The Cambridge International Conference on Open and Distance Learning 2009

The Von Hügel Institute, St Edmund's College, Cambridge
in association with The Open University and The Commonwealth of Learning

Supporting learning in the digital age: rethinking inclusion, pedagogy and quality

Tuesday 22 September - Friday 25 September 2009

Collected Conference Papers and Abstracts

September 2009

Edited by Anne Gaskell and Roger Mills

With an introduction by Anne Gaskell and Alan Tait

CD-ROM: ISBN 978-0-7492--29269

Cambridge Conference on Open and Distance Learning

Supporting learning in the digital age: rethinking inclusion, pedagogy and quality

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Supporting learning in the digital age: rethinking inclusion, pedagogy and quality

Introduction

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Roger Mills
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Those of us who work in the field of open, distance and e-learning have the responsibility to ensure that we support our learners to succeed, and to prepare them in the best possible ways for learning in the future. Over the next few years a period of significant financial difficulty can be expected almost everywhere, but we hope that nowhere will institutions be tempted to return to the old private correspondence school methods that regarded student drop-out as a good thing, because it optimises income (i.e. the sooner students drop out after paying the registration fees the less demand on services they make) – or even that high levels of attrition provide evidence of the maintenance of high standards. The Cambridge Conference has a long tradition now from over twenty-five years of prioritising the place of learners in our institutions and organisations over and above other issues. When we align the high profile topic of the digital age and all the range of uses of technologies that come with that, we hope at this conference in 2009 that we can continue that tradition in assessing the ways in which digital technologies can support learning and learners.

There has recently been some skepticism cast on the notion of the digital natives/digital immigrants polarities proposed by Prensky (Prensky 2001): that is to say that all under 25 year olds are far ahead of their teachers in understanding and using digital technologies or, indeed, that they want to import their social networking spaces wholesale into their e-learning (see Australia Learning and Teaching Council 2009). The report from the Australian Learning and Teaching Council makes clear that there is much more variety amongst both teachers and learners in their ability and willingness to deploy the new technologies for learning. Thus, even in the developed world where the ubiquity of access to digital resources is very widespread, the support of learners with digital resources is much more nuanced that the earlier observers proposed. And since Warschauer's seminal work, the very notion of a digital divide has needed to be reformulated from "one that focuses on gaps to be overcome by provision of equipment to one that focuses on social development issues to be addressed through the effective integration of information and communications technologies into communities, institutions and societies" (Warschauer, 2003: p. 9). It is interesting, therefore, that several of the papers submitted to this conference focus on the difficulties learners face in dealing with on-line administrative procedures within institutions developing on-line services for their students.

Nonetheless, two key dimensions of the new age have to be assessed and deployed for the purposes of supporting learning and revisiting our issues of rethinking inclusion, pedagogy and quality. These are we propose:

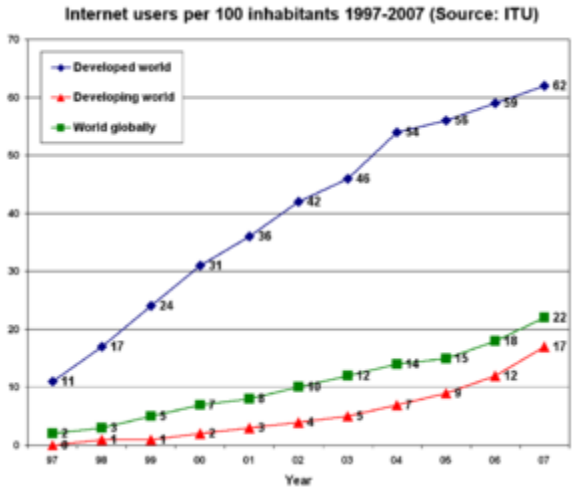
- connectedness
- information and resources

The key to the changes that have been bewildering over the last decade has, in fact, been the inter-relationship of the two. Most learners now have access to huge resources that have hitherto been locked behind the entrance desks of university libraries' in addition to the extraordinary amount of sources and archives that have been similarly opened up. This is combined with our ability to discuss these, and provide our own accounts of them, through the development of Web 2.0 tools – blogs, wikis, forums and beyond - which has meant the growth of so much learner-generated information and commentary, of all qualities, on the web. Thus, we see communities grow up which are fluid, accepting new members every day at the same time as others leave. This follows directly in some aspects the traditions of distance education which have freed up the learner from the constraints of time and space and accelerated the shift from didactive to facilitative modes of teaching and learning within a constructivist framework. Out of this comes the wonderful phenomenon of Wikipedia, which we are not afraid to say we use and use regularly. It is reported that 2.5 percent of all users of Wikipedia provide 80 percent of all content (Meisher-Tal & Gorsky, forthcoming 2010) but the concept of Wikipedia enables input and correction from any of their global participants. This and other peer-generated information and networking force us to rethink how we conceptualise authoritative information; and indeed how we quality assure the content, processes and outcomes from our teaching in a digital age.

We also have the more recent development of the Open Educational Resources movement, usefully summarised in an open access special issue on the subject from the journal *Open Learning* (2009), guest edited by our keynote Susan D'Antoni (D'Antoni, 2009). Kick-started by Harvard University, this movement has now grown to be a world wide movement making teaching available through the web to all who can make use of it. Informal learning has benefited most from sites such as iTunes U), and these provide resources of a very wide range of types (see http://www.apple.com/education/mobile-learning/). As institutions succeed in making links between informal and formal learning, providing accreditation for example, the capacities for learning in a digital age will be substantially enhanced.

One thing that has changed as a result of this is that enquiry and scholarship have become core activities in almost all fields. The new technologies have played an extraordinary part in liberating knowledge from the locally produced and managed to the universally available, with contributions from around the world. Enquiry, supported by scholarship in the broader sense, thus stands at the heart of human activity. It is now a form of activity in all its variety of far wider interest than just the world of the University. Firstly, it has over the last 30 years spread down through the age groups and across organisational types. While 30 years ago enquiry in the sense of independent, even if supported, research was primarily restricted to postgraduate work in universities, it has now spread into baccalaureate or undergraduate degrees, and further into schools, as important practice that learners need to master. In primary schools in England plans are being made now for ICT to be an essential element in the curriculum, and enquiry will rightly be at the core of that activity for children aged 5-11. As importantly, enquiry supported by scholarship has now spread to all sorts of organisational roles and at all sorts of levels. Supporting the learner in the digital age must engage with the development and enhancement of these scholarly skills: one of the ways in which we must rethink pedagogy in a digital age.

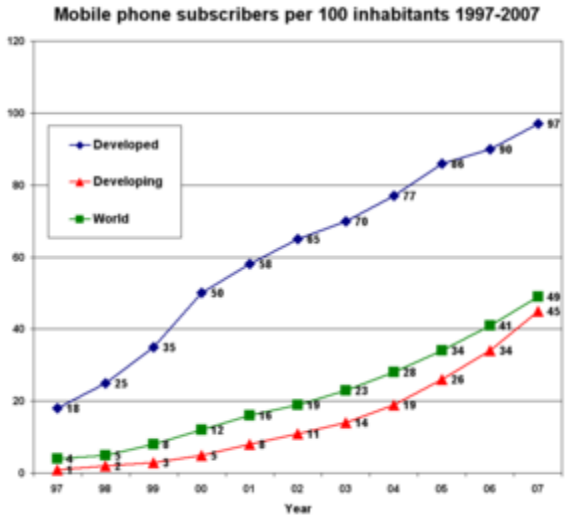
While the digital divide remains substantially challenging for the developing and developed world contexts, and indeed for the same sorts of division within developed countries to a lesser extent, the expansion of internet use is nonetheless remarkable. The growth up to 2007 is set out in the International Telecommunications union as below.



Wikipedia 2009

The recent installation of fibre optic cable off East Africa, bringing Kenya, Tanzania, Mozambique, Uganda, South Africa and Rwanda into 21st century possibilities of communications, means not that the digital divide is unimportant but that it is a temporary phenomenon. It will reproduce the differences of wealth that structure relationships between North and South, and South-South too, but there is no determinist necessity that the gaps between North and South will be embedded and increase (Allafrica.com 2009). As one of our keynote speakers, Sugata Mitra, has argued: "The most advanced educational technology should go first to the most disadvantaged learners' " (Mitra, 2006). One of the major targets for the Commonwealth of Learning (COL) in its 3 year plan 2009-2012 is to "help countries and institutions understand elearning and implement it using technologies that are practical, user-friendly and compatible with existing equipment" (COL 2009, p.26). What is needed is not simply increased physical access to computers and connectivity, " but also to the requisite skills and knowledge, content and language, and community and social support to be able to use ICT for meaningful ends….reducing marginalization, poverty and inequality and enhancing economic and social inclusion for all" (Warschauer, 2003, p. 216).

In the meantime, the use of mobile telephony has made the possibility of learning anytime anywhere a reality in many parts of the world, and has done so faster than the internet, as the ITU figures for 1997-2007 make clear:



Wikipedia (ibid.)

More recently, Microsoft claimed that more than 20 million smartphones were sold in 2008 with its software on board, with Apple's iPhones selling c 13 million and Nokia's smartphones selling 18m (Zeman 2009).

This widespread use of mobile telephony, both with handsets that are in fact handheld computers, holding resources of a range of kinds, and with more basic devices, means that ubiquitous learning is now really widespread and provides some further examples of ways in which we can rethink inclusion in a digital age. The value of mobile devices for learning and teaching in addition to administrative reminders has so far mostly been evidenced through small-scale, short-term projects. However, there are some larger scale initiatives, such as the Learning2Go project in Wolverhampton, UK (http://www.learning2go.org/) which demonstrate the potential for further activity in this area (Gaskell and Mills, 2009).

This extraordinary bourgeoning of activity does not mean that teaching is unimportant: the structuring of learning importantly remains in our view key, but that teaching has changed in ways with which we, as distance educators, recognise: away from the provision of content and towards the support of learning skills; away from the didactic and towards the facilitative mode. In this we see a continuity of tradition with distance education, where the learning materials have been provided and the role of the tutor has been to support learning. That development is accelerated, as Walton et al argue: "There is an urgent need to establish new forms of learning using internet technologies which release the potential for learning which many groups currently excluded from learning have" (Walton, Weller and Conole, 2009).

The digital age thus provides challenges to supporting learning for all those concerned with our themes of inclusion, pedagogy and quality. How best can learning be supported for those who do not regularly have access to the range of ICTs that others take for granted? How far can the more ubiquitous, even if less sophisticated, mobile devices help? How far do mobile devices really support deep learning? Do we need new pedagogies to make the most of digital learning or are we working with familiar concepts in different media? If anyone can contribute to Wikipedia and all websites

appear to have equal status, how do we help students evaluate the quality of information in a digital age? How do we ensure the quality of our input and outcomes?

The conference papers and parallel sessions provide a very rich forum for you to engage in consideration and discussion of these issues. We invite you to revisit the issues in 2011 when the Cambridge International Conference will be considering "Internationalisation and social justice: the role of distance and e-learning".

Anne Gaskell, Roger Mills and Alan Tait

References

AllAfrica.com (2009). *East Africa: Sea Cable Ushers in New Internet Era*. Available online at http://allafrica.com/stories/200907230954.html (accessed 31 July 2009).

Australia Learning and Teaching Council (2009), Educating the Net Generation, a Handbook of Findings for Practice and Policy Available online at http://www.netgen.unimelb.edu.au/downloads/handbook/NetGenHandbookAll.pdf (accessed 31 July 2009)

Commonwealth of Learning (2009), *Learning for Development. Three-Year Plan 2009-2012* . Available online at http://www.col.org/progServ/3YR/Pages/default.aspx (accessed 31 August 2009)

D'Antoni, S (ed) (2009), Open Learning Special issue: Open Educational Resources, *Open Learning* 24 (1). Available online at http://www.tandf.co.uk/journals/carfax/02680513.html (accessed 5 August 2009).

Gaskell, A & Mills, R (2009), Using Mobile Technology for Learner Support in Open Schooling: a report for the Commonwealth of Learning, Cambridge, St Edmund's College.

Meisher-Tal, H & Gorsky, P (2010 forthcoming), Wikis: what students do and don't do when writing collaboratively, *Open Learning*, 25 (1).

Prensky M (2001) Digital Natives, Digital Immigrants, in *On the Horizon*, MCB University Press, 9 (5). Available online at: http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf (accessed 31 July 2009).

Walton A, Weller M, and Conole G, (2009) SocialLearn- Widening Participation and Sustainability in Higher Education, in U Bernath, A Szucs , A Tait and M Vidal (Eds.), *Distance and E-Learning in Transition, Learning*, *Innovation, Technology and Social Challenges* , ISTE/Wiley, London and New York, 691-700.

Warschauer, M (2003), *Technology and Social Inclusion: rethinking the digital divide*, Cambridge Massachusetts, MIT Press.

Wikipedia (2009) Digital divide, http://en.wikipedia.org/wiki/Digital_divide, (accessed 31July 2009.)

Zeman E (2009) The Information Week, 22 January 2009. Available online at: http://www.informationweek.com/blog/main/archives/2009/01/whos_the_champ.html;jsessionid=DZ2BJN5DGVOQYQSNDLRSKH0CJUNN2JVN (accessed 31 July 2009).

A survey of quality assurance programmes in open and distance learning: University of Lagos Distance Learning Institute in perspective

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Abstract

Research has indicated that for open and distance education to be acceptable as a viable or better option to the conventional system, it must necessarily develop a quality culture in the areas of policy and planning, specification of standards, identification of critical functions, documentation, staff involvement, monitoring, training and costs. This study examined the extent to which these aspects of quality culture are being implemented at the Distance Learning Institute, University of Lagos, Nigeria. Data were collected from a survey of students enrolled for various programmes at the Institute. Descriptive statistics were used to analyse the data collected and, based on the results, recommendations are made for improvement in those aspects of quality culture which fall short of expectations.

Introduction

Over the past few years, there has been significant growth of Quality Assurance (QA) activities aimed towards improving higher education on institutional, national, regional, and global levels. A number of terminologies have been developed and used to refer to similar ideas of improving the quality of higher education. Some of these terminologies are quality assurance, quality assessment, quality improvement and quality development (Harman, 2000; Brennan & Shah, 2000; Hopkin & Lee, 2001; Gosling & D' Andrea, 2001). However, while the definition of quality assurance may differ, all quality assurance terminologies share a common purpose in ensuring that students receive a high quality and relevant education and awarded credentials that are widely recognized by governments and employers.

QA has been defined as " systematic management and assessment procedures adopted by higher education in order to monitor performance against objectives, and to ensure achievement of quality outputs and quality improvements" (Harman, 2000). In general, the term QA refers to a process of defining and fulfilling a set of quality standards consistently and continuously with the goal of satisfying all consumers, producers and other stakeholders. In engineering and manufacturing, for example, "quality control' or "quality assurance" is viewed as a set of measures undertaken to ensure that defective products or services are not made - typically under the credo "do it right the first time" and that the product or service meets the predetermined performance requirements.

In the last four decades (1969-2009), open and distance learning has had phenomenal growth and outreach, especially within the developing world. This unprecedented

growth has thrown up several challenges in relation to quality and "parity of esteem" with established conventional systems. As such, any discourse on quality assurance in ODL is bound to remain incomplete unless situated within its dynamic global context.

The dynamic global context of ODL

The first generation ODL programmes (mainly correspondence courses) have been available in diverse forms and at various levels for over 150 years now. And yet they have not assumed the centrality that this long existence would presuppose. On the other hand, they have generally been considered "second rate" and "second chance" as provision for pedagogic interaction has been minimal, if at all.

ODL profile – 1969-1999

It is only during the last 30 years, that is, since 1969 when the British Open University marked a significant departure from correspondence courses, that ODL has become a mode to contend with and has offered real opportunities for a more democratic and egalitarian mode of education. One could trace this further back to 1946 when the University of South Africa (UNISA) became the first ever dedicated distance education university.

In the late 1970s and the 1980s, the third generation ODL demonstrated new and powerful possibilities with enthusiasm for experimentation with additional technologies such as audio and videotapes, audio and video-teleconferencing, audio-graphic communication and computer-assisted course preparation and evaluation.

With its base in the World Wide Web, the fourth generation ODL commenced with the first online courses around the mid-1990s, and with them the notion of the *virtual university* began to materialize with features like interactive multimedia presentations, computer-mediated communication, Internet access and WWW resources.

The emerging profile of ODL - post 2000

The fifth generation ODL marks a significant departure from its earlier incarnations in that it *fully integrates* pedagogy, educational and institutional management and technology, unlike its forerunners which used technology piecemeal and mainly for *delivery* purposes. Technology is now being used for every aspect of the enterprise - educational administration, learner management, learner preparation for readiness, curriculum construction, instructional design, support services including tutoring and library services as well as learner evaluation.

Distance Learning Institute (DLI)

The Distance Learning Institute (DLI) of the University of Lagos, Nigeria, was established in response to the then rightly conceived need highlighted in the 1961 Ashby Report to provide a special non-conventional mode of education which would:

- fill a gap in the opportunities for higher education for gainfully employed persons in the business/commercial capital of the nation;

- widen access to and promote an innovative, flexible and cost-effective system of education to an increasing proportion of mature persons within and outside the country.

Other reasons for the establishment of DLI include the increasing number of applicants for higher education vis-à-vis the limited spaces available in the conventional institutions in Nigeria. Even younger learners are now opting for distance education, having repeatedly failed to gain admission into conventional universities through the Joint Admissions and Matriculation Board.

Status of students

The first batch of 501 students was admitted to DLI programmes during the 1975-1976 session. The current student enrolment is over 6,000. The student population is made up of teachers, public servants, military officials as well as employees of private or commercial enterprises. They take equivalent examinations in courses taken as the full-time students during period of residence which marks the end of a session. These examinations are subject to the same rules as those of the full-time students. The same degrees are awarded after the successful completion of their courses.

Purpose of study

A survey was conducted on 250 learners at DLI in order to assess the identified quality assurance indicators and to ascertain the extent to which the Institute has taken steps to ensure that there is qualitative learning outcome from the open and distance education programme. This will, in effect, enable the Nigerian populace to accept ODL as a viable option for massification of education.

Methodology

Data was collected using a questionnaire which was administered on distance learning students in the Bachelor of Science in Accounting and Bachelor of Science in Business Administration programmes. This group of students was chosen because they constitute about 95% of the DLI student population. Two hundred and fifty (250) questionnaires were sent out and there was a high return rate of 228 (91.2%). Each item of the questionnaire was analysed using descriptive statistics to assess the effectiveness of quality assurance as an integral part of DLI programmes.

Results

The analysis of the quality assurance indicators provided at Distance Learning Institute University of Lagos, focused on the conditions and process of enrolment, adequacy of study centre, adequacy of facilities at the study centre, adequacy of course materials, information dissemination, library facilities, processing of examination results, quality of learning, course advising and counselling and interactive technology.

Condition and Process of Enrolment
Figure 1

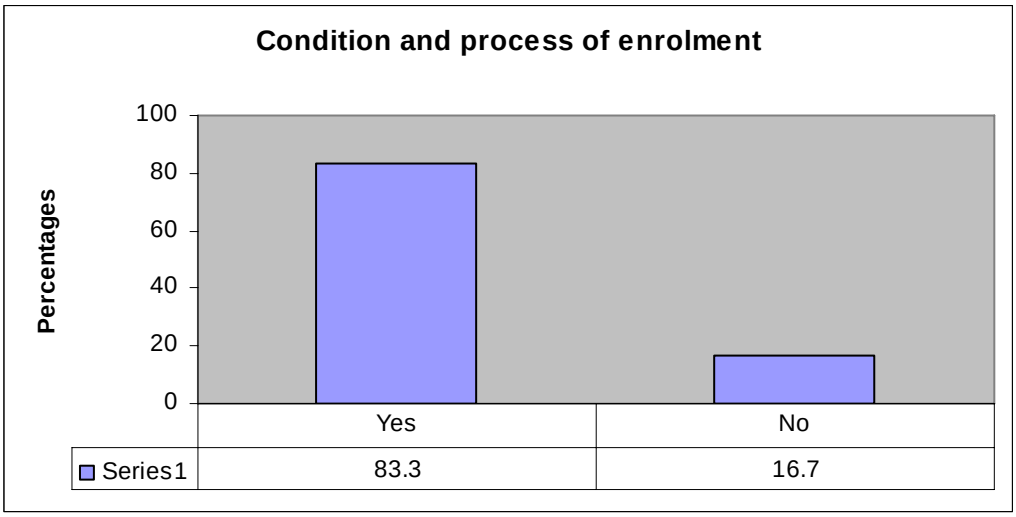
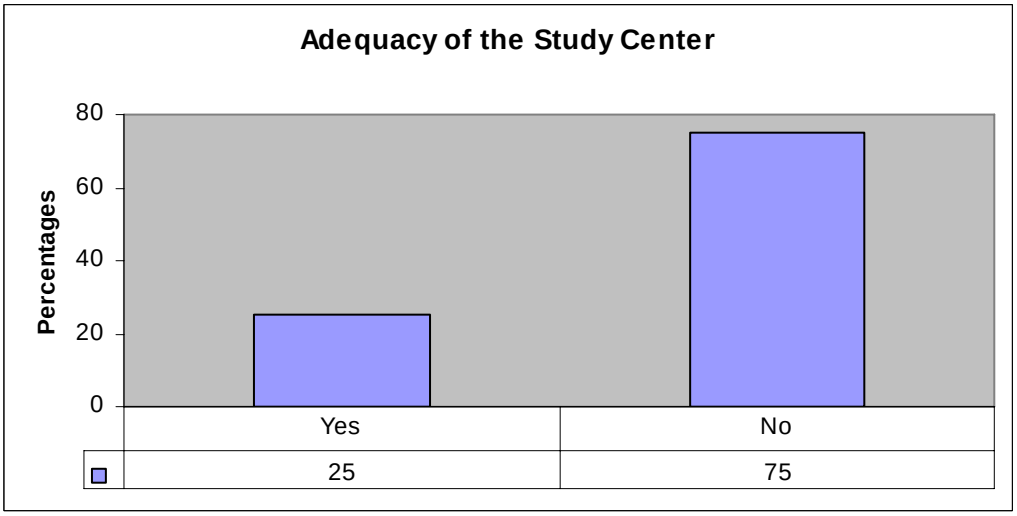


Figure 1 above shows that 190 respondents or 83.3% are of the opinion that the conditions for enrolment give opportunity for all qualified applicants to enroll while 38 respondents or 16.7% had a contrary opinion. The implication is that the institute provides opportunity for majority of people in Nigeria to acquire higher education through the non-conventional mode.

Adequacy of the Study Centre
Figure 2



From Figure 2 above, 57 respondents or 25% said that the study centres are adequate while 171 or 75% said that they were not adequate. This implies that learners are not satisfied with the level of adequacy of the study centre. This is logical in view of the fact that DLI operates only one study centre in the Nigerian commercial capital, Lagos.

Facilities at the Study Centre
Figure 3

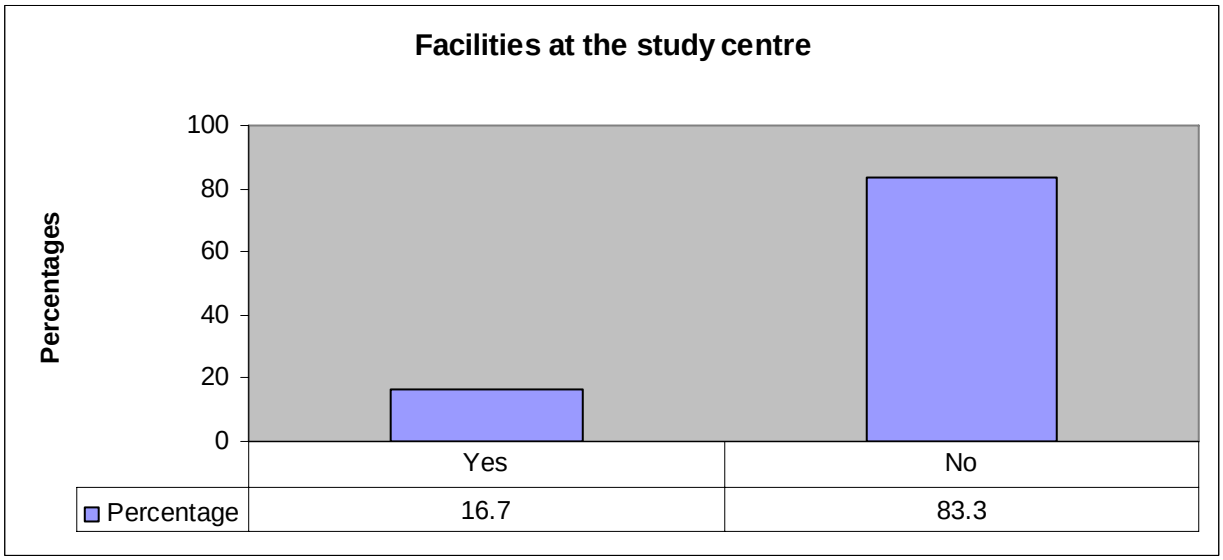
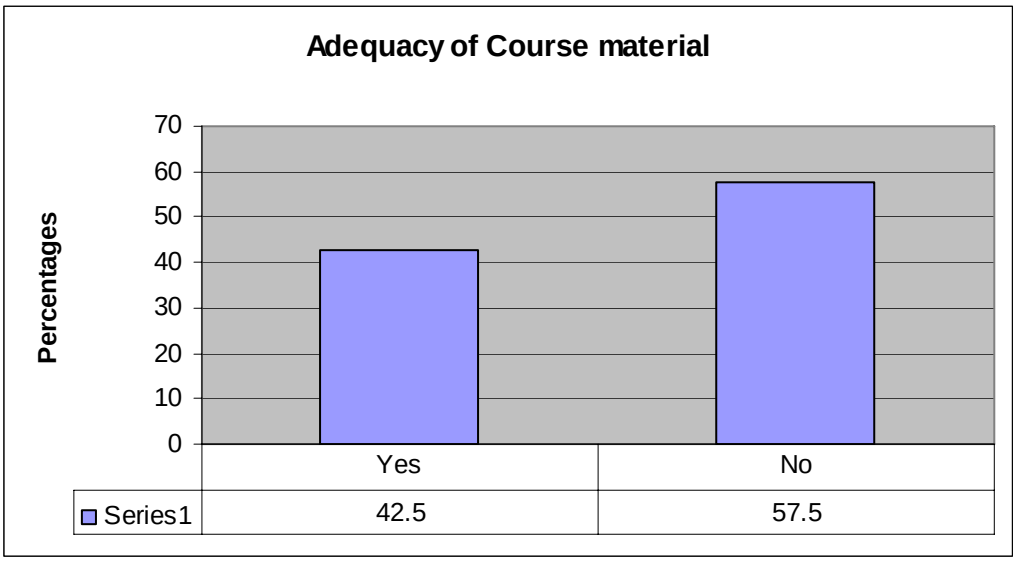


Figure 3 above shows that 190 respondents or 83.3% said that they did not have access to audio-visual aids such as audio cassettes, audio/video CDs, computer laboratory with internet facilities, educational teleconferencing facilities and radio broadcast of educational programmes. This implies that DLI lacks essential facilities needed to support learners for a qualitative learning outcome.

Adequacy of Course Material
Figure 4



From Figure 4 above, more than half of the respondents claimed that they did not find sufficient course texts relevant to their studies. This implies that course texts and self learning materials as a foundational tool for open and distance learners are yet to be provided by the institute.

Information dissemination at DLI UNILAG
Figure 5

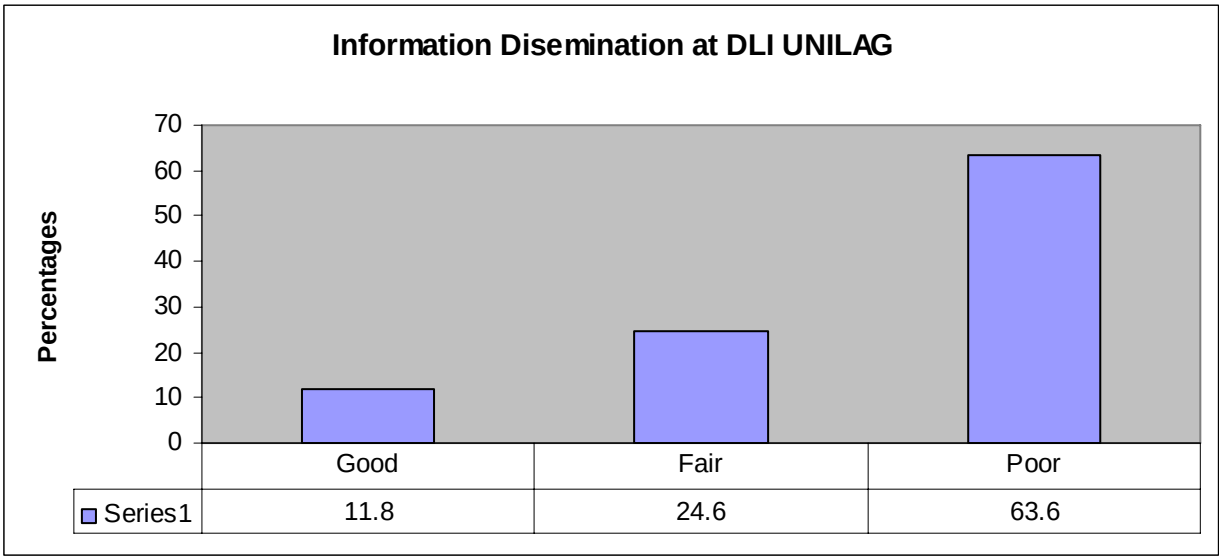
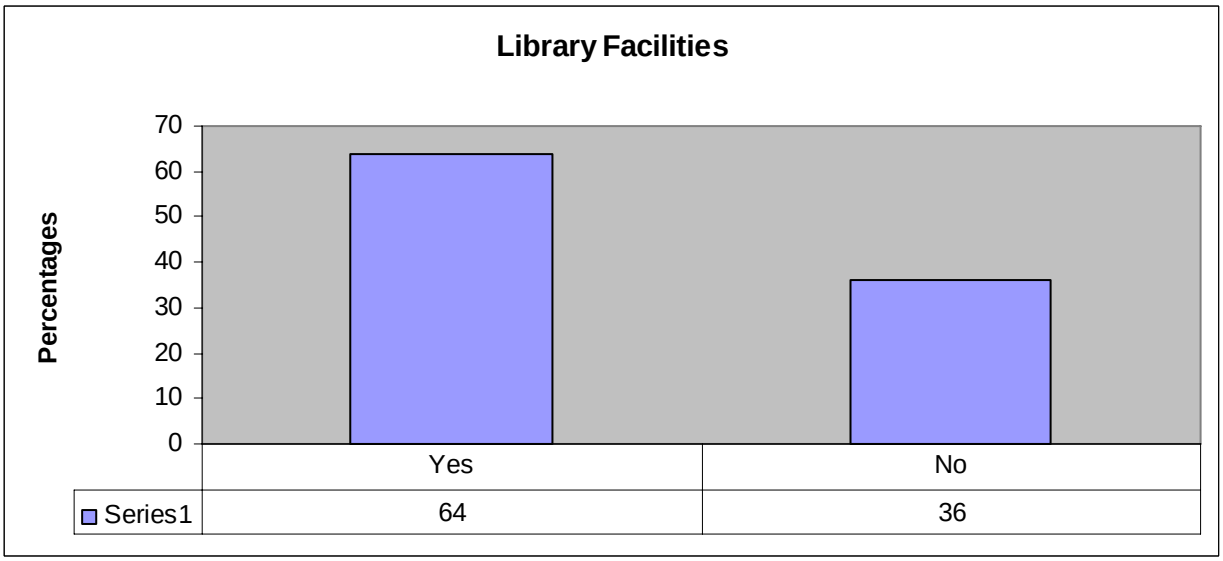


Figure 5 above shows that 63.6% of the respondents judged the information dissemination strategy of the institute to be poor. This implies that the technique of disseminating information to the learners is not satisfactory. In distance education, free flow of information between learners and tutors on the one hand and between learners and the institution is very important.

Library Facilities
Figure 6



The result in figure 6 above shows that 64% said that they had access to library facilities at the study centre. This implies that the remaining learners are being denied library facilities largely because they are based outside the city which hosts the library facilities. This imbalance could be addressed with electronic library services.

Processing of Examination Results
Figure 7

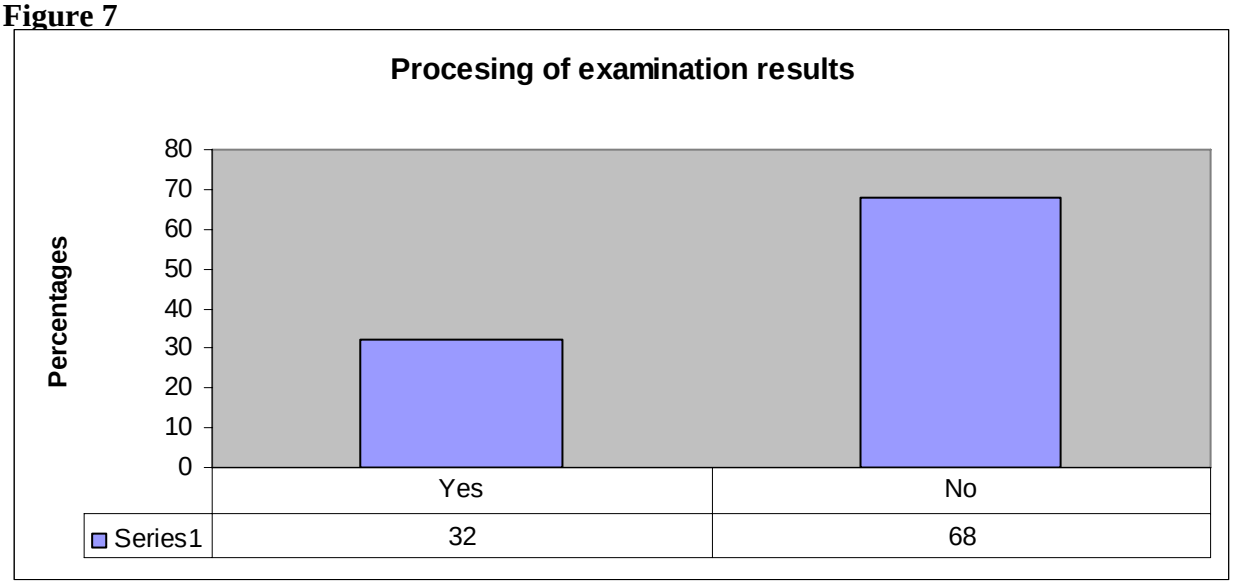
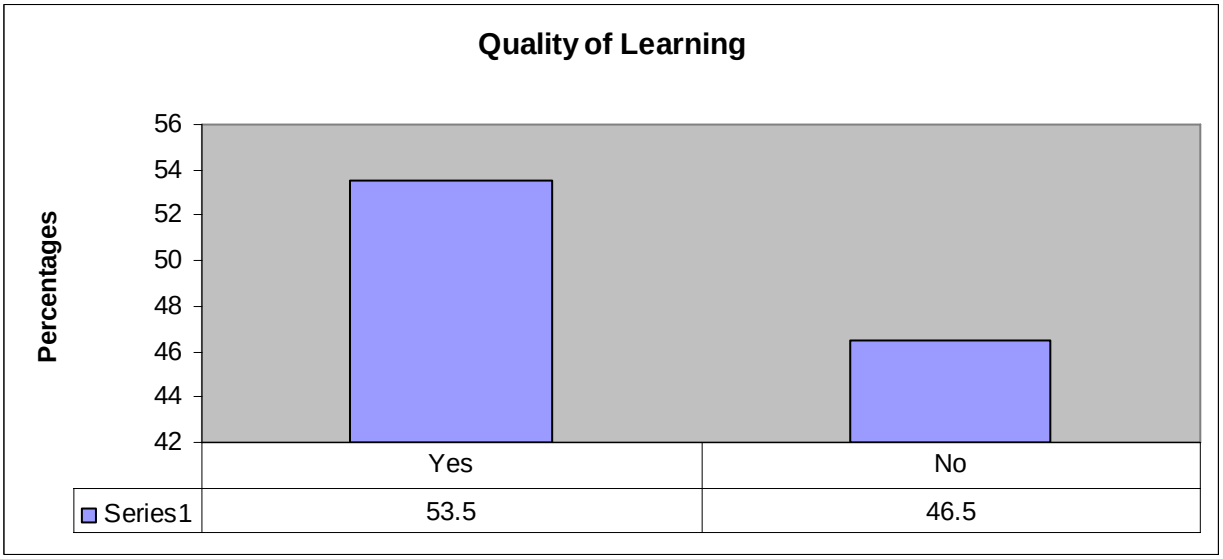


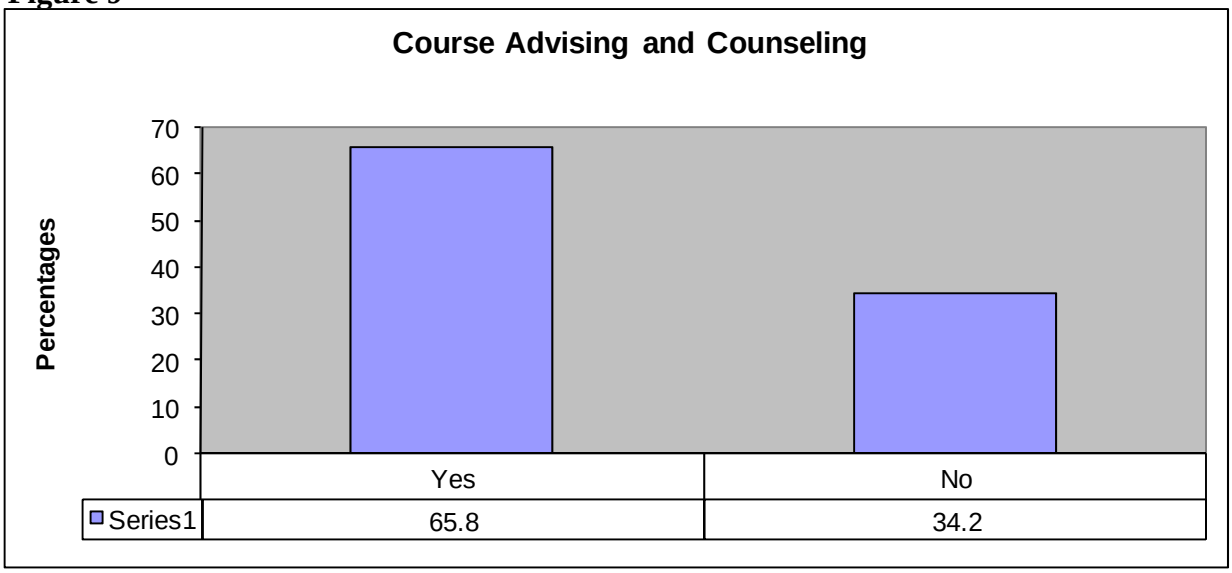
Figure 7 above shows that 68% of the learners were not satisfied with the manner in which results are processed and released. This implies that the assessment and evaluation procedure are not satisfactory, the institute will need to deploy information technology to drive the examination and assessment procedure.

Quality of Learning
Figure 8



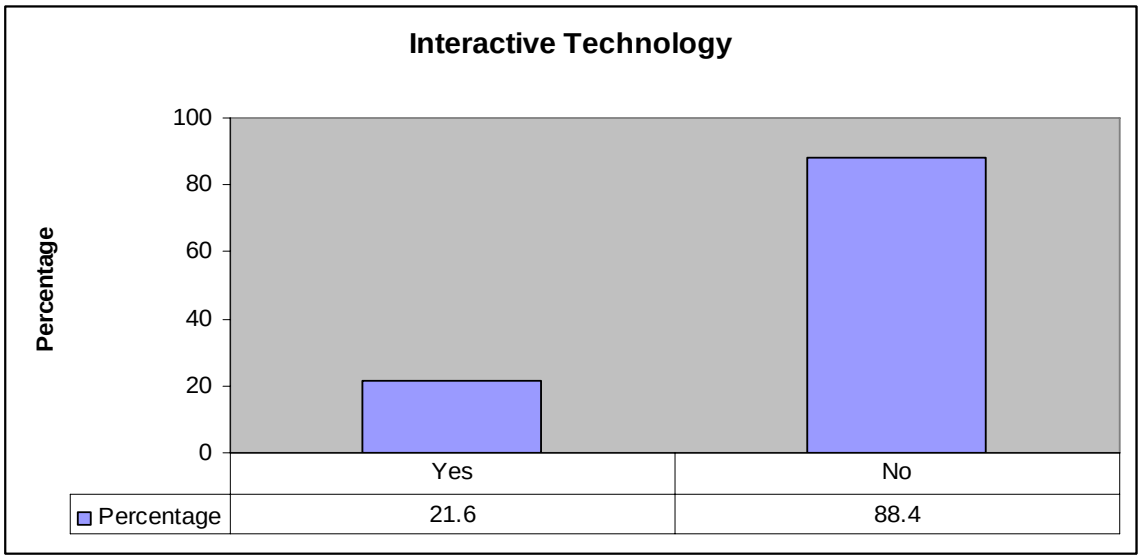
The result in figure 8 above shows that only 53.5% of the learners claimed that the quality of learning through distance education was not inferior to learning through regular classroom attendance as in the conventional mode. Considering the percentage of those who had a contrary opinion, one discovers that the distance mode has not been fully accepted as a viable option to obtaining higher education. However, with renewed efforts in learner support services and quality assurance, the expected change should soon come.

Course Advising and Counseling
Figure 9



From figure 9 above, the method of course advising and counselling was adjudged to be satisfactory by 65.8% of the learners. However, there will be improvement if course advisers and counsellors are exposed to relevant training and workshops that will improve their performance.

Interactive Technology
Figure 10



The result in figure 10 above shows that 88.4% of the learners said that interactive technology facilities were not provided. This implies that the institute is yet to fully deploy Information Technology in effecting teaching and learning activities.

Conclusion and recommendations

It is crystal clear that quality assurance should be designed with a particular institution in mind, it follows that the primary requirement for an effective system is institutional commitment and support. Without such widespread and thorough support of the

institution as a whole and from its departments, any system is doomed to failure. In a dual-mode institution such as the University of Lagos, this means that distance is seen as a vital component of institutional activity, that distance teaching is not less than or subsidiary to face-to-face teaching. Although, the learners were satisfied with the conditions and process of enrolment at DLI, they were not satisfied with the registration process which they described as cumbersome. They therefore would want the Institute to appoint and empower more registration officers and, most importantly, to make registration process online so as to reduce the time used by the students to complete their registration.

Apart from the above, the classrooms at the study centre must made conducive to learning by ensuring that they are well-ventilated, well lit and that the chairs and tables are sufficient and comfortable for effective learning. There is also the need to provide audio-visual equipment at the study centre so as to aid learning. On information dissemination at DLI, it is recommended that DLI should build a website where new information can be placed on this website. More extensive use of the mass media as well as internet and mobile phone messaging should be encouraged. Although the respondents were satisfied with the process and conduct of sessional examinations, efforts should be made towards early release of results say, at most, three months after seasonal examinations.

Furthermore, there is a need to provide adequate and good study materials that will cover all courses as this will enable the students to develop the skill of self-learning for which open and distance education is noted. In line with the above, there is a need for improvements in the attendance of instructors at the study centre meetings. Students are discouraged when some will have to make up time for the weekend study centre meetings only to find out that the instructors/tutors are absent.

References

Asika, Nnamdi (1991): Research Methodology in Behavioural Sciences, Longman Nigeria Plc.

Brennan, J., & Shah, T. (Eds.) (2000). Managing quality in higher education. Milton Keynes; OECD, SRHE & Open University Press.

Commonwealth of Learning and Asian Development Bank: Trainers' Kit 005. Quality Assurance in Open and Distance Learning-Edited by Badri N. Koul, 1-6pp.

Distance Learning Institute, University of Lagos, 2003-2005 Prospectus, University of Lagos Press.

Distance Learning Institute, University of Lagos: Join us at DLI (2004) Complied by N.M. Ogbuehi.

Gosling, D., & D'Andrea, V. (2001). Quality development: a new concept for higher education. Quality in higher education, 7(1), 7-17pp.

Harman, G. (2000). Quality assurance in higher education. Bangkok: Ministry of University Affairs & UNESCO PROAP.

Hopkin, A.G., & Lee, M.B. (2001). Towards improving quality in 'dependent' institutions in a developing context. Quality in Higher Education, 7(3), 217-231pp.

A survey of quality learners support programme for distance learning students of the University of Lagos

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Abstract

Several researchers have discovered that quality learner support is a significant component of open and distance education in this age of technology. A proper understanding of the concept of learner support is supposed to enable open and distance learning institutions develop support services that take into consideration the peculiar needs of open and distance learners rather than support services based on individual institution's ideas, beliefs and conditions. This study attempts to establish empirical evidence for the needs of learners. The data were collected from a survey of students enrolled for various programmes at the Distance Learning Institute, University of Lagos, Nigeria. Descriptive statistics were employed to analyse the data collected and, based on the results obtained, guidelines for developing qualitative learners support programmes are proposed.

Introduction

Education today places more emphasis on the learning process of the learner rather than instructional strategies of the teacher. For a conventional mainstream learner, learning seems to be a full-time as well as a major activity, while for distance education learners, it is a part-time, secondary activity. Koul (1989) gave three categories of learners in distance learning system. The first comprises learners who have confidence in their ability to work on their own. They are confident enough to think that they can succeed without any guidance from the counselor even though many of them still need assistance to succeed. The second category of distance learners are those who require guidance/assistance. Having someone to help in solving problems gives them reassurance about the system as well as builds a little more confidence in them. For them, a face-to-face support system can make all the difference between withdrawing from the course and completing it. The last are those in between the first two. They often demonstrate a level of confidence but are also quick to seek guidance when needed. In view of those categories several complaints are received from learners regarding the various aspects of learning, tutoring, counselling, evaluation and assessment, examinations, results, etc. - such complaints are sometimes overwhelming. Learner support is a significant compliment of education particularly in open and distance education. However, determining what kinds of support students need is a difficult task. It appears that support services provided by distance learning centre are still based on presumptions, belief and conditions of the provider.

In determining the learner support needed, it is useful to look at the concepts of learner support. Robinson (1995) stated that the definitions of learner support vary. One

concept describes it as the element of an open learning system capable of responding to a particular individual learner. Thorpe (1988) defined learner support as the support incorporated within the self-learning materials, while Wright (1991) noted that as the requisite student services essential to ensure the successful delivery of learning experience at a distance. These studies recognized learner support as an integral part of a course, while others saw it as a supplement. The range of services included in models of learner support also varies, some include pre-entry services, and others do not. In some cases, support services are provided in partnership with other agencies, adding yet another dimension to the concept.

According to Tait (2003) non-academic support consists of advising, giving information, exploring problems and suggesting directions, assessment, giving feedback to the individual on non-academic aptitudes and skills, actions such as practical help to promote study, advocacy, i.e. making out a case for funding, writing a reference, agitation - promoting changes within the institution to benefit students and administration which involves organizing student support.

Robinson (1995) identified various components of learner support which include:

1. Personal contact between learners and support agency people acting in a variety of support roles and with a range of titles, individual or group, face-to-face or via other means;
2. Peer contact;
3. The activity of giving feedback to individuals on their learning;
4. Additional materials such as handbooks, advice, notes or guides;
5. Study groups and centres, actual or virtual (electronic);
6. Access to libraries, laboratories, equipment and communication networks.

It could be said that learner support is needed in order to facilitate students' learning. Support can be in the forms of facilities, administrative, learning materials, reading materials and references, human interaction advice and moral support.

Purpose of study

This study examines the learner support services initiatives of the Distance Learning Institute (DLI) of the University of Lagos with a view to establishing the adequacy or otherwise of the support system.

Design and Methodology of Study

Based on the model developed by Tait (1995), this study is a survey, designed to determine the demographic characteristics of DLI students, their needs in terms of learner support and their satisfaction regarding the services provided. From the findings, suggestions are made to provide guidelines for quality learner support programme. Data was collected using a questionnaire which was administered on distance learners in the Bachelor of Science in Accounting and Bachelor of Science in Business Administration programmes respectively. This group of students was chosen because they constitute about 95% of DLI students' population.

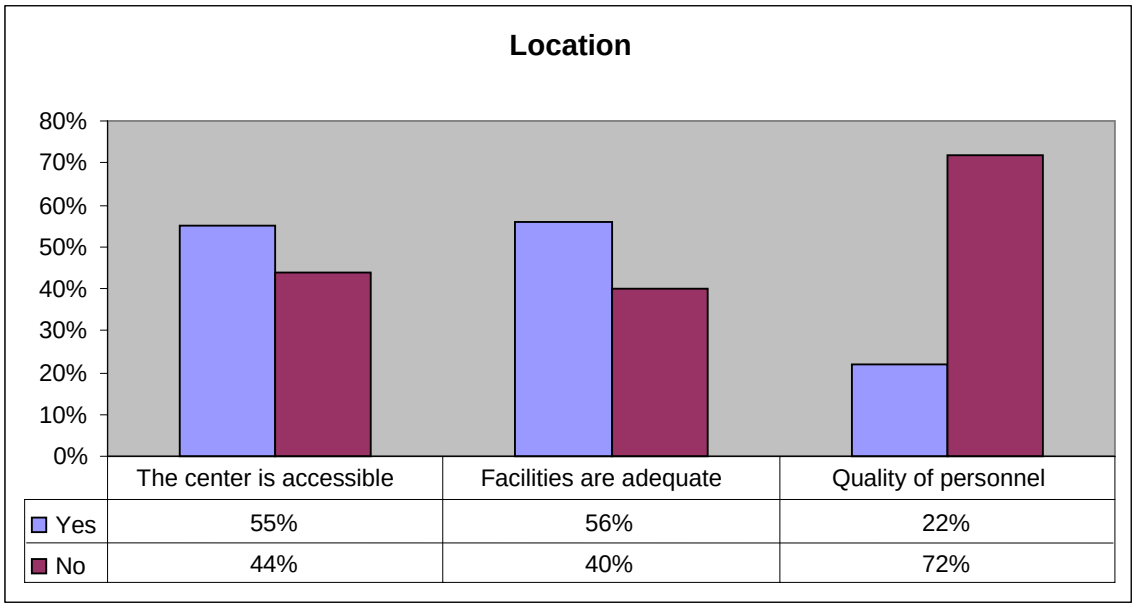
The analysis of the learner support programme was done using descriptive statistics to assess how the learner support programmes are being utilized. Six hundred and fifty (650) questionnaires were sent out and only 435 (66.92%) were returned. Each item of the questionnaire was analysed in order to:

a) identify the students' needs in terms of learner support;
b) identify the learner support services provided by DLI; and,
c) determine the extent to which students' are satisfied with the support services provided by DLI.

Results

The analysis of the learner support services provided at Distance Learning Institute, University of Lagos, focused on location, information services, pre-admission services, post admission services, Library services, examination and evaluation services, financial services, technological services, media services and other relevant services.

Location
Figure 1

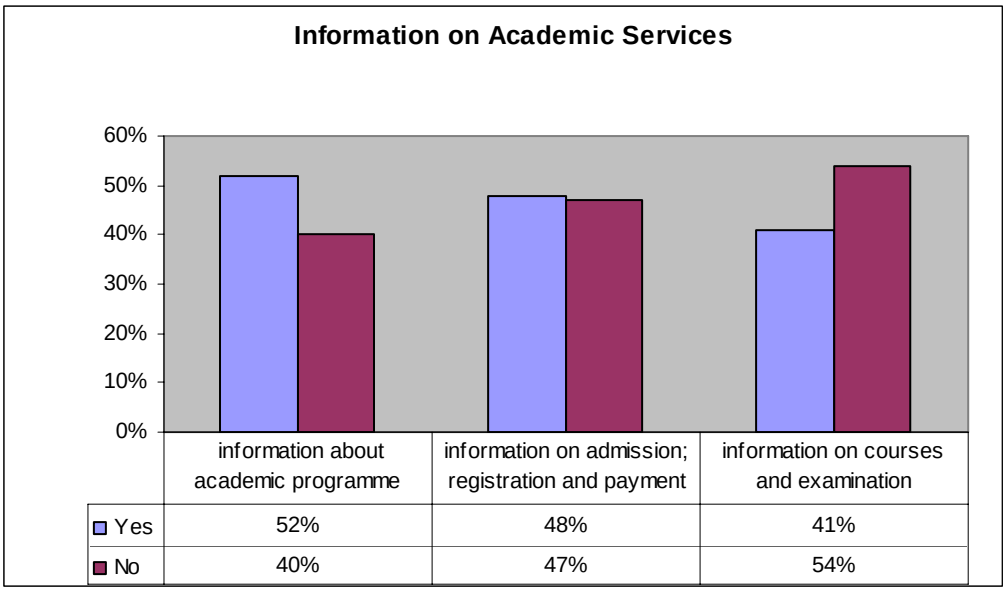


	The center is accessible	Facilities are adequate	Quality of personnel
Yes	55%	56%	22%
No	44%	40%	72%

Figure 1 above shows that the location of the study centre (only one) is accessible to more than half of the students and that the facilities provided are moderately adequate. However, the learners are not satisfied with the quality of personnel managing the centre. The implication is that the majority of learners are not satisfied with the quality of personnel employed at the centre.

Information on Academic services

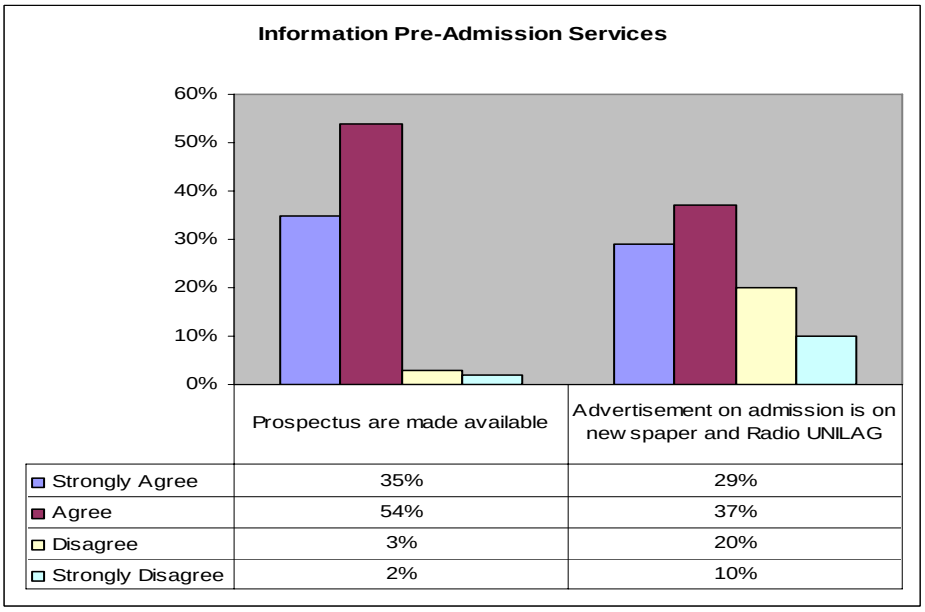
Figure 2



The result in Figure 2 above shows that 52% of respondents consider satisfactory the procedure for disseminating information. However, this can be improved upon if all necessary information is uploaded on the institute's website for easy accessibility by the learners.

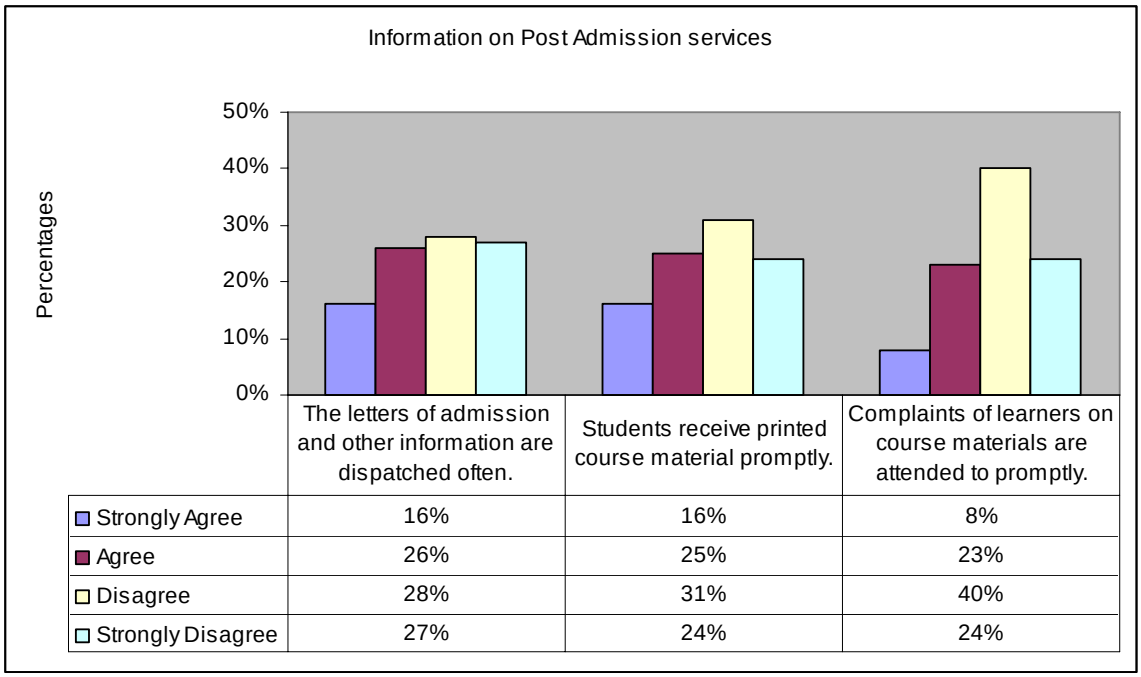
Pre-admission services

Figure 3



The students were satisfied on the information on the radio (University of Lagos Radio and newspapers whenever application forms are to be sold to prospective learners. However, there could be improvement by uploading the prospectus on the website so that prospective learners can gain access at any time and not necessarily when applications forms are to be sold.

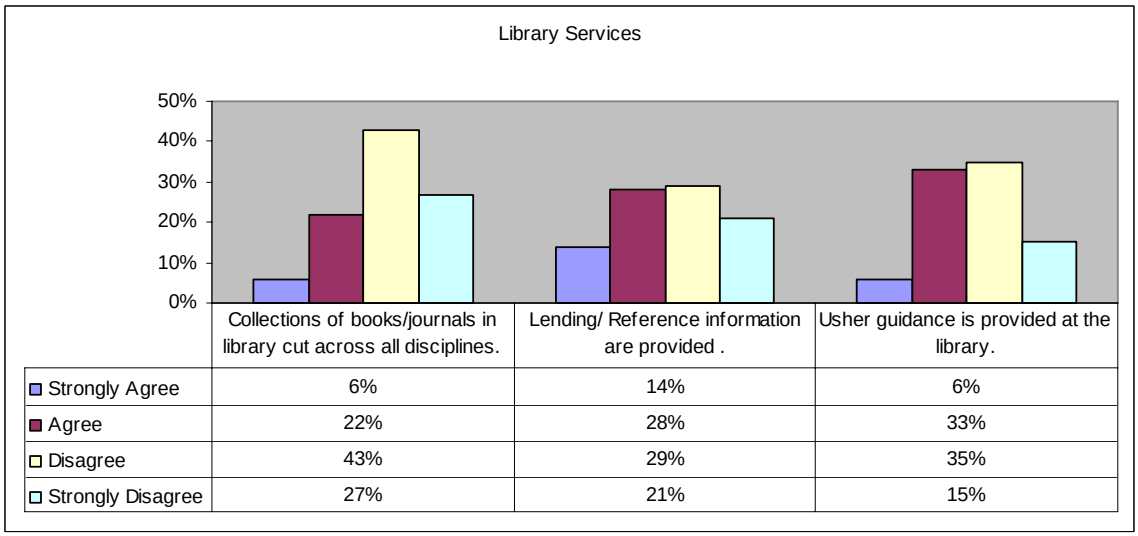
Post-Admission Service
Figure 4



	The letters of admission and other information are dispatched often.	Students receive printed course material promptly.	Complaints of learners on course materials are attended to promptly.
Strongly Agree	16%	16%	8%
Agree	26%	25%	23%
Disagree	28%	31%	40%
Strongly Disagree	27%	24%	24%

The Figure 4 above shows that the students are not satisfied with the process of issuing admission letters, dispatching/receiving printed course material and attending to their complaints promptly. The implication is that the mode adopted by the Institute needs to be improved upon with the use of e-learning approach to reduce the paper work.

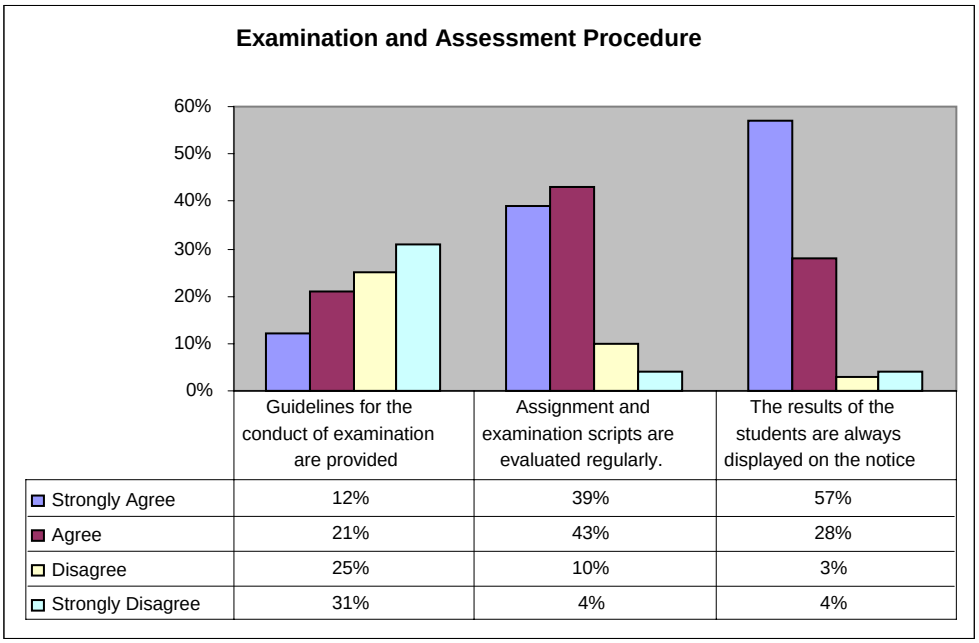
Library Services
Figure 5



	Collections of books/journals in library cut across all disciplines.	Lending/ Reference information are provided .	Usher guidance is provided at the library.
Strongly Agree	6%	14%	6%
Agree	22%	28%	33%
Disagree	43%	29%	35%
Strongly Disagree	27%	21%	15%

The result in Figure 5 above shows that learners are not satisfied with the library services in the areas of the available collection of books and journals, lending and user guidance. However, electronic library services could be employed to further improve the quality of library services provided by the DLI library.

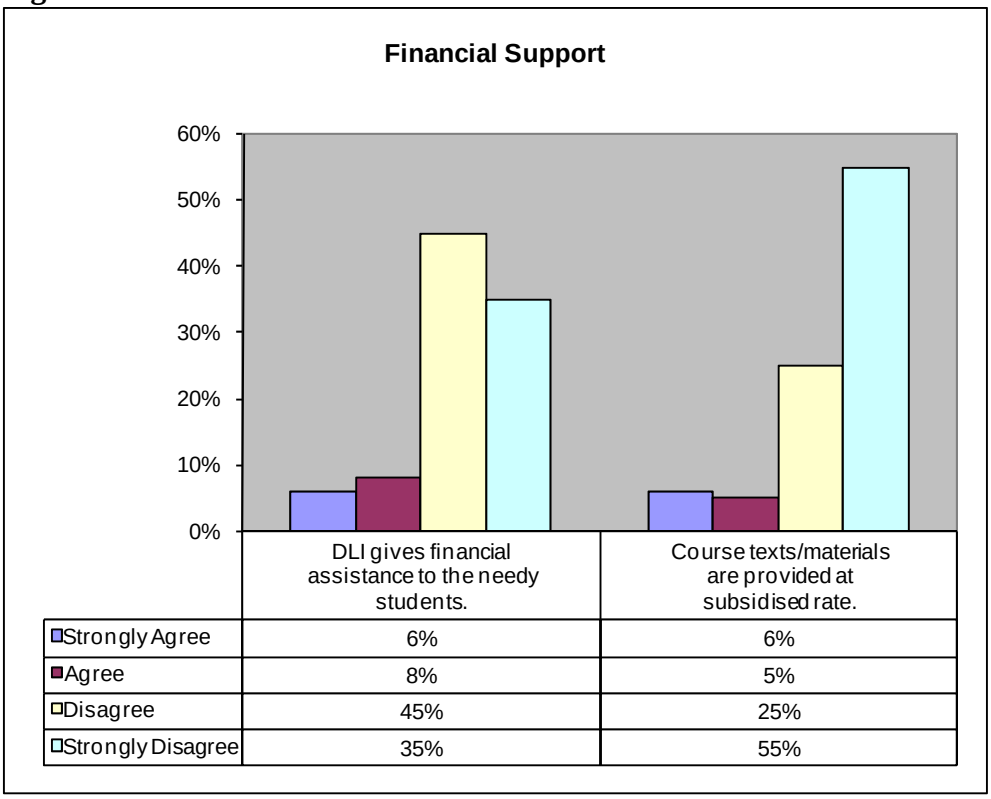
Examination Services
Figure 6



	Guidelines for the conduct of examination are provided	Assignment and examination scripts are evaluated regularly.	The results of the students are always displayed on the notice
Strongly Agree	12%	39%	57%
Agree	21%	43%	28%
Disagree	25%	10%	3%
Strongly Disagree	31%	4%	4%

The result of Figure 6 above shows that learners were not satisfied with the guidelines provided for examination but were satisfied in the case of the evaluation of assignment and assessment of examination scripts and release of results. This, however, can be improved upon by uploading such guidelines on the Institute website.

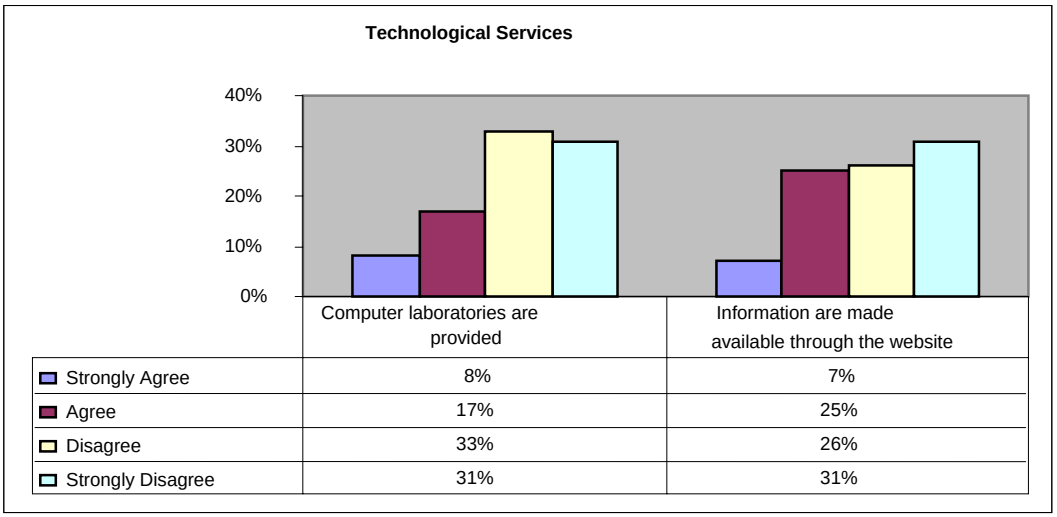
Financial Services
Figure 7



	DLI gives financial assistance to the needy students.	Course texts/materials are provided at subsidised rate.
Strongly Agree	6%	6%
Agree	8%	5%
Disagree	45%	25%
Strongly Disagree	35%	55%

The result in Figure 7 shows that the course texts are not provided at subsidized rate and that the institute does not have other ways of providing financial assistance to needy learners in forms of scholarship, bursary and loans. This is an important aspect of learner support which has to be given serious attention.

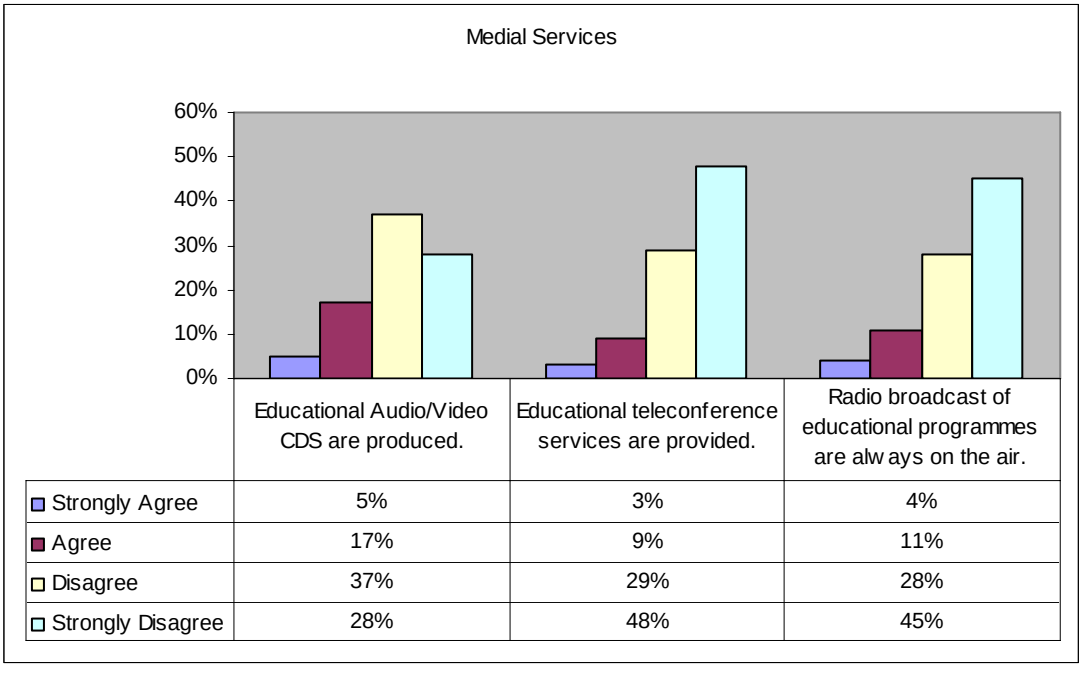
Technological Services
Figure 8



	Computer laboratories are provided	Information are made available through the website
Strongly Agree	8%	7%
Agree	17%	25%
Disagree	33%	26%
Strongly Disagree	31%	31%

The result in Figure 8 above reveals that there has been little or no improvement in ICT and e-learning as a necessary leaner support programme. The institute will need to develop a well equipped computer laboratory and design a website that is learner-centred.

Media Services
Figure 9

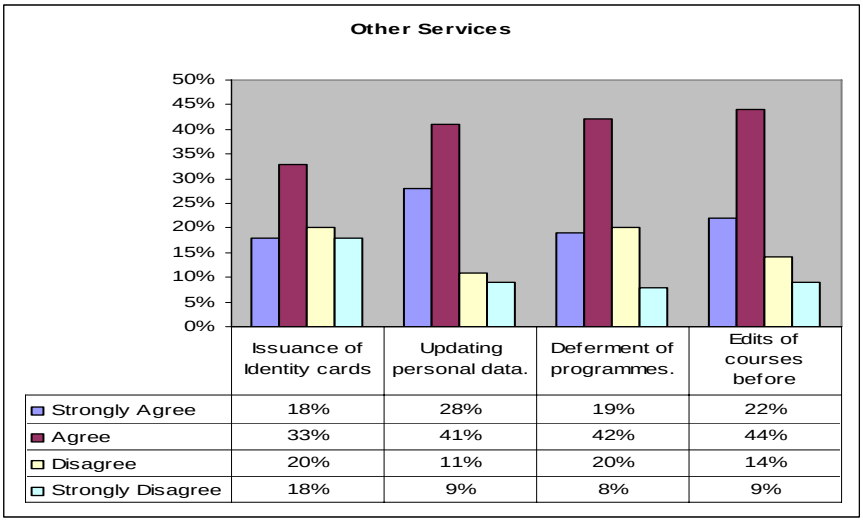


	Educational Audio/Video CDS are produced.	Educational teleconference services are provided.	Radio broadcast of educational programmes are alw ays on the air.
Strongly Agree	5%	3%	4%
Agree	17%	9%	11%
Disagree	37%	29%	28%
Strongly Disagree	28%	48%	45%

The result in Figure 9 above revealed that students were not provided with audio/video CD, educational teleconferencing facilities and radiobroadcast of educational

programmes. This, in effect, hinders learning activities and affects learners' performance.

Other relevant services
Figure 10



	Issuance of Identity cards	Updating personal data.	Deferment of programmes.	Edits of courses before
Strongly Agree	18%	28%	19%	22%
Agree	33%	41%	42%	44%
Disagree	20%	11%	20%	14%
Strongly Disagree	18%	9%	8%	9%

The response shows that students are satisfied with the services provided in the areas of issuance of identity cards, updating their personal record, deferment of programmes and editing of courses before taking examination. This could also be improved upon if these requests could be made and processed online.

Conclusion and recommendations

The survey conducted is a true reflection of the operational mode of a distance learning programme in Nigeria. As clearly revealed by various authors, quality leaner support is indispensable to open and distance education if the system must produce results in terms of qualitative learning outcomes. Moreover, for an effective development of open and distance education, there is need for the development of technology-based structure incorporating e-learning facilities designed for ODL programmes. Recruitment of staff, particularly those who can be used to effect ICT revolution, should be embarked upon. Comprehensive training should be given to staff in various areas where learners' needs have been identified. The institute should design and host a functional website where all necessary information will be uploaded and provide contacts for guidance and counselling.

References

Hui, H.W. (1989). 'Support for students in a distance learning programme- an experience with a course in Fashion and Clothing Manufacture', in A. Tait (ed.) Conference papers: Interaction and Independence: Students Support in Distance Education and Open Learning, Cambridge: The Open University, 129-141.pp

Koul, B.N. and Anita B. (1989). IGNOU Handbook – 3, Academic Counseling, New Delhi, Division of Distance Education, IGNOU, 6-7.

Robinson, B. (1995). "Research and Pragmatism in Learner Supports" in F. Lockwood (ed.). Open and Distance Learning Today, London: Routledge, 221- 231.pp

Staff Training and Research Institute of Distance Education (IGNOU), Module 1 in Learner Support Services of the Masters of Arts in Distance Education.

Thorpe, M (1988). Open Learning, Module 2 of the Post – Compulsory Diploma in Education Milton Keynes. The Open University.

Wright, S.J. (1991). Research on selected aspects of learner support in distance education programming: a review; selected papers part 1, the second American symposium in Research Distance Education, Pennsylvania State University, 59-71.pp

Tait, Alan (1995). 'Student support in Open and Distance Learning', in Fred Lockwood (ed) Open and Distance Learning Today, London.

Tait, Alan (2003). 'Management of Services to Students' in Planning & Management in Distance Education, eds Santosh Panda, Kogan Page, London. 155-169pp

A statistical analysis of the performance of distance learning students and the full time students of the University of Lagos

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Abstract

The study compares the performance of distance learning students with full time students in a traditional face-to-face learning environment. This study is one aspect of a larger research project designed to gain insight into factors that may influence the performance of distance learning students. The data used in the study represent the graduating GPA (Grade Point Average) and CGPA (Cumulative Grade Point Average). The result showed that students of Distance Learning Institute (DLI) performed better in business administration than the mainstream students, while the mainstream accounting is better than the DLI students. Results indicated that there was a statistically significant difference in final grade.

Introduction

A cursory look at the Distance Learning programme in Nigeria today is very important because of its contribution to the knowledge, social, economic and technological development. The period of psychological demoralization is gone when people assumed that Distance Education was meant for people who cannot pass the entrance examination to the University organized by the Joint Matriculation Admission Board (JAMB) in Nigeria. The increased demand for tertiary education in Nigeria experienced in the early eighties showed that there is a greater need among working adults to continue their education. However, most adult workers in the country are not able to continue their studies using the conventional means, due to their work and family commitments. Distance education provides the flexibility for them to continue their studies. Many see distance learning programme as a cost-effective instructional methodology, because the students do not have to be resident with their teacher or instructor (Joan Kleinman, 2002). Today, distance learning programmes are available throughout the world as a means of providing mass education to all. Questions had been raised by the populace about the effectiveness of distance learning programme compared to the traditional method of face to face method of teaching.

The Distance Learning Institute of the University of Lagos was established in 1962 with a student population in 1962 of 131 – there are more than 8,000 students today. The courses offered were science education and management courses. One might speculate that since the distance learners are more mature than traditional students, they are better able to monitor their own progress. The goal of this study was to explore whether differences in academic performance exist between students studying via face-to-face learning environment and those studying via distance education. The remainder of this article is sectionalized as follows: we described the data and the methodology used in the study in section 2; results and interpretation is presented in section 3. The article is concluded in section 4.

Data and methods

The data used in this paper are the graduating results of final year students of the two groups of students; that is, the Distance Learning Students (DLI) and the mainstream students. The Cumulative Grade Point Average (CGPA) of the final year students was used for the analysis. The two sets of students are taught by the same lecturer of the University using the same course contents. The data set comprised of the CGPA of 565 graduate students of the Distance Institute and 235 of the regular or mainstream.

Descriptive statistics are used for this study. The descriptive procedures are useful for obtaining summary comparisons of variable which can be easily understood. In addition to the measures of central tendency like the mean, median and mode we also utilize statistics such as skewness and kurtosis. A t-test was done to compare the means CGPA of the two groups of students. Further, separate t-test was done to compare the performance of Accounting and Business Administration students from the two groups (i.e. DLI and Regular or mainstream).

Analysis and Interpretation

Tables 1-5 show the descriptive statistics and results of the t-test significant difference in the means CGPA.

Table 1: Statistical measures of graduating Cumulative Grade Point Average (CGPA) and final Grade Point Average (GPA) of Distance Learning Students

Statistic	Business Administration	Accounting	Combined
Sample Size	360	205	565
Range	3.4	3.26	3.4
Mean	2.55	2.67	2.59
Std. Deviation	0.72	0.75	0.73
Std. Error	0.04	0.05	0.03
Minimum	1.02	1.02	1.02
Maximum	4.42	4.28	4.42
5% Percentile	1.4	1.38	1.39
10% Percentile	1.62	1.64	1.63
25% (1^{st} quartile)	2.03	2.06	2.06
50% (median)	2.55	2.72	2.59
75% (3^{rd} quartile)	3.09	3.22	3.11
90% Percentile	3.55	3.65	3.57
95% Percentile	3.69	3.89	3.83

Table 2: Statistical measures of graduating Cumulative Grade Point Average (CGPA) and final Grade Point Average of Full time students of the University of Lagos

	CGPA		GPA	
Statistic	Bus. Admin	Accounting	Bus. Admin	Accounting
Sample Size	128	107	128	107
Range	3.86	3.96	3.28	3.39
Mean	2.9811	2.9997	2.9756	3.0116
Std. Deviation	0.82836	1.1655	0.84743	1.0666
Coef. of Variation	0.27787	0.38853	0.28479	0.35416
Std. Error	0.07322	0.11267	0.0749	0.10311
Skewness	-0.41343	-0.56275	0.12799	0.03544
Excess Kurtosis	0.40814	-1.021	-0.98693	-1.5443
Minimum	1	0.67	1.33	1.46
Maximum	4.86	4.63	4.61	4.85
5% Percentile	1	1	1.7045	1.534
10% Percentile	2	1	1.887	1.628
25% (1^{st} quartile)	2.525	2	2.2825	1.95
50% (median)	3	3.43	2.905	2.96
75% (3^{rd} quartile)	3.57	4	3.8	4.03
90% Percentile	4	4.29	4.17	4.396
95% Percentile	4.312	4.5	4.342	4.518

Table 3: Overall performance of both programmes

Overall performance Based on programme of students

		t - value	Df	P-value
Overall performance	DLI Versus Main Stream	6.433	797	0.000
Business Administration students	DLI Versus Main Stream	5.46242	486	0.000
Accounting students	DLI Versus Main Stream	-3.3784	311	0.008

Table 4: Performance Based on Class of degree for accounting students

Performance Based on Class of degree for Accounting students

		t – value	df	P-value
Second class upper	DLI Versus Main Stream	2.85092	64	0.006
Second class lower	DLI Versus Main Stream	-1.6386	125	0.104
Third class	DLI Versus Main Stream	-1.8538	95	0.667
Pass	DLI Versus Main Stream	-1.7715	14	0.098

Table 5: Performance Based on Class of degree for Business Administration students

Performance Based on Class of degree for Business Administration students

		t - value	df	P-value
Second class upper	DLI Versus Main Stream	3.38463	70	0.001
Second class lower	DLI Versus Main Stream	-0.1841	213	0.854
Third class	DLI Versus Main Stream	0.07732	164	0.938
Pass	DLI Versus Main Stream	1.30339	28	0.203

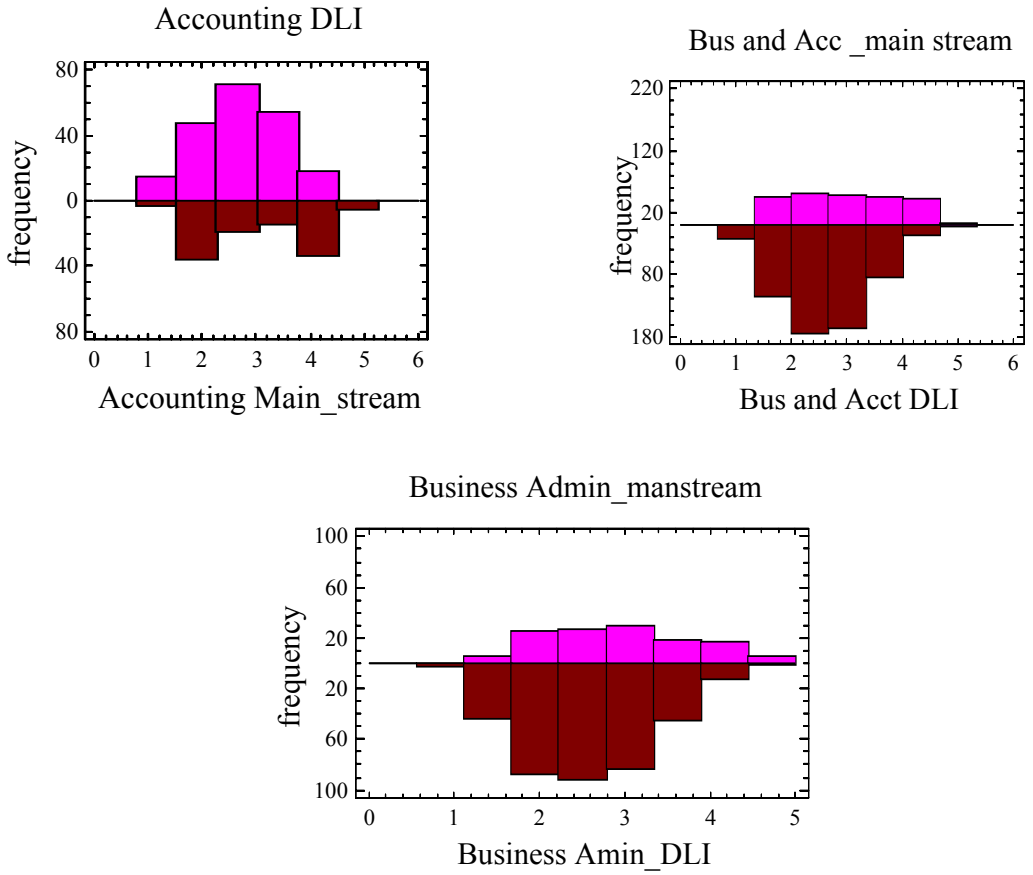

Figure 1: Histograms comparing the performance of final year students

There was a statistically significant difference between the distance education and face-to-face groups regarding overall academic performance as measured by grade earned (p = .000). The students who enrolled in the full time programme of the University of Lagos earned, overall a 3.01/5.00 and the students who took the distance education earned a 2.59/5.00 overall. Tables 1 and 2 above depict the descriptive statistics analysis of both programmes. The tables 3, 4 and 5 show the relationship and academic performance between Distance Learning students and the full time students when sorting the data by class standing.

There is a significant difference in the mean CGPA of DLI Business Administration and regular or mainstream Business Administration students at p-value = 0.00. In the case of Accounting the result was different - it shows that the regular or mainstream Accounting students performed better than the DLI students

Conclusion

This paper compares the Distance Learning Institute and the full-time students in both Accounting and Business Administration. Analysis of students' performance was done based on their final grade point average. The results showed that students of the Distance Learning Institute performed better in Business Administration than the mainstream students, while the mainstream Accounting results are better than the DLI students.

References

Carr, Sarah. (2000). Online Psychology Instruction is Effective but Not Satisfying, Study Finds. Chronicle of Higher Education. March 10, 2000.http://chronicle.com

Clark, D. (1999). Getting results with distance education. The American Journal of Distance Education, 12(1), 38-51.

Dutton, J., Dutton, J., & Perry, J. (1999). Do online students perform as well as traditional students? In T.L. Russell (Ed.), The No Significant Difference Phenomenon, IDECC, Montgomery.

Kleinman J.N. (2002) Comparison of In-class and Distance Learning Students' Performance and Attitude in an Introductory Computer Science Course. Journal of Computing Sciences in Colleges Volume 17 Issue 6, page 206- 219

Phipps, Ronald and Merisotis, Jamie, (1999). What's the Difference? A Review of Contemporary Research on the Effectiveness of Distance Learning in Higher Education. Institute for Higher Education Policy. Washington, D.C.

Phipps, Ronald and Merisotic, Jamie. (2000).Quality on the Line, Benchmarks for Success in Internet-Based Distance Education. Institute for Higher Education Policy. Washington, D.C.

White, Cheryl. (2000). Learn Online: Students and Faculty Respond to Online Distance Courses at Grant MacEwan Community College. T.H.E. Journal. 27, 9 (April 2000); 66-70

The strategies for perfect communication in an ODL system

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Abstract

The theme of this paper is to project ways and means that have to be explored in order to reach the students in remote areas in ODL System. What may be the best practices to develop in this area? This is in particular reference to the Karnataka State Open University, India, which works on ODL system, and has a large student population of over a lakh (100,000) of students. The feedback from the students reveals that they do not get information on time/in time. The university has a target in its mission that is to admit, conduct and award degrees and diplomas within the stipulated time.

Conduct of examination in ODL System

Mainly, here in this paper, I confine myself to the conduct of under-graduate and post-graduate examinations in the ODL system. The student has to submit assignments for evaluation as part of the total assessment. It may be ten percent of the total assessment. The student has to be informed about the internal assessment and examination policy. The university gives information in the prospectus or alerts the student to remember what has to be done at different dates. The students face this problem repeatedly in terms of their preoccupations or lack of coherence of approach to their study. The number of students is so huge that the problems of the students do not linger for many days as there is no direct contact with the students, though the University maintains that it wants to insist on communication with the students at any cost. Over the years, it has been found that the students always nurture the feelings that they 'do not get enough information, vis-a-vis prospectus.'

New perspective in communication (ODL System)

The perception, with which the student pursues education, needs coherence and concentration. However, there is lack of active participation of the student. In order to make the communication more meaningful, strategies have to be established and evolved. The strategy which I am looking at is mobile technology. A component of mobile phone technology is SMS. This is a reference to Short Message Service. It's a system *where short messages are instantly conveyed over the mobile.* Here, it is important to confess that the student should also possess the telephone instrument, however, it must be noted that a large chunk of population of students do possess the instruments. The immediate aspect is to inject the notion that SMS can work wonders with the students. The main reasons are

- Communicate instantly
- The student looks at the message and an 'alert' is focussed in his mind
- The message can be saved and the student can review the message.

Methodical preparations by the University

The university has to make preparations for listing all the phone numbers and before this, students have to fill the field of cell phone without leaving it blank. It should be done methodically and the students have to be informed about the cell number. Many times, it is found, with the repeated instructions to fill the form, along with details, students due to ignorance or lack of application do not fill the fields and it leads to problems.

SMS v/s Postal communication

Financially, SMS works out at a cheaper rate in comparison to postal communication, though web-based communication is cheaper still. Currently 95% of the students own cell phones. However, in the first instance, both postal and SMS communication is used but we hope that later on postal communication can be avoided completely.

Loopholes in Postal communication

Postal communication, though it is the safest possible means to communicate, there are still loopholes. It is observed that many communications are sent back to the sender as the addressee is not found. It is also observed that the addressee changes the address often and though he informs the university about the changes, these changes are not made due to the negligence of the staff.

Advantages of SMS

However, if the communication is sent through SMS, it can even be checked whether the SMS has been delivered, though it may not be possible to ascertain whether the student has read the message or not. If the communication is sent through SMS, perhaps the problem of communication may be sorted out.

Major Problem Area

The major problem for students and the university is real communication between the two. The students often visit the university with the plea that they do not have communication with regard to payment of fees, submission of assignments, collection of examination hall tickets, etc.

SMS: A revolution

SMS can solve such problems and online education/communication can make things easier. But, as online communication has impetus, it still has to grow and the rural students have to adapt to such situations. For this, education in computers is critical which is why the universities in Distance Learning, should also promote computer education in the first instance. Then, all other components will follow.

Easier means to reach the student

Once communication through SMS is established, then students, wherever they are, get an alert and they will always be ready to fulfil their obligations to a program or course

of study. There are many reasons which deter the universities from reaching out to the student compared with the processes in a regular university. Reaching out to the students in the ODL system has at present two components, mainly comprising postal and communication in the form of web information.

Postal Information

Postal information is the foremost and vital source of information. But in Indian conditions and population, it has constraints. Many of the students who register for the ODL System, are from rural areas, where the postal network seems to fail because of lack of proper addresses and correct destination. Hence, a rural student in a remote area fails to get information. In order to make the student comfortable a new means is developed in terms of SMS.

Problematizing the problems of communication

As communication is the major concern of a distance learner the university which deals with ODL system must address this problem. One such a solution is SMS and this short message service can be two dimensional. Another mechanism may be created to use SMS in terms of reaching the un-reached, i.e., the teacher. The university can create software by providing mobile numbers of those teachers who are involved in writing the self instruction materials and also assess the assignments. The students should be able to send the SMS and state a problem.

Creation of chat rooms

Another important link for SMS is to create chat rooms and the message through SMS can be used as an alert to the teacher but here strict instructions should be given to the students to use SMS very judiciously according to the timings given for chat rooms. Chat rooms are important because a distance learner sitting in a remote place can connect directly with the teacher in the same way as a regular student having a rapport with the teacher in a classroom situation.

Short Message Service: A tool of communication

The first and foremost essential for SMS is mobile service provider. A memorandum of understanding between the provider and the university should be developed. The university should make it very clear that the number on which SMS sent and the chargers thereof must be appropriated with the discounts to the university. Here also, there is financial benefit to the university. This discount at the mobile service provider's end should help the university.

Conclusion

This paper is concluded with the hypothesis that short message service is operational in ODL system provided the universities use different mechanisms of checks and balances.

References

Hara, N. & Kling, R. (2003) Students' distress with a web-based distance education course: *an ethnographic study of participants' experiences. Information, Communication, and Society*

Simonsen, M., Smaldino, S., Albright, M., & Svacek, S. (2006) Teaching and learning at a distance: *Foundations of distance education (3rd Ed.)* (Upper Saddle River, NJ: Prentice-Hall)

The American Journal of Distance Education (1993) The American centre for the study of Distance education

Willis, B. (1993) Distance Education: *A practical guide*

Willis, Barry (Ed.). (1994) Distance Education: *Strategies and tools*

Net-working the process-approach to teaching writing skill: the digital enhancement dimension

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Abstract

The digitalized educational enhancement programme where and when clearly conceptualized and rightly applied in the acquisition of language skills in writing pedagogy, may offer a raft of uncontestable dividends for language learners. Not only does it enhance individual capacity and capability development but it analyses inputs and accelerates outputs. The interactions between new technology and pedagogical submissions have been found to an extent to be addressing the heterogeneous needs of second language learners, and any global discovery which aims at minimizing learners' constraints is a welcome development in a rapidly changing world of technology. This is why the inroads made by using the modern state of the art technology in the teaching and learning process has formed a veritable bedrock for improvements and innovations in Language Education. The meteoric rise in the use of ICT is resulting in explosive growth which, in turn, is making it a strong springboard for providing a wide range of electronic services in teaching writing skills. This paper is an attempt to explore how far learning with new technologies is being underpinned by the process approach pedagogy in the acquisition of writing skills.

Introduction

The ability to employ any of the four basic language skills by man in interaction with his environment is highly important. Individual competence in language use can be ascertained at the level of performance. There are so many factors that can be responsible for good or poor performance in any of the basic skills in English. Nevertheless, there have been concerted efforts in the field of Language Education to see how the constraints associated with language use can be ameliorated. More also, the four basic skills are not the same in orientation and acquisition. Naturally, every able-bodied child grows up hearing and speaking; effort must be made to teach and learn how to read, yet, not all who read can write. This view agrees with the assertion of Nunan (1994) that learning to write fluently and expressively is the most difficult of the macro-skills for all language users regardless of whether the language in question is a first or second language. White (1981) says writing is not a natural activity. All physically and mentally normal people grow up speaking a language. Yet, all people have to be taught how to write. From the above, one can deduce the position and condition of English as a second language for teachers and learners who want to attain mastery in the skill of writing. Now, in this age of modern technologies, the situation is not expected to be the same.

New technologies bring about new ways of engaging learners and new patterns of social and intellectual interactions among learners (Oblinger, 2005). This happens when teachers integrate new and relevant innovations into their pedagogy to create a learning environment that goes beyond the classroom (Fisher, 2005). The onus then rests on

language teachers to think of how to involve new technologies in their teaching approaches so that a better pedagogical approach will evolve. It is a myth that all it takes to write is to sit down in front of a blank page, to begin at the beginning and write through to the end, with no planning, break, editing or changes in between (Vanessa, 2004). Scholars in the field of Language Education have carried out research to find out how to develop the writing skills of learners, especially those having English as a second language. The first approach to employ is the Product-oriented approach, otherwise known as the model approach. This is a traditional approach in which students are encouraged to mimic a model text before the students write (Vanessa, 2004). Yet, Myles (2002) says, "Academic writing requires a conscious effort and much practice in composing, developing and analyzing ideas, and students writing in second language are also faced with social and cognitive challenges related to second language acquisition".

Montague (1995) and Akinwamide (2008) say the inadequacies discovered in the first approach led to the discovery of the present global approach, which is called the Process Oriented Approach. Researches have proved that not many language teachers in Nigeria are aware of the shift from Product oriented approach to the Process approach in the teaching of writing. Montague (1995), Omojuwa (2006) and Akinwamide (2007) observed that the recognition of the Process approach as a better approach to teaching writing, especially with English as a second language learners, happened decades ago. The Process approach tends to focus on classroom varied activities. It is made up of several over-lapping stages. Basically, the stages are: the pre-writing stage, the drafting stage and the revision stage. Editing is a recurring decimal to all the stages. Admittedly, every approach has its own merits, but for diversified learning disabilities, a given approach may be adjudged as more appropriate for a particular set of learners operating under an identified condition which, in a way, may not favour the application of some other approaches. It becomes imperative and quite germane for language teachers to be current and be abreast of learners since the task and responsibilities of training students rest on them.

Teaching and learning in the new millennium has evolved with the advancement of technology, especially the World Wide Web (WWW) (Black, 2002). Earlier constraints in the field of Language Education are now addressed via e-learning which is made possible by global interactions. It becomes a mission impossible in this 'technology-infected' age to isolate teaching and learning processes from e-learning with the recorded impacts and the promising potential of revolutionizing education, development and skill proficiency through e-learning.

Constraints in the Teaching of Writing: Second language setting

In Nigeria, in spite of the fact that second language teachers more often than not teach second language students in a second language situation, the same teachers handle all the macro-skills of language. This allows a very little time, minimal concentration and inadequate planning for composition writing. The problem of over-crowded classes and inadequacy of personnel are also there to contend with. Teachers, according to Odeh (2000) either gloss over or ignore certain basic skills in the teaching processes. Okedara and Odeh (2002) opined that over the years the problem of poor writing skill has persisted and that this reveals that the traditional way of teaching writing is ineffective. Therefore, the different views and opinions on the nature of writing make investigation

into ways of developing a better way of teaching the writing skill inevitable and, in fact, it is quite essential in this age of modern technologies.

The technical nature of writing and the need to use writing to express a writer's thought in a logical and coherent manner call for developing a writing task that blends with digital technology, this without doubt will enhance better performance. Coupled with this is the fact that writing is different from the other language skills of reading, speaking and listening, their inter-relatedness can come up in digital programming for holistic skills acquisition. All the other macro-skills of language could be learnt by analyzing and coordinating with digital technology. For example, the application of the appropriate mechanics as it is required in writing skill are already part of the mechanisms inherent in computer technology. D'Angelo (1981) says teachers need to understand that composition writing has principles and forms, which students must understand before attaining mastery. It is, therefore, to be understood that the writing skill requires an articulated effort by the teacher to incorporate ICT into the process of obtaining the desired result from the students in the development of writing skill. Writing, according to Akinwamide (2007), is externalizing what has been internalized, through observations, examinations, and comprehension. Therefore, there should be a system through which what has been internalized would be displayed to reflect meaning, reason and logic in this digitally conscious age.

Digitalizing the Process Pedagogy

The Pre-writing Stage

This refers to any structural experiences that influence active student participation in thinking, talking, writing and working on the topic under focus in a writing lesson.

Technological enhancement of a pre-writing stage in writing pedagogy

TASK	TECHNOLOGY INVOLVED	PEERS' ROLE	TEACHER'S ROLE
Brainstorming	Palm-top, laptop, teleconferencing, etc.	Reviewing and making inputs through inter/intra connectivity	Facilitating ideas
Imagining	Notepad Advance-organizers	Direct inputs through comparison of notes	Moderating activities
Mind-mapping	Lap-top, mobile-technology	Editing and suggesting ideas	Facilitating and Moderating inputs
Watching movie	Projector, laptop, monitor, etc	Logging ideas in electronics devices for comparison	Answering questions and explaining concepts

Each of the writing activities under the task leads to gathering of information which always results in a pool of ideas. The technological devices can be used to pool ideas together and also act as an 'Information Bank'. Teachers and peers can make direct contributions as a result of digital connectivity. Whatever information is gathered and stored forms the launching pad for the next basic stage.

Drafting stage

The different ideas and contributions of the pre-writing stage form the basis of the draft. Editing of superfluous ideas and contributions are expected.

TASK	CONTEXT	TECHNOLOGIES INVOLVED
Rhetorical considerations	**Voice:** Mood and veracity of ideas **Audience**: Who am I writing for? **Purpose**: My message and expectations	Notepad, laptops etc
Linguistic specification	Choice of Words, {formal/informal} Figurative and Sentence Structure	Microsoft Encarta, Longman CD-Rom, Computerized Lexicon
Storing of points and ideas	Appropriateness	Flash-drives, lap-top Electric storage systems

The drafting stage is aided by technological inputs. Preparation for the act of writing is a decisive factor in the quality of the results and students can benefit by working together from oral to written form; this is greatly enhanced by digital applications. Correct use of appropriate grammatical items is made possible and easier by the built-in grammar asset of the digital devices in use.

Revisional stage

The stage calls for holistic appraisal and reviewing of all the ideas and points that have been gathered and stored. However, new points are still accommodated while editing goes on simultaneously.

TASK	TECHNOLOGIES INVOLVED	FACILITATORS/REVIEWERS
Distributions of Write-up	E-Conferencing, Internet, E-mailing, etc	Teachers, Peers and On-line Teachers.
Extracting points and ideas for Final Write-up	Flash drives, lap-top, etc	

The above technologically-enhanced lesson model can minimize some of the constraints of teachers and students. The teaching and learning here is absolutely learner centered. There is room for peer interactions. Teacher does not dominate the class but acts as moderator or facilitator. Errors generated as a result of free writing are corrected at the editing stage and the errors identified provide the teacher a direct link to topics of next discussion. The intra or inter connectivities give informative and educative support among students and between students and teacher.

Technology, in the current global rhetoric ICT, provides the machineries needed in the academic landscape for Writing Skill development and overall proficiency in language education. Through mobile technology, learners can create, concatenate, collect and apply new knowledge. Technology is becoming an integral part of human existence, it

is changing the way we live, interact, work, think, communicate, teach and learn. This in no small measure has a pronounced effect on writing pedagogy. Reviewing the past literature and juxtaposing with the recent, there is a wide difference in the processing and production of data. Now, a revealing and rewarding transition into the digitalized Writing pedagogy can take place as a result of new technological inputs into the teaching-learning process.

Implications and Conclusion

For a successful and holistic appraisal of technological and pedagogic interactions, there are some factors that must be considered:

1 **Economic factor:**
- ❖ There must be a strong and sound financial base for the procuring of needed technological systems
- ❖ There must be financial support for teaching auxiliaries and other consumables
- ❖ Adequate cost implications for maintenance of the digital devices must be put in place

2 **Institutional readiness:**
- ❖ The planning at the institutional level must be goal oriented in the direction of an ICT–driven learning environment
- ❖ There must be specification for timing and Technological plan

3 **Student factor:**
- ❖ Student readiness and training in the use of modern technologies
- ❖ There must be adequate access to new technology

4 **Teacher factor:**
- ❖ Teacher readiness for training and retraining to conform to the new digital age
- ❖ Constant application of new technologies in teaching
- ❖ Engaging students in fact-finding academic assignment

5 **Technological factor:**
- ❖ Relevance and appropriateness of imported technology
- ❖ Suitability and adaptation of new technologies to the less developed nations

6 **Pedagogical factor:**
- ❖ Goal Stratifications to prompt the pursuit of learning objectives at every stage of learning with digital encounters
- ❖ Content Simplifications to enhance digital programming
- ❖ Medium Specifications for appropriate acquisition of relevant technology
- ❖ Audience Sensibility and orientation on the new technologies
- ❖ Learning Strategies based on content specifications
- ❖ Evaluating System for the efficiency of the modern technology in use.

Above all, the interactions between technology and pedagogy in the teaching and learning processes seem to display logical and systematic reasoning rather than the usual stereotyped pedagogically–informed decisions. This simply means, pedagogically, learning is being transformed from quantity to higher quality. Through independent, self-paced learning, students interact with technologies to review, construct, analyze, and make submissions. It is to be noted that the inclusion of information and communication technology (ICT) into Language education gives vent to new learning

paradigms in language education. In addition, every pedagogical interaction with technology provides an interface for students to discuss, explore, construct, review, and infer knowledge on learning challenges. Conclusively, the interactions between technology and pedagogy stand to put both learners and teachers on their 'academic toes' for improving and developing the modern society.

References

Akinwamide, T.K. (2007) The Basics Approaches To The Teaching of Writing. In Language and Literature Teaching Methods (Ed) Oyinloye G.O. Bifocal Publishers, Matori, Lagos.

Akinwamide, T.K. (2008) The Effect of Process Approach on Students' Creativity in Essay Writing. *Unpublished PhD Dissertation. Adekunle Ajasin University, Akungba Akoko, Nigeria.*

Black, H. (2002), A comparison of traditional, online and hybrid methods of course delivery. *Journal of Business Administration Online.* http//jbao.atu..edu/spring2002/black.pdf

D'Angelo, J.D. (1981) The Search for Intelligent Structures in the Teaching of Composition. Tate, G. and Edward, R.J. Corbert (Eds.) The Writing Teacher's Source Book. New York; Oxford University Press.

Fisher, K. (2005) Research into identifying effective learning environments. Papers from OECD/PEB Experts' Group Meeting on Evaluating quality in Educational Facilities. http://www.oecd.org/dataoecd/26/7/37905387.pdf

Montague, N. (1995) The Process Oriented Approach to Teaching Writing to Second Language Learners. New York State Association for Bilingual Education Journal v10 p13-24,

Myles, J. (2002) Second Language Writing and Research: *The writing Process and error analysis in students' texts TESL-EJ, 6 (2), 1-20Ibadan.Ibadan University Press.*

Nunan, D. (1999), Second Language Teaching and Learning, HEINLE & HEINLE

Oblinger, D. (2005), Leading the transition from classroom to learning spaces. *Educause Quarterly*, 28(1), 14-19. http://www.connect.educause.edu/Library/EDUCAUSE-Quarterly/Leading the Transition C/39902

Odeh, S.N. (2000) The Process Writing Approach As a Facilitator of University Undergraduates Competence in English Composition Unpublished PhD Thesis University of Ibadan.

Okedara, C.A. and Odeh, S.N. (2002) Trends in the Teaching of Composition at the Tertiary Level: The Process Writing Approach. Stirling-Horden Publishers (Nig.) Ltd

Omojuwa, R.A. (2006) Lecture in Language Skills Development. A. A. U. Nigeria

Vanessa, S, (2004) Product and Process Writing; A Comparison. *Teaching English.* British Council, London. SW1A 2BN, UK

White, R. (1981). Approaches to Writing: Guidelines, 6 1- 11. Longman

ICT supported learning: dialogic forums in project work

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Abstract

Education in the twenty-first century is underpinned by theories of inclusion and practices of open and distance learning (Aldrich, 2003; Richards, 2004). New concerns are replacing the traditional views on the impossibility of integrating pedagogy and technology (Barab *et al*, 2004; Roblyer *et al*, 2000). Supporting learning in the digital age looks at devising innovative methods to utilize ICT in education for maximalist inclusion of learners, accompanied by a reformed pedagogy that frames quality in the learning activity by raising the interest and involvement of the student in dialogic learner centred approaches (Salmon, 2002; Sandholtz *et al*, 2002).

Introduction

The role of ICT in the learning process has been overwhelmingly complementary and limited (Barab et al., 2000; Cope et al, 2000). ICT skills are either taught in vacuum without establishing relevance to learners' contexts or as add-on activities instructed by the teacher in the classroom (Cuban, 2001, Thomas et al, 2002). ICT resources and tools in the internet, multimedia and related technologies are acknowledged by learners and tutors as offering wider arena of supported learning. Additional resources, explanation and glossary are available at the touch of a button and through various web links. Accessing information is utilized by the students as the celebrated method of integrating ICT in teaching and learning, however it remains constrained by the tutor's instruction.

A more critical evaluation of the application, however, probes deeper into the pedagogy associated with such integration and underlines concerns that ICT supported learning was not able to fulfill wider pedagogic aspirations of transforming the teaching and learning process to an active path charted by the learner. Laurillard (2002), Loveless et al (2001), Gee (2003) and Kimber (2003) provide skeptical evaluation of the employment of ICT in education and point out that despite its wider aim at inclusion and innovation, the pedagogy associated with the practice remain constrained by the transmission model associated with instructional approaches that alienated the learner and did not bring about the desired engagement. ICT supported learning, specifically in third world and developing countries, remain at best applied in similar ways to the traditional print resources and bound to the transmission of instruction and guided learning. Cuban (2001) documents that ICT supported programmes and possibilities intimidate rather than encourage educators and that the involved ICT practices are at best complementary utilized as "add-on" exercises in the classroom.

The context of the study

The context of the study is the Arab Open University in Lebanon. The open system is relatively new, pioneered in the west by the United Kingdom Open University (UKOU).

It is a totally new experience in the Arab world, pioneered by the Arab Open University (AOU).

Traditional methods of education have been greatly influenced by what was known as the transmission model of education (Freire, 1985). The transmission model has as its basic tenet narration where teaching takes place through direct instruction. The teacher transmits through narration/instruction concepts and ideas. The teachers' role is to "fill" the minds of the students with the content of their narration. The students' role, in the transmission model, is to accumulate, memorize and reproduce mechanically the narrated content. Education becomes an act of depositing knowledge and learning becomes a passive process where learners receive, memorize and repeat given information instead of getting involved in the learning process (Shor, 1987). In the traditional system, there is a dichotomy between the learners and the learning process (Goody, 1968). Learners are receivers of knowledge whose minds await instruction without which they are assumed empty. Such views position the learners outside the learning process; as outsiders with no prior knowledge who need to be integrated into the system. The system is there to assess their ability to reproduce what has been instructed. In such a context there is no place for creativity, analysis or critical thinking. Students are there to be taught and knowledge is transmitted to be acquired and reproduced. There is no active role for the learners. They simply digest what is given and reproduce it when assessed.

In the context of the open system, "open" means having no confining barriers, facilitating, accessible, responsive and, as outlined in the Open University mission, "open as to people, places, methods and ideas" (Atkins et al, 2002). The need for an open system of education in the modern world materialized out of the problems and stresses of modern life, coupled with shortage in facilitative institutions of higher education that can be responsive to the needs of the less privileged sectors of modern societies, e.g. working people, women, etc. To facilitate reaching out to the maximum number of learners, the Arab Open University utilizes ICT support in communicating information to separate geographical regions.

Theoretical framework

Education in the twenty-first century is underpinned by theories of inclusion and practices of open and distance learning (Aldrich, 2003; Richards, 2004). New concerns are replacing the traditional views on the impossibility of integrating pedagogy and technology (Barab et al, 2004; Roblyer et al, 2000). Supporting learning in the digital age looks at devising innovative methods to utilize ICT in education for maximalist inclusion of learners, accompanied by a reformed pedagogy that frames quality in the learning activity by raising the interest and involvement of the student in dialogic learner centred approaches (Salmon, 2002; Sandholtz et al, 2002).

The present study traces the outcome of integrating ICT supported learning in the open system through a collaborative model that has the objectives of promoting independent learning. The case study follows forty students majoring in English as they work on research projects in a British-based programme. Participants are senior students embarking on project work in two English language senior course, E300 and E303. Project themes were selected by the students from the macro categories proposed in the curriculum, in relation to the learners' contexts, professions and interests.

Group forums and themes

Forty senior projects were thematically categorized into eight groups of five participants each. Two or more participants in any one group may conform, in project selection, to one of the categorized themes. The themes are as in figure 1:

Group A	**Theme : ESL problems and practices**
Topics	• Learning English through songs in the pre-school • Communicative methodologies in ESL cycle one (6-8yrs) • ESL errors in writing in cycle two Speaking and writing problems in ESL cycle three (12-13yrs) • Comparative study of grammar competence in English of Senior students at two Lebanese Universities
Group B	**Theme : English for students with special needs**
Topics	• Sociolinguistic perspective on learning difficulties: a case study of a five year old • Language problems of a dyslexic learner • Language teaching and autistic learners: a case study • Problems that face students with special learning needs • Difficulties in writing English in deaf and blind learners in cycle two: a case study
Group C	**Theme : Language in advertisement**
Topics	• Selling vanity products • Language use in telemarketing • Buying the "Manager's Choice" • Buying death : cigarette advertisement
Group D	**Theme : Language in political rhetoric**
Topics	• Comparative analysis of Obama and Luther King's speeches: the Black experience • Authenticating realities: selling ideology (Lebanese elections) • Comparative analysis of Condalisa Rice and Margaret Thatcher's rhetoric: gender in statesman's talk • Political Slogans: opting for a date in March (Lebanese Elections)
Group E	**Theme : Language and identity**
Topics	• Ethnocentrism in Pocahontas: Systemic Functional Perspective • Presenting the self in chat rooms • Identity issues in youth conversations: a case study at Verdun Dunes
Group F	**Theme : Phatic communion**
Topics	• Ladies' talk in a beauty saloon • Gender characteristics of ladies' talk in a gym
Group G	**Theme : ESL teaching methods**
Topics	• Getting things done in ESL cycle one : teacher's talk • Strategies of using language in class instruction • Touching people's lives in a positive way: ethnographic applications in the classroom
Group H	**Theme : Language and business**
Topics	• Business English: The role of modal forms in economic forecast • A case study of governor Riad Salameh's speech

Discussion

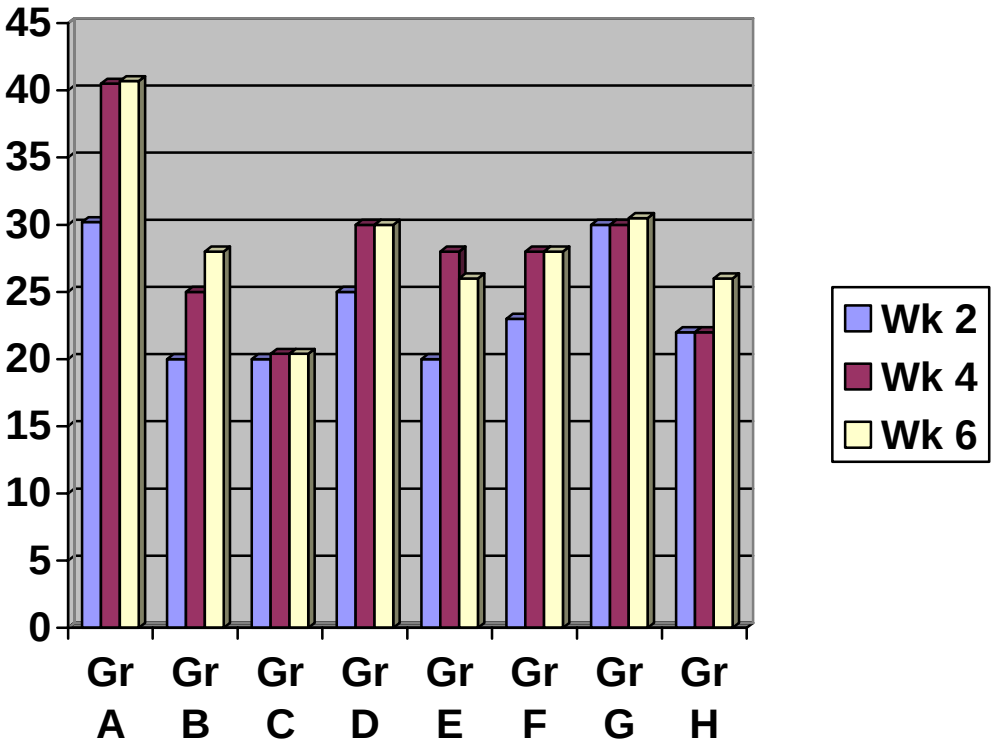
E300 and E303 are level 3 courses in the English language and literature programme offered at the Arab Open University. The materials are developed by UKOU. Students access course information and support material from AOU Learning Management System (LMS) through Arab Campus E-learning ACES. The system displays general information related to AOU news, student guide, information on courses, tutorials, enrolment, payment, calendar of events, etc. The system also has a menu for free online books and articles.

Course coordinators have editing privileges on their respective courses to update and upload material, including course calendar, assignments and tutorial outline. Students log in using personal accounts to download material, e-mail their tutor or colleagues, or upload assignments. The university offers on-campus facilities in a number of computer labs and Learning Resource Centre (LRC) to access and use LMS.

LMS administrators list routine access averaging one time per week for E300 and E303 students to download tutorial outline before every tutorial. Students use the system also to upload their assignments twice per semester. On all accounts ICT support is utilized on the basis of teacher instruction to execute directives in course management or receive information and not at personal initiative. ICT is utilized in transmitting tutorial context to learners without much engaging them except through the process of uploading their assignment work.

ICT supported dialogic models of conferencing were institutionalized where theme based forums were activated for each group. These required exchanging information and receiving peer feedback. Student groups were involved in developing their specific forums and folders containing project resources, webquests, theory, frameworks, methodology, surveys, workshops, data and glossaries. Groups constructed a number of interactive folders on different theoretical background, resource links, methodological frameworks, presentation techniques, etc. The total number of access times for the groups as monitored during the study period is as follows.

Figure 2
Number of entries in the specified week



Access has at least increased by four fold at any one interval, as compared with the once per week instructed entry monitored earlier. Any one group, of five participants, have at least scored 20 total entries at any one monitored interval. Moreover, these entries were based on the learner's initiative and not on any tutor based instruction. ICT supported learning in the study promoted personal motivation for active learning. Kress (2003) and Jonassen (2000) argue that effective multimodal literacy learning needs to be grounded in everyday practices and contexts of the learners. Learners were involved in defining their role in the learning process, taking initiative, suggesting and planning the course of their research project, designing its component parts and, ultimately, owning their learning. Participants actively engaged in the exchange of information, suggesting web links, resources, analytic frameworks and ways of collecting, categorizing and presenting data. Participants also engaged in reviewing peer's work and providing helping notes, suggestions and comments.

Forums were accessed for monitoring by the tutor at identified intervals to conform to project calendar of events and tasks and trace group progress and involvement. The summary presentations of the groups reflected the commitment of the learners to interactive ICT supported learning in project work and the authentic involvement in research topics of relevance to their contexts.

Instead of instructional pedagogy involving ICT supported learning ICT integration requires new models that ground processes and cycles in the context of the learners and their experiences in a practice-reflection duality in the learning process, committing the learner to a dialogical applied enquiry-based project in the pursuit of learning excellence (Richards, 2001 and 2003).

Tutorials reviewing learners' practices and reflection modes revealed holistic tackling of the projects and improved standards of learning brought about by the integration of technology in pedagogy.

Evaluation and recommendation

Integrating ICT in education does not need to curtail the offered potential and possibilities to limited extension of traditional resources chained to the instruction-based teacher directed application.

The full potential of ICT support should be explored in learner-centred strategies to shift pedagogic orientation to cater more for the role of the learner in the learning process, taking advantage of the resources and tools made available in the digital age.

Reformed pedagogy need to promote engaging learners in interesting and authentic contexts framed in project-based ICT supported modules integrating pretexts for learning across the curriculum. Web forums and conferencing as well as internet resources and e-mails are utilized to support integrated applied learning and exploration in realizing active learning in the digital age.

References

Aldrich, C. (2003). Simulations and the future of learning: An innovative (and perhaps revolutionary approach to e-learning. San Francisco, CA: Jossey-Bass.

Barab, S. And Duffy, T. (200). From practice fields to communities of practice. In D. Jonassen and S. Land (eds.), Theoretical foundations of learning environments (pp. 25 – 56). Mahwah, N.J. Laurence Erlbaum.

Barab, S. King, R. and Gray, J. (eds.) (2004) Designing for virtual communities in the service of learning. Cambridge, England: Cambridge University Press.

Beard, C. and Wilson, J. (2002). The power of experiential learning. A handbook for trainers and educators. London: Kogan Page.

Cope, B., and Kalantzis, M., (eds.). (2000). Multiliteracies: Literacy learning and the design of social futures. New York: Routledge.

Cuban, L. (2001). Oversold and underused: Computers in the classroom. Cambridge, MA: Harvard University Press.

Disessa, A. (2000). Changing minds: Computers, learning and Literacy. Cambridge, Massachusetts: MIT Press.

Gee, J. (2003). What video games have to teach us about learning and literacy. New York: Palgrave Macmillan.

Jonassen, D., (2000). Revisiting activity theory as a framework for designing student-centred learning environments. In D. Jonassen and S. Lund/eds.) Theoretical Foundations of learning environments (PP. 89 – 122). Mahwah, NJ: Lawrence Erlbaum.

Jonassen, D., Howland, J., Moore, J., and Marra, R.M. (2003). Learning to Solve problems with technology: A constructivist perspective upper Saddle River, NJ: Pearson Education.

Kimber, K. (2003). Technoliteracy, teacher agency and design: Shaping a digital learning culture. Queensland University of Technology, Australia.

Kress, G. (2003). Literacy in the new media age. London: Routledge.

Lankshear, C. and Snyder, I. (2000). Teachers and technoliteracy. Sydney: Allen and Unwin.
Laurillard, D. (2002). Rethinking university teaching: A conversational framework for the effective use of learning technologies. London: Routledge.
Norman, D. (2002). The design of everyday things. New York: Doubleday.
Pearson, J. (2001). IT in Education. Journal of Information Technology for Teacher Education, 10 (3), 271 – 281.
Prensksy, M. (2000). Digital game-based learning. New York: McGraw–Hill.
Richards, C. (2000). Hypermedia, Internet communications, and the challenge of redefining literacy in the electronic age. Language Learning and Technology, 4(2), 55 – 77.
Richards, C. (2001). Changing with the times: Using action research to introduce IT in classroom teaching. React, 20(2), 7 – 16.
Richards, C. (2003). ICT – supported learning Environments: The Challenge of reconciling technology and pedagogy. Proceedings of international conference on computers in Education.
Richards, C. (2004). From old to new learning: Global dilemmas. Globalisation, Societies and Education, 2(3), 399 – 414.
Roblyer, M.D. and Edwards, J. (2000). Integrating educational technology into teaching. Merrill, NJ: Prentice Hall.
Salmon, G. (2002). E-tivities: The key to active online learning. London: Kogan Page.
Sandholtz, J., Ringstaff, C. and Dawyer, D. (2002). The evolution of instruction in technology- rich classrooms. In R. Pea (ed.), Technology and learning (pp. 255 – 276). San Francisco: Jossey-Bass.
Thomas, L., and Knezek, D. (2002). Standards for technology – supported learning environments. State Education Standards 14-20. Available online at ISTE.

Using Geographic Information System (GIS) technology to support open learning in the developing countries

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Abstract

We propose in this paper a new approach to overcome some of the students learning difficulties in the open learning environment. The idea is based on the integration of a GIS (geographic information system), an e-learning management system and the short message service. The main application area of the proposed model is the e-learning environment of the universities that follow the open learning system. These universities use the internet as the main communication media with their students.

In order to reach the majority of learners using the open system, our study shows that it is highly recommended not to rely exclusively on the internet based services to provide learning materials and academic news to students. As an alternative, a customized hybrid communication methodology is proposed. The integrated GIS provides the system with the necessary information to select the communication tools to be used for a particular group of students.

The proposed system has been developed and tested at the Arab Open University in Lebanon, where a sizeable proportion of students residing in rural areas experience difficulties with internet access. The results show that the suggested hybrid model significantly improves the performance of the communication system between the university and the students.

Introduction

The open learning system is relatively new in the Middle East region and specifically in the Arab countries. Although it is considered as an important methodology to bridge the digital divide (Daniel, 2009), it took many years for the governments to validate the introduced program. This is due to the fact that in this region, the open learning system is not adopted in higher education institutions of the public sectors. The support of the Open University contributed indirectly to obtaining the local approval for such learning systems. Still, the laws as well as the state of mind need to be adapted in order to cope with the new methodologies in higher education learning.

One of the main factors supporting the open learning is the availability of a modern, dynamic and advanced e-learning management system (Balasubramanian and Clarke-Okah, 2009; Styliadis and Pehlivanis, 2006). When we started the implementation of the e-learning management system at the Arab Open University in Lebanon, we though that adopting such a system is sufficient to communicate with our students through the emailing service, the forum, the course web page and through other provided facilities. During the implementation, we noticed that a significant number of students are not aware of the services provided by the system. They are not responding to the news, messages and announcements posted on the academic web pages. We analyzed the

reasons behind this problem and we discovered that in the developing countries where high speed internet access is not available to all students we cannot rely exclusively on the e-learning management system to communicate with them.

The rest of this paper is organized as follows: in section two we present our study on the availability of internet access and high speed internet connection over the Lebanese territories. We introduce our experience at the Arab Open University and we discuss the main challenges to implementing this new type of learning. Section three provides an approach integrating the geographic information system into the e-learning management system. This section presents the GIS in a brief way (Adams, 2004); it unveils the main advantage of integrating a GIS into Moodle. The same section presents the case study conducted and the Arab Open University in Lebanon. We conclude this paper in section four where we present our perspective for future work on the integration of a GIS and the e-learning management system.

Internet and DSL service availability

The Lebanese official operator for the Broadband Internet over DSL offers this service for the coastal cities and the main cities of the other districts. Figure 1 presents the distribution of our students over the Lebanese territories. It presents as well the percentage of the high speed internet availability in the corresponding cities (OGERO Telecom).

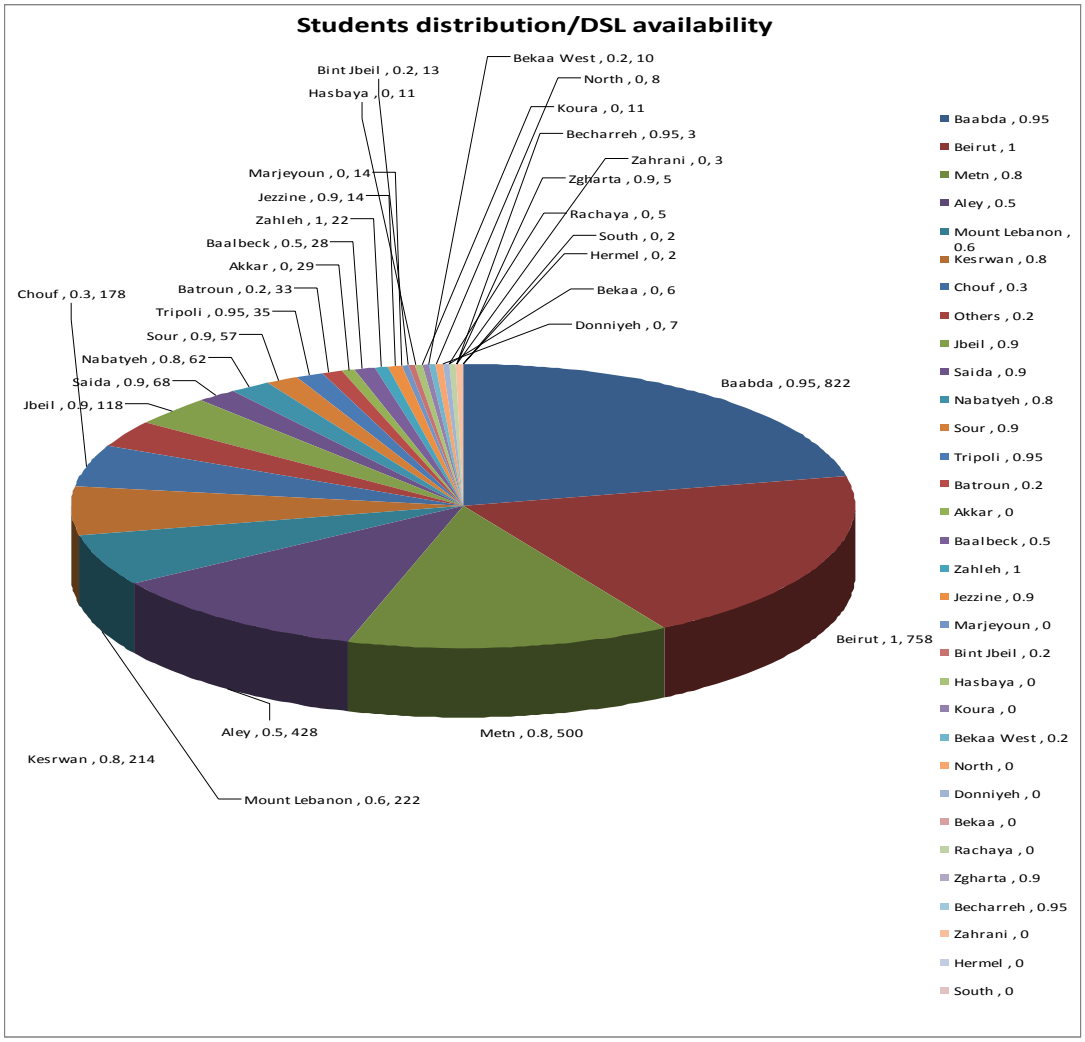

Figure 1: Students distribution and DSL availability

In the above figure, the first part of the legend text corresponds to the name of the city or the name of the district, it is followed by a number, and this number reflects the percentage of DSL service in the corresponding cities and villages. It is followed by the number of AOU students residing in this city. With a simple calculation, we observed that 23.7 % of our students do not have high speed internet connection in the cities where they live.

The total number of students in our branch is about 3800 students (Spring 2009). 23.7% of them do not have DSL. Therefore, we can say that around 900 students do not possess high speed internet connection. The internet connection via telephone line is available to 40% of them. Therefore, 360 students can use the e-learning system of the AOU. However, the economic situation of the people residing in the corresponding cities is difficult. Accessing the internet via telephone line is relatively expensive in Lebanon, the economic situation of 50% of these students prevents them from following the corresponding program online, this number corresponds to 180 students. As a result, 720 students do not have internet access via DSL nor via telephone line. This number represents 18% of the total number of students at the Arab Open University in Lebanon branch.

As our system relies to a large extent on the availability of the internet connection to our students, the objective of our study is to reach the maximum number of students with no internet access. This might be achieved through several measures, including, and not limited to, customizing the communication protocol with our students with respect to influencing factors such as their geographic location. We started the first phase by integrating the geographical information system and the e-learning management system.

Integration of GIS and the e-learning systems

The e-learning management system is an online software framework that allows the academic authority to manage the delivery of self placed, e-learning courses. It allows publishing study material and posting them in an online catalogue (Moodle). The intelligence of such a system depends on how advanced is the way we use it to provide the material to our students. This varies from posting a simple text covering the content of the material and the study calendar, to covering all the aspects of the learning process using interactive concepts in information technology through advanced multimedia tools that facilitate the learning process.

Students can log into the system using an internet browser, they have access rights with respect to the courses and the program they are enrolled in. The system tracks the learners' activities and provides online report for each learning component and each learner. At the Arab Open University in Lebanon we adopted the Moodle e-learning management system. This is an open source product where the core component part has been developed by the Moodle community and there is space for customization using the PHP programming language to change, modify and add more components and features that comply with the institution where the system is used.

> *GIS, or geographic information systems, are computer based tools for mapping and analyzing spatial data. The technology dates back to 1960 (Xiong, 2008). The GIS technology has been used to automate the management of the information based on the corresponding location; it provides the necessary help when a particular administration needs to take an important decision influenced by special factors. This has been used in various sectors, including security, marketing, health care and other disciplines (ESRI, 2006; Kotch, 2005; Amaneddine, 2009).*

The e-learning management system we use at the Arab Open University does not include in its original version a geographical information system. This means that we cannot make use of the geo-spatial information to enhance the learning process. As we rely on the internet to conduct our learning procedure, and a big number of students do not have internet access depending on their geographical location, we are seeking a solution based on the geographical distribution of our students over the Lebanese territories and the availability of the internet access in the corresponding districts.

In the admission application, there are two important fields: the district and the village of the applicant. This information is used to create a GIS along with the geo-spatial data, the ID of the students with all the corresponding information regarding the programs and the courses they are enrolled in. The information regarding the DSL and phone line based internet access has been provided by the Lebanese official internet operator, OGERO.

Some research results show a personalized e-learning management system but they do not make use of the GIS in the learning process. Through utilizing of the information provided by its GIS, the university can customize the communication protocol it uses with the students. Some other research approach proposed the mobile learning technology (Prensky, 2005). This technology has some problems related to the hardware limitations of the mobile devices. It cannot be used as an alternative to the e-learning. As stated by Prensky, mobile learning can be helpful to support the learning process but until the technology of mobile devices reaches a very advanced level, mobile learning is applied in a very limited scope.

In the customized open system we adopted, the students have to attend face-to-face tutorials for every course at least once every other week. Therefore, they are obliged to get their tutorial session at the university campus. Thus, they rely on the physical meeting with their tutors rather than following the course and the university news through the internet web site. Furthermore, high speed internet connection is not available except in the major cities. Students who live in rural areas do not have the necessary bandwidth internet connection, and the phone line based internet that can be used is unreliable.

Although the majority of students living far from the main campus have financial difficulties, we observed that more than 95% of these students possess mobile phones, which is contradictory to expectations. However, the social and cultural context plays a big role in this matter. With experience we discovered that 98% of the students read the news sent to them through the short messaging service where 25.8% of the overall students do not access the appropriate web pages to obtain relevant information about the courses they are enrolled in.

Important news about the university, the programs and the courses are posted on Moodle, as per our study, around 18% of the students do not have internet access, therefore, the news will not reach them until the next time they attend their tutorial in the university campus. In some cases, the nature of the news has its impact on the following tutorial. Therefore, we need to inform the students about new information in a real time manner. Using the short message service for all the students is not a cost effective solution, therefore, the GIS provides the system with the mobile phone numbers of the students who potentially do not possess internet access. The short message service is used in a customized way to inform those students about the required news.

The architecture of the integrated system is illustrated in Figure 2. Where the GIS database provides additional information to the data warehouse of the university, it provides the system with the necessary data so it can select the way we communicate with the students. The GIS uses the geo-spatial information of the students provided during the admission and submitted to the university management system.

The integrated GIS serves as a decision-aid system, where it provides relevant information that is required to decide whether the student resides in one of the of available-internet cities or not. If he/she does, we consider that he/she can reach the information once he/she logs on into the system, otherwise we measure the importance of the information and its relevance to this particular student. The system filters with

respect to the list of students belonging to a particular course if the information is course-related.

The same is applicable if the provided data corresponds to the programme, otherwise, it is potential university related news and it should be delivered to the corresponding student. The e-learning management system is referred in Figure 2 by LMS.

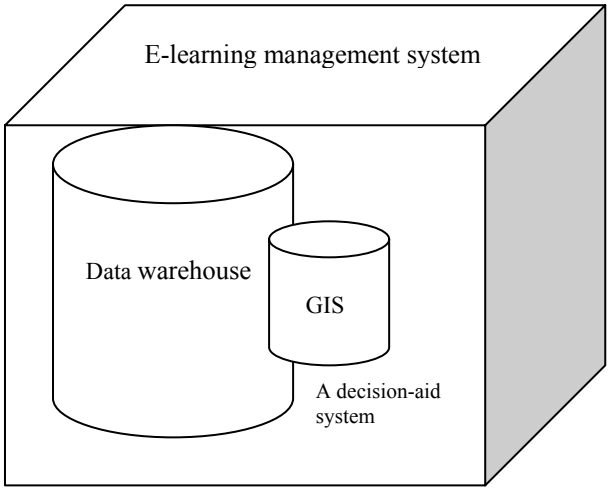

Figure 2: Integration of GIS and the LMS

Technically, we use the client/server architecture. The main server stores, manages, retrieves and protects data. The service provided by the web server is primarily dedicated to file delivery. The data presented to the students are provided using a graphical user interface and the users are from the client part of the system. The GIS delivers the necessary information that triggers the short message service to execute an operation delivering the corresponding message and targeting particular students, namely, those who are selected by the system with no internet access. The following algorithm has been used for decision-aid system provided by the GIS:

Identify the information to be posted
Select the corresponding students
Loop through the student list
For each student consult the GIS
Has internet connection → do nothing
Does not have internet connection → add the phone number to the list
End Loop
Post your news on Moodle

After conducting our study we came with the following results: we cannot rely exclusively on the e-learning management system to communicate with our students, and we cannot rely on the SMS service exclusively to communicate with them. The solution is to customize the way we communicate with them with respect to their location and the availability of high speed internet connection in their corresponding areas. Although some research results support mobile learning but still it is difficult to implement it as an alternative solution because of its limitations as stated in Prensky (2005). We noticed that we could reach around 90% of the students who do not have internet access through the proposed solution. We consider that this is an acceptable

ratio given that not all the students possess mobile phones and not all those who possess it read their messages in a frequent way.

Conclusion and future work

The application of the open learning system may face several obstacles especially in developing countries, where the required service is not available to all potential students. To overcome the problems that might arise during the implementation, a collective effort is required, not only from the academic and the administrative part of the related institution, but also from governments in the country where the open learning system is being implemented. This needs a package of reform process on the local and higher education codes of practice and laws.

The integration of the LMS and the GIS into one system contributes to enhancing the learning process. However, the problem of reaching all the required students has not been solved completely. Other research is being conducted in our department in order to find the best methodology to post the news on the ELMS. Also, the support of the mobile learning can be partially used. Our future study will be focused on identifying other weak points in implementing the open learning system in order to come up with an integrated and holistic solution to overcome the problems we face during the application of this modern higher education methodology in developing countries.

References

Daniel, J. (2009) "elearning for development: using information and communications technologies to bridge the digital divide" Commonwealth of learning, learning for development. http://www.col.org/resources/speeches/2009presentation/Pages/2009-06-CMRB.aspx

Balasubramanian, K. Clarke-Okah, W. et al, (2009) "ICT for Higher education", the UNESCO world conference on higher education, to appear, Paris 6-8 July 2009.

Styliadis, A. Pehlivanis, K. (2006) "Personalized e-learning in a reusable way, a proposed GIS system design, the architecture". Journal of Engineering and applied Sciences 1, 30-34, 2006.

OGERO. The Lebanese official high speed internet operator. www. Ogero.gov.lb

Moodle, An e-learning management system. www.moodle.org.

Shekharand, H., Xiong, S. (2008) Encyclopedia of GIS.233 Spring Street, New York, NY10013, USA: Springer, 2008

ESRI, GIS Solutions for Business,2006,http://www.esri.com/library/brochures/pdfs/gis-sols-for-business.pdf,Accessed 15, Jan 2009.

Kotch, T. (2005) Cartographies of Disease: Maps, Mapping and Disease. CA: ESRI Press, Redlands, 2005.

Prensky, M. (2005) "What Can You Learn from a Cell Phone? Almost Anything!" Journal of online education, volume 1, issue 5, June/July 2005.

Adams, C.S. (2004) "An interactive, online geographic information system (GIS) for stakeholder participation in environmental site selection, "Engineering systems divisions and the department of Civil and Environmental Engineering, 2004.

Amaneddine, Chmeit, N. (2009) Modeling real estate search service using GIS technology, to appear in the IEEE 17th international conference in geoinformatics, August 12-14, 2009, Fairfax, USA

The Re.ViCa project: a review of virtual campuses

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Abstract

Re.ViCa is a two-year analytic project funded under the Lifelong Learning Programme of the European Union, which finishes at the end of September 2009. Its mission is to produce an inventory of the main university-level virtual campus programmes across the world and by analysis of these, and of 30 detailed country overviews and nine in-depth case studies, to derive a set of Critical Success Factors which will inform future leaders of such programmes and thus facilitate them to achieve a greater degree of success than has often been the case in such projects.

This paper describes the main outcomes of the Re.ViCa project which are relevant to open and distance learning, and open universities in particular, with a focus on national initiatives and critical success factors. Other issues covered include taxonomy and categorisation of virtual campuses, challenges with geographic and political definitions, and the sensitive issues around failed initiatives.

Introduction

Rather than take space to describe the project in detail, we shall just provide the essential facts relevant to this audience, and refer readers to the web site (http://revica.europace.org) and the comprehensive wiki (http://www.virtualcampuses.eu).
We shall take as a focus two issues: national initiatives in e-learning, and the current role and value of open universities in e-learning innovation.

Overview

The Re.ViCa project's full title is "Review of (traces of) Virtual Campuses. (The "traces" phrase signifies that several initiatives have "ceased".) Re.ViCa has nine partners of which one is an association of universities active in e-learning (EuroPACE), two are open/telematic universities (FernUniversität and UniNettuno), four are traditional universities including the University of Leuven, and two are consultancies (Matic Media and ATiT).

As we come to the end of the funded period, consultations are under way to open the wiki to a wider range of contributors and topics. In fact the wiki was made public at the ICDE/EADTU conference in June 2009 and several new people have already started

providing material. The project partners have committed to continue updating the wiki for at least the next year – and it can remain available as long as it is useful.
The wiki uses the popular MediaWiki software, used by both Wikipedia and some of the major projects in e-learning at international level – including WikiEducator. This makes it much easier to share wiki expertise and resources.

Virtual Campuses

Although the phrase "virtual campus" is used in the project title, the term has a range of meanings, depending on the countries and institutions where it is used. It became unfruitful to be constrained by any particular definition – although we carried out a good deal of analytic work on the concept (see http://www.virtualcampuses.eu/index.php/Virtual_campus)**.** In a way rather similar to benchmarking e-learning (Bacsich, 2009), the precise definition of virtual campus does not seem to make much practical difference.

We concentrated on "Programmes" which we expanded to mean "Notable E-Learning Initiatives" – all within the restriction to post-secondary education. There was much internal discussion on the word "Notable" – which we interpret as that a well-known person, agency or project report "noted" the initiative – and as such we dutifully scoured the main sources of such "notes" including UNESCO, OBHE, COL, and conference proceedings. There has been less discussion on "Initiative" which is, in fact, the key phrase. To us, an initiative has to be a coherent, recognizable situation with somebody "initiating" and then overseeing and indeed managing it.

Countries where virtual campuses exist

What is a country – and what is Europe?

One of the many challenges that Re.ViCa had to face, more than many projects of lesser scope, is that almost every word or phrase turns out, on analysis, to have a far less precise meaning than commonly believed. We have commented already on the issue with "virtual campus", but many other educational words including, of course, "e-learning" have their own obscurities. So it is with countries. We take a non-partisan view that any territory which appears to be coherent and in charge of its own borders, is treated as a "country". This will include states which are not recognized by some or indeed many other countries. Thus our list is a somewhat larger list than the members of the United Nations. (For further discussion see http://geography.about.com/cs/countries/a/numbercountries.htm.)
By our reckoning there are somewhat over 200 countries, of which we list 156 as the most fruitful countries for e-learning (see http://www.virtualcampuses.eu/index.php/Countries). The ones we excluded are typically small, war-torn and/or extremely poor.

For certain countries where education is not a central responsibility, but devolved to states (provinces, etc) we try to also tag the interesting entities against the state of relevance, as well as against the country. However, this is a great deal of work – thus it has only been done for a small number of countries where education is so devolved that it is impossible to produce whole-country reports – UK, Belgium, Canada, etc.

The other main challenge is “Europe”. Since Re.ViCa is an EU-funded project there is the usual objective of providing useful information for (not just about) “Europe” – and in particular to compare virtual campus development in Europe against the Rest of the World. However, the “geographic” definition of Europe is too broad, and there are countries towards the boundary of Europe whose socio-economic systems – and approaches to universities and e-learning – are very far from those of the EU. However a “political” definition of Europe as just the EU is too narrow. After consideration, we decided that the only practical definition of Europe for this project was as the combination of EU, EEA and Switzerland – the solution had been literally staring us in the face on airport signs. We resolutely resisted rhetoric of “heartland” or “west”, preferring the obscure neutral phrase “European Economic Zone” (EEZ for short).

Virtual Campuses – Programmes of interest

We have identified around 170 Programmes in Europe (EEZ), with some 20 more existing as EU projects past or present. In the Rest of the World there are nearly 300. Thus we now have nearly 500 Programmes across the world, though the rate of growth is now slowing since we have trawled every major report available and there are few promising countries left to analyse. There are currently 86 countries with one or more Programmes. The first headline conclusion is that this is considerably more than we expected. We hypothesise that the rhetorics of web 2.0 and multimedia tend to encourage analysts to progressively “raise the bar” on what e-learning is – a classic example – but not the only one – is that constructivist learning over a type of internet-based social network was going on at several European open universities in the mid 1990s. These large numbers make it likely that a more “quantitative” type of comparative analysis of worldwide e-learning activity can now take place than was possible in the past. This will inevitably stretch beyond the end of the funded phase, thus many conclusions here are interim and tentative.

Of the Programmes, we identify 52 as “national initiatives” – those Programmes where a country (or state within a country) has aimed to take action across the country (see http://www.virtualcampuses.eu/index.php/National_initiative). Typically most countries have only *one* national initiative extant at any one time – Hanoi Open University, Swedish Net University, Swiss Virtual Campus, etc. However, a surprising number of countries, including in Europe, have none – or none currently. In contrast, a few countries, especially the UK, seem to have an inexhaustible appetite for national initiatives, despite several high-profile failures such as the Interactive University and UKeU. Thus there are, in fact, just over 20 different countries with one or more national initiative.

There has been recent discussion in the project and International Advisory Committee on the topic “Europe is tired of national initiatives”. While this is true at a headline level, especially in the westerly EU, the truth is more complex. One country retains an inexhaustible enthusiasm for them (the UK), and they continue towards the east end of the EU (e.g. Bulgaria and Estonia) and just south of the EU (e.g. Egypt). The lesson one could draw from the UK until recently was “less is more” – what was working quite well are the more modestly funded but widespread initiatives such as Pathfinder, Gwella and the JISC Curriculum Development Programme – but recent news is that the UK (or at least England) is about to start on the HEFCE Online Learning Innovation Fund which goes at least part-way getting back to the higher funding levels and more targeted

projects of a few years ago in the UK (http://www.virtualcampuses.eu/index.php/Online_Learning_Innovation_Fund).

The other issue, which we shall return to at the end, is the continuing role of some open universities as agents of change for the sector.

Taxonomy of virtual campuses

There are many different ways by which one could classify virtual campuses, and in the project we have discussed most of them (see http://www.virtualcampuses.eu/index.php/Taxonomy). In the end we decided to work with an existing UNESCO classification but modified it. The core categories are:

- Newly created institution (after 1996)
- Evolution of existing institution
- Consortium

We distinguish between commercial and non-commercial providers by singling out:

- Private provider (for-profit)
- Private nonprofit provider

Each of these categories is populated by one or more of nine case studies – of which the most interesting are likely to be Hibernia College and the Swiss Virtual Campus (see http://www.virtualcampuses.eu/index.php/Case_studies). We also have a cross-cutting classification of political scale of initiative of which the most prevalent is the National initiative (such as Swiss Virtual Campus) – but international and multinational initiatives are also flagged, such as the Arab Open University. Note that this, and some other institutions, fall into several of these categories.

It is also important to note which institutions are universities and which colleges (post-secondary level but non-degree).

Finally we also categorise each institution by the country/countries with which it is closely associated.

The main categories in practice

In general terms, many governments and agencies in Europe and beyond remain most comfortable with the idea of consortia, even though there are many issues about sustainability of these (Epper and Garn, 2003). They remain much more cautious about creating a brand-new institution on a green-fields site. We currently list just under 40 of these across the world but there are some problems of taxonomy to resolve and the number may reduce – in addition, within the category many are not in the green-field core. There are far fewer brand-new green-field non-profit still active providers – and some of the paradigmatic ones like Western Governors University are quite old.

There is often one country which likes a specific type of virtual campus such as “newly created institution”. In this case it is two: Italy with the telematic universities (UniNettuno, Pegaso, etc) and Korea with the cyber universities (Hanyang, Seoul, etc).

This clustering further reduces the number of core exemplars. Nevertheless, there is still a trickle of recent exemplars such as Hibernia College (Ireland, for-profit provider), Egyptian E-Learning University (private non-profit provider), and Gotland University (Sweden, state-controlled).

Failures

As we said earlier, we have taken care not to rush to judgement about "failure" – but we recognize the eternal interest in the subject. As usual, simple categories become murky. There are 13 institutions marked as Ceased E-Learning Initiatives – and a further 14 marked as Failed E-Learning Initiatives. Most of the cases of failure seem unarguable, such as Scottish Knowledge and TechBC, but for some of the cases tagged as Ceased, some readers might accuse our analysts of having rose-tinted spectacles. Why was the Dutch Digital University not a failure? In some cases, like this, the issue is to do with lack of information. Yet for others it is clear – the Swiss Ministry said at the beginning and the end that the Swiss Virtual Campus was a fixed-length project. So is the impending closure of the Swedish Net University planned (so to be Ceased) or unplanned – that is, Failed? Several of the Ceased initiatives ceased only because they were merged into other organizations, so is it fair to say that they Ceased? Any categorization introduces divisions into the seamless but complex space of Programmes.

Success – and Critical Success Factors

Looking on the brighter side, what has the project told us about *success*? Much analysis of the Programmes, and much deeper analysis of our case studies, coupled with cross-correlation with conclusions from earlier projects such as MegaTrends (http://www.nettskolen.com/in_english/megatrends/), leads to the following conclusions.

We have identified a set of 17 Critical Success Factors – that is, criteria which are *necessary* for success in a Major E-Learning Initiative (MELI). What is major? We have a number of specific signifiers (see http://www.virtualcampuses.eu/index.php/Major_E-Learning_Initiative) but in summary one can recognize a MELI by the stress it puts on the system: budgets will be worryingly large, very senior managers will want to be kept up to date, many students will be affected, reports and strategy documents will be needed, risk and reputational issues will surface, etc. In EU project terms, it is designed to include the projects analysed by MegaTrends. In UK terms, it is designed to be similar to what UK agencies call "step change" (see http://elearning.heacademy.ac.uk/wiki/index.php/Step_change).

There is not space here to go through all the Critical Success Factors – they contain the following criteria: Leadership in E-Learning, (Appropriate) Management Style, Relationship Management Upwards (to ministries and funders) and Market Research; in addition to several criteria familiar to those who work on benchmarking and quality for e-learning (see http://www.virtualcampuses.eu/index.php/Critical_Success_Factors.) However, these factors are not sufficient to guarantee success, but the additional factors – so-called Key Success Factors – depend on the type of initiative being undertaken – see http://www.virtualcampuses.eu/index.php/Key_Success_Factors. We have so far identified these for the following categories: Consortia, National initiatives, newly created institutions, Evolution of existing institutions, For-profits and Public

institutions. An interesting discussion item is to produce a selection for open universities.

Those interested in benchmarking and quality may also like to know that the Critical and Key Success Factors are designed so that they can be mapped down into the main benchmarking schemes used in Europe. They are, in fact, designed as an extended subset of the Pick&Mix criteria (http://virtualcampuses.eu/index.php/Pick%26Mix) but it is hoped that with help from others the mappings can be done into the main European schemes (as used by EADTU, EuroPACE, etc) as well as for relevant national schemes e.g. in Sweden (Högskoleverket, 2008).

Lessons for open universities

One goal of Re.ViCa was to reassure stakeholders that there was no bias, even implicit, towards distance learning in the project as a consequence of using the phrase "virtual campus". (This was a sensitive issue at bid time in 2007.) Indeed, this was one of the reasons why the concept of "E-Learning Initiative" was consciously introduced; and later, why the neutral word "Programme" became so popular. However, it was decided from the beginning that open and distance learning, and the institutions that deliver it, would be kept under scrutiny. In particular the various associations of open universities were analysed and their lists of members trawled to ensure that each member had an entry. It may have started off as a polite fiction to deem that every open university around the world was a Programme, but evidence from the web, workshops and conferences became compelling that virtually every open university did have sufficient activity in e-learning to qualify.

We do see signs of growing convergence between so-called traditional and distance-teaching universities in their approach to e-learning but it is notable that still in many countries of Europe, there is a resolute lack of interest in distance learning from most of the conventional sector, and this is true whether or not there is a "sitting tenant" open university in residence. The reasons seem to be socio-economic (to do with the funding mechanism for universities and students). In the UK it seemed similar till recently but perhaps things are changing now, or at least becoming more visible – in fact there was considerably more non-OU distance learning going on "quietly" in the UK HE sector than most (non-OU) analysts realised (for a crude overview of how much there is see http://virtualcampuses.eu/index.php/United_Kingdom_-_distance_learning).

This brings us to two contrasting statements we raised for discussion in our summer 2009 meeting:

1. Distance learning has been the main catalyst for e-learning in general and Virtual Campuses in particular;
2. The "sitting tenant" OUs are a dead hand on innovation from other universities.

Statement 1 is certainly not true in any part of Europe, with the possible exception from time to time of the UK – yet the statement seems still to have great relevance in the US even if less now in Australia and New Zealand.

On Statement 2 it is clear to us that the impact of open universities does vary considerably from country to country – with some evidence that language has some

bearing on this. In the English-speaking world there is widespread e-learning expertise in most developed countries even though in reality in the UK much of the "big system" e-learning expertise is at the OU. In a country where the national language is spoken by far fewer people – e.g. Netherlands or Portugal – the Open Universities in these countries have served as magnets for much of the leading-edge e-learning development in their linguistic sector. The situation for Spanish is interestingly intermediate. Mention of Spain raises another key issue – the role of empowered regions. There, as in India, China and the US, regional diversity and rivalry seem to play a key role – but not in the UK – which has missed out on developing strong regional distance e-learning players. No UK government was brave enough to mandate a break-up of OU or Ufi – or even to restrict UKeU to England – and the non-English devolved governments did not manage to sustain funding of any credible home-grown players. However, the recent reconfirmation of and funding for the "OU National Role" in the UK seems a promising compromise in a large country like the UK – though less plausible in a small one.

Interestingly, modern analyses do not seem to focus on dual-mode providers in a way they would have done ten years ago. In particular we have not used the category of "dual-mode" – we welcome feedback on this omission, in particular if a convincing modern definition can be found with a justification for its analytic power.

The good news for the "open university club" is that for a country who wishes to experiment with a newly created institution, it is probably still the safest bet to set up a public open university, unless there is one (or a strong dual-mode player) already – if there is, then it is probably best to let the commercial sector or a non-profit foundation take the financial and reputational risk. Some interesting thoughts arise about African and Middle East exemplars.

In conclusion, a key aim of the project has been to generate a dataset that many analysts can now draw on *and contribute to*. Three wider issues might be of interest. Are there virtuous circles linking e-learning innovation in schools and universities? Why is there a relative paucity of e-learning development in the post-secondary *non-university* sector (outside the US)? Is there evidence for a key role of "liminal" countries/regions/cities (Hong Kong, Catalonia; Milton Keynes and Sheffield?) in e-learning innovation? And what might information on the above imply for UK and more generally the EU?

References

Bacsich, P. (2009) Benchmarking e-learning in UK universities – the methodologies, in: Mayes, T. et al (Eds) *Transformation in Higher Education through Technology-Enhanced Learning* (York, Higher Education Academy).

Epper, R. and Garn, M. (2003), *Virtual College & University Consortia: A National Study* (Denver, WCET/SHEEO), available at http://www.wcet.info/services/publications/vcu.pdf.

Högskoleverket (2008) *E-learning quality: Aspects and criteria for evaluation of e-learning in higher education, Report 2008:11 R*, available at http://www.hsv.se/download/18.8f0e4c9119e2b4a60c800028057/0811R.pdf

Digital supported learning initiatives in Africa: the experience of a new University of Education in Africa

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Abstract

There has been a growing concern and almost an all pervading question on how can a country meet the demands of this digital-conscious generation. The circumstances of our world have been changing and the changes will continue, necessitating the need to up-date and up-grade our educational systems. Every country is craving for development in all spheres of human existence and the working tool is education. It becomes obvious, therefore, that learning initiatives will have to be designed in such a way that they will incorporate national objectives right from the embryonic stage. This paper presents a systematic but technical overview of the digital initiatives of a new university of education in Africa, 'The University of Education, Ikere Ekiti' (TUNEDIK). It also summarizes the preliminary outcomes of a two-week intensive ICT training program pre-requisite to registration for semester courses for all students in the faculties. For quality and effective interactions between technology and teaching-learning, the University was comprehensively ICT connected via the modern Local Area Net-work (LAN) with dedicated bandwidth incorporating the use of v-sat campus net-work support for pedagogical and research purposes. The mission of Government is to create a unique ICT driven institution in Africa, committed to the pursuit of academic innovation, skill-based training and a tradition of excellence in teaching, research and community services in the discipline of education.

Background

Teachers play a major role in the education of a child. The importance of teachers can not be over-emphasized. This, among other points, may explain why a university that is different from other conventional universities, a 'University of Education' is now being put in place. The first University of Education is in Winebba in Ghana, the second is the Tai Solarin University of Education in Ogun State of Nigeria and the third is the University of Education, Ikere, Ekiti State of Nigeria. This university is in the academic business of equipping students to gain qualifications that allow them to join the

workforce and contribute in professional contexts. This becomes germane as a result of the accomplishments of other countries of the world.

Mathew (2009) says there is now global consensus that the 20th century teaching model commonly referred to as the instructional paradigm is no longer an adequate or appropriate pedagogy for educating students in the 21st century. Instead, it is now strongly advocated that students' education should shift to the 'Learning Paradigm', which compels educators to critically review, reappraise and re-strategize the design and delivery of their curriculum to ensure that it aligns more closely with the intensive global forces of change in the 21st century. Therefore, with the current radical change in educational pedagogy, a well designed and orchestrated plan of action will be a necessity for laying a solid foundation for teacher education in a digitally sensitive world (Akinwamide, 2007).

This realization led to the two-week intensive training in information and communication technology in TUNEDIK. The plan is that the student should be ICT proficient and to be fully prepared for education in an ICT driven environment. In pursuit of this novel idea, all the students were given laptops at the inception of the training. This among all other things was to give access to regular practices and to have immediate access to computer. The University entered into technical agreement with two reputable computer companies for the maintenance services of the laptops. Lecture theatres and classrooms have Interactive Electric Star Boards supported with magic boards as backups.

The intensive ICT training programme formed one of the future-oriented plans of the University to equip the students at TUNEDIK with the skills required to compete favourably with colleagues in this digital conscious world. The training was designed to incorporate theoretical and practical sessions that are expected to lead to speedy acquisition of requisite ICT knowledge and skills.

Accompanying this training was on the spot formative evaluating system. This enabled the instructors to access the rate of comprehension of the exercise by the students. At the end of the 2-week training, students were expected to be awarded the first certificate in ICT proficiency and at the successful completion of all the series of training designed for the entire programme, the students got a Diploma in ICT.

The training schedule

WEEK ONE

	FIRST SESSION 9.00-11.00AM	SECOND SESSION 11.30AM-1.30PM		THIRD SESSION 2.30-4.30PM
Day 1	Programme flag-up	Introduction to computer technology		Introduction computer software /hardware
Day 2	Microsoft Windows(3A)	Microsoft Windows(3B)		Microsoft Windows(3C)
Day 3	Microsoft Windows(3D)	Use of Microsoft Word (4A)		Managing files / creating documents under Microsoft Word(4B)
Day 4	Evaluation	Viewing and navigation of Documents(4C)		Formatting and editing of documents (4D)
Day 5	Working with text, graphics & charts in Microsoft Word (4E)	Mass mailing/printing of documents (4F)		

WEEK TWO

	FIRST SESSION 9.00-11.00AM	SECOND SESSION 1130AM-1.30PM		THIRD SESSION 2.30-4.30
Day 1	Microsoft Outlook (5)	Microsoft Power Point (6)		Working with text, graphics & charts in Microsoft Power Point (6)
Day 2	Microsoft Excel (7A)	Microsoft Excel (7B)		Microsoft Excel (7C)
Day 3	Microsoft Excel (7D)	Microsoft Excel (7E)		Microsoft Excel (F)
Day 4	Evaluation	Use of Internet (8A)		Use of Internet (8B)
Day 5	Internet/Practical Session	Closing Session & Presentation of Certificates		

The Digital Philosophy of the University

The complex heterogeneity of the African social milieu, coupled with economic and educational retardation, unflatteringly becomes a pointer to the necessity of a flexible ICT learning environment that will be state-of-the-art, accessible, affordable and promising. This is the propeller that filliped the management of TUNEDIK into action. The vision of management became novel in attempting to make a holistic transfer of teaching/learning processes from the conventional pattern to a variety of learning experiences that are blended with this digital age in learning, knowledge management

and performance support. The view of management is to make The University of Education Ikere Ekiti (TUNEDIK) one of the major functioning institutions with the provision and the deployment of ICT for the teaching, learning, information management and administration. Management therefore set up a high–power technical committee with the following strategic objectives:

- To provide a robust internet access backbone for wireless campus wide area network;
- To increase accessibility to teaching and learning opportunities generally and especially for staff and students;
- To strengthen the existing wireless network for wide coverage and optimal performance;
- To make available indoor and outdoor equipment that is sufficient to accommodate gradual increase of bandwidth and internet users to a higher capacity;
- To facilitate, encourage and motivate academic staff to conduct challenging research studies;
- To make way for Capacity–building through training and re-training workshops for different categories of staff.

At inception, an internet backbone infrastructure was deployed with a defined bandwidth size capable of meeting the initial needs of the Management and Staff for admission, and the recruitment exercise. The number of internet users later soared up after recruitment and admission to about 1000 users.

Government support

The disparity between the developed and the developing world, particularly Africa, in the development, acquisition and availability of technologies, is quite alarming. The government of many African countries is rising to the challenges of ameliorating the compounding situation of digital-divide. This explains why concerted efforts have been put in place by the government of Nigeria to assist educational institutions in technology procurement. In TUNEDIK, the government matched their mission with action by supplying all students with laptops at affordable prices. All pioneer staff were examined on ICT proficiency and the successful ones were offered employment.

Staff and student training for ICT proficiency

With the diverse and the broad range of activities, coupled with the developments that go on in the technological conscious world, staff and students of TUNEDIK submitted to the ICT proficiency training. There is a heightened interest among staff and students in belonging to a Digital Sensitive University and in becoming a fronting model and product of a digitalized citadel in the society. Evidence from facial observation, formative and summative evaluation showed that the staff and students embraced this technological development. To sustain learners cognitive functioning, technical instructors were assigned to students to build up learners' confidence on challenges encountered in the course of digital operations. Already the staff and students have been educated on the need to prepare to turn information to knowledge under information literacy, the process includes assessing evaluating, applying and generating information through technological interactions. The targets set for every participant is to aspire to

extend beyond the current technological attainment and encompass learning, critical thinking and interpretative skills across professional boundaries.

Digitalizing institutional operations

Many universities and private corporations are investing significant capital in e-learning. This will eventually make universities to be able to meet the growing demands of our knowledge–driven society. The goals of the management of this newly established university of education are: to set a pace for teachers' education in Africa, to breed students who can gather and generate data and process data for results. To be an ICT driven university with a focus on healthy intra and international academic competitions. The management of TUNEDIK took off on a benchmark pedestal right from inception. Obtaining of forms, admission, payment of fees, and other registration exercises were done on-line. Computations of results, accounting procedures and other inter and intra management operations are on-line. The 2-week intensive training programme was organized to herald and publicize the intention of management to the outer world that TUNEDIK among other things aims at producing a thinking workforce that is technologically alive and to also democratize digital-education so that all the students will have access to technology. We contend that what TUNEDIK is after with the present set up is making the students imbibe the culture of e-learning, thereby turning information that is now readily available, accessible and ubiquitous into useful knowledge in this digital age.

Digital divide problems as hunting shadows

According to Glef (2007), the documentary series *Digital Divide* explores the role of technology in widening gaps in the society, especially among young people. It affects classrooms, gender, race, and work! In the most elementary form, *Digital Divide* is often used to describe the disparity in *access* to technology between the '*haves*' and the '*have nots*' (Bandele, 2007). The *Divides* with regard to access therefore constitute an incontrovertible problem that has enough potential to dampen the vision for ICT education in Africa. Availability and access to new technologies in Africa is still disproportionately low when compared with what exists in the developed world. The little progress made in Africa on access to mobile phones and Internet is suspect. The so-called 'new' technologies that are available in Africa are not the 'latest' technologies.

However, the giant strides made by some of the governments of African countries have drastically reduced the adverse effects of digital-divide. In some quarters, there have been swift reactions to enter into partnership with developed nations in the bid to bridge the gap and thereby turning digital-divide to digital-dividends. It is regrettably observed that many of the technologies that are available are not recent; this still goes a long way to expose the imbalance between the technologically rich and poor countries of the world. This lopsidedness is a pointer to the reality of digital-divide. Now there is escalating concern among less-developed countries on how to effect a drastic and meaningful change in the lopsidedness.

Implications and Recommendations

However, one should now consider the numerous factors that will go a long way in ensuring digitally successful academic initiatives:

- Finance - there must be a sound financial base to facilitate maintenance implications and pave the way for un-hindered operations;
- Adequate Infrastructure to guarantee stability;
- Broad-base support incorporating Governmental and Non-Governmental Organizations;
- Competitive drive of students through challenges and motivations;
- Challenging moves of teachers locally and internationally.

Technologically-rich environments are becoming a common scenario in many academic landscapes in this new technological age. Students now have access and a myriad of options through the internet. It is therefore hypothesized that we stand to have a generation of thinking students who can analyze, construct, and pull ideas together to make a meaningful professional contributions to the society through digital enhanced education.

References

Akinwamide, T.K. (2007) Effects of Guided Method of Teaching Essay Writing on the Performance of Students in Nigeria Elementary Secondary Schools. Journal of Education. University of Ado Ekiti, Nigeria. Vol.4 No 1

Bandele, (2007). Mobile learning paradigm in Africa and the problem of the digital divide. The 12th Cambridge International Conference on Open and Distance Learning (Ed) by Anne Gaskell and Alan Tait

Glef (2007), Digital Divide. Next step. *E-Newsletter*. Available at file://E:\Digitalnextsteps.htm

Enhancing student learning by using automated assessment databases to promote formal assessment of academic programs

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Abstract

After a recent visit by an accreditation agency provided feedback that our university was doing a great job of gathering academic assessment data but was not making maximum use of the data to determine if students were learning what we advertised they were learning, the faculty took on this constructive criticism as a challenge. The consultant agreed with the basic finding of the accreditation agency that the faculty was not using the abundance of assessment data collected to the maximum potential and further suggested that we focus more on formative rather than summative assessment techniques. Formative assessment tends to motivate students better by providing them with feedback on how they can improve, whereas summative assessment simply provides them with an evaluation of the level of their performance, i.e. a grade. At the same time that the faculty was reviewing its approach to the use of academic assessment data, the faculty and the administration were also in the process of moving from a paper report to an online relational data base, the Accountability Management System (AMS) in which data was moved into a central data base from various separate faculty and administrative sources.

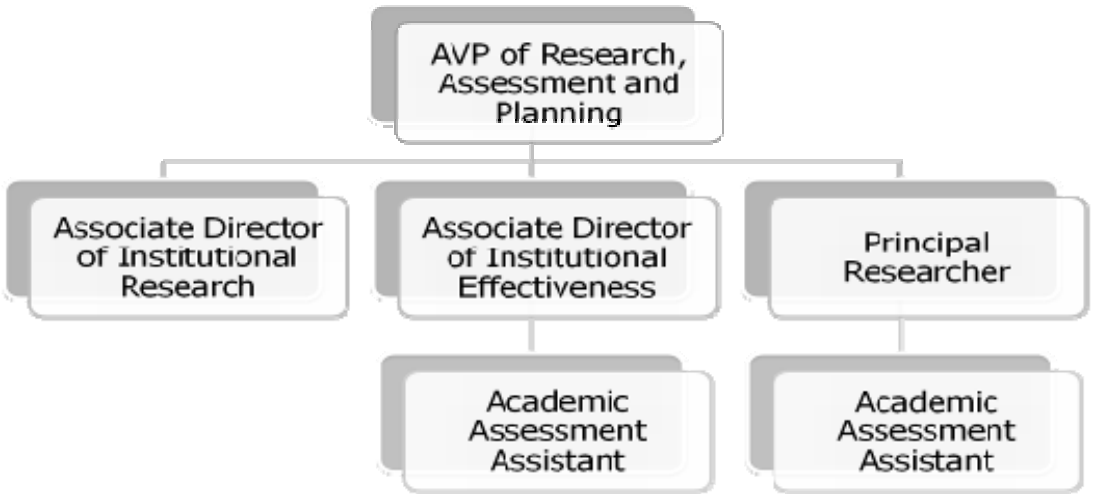
We integrated the effort to focus more on how data was used with formative vs. summative assessment supported by a centralized database to help faculty successfully better analyze data to promote student learning.

Introduction

After a recent visit by an accreditation agency provided feedback that our university was doing a great job of gathering academic assessment data but was not making maximum use of the data to determine if students were learning what we advertised they were learning, the faculty took on this constructive criticism as a challenge. To insure that it was proceeding objectively in evaluating how it was using the data, administration supported the faculty in obtaining the services of an outside academic assessment expert to evaluate our process and provide some suggestions on where and how we could improve the academic assessment system. The consultant agreed with the basic finding of the accreditation agency that the faculty was not using the abundance of assessment data collected to the maximum potential and further suggested that we focus more on formative rather than summative assessment techniques. Formative assessment tends to motivate students better by providing them with feedback on how they can improve whereas summative assessment simply provides them with an evaluation of the level of their performance, i.e. a grade. Anderson et al (2001) found that though both formative and summative assessments have value, students are more likely to do better on summative assessments.

The consultant (Allen, 2004) observed in one of her scholarly works that data that is filed away and is not used for academic program analysis is useless, a direct criticism of those faculty and institutions that are "wonderful data collectors" but who do not analyze the data for information that could help them improve the academic programs. She believes that the data has to be analyzed by the faculty in order to reach conclusions about what the assessment of the data means in order to determine the implications for changes in the curriculum or pedagogy and related program modifications.

At the same time that the faculty was reviewing its approach to the use of academic assessment data, the faculty and the administration were also in the process of moving from a paper report to an online relational data base, the Accountability Management System (AMS) in which data was moved into a central data base from various separate faculty and administrative sources. By coincidence, one of the consultant's recommendations supported a deduction the faculty and administration had recently made. That deduction was that the faculty was required to spend too much of their academic assessment time collecting data that was already available electronically from various other sources. After discussing this requirement in depth and coordinating a proposal to eliminate the requirement for the faculty to gather any data already available in the new centralized data base, the requirement was eliminated allowing the faculty to focus more on the formative aspect of assessment. The end result was that the faculty was given more time in the assessment process to spend on formative vs. summative assessment and analysis which, according to Anderson (2001), as noted above, tends to result in more effective, responsive learning by students. Staff, responsive to the faculty was hired to assist the faculty in gathering and analyzing assessment of the academic information gathered from the programs. This staff was organized into the Office of Institutional Research and Analysis (OIRA). The office was structured as follows:



The OIRA staff was organized to play a key and critical role in both the efficiency and effectiveness with which the academic assessment data across the University was gathered, analyzed and used. The Accountability Management System is the input and repository of all university academic and related data to be assessed and analyzed. The OIRA staff worked closely with designated faculty members and administrative staff to insure the correct information was provided for input into the system and that assessment rubrics are developed and used at all levels of academic assessment review to insure comprehensive and quality assessment of teaching and learning at the University.

The OIRA staff also developed analysis questions to be used in assessing data collected annually for a review of each program in the university. They trained the faculty in assessing and using the data in the central data base to conduct analyses and draw conclusions on the teaching effectiveness of faculty and learning effectiveness of students.

Features of AMS

Rubric Wizard: A rubric is the guide used to score performance assessments in a reliable, fair and valid manner and is generally composed of dimensions for judging performance, a scale for rating performances on each dimension, and standards of excellence for specified performance levels. AMS contains *a rubric wizard* that assists the faculty in developing a rubric for any given course.

Storage Capabilities: "Pack-It-Up" provides the capability to take web pages and rubrics created in AMS offline. Once offline, you can burn your assessment work to CD-ROM and/or save your work to your computer or other external storage device for future use in assessment of a given program or course.

Webpage Builder: Create a web publication of assessment data and analysis that can be shared via email, published within AMS (via Shared Resources), or externally by creating Web URL (optional password protection).

Assessment Data Eliminated from Faculty Collection

The previous Program Annual Review (PAR) data gathering requirements mandated for the faculty to collect was as follows:

- Section I: Program Information. Program information is matched to the University General Catalog
- Section II: Faculty Profile. Summary analysis of faculty information from the Office of Institution Research and Analysis (OIRA) data to include:
    - Faculty Qualifications
    - University Training
    - Scholarship and related professional contributions
    - Student course assessment
- Section III: Student Profile to include
    - Summary analysis data from OIRA
    - Recommendations
    - Comparative program, school, and University data
- Section IV: Class Data to include
    - Average class data
    - Faculty/Student ratios
- Section V: Program Assessment to include
    - Program and Mission goals alignment
    - Online and onsite location data
    - Program learning outcomes assessed
    - Graduate Level analysis
    - Graduate Council/Undergraduate Council approval of assessment tools
    - Assessment Tools reliability

- Multiple means of assessment for each outcome
- Level criteria or benchmarks (rubrics, portfolios, external licensing bodies, or professional accreditation organizations
- Summative trends or other findings
- Recommendations resulting from assessment
- Assessment plan for next year—same learning outcomes, different outcomes, additional means or benchmarking activities
- Actions based on previous year's assessment and impact on program
- Summary of the implementation of the Memorandum of Agreement for the last 5-year program review.

Based on the consolidated AMS database, the Assessment Consultant recommended that the PAR focus of the faculty be Section V, and that they not be required to input data previously required in Sections I to IV. This proposal, as noted above, was strongly supported by the department chairs to reduce the tremendous workload of their academic program faculty members. The administration, in turn, supported the faculty recommendation on eliminating the data required from faculty in Sections I to IV and the focus of data collection and analysis became solely section V.

Central Data Management

Baker (2005) observed that providing a central data base whereby data is made available to faculty to compare their programs with peer programs at other universities or using it to design and administer surveys to/of students and alumni can be highly useful in objective assessment and related follow-up actions. The PAR assessment, done each year, is complemented by a Five Year Plan supported by a memorandum of understanding which assesses a given program using evidence from data collected over five years. It focuses on data trends, cumulative data analysis, and associated recommendations. External reviewers are sought to add objectivity to the process. Delta College, in the U.S. state of Michigan listed the following goals for use of their assessment database.

Goals

1. To have clear academic goals be the cornerstone of what we choose to assess so that the data we collect will have educational value to faculty, administration, and the communities we serve.
2. To think in advance about how the information will be used, and by whom, so that the information will be connected to issues or questions that people really care about.
3. To recognize that learning is an extremely complex process calling for a variety of assessment tools that must be used over time so as to reveal change, growth, and increasing degrees of integration.
4. To develop formative, ongoing assessment that entails a linked series of activities undertaken over time.
5. To assess the assessment process itself to refine it in the light of insights gained.
6. To keep the focus on learning and teaching so as to meet the obligation to ourselves, our students, and society to improve.

At the University of South Dakota (2009), the Office of Academic Evaluation and Assessment coordinates the development and implementation of the university's assessment plan, including assisting in the development of measurement and analysis protocols for evaluating student learning. Finally, they collect, analyze and disseminate academic assessment data to help with the improvement of student learning. This includes assessment reports, feedback, blank reporting forms, and scoring rubrics for the degree programs at the University. Also available are information and results from the proficiency exams, the Kansas State student evaluations of teaching, the National Survey of Student Engagement, the Faculty Survey of Student Engagement, the Noel-Levitz Student Satisfaction Inventory, and other campus-wide assessments.

Conclusions

National University is emulating some of the database automation advances made at other universities such as those noted above. With the availability of our AMS system, it is the hope of academic program faculty and their department chairs that the accumulation of PAR data within AMS over five years will allow the 5-Year plan analysis to be made from the cumulative PAR data collected in each of the five years for which the assessment is being made. At present, our database only contains assessment data from the 2008 Program Annual Review but it is our goal that as we add data over the coming years we will be able to reach a point wherein we will be able to do continuous assessment and analysis not just on an annual or five year basis. It is also our goal to use and develop the automated central database so that a faculty member or an administrative official can determine, at any point in time, how effective a given academic course is from a student's or students' learning effectiveness and knowledge retention point of view. We will also be able to determine if our focus on formative vs. summative assessment is having the positive motivational effect on students that we intended. In any case, we believe our investment in a centralized data base that we designed and developed to reduce faculty "busy work" in collecting statistical information in favor or more time in reflective analysis, has enhanced student learning.

References

Anderson, L, et al (2001). A Taxonomy for Learning, Teaching, and Assessing. New York; Addison Wesley Longman, Inc.

Baker, M. (2005). Assessment and Review of Graduate Programs—A Policy Statement. Washington D.C. Council of Graduate Schools.

Delta College (2009). Mission of Student Learning Assessment. From the Internet at http://www3.delta.edu/assessmt/ Assessed April 15, 2009

TaskStream (2009). Accountability Management System. From the Internet: http://www.taskstream.com/pub/AMS.asp Assessed April 12, 2009.

University of South Dakota. Academic Assessment and Evaluation. From the Internet http://www.usd.edu/acadaffairs/OfficeofAcadEvalandAssess/ Assessed April 13, 2009.

Teaching and learning in open and distance learning: how should management of ODL institutions change in order to integrate new technologies?

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Abstract

Distance Education has traditionally been defined as instruction through print or electronic communication media to persons engaged in planned learning in a place or time different from that of the teacher. This traditional definition of distance education is slowly being eroded as new technological developments challenge educators to re-conceptualise the idea of schooling and lifelong learning. At the same time, interest in the unlimited possibilities of individualised distance learning is growing with the development of each new communication technology. Although educational technologists agree that it is the systematic design of instruction which should drive the development of distance learning, the rapid development of computer related technologies has captured the interest of the public and has been responsible for much of the limelight in which distance educators currently find themselves.

Introduction

During the 1980s, and with the associated rapid expansion of communication technologies into everyday life, the appeal of distance learning received a new lease on life. It came to be seen not as simply a tool for reaching underdeveloped areas and people, but as part of the mainstream in higher education and in the corporate environment. For example, Charles Wedemeyer emphasised the individual freedom that, he believes, distance learning confers. He advances the argument that distance learning and newer technologies confer equal access, personal independence and autonomy. Similarly, Wedemeyer's model proposes that a democracy of education for all people regardless of their gender, age, nationality, class, and place is the logical outcome of distance learning (Moore, 1999). His approach assumes that teaching and learning are the prime movers of distance learning, thus he focuses on the pedagogical possibilities. On the other hand, Wedemeyer seems to ignore important structural components such as power and political-economy.

Michael Moore rethinks the concept of distance, arguing that distance should be theorised as a multi-dimensional concept. He suggests that among these dimensions and contrary to previous work, geographical distance is not the most important. Using the term transactional distance, he proposes two major concepts within his theory of learning: structure and dialogue. Moore defined structure as a measure of an educational program's responsiveness to learners' individual needs (Hoffman, 2004). He also defined dialogue as the extent to which, in any educational program, learner and educator are able to respond to each other (Moore, 1991). In other words, structure refers to the design of the instructional program while dialogue refers to the interaction through communication of the learner and the teacher. Moore, in fact, shifted the debate concerning distance learning by pushing it into the arena of pedagogical differences.

For Garrison and Shale, however, educational issues are the fundamental issues in the theory of distance education, regardless of separation of teacher and students. They attempt to focus on the functional basis of education by placing teaching and learning transaction at the core of distance education practice (Garrison, 2000). Garrison added the concept of responsibility and control into the theory of transactional learning, claiming that control and responsibility give students a chance to shape their own educational outcomes. Also, that responsibility and control together will encourage students to assume ownership of their learning and education (Garrison & Archer, 2003).

Distance education and distance learning programs are popular ways for adult learners to attain educational objectives. Moore and Kearsley (1996) write that around the world, most distance education students are adults between the ages of 25 and 50. Consequently, the more one understands the nature of adult learning, the better one can understand the nature of distance learning. The technology associated with this phenomenon allows virtually instantaneous access to instruction at times and places that are convenient for the adult learner rather than for the instructor or the institution.

Distance teaching and learning at the University of Namibia (UNAM)

The Centre for External Studies (CES) was set up as part of the University of Namibia (UNAM) in August 1992. It grew out of the Department of Distance Teaching of the former Academy in the mid 1980s as a purely administrative unit with no academic control or any influence over academic activities. Initially, it offered either the University of South Africa (UNISA) courses or courses very closely modelled on UNISA's pure correspondence courses (Dodds, 1996). It appears that these close links with UNISA, a single mode distance education institution, rather than a mindful policy, were the major determinant in the inclusion of distance education in the Academy's original course offerings. This tradition continued and was taken over by the new University of Namibia when it was established. Therefore, although commitment to the dual mode system was a historical matter, it continued as desirable and necessary.

Fulltime and distance students at UNAM register for the same diploma and degree programmes and follow the same curricula. CES thus continue to serve as an administrative and professional unit through which some of the University's Programmes are offered by distance education. Instructional design, editing, delivery and management of administrative and student support services are the responsibility of CES, while the Faculties are responsible for curriculum decisions, the writing of course materials, and assessment.

We tend to assume that our carefully crafted resources will guide student learning and that students will work through our materials more or less in the manner directed. However, research into distance students' use of study materials (Merland et al, 1990) and the use of formative activities (Lockwood, 1995) suggests that there are far more complex behaviours at work. With their materials laid out before them at the commencement of a term, distance students have greater autonomy than their on-campus counterparts regarding how they go about their study and what they choose to read and do. Not surprisingly, the assessment tasks and what they perceive is expected of them are primary in their minds. Unless the assessment tasks are carefully

interwoven into the study materials, with formative activities supporting summative assessments, our finely crafted resources may well be bypassed altogether (Parry, 2004).

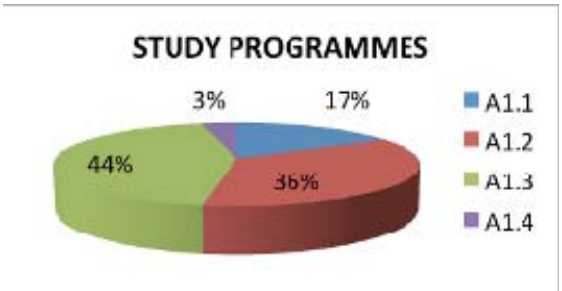
Distance students often have less opportunity in which to diagnose their own errors or mistaken assumptions before they commit to a formal assessment task. For example, it may not be until halfway through a semester or course, when a student's first assignment is returned, that a simple error is discovered, to the detriment of the student's final grade. While fulltime students can often rectify these problems long before they submit an assessment task, distance students do not necessarily have the same kind of opportunities to check their understanding of an assessment task or compare approaches with other students. In order for distance students to be successful, they are more dependent on effective, early communication of assessment requirements, together with well-designed and cohesive assessment tasks, useful and timely support, and a transparent marking scheme that explains how judgments are to be made (Morgan and O'Reilly, 2004).

Distance education is not merely another way to pump knowledge content like a liquid from a full reservoir, the lecturer, into an empty one, the student. In addition, distance education is not just another way to pump some commodity called education from one vat into another. There is a difference of kind here, not just a difference in degree. Within the classroom, lecturers use a variety of means to determine how well students are learning. They use tests, quizzes, examinations, written assignments, and research papers to formally evaluate student achievement and assign grades. To informally evaluate learning, lecturers ask questions, listen to comments and questions from students, and monitor facial and body expressions. However, different challenges face lecturers who must teach at a distance. Although they lack contact with students, they must also use an informal approach to collect data that determines teaching effectiveness, appropriateness of assignments and student comfort with the methods of delivery of instruction.

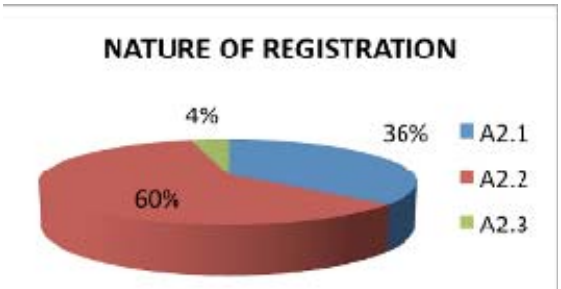
Profile of UNAM students

The following provides a profile of students that were registered in the Faculty of Education at Unamin 2007:

Biographical Information



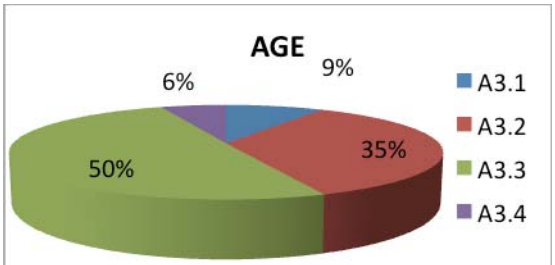
A1.1 = Undergraduate Diploma
A1.2 = Post graduate Diploma
A1.3 = Undergraduate Degree
A1.4 = Post graduate Degree



A2.1 = Fulltime
A2.2 = Distance
A2.3 = Part-time

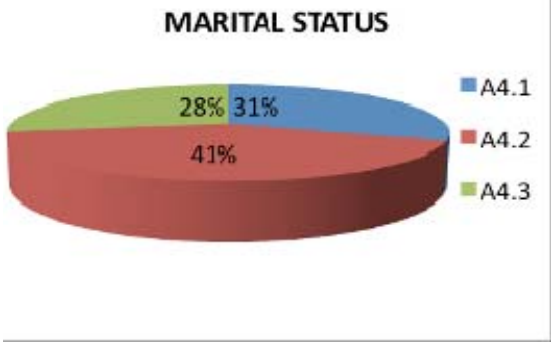
The students who completed the questionnaires were registered for one of an undergraduate diploma, a postgraduate diploma, an undergraduate degree or a post graduate degree. The majority of respondents were registered for the undergraduate degree, which means that they have passed grade 12 with at least 25 points in 5 subjects and a C in English (UNAM, 2008). Students in the post graduate diploma already have a first qualification.

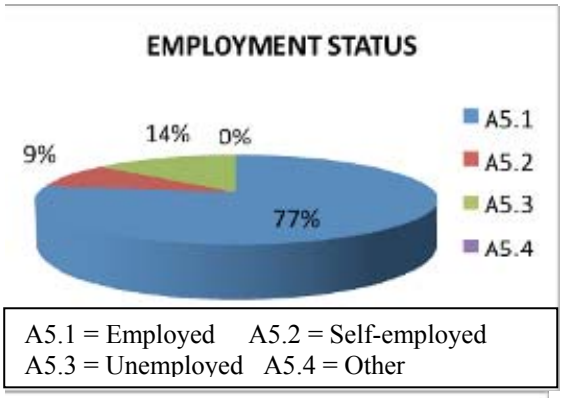
It should be noted that the 36% that was registered for the postgraduate diploma was not the same 36% that was registered fulltime. A very small percentage (4%) attended evening classes.



A3.1 = ≤ 20 years A3.2 = 21 – 30
A3.3 = 31 – 40 A3.4 = 41 – 50

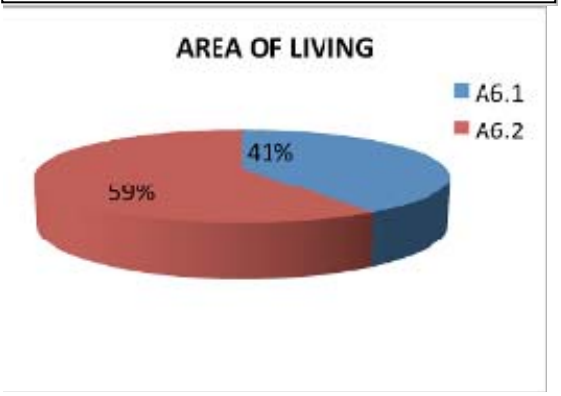
A4.1 = Single A4.2 = Married
A4.3 = Separated





A5.1 = Employed A5.2 = Self-employed
A5.3 = Unemployed A5.4 = Other

A6.1 = Urban A6.2 = Rural

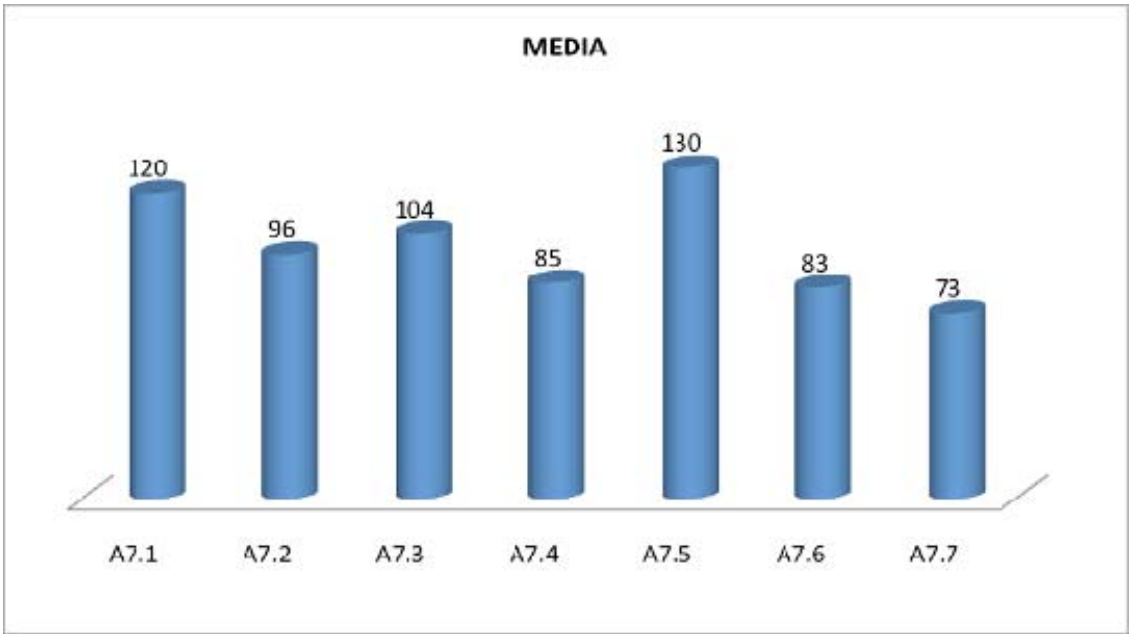


Half of the respondents were quite mature, between the ages of 31 and 40 years old. A cross tabulation with the nature of registration showed that the fulltime students were mostly between the ages of 21 – 30 years.

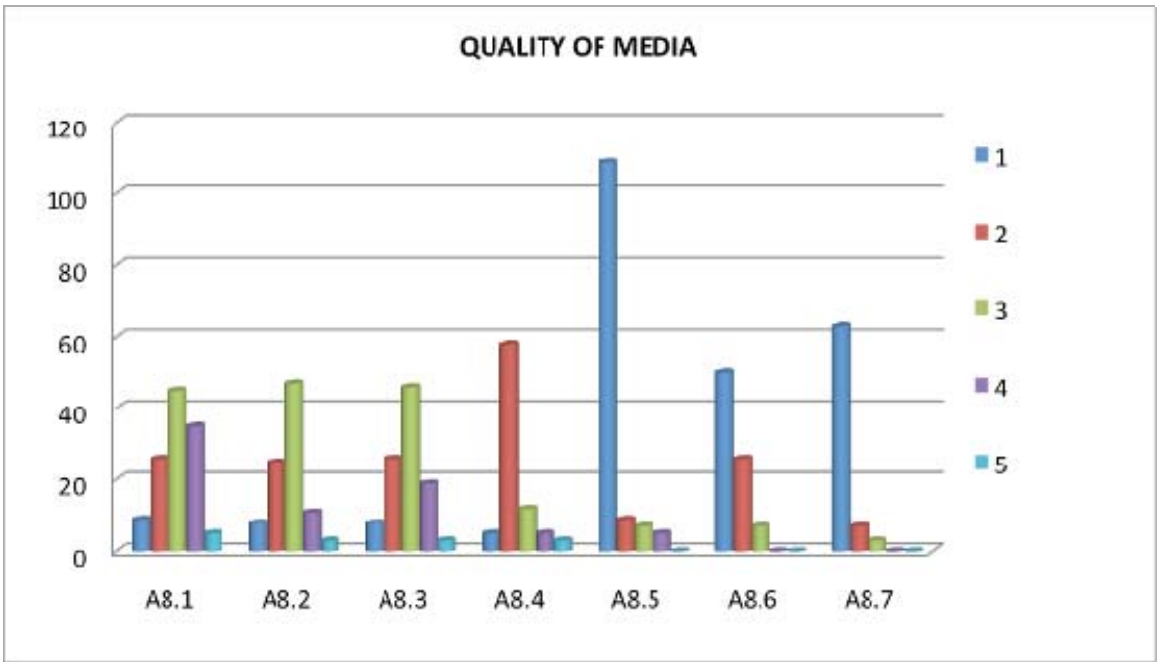
The 41% of students who were married, however, included both fulltime and distance students. Students who were separated (31%) were actually still married, but did not live with their partners for various reasons.

A large number of students (77%) were employed. This number also included both fulltime and distance students. One could assume that students work in order to pay for their studies. In Namibia, qualified workers tend to move to the urban areas. That could explain the large number (42%) of students in the rural areas. Although many of them struggle with distances to the nearest resources, they have no choice as to work in the rural areas in order to make a living.

Access to different media:



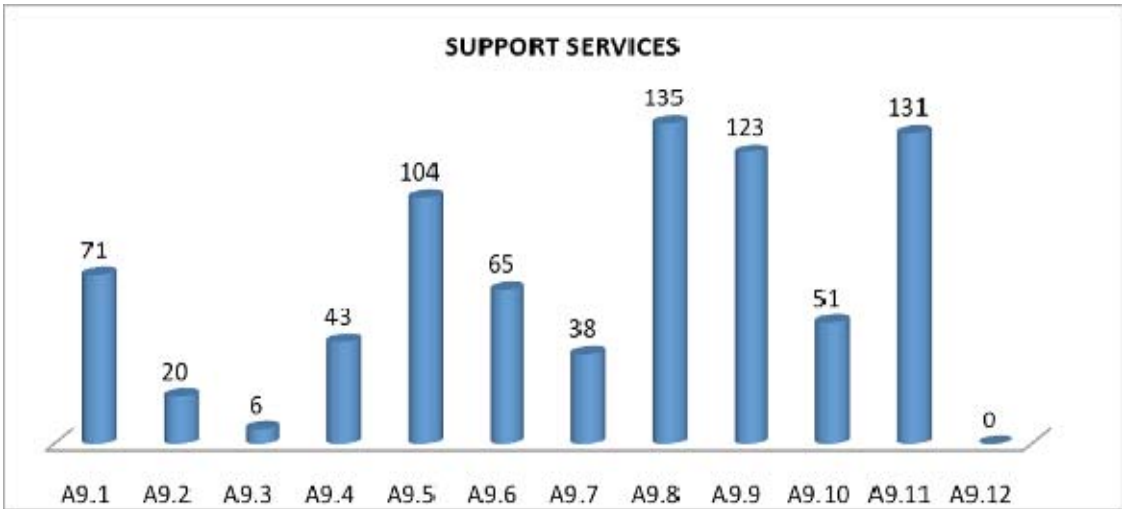
A7.1 & A8.1 = Computer
A7.2 & A8.2 = Internet
A7.3 & A8.3 = E-mail
A7.4 & A8.4 = Library with tertiary level textbooks
A7.5 & A8.5 = Cellphone
A7.6 & A8.6 = DVD Player
A7.7 & A8.7 = Television



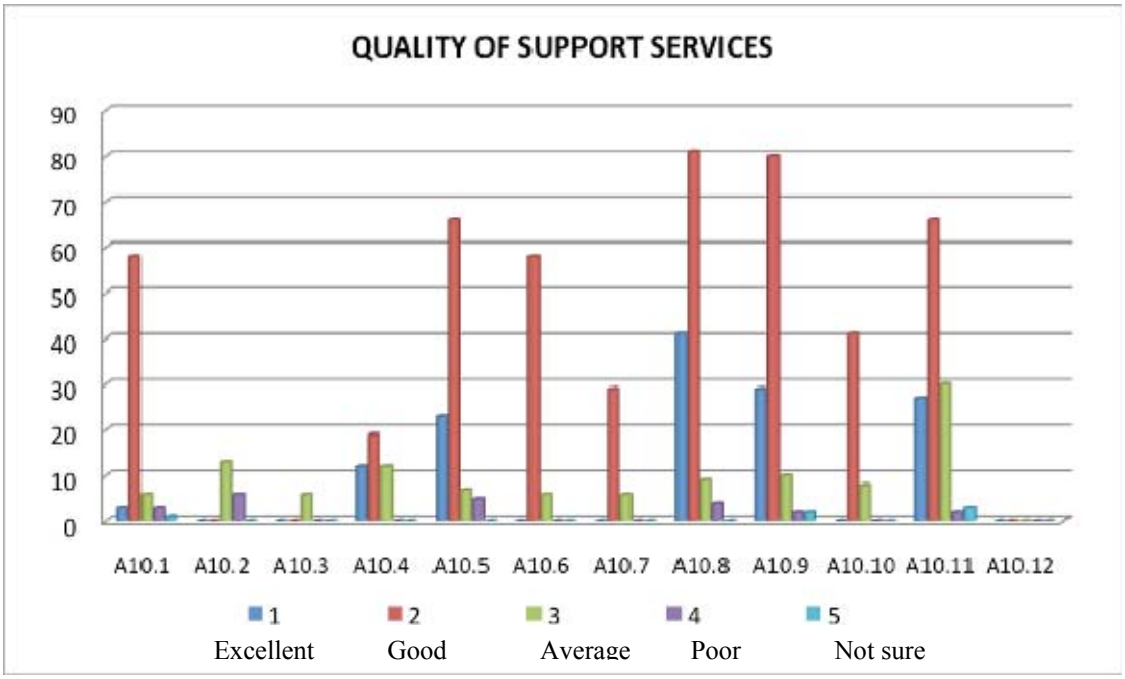
Key: 1 = Excellent 2 = Good 3 = Average 4 = Poor 5 = Not sure

Students had access to quite a number of media; a fairly high number had access to computers, internet and e-mail, apart from cellphones that almost everyone had access to. The quality of the media was actually a matter of concern. The computers, internet and e-mail were all of average quality. Cellphones, DVD players and televisions were, however, of excellent quality. 85 of the 137 respondents (62%) had access to a library with tertiary level textbooks which they rated as "good".

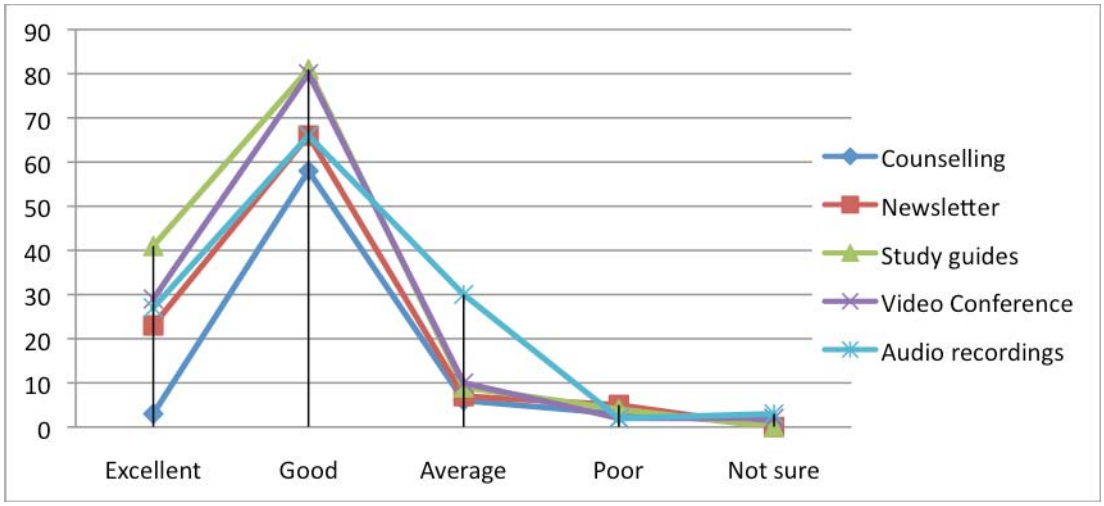
Support Services provided to ODL students



9.1 & 10.1	Counselling	9.5 & 10.5	Students' newsletter	9.9 & 10.9	Video Conference
9.2 & 10.2	Telephone contact with lecturers	9.6 & 10.6	Field trips	9.10 & 10.10	Video recorded information
9.3 & 10.3	Correspondence with lecturers via sms	9.7 & 10.7	Laboratory facilities	9.11 & 10.11	Audio recorded information
9.4 & 10.4	Correspondence with lecturers via e-mail	9.8 & 10.8	Study guides	9.12 & 10.12	Other (specify)



The following support services were provided to more than 50% of the students: counselling, students' newsletters, study guides, video conferences and audio recorded information. The quality of these services was rated as follow:



According to this graph, students were happy with the quality of the services provided to them. The study guides were especially rated quite high and also the video conferences that they received.

However, referring back to the previous two questions about access to media and the quality thereof, it was interesting to note that a high number of students (95%) had access to cell phones (A7.5) and rated the quality thereof as excellent (A8.5). In contrast, only 15% of the students indicated they had telephone contact with lecturers (A9.2) and rated the quality thereof from good to average (A10.2).

The amount of support services an institution can offer largely depends on that particular institution's capacity and resources at its disposal. These support services are, however, important from an emotional perspective. Face-to-face students have many physical clues of their attachment to the institution. Providing support services to distance education students is an important part of creating the feeling of belonging for students who do not have access to face-to-face clues (Molefi, 2002). Students also need access to resources that may be of educational interest to them; all of which are provided for face-to-face students and should be made available in some fashion for students studying at a distance.

Conclusion

Distance Education is a means of bringing education to the doorsteps of people who would otherwise have no access to formal education. It can thus remove barriers to formal education and enable people to access learning while they are working. However, for ODL to be effective, effective management and administration systems need to be put in place.

It is particularly important to make sure that ODL students are not isolated though they may be at a distance. An effective system of two-way communication between student and institution is therefore an important element of good management and administration. It is thus recommended that UNAM develop procedures for defining and reviewing its institutional mission for selecting and controlling the use of technologies.

ODL is distinct only in its organization or in the structure of the components of the educational transaction. The process of ODL in itself is not unique, but adopts methods and techniques appropriate for particular educational goals and objectives (Garrison, 1990). The important task is to pursue effectiveness. The only limitation for ODL is the imagination of educators and their understanding of ODL methods.

References

Dodds, T. (1996). The University of Namibia for the people of Namibia: A vision of Development for the Centre for External Studies. Unpublished.

Garrison, D.R. (2000). Theoretical challenges for Distance Education in the 21st century: A shift from structural to transactional issues. International review of research in open and distance learning, 1 (1), 1 – 17.

Garrison, D.R., Anderson, T., & Archer, W. (2003). A theory of critical inquiry in online distance education. In G.M. Moore & A.W.G. (Eds.), Handbook of Distance Education. London: Lawrence Erlbaum Associates

Hoffman, D. (2004). Encyclopedia of Educational Technology. Retrieved 2 March 2004 from http://coe.sdsu.edu.

Lockwood, F. (1995). Open and Distance Learning today. Routledge.

Morgan, C. & O'Reilly, M. (2004). Assessing open and distance learners. Sterling, VA: Stylus Publishing.

Moore, G.M. (1991). Editorial: Distance Education Theory. The American Journal of Distance Education, 5(3), 1 – 6.

Moore, G. M. (1999). Autonomy and Interdependence. The American Journal of Distance Education 8(2).

Moore, G. M. & Kearsley, G. (1996). Distance Education: A system view. New York: Wadsworth.

Embedded digital textbooks in online courses: data driven study for improving the online learning experience

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Abstract

Chapman University College recently began a pilot program to study the combined delivery of an embedded digital textbook and the corresponding online course from the same online location. The enrolment, student retention and course completion rates were measured and compared against online classes using a physical textbook. Cost factors associated with physical textbooks versus e-textbooks were examined. This paper discusses preliminary results for the first term of the pilot study. Initial findings indicate that students who completed a course utilizing embedded online text were significantly more satisfied, open to using online texts in the future and showed less preference towards physical textbooks. Textbook cost factors appear to impact student satisfaction with both the text and the course. Finally, flexibility regarding course revisions related to updating textbook editions emerges as an important strategic consideration for online faculty and administrators.

Introduction

The needs of today's working adult students are compelling major changes in the way higher education is delivered. Many of today's students are adult learners returning to college to complete a degree or to obtain an important job related certification. Chapman University College (CUC) serves a community of working adult students that also includes significant numbers of military students, many of whom are deployed overseas. Fully online courses allows our students to complete their degree or certificate while working full time or completing active military assignments. However, the physical textbook that traditionally accompanies an online course often presents a challenge for both students and faculty. These challenges include students receiving the correct version of the textbook in time to begin an accelerated term at distant locations. Faculty are challenged to update their online courses to complement new textbook editions within an accelerated term structure and on the publisher's time table which rarely complements non traditional faculty schedules. Rising textbook costs and textbook return policies are a source of significant student dissatisfaction and also pose financial challenges. Lastly, the online student often "attends" class in many locations. For some, portability is seen as a benefit (Advisory Committee on Student Financial Assistance 2007) and lugging textbooks from place to place can be a physical challenge.

In response to these challenges, CUC has partnered with Pearson Publishing and eCollege (CUC's online course delivery platform) to develop an alternative to the

physical textbook for fully online courses. The embedded e-textbook is a "PDF-type" version of the physical textbook that can be embedded within the online course and customized to complement the specific online course. The assigned reading is directly connected to the learning module or the week's assignments via links that are embedded throughout the course. Once the student has accessed the embedded text they can search for key words, use a zoom feature to enlarge or reduce the size of the page, use a highlighting feature, jump to specific pages and print all or part of the text. Students can open the entire e-book and select a chapter. For the initial two term pilot study there is no additional functionality available, such as hyperlinks to additional information or a method to annotate the text or to download the text to additional computers or electronic readers.

For the first two terms of the pilot study CUC is covering all costs associated with the embedded digital textbook. Beginning in the Summer 2009 term, students will be charged for the embedded e-textbook at a rate equal to 50% of the cost of the new physical textbook. In response to feedback from pilot study participants, beginning in the summer term, Chapman will incorporate a download feature to permit students to download the embedded digital text to up to three external devices.

The Study Construct

The pilot program was developed to deliver the text and the course from the same online location. The physical textbook was replaced with the corresponding e-textbook and then embedded into the eCollege online course shell. The embedded online text was provided at no cost to students.

The first phase of pilot program was designed to run over two terms. The Spring I 2009 term included four courses, with approximately 120 students and five faculty members. Three of the courses utilized an embedded digital textbook, and the fourth course utilized open source materials and hyperlinks to public information. Four online courses using a physical textbook were added to the study for comparison purposes. The Spring II 2009 term includes 10 courses, approximately 250 students and 11 faculty members as well as the corresponding number of comparison online courses utilizing a physical textbook.

Students were surveyed during the seventh week of the nine week term via an electronic survey. The survey looked at how students used the textbook, their openness to using digital textbooks for future courses and to measure overall student satisfaction with the course. Some of the survey questions were taken from questions utilized in a study conducted at Portland State University and the City Colleges of Chicago (Allen, N. 2008) as well as a study conducted at the University of Michigan (Samson, P. 2008).

Data was collected to determine whether online courses with digitally embedded textbooks or open source materials resulted in higher enrolments and better student retention rates. The number of students enrolled in each of the classes in the study was counted on the first day of the term, the day after the deadline to drop the course without penalty (Tuesday of the third week of the term) and on the last day of the term.

The student outcome was measured as a "satisfactory grade" (an A, B or C grade) versus an "unsatisfactory grade" (a grade of D or F, an Incomplete or an FW, a failure

to withdraw designation) and then compared to these same measures in the online courses utilizing physical textbooks.

The faculty perspective was measured via a telephone survey of the instructors who taught the three courses with the embedded digital textbook during the first term of the pilot study.

The analysis relating to cost of purchasing the e-textbook for the pilot study was conducted in a similar manner as the study conducted at Portland State University and the City Colleges of Chicago (Allen, N., 2008). The following data was gathered for each textbook required in each of the courses in first two terms of the study.

- Title, Author, Publisher, Edition, New Version (Yes = This term is the last term current version is used or this term is the first term using a new edition of the textbook)
- E-textbook price on CourseSmart
- Retail price for a new book on MBSDirect.com (CUC's online bookstore)
- Retail price for a used book on MBSDirect.com, if applicable, or www.Amazon.com
- Bookstore buyback price, if applicable.

Findings

Student Survey Results

1. How often did you read the assigned readings?
    a. E-Textbook Students: 14% Sometimes / Rarely / Never
    b. Physical Textbook Students: 12% Sometimes / Rarely / Never
2. Did you print the text or read it onscreen? (e-textbook class survey)
    a. Read onscreen: 55%
    b. Printed it: 22%
    c. Both: 23%
3. Did you purchase a physical textbook to accompany the online version? (e-textbook class survey)
    a. No: 77%
    b. Yes: 20%
4. Did you purchase the textbook for this class? (physical textbook class survey)
    a. Yes 91%
    b. No 3%
5. How satisfied were you with the course content and your learning experience in this class?
    a. E-Textbook Students: 87% Very Satisfied / Satisfied
    b. Physical Textbook Students: 77% Very Satisfied / Satisfied
6. Would you be open to using an online textbook in other classes?
    a. E-Textbook Students: 86% Yes
    b. Physical Textbook Students: 51% Yes
7. If cost were not a factor, would you prefer a printed textbook or an online textbook?
    a. E-Textbook Students: 66% preferred printed textbook
    b. Physical Textbook Students: 81% preferred printed textbook
8. Do you ever choose to keep textbooks for future reference?

a. E-Textbook Students: 85% Yes/Depends on Textbook
b. Physical Textbook Students: 91% Yes/Depends on Textbook

9. If you also attend on-ground classes, do you carry your textbook to class?
    a. E-Textbook Students: 90% Yes
    b. Physical Textbook Students: 93% Yes

Written student comments were overwhelming positive. The following two student comments summarize the positive student outlook: *"I really liked having the text online because I do my work at a variety of places including my work, home, in-laws and on vacation. This way I did not have to lug around my text! It was great, and actually, I read more of this text than I did of my physical text for another class." "The online textbook was incredibly helpful. The book was available right away rather than having to wait a week or so like other classes…"* The survey data indicates once students experience a course utilizing an online text, they are more open to the use of an online text for future courses and their preference towards printed textbooks drops considerably.

By far the most encouraging indicator from the study is that significantly more students considered themselves to be either "very satisfied or satisfied" with the embedded digital textbook/open book classes. 87% of students in embedded digital textbook courses rated themselves as very satisfied or satisfied with their overall course experience versus 77% of students in online courses utilizing physical textbooks. This is a dramatic increase in student satisfaction and this statistic warrants further study and analysis when the second term data becomes available. We are especially interested in assessing relative student satisfaction rates between embedded digital text and physical text courses once students are responsible for a portion of the embedded textbook cost. This data will not be available until the conclusion of the summer 2009 term.

Enrolment and Retention

Student Count	**1/19/2009 ***	**2/3/2009 ****	**3/8/2009*****
Embedded Digital Textbook Classes			
EDUU 413/513 9201	18	19	19
EDUU 413/513 9202	17	18	17
CJCU 460/560 9201	9	9	8
PSYU 328 9201	20	22	22
EDUU 451/551 9201	24	29	28
EDUU 451/551 9202	24	25	24
	112	**122**	**118**
Physical Text Classes			
FSNU 200 9201	18	19	18
PSYU 324 9201	19	21	21
PSYU 324 9202	16	19	19
PSYU 323 9201	20	19	18
PSYU 323 9202	18	20	20
OLCU 350 9201	31	27	24
	122	**125**	**120**
* Last day of regular enrolment period			
** Last day to add a course			
*** Last day to drop without record of enrolment			

Table 1: Enrolment and Retention

The add rate was 9% for the embedded/open text courses versus 2% for the physical textbook courses, and drop rates were not significantly different. Encouragingly, total enrolment in the embedded textbook courses was up 5% from start of term, while enrolment in the physical textbook courses was down 2% from start of term. Second term data will be useful in supporting or refuting the first term data and supplemental investigation to determine the reason for the higher add rate and enrolment numbers will be considered as further data becomes available.

Student Outcomes

Student Counts	**Satisfactory Grades A, B & C**	**Unsatisfactory Grades D, F, I, FW**
Embedded Digital Textbook Classes		
EDUU 413/513 9201	18	1
EDUU 413/513 9202	17	0
CJCU 460/560 9201	8	0
PSYU 328 9201	18	4
EDUU 451/551 9201	25	3
EDUU 451/551 9202	20	4
	106	**12**
Physical Text Classes		
FSNU 200 9201	16	2
PSYU 324 9201	20	1
PSYU 324 9202	17	2
PSYU 323 9201	16	1
PSYU 323 9202	18	2
OLCU 350 9201	23	1
	111	**9**

Table 2: Course Grades/Outcomes

Student Outcomes are slightly inferior for the embedded/online text courses. Again, second term data will be useful in correlating this outcome.

Faculty Survey Results

1. How satisfied were you with your instructional experience?
   100% Very Satisfied
2. Would you be open to teaching another online course with an embedded digital textbook?
   100% Yes
3. Did you use the physical textbook or the embedded digital text for your instructional preparation and faculty work?
   33 % physical text, 67% both

The three faculty members who taught the embedded digital textbook courses were surveyed. Although overall faculty satisfaction results are extremely encouraging for embedded digital text courses, the survey sample of three is too small for analytical findings. Among the three faculty surveyed there was a strong preference to have the

physical textbook on hand. The study will continue to track faculty preferences and textbook usage behaviors over time.

Cost Comparison

Course Name:	**CJCU 460**	**PYSU 328**	**EDUU 413/513**
e-Textbook Price:	$ 31.50	$ 69.27	$ 51.50
New Book Price:	$ 63.00	$ 138.53	$103.00
Buyback Price:	$ 15.75	N/A	N/A
Net Cost:	$ 47.25	$ 138.53	$103.00
Used Book Price:	$ 45.00	$ 81.04*	**
Buyback Price:	$ 15.75	N/A	N/A
Net Cost:	$ 29.25	$ 81.04	$103.00
* average price on Amazon, ** 8th edition not listed for sale on Amazon			
N/A – Publisher has updated edition; students may no longer sell back this edition			

Table 3: Textbook Cost Comparison

Use of a new edition of a textbook measurably affects cost; if this is the last time CUC is using the current edition, the student will not be able to sell back the book. Therefore, the student's net cost will be equal to the purchase price of the book. Alternatively, if the text edition is new, the student will not have the option of purchasing a used textbook and would have to pay the higher new book price.

Some of the costs associated with the online text were not measured within the study, as 43% of the students in the embedded/open text courses reported printing some or all of the electronic content. Therefore, the student or the Chapman campus technology lab (where students can utilize Chapman computers and print free of charge) incurred some or all of the costs of paper and printing. Informal reports from the campuses suggest that students in embedded digital text courses made regular use of Chapman labs to print out textbook material throughout the term.

Lastly, there is an unmeasured cost of not having the textbook available for future reference as access to the text currently expires with completion of the course. Several students noted that they "…will miss having a hard copy for reference in the future". To address this concern, beginning in the summer term students will be able to download the embedded text to up to three devices external to the course. This new functionality will allow students to retain access to the text after completion of the course. The study will continue to monitor student perspectives and any changes in perspective that may occur when the additional functionality becomes available.

Control of the New Edition Process

Once an embedded digital textbook is set up for a specific course, one can choose to stay with the textbook edition for as long as one wants. The embedded digital text does not go out of print even if the publisher debuts a new edition of the physical version of the textbook and all of the old edition books become unavailable. This allows faculty

and online administrators to gain control over the decision making, timing and regularity of incorporating a new textbook edition into the course.

CUC faculty prefer to do major course updates, such as revisions to reflect next generation textbooks, to their online courses during term breaks or an off term. These opportunities rarely coincide with the timing of new textbook editions. Sometimes faculty comment that the work required to redesign a course to incorporate a new textbook edition may not be the best use of their course development time, especially if the new edition significantly rearranges the critical course information but provides little relevant new information. In cases such as this, faculty can elect to stay with the embedded text and devote their redevelopment time and effort to improving the instructional design of the course or working on aspects of the course that are independent of the text.

Online administrators are always looking to improve the process of bringing new faculty onboard to teach existing online courses. CUC prefers new online instructors begin by teaching an existing online course so they may focus exclusively on developing their online teaching skills, and not on course redesign issues.

Of the twenty one embedded digital textbooks utilized in the first phase of the pilot program, nine (42.5%) are currently scheduled for edition updates within the next few months. This will require a systematic approach to redesign decisions as well as a thoughtful and judicious assignment of faculty resources by the online administration team. But now, instead of the publisher's schedule dictating course updates and faculty feeling hurried to update their courses when the new text edition arrives, CUC is able to manage these textbook and online course changes and to schedule the redesign work into and around other key university projects and mandates that are pending and being given resource priority.

Are there dangers to this new found control in the timing of course revision work? Yes, there is the danger of staying too long with an outdated edition and losing the contemporary focus of the courses. Will this be a gift for lazy faculty who don't want to revise their courses? It is too early to tell how the benefits of this new technology or the dangers that it presents will play out, but at a minimum these are significant new decision points for online course faculty and administrators. CUC plans to track the embedded digital text edition changes over time and do comparative studies against the publisher's new edition schedules and provide data driven analysis on this issue.

Summary

The first term of the pilot study shows encouraging results in the areas of add rates and student retention. The most dramatic positive change is in student satisfaction, which is considerably higher for students in the embedded/open text courses. However, as the students did not incur a textbook cost for these classes, it is unclear how much of their "satisfaction" was due to the free text. The study will closely monitor the student satisfaction results in the upcoming spring term where the text is again included at no charge and in the coming summer term when students will be charged a fee for the embedded text. The study will compare these survey outcomes for free and fee based texts and attempt to make further assertions when data is available in the fall. Given the Spring I term survey results, faculty are not ready to abandon physical textbooks.

The pilot study continues with the current Spring II term. The program will then move to into a beta test phase beginning in the Summer 2009 term. The e-textbooks will be downloadable, but the students will be charged for the embedded e-textbook at a rate equal to 50% of the cost of the new physical textbook. Beginning in the fall, CUC intends to begin working with other publishers to expand the embedded digital textbook offerings. The study will continue to accumulate data and to provide ongoing analysis and comparison through at least the end of 2009. Chapman is actively seeking grant funding for a significant decade long study of these topics.

References

Advisory Committee on Student Financial Assistance (2007). *Making College Textbooks More Affordable*. Washington DC: ACSFA

Allen, N. (2008). Course Correction: How Digital Textbooks Are Off Track and How to Set Them Straight. In *MakeTextbooksAffordable.org* and retrieved from http://www.maketextbooksaffordable.org/course_correction.pdf.

Cavanaugh, T. (2004). Using Electronic Texts as the Course Textbook. *Proceedings of Society for Information Technology and Teacher Education International Conference, 2004,* Association for the Advancement of Computing in Education, Chesapeake, VA. 1113-1117.

Guess, A. (2008). E-Textbooks for All. In *InsideHigherEd.com* on October 7, 2008 and retrieved on January 5, 2009 from http://www.insidehighered.com/news/2008/10/07/ut

Hannon, C. (2008). E-Texts in the Classroom. *EDUCAUSE Quarterly*, 31 (1), 12-13.

Nelson, M. (2008). E-Books in Higher Education: Nearing the End of the Era of Hype? *EDUCAUSE Center for Applied Research (ECAR) Research Bulletin*, 2008.

Powers, E. (2008). Different Tacks on Textbook Choice. In *InsideHigherEd.com* on February 19, 2008 and retrieved on January 5, 2009 from http://www.insidehighered.com/news/2008/02/19/textbooks.

Samson, P. (2007). Online Textbooks Could Work, But... In C. Montgomerie & J. Seale (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2007* Association for the Advancement of Computing in Education, Chesapeake, VA. 4369-4376.

Factors influencing success in the delivery of business courses through Web CT in remote locations: a case study of a collaborative partnership between Curtin University of Technology and the African Virtual University

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Abstract

There is limited access to tertiary education for students in remote African locations. In 1997 the World Bank launched the African Virtual University which collaboratively "facilitates the use of effective Open Distance and eLearning (ODeL) Methodologies in African Tertiary Education Institutions" (2007). As collaborating partners, lecturers from Curtin University of Technology in Western Australia utilised Web CT to deliver the Bachelor of Business (BBA) into four East African universities; Addis Ababa University (Ethiopia), Kigali Institute of Science & Technology (Rwanda), Kenyatta University (Kenya), University of Dar es Salaam (Tanzania). This paper presents a case study which describes the deployment of Web-CT into these locations. The successes identified in this case study refer, particularly, to student completions. Due to environmental conditions present at the time of the AVU-BBA project and documented in the literature the project encountered difficulties. Some references are made to the African students' expectations concerning their distance and e-learning experiences and capacity building as an outcome of the AVU and Curtin University of Technology partnership. As a result of this research, recommendations are made for the successful delivery of distance and e-learning in similar African rural and remote locations.

Introduction

The African Virtual University (2007) was established in 1997 as a World Bank initiative to facilitate distance learning and e-learning through collaborative partnerships with European, North American and Australian universities. In particular, the AVU-BBA was an initiative in which four universities in Africa, in collaboration with Curtin University of Technology in Western Australia, delivered the Bachelor of Business Administration (BBA) degree course via the Internet and other channels. The four African universities were Addis Ababa University in Ethiopia, Kigali Institute of Science and Technology in Rwanda, Kenyatta University in Kenya and the University of Dar es Salaam in Tanzania. The project commenced in 2004 with an initial intake of students; a second cohort commenced in 2005. Students began to graduate from these courses in 2006 and 2007 respectively. Additionally, in 2007 and 2008 some students who initially commenced in the degree course graduated with a Diploma of Commerce. Distance and e-learning education within the AVU-BBA project spanned a period of five years.

In 2009 Mark Graber, who had been involved with the project from its inception, and Susan Bolt conducted research to develop a case study which described the factors required for successful delivery of collaborative distance and e-learning programs. Quantitative data concerning student completions were collected from Curtin University of Technology Student One databases and qualitative data about factors affecting the course delivery were collected as a result of interviewing key informants involved in the AVU-BBA project. In this paper, the researchers provide information about the background to the project and a review of pertinent literature; the results of the research are presented in relation to setting up the project, the delivery of the course materials and the outcomes of the project. Finally, the researchers make recommendations for the future delivery of distance and e-learning courses in regional and remote locations.

Background to AVU Distance Education

Concern for African youth who lacked opportunities to engage with education led to the establishment of the World Bank's African Virtual University; prior to this only 3% of African youth enrolled in a college education (Light, 1999). When the AVU established the concept of an interactive instructional telecommunications network to deliver distance education it was relatively new and innovative; business education curricula delivered via Internet access was the first of its kind in Africa.

As a virtual organization, the AVU was linked electronically to its educational partners around the globe with the intention of rolling out distance education in three distinct phases. In the first phase Internet Technology and Computer Programming certificate courses were delivered to African students enrolled in the AVU; as an organisation without boundaries the AVU was situated within existing African universities but it remained separate from the host sites. In collaboration with universities from the United States of America, Canada and Europe the AVU delivered technology based certificate courses (Ondari-Okemwa, 2002). In 1999 approximately 5000 students completed at least one semester-long course (Light, 1999).

Phase Two, the delivery of undergraduate business degree programs, was due to commence in 1999 but started later (Ondari-Okemwa, 2002). In 2003, the partnership between the AVU and Curtin University of Technology in Western Australia was established to deliver a Diploma of Business course to two cohorts of students in the four remote African universities and to, subsequently, build capacity in each of the four AVU partners. The intention was for successive BBA degree programs to be delivered after the termination of the partnership. At the same time, the Royal Melbourne Institute of Technology (RMIT) in Victoria gained funding to deliver undergraduate Computer Science degree and diploma programs in a similar collaboration with the AVU (2003). According to Ondari-Okemwa (2002) the third phase was intended to deliver science curricula but it was not know when this would begin.

Constraints Impacting on AVU Projects

As is common with any innovative educational program, unidentified variables emerge throughout implementation. As early as 1992, Moussa and Schware (1992, in Ondari-Okemwa, 2002) identified five major constraints to implementing the AVU initiative; many of these constraints were also cited by Mutula (2001). Institutional weakness undermined the planning phase; hence there were inadequate systems, facilities and

technology. There was a lack of qualified staff and a high staff turnover rate. Moreover, staff did not function effectively in teams. The lack of trust between the diverse ethnic groups of the AVU made it difficult to establish a common vision for projects. Furthermore, the poor economic performance in countries like Kenya meant that lecturers were not well remunerated and, consequently, sought better employment opportunities. Typically, the cost of projects was underestimated; so, there were delays and some projects were not completed. Environmental constraints such as the lack of equipment, poor telecommunications and limited electricity supplies undermined the delivery of distance education which depended on these resources. In countries such as Kenya which was one of the first African countries to connect to the Internet, access was restricted (Mutula, 2001; Ondari-Okemwa, 2002).

Issues Related to the Delivery of Distance Education

Keegan (1980, 1996 and 2002, in Bryant, Kahle, & Schafer, 2005) noted five defining elements of distance education as shown in Figure 1. From this, Bryant, Kahle, and Schafer (2005) proposed a model of distance education comprised of communication media, the educational organisation, the learner and the teacher; each element has implications for the successful delivery of distance education.

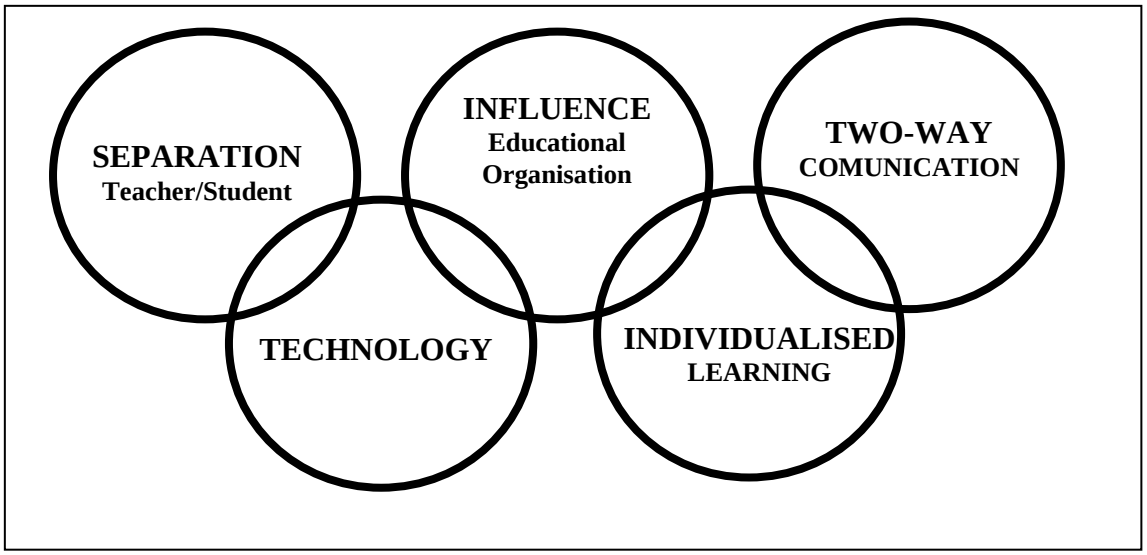

Figure 2: Keegan's Defining Elements of Distance Education

In the initial phase of delivery, North American lecturers communicated via video recordings which were routed via fibre optics, ISDN lines, or satellite to an uplink in Washington DC. The success of the program was attributed to the immediate feedback students received from two-way telephone communication with the lecturers (Light, 1999).

Many of the issues raised by Mutula (2001) and Ondari-Okemwa (2002) were evident in the AVU-BBA. Interestingly, unrelated studies on the delivery of distance education by Compora (2003, in Bryant, Kahle and Schafer, 2005) found that institutions typically did not conduct a needs analysis before embarking on a distance education project. Also, in distance education there were high development costs, labour intensive

administrative procedures and the need for staff development and support (Bryant, Kahle and Schafer, 2005). Montelpare and Williams (2000, in Bryant, Kahle and Schafer, 2005) noted that academics delivering distance education were frustrated because of equipment failure, inadequate technology and Internet inaccessibility; students, too, were concerned about these issues. In the AVU-BBA context, students encountered limited educational opportunities and satisfactory facilities. In distance education the quality of student learning is significantly dependent upon the effective assessment of students' prior knowledge; the availability of high quality interactive learning resources; individualised learning plans; the integration of continuous assessment; timely feedback and interaction with academics and student colleagues (Bryant, Kahle and Schafer, 2005).

Research Methodology to Investigate the Second Phase AVU-BBA Project

The aim of the research was to develop a case study that would describe the process and outcomes of the collaborative partnership between the AVU and Curtin University of Technology in relation to the delivery of the Bachelor of Business Administration (BBA). Although the project was managed centrally by Curtin University, the course was delivered by a small team of lecturers within the Curtin Business School (CBS). Therefore, in this research a group of key informants were interviewed in relation to their roles in the project. Two central managers and two CBS lecturers were interviewed and their responses collated and analysed. Data saturation became apparent as common themes emerged from informants' responses. The information in subsequent sections emerged as a result of interviewees responses to the research questions. In addition, records of AVU students' enrolments and course completions were accessed from Curtin's Student One database. Table 1 below shows that 350 students participated in the AVU-BBA project from 2004 to 2008. Further information about student completions will be addressed in the section on the outcomes of the project.

University	Course	2004	2005	2007	2008
Addis Ababa University	**Degree**	71	107	0	0
	Diploma	0	0	15	0
Kenyatta University	**Degree**	14	22	0	0
	Diploma	0	0	0	1
University of Dar es Salaam	**Degree**	15	10	0	0
	Diploma	0	0	1	0
Kigali Institute of Science & Technology	**Degree**	40	49	0	0
	Diploma	0	0	3	2

Table 1: Numbers of Student enrolled in AVU BBA Degree & Diploma Courses

Setting up the AVU-BBA Project

Interviewees in this case study provided the following information about setting up the AVU-BBA project. The Australian Government awarded the tender to deliver business degree programs in collaboration with the AVU to Curtin University of Technology. So, the two parties negotiated a contract to deliver the BBA to two cohorts of students and build the capacity of AVU staff involved in the project. A subsequent change in the leadership of the AVU resulted in a move away from the initial contractual arrangement

and funding allocated for building the capacity of the four partner universities and the AVU became unviable.

Throughout the AVU-BBA project, leaders and managers from Curtin University visited the four African universities where the BBA was delivered. During these visits, teams from Curtin University were shown the campus' facilities and other sites of interest by their hosts. Typically, there were more visits by managers to the sites than by lecturers; one manager made twelve such visits to the four university locations. Even so, consistent with Compora's (2003) findings, lecturers reported that a needs analysis was not undertaken; they had no significant input into the following key areas; (i) determining what types of equipment was being used, (ii) the facilities that would be used for conducting the classes and (iii) the technical skills capability of assistants to university academic teaching staff.

Delivering the Course Materials

Results from the interviews provided the following information about delivering the AVU-BBA course materials. The discussion relating to the delivery of course materials has been structured according to Bryant, Kahle and Schafer's (2005) model of distance education; that is, the communication media, educational institutions, teachers and learners.

The Communication Media

Prior to the AVU-BBA course delivery, a central WebCT Campus Edition 3.7 server was located in Johannesburg, South Africa, which broadcasted Internet packets to the four partner universities via satellite. Students accessed WebCT learning materials and news forums via learning centres attached to each university. Live and pre-recorded video was also periodically broadcast to students who viewed the materials in lecture theatres. The satellite link was only one-way, central to local. Two-way satellite transmission was planned; however, due to the unreliable satellite connection pre-recorded videos were often posted to the four university partners.

Student PC workstations at each local site transmitted Internet packets via intranet, phone line and an ISP. Bandwidth in the local to central direction could vary between 28.8KBPS and 64KBPS. Each university partner had a WebCT Campus Edition 3.7 server installed with copies of learning materials from WebCT central in Johannesburg. Each local WebCT server maintained its own local news forums. Synchronising material on the central and local WebCT servers was completed via a manual upload process.

Issues of access to technology still remained. There were insufficient numbers of workstations available, electricity supplies were inconsistent. The implementation of uninterruptible power supply (UPS) machines for backup reduced downtime. During initial visits, CBS managers were shown facilities and resources that appeared adequate but by the commencement of the course, facility allocation had changed. RMIT had also won a tender to deliver distance education through the AVU. Consequently, there were more students enrolled in courses than could be catered for by the existing facilities and equipment.

The Educational Institutions – Introducing Curtin University of Technology

Already, the AVU has been described; Addis Ababa University in Ethiopia was selected as the lead partner, by virtue of the highest number of enrolled students. Curtin University provides tertiary education for more than 40,000 students in local, rural, remote, national and international locations and is Western Australia's largest and most multi-cultural university. Hence, lecturers in CBS are experienced deliverers of distance education; via the Blackboard Learning Management System (LMS) this is used across all CBS units.

The common themes that emerged from interviews with Curtin staff members were consistent with the literature cited earlier in this paper; for example, a thorough needs analysis was not conducted at the outset. Hence, there was a lack of clarity about the project goals and the partners did not share a common vision; *the roles, responsibilities and expectations weren't clear*. Additionally, there was insufficient consultation in relation to the culture and locations involved in the delivery of the courses. Some key elements of program delivery were marginalised; *we didn't identify teething problems and fix them … we failed to evaluate and improve*. Furthermore, issues of sustainability were overlooked; *everyone does the one-off but nobody builds capacity*. Although Curtin staff members were experienced deliverers of distance education and the collaborative partnership was established and funded, other factors undermined the project's chances of success.

The Teachers

Although Curtin lecturers were seasoned deliverers of distance education, in this situation they operated under certain constraints. For example, in delivering the AVU-BBA course, access to technology in Africa limited them to using CD, video and hard copies of resources rather than a learning management system administered over the Internet. The videos were often developed in rushed circumstances with little or no feedback. In 2004 one lecturer videoed his lectures and posted them to the African locations; he also visited all four locations with the project manager to monitor the project and deliver face-to-face lectures for the students enrolled in the AVU-BBA program. In 2005 another lecturer was videoed at Curtin University delivering 10 modules in two days and he did not visit the African locations at all.

African university academics' conceptual and practical understanding in the delivery of distance education differed vastly from Curtin lecturers. In many cases the African lecturers had part-time contracts and unit coordinator roles had not been assigned to specific individuals – so communication between the AVU-BBA partners was difficult. The African lecturers were typically younger than their counterparts at Curtin and less experienced in teaching and learning fundamentals.

The Students

In 2004, students were invited to enroll in a three year business degree course or in a one year diploma course. Students in Kenya, for example, wishing to enroll in the degree course were required to have a Kenyon Certificate in Secondary Education (KCSE) C+ average, including C+ passes in English and Mathematics; those enrolling in the diploma courses were required to have achieved this at C level. This was not

consistent across the four universities. Incomparable entry enrolment infrastructure operated mutually exclusively within each of the four universities. Students were required to complete an application form and pay for their own tuition. A CBS lecturer described the students as so interested that it was difficult to get them to leave after the lectures finished; "*all of them wanted to do well and find opportunities for themselves and their families"*.

The Outcomes of the Project

A number of constraints have been identified that could suggest that it would be unlikely for such a project to reach a successful conclusion. However none of the constraints dampened the student's individual spirit or the level of diligence and intent shown towards their studies. There were a number of successful outcomes from the AVU-Curtin BBA project, for example 167 AVU students graduated with a Bachelor of Business Administration and 21 students graduated with a Diploma of Commerce. The percentages of students who graduated from the AVU-BBA courses from each university are shown in Table 1.2, below. Overall, in the degree course 50% of students graduated; in the diploma course 87.5% of students graduated. It must be noted that all of the students who entered the diploma course were originally enrolled in the degree course.

AVU Location	Degree	Diploma
Addis Ababa University	49.7%	100%
Kenyatta University	56.7%	100%
University of Dar es Salaam	84%	0%
Kigali Institute of Science & Technology	41.5%	71.4%

Table 2: Percentage of Students who Graduated

Even though it was not possible to build the capacity of the AVU partners through this project and there were many obstacles along the way, the students who graduated benefited and Curtin lecturers who participated gained from the experience. Looking back on the project through this research, it has confirmed what was previously stated in the literature regarding the set up and implementation during the initial phase of the AVU distance education program. Moreover, this reflective process has yielded several recommendations for projects of this nature in the future.

Recommendations

In light of the four defining elements of distance education as defined by Bryant, Kahle and Schafer (2005) and responses from the research participants, the following recommendations are made:

1. Prior to the commencement of distance education programs a situational analysis and needs assessment should be conducted. This would include determining what types of equipment and facilities are necessary and available and the technical skills and capacity of academic staff and their assistants.
2. Establish strategies to monitor and evaluate the project.
3. Establish suitable benchmarking targets to maintain total quality management of the project.

4. Establish and implement strategies to build the capacity of those involved in the project so that once the project is completed the delivery of distance education will be enhanced and sustainable.

Conclusion

The AVU-BBA partnership was a Phase Two AVU project; degree and diploma programs were delivered over a five year period from 2004-2008. The same conditions and constraints that were reported in the literature concerning Phase One projects also impacted on this project. As a result of the project 350 students participated; 188 students graduated. The importance of following sound project management procedures, such as conducting a situational analysis, monitoring the project, and building the capacity of participants were highlighted in the recommendations. Even though the AVU-BBA partnership encountered difficulties, it was a worthwhile project from which students gained an education and academics gained insight into what is required to successfully deliver distance education programs within the African continent.

References

(2003) Australia launches degree courses in Africa, *African Business*, 283, 27. Accessed 11 February, 2009 from ABI/INFORM Global.

(2007) African Virtual University: About –Background, Accessed 11 February, 2009 from http://www.avu.org/inner.asp?active_page_id=|233|227|130|224|36|81|133|59|235|230|57|25|59|137|130|247|199|247|88|2|5|229|230|84|33|195|250|204|236|221|65|94|229|226|32|14|138|216|97|96|118

Bryant, S.M., Kahle, J.B. & Schafer, B.A. (2005) Distance education: A review of contemporary literature, *Issues in Accounting Education*, 20 (3), 255-272.

Light, D.A. (1999) Pioneering distance education in Africa, *Harvard Business Review*, 77 (5), 26.

Mutula, S.M. (2001) The IT environment in Kenya: Implications for libraries in public universities, *Library Hi Tech*, 19 (2), 155-166.

Ondari-Okemwa (2002) Challenges of harnessing virtual information resources in Kenya: The case of the African Virtual University, Journal of Information Science, 28 (4), 321-329.

Acknowledgement of others' contributions as a peer facilitation skill in online discussions

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Abstract

Our experience is reflected by the experience of other authors, suggesting that the 'continuous evolution of learning technologies requires new competencies and a further study of roles and competencies' (Williams, 2003: 47). There is a large body of literature which provides guidelines for tutors in online education on how to make a course successful (see Salmon, 2008; Salmon, 2002, Holmes and Gardner, 2006, Hartley et al, 2005), but there is little literature available on how to be a successful e-student. This study is a part of a research project[1] which attempts to bridge this gap by focusing on students' interpersonal skills in virtual learning environments (VLEs). It has provided guidelines which have been used to produce resources aimed at increasing students' and tutors' awareness of interpersonal skills in an online setting.

Introduction

Distance education used to be based on the instructional model and traditional teaching materials were simply adjusted from traditional classroom to distance education circumstances. This traditional kind of teaching, where the teacher is the deliverer of objective knowledge and a student is a passive recipient, is referred to as instructivist (Haughey et al, 2008). The constructivist approach, on the other hand, deems interaction to be central to the learning process and regards knowledge as relative, not a given, and as constructed by the learner who relies on his or her experience (Vrasidas and MacIsaac, 2000: 105). It also puts an emphasis on collaborative learning, and argues that knowledge construction is a result of shared, not individual experience (Prawat and Floden, 1994). It is argued that online teaching environments are excellent 'venues' for learning and teaching approaches derived from constructivist epistemology and those which emphasise the social aspect of learning (Kehrwald, 2008). Online learning environments are social–relational systems driven by the exchanges between individual actors in the environment (Kehrwald, 2008). We argue that the variations of online learning, such as collaborative work, are to a large extent likely to depend on interpersonal skills which shape the communication processes between students in the course of their study (MacAlpine, 2000: 69). Literature confirms the positive relationship between a high level interpersonal skills and good student retention and satisfaction with online courses (Rovai, 2003: 11). We believe that a well-grounded knowledge of the ways in which interpersonal skills work in the virtual space may help to make the online teaching and learning experience more effective and enjoyable.

[1] funded by the LearnHigher CETL, www.learnhigher.ac.uk

Methodology

The interpretive paradigm was adopted as the nature of the research is exploratory. The aim is to gain a deeper understanding of interpersonal skills that occur and/or are absent in the online educational environments. Our approach is strongly linked to grounded theory, in the sense that we have set out without any hypothesis in mind (Glaser and Strauss, 1967).

The research sample

In the data collection we employed purposive sampling. The sample in the research is a maximal variation sample, selected to represent diversity of e-students' experience (Maykut and Morehouse, 1994: 57). As the study is qualitative, we were more concerned with validity than generalisability; therefore, we did not aim to build a random sample. Data produced by cohorts in the study were made available by University of Hull, University of Huddersfield, and University of Leeds.

- **University of Leeds data** (further referred to as Module A)
  Produced using transcripts from an on-line masters level course (MA ICT and Education) module, 'Learning with Virtual Worlds'. The data were retrieved from synchronous discussions using the First Class VLE. Students were mature professionals with a background in education, and included UK residents and those from overseas.
- **University of Hull data** (further referred to as Module B)
  Produced using transcripts from a one week-long on-line 'survival' task developed by the Careers Service unit at the University of Hull. Whilst the data was predominantly asynchronous discussion, student exchange was occasionally synchronous. There was no tutor moderation throughout the task. The VLE used was eBridge (SAKAI). We used data from an undergraduate and a postgraduate cohort.
- **University of Huddersfield data** (further referred to as Module C)
  Produced using transcripts from asynchronous discussions on a foundation level on-line course in Education Administration. Students were British mature professionals with background in administration.

The analysis method

We adopted transcript analysis, an analysis method that 'builds on procedures to make valid inferences from text' (Anderson et al, 2001). It is an observational technique which allows understanding of educational discourse in an online environment (Garrison et al, 2006). The advantages of transcript analysis lie in that it relies on a 'complete, objective, verbatim, and archived text-based record' of online discussions (DiStefano et al, 2003: 138), to which we were given access. The transcripts were read and codes were assigned to those units of analysis which represented behaviours which were linked with specific interpersonal skills. We used Atlas ti, qualitative analysis software to code and organise the data, which has been categorised into four intersecting themes that created the framework for data analysis: **peer facilitation; online community building; interpersonal skills in cognitive discussions**; and **helping**. They emerge from different sets of interpersonal skills identified in the discussion

transcripts. In this paper, we focus on acknowledging others' contribution, one aspect of the facilitation theme which is closely related to opportunities for peer support offered by new technologies, one of the subjects raised by this conference.

Ethical issues in the research

Throughout the research project we have considered ethics in research as a two-way process: what bearing the specificity of the research may have on the ethical issues and how applying ethics guidelines may shape the research. We focused particularly on participant anonymity and informed consent.

In line with online ethics guidelines, identities of students have been protected (Clark, 2006). Although the data obtained from the online discussions was not sensitive (it involved mostly course-related reflections) we considered that removing real names and names of locations from the quotes used would be in the interest of participants.

The issue of informed consent was more problematic. In two cases transcripts were obtained 6 months after the completion of the module, and student contact details were not stored. Both gatekeepers (module tutors) provided their data in an already anonymised form. In the third case, most students were still enrolled on the programme of study and consent was requested and provided by all participants.

The issue of informed consent is a contentious one amongst researchers (Wiles et al, 2006). Some suggest that without participant consent the research project should be abandoned (Rourke et al, 2001). We decided to utilise all our data for the following reasons: we had gatekeepers' consent, the purpose of the project was beneficial for the participants, and the data was not sensitive (Fahy, 2007).

Online interpersonal skills in peer facilitation, community building, cognitive discussions and helping

Peer facilitation, community building, cognitive discussions and helping are the four main themes which constitute the analysis framework. They have been created by grouping together codes which emerged from students' interactions. Within these four themes we analyse students' moves (Pilkington, 1999: 18), dependent on interpersonal skills.

In contrast to Shepherd's analysis (2008), **peer facilitation** has been addressed here separately from helping. Although these activities are closely related, facilitating has been defined here as a resultant of implicit or explicit management actions which move the discussion forward, including *summarising others' contributions*, which made it possible to establish consensus on discussed issues and move the focus elsewhere; *acknowledging others' input*, which gives credit to original authors of ideas in the process of idea development; *questioning*, especially asking recall and probing questions[2] and *drawing other students into the discussion*, which ensures that everyone's point of view is considered and prevents alienation of individual students'.

[2] See the existing LearnHigher questioning resources at http://skills.library.leeds.ac.uk/learnhigherleeds/pages/questioning_skills/quest_home.htm

There is evidence that 'social messages' facilitate learning processes as they make students more comfortable and relaxed (Molinari, 2004). They contribute to the development of social presence in the group in the stages of its establishment and retention (Kehrwald, 2008). In the analysed data six types of **online community building** moves have been identified. They include *encouragement*, *friendly comments*, *self-disclosure*, *humour*, *use of emoticons*, and *apologising*. More often than not, contributions reflected a number of these moves, thus had multiple functions in the discussions.

Interpersonal skills play an important part in **cognitive discussions**, as they shape students' moves which function as opening of a discussion, offering a view, agreement, agreement with elaboration, and disagreement. Disagreements and challenges may, for example, lead to critical thinking, conflict, or both (Jeong, 2003); we argue that various ways of participation and interaction in cognitive discussions which have different outcomes are embedded in students' interpersonal skills.

Finally, within the theme of **help**, we have identified moves such as signalling not following, asking for help, offering to help, helping, and thanking for help. Peer helping is recognised as significant in teaching and learning for a number of reasons (Greer et al, 1998: 494-495); it encourages students to socialise in the context of the course; as it is situated in a shared context, it is likely to provide a 'stronger learning experience' for the student; it is likely to be prompt; it encourages reflection and self-awareness in the helper who additionally obtains social recognition for their knowledge'; finally, it facilitates social interaction and knowledge-based personal relationships among learners. In our perspective on peer help in online discussions we consider factors which make helpers more effective; for example, the ways in which help may be offered are dependent on one's interpersonal skills which determine if the exchange is based on a hierarchy of the 'knower' and 'non-knower'.

Due to the paper size limit, we focus here on 'acknowledging and summarising others' contributions' as an example of a number of interpersonal technique in students' online discussions. We point out why certain moves constitute good or bad practice and make suggestions about 'problem areas' which constitute a basis for production of interactive of resources aimed at development of students' interpersonal skills.

Acknowledging and summarising others' contributions

In an attempt to expand on a thought of a peer, one module A student writes: '*The theories are alike but different on the selection thing which X mentiones…*'[3]. On module B, people make selections based on other people's explanations and points, and acknowledge that: '*following Pedro's suggestion that binoculars can be used for starting a fire, I have taken the mirror from my list and replaced it with the binoculars*'. Such discursive moves constitute 'cumulative talk', where speakers, through building on others' contributions, construct a 'common knowledge' by accumulation, which is characterised by 'repetitions, confirmations, and elaborations' (Mercer and Wegerif, 1999: 85).

Acknowledgement of peers' utterances/contributions is considered good interpersonal skills practice, as it demonstrates the awareness of the other student and their question;

[3] The quotes used in this paper are in the original form

it supports their effort to contribute to the discussion or find out about something. On module A, student X asked a question concerning a button on the module site, and she did not receive a response from anyone. Conversation on a different topic continued, and after 22 statements from other students, Student Y wrote: '*Nobody answered X*', pointing out that X might still be waiting for an answer. Y's intervention is likely to have decreased X's sense of being ignored, especially as it led to the question being finally answered.

In discussions where there are multiple contributors and threads, following these can be difficult (Salmon, 2008: 39), especially when it is not indicated who the recipient should be. Some students are aware of that, and make specific references to other people's entries which facilitates the understanding of the discussion for 'bystanders'. For example, module B students write: '*with X's post in mind…*', '*with regard to Y's comments with regard to Darwin and the survival of the fittest…*' Especially in a situation when a number of ideas are offered, writing '*I agree*' leaves the participants unsure who the person is agreeing with, as in the below example from module A:

Student 1: (…) gain new knowledge, information....but yes, the result is wonderful
Student 2: it's worth the pain:)
Student 3: :p
Student 4: I think one must find his/her learning style to make learning easier for him/her
Student 3: I agree

Expressing praise is one of the aspects of good teaching practice (Graham et al., 2001), and has similar positive effects in peer-to-peer interaction. It is a significant move which informs the praised student that their ideas are considered valuable from the educational point of view; it contributes to community building processes. Praise in online discussions is defined as 'social encouragement' (Butler et al, 2002) that increases the sense of achievement in individual students and groups. Students use a variety of phrases to praise:

- '*Good point, X!*' (A)
- (in response to another student's sophisticated argument) '*wow* [I'm] *impressed:)*' (A)
- '*Z, we are still amazed at the excellent job u did on Tuesday*' (A)
- '*Having read all contributions, I am really amazed by how thoughtful and well-justified the suggestions made so far*' (B)
- '*You make a valid point that inclusion is also about providing opportunities*' (C)
- '*Y, you've been a great manager!*' (A)

The first five utterances could be classified as 'process praise', and the last one is described as 'person praise'. Consequences of these two types of praise are quite different: process praise seems to promote information seeking and problem-solving strategies, while person praise encourages students to find out how their achievement compares to others (Maclellan, 2005: 201). While process praise is a necessary component of a discussion where students express their ideas and compare their arguments, person praise, if overused, can become an impediment to the discussion. On module A discussions, one student adopted very non-informal behaviour common in non-educational online discussions. By making very enthusiastic, long and frequent

statements containing multiple exclamation marks and jokes (such as: ‘A**** is FAB!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! (although don't tell her I told you that - tee hee!!!!) *Hides this text from the boss* ’) she ‘hijacked’ the conversation, making 13 statements out of 22 – and there were 8 other students in the chat room. The others seemed to have been silenced by such a confident poster in their midst, and the conversation did not take off until the module tutor appeared.

Summary

The ‘acknowledging others’ contributions’ sub-theme suggests that interpersonal skills shape the online discussions in that they become more reflexive, respectful, and inclusive. It also shows in what ways interpersonal skills are embedded in the four main themes and their subthemes which constitute the analysis framework.

Acknowledging and building on contributions of other participants is reported to ‘ameliorate the risks of participating and emphasise its benefits’ (Lapadat, 2002, np). Building on other person’s ideas or contributions is a sign of respect for our discussant; it credits their ideas and work. It also proves to the fellow students that one has carefully followed the discussion and is aware that a specific idea has already been introduced by someone else. Finally, acknowledging someone’s contribution may be an expression of praise; we may be impressed with their idea, work or witty remark. Students’ moves suggest an effort to build an atmosphere of respect, politeness and fairness. This requires ‘other-awareness’, an interpersonal skill identified by Shepherd (2008). The example of a student who drew attention to the posting of another student is an indication of ‘other-awareness’ as she not only noticed that her fellow student was ignored, but also acted upon this observation and raised the issue in the discussion.

In contrast, lack of acknowledgement may leave the contributing students feeling ignored, insignificant, or even slighted. Also, a large proportion of personal praise may lead to competing instead of cooperating, which does not facilitate shared development of knowledge. Finally, very confident contributors may dominate and silence others. Domination of the discussion goes against the concept of the online discussion as democratic, and may make other users feel excluded.

Acknowledgement of the contributions of others creates a more dynamic learning environment, often referred to as scaffolding (Bruffee, 1993) in which students engage in a comprehensive knowledge building process which utilizes the experience and contribution of others. Such examples suggest that online educational collaboration places greater emphasis on evidence of students’ interpersonal skills. This fact needs to be acknowledged by the teaching and learning community, however these attributes and experiences are not necessarily evident in all students and interpersonal skills activities need to be included in the online course curriculum.

References

Anderson, T. et al (2001) Assessing teaching presence in a computer conferencing context, Journal of Asynchronous Learning Networks, 5(2), 1-17.

Bruffee, K. A. (1993) *Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge* (Baltimore, Johns Hopkins University Press).

Butler B. et al (2002) Community effort in online groups: who does the work and why? in: S. Weisband, *Leadership at a Distance: Research in Technologically-Supported Work* (New York, Psychology Press).
Clark, A. (2006) Anonymising research data, *NRCM Working Paper Series* (Leeds: University of Leeds).
DiStefano, A., Rudestam, K. E. & Silverman, R.J. (Eds) (2004) *Encyclopaedia of Distributed Learning* (Thousand Oaks: Sage).
Fahy, P. J. (2007) Ethics review concerns of Canada's distance researchers, in U. Demiray & R. Sharma (Eds), *Ethical Practices and Implications in Distance Learning* (Hershey, PA: IGI Global).
Garrison D. R. et al (2006) Revisiting methodological issues in transcript analysis: negotiated coding and reliability, *The Internet and Higher Education*, 9(1), 1-8.
Glaser, B.G. & Strauss, A.L. (1967) *The Discovery of Grounded Theory* (New York, Aldine de Gruyter).
Graham C. et al (2001) Seven principles of effective teaching: a practical lens for evaluating online courses, *Technology Source*, http://www.technologysource.org/article/seven_principles_of_effective_teaching/ accessed 1 June 2009.
Greer J. et al (1998) The intelligent helpdesk: supporting peer-help in a university course, in: *Lecture Notes in Computer Science*, (Berlin, Springer).
Hartley, P., Woods, A., & Pill, M. (2005) *Enhancing Teaching in Higher Education: New Approaches for Improving Student Learning* (London, Routledge).
Haughey, M. & Muirhead, B. (2008) The pedagogical and multimedia designs of learning objects for schools, *Australasian Journal of Educational Technology*, 21(4), 470-490.
Holmes, B. & Gardner, J. (2006) *E-learning: Concepts and Practice* (London, Sage).
Jeong, A.C. (2003) The sequential analysis of group interaction and critical thinking in online threaded discussions, *American Journal of Distance Education, 17(1), 25-43.*
Kehrwald, B. (2008) Understanding social presence in text-based online learning environments, *Distance Education*, 29(1), 89-106.
Lapadat, J.C. (2002), Written interaction: a key component in online learning, *Journal of Computer-Mediated Interaction*, 7(4).
Maclellan, E. (2005) Academic achievement: the role of praise in motivating students, *Active Learning in Higher Education*, 6(3), 194-206.
Maykut, P.S. & Morehouse, R. (1994) *Beginning Qualitative Research: a Philosophic and Practical Guide* (London, Routledge).
McAlpine, I. (2000) Collaborative learning online, *Distance Education*, 21(1), 66-80.
Mercer N. et al (1999) Children's talk and the development of reasoning in the classroom, *British Educational Research Journal*, 25(1), 95-111.
Molinari, D.L. (2004) The Role of social comments in problem-solving groups in an online class, *American Journal of Distance Education* 18(2), *89-101.*
Pilkington, R. M. (1999), Analysing Educational Discourse: The DISCOUNT Scheme. *CBLU Technical Report*, 99 (2).
Prawat, R. S. & Floden, R.E. (1994) Philosophical perspectives on constructivist views of learning, *Educational Psychologist*, 29(1), 37-48.
Rourke, L. et al (2001) Methodological issues in the content analysis of computer conference transcripts, I*nternational Journal of Artificial Intelligence in Education* 12, 8-22.

Rovai, A. (2003) In search of higher persistence rates in distance education online programs, *The Internet and Higher Education*, 6(1), 1-16.
Salmon, G. (2002) *E-tivities: the Key to Active Online Learning (*London, Routledge).
Salmon, G. (2008) *E-moderating: the Key to Teaching and Learning Online* (London, Routledge).
Shepherd, T. (2008) Listening and Interpersonal Skills Review, www.learnhigher.ac.uk/Download-document/293-Literature-Review-Listening-and-Interpersonal-Skills-19-06-07_1.htm, accessed 1 June 2009.
Vrasidas, C. & MacIsaac, M. (2000) Principles of pedagogy and evaluation for web-based learning, *Education Media International*, 37(2), 105-111.
Williams, P.E. (2003) Roles and competencies for distance education programs in higher education institutions, *The American Journal of Distance Education*, 17(1), 45–57.

How important is the local in open and distance learning?

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Abstract

In this paper I look at some strategic issues for open and distance learning viewed from a Scottish perspective. Across the world, economic and technological developments point to the development of a global education market in which students are set free from constraints of place. At the same time there are counter-trends of increasing diversity and concerns with local, regional and national identities. Scotland exemplifies some of these contradictory processes. It has always had a separate education system from the rest of the UK. However, its distinctiveness has increased since the advent of devolved government and the establishment of the Scottish Parliament in 1999.

Open Universities sit in this changing global landscape with common features of scale and reach but also social missions and identities which shape the distinctive demographics of their student bodies. The paper examines some of the issues and challenges for open and distance learning in the 21st Century through reflection on the international literature and through specific examples drawn from case studies and research conducted in Scotland. What are the tensions between the new technologies and widening access? Does the ubiquity of the internet render the location of students irrelevant? Is it possible to develop models of student support that can combine working at scale with local diversity?

Introduction

In addressing the question 'What are Open Universities for?' Tait (2008:93) concludes that their main purpose *'is for development, driven by values of social justice*' (Gaskell 2008: 81).

A decade earlier Peters observed that

> '*The [UK] Open University stresses the humanitarian aspect of its work much more than any other distance–teaching university*' (2001:196)

Whatever the founding missions of institutions may be, they grow and operate in global and local environments that are subject to continuing political and economic change. In this respect Tait notes that

> *'Open universities have to walk between being a university – a necessary condition of their existence for students and staff alike in terms of recognition and reward and, of course, challenged by those whose concept of university they do not fulfil from a range of perspectives – and challenging the nature of the definition of a university in their particular time and place. This seems to be for some open universities particularly problematic, at least in the second phase of their life ...*' (2008:92)

The Open University UK is now 40 years old and since its inception the Higher Education (HE) landscape in Britain has changed fundamentally. Whereas once the university blazed a trail in opening access it is now one of many institutions which comprise a system of mass HE. One aspect of the massification of HE in the UK (and elsewhere) has been a convergence of full-time campus based education and distance education (Kirkwood and Price: 258). Where once the use of technology and pedagogical approaches designed to develop autonomous learners might have been largely the preserve of Open Universities both are now ubiquitous.

One driver of the convergence between ODL and campus based HE has been a concern with the effective use of online technologies. Traditional providers of ODL and campus institutions alike have seen the internet as a means to expand their horizons and break free from constraints of location. Mason (1998), for example, in her discussion of the globalization of education, sees it as intertwined and, perhaps, synonymous with the world-wide-web and online learning. Linked to this discussion there is often a view that the learner of the twenty first century will be of a new type. Peters (1998) suggests that

> *'In a post-industrial society the traditional industrial model of distance teaching will no longer satisfy the new needs of new types of students with their particular expectations and values which, seemingly, not only differ from those of the students in the industrial society but are in many cases even the exact opposites of them. This situation calls for the design of new models of distance education. They will probably be combinations of intensified and sustained group work – highly sophisticated ways of acquiring the necessary information for self-study and increased telecommunication between the participants. They will have different sets of goals and objectives. And they will have to rely on self-directing and self-controlling – that is, on students becoming autonomous'*

Mason (2003: 97) describes the learners of the new millennium as '*customers, lifelong learners, confident in a digital world*'.

Debates around globalization have tended to focus on issues of culture. One problem here has been the relatively restricted range of courses that are currently offered in international ODL. Arguably, not a great deal has changed since Mason (1998: 111) noted that most global education is in business studies, computer related courses and languages. Studies of global education have a tendency to focus on relatively specialized examples. Attention has also been drawn to issues of access to technology which even in the developed world is skewed by class and income.

The aim of this paper is to explore some aspects of a research area identified by Brennan and Naidoo who note in the context of the UK in the early twenty first century that:

> *'There are post-massification issues to be examined, including the effects of increasing system differentiation and provision of lifelong learning opportunities.'* (Brennan and Naidoo 2008: 299)

An additional dimension for the UK OU noted by Tait (2008: 91) is the impact of devolution which means that

> '*… defining OU UK activity simply for the United Kingdom is no longer adequate.'*

In the next section I look at some of the implications of devolution for the OU in Scotland. In the Scottish context I then explore two particular issues that arise in operating as an Open University across different political jurisdictions, namely widening participation and the relative importance of the local in open and distance learning.

The Open University in Scotland and devolution

A system of devolved government was established in Scotland in 1999. One of the powers of the new Scottish parliament is control over education (Issakyan et al 2008). It is important to note, however, that prior to devolution Scotland had education and legal frameworks which were distinct from the rest of the UK (Humes and Bryce 2003). At secondary level a significantly higher proportion of young people attend comprehensive schools than in England (Paterson 2003) and people study for different qualifications. The normal university degree is four years as opposed to three in the rest of the UK and a greater proportion of higher education is delivered through the college sector which has an organisation and governance structure which is distinct from the universities.

The OU UK has always operated its system of supported open learning through a system within which course development is highly centralised but student support is delivered through a network of 'regional' centres. In this sense, pre-devolution, the OU in Scotland was not significantly different from any of the other regional centres and the university operated in a similar way across the whole of the UK. Recognition of a specific national context in Scotland operated only at the margins – for example in the provision of separate advice and guidance for OU students looking to enter the teaching profession. This it should be noted in a context where there had for a long time been a strong sense of Scottish national consciousness (Davidson 2000). However, a process of change and differentiation began from April 2000 when funding for the OU in Scotland moved from the Higher Education Funding Council (which continued to fund the university in the rest of the UK) to the Scottish Higher Education Funding Council. A similar transfer took place in Wales on the 1st August 2005. Northern Ireland is currently still funded with England but there is a growing trend towards differentiation.

The decade of devolution has run concurrently with important changes in the organisation and funding of higher education in the UK. However, the different devolved jurisdictions have taken radically different roads. In England fees for full-time HE were introduced in 1998; in Scotland, post devolution, New Labour was the senior partner in a coalition government and the other parties forced them to abolish tuition fees for full-time students. In 2007 the coalition was replaced by a minority Scottish National Party administration which went further by abolishing the Graduate Endowment which Scottish students were required to pay after graduation. North and south of the border OU students are classified as part-time and, therefore, are not directly affected by the increasingly diverse systems of full-time student funding. In

both England and Scotland part-time students pay fees. However, in England with the availability of fee waivers for lower income students it became possible for the OU to advertise it's courses as a low-cost alternative to full time HE study. In Scotland, on the other hand, part-time education and fees contrast with 'free' full-time education. Causal links between student funding regimes and the demographics of student enrolments are hard to establish; but, whatever the reason, during this period the proportion of low income students enrolled with the OU in Scotland has grown and is now higher than in the rest of the UK.

Policies on fees and student funding are not the only ones that have diverged post devolution. On both sides of the border there has been an increase in the regulatory requirement for workers in the health and social care sector and elsewhere to achieve HE qualifications. However, these sectors tend to be controlled by different statutory bodies in Scotland from the rest of the UK and so the timetable of implementation of regulation and the details of regulatory requirements are different. This presents a real challenge for the OU which is a major provider of vocational HE but needs to differentiate its curriculum offer across several jurisdictions. One successful outcome of this is the development of the Scottish Social Work degree which is offered on the four year Scottish model to meet the requirements of the Scottish Social Services Council.

The Scottish Government has also taken a different approach to skills and employer engagement than in the rest of the UK. This means that whereas in the rest of the UK the OU offers two year Foundation degrees, these have no currency in Scotland and the university's work-based learning curriculum has to be packaged differently. The emphasis is firmly on higher level skills, skills utilisation and individual employability rather than on the employer.

Targets and incentives for universities to widen participation are also different and include a key component that focuses on the college sector, which provides around a quarter of all HE, and is seen as particularly effective at widening the social base of undergraduate education (Gallacher et al 1997).

A final, but very significant difference is the decision of the Westminster government to introduce the Equivalent or Lower Qualifications (ELQ) regulation which means that students will not receive government funding if the award they enroll for is at the same level or lower than one they have already achieved. This new restriction will have a significant effect on the OU operations in England but not in the other three devolved jurisdictions.

Discussion

The UK OU developed its identity in the 1970s in a period that was very different from now. The huge expansion of Higher Education was still to take place and a large proportion of the population, including many in professional jobs, were not educated to degree level. The curriculum was broadly academic rather than vocational although then, as now, academic study was often a vehicle for career progression.

In 2009 the curriculum is wider, covers many more areas of study and has a significant component that is much more directly vocational, including work based learning

courses. In this new phase of its life the university faces challenges from other institutions that also offer part-time and distance learning courses and with the advent of devolved governments in Scotland, Wales and Northern Ireland it now operates across four distinct political jurisdictions. Scotland is furthest down the road in terms of political and educational differentiation but there seems little likelihood that the trend will reverse in any of the other constituent parts of the UK.

Simpson (2002: 189) suggests that the most important factors determining the distinctive characters of open and distance learning institutions are:

- '*the characteristics of their students;*
- *the physical and virtual infrastructure of the areas in which they operate;*
- *the courses they are delivering;*
- *the funding regimes within which they operate*'

In comparing the OU in Scotland with the OU in the rest of the UK, all these factors differ to a greater or lesser extent.

The OU retains a sense of social purpose. In the first three decades of its existence its open entry policy was seen as a mark of its ability to widen participation. In the last decade, however, an explicit policy of widening participation has become an important part of the university's strategic plan. This new emphasis has been driven by recognition that mass participation in higher education in the UK has been strongly skewed in the direction of the better off and has aligned with government policy (phrased in terms of social inclusion). With close to 50% participation in HE among young people it is likely that any university serving predominantly adults would tend to recruit more low-income students.

However, the OU has also taken pro-active steps to widen participation. The university's Centre for Widening Participation has developed short access courses (*Openings*) which provide a bridge into HE. These courses have a strong emphasis on developing learning skills and attract a high level of individual tutor support which, with one exception, is provided via the phone in order to enable students without internet access to make a first step into HE. The organisation of these courses is highly centralised and tutors are in general linked to students with no consideration of location. In a comparative study of conceptions of learning among adult learners returning to education through *Openings* courses Makoe et al (2008: 317) find conceptions of learning that have not been identified in previous studies. They note that

> '*adult learners embarking upon distance education hold distinctive conceptions of learning, and this supports the idea that conceptions of learning are culturally and contextually dependent'*.

Some of the regions and nations of the OU UK have also used pro-active outreach activity as a means of targeting and recruiting non-traditional students. Encouraged by government policy and targeted funding by the SFC, the OU in Scotland has made the development of sustainable local partnerships to widen participation a key part of its strategic priorities (see for example Cannell et al: 2005). The approach taken is to use the CWP Openings courses, but build in local support through working with voluntary organisations (gatekeepers) and local colleges. Here, although the curriculum is

centrally organised and produced, the local aspect of recruitment and student support seems to be a decisive factor in recruitment and retention of students. Such activity seems to be successful in both increasing the numbers of non-traditional learners by significant amounts and also in increasing retention.

However, the model suggests that the conceptual framework of engagement and retention in HE study (see, for example, Yorke 2004, Simpson 2005) perhaps needs to be extended to include a pre-study phase which involves local engagement. Veronica McGivney (2000) notes the importance for widening participation of the involvement of local 'gate keepers' in facilitating progression into education.

Another respect in which the OU in Scotland differs from the rest of the UK is the higher proportion (just under 30%) of students with HE experience in the college system. Longitudinal studies suggest that once established in the OU system these students have retention and progression rates that compare favourably with other students (Cannell et al 2007); the main barriers to successful transition are affective, associated with issues of identity as a learner, often expressed as '*I'm not a university student*'. Elsewhere in a study of college students Gallacher et al (2000) characterise them as 'tentative learners'.

Conclusion

The characteristics of mass HE in the UK together with the impact of devolution has meant that the demographics of the OU student population has changed and also has become differentiated by nation. While there is a synergy between the mission of the institution and the increasing diversity of its students these developments also pose significant challenges. Differentiation in curriculum poses issues of scale for a distance learning university. Here, however, we have looked at how student support and recruitment is conceptualised. The evidence from the OU studies and the broader widening participation literature suggests that students who are non-traditional learners and those who are economically vulnerable may need more support at and before the point of formal recruitment. Initially at least they are far from being Mason's confident, lifelong learners. Indeed, it may be helpful to re-conceptualise the stages of the student journey to put greater stress on pre-entry. In this respect locality, relationships and links to partners and networks are important. However, these appear to be issues that are under-researched in the context of Open and Distance Learning. Indeed, in researching this paper, I was unable to find directly relevant studies.

This paper has confined itself to a case study of devolution in the UK. The trends and tendencies described, however, are certainly not confined to the UK and are present in different degrees in many countries with federal or provincial governments. The tension between greater student diversity in an era of mass HE and operating at scale across different jurisdictions opens up questions which deserve further research.

References

Brennan, J. and Naidoo, R. (2008) Higher education and the achievement (and/or prevention) of equity and social justice, *Higher Education*, Vol. 52, pp287-302

Cannell, P., Hewitt, L. and George, J. (2005) Joined Up Access – the Open Road Programme in Dumfries and Galloway', Widening *Participation and Lifelong Learning*, Vol7, No3

Cannell, P., Levy, S., MacKinlay, K., Jones, H. and Mair, C. (2007) Routes to a degree: a study of transition from college to university, Proceedings of the CRLL Conference

Davidson, N. (2000) The origins of Scottish nationhood. London: Pluto

Gallacher, J., Leahy, J. and MacFarlane, K. (1997) The FE/HE Route: New Pathways into Higher Education. SOEID Research Report

Gallacher, J., Crossan, B., Leahy, J., Merrill, B. & Field, J. (2000) Education for All? Further Education, Social Inclusion and Widening Access, Glasgow: Scottish Executive/Centre for Research in Lifelong Learning

Gaskell, A. (2008) Rethinking the role of open and distance teaching institutions; *Open Learning*, Vol. 23, No.2, pp81 – 83.

Humes, W. and Bryce, T.G.K. (2003) Scottish Education, Post-Devolution (2nd ed). Edinburgh, Edinburgh University Press.

Issakyan, I., Lawn, M., Ozga, J. and Shaik, F. (2008) The education sector in Scotland. The University of Edinburgh, Centre for Educational Sociology

http://www.knowandpol.eu/fileadmin/KaP/content/Scientific_reports/Orientation1/O1_Final_Report_Scotland_educ.pdf

Jelfs, A., Macdonald J., Price L., Richardson J.T.E. and Cannell P. (2007) 'Am I still doing a good job?' Conceptions of tutoring in distance education in Rust C. (ed) Procs 12th Improving Student Learning Symposium, 2006, Oxford: OCSLD

Kirkwood, A. and Price, L. (2005) Learners and Learning in the 21st century; *Studies in Higher Education* Vol. 30, No. 3, pp. 257–274.

Makoe, M., Richardson, J.T.E. and Price, L. (2008) Conceptions of learning in adult students embarking on distance education, *Higher Education*, Vol 55, pp303-320

Mason, R. (1998) Globalising education – trends and applications. London: Routledge

Mason, R. (2003) On-line learning and supporting students: new possibilities in Rethinking Learner Support in Distance Education, Tait A. and Mills R. (eds). London: RoutledgeFalmer

McGivney, V. (2000) Working with excluded groups, Leicester, NIACE.

Paterson, L. (2003) Scottish Education in the Twentieth Century, Edinburgh: Edinburgh University Press.

Peters, O. (2001) Learning and Teaching in Distance Education; London: Kogan Page.

Simpson, O. (2002) Supporting students in online, open and distance learning. London: RoutledgeFalmer

Simpson, O. (2005) Student retention in online, open and distance learning, London: Kogan Page.

Tait, A. (2008) What are open universities for? *Open Learning*, Vol. 23, No.2, pp85 – 93.

Yorke, M. (2004)Retention, persistence and success in on-campus higher education, and their enhancement in open and distance learning, *Open Learning*,19:1,19 — 32

Supporting quality online learning in a period of rapid growth

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Introduction/Abstract

In this paper, we will review the framework, processes, and tools that contribute to the quality design and delivery of SUNY Empire State College's online courses in a period of rapid growth in the number of students, faculty members, and courses. Since 2000, matriculated students at Empire State College's Center for Distance Learning increased more than 25%. Full-time faculty responsible for designing and delivering online courses increased from eight to thirty-nine. Instructional Design staff increased from one individual to a team of five curriculum and instructional design professionals, two editors, a project coordinator, and three support staff. And the number of courses and course instructors grew exponentially – approximately 400 online courses and over 600 instructors. Our task was to retain quality while focusing on scalability and sustainability in methods and processes. To do this, we are confronting and addressing the elements that support quality learning: course design processes, course pedagogy, and instructor training.

Course Design Processes

To help ensure quality courses, we operate two distinct design and review processes, one from faculty and one from instructional design perspectives. Both processes mirror the community of inquiry model (instructor, social, and cognitive presence) in that we provide multiple ways for discussions and linkages to occur among faculty and designers (Garrison, et al, 2000). Both processes aim to make public the artifacts of such discussion to create communal understandings, thus modeling the processes we incorporate into student learning experiences.

Faculty use a staged course review process which invites input that moves from informal to formal and, most importantly, creates a public record of these comments for members of our academic community. Using an internally-designed online system named "CourseTrak," we initiate the course development process by posting course concepts, which are open to informal comment and review by all full-time faculty. Faculty comments at this stage range from pointing out potential linkages with other courses, to asking how the course fits with existing offerings, to offering additional ideas and resources.

Once a course concept has general approval – barring any objections to the course or potential overlap with existing courses – the faculty developer creates a fuller course proposal. The online CourseTrak system helps to ensure quality by prompting course developers to include certain information, including a topic outline, a rationale for the course's level of study, sample assignments, and discussion of how technology will be used creatively, as appropriate. Full course proposals are then subject to fuller, more formal review from a subset of faculty in the course's area of study. At this stage, faculty review consists of a more careful look at course content, discussion of pedagogy, and sharing of resources appropriate to the course. Area of study faculty groups need to approve course proposals before they move to the final, most formal, stage of curriculum committee review.

Curriculum committees consist of faculty representatives from each area of study, plus representatives from instructional design. Full course proposals at this stage are reviewed for completeness and readiness for the development process, as well as content and pedagogy.

The most important concept in this course review and development process is that the results of these various stages of review are captured in the CourseTrak online management system. Using Hansen's terminology, we use primarily a codification approach to knowledge management, creating intellectual assets to be shared, reused, and added to. "Knowledge is codified using a 'people-to-documents' approach: it is extracted from the person who developed it, made independent of that person, and reused for various purposes" (Hansen, 1999). In this way, the intellectual assets of the organization are shared among academic colleagues. Course developers have a record of ideas and comments related to their own courses, and also have the ability to consult the records of previous courses, to know what worked, what didn't work, and the types of issues they need to address.

While the faculty review process is ending, an instructional design review process is initiated at the curriculum committee stage. Instructional design uses a three-tiered rating system – exemplary, acceptable, not acceptable – based on criteria similar to faculty review, with more emphasis on completeness of information, pedagogical soundness, and incorporation of appropriate technology and resources. According to Director of Curriculum and Instructional Design, Nicola Martinez:

> CourseTrak also allows instructional designers access to information at an early stage to complete a course resource needs analysis, identifying potential library, visual, and technical support needs for the course. Because there is concrete, specific, standard data housed in CourseTrak for every new course and major course revision, instructional designers, faculty, and librarians are able to work together to make courses rich in resources. Multiple perspectives also foster creativity in solving delivery problems and considering innovative ways of engaging students. The data also allows instructional designers to measure resources used in order to anticipate levels of support needed for subsequent development cycles (Martinez & Oaks, 2006).

One important item to note – while faculty review is public to all full-time faculty and instructional designers, the instructional design review is limited to instructional

designers only, in order to better support faculty course developers in the development process.

Over the past five-seven years using this system, a community of practice has evolved among the persons responsible for developing, designing, and delivering courses. Faculty and staff have moved via CourseTrak into what Wenger labels the "active" development stage, "engaging in joint activities, creating artifacts, adapting to changing circumstances, renewing interest, commitment, and relationships" (Wenger, 1998). The design and implementation of this course development and review system actually represents all of the types of communities that Maki defines: "task-based," focused on creating a product; "practice-based," focused on Wenger's "constantly evolving" discussion; and "knowledge-based," focused on "advancing collective knowledge" (Maki, 2005).

Instructor Training

Once courses move from proposal to development stage, the processes and tools for course design, revision, and delivery include training and development of new content experts/course designers, training of new instructors, quality checkpoints, and post-term activities aimed at ensuring quality. In our orientation and training for new instructors, we model the approaches to social and instructor presence that we would like the instructors to use, such as the facilitation of discussions and approaches to evaluations of student work.

As a result of the framework and processes we have developed, our center is able to respond more rapidly to meet changing needs not only in new fields such as emergency management and nursing, but also in fields we have historically served.

A critical element of our approach to learning is to emphasize the interaction not only between instructor and students, but also among the students in making sense of the course material in light of their experiences and prior learning. To enhance opportunities for students to interact among themselves and with their instructor, we limit the size of each class to about 20-25 students. Due to the growth in enrolments, the number of sections per course has grown significantly and we have developed processes to help ensure we have instructors who are both subject matter experts and prepared to teach online.

Instructors hired by the Center undergo a series of pre-service and continuing in-service training and development sessions throughout their employment with us to ensure that they are continuing to enhance their knowledge of online learning and improve their teaching effectiveness. Newly hired instructors must undergo an orientation to acquaint them with their administrative responsibilities and the technology and platform used to offer the Center's courses in its asynchronous environment. Through training delivered by an Instructor Development Group, they learn about the key responsibilities of the instructor in an online environment, which include creating a positive online community of learners, managing ongoing student-to-student discussion around key parts of the course content; and providing substantive developmental and evaluative feedback on individual and group related assignments on a timely basis. To support this orientation, the newly hired instructor will shadow/audit an existing course online to become more

familiar with the dynamics of the online learning environment, and learn how to incorporate best practices from more experienced instructors.

During their first term, the Area Coordinators monitor and coach instructors closely to ensure that they are able to manage and balance the demands of teaching online. The area coordinator also conducts periodic meetings - in person or by telephone - with individual instructors to exchange observations about the instructor's performance, to provide some timely tips to improve performance where necessary, to field questions about issues arising in the instructor's class, and to support the instructor's improving performance and overall development.

Professional development opportunities exist throughout the academic year and all instructors are required to attend or participate in at least one activity per year. Workshops are offered in a variety of formats – webinars, audio conferences, and meetings – and focus on topics such as encouraging student discussion, writing useful narrative evaluations, and linking students to support services for help in improving skills in writing, thinking, and analysis. These culminate with the CDL Annual Regional Conference featuring keynote speakers who are world renowned experts in online and adult learning theories and practices. In addition, the Center publishes *CDL Instructor News* every month to update faculty on the integration of best practices for effective online instruction; to provide current research and information regarding online technology developments; and to alert instructors to other workshop and training opportunities available to them.

Instructors are formally reviewed every year by the Area Coordinator for their ability to support student learning. ACs receive major input from students (who complete both an end-of-term survey and a completed questionnaire survey on the instructor's overall performance), Student Services, and the Area Coordinator's support team. In the process the instructor completes a self evaluation and responds to the same set of questions that the AC will use in her/his review (*CDL Instructor Guide*, 2009).

Course Pedagogy – focus on Online Discussions

The courses' design and delivery, including their structure, content, and learning activities, incorporate elements of the Community of Inquiry framework (Garrison, et al, 2000). This framework focuses on social presence, instructor presence, and cognitive presence in online courses to maximize students' performance and learning. Social presence and teaching presence are addressed through mechanisms that allow instructors and students to establish connections through formal and informal discussions, as well as communications that occur one-to-one. Cognitive presence is addressed in many courses through applying a Practical Inquiry model, which moves from experience to imagination and reflection, back to experience and practice. Learning activities are designed with scaffolds for students to demonstrate their deepening understanding of the material, and learning activities are supported in media-rich formats to address a range of learning styles and assist students in mastering the material.

As part of our efforts to maintain quality in our online courses, we engage in research projects to assess how well we are incorporating the Community of Inquiry framework. One on-going project to assess cognitive presence is the analysis of discussions for

evidence of student learning. This research is designed to provide a basis for understanding how best to scaffold discussion activities to aid students in demonstrating their mastery of course objectives.

Our courses use an asynchronous format, where students are evaluated primarily on written assignments, projects, and discussion, with little to no use of tests. There is a strong emphasis on discussions for two primary reasons – they enhance student-to-student learning, and they help connect experience with theory. Discussions exist in all of our courses, typically begin with a formal question, and then additional questions/issues are introduced. Expectations for both quality and quantity of discussion participation are established for each course. Final course evaluations include evaluation of discussion participation.

In general, in our framework a high quality discussion response applies a concept from the text or course in a meaningful way, or facilitates understanding of the course material or topic. Responses should indicate that the student has critically thought about the discussion topic and can apply and articulate the knowledge being learned. Substantive responses don't just deliver opinions, but also offer justification for them and must cite sources when appropriate. Full participation in each discussion requires that the student not only responds to the initial discussion item, but also returns at a later time to read the responses of others, and respond to at least two other comments.

Due to our strong emphasis on student-to-student learning, it is important to assess the effectiveness of discussions as a learning tool. Our current research project focuses on two central themes:

1) To what extent are students demonstrating knowledge in the discussions?
2) How can we better design discussions to enhance cognitive learning?

Prior studies have established relationships among discussion design, level of student participation, and student learning (e.g., Richardson, Tunwall, and Carnevale, 2000; Jiang and Ting, 2000; McCallister and Ting, 2002). Our efforts also draw from work by Biggs and Collis (1982) on constructivist learning, and Kanuka and Garrison (2004) and Kanuka (2005) on learning through online discussion. Based on the prior researchers' identification of factors in determining the extent of assessing student learning, we identified three variables that are important in determining the extent of student learning:

- the position of post in discussion thread,
- the level of learning reflected in the post, and
- the length of the post.

Our pilot study included analyses of postings from two advanced-level business courses taught by different instructors. For each course, we analyzed postings from a discussion early in the course and one from a concluding module. This approach was designed to capture the students' increased knowledge of the subject as the term progressed. Each post within the selected discussion was coded based on the three variables.

The preliminary findings provide evidence that the model and data analysis methods are reliable but that further refinement and expansion of the data set are necessary to ensure

a higher degree of validity. For example, the data indicated that there was limited disagreement among students on the issues raised in the discussions. Broadening the data to include a range discussion formats (e.g., topic-based, debates, role-plays, simulations) will provide us with a more complete analysis.

In our next phase of the project, we will be assessing a broader range of discussions posts to examine student learning in more detail. We are re-examining how best to code students' comments to more fully capture the intent of the post and expanding the analysis to include team-based discussions. We are also interested in examining the role of the instructor by assessing discussions in multiple courses facilitated by the same instructor.

Some conclusions can be drawn from our work thus far. We need to ensure that courses start with a discussion that models knowledge-building discourse. We need to provide students with annotated models of discussion responses, and create a student reflection/self-evaluation process for postings.

Being able to identify points of student learning in online discussion aids practitioners in understanding how and when learning takes place. This information has implications for designing meaningful discussion activities and facilitation procedures that provide the students with opportunities to demonstrate advances in their learning through their postings. Online discussions allow students, including individuals who may not be comfortable speaking up in a traditional classroom, the opportunity to participate. By improving the design and facilitation of discussions, we can promote deeper discourse and help students develop their ability to think critically. Deeper engagement also promotes a sense of community and can improve synergistic learning by providing meaningful discussion opportunities.

This is just one example of current research into student learning in our online courses. Research into student learning has implications for course pedagogy, course design and delivery, and instructor training – all three areas in which the Center for Distance Learning of Empire State College tries to address quality online learning, through our methods and processes, in a period of rapid growth.

References

Biggs, J. and Collis, K. (1982) *Evaluating the quality of learning: the SOLO taxonomy* New York: Academic Press. *CDL Instructor Guide* (2009) Retrieved from www.esc.edu/cdlfaculty on May 29, 2009.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87-105.

Hansen, M.T., Nohria, N., Tierney, T. (1999) "What's your strategy for managing knowledge?" *Harvard Business Review* 77: 106-116.

Jiang, M. and Ting, E. (2000). A study of factors influencing students' perceived learning in a web-based course environment. International Journal of Educational Telecommunications*, 6(4), 317-330.*

Kanuka, H. & Garrison, D.R. (2004). Cognitive Presence in Online Learning. *Journal of Computing in Higher Education*, 15(2) (Spring 2004), 30-49.

.Kanuka, H. (2005). An exploration into facilitating higher levels of learning in a text-based environment Using diverse instructional strategies. *Journal of Computer-Mediated Education*. Retrieved from http://jmc.indiana.edu/vol10/issue 3/kanuka.html on 4/19/2006.

Maki, V. (2005) "Designing for Virtual Communities in the service of learning." *Technical Communication*. Washington: 52 (3): 395-396.

Martinez, N. & Oaks, S. (2006) "Designing a tracking system to ensure quality, high-volume course development" Working Paper.

McAllister, C. & Ting, E. (2001) Analysis of Discussion Items by Males and Females in Online College Courses. Paper presented at the American Educational Research Association, Seattle, WA.

Richardson, J., Tunwall, C. and Carnevale, C. (2000) The affordances and constraints of asynchronous learning networks: Looking at interaction in an online environment. In Kommers, P., & Richards, G. (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2000*, 1490-1492.

Wenger, E. (1998) "Communities of practice: learning as a social system." *SystemsThinker*.

How mobile phone technology can support open and distance learning: Malawi's own context

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Abstract

Mzuzu University was established in 1998 by Act of Parliament as the country's second National University with the aim of addressing limited access to tertiary education in Malawi. As of 2008, statistics indicate that the two universities, using the face-to-face and residential mode of delivery, had only managed to enroll 3.03% of the pupils who complete secondary school education, due to lack of bed and teaching space. This figure is well short of the 30% expected enrolment of secondary school leavers into tertiary education. In view of this, Malawi has two options for increasing admissions into tertiary education; expand classroom and hostel infrastructure. This option is expensive in terms of finances and time. Alternatively, programmes could be offered in open and distance learning mode which seems cheap and feasible given the relative poverty of Malawi. Consistent with this, Mzuzu University established the Centre for Open and Distance Learning (CODL) in 2006 to put the generic degree programmes on ODL. From the way CODL has started, it is likely that it will use print media as the main instructional mode supported by selected electronic media. The issue with this model concerns the selection of the most appropriate and effective technology to support learners. This paper accordingly discusses the effectiveness and appropriateness of using mobile phone technology in supporting ODL in Malawi. Finally, it attempts to provide information which should constitute a basis for Mzuzu University's identification and selection of the most appropriate technologies within the circumstances.

Introduction

The issue of access to tertiary education is of great concern for all stakeholders in education, including politicians, teachers, parents and students. The low levels of student admission into national universities has triggered numerous initiatives by the Malawi government to found new institutions of high learning such as Mzuzu University and the Lilongwe University of Science and Technology. Some of these institutions have been opened in premises that were either secondary schools or teacher training colleges (TTC). A good example is the Mzuzu University that was once Mzuzu TTC, The Catholic University once Montfort TTC and the Livingstonia University of the CCAP Synod previously Livingstonia Secondary School. It should be noted also that by closing these institutions, other problems have been generated. By closing these secondary schools, students' admission into secondary schools has been affected. By closing the TTCs, student-teacher admission into these colleges has also been reduced, consequently affecting the number of the much-needed trained teachers in schools.

The problem of poor access to education due to lack of bed space has been aggravated by the introduction of free primary school education in 1994, during which the number of pupils increased at primary and secondary school levels, consequently leading to too

many students finishing and qualifying for the limited number of places in national universities. It should be noted also that these problems have consequently compromised quality of education. This is true if we are to use the data from the Malawi Education Statistics report of 2007 which indicates that, out of 78,524 students who completed their Malawi School Certificate of Education (MSCE) only 2,382 were admitted to National Universities, representing 3.03%. In 2009, the projected level of absorption into the two National Universities is that out of the 92,871 students who have just completed their MSCE, 2.6% will be admitted for tertiary education in the two national universities. This suggests that as far as access to tertiary education is concerned, using the face-to-face residential mode, Malawi is still very far from attaining positive results, unless an alternative approach is explored. It is the case then that access to tertiary education has been limited and is still a major challenge to Malawi's education system.

Another issue of great concern is that of quality. The quality of education at all levels has gone down. This is well reflected if one surveys the number of students who sit for both Junior Certificate of Education (JCE) and MSCE and pass the examinations relative to those that fail. For the past ten years or so, the pass rate has been very poor, below 45%. In 2006, 78,524 sat for MSCE and only 30,510 passed, representing 38.85%; and the pass rate percentages for other years were as follows: 40%, 33.93%, 43.04%, 37% and 34.78 % in 2008, 2007, 2005, 2004 and 2003 respectively. This poses a challenging situation to the government if it really were to improve quality of education.

All these can better be reflected if we were to re-examine the teacher ratio and pupil-classroom ratio situation and the model of education currently in use. The pupil-classroom ratio on average now stands at 1:107 in most primary schools. With this environment, one cannot expect quality education. Effects of this move include those already reflected in the 2007 Education Statistics Report on JCE and MSCE results for the past few years. Also, the teacher–pupil ratio now stands at 1:100 in some schools and in extreme cases 1:120. Coupled with these unacceptable ratios and the presence of a host of unqualified teachers at both primary schools and secondary schools, the quality of education has sunk so low and even through use of the simplest measure such as examination results, the outcomes are abysmal. In tandem with this assertion, Dr Dixie Maluwa Banda, former Dean of Education at Chancellor College had this to say:

> *"Though the 2008 pass rate is higher than that of 2007 and seems to move in the right direction, the recent fluctuations coupled with the poor JCE and Primary School Leaving Certificate (PLSCE) results this year are a cause for concern. There is a lot of lip service in the education sector and our system has deteriorated. If the immense political will that is put into the country's road infrastructure and agriculture was directed towards education, a vast improvement would occur. Stakeholders should discuss how best to deal with the situation, starting at primary school level. Emphasis ought to be put* ***on the quality of teaching***, ***examinations*** *and the* ***school environment****."*
> (The Daily Nation Newspaper, 12 February 2009)

From these comments and statistics, it is clear that Malawi's education system is in a dilemma when it comes to increasing access to tertiary education and improving quality, especially at this time when developing countries are striving to achieve at least a

minimum target of 30% student admission into tertiary education. With problems of this kind, it is time we opted for feasible and practical corrective measures, such as building more classroom blocks and hostels so that intake of students can be increased. The question is: do countries like Malawi have enough resources to erect adequate classroom and hostel infrastructure? The answer is no, given her relative poverty. Therefore, another way forward has to be found, namely to deliver programmes through distance education. This is a much more feasible mode than the residential face-to-face one. Perraton (2000) notes that distance education is one of the fastest growing models of education and its success has largely been influenced by the invention of modern technologies, in particular the worldwide web and the internet. He adds that separation of the teacher and students during the teaching process and use of media to unite the teacher and students in the learning process, would eliminate questions of lack of classroom/hostel infrastructure and hence an ideal model for developing countries.

Consistent with this thinking, Mzuzu University has already taken an initiative to address the problem of poor access to tertiary education. One of such initiatives is the establishment of the Centre for Open and Distance Learning (CODL) in 2006 that has been overseeing evening classes and facilitating the process of putting generic degree programmes into modules for open and distance learning with the BA (Ed) and BSc (Ed) as pilot programmes. Worth noting is the fact that CODL is still in its preparatory stage, since materials are being developed, and hopes to officially launch the programme in July 2009. It is likely that CODL will use the print media as the main instructional mode, supported by select electronic media. The issue with open and distance learning models concerns the selection of the most appropriate and effective technology to support the learners. This paper accordingly discusses the effectiveness and appropriateness of using mobile phone technology in supporting ODL in Malawi. It will also attempt to provide information regarding the possibility and feasibility of integrating mobile phone technology at Mzuzu University for student support services, both administratively and academically.

Effectiveness and appropriateness of using mobile phone technology in supporting open and distance learning

Realising that the face-to-face residential delivery model has not done much to improve access and quality of education, open and distance learning, supported by an integration of mobile phone technology, computers (PCs) and printed modules seems to be the only option. For the purpose of this paper, emphasis will be put on exploring effectiveness and appropriateness of mobile phone technology rather than the other technologies such as PCs and television.

In a developing country like Malawi, where the concern of most people is to meet their basic needs such as food, clothes and shelter, access to expensive modern ICTs such as computers, television sets and ipods is not possible for many people. Thus the selection of ICT should bear in mind that the targeted audience is not prepared to spend too much on something too expensive and seemingly luxurious. Nonetheless, ICT has a major impact on open and distance learning in developing countries and, as such, a balance ought to be met between pure necessities and luxuries. This means that developing nations must not only put all their effort into curbing hunger, poverty and communication problems, but also on improving access to education and achieving quality education by exploring every means possible to make affordable ICTs such as

mobile phones accessible to people in rural areas. Indeed, the relevance of adopting affordable and less expensive ICTs such as mobile phones has proved to be appropriate and effective in supporting open and distance learning (ODL) in some parts of the continent, especially Asia and Africa where the "digital divide" is more prevalent than anywhere else. For instance, at Philippines Open University in Asia, mobile phones have played a vital role in ODL in delivering course content in the **m-Learning Project** that was launched in 2004. Using a combination of print media and mobile phones, lessons such as body idioms - from body to toe, mental mathematics, eating matters, correct spellings, let's get physical, etc, were delivered to open and distance learners as pilot topics. These were selected because they were considered universally relevant to all Filipinos. Again, at this university, mobile phones, through SMS, played a significant role in delivering student support services on tutorials, counselling and guidance. Students could be informed through SMS that their course material was then ready on the website and must be downloaded at the internet café; reminding them on the due date of an assignment and should submit it using the internet, fax and or express services; registration has started and must register before closure, among others. The Filipinos also observed that, through mobile phone, communication between students, "cohort socialisation", had tremendously improved. Students were able to interact and encourage one another in their distance education courses, providing the much desired sense of belonging that is sometimes scant in ODL (Domingo, 2006).

Similarly, at King Mongkut Institute of Technology, North Bangkok, Whattanarong (2005) asserts that mobile phones proved to be wonderful in supporting learning. Graduate students at this university participated in a test using mobile phones and more than 90% of the participants owned mobile phones themselves, testifying that this technology is so ubiquitous and accessible. The students sent short SMS to a given telephone number in order to respond to quiz questions shown on a projector screen. Student scores among mobile phone users were the same as those of traditional test takers. From this, the researchers concluded that mobile phones and traditional methods of teaching contribute equally towards performance.

The English for Special Purposes Foundation in Mongolia also developed English units for waiters and bankers via SMS messages and reported that 94% of the learners were willing to use SMS for learning English (Batchuluum, 2007), while a majority said that they were willing to spend 35-50 percent of their SMS units on learning. Batchuluum concluded that mobile phones can be an essential asset in developing countries.

Likewise, in Europe, Turok (1977) in his paper: *Telephony - a passing lunacy or genuine innovation?* presents research findings from Sweden which revealed that 77% of students found telephone teaching very helpful; and Davies (1976) at the University of Linkoping, also in Sweden, used individual telephone calls to teach English lessons at a distance and he reported that 91% of the students gave telephone teaching the highest rating on a 5 point scale. He added that there is no doubt that the more reserved students speak more connected English in the course of these telephone conversations than they would in many hours of the normal so-called "contact session" where they are always members of a large group and often times feel intimidated.

In South Africa, Brown (2005) studied the use of mobile phones at the University of Pretoria and observed that responses to information provided via SMS messages were in mass and almost immediate and that without SMS, posted information would have

taken 3-18 days to reach all the students. He also reports that in response to reminders for registration through SMS, 58% of the students registered before the closing date, compared to the normal expectation of below 40%. Brown also reported that bulk SMS messaging resulted into a saving of 20 times greater than when the postal services were used to distribute information to learners. He concludes that m-Learning is the gateway to e-Learning for most learners in Africa, where wireless infrastructure is rapidly growing.

More recently, the same Open University of the United Kingdom has introduced level 1 Access courses "The Openings Programme" (http://www3.open.ac.uk/widening-participation/p4_1.asp) – which are supported entirely by telephone. Students are assigned to a teacher who phones and negotiates dates for telephone tutorials and submission of assignments. The programme has been very successful in a number of ways: by attracting students who might not have otherwise studied at a Higher Education level; encouraging students to continue with degree level work by registering for an undergraduate programme; and register for a further course the following year. There was, for instance, a 10% difference between numbers of Openings students and other new students who continued to register when they had completed their first 'conventional' OU level 1 course. It was also reported that 90% of Openings students surveyed in 2001 felt that telephone contact was sufficient as the main source of support. It also seems to have been perceived as particularly helpful in instilling confidence in the learners before undertaking a conventional OU undergraduate course with face-to-face tutorials: "I can now meet other students at the tutorials. I don't think that I was ready for that when I was doing my Openings" (Allen & Sutton, 2001) reports. This tells us that in ODL a large number of students are held back because of low self-esteem. ODL learners must first test their abilities under wraps. By the time they go to a study weekend, to blend with their fellow learners, they have had comments from their tutors and their poise has begun to build.

Similarly, mobile phones via bulk SMS has also played an enormous role in Kenya during the In-service Teacher Training programme (Traxler and Dearden, 2005). Kenya, like many other sub-Saharan countries, has a deprived physical infrastructure and in response to the problem, Kenya has developed "lively and energetic mobile phone networks." Traxler and Dearden concluded that mobile phones can be used for peer to peer teaching in local decentralised groups and is socially inclusive (p7). There is indeed one thing common in all the findings: vis, mobile phones can equally improve students performance just like the traditional methods do; mobile phones encourage participation and immediate action; promote completion; encourage cohort socialisation thereby enhancing a feeling of belonging which is mostly absent in ODL; and reduces on cost of delivering instruction materials more than it would be if post office and other swift door to door services were involved.

The other strengths of mobile phones in ODL as indicated by the various cases given herein is that, poverty aside, this technology is readily available, accessible and affordable by everybody in the developing countries and Africans have prioritised it. Indeed the number of cell phones influx around the world is overwhelming: Economist.com (2008) reveals that there are 3.3 billion mobile phones in use around the world against the total population of 6 billion people. Africa alone, Wijayo (2006) reports that cell phone penetration was at around 76 million units but is on a swift rise. Polikanov and Abranova (2003) stated that Tanzania had surpassed the United Kingdom

in number of mobile operators and that mobile phones exceeded landline telephones in Rwanda and Somalia. Likewise, Brown (2005) reports that out of 1900 students enrolled on ODL programmes, only 0.4% had access to e-mail; while 99% had access to cell phones making it the most ubiquitous communication tool. Similarly, The New Statesman (2003) reports that the astonishing boom in cell phones proliferation in Africa is a potential catalyst for their inclusion in ODL student support services. Concurring with this assumption is Marc Prensky, an author for Vodafone Receivers magazine #14, Eikrem E (2008) who says that:

> *"Of all possible uses of mobile phones, the use that will have the greatest impact on the world in the long run - I predict is just emerging - using mobile phones for worldwide teaching and learning…"*

It should be understood here that Prensky's assertion suggests that the availability of different technologies in Africa, issues of geographical location, lack of knowledge to use ICT and financial constraints ought to be considered when choosing the type of ICT to be used. Therefore, it is not proper to choose a type of ICT for its own sake but rather on its affordability, availability and accessibility hence the choice of mobile phones.

The potential of mobile phones in supporting learning at Mzuzu University

The concept of distance education is not as ubiquitous in Malawi as it is in some parts of the world. The only known institutions providing open and distance learning are the Domasi College of Education, founded in the early 1990's to train Secondary School teachers up to a diploma level, the Malawi College of Distance Education (MCDE) and the newly founded Mzuzu University's Centre for Open and Distance Learning (CODL). In all these institutions, the main mode of delivering course content and student support services to open and distance learners has been the traditional media: face-to-face, print media and the radio. In spite of the overwhelming evidence supporting effectiveness and appropriateness of using mobile phones in many parts of the world, the fact is that Malawi has not adequately explored both e-Learning and m-Learning. The reasons are two-fold: the technology was only introduced into Malawi's culture a few years ago; and Malawians are relatively poor and mostly cannot afford to buy a computer because it is very expensive. Nonetheless, with the advent of SADC/COL ODL programmes, especially the formation of the Distance Education Association in Southern Africa (DEASA) that has been facilitating conferences and workshops on empowering open and distance learning institutions in the region, Malawi ODL institutions are now taking a proactive role. These conferences have exposed the Malawi ODL system to other advanced ODL systems and the new technologies being employed to deliver programmes.

In response to such national and multinational fora on improving ODL programme delivery through modern technologies, Mzuzu University sought to explore the feasibility of integrating mobile phones into the learning system. A number of students and lecturers were contacted to find out about their knowledge, attitudes and practices about mobile phones and probably establish the availability of this technology. To this end, questions that sought to establish accessibility, affordability and challenges of mobile phone technology were tailored and distributed to the Intermediate Certificate in ICT class for them to respond. (See the tables of frequencies given below).

Table 1: Access/own modern support technologies

N=20

Response	Frequencies	%
Cell phone	19	95
Ground phone	2	10
Desktop computer	1	5

Note: The percentage adds up to 110% due to the fact that some respondents have access to more than one form of technology and hence responded accordingly.

Table 1 above shows that the majority (95%) of the students in this class have access to a cell phone and/or own a cell phone, making it the most ubiquitous form of communication. While 10% of them own ground phones, 1% own computers, giving similar results to what Brown (2005) found at the University of Pretoria in South Africa.

The study also wanted to find out from the students what they thought were the major uses of mobile phones. Table 2 below summarises the findings.

Table 2: Uses of cell phones

N= 20

Response	Frequencies	%
To chat with friends and relatives	19	95
For business communication	2	10
For academic and administrative support services	1	5

Table 2 above indicates that 95% of the students use mobile phones to communicate with relatives and friends; 10% use it for business communication with their clients and 5% use it for academic and administrative support services. From these statistics, it is evident that mobile phones were once considered as mere mobile phones and their immense potential and effectiveness in supporting academic and administrative issues have remained unidentified. It is a given fact that no concrete research regarding the use of mobile phones in ODL in Malawi Universities has been done and perhaps this would be another area for research educators should take interest in. Still, through the 5% window, coupled with adequate and affordable ICT equipment provision and training; introduction of a lively and energetic mobile phone network, Malawi can become a leader in using this technology in ODL given its ubiquity, accessibility and affordability.

Challenges and problems of modern technologies

Realising that where there are success stories of any kind, especially with new developments, challenges and problems associated with this change are expected. For this reason, a question, meant to seek views of the learners on the possible challenges they encounter and/or are likely to encounter when using modern technologies, was crafted and Table 3 below summarises the responses.

Table 3: Challenges of using mobile phone technology and computers to support learning

N=20

Response	**Frequencies**	**%**
Cell phones		
Exorbitant tariffs levied on airtime	13	65
Poor and irregular network	6	30
Computers		
High rates charged per minute when browsing internet at an internet cafe	8	40
Very slow internet signal	7	35
In adequate computers for pupils and everyone	5	25

From Table 3 above, 65% of the respondents complained of airtime tariffs being high and not worth the talk value. It is true in Malawi, unlike in Europe and other developed countries, that talk time rates are very high because of the tax that is levied on the airtime. This would be the greatest challenge if mobile phones were to be consistently used in learning situations. The same table also shows that 30% of the respondents complained of poor and irregular network. This is true, since some network providers do not cover all parts of Malawi. It is indeed true that in many parts of the rural areas the network is very poor or not in existence. For instance; in the northern region, some parts of Karonga, Rumphi, Chitipa and Likoma Island; in the southern region: Nsanje, Phalombe and some parts of Chikwawa the network is either irregular or absent, placing a distance learner out of active communication.

With the computer technology, 40% of the respondents complained of the internet charges per minute being too high for them. Besides, even if one were to use mobile phone internet facilities, the charges were still prohibitive and sometimes the signal very irregular. While 35% of them complained that internet in Malawi is very slow due to poor signal and this also translates into paying more since you stay longer on the computer port. Also, 25% of the students complained of lack of computers to cater for the entire university community. Indeed, Mzuzu University has very few reliable computers. Out of the 14 computers in the American Corner that are accessible by everyone, students inclusive, only 6 are working for the total student population. This is indeed one of the greatest drawbacks in our education sector.

Conclusion and recommendations

From this discussion, it can be concluded that mobile phones will have a great potential at Mzuzu University in supporting ODL as a result of their ubiquity, accessibility and affordability and promoting its innovative and creative use is the best option. This technology is indeed ubiquitous and readily available given the current mobile phone infiltration rate which is at around 1,562,500 cell phones against a population 13,000,000 people. Zain Malawi alone has over 1,000,000 customers, representing 63.5%, while Telecom Networks Malawi Limited has 562,500 subscribers, giving 36.5% of the total subscribers. With this high rate of cell phone penetration into Malawi, it is critical now that educators should begin to utilise this opportunity by integrating this technology into ODL systems. It can also be concluded that problems of

airtime tariffs and irregular networks are ephemeral and can be sorted out given enough political will. In fact, computers are not only too expensive, inaccessible and unpopular but also sophisticated and expensive when repairing them. And, more worrisome, Malawi has the lowest levels of ICT trained individuals in the SADC region and beyond.

It is hereby recommended that Malawi should support and fund the expansion of distance learning education as a long term investment towards improving access to tertiary education through adopting modern technologies such as mobile phones, computers and televisions and also train the people on using ICT. Likewise, Malawi universities and teacher training colleges, where trainers of trainers are prepared, should begin to utilise mobile phone technology as a teaching and learning tool so that this culture is nurtured in the student teachers who will pass it over to the learners. The Malawi parliament through the Ministry of Finance, should in every year's national budget, allocate more funding towards the purchase of ICT equipment such as mobile phones, computers and television sets to be used in learning institutions. Lessons from Mzuzu University shows that ODL institutions need to think strategically in order to develop human resources; sustain the limited finances; restructure management systems so that it is more inclined towards the use of ubiquitous and affordable technology that is also effective and appropriate to distance learners.

In conclusion, this paper has indicated that cell phones ought to be integrated into the ODL system at Mzuzu University and beyond because of its ubiquity, affordability and accessibility. It has also examined some research findings from different institutions around the globe that agree that cell phones do indeed support ODL learners through participation, registration, completion and cohort socialisation among others and therefore it is time for Mzuzu University to show the nation that this technology can perform wonders in supporting open and distance learning.

References

Allen, T. & Sutton, H. (2001) Evaluation of Openings 2000, unpublished internal report, Student Research centre, Milton Keynes, The Open University

Attwell, J. (2005) Mobile technologies and learning: a technology update and m-learning project summary. London: Learning and Skills Development Agency.http://www.m-learning.org/docs/The%20 project%20- 20%summary.pdf

Bandaria, Pena M. (2007) International review of research in ODL; Vol 8 Barron, A. (1993) 'New technologies for education.' Englewood, Co: Libraries Unlimited

Batchuluum, B. (2007) Evaluations of distance delivery methods (Mongolia). In J. Baggaley & T. Belawati (Eds). Distance Education Technology in Asia (pp118-126). Lahore Virtual University of Pakistan.

Brown, T. (2003) The Role of M-learning in the future of e-learning in Africa? http://www.tml.tkk.fi.Opinnot/T-110.556/2004/Materiaali/brown03.pdf

Chute, A. (1999) The McGraw-Hill Handbook of Distance Learning. New York: McGraw-Hill

Brown, T. (2005). Towards a model for m-learning in Africa. International Journal on E-Learning. 4 (3), pp. 299-315. Norfolk, VA: AACE. Retrieved from http://www.editlib.org/p/5082.

Davies, N.F. (1976) The Use of Telephone in Distance Teaching, Department of English, University of Linkoping, Sweden.

Domingo, Z. (2006) Text2teach: an ICT-based strategy to help improve quality education in the Philippines. Paper presented in the National Conference of the Philippines e-learning Society. 28-29 November, 2006.
Economist. Com (2008). Halfway there: How to promote the spread of mobile phones among the worlds poorest. http://www.economist.com/business/display story
Hendrix, J. (2008) 'Cell phones as an instrument for student support. The Case of University of Pretoria': a report of research findings presented at the DEASA Conference in Livingston, Zambia.
Keegan, D. (2002) The Future of Learning: from E-learning to M-learning FernUniversitat, ZIFF, Postfach 940, D - 58084 Hagen, Germany. Fax: 49 2331 880637; Web site: http://www.fernuni-hagen.de/ZIFF. Ministry of Education
Polikanov, D., & Abranova, I. (2003) Africa and ICT: a chance for breakthrough? Information communication and society 6(1), 42-46.
Education Governance (2007) Malawi Education Statistics report: Min of Education, Lilongwe
New Statesman details, Special supplement, Our mobile future, 15 September 2003
Perraton, H.D. (2000) Open and Distance Learning in Developing World, London, Routledge, Falmer
Prensky, M. (2008) Vodafone Receivers Magazine # 14 23 July 2008.
Traxler, J. & Dearden, P. (2005) The Potential for using SMS to support learning and organization in Sub-Saharan Africa. http://www.wlv.ac.uk/pDF/cidt-article20.pdf
Traxler, J. & Dearden, P. "http://www2.wlv.ac.uk/webteam/about/cidt/DSA Submission. PDF".
Turok, B. (1977) Telephony - a passing lunacy or genuine innovation? Teaching at a Distance, 8, 25-33
Whattanarong, K. (2005) An Experiment in the use of mobile phones for testing at King Mongkut's Institute of Technology, North Bangkong. http://www.seameo.org/vl/krismant/mobile04.pdf

Ensuring quality and measuring effectiveness, impact and capability of e-Learning in the workplace

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Abstract

In 2008, the Ministry of Education of New Zealand funded a project investigating the current use of e-learning in building workforce capability. From the literature reviewed and case studies compiled it was evident employers who used e-learning applications to meet their workplace training needs and the employees who participated in the e-learning events offered needed to be assured the e-activities deployed were effective (do what they say they will do) and were efficient and cost effective.

This paper focuses on three topics – quality, measurement and capability. The first topic - quality - will describe how the quality of workplace e-learning events can be directly attributed to the quality of the processes used in the creation of the event. It will then explore what has been conceptualised as the 5Ds of e-Learning in the workplace: define, design, develop, deliver and determine. The second topic - measurement - will outline how the effectiveness and impact of e-learning events occur at two levels of analysis. Firstly, at the individual level, investigating competency and accomplishment and secondly, at the organisational level, investigating strategic alignment and business impact. An evaluation framework based on five levels of evaluation (satisfaction, accomplishment, application, impact and return on investment) will be discussed. The third topic - capability - will investigate potential models for future assessment of components for successful deployment of e-learning within the workplace. The models highlighted – the reflection-action-measurement cyclical model (R.A.M.) and the A.C.E. conceptual framework model - have been developed by the authors as part of a research project investigating the effectiveness of e-Learning professional development across the New Zealand education sectors.

Context

The drive to improve capability in New Zealand industry has been outlined in the Human Capability Framework (HCF) (Department of Labour, 2005) where the emphasis has been placed on examining the skills and abilities of New Zealanders, and how these can be used successfully to generate income and promote an inclusive and thriving community and economy. In the current uncertain economic environment, it is considered a strategic imperative to be aware of effective processes, procedures and plans to improve workforce capability, increase productivity and reduce overall training costs through the implementation of e-learning applications, strategies and techniques (Business NZ & Industry Training Federation of NZ, 2003). To ascertain how e-learning was being used in industry the New Zealand Ministry of Education funded, in

2008, a project titled *Using e-learning to build workforce capability* (Clayton, Elliott, Saravani, Greene & Huntington, 2008). As part of the project the research team investigated how the effectiveness and impact of e-learning events could be measured and how the quality of e-learning events were determined.

Definition of key terms

In practice, e-learning typically involves interactivity, such as student engagement with stand-alone digital content, interactive games or virtual simulations, interaction between learners and their instructors and interaction between learners and their peers. It is facilitated by the use of computers (stand-alone and networked), mobile devices (such as laptops, PDAs, mobile phones), digital communication tools, facilitated by the Internet (such as chat, e-mail, forums, instant messaging, Voice over Internet Protocols (VoIP) and video for virtual discussions) digital content creation tools (such as Wikis, Blogs and Web-folios) and digital content (such as web pages, podcasts, audio and video files, CD-ROM and DVDs). In some cases, such as in an instructor-facilitated video/web-conference, e-learning activities are carried out in 'real-time' and the activity undertaken is time-constrained and dependent on the attendance of all participants. This is known as synchronous e-learning. In other instances, such as student engagement with a CD-ROM, interactive DVDs, stand-alone games and virtual simulations, the learning will occur in 'nominal-time' and the activity undertaken is not time-constrained and is independent of other participants. This is referred to as asynchronous e-learning. The working definition constructed for the research project defined e-learning as referring to the provision, administration and support for 'off-the-job' and 'on-the-job' training using information and communication technologies such as stand-alone and networked computers, Internet-based technologies and mobile devices.

On-the-job learning provides employees with the required hands-on experiences necessary to develop the specific skills that are relevant to a firm's needs. In practice, on-the-job learning typically involves using the participants' normal work-related tasks as a focus for learning, and recognising the skills that they develop through these tasks. Its primary intended outcome is performance improvement. It can involve all types of learning modes from self-initiated research through to discussion, demonstration and practise of work tasks. In essence, on-the-job learning can be described as learning that takes place in the workplace or the know what to do.

On-the-job training includes a range of activities, from structured, assessed learning, which leads to qualifications (like that arranged by many industry training organisations) to informal and unstructured ad hoc learning and peer education. Using the technique of "learning by doing" it provides opportunities for participants to improve basic skills and meet performance targets. Since on-the-job learning occurs on-site during the participants' normal working day it has been described as work-place learning.

In essence, "on-the-job" learning is structured learning that occurs within the learner's normal working environment. This is also known as work-place learning
For the purposes of the project, "off-the-job" training referred to authentic, evidence-based learning activities and tasks designed and provided for workers at locations other than their normal place of work. Off-the-job learning resources are normally designed in

context with the worker's current working practices. This is also known as "work-based" learning.

Methodology

During the initial literature review a "broad-brush" approach was used in searching for and locating material. The key concepts were used, individually and in various combinations, to search indices, data-bases, digital repositories, library holdings, bibliographies and websites. This literature review was complimented and supplemented by firstly, desk top research, where telephone interviews with industry leaders were conducted, and by the compilation of six case studies of e-learning in a range of industries.

Quality Assurance in e-Learning

Providers of e-learning modules, trainers delivering e-learning events and employees who participate in e-learning activities, need to be assured the training experiences developed and offered are effective and do what they say they will do. 'Quality Assurance (QA)' is the activity undertaken to provide the evidence needed to establish confidence among all concerned, that quality-related activities are being performed effectively.

The concept of 'Quality Assurance (QA)' can be very difficult to define precisely. To some (Barron, 2003) it would include quality indicators such as, learning effectiveness, cost efficiency and learner experience. To others (Scienter-MENON, 2004), quality could be based on participants' perceptions of activities they engaged in. However, what is agreed is the quality of the experience of all participants in an e-learning environment can be directly attributed to the quality of all of the processes used in the creation of the training event (Barker, 2002). For example, the processes used in:

- the creation and publication of digital learning materials;
- the ongoing tutoring/mentoring/supporting of students in e-learning environments;
- the administration of e-learning activities.

A lack of 'quality' during any of the identified processes ultimately affects the final e-learning experience of participants. To ensure quality, the creation of e-learning events should follow a recognized cyclical pattern conceptualised by the research team as the Five D's (5Ds) of e-learning in industry:

- Define: the training requirement(s),
- Design: the training event(s),
- Develop: the resource(s),
- Deliver: the event(s),
- Determine: how or if e-learning can or should be used to meet the above requirements successfully.

The research team's Five D's (5Ds) of e-learning in industry is illustrated in Figure 1 below:

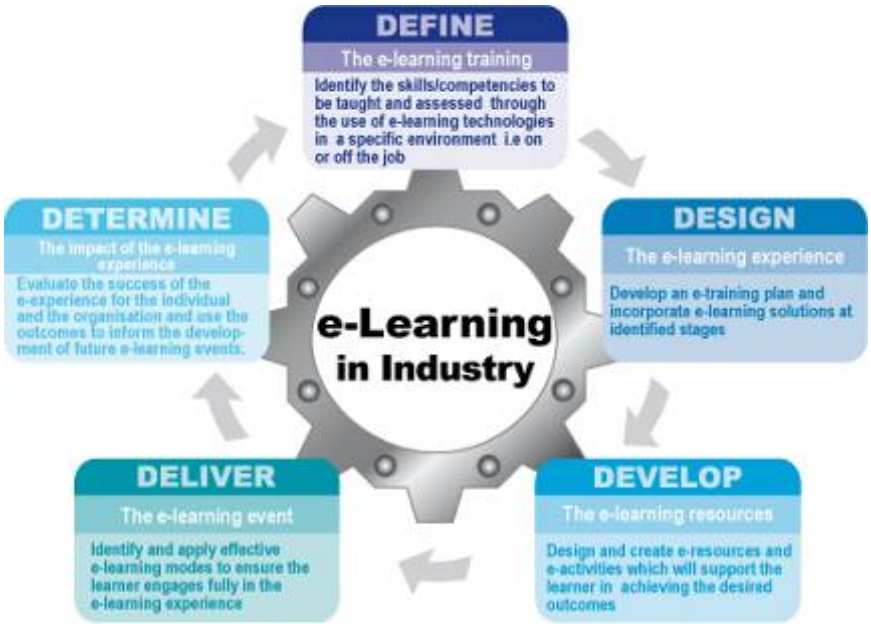

Figure 1: The 5Ds of e-learning

Measuring Effectiveness and Impact

Measuring and proving the value of e-learning can be a complex task and, dependent on the "model selected", perceptions on the impact and effectiveness can vary widely (Wilson, 2004). In evaluating the effectiveness and impact of e-learning the two target areas of analysis are firstly, the individual level investigating competency and accomplishment and secondly, the organisational level investigating strategic alignment and business impact. At an individual level it is important to ascertain if the employee has "learnt" something from the training provided. For example, have they acquired a new skill, have they modified or changed behaviour, or are they "happier" in their workplace (Cooper, 2007). At an organisational level it is critical to understand how effectively the learning and training opportunities presented to employees have contributed to improving the organisation. For example, has quality of product improved, has the dollar value of sales increased, is there an increase in customer satisfaction, have staff retention rates increased, or is plant being used to optimum capacity (Walliker, 2005).

While some reports advocate the use of innovative models to evaluate the impact and effectiveness of e-learning implementations (Wilson, 2004), in general, the literature argues a comprehensive measurement model based on slight modifications to the widely-applied Kirkpatrick-Philips evaluation model would be more in keeping with existing evaluation practices and would be more readily accepted (Skillsoft, 2005). The Kirkpatrick-Philips model is often conceptualised as a pyramid comprising five levels:

- Level one (satisfaction) evaluates if learners liked the activities undertaken,
- Level two (learning) measures if learners learned from the activities,
- Level three (impact) measures how learners have used their learning on task,
- Level four (results) measures the impact on the business's performance, and

- Level five (return on investment measures if the investment in training paid off).

Using the Kirkpatrick-Philips model as a framework, an evaluation model based on five levels (satisfaction, accomplishment, application, impact and return on investment was developed by the project team and this is illustrated in Figure 2 below.

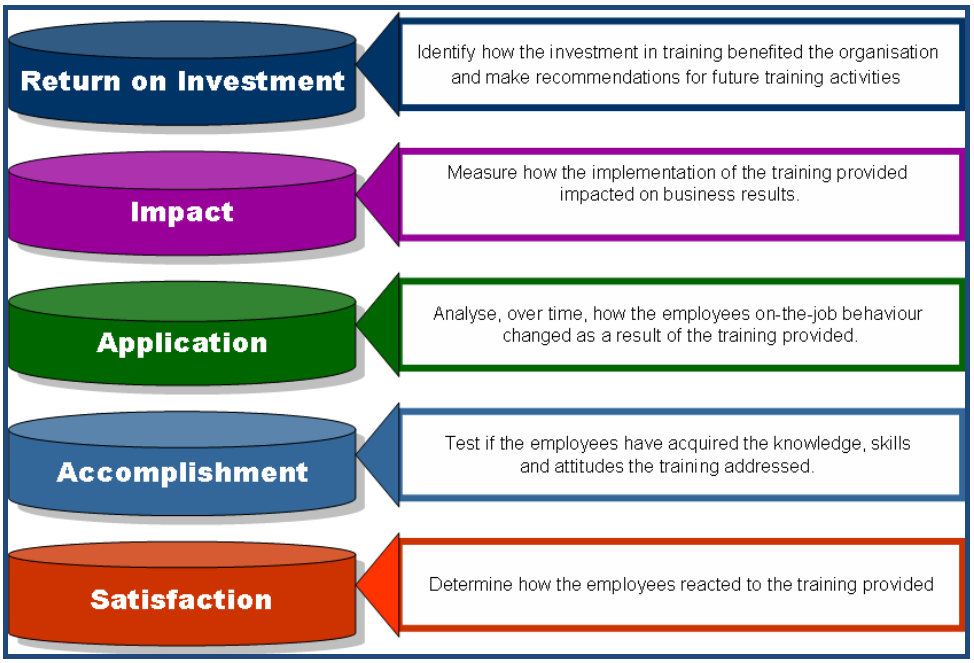

Figure 2: Evaluating the effectiveness and impact of e-learning

Future quality assessment capability models

The authors appreciated that, while the concept of "e-learning capability" may be difficult to define, it is of critical importance to the monitoring of the effectiveness and efficiency of e-learning activities in the work place. Assurance that effective, efficient and replicable e-learning activities are being implemented allows a comparison against the Kirkpatrick-Philips' five levels (satisfaction, accomplishment, application, impact and return on investment) of evaluation.

The concept of benchmarking as a tool for establishing the capability of an organisation to be effective in a particular area of work is well-established (Paulk et al. 1993, El Eman et al. 1998, as cited in Marshall, 2006). Benchmarking is a critical feature of sustainable commitment to quality delivery of e-learning in the workplace and is based on the concept of comparison and measurement, using a clear set of measurable indicators. When benchmarking is used appropriately the findings of the benchmarking process can help organizations:

- Reflect on their strengths and weaknesses in the integration of e-learning training within their structures and processes;
- Identify action(s) that will facilitate increased learner competence, confidence and understanding of e-learning applications;
- Measure and report on the impact e-learning events on strategic alignment and business operations.

In essence, benchmarking creates a reflection-action-measurement cyclical model (R.A.M.) that iteratively builds organisational capability and capacity in an ICT-literate and informed workplace. This is illustrated in Figure 3 below.

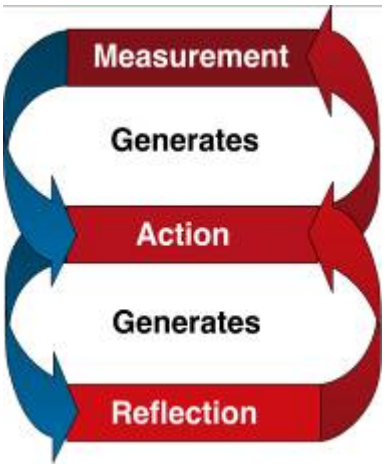

Figure 3: R.A.M. conceptual model

An understanding of quality and the impact of effectiveness cannot be divorced from the existing environment. Any model intended to be used as a tool for moving an organisation through the processes of building a skilled workforce and implementing improvements to planning and operations needs to allow for progression from a current state, which may not necessarily contain awareness of present capabilities, through to a desired state that includes commitment, evaluation, leadership and sustainability.
The research team developed the A.C.E. conceptual framework based on the 3 As, Cs, and Es (A.C.E.). The constituent parts of the framework are:

- *The 3As*: Awareness (policy makers reflect upon the existing educational capacity and capability), Action (policies are generated providing guidance for e-learning implementations) and Accomplishment (the impact of e-learning implementations are measured).
- *The 3Cs*: Context (factors shaping and influencing perceptions), Content (factors influencing direction and focus) and Capability (factors shaping participant confidence and understanding).
- *The 3Es*: Enabled (initiatives can be measured by how they have enabled users to participate), Engaged (initiatives can be measured by how they have initiated and maintained engagement) and Empowered (initiatives can be measured by how they have ensured capability of participation).

By combining the A.C.E. conceptual framework and the R.A.M. cyclical model and self-review framework, an e-Learning capability self-review conceptual framework was constructed. This is illustrated in Figure 4 below:

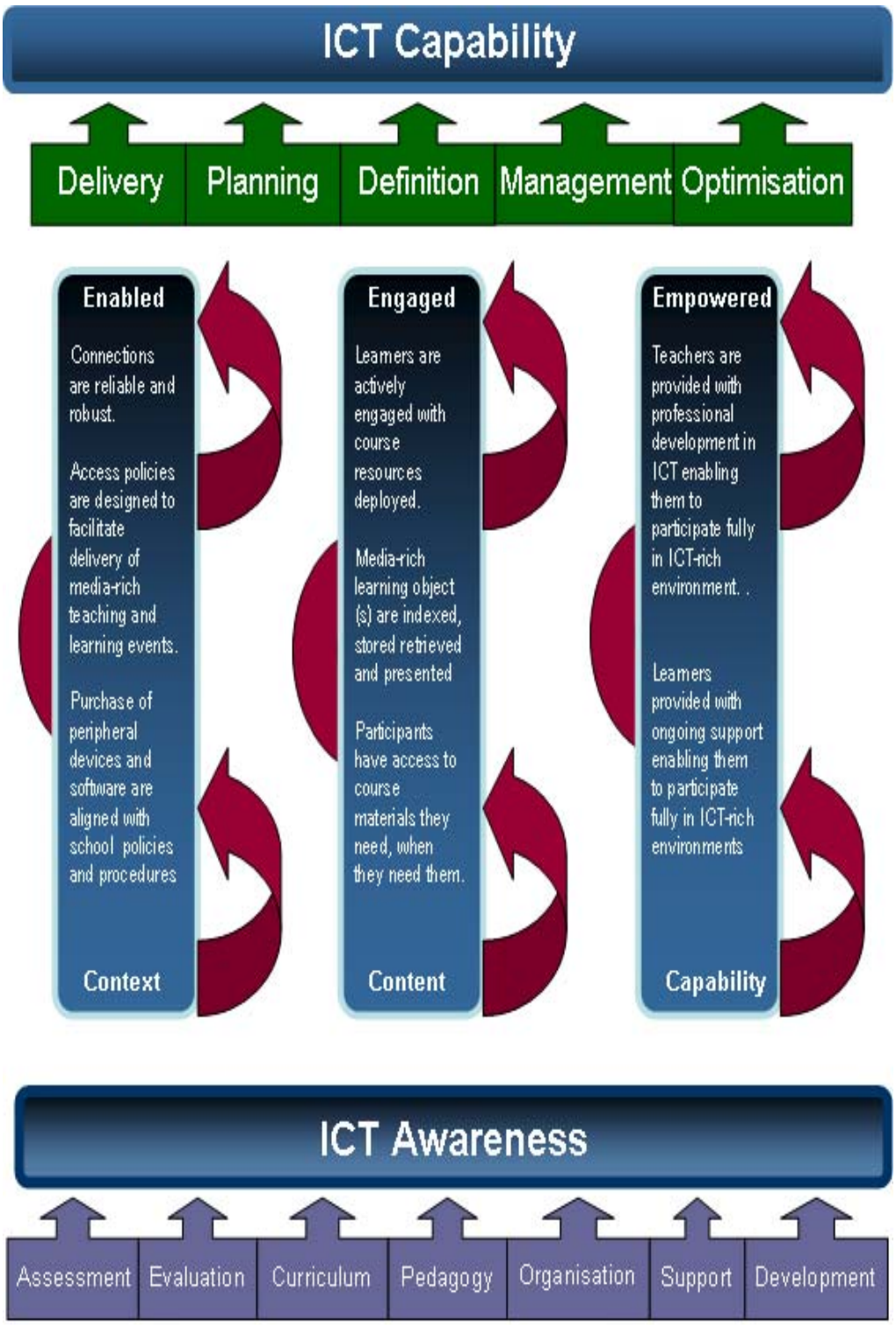

Figure 4: e-Learning capability self-review conceptual framework

The seven factors contributing to the baseline state of e-Learning Awareness provide the environment boundaries within which the organisation determines its activities and expectations. These can be cross-linked to the Five D's of e-learning model mentioned earlier, which employs a cyclical pattern, also evidenced within the supporting pillars of

the e-Learning Capability model in Figure 3. At each stage of the planning process, to move an organisation from an awareness of what is required of learners and trainers (R), through to an assessment of the capability of the organisation as a whole (A), the presence of quality and how it is measured (M) will ultimately affect the ability either to progress to a further, or to return to an earlier, stage. The iterative quality of the process is an underlying strength as it recognises the goalposts of awareness and capability have the capacity to move over time.

For example, in defining, designing and developing an e-learning event within the workplace for the purpose of developing online course materials – Content - similar planning will need to have occurred with the acquisition or deployment of peripheral devices - Context – in order for the event to be accepted as a quality experience by all those involved. Likewise, the measurements of success of an enabled, engaged and empowered workforce will vary from those of a workplace that is in the early stages of moving through the process towards achieving e-Learning capability. The process of self-review will involve identifying critical success factors, which will vary from one organisation to another, but will probably include:

- Key drivers for deploying e-learning
- Determining work-force capabilities
- Barriers to implementation
- Impact upon the organisation as a whole

Conclusion

A 2008 investigation into the state of New Zealand businesses, trades and industry and their consideration of employing e-learning as an effective method for building a skilled workforce revealed that many were acquiring the necessary skills and operational experience in the deployment and implementation of e-learning systems, application and content for education and training (Clayton, Elliott, Saravani, Huntington and Greene, 2008, p. i).

Planning for e-learning development and implementation needed to be part of larger strategic planning processes, with demonstrated commitment from senior management. The provision of e-learning needed to be seen to provide consistent quality of training which would result in a knowledgeable, skilled workforce and which resulted in identified, measurable return on investment.

E-learning in the workplace – either delivered as on-the-job training or off-the-job learning – typically involves interactivity between learners and digital content, learners and their peers and learners and their trainers. The learning typically involves using the participant's normal work-related tasks as a focus or is designed in context with the participant's current working practices. Both learners, trainers and senior managers need confidence that the e-learning event is of consistent, measurable quality. Experience has shown that quality is defined by the sum of all processes used in the creation and outcomes of the e-learning event.

A variety of models can be employed to aid assessment of quality – the 5 Ds of e-learning is one such model developed by the authors for the purpose of integrating critical factors at the various stages in an overall life cycle.

A slightly modified version of the widely-applied Kirkpatrick-Philips evaluation model can be used as a tool for measuring the effectiveness and impact of e-learning.

Engaging in a self-review exercise of organisational capability can usefully be undertaken using the ACE conceptual framework described earlier. This involves a combination of stages moving from initial awareness through action to accomplishment with measurements and quality assessment underpinning stages in the progressive process.

References

Barker, K. (2002). *Canadian recommended elearning guidelines (CanREGs). FuturEd*. Retrieved February 8, 2008, from: www.futured.com/pdf/CanREGs%20Eng.pdf

Barron, T. (2003). *LoD survey: Quality and effectiveness of e-learning: Learning circuits*. Retrieved February 8, 2008, from: http://www.learningcircuits.org/2003/may2003/qualitysurvey.htm

Business NZ & Industry Training Federation of NZ. (2003). *Report of the Business NZ Skills and Training Survey 2003*. Department of Labour. Retrieved January 28, 2008, from: http://www.dol.govt.nz/PDFs/Skills%20and%20Training%20Survey%20Report%20-%20June%202003.pdf

Clayton, J., Elliott, R., Saravani, S., Greene, N., & Huntington, N. (2008). *e-Learning in industry: A summary of activities*: *e-Learning in Industry.* Wellington: Tertiary e-Learning Research Fund. Retrieved July 17, 2008 from http://ito.e-learning.ac.nz/

Cooper, C. (2007). *Work-based learner ICT and e-learning survey: Final report.* Association of Learning Providers and the Learning and Skills Council. Retrieved January 28, 2008, from: http://www.elearningproviders.org/HTML/images/cms/alp_e-learner_survey_final_report.pdf

Department of Labour (2005). *Human Capability Framework.* New Zealand Government. Retrieved January 28, 2008, from http://www.dol.govt.nz/initiatives/strategy/hcf/

Marshall, S. (2006). *E-learning Maturity Model: Process assessment workbook.* Wellington: Victoria University of Wellington.

Scienter-MENON Network. (2004). *Sustainable environment for the evaluation of quality in e-learning (SEEQUEL).* MENON Network EEIG. Retrieved February 8, 2008, from: http://www.education-observatories.net/seequel/SEEQUEL_core_quality_Framework.pdf

Skillsoft (2005). *What return on investment does e-learning provide? White Paper.* Skillsoft. Retrieved January 28, 2008, from: http://www.e-learningcentre.co.uk/eclipse/Resources/costs.htm#d2007

Walliker, P. (2005). *Cost comparison: Instructor led Vs. E-learning.* Learning Circuits. Retrieved January 28, 2008, from: http://www.learningcircuits.org/2005/jun2005/walliker.htm

Wilson, D. (2004). *Measuring and proving the value of learning*: *eLearnity viewpoint paper.* Cirencester, UK. Retrieved January 28, 2008, from http://www.elearnity.com/index.html

Learner perceptions on instructional design of multimedia in learning abstract concepts in science at a distance

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Abstract

This study was carried out to explore learner perceptions on the instructional design features of Interactive Multimedia (IMM), which was specially designed to support the open and distance learners studying Microbiology as a part of the B.Sc. Degree programme, of the Open University of Sri Lanka (OUSL). The purpose of developing this IMM was to explain the dynamic abstract concepts and processes of bacterial genetics which are hard to comprehend that are in lengthy explanations in print course material, as surfaced from course evaluations.

When developing the IMM package, the emphasis was placed on the interface design, navigational design and instructional design in particular, in order to enhance active learning and to achieve a meaningful learning experience. Instructional design was mainly based on Gagne's nine events of instructions, and Mayer's Cognitive Theory of Multimedia Learning (CTML) on verbal and pictorial information. IMM was designed incorporating the basic instructional features such as objectives, an introduction, self assessment questions, glossary, etc. To explain abstract processes, animations with narrations were extensively used. These design features were integrated enabling active learning, visualizing the dynamic abstract bacterial processes over time, and testing students' knowledge with immediate feedback.

Learner perceptions on instructional design features were gathered through quantitative and qualitative research methods by means of questionnaires, interviews and observations. Evaluation revealed many positive features and a few negative features to be incorporated into the design of IMM in providing better support for the learners. Findings of this study throw light on designing authentic learner centred multimedia learning material.

Introduction

Computer based multimedia learning materials are widely used in Open and Distance Learning (ODL), and have revolutionized the instructional practice by enhancing active learning through interactivity and exploration. The fusion of technology with educational content has an important bearing on learners, enabling them to experience

learning through multi-sensory representations. This is achieved through the use of media elements *viz*. text, sound, still and moving images, in reinforcing the message.

Interactivity built into multimedia technology has allowed learners to proactively engage in the learning task and has changed the way teachers teach and students learn (Neo, Kian, & Eshad, 2007). Consequently, this has created an impact on transformation of traditional material into interactive format where instructional design plays a key role in this transformation. Instructional designers are claimed to structure both the content and the method used to convey lesson content (Hakkinen, 2002). Instructional theories and principles provide strategies and help designers to organise instructions to achieve a meaningful learning showing interrelationships of the lesson content (Hoffman, 1997).

Hence, properly designed multimedia learning material provides greater potential to overcome the limitations of traditional media (print) in supporting the development of scientific understanding, especially in teaching and learning abstract concepts in science (Garnet, *et al.* 1998).

It is with the purpose of explaining dynamic abstract concepts in Microbiology, an interactive multimedia (IMM) was developed to support the undergraduates of the B.Sc. degree programme who are learning at the Faculty of Natural Sciences, the Open University of Sri Lanka (OUSL). Microbiology course was first offered in 1991, with a correspondence approach and later restructured with ingenuity (Jayatilleke, Kulasekara & Coomarswamy, 2009). As such, the print course material was extensively refined, transformed and also supplemented with audio-visual materials (Coomarswamy, 1999). However, feedback evaluations still indicated students' difficulty in comprehending abstract genetic processes, which are in lengthy explanations in print course material. This finding paved the way for the development of this IMM.

IMM learning package

The IMM '*Recombination of genes in bacteria*' was produced using Macromedia Director authoring tool.

While designing the IMM, the same content information in the print course material (*BTU 2104 Principles of Microbiology* - Lesson 19) was presented with a great amount of interactivity. In order to produce an effective instructional product which promotes meaningful learning, instructional design perspectives based on research foundations were harnessed. Instructional design was mainly based on Gagne's nine events of instructions (Gagne, 1985) and Mayer's Cognitive Theory of Multimedia Learning (CTML) in designing verbal and pictorial information (Mayer, 2001). Emphasis was also placed on effective visualization of abstract concepts and learner motivational factors. Careful attention was also placed on presenting information in the English medium, as learners are non native English speakers, however, following the course in English.

Three basic screens structures were used for the 'Title' screen, 'Contents' screen and for the Factual information screens.

The title screen (Figure 1) was made simple and explicit (having the Title, a picture showing two strands of DNA molecules, background music and a navigational button to start with) in order to create a receptive attitude, and to provoke learner interest towards the theme of study.

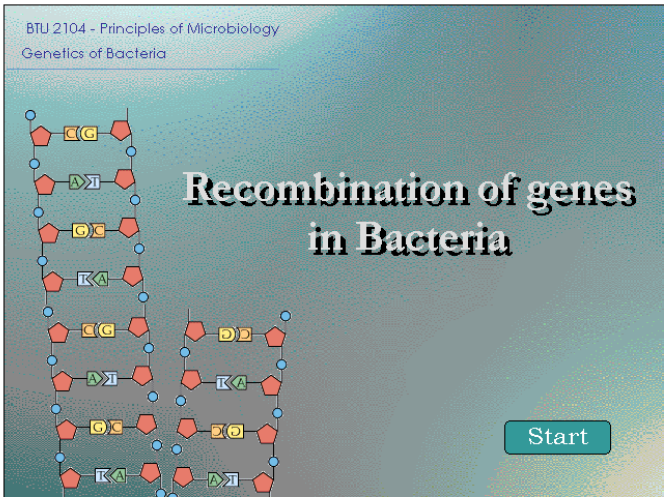

Figure 1 – Title screen

The 'Contents' screen (Figure 2) consists of navigational buttons (1-7) indicating the sections. In addition, this screen consists of three other buttons *viz*. Tour Guide, Menu button, and an Exit button.

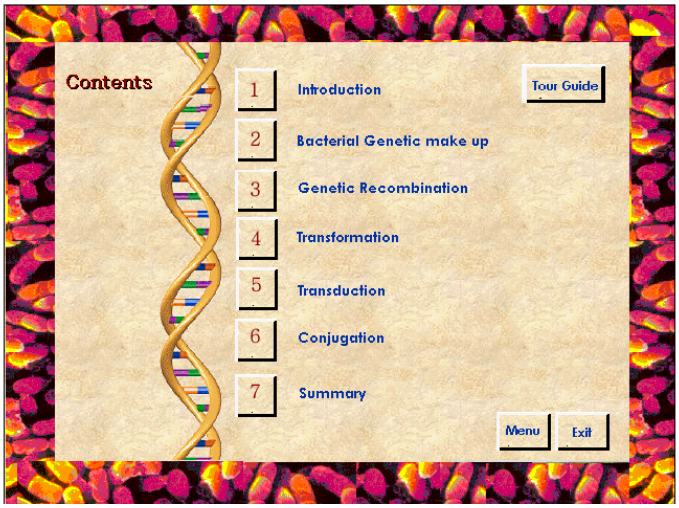

Figure 2 – 'Contents' screen

The 'Contents' screen starts with a background narration instructing students to view the 'Tour Guide' if they are viewing the package for the first time. A back button was not included, as there is no necessity to go back to the title page. The 'Contents' screen was made as simple as possible in order to gain fullest attention on the organisational structure of content information. As such, 'negative space' (empty background space) was kept blank to its fullest, in order to give a better perspective of the positive space (space which the text/objects occupy).

Factual information screens were structured as shown in the following storyboard (Figure 3).

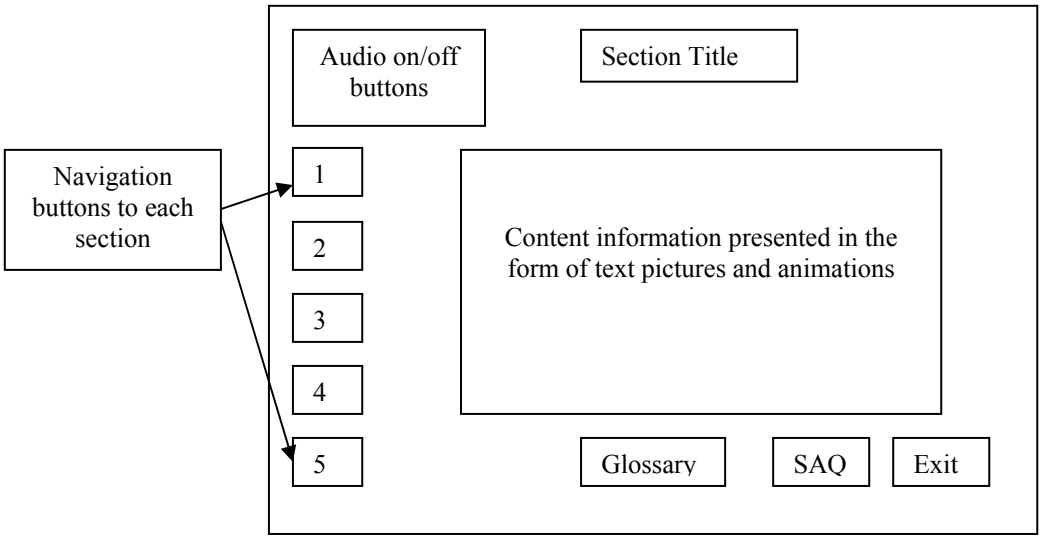

Figure 3 - Storyboard showing the structure of factual information screens

Each page was supplemented with following features:

- a simple definition at the beginning
- Content information placed in the middle portion of the screen presented in the form of text, graphics and animations
- Audio on/off button at the top left corner of the screen
- Navigational buttons placed on the left hand side and 'Exit' button at the bottom right corner of each screen
- Link to 'Self Assessment Questions' (SAQ) with interactive feedback
- Link to the 'Glossary'

A sample screen is given in Figure 4.

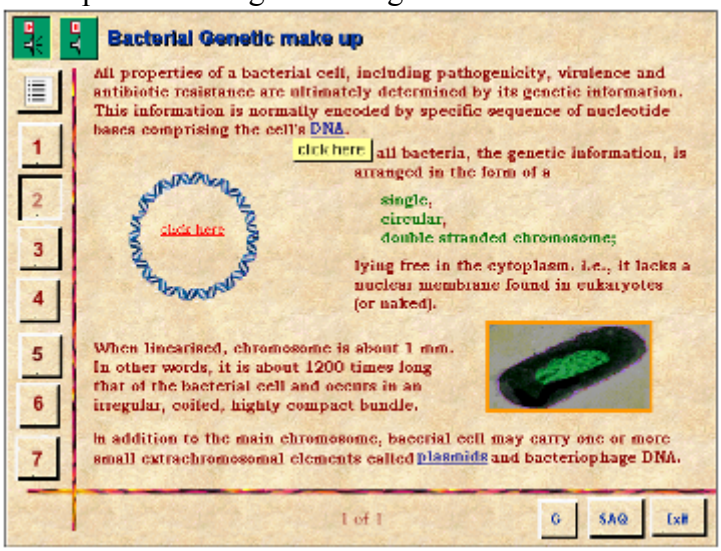

Figure 4 – A sample screen showing the format of a section

Animations were extensively used to explain the dynamic bacterial genetic processes. These animations were incorporated with *play, stop* and *repeat* buttons allowing learners to view as they wish. Graphical illustrations of bacteria depicting the nuclear material with different colours were used to emphasise the text explanations. Information was chunked appropriately with short descriptions, taking care not to overload the working memory of the learner. In case of explaining detailed instructions, windows overlays were used however, not to exceed more than two–three levels. Text was supported by a narration (redundant narrations) with audio controls. Auditory explanations were of simple narrative explanations with learner paced segments.

Objectives of the study

The purpose of this research paper is to find out learner perceptions of the instructional design of the IMM, in learning dynamic, abstract genetic microbial processes, in developing a more user friendly, authentic learning package.

Methodology

Research Methods – Both qualitative and quantitative methods were used to collect data. Quantitative data collection was done with the aid of a questionnaire, while observations and interviews were conducted to gather qualitative information. Triangulation of research methods was used to validate the results.

The questionnaire comprised of twenty four close-ended questions. The interview schedule consisted of standardized open-ended questions with some probing questions, and each interview was recorded for reference. The observational study was carried out while the individual learner was studying the IMM, and observations were recorded using an observational schedule. In this instance researchers adopted a passive non-intrusive role where students were observed without interfering with their learning, as pointed out by Cohen, Manion & Morrison, (2000).

Sample - The quantitative study was conducted with 42 science undergraduates and the first 30 students were interviewed and observed, in order to gather qualitative data.

Content analysis was carried out with qualitative data and frequencies were computed for quantitative data.

Results

Helpful nature of 'Tour Guide'

Observational studies indicated that all students watched the 'Tour Guide', in response to the audio instructions given at the very beginning of the IMM. During interviews students expressed that 'Tour Guide' was a very helpful feature, which made them familiar with moving through the lesson. This was strongly supported by the questionnaire data too, having a 100% of students accepting (57% agreeing and 43% strongly agreeing) the helpful nature of the 'Tour Guide' in navigating through the IMM.

Instructional design of the learning content

During interviews students rated animations as the most helpful feature in this IMM, in clarifying their doubts about bacterial genetics. They said that they could grasp bacterial genetic processes without much effort. Further, students expressed that animations visualised the microbial processes as live processes, which cannot even be explained in face-to-face situations. They have perceived this learning situation as they were studying in a classroom situation, and accepted it as an excellent facility for self learning, rather than learning with lengthy descriptions in textbooks. Students were satisfied having adequate number of animations to explain the concepts, however, reported some movement points to be re-done and improved. Observational studies witnessed students' thorough engagement with animations with repeated watching.

Students revealed that instructions given in the form of text/audio, especially describing the concepts at the very beginning of each section, were clear and have conveyed the meaning of genetic concepts perfectly. They also revealed that they could easily grasp the content information as those were presented in small manageable chunks. Questionnaire data also supported the same fact having 100% strong support. However, one student (S14/M) specifically requested to incorporate more introductory explanations in each section:

> '*I would prefer to have more introductory explanations when introducing all concepts.*' (S14/M)

All students highly appreciated the bacterial picture descriptions in colour and said that they could discriminate the structural features more clearly than the black and white illustrations in print course material. Questionnaire data also gave a 100% strong support to the fact that the colour graphics had stimulated their learning.

Students pointed out that narrations enhanced the message depicted by the visuals. They highly appreciated having a listening component, as it is very much limited in the teaching packages at OUSL. Questionnaire results also supported the above fact by having 67% of students strongly agreeing and 33% agreeing. Interviews revealed that narrations are simple, clear, at a moderate speed, easy to understand and helped them to know the correct pronunciation of the technical terms. As a whole, students were satisfied with the existing male voice used in the narration, but some male students (6) preferred a female voice instead.

Students also revealed that narration of the same written text was useful, as it gives them a chance of reading, identifying the difficult terms and their correct pronunciation. Students appreciated having on/off audio buttons as a helpful feature to listen to the audio repeatedly or to switch off audio to proceed with silent reading. Individual differences were observed using the audio component:

- some students listened to the audio while studying the pictures/animations
- some others were not very keen on listening but read the text by switching off the audio.
- some others did a silent reading, after once listening to the audio.

During interviews students expressed audio as a helpful feature, especially when learning with computers:

> '*It is very difficult to keep on reading over and over on computers, so that narration helps us in such occasions.*' *(S18/F)*

All students expressed that they felt comfortable by not having narrations for SAQs, so that they could attend to questions without interferences. Students' deep engagement in reading SAQs was also witnessed during observations.

Other design features

Introduction - Observational studies witnessed all students viewing the 'Introduction' and silent reading was spotted as there was no audio incorporated in this section. Questionnaire data revealed that 100% of students agreeing (55% strongly agreeing and 45% agreeing) that the introduction helped them in getting an overview of the lesson to be studied.

Learning Outcomes (*LOs*) - During observations researcher noted some students (i.e., 16 /30) missed viewing LOs. When these students were posed with a question at interviews, why they have missed viewing LOs, they indicated that the placement of LOs was not visible enough as it was within the 'Menu' option and the audio instructions regarding the LOs were not stressed at the specific point in the 'Tour Guide'. As a suggestion, students (15/16) suggested keeping the LOs in the 'Contents' page either below the 'Introduction' link or after the 'Summary'. One student suggested incorporating LOs along with each section.

Having completed viewing of the whole program, these students were asked to view the LOs before they answer the questionnaire. Questionnaire data revealed 100% students agreeing that LOs given are clear (75% strongly agreeing and 25% agreeing), and again 100 % agreeing that the incorporation of LOs helped them to focus on what they should achieve by studying the IMM.

Glossary -Assistance provide by the 'Glossary' to help student understand the difficult terms was well supported through the questionnaire (100% agreement). Students expressed that, unlike in textbooks, they checked the Glossary repeatedly as it was interactive and directly linked with each section. Observational studies also witnessed the usage of the 'Glossary' even while attempting SAQs. Questionnaire data also revealed that 75% of students requested a background narration to be incorporated into the 'Glossary' while the rest (25%) disagreed with the same fact, something which was also revealed during interviews.

Access to prior knowledge - All students expressed their happiness refreshing their knowledge on 'bacterial genetic make up' at the very beginning of the lesson during interviews. Further, they requested to incorporate '*lytic*' and '*lysogenic*' cycles especially in the form of animations, as those are very useful in understanding the processes.

SAQs - All students rated SAQs as the most helpful pedagogical feature in this IMM, and were excited over the prompt feedback. One student expressed her views:

> *'SAQs are also remarkable, and it is helpful to evaluate myself. In one section out of the SAQs, I got all correct answers, I was just like flying, and I felt like I know everything. And when I got a wrong answer, there I stopped to think where I went wrong. I think this is really wonderful'* (S30/F).

Students indicated that although print course material had SAQs they could not get prompt feedback as such. Interviews also revealed that SAQs gave them a chance of assessing their own performance instantly, clarifying their uncertainties and developing self confidence on what they have already learnt.

Observational studies witnessed students' eagerness to study the SAQs in each section, sometimes even before proceeding with the relevant content sections. While trying the questions when they get wrong answers, they tended to go back to the section to verify their knowledge, without merely clicking answers to get the correct answer. It was also witnessed that 75% of students obtained more than 80% marks at their first attempt, except for SAQ2, and none of the students obtained less than 40% marks. Students requested to include more SAQs into each section at the interviews.

Summary - Observational studies revealed that no students had tried to skip this section, but spotted four (4/30) students viewing it for the second time. During interviews students (7/30) revealed that the summary helped them in recapitulating the content learned.

As a whole, students commented on how easy it was to learn the complex bacterial genetic processes using IMM compared to lengthy explanations in print course material. They also revealed that microscopic processes were properly understood by viewing this IMM than from the print course book.

Discussion

Results related to qualitative and quantitative investigations show that 'Tour Guide' has helped students to get an overview of the navigational design, and has provided *learning guidance* as stated by Gagne (1985). Similar studies have also shown that designing an explanatory screen that provides a clear idea of program's navigation has facilitated in avoiding disorientation and wild excursions (Andrewartha & Wilmot, 2001; Park & Hanafin, 1993).

Findings brought into light that colour graphics helped students remember spatial distribution of components within bacterial cells better than the black & white illustrations and explanations in textbooks. Superiority of pictures over text to communicate spatial distribution was supported by various studies (Paivio, 1986; Mayor, 2001), which have found that pictures help access information more clearly and completely than do words, having more features available for processing (Najjar, 1998). OUSL learners being non native English speakers and a majority being weak in English (Raheem & Ratwatte, 1997) could be better supported with visually presented information as shown by Ratwatte (2005).

According to findings, animations are the main source which helped students understand dynamic abstract concepts, compensating the static illustrations and lengthy

details used in print course material. Students have used animations as a 'cognitive tool', scaffolding agent, individual problem solver, which reduces complexity of self-learning. These results are in agreement with similar findings by Lam & McNaught (2006). Having perceived animations with explanatory narrations, as they are learning with a teacher in a classroom, it has generated 'immediacy' which enhances social presence (Gunawardana, 2004), which is a strong affective component especially in e-learning situations.

As shown by observational studies, students' repeated engagement with animations is an encouraging feature which facilitates learning abstract concepts in science, especially in ODL context. Repeated engagement supports learner autonomy (Oswald, 2004) and facilitates learning in a second language (Ratwatte, 2005).

According to findings, the inclusion of text along with audio explanations (with controls) have provided the learner a personalized learning environment by facilitating different learning styles, *viz*. auditory, visually or both. Students' enthusiasm in learning correct pronunciation has added value to the audio component, particularly with English being a second language (Kulasekara, Jaytilleke, & Coomarsawamy, 2007). It has also facilitated students' learning with a 'listening' component, which is not much in use in OUSL teaching packages.

Having an 'Introduction' at the beginning of the IMM has provided the learner a guide to learning.

A major drawback in the instructional design of IMM surfaced in this study was with regard to the placement of LOs, as many students have missed viewing LOs. Students suggested to shift the LOs to the 'Contents' page explicitly along with main topics rather than separately in the 'Menu' option.

Provisions assisted by the interactive 'Glossary' has allowed students 'just in time' learning, and repeated access to unknown terms, facilitating the learner understanding the terms in English, without guessing incorrectly. Research related to computer mediated text glossaries are in agreement with these findings, having observed learners attending higher level processing (Abraham 2008; Chun, 2006). Pedagogical features such as 'access to prior knowledge' and 'summary', have also become useful in learning the subject matter.

SAQs with prompt feedback have become more responsive to individual students and have provided them a chance to determine achieving standards. Students' reflections brought into light their intrinsic feeling of success and enjoyment in return for their learning effort without any external rewards. Achieving high scores for SAQs indicated students' success in comprehending abstract concepts. Abas (2007) have also found similar results on feedback responses to questions given in a multimedia courseware.

In conclusion, instructional design features used in the IMM, were well perceived by students, and have helped them to construct knowledge in dynamic abstract process by the use of multi sensory representations, especially with animations. Interactivity built into various design features, has allowed learners to actively participate in learning providing an individualized learning experience. The findings of this study also throw

light in designing authentic, learner centred multimedia learning material, especially to learn abstract scientific concepts.

Acknowledgements

We acknowledge the National Science Foundation of Sri Lanka for their financial support given to conduct this research study.

References

Abas, Z. W. & Osman, R. (2007). Effectiveness of Multimedia Courseware Design: Towards Quality Learning in ODL. *In Proceedings of 21st Annual Conference of Asian Association of Open Universities*, 29 -31 October, 2007, Kuala Lumpur, Malaysia.

Abraham, L. B. (2008). Computer mediated glosses in second language reading comprehension and vocabulary learning: A meta analysis. *Computer mediated Language Learning*. 21 (3) 199-226.

Andrewartha, G. & Wilmot, S. (2001). Can multimedia meet tertiary education needs better than the conventional lecture? A case study. *Australian Journal of Educational Technology,* 17 (1) 1-20.

Chun, D. (2006). The effect of CALL technologies for L2 reading On L. Ducate & N. Arnold (Eds) C*alling on CALL: From theory and research to new directions in foreign language teaching* (pp 69-98) San Marcos, TX:CALICO.

Cohen, L., Manion, L., & Morrison, K. (2000). *Research Methods in Education*, (5th ed.). London: RoutledgeFalmer.

Coomaraswamy, U. (1999). Ensuring quality in Distance Education: Development of Instructional Material in Microbiology under the Department for International Development (DfID) UK Project. *OUSL Journal*, 2: 44-64.

Gagne, R. M. (1985). *The Conditions of learning and theory of instruction* (4th ed.). New York: Holt, Renhart, and Winston.

Garnett, P., Oliver, R. & Hackling, M. (1998). Design interactive multimedia materials to support concept development in beginning chemistry classes. In Chan, T., Collins, A. & Lin, J. (Eds.). Global Education on the Net: *In the Proceedings of the 6th International Conference on Computer in Education*. China Higher Education Press, Beijing and Springer Verlog, Heidelberg (pp 141-144).

Gunawardana, C. N. (2004). Designing the Social Environment for online Learning: The role of social presence. In D. Murphy, R. Carr, J. Taylor, & T. Wong (Eds), *Distance Education and Technology: Issues and Practice*. Hong Kong: Open University of Hong Kong Press.

Hakkinen, P. (2002). Challenges for design of Computer based learning environments. *British Journal of Educational Technology* Vol. 33 (4) 461 – 469.

Hoffman, S. (1997) Elaboration theory and hypermedia: Is there a link? *Educational Technology*, 37(1) 57-56.

Jayatilleke, B. G., Kulasekara, G. U. & Coomaraswamy, U. (2009). Harnessing Advances in Technology in Course development to enhance learner satisfaction in the Open University of Sri Lanka. In U. Coomaraswamy, A. Hope, K. Rama, (Eds) *Quality Assurance Toolkit: Distance Higher Educational Institutions and programmes.* Ministry of Higher Education, Sri Lanka, Commonwealth of Learning, UNESCO

Kulasekara, G.U., Jayatilleke, B.G. & Coomarsawamy, U. (2007). Learning with interactive multimedia: Perceptions of students learning microbiology at a distance. *In Proceedings of the 3rd International Conference on Open and Online Learning*, *Pedagogical Scripting for Open and Distance Learning (ODL)*, 11-14 June 2007, Penang, Malaysia.

Lam, P. & McNaught, C. (2006). Design and evaluation of online courses containing media enhanced learning material. *Educational Media International*, 43(3)199-218.

Mayer, R. E. (2001). *Multimedia Learning*. Cambridge University Press.

Najjar, L. J. (1998). Principles of Educational multimedia user interface design. *Human Factors*, 40(2), 311-323.

Neo, M., Kian, K. N. T. & Eshad, A. R. M. (2007). Designing Interactive multimedia curricula to enhance learning in the Malaysian Classroom- form teacher led to student centered experiences. *International Journal of Instructional Media* Vol.34 (1) 51-59.

Oswald, D. (2004). Toward an instructional design theory for fostering self-directed learning. *Educational Technology*, 44(6) 31-38.

Paivio, A. (1986). *Mental Representations: A dual coding approach*. New York: Oxford University Press.

Park, I. & Hannafin, M. J. (1993). Empirically based guidelines for the design of interactive multimedia. *Educational Technology Research and Development,* 41(3) 63-85

Raheem, R. & Ratwatte, H. W. (1997). Student Profiles in English: Issues and Implications. *OUSL Journal* Vol.1, 3-27.

Ratwatte, H. W. (2005). Teaching in the Learner's second language: The OUSL (The Open University of Sri Lanka) context. *In the Proceedings of OUSL Silver Jubilee Academic sessions* 24-25, November, 2005, Nawala, Sri Lanka.

Implementing Peer Assisted Student Success (PASS) programme in an open learning context: a case study at the Arab Open University – Lebanon

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Abstract

In this paper, we discuss the impact of applying the PASS programme in an open learning context. In particular, we present our experience with the PASS programme in the Information Technology and Computing (ITC) department at the Arab Open University - Lebanon.

Peer Assisted Student Success (PASS) is a peer-led support programme that targets at-risk academic courses, i.e. courses with high failure rates, high withdrawal rates or low averages. In a classic learning context, this programme offers scheduled out-of-class study sessions to all students enrolled in the target course. These sessions are led by PASS leaders or coaches, who are the key people in the programme. They do not focus on lecture content but instead on study skills, which makes this model distinct from the traditional tutorials. The PASS programme is currently widely implemented in universities and schools around the globe.

We describe our open learning-adapted implementation of the PASS programme for a second level course. Finally, we evaluate the programme results.

Introduction

Peer Assisted Student Success (PASS)[4] programme is a type of supplemental instruction (SI) which is an academic support programme that increases student academic performance and retention. The main targets of the PASS programme are traditionally difficult academic courses; these are course subjects that routinely have thirty-percent or more "D" or "F" grades and withdrawals. It is worth mentioning that PASS programme, unlike traditional student assistance programmes, does not identify high-risk students, but rather identifies high risk courses (Arendale et al., 1993).

Supplemental Instruction was initiated in 1974 by Deanna C. Martin, at the University of Missouri-Kansas City in courses. It began with medical students in courses such as Anatomy and Physiology. The idea came from the observation that many students enrolled in these UMKC health science schools were having academic difficulty and some were dropping out of school, even though these students had a previous history of good academic performance (Arendale & Martin, 1993). It was clear that the problem is related to the difficulty in specific courses and doesn't reside with the academic preparation of the students (Arendale, 1993).

[4] PASS is also used in the same context as an acronym for Peer-Assisted Study Sessions

The SI programme now is recognized internationally. Figure 1 illustrates the distribution of the SI programmes around the world (UKMC, 2009).

Figure 3 - Distribution of SI programmes around the World

In this paper, we present our experience in implementing the PASS programme in an open learning context at the Arab Open University (AOU) – Lebanon. The rest of this paper is organized as follows: section 2 explains the PASS programme. Section 3 describes how PASS was implemented in the AOU - Lebanon. Section 4 presents the results and finally section 5 concludes the paper.

Peer Assisted Student Success

As already mentioned, PASS Programme is intended for courses perceived by students as being difficult which is normally translated by high failure rates. The programme is non-remedial and open to all students enrolled in the related course. Sessions are led by students called PASS leaders or PASS coaches, who are chosen on the basis of their academic record and their excellent interpersonal skills. In few words, PASS can be seen as an "environment where students are presented with questions or examples related to course material and encouraged to collaborate with each other to form a solution" (Lewis et al., 2006).

One of the key success elements for the PASS programme is the choice of the PASS coach/leader. Arendale (1993) identifies ideal PASS leaders as students who have previously taken the course that they are now assigned to coach. They present skills of appropriate thinking, organization, and mastery of the discipline. These leaders are deemed competent in the content area by the instructor of a targeted course. The main role of the PASS coaches is to help their peers to discover appropriate application of study strategies, e.g., note taking, questioning techniques, test preparation, etc. In other words, to show them how competent students learn. The leadership of the PASS coach should be reflected in managing the group dynamics, posing relevant questions to prompt further thought and guiding the group toward the correct answer. It is important

to mention that PASS leaders are engaged in sharing their experiences and facilitating discussion rather than re-instructing the subject.

The PASS study sessions are available on weekly basis, each lasting 50 minutes. They constitute an open forum whereby students feel free to compare notes, clarify what they read and study, analyse, criticise, question and seek verification of ideas. Through peer interaction in this study environment, students are able to admit ignorance and misconceptions and seek information, advice and remedy, without fear of jeopardising their academic performance (Topping, 1996). Furthermore, they have the opportunity to become actively involved with the course material as the PASS coaches make use of these, as well as other supplementary material, during the sessions.

The results of implementing the PASS programme have been encouraging since its initiation in mid-1970s (UKMC, 2004; 2007). The benefits are not only restricted to decreasing failure rates for participants, even though it is one of its main objectives. Surveys have revealed that participants in PASS also show improvement in communication and public speaking skills, better problem-solving and analytic skills and improved ability to work as part of a group. Participants in PASS also reported that they felt increased confidence in dealing with the subject, enjoyed the subject more and felt more comfortable in moving into tertiary study (Lewis et al., 2006).

Implementing PASS at the AOU-Lebanon

The Arab Open University (AOU) is a non-profit organization that was set up at the initiative of HRH Prince Talal Bin Abdulaziz Al-Saoud, with the funds of Arab Gulf Program for United Nations Development Organization (AGFUND). The Arab Open University has branches in Lebanon, Bahrain, Jordan, Egypt, Oman, Yemen and Saudi Arabia.

The AOU aims to establish itself as a leading institution of open learning, offering opportunities for a new method of study and creating a forum of lifelong learning. The university intends to promote human resources development that is compatible with the demands and challenges of current and emerging information technology platforms and international socio-economic developments (AOUL, 2009).

The AOU adopts a mixture of classic learning and open learning with a mandatory face-to-face component of each course (25% of the traditional university requirements). Tutorials for courses are repeated throughout the week days and times so when a student misses a tutorial he/she can attend a make up tutorial at the discretion of the course coordinator (Salah, 2003).

The PASS programme has been implemented in the Information Technology and Computing (ITC) department at the AOU - Lebanon, for a second level course that satisfy the criteria of a difficult course; i.e. a course with a high DFW (D' grades /F' grades/Withdrawal) rate. Figure 2 and 3 illustrate the detailed and the overall DFW rates of the course in the last three years.

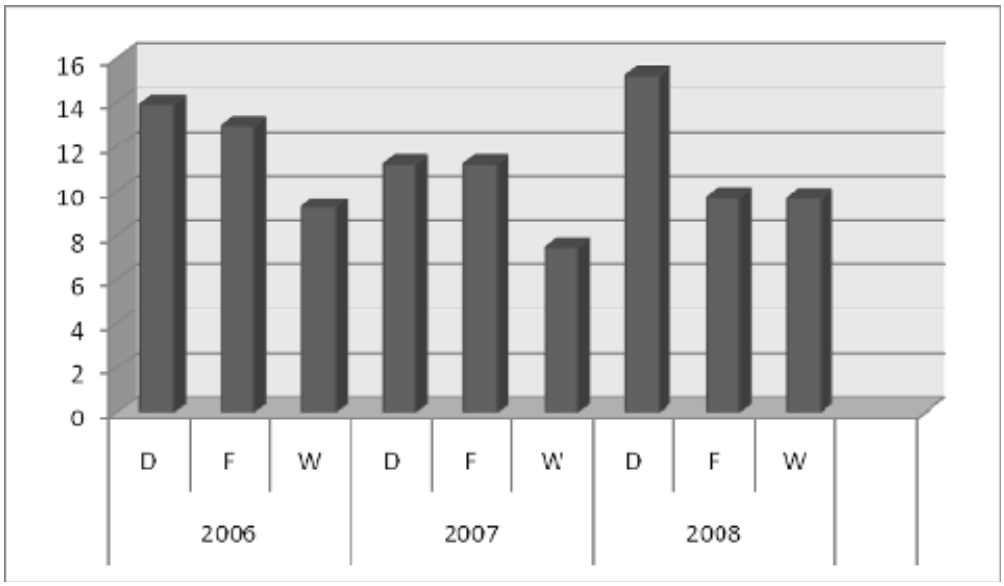

Figure 4-DFW detailed rates

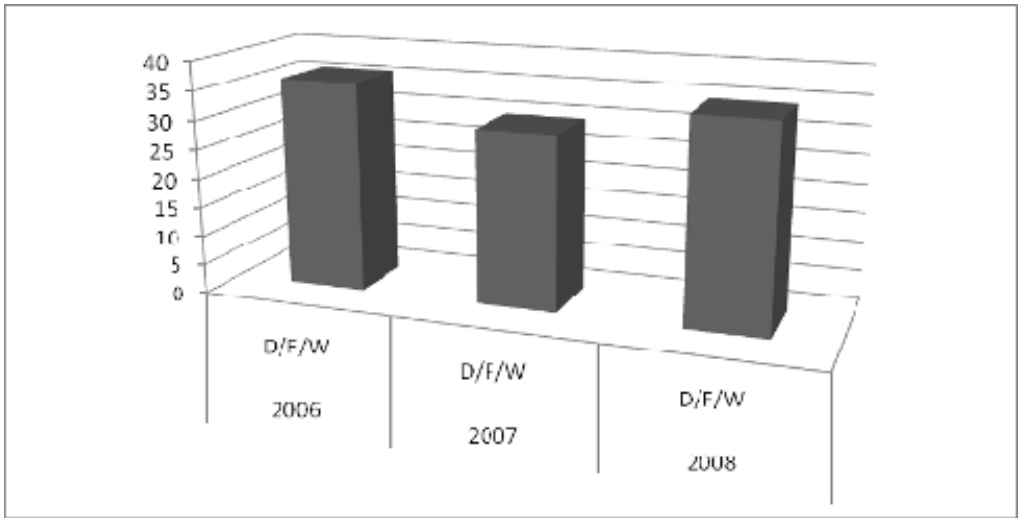

Figure 5-DFW overall rates

As already mentioned, the PASS coaches are students who have previously done well in the course, demonstrated excellent records of participation and can therefore act as model students. However in our implementation, the chosen PASS coach students are selected 'A' students who have good communication skills. They were trained in learning theory and techniques by the course coordinator. Three PASS coaches were chosen according the aforementioned criteria in order to cover morning and evening sessions. Every PASS coach has the responsibility of preparing the 50-minutes weekly session content.

Furthermore, and in order to add more flexibility to the PASS programme in an open learning context, we integrate another means of communication between the PASS coach and the participants: the forum. A forum was created in the university learning management system (LMS) with three separated member groups (each corresponding to a PASS study session) moderated by the three PASS coaches. The forum is a complementary part for the face-to-face communication providing the PASS coaches the possibility to upload supplementary materials they may judge useful for their peers, and allowing PASS participants (including the coach) to discuss course related topics

outside the study sessions. The forum also constitutes an alternative to face-to-face sessions for those students unable to attend these sessions.

The programme began during the first week of the term in anticipation of the perceived difficulties. The PASS programme was closely followed up by the course coordinator in the first three weeks in order to guarantee a good start. After that, the coordinator role was mainly to remotely monitor the quality of the PASS sessions and gather feedback from the PASS participants.

The PASS sessions are open for all enrolled students with no pre-selection, even though weaker students are more likely to attend these sessions (Figure 3).

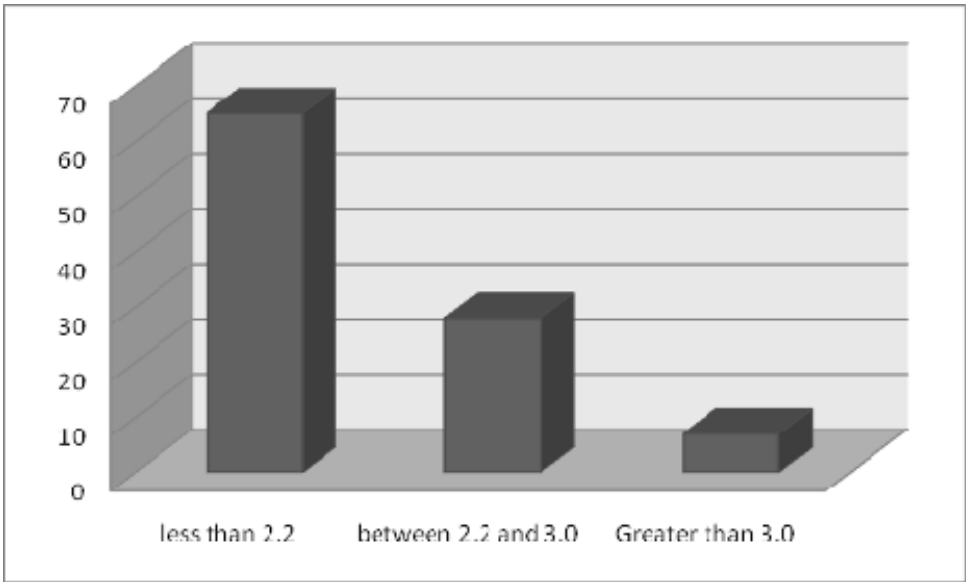

Figure 6-GPA distribution of PASS participants

Results

In this section, we provide an evaluation of the PASS programme regarding two metrics: the student attrition rate and the student academic performance.

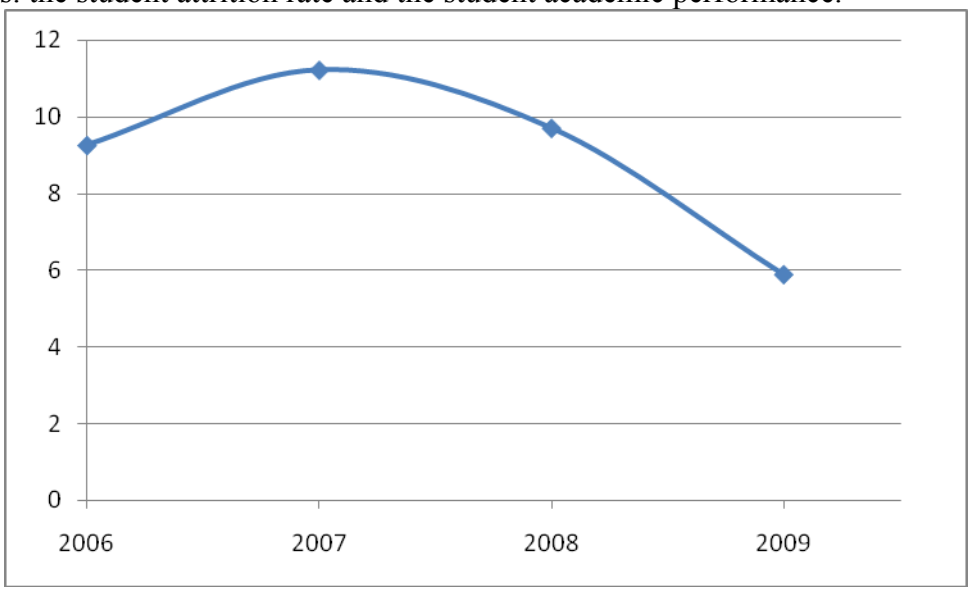

Figure 7-Course attrition rates

Figure 5 depicts the course attrition rates in the last three years (before implementing PASS) and the enhancement made with the application of the PASS programme. The number of drop cases was reduced from around 10% to less than 6%.

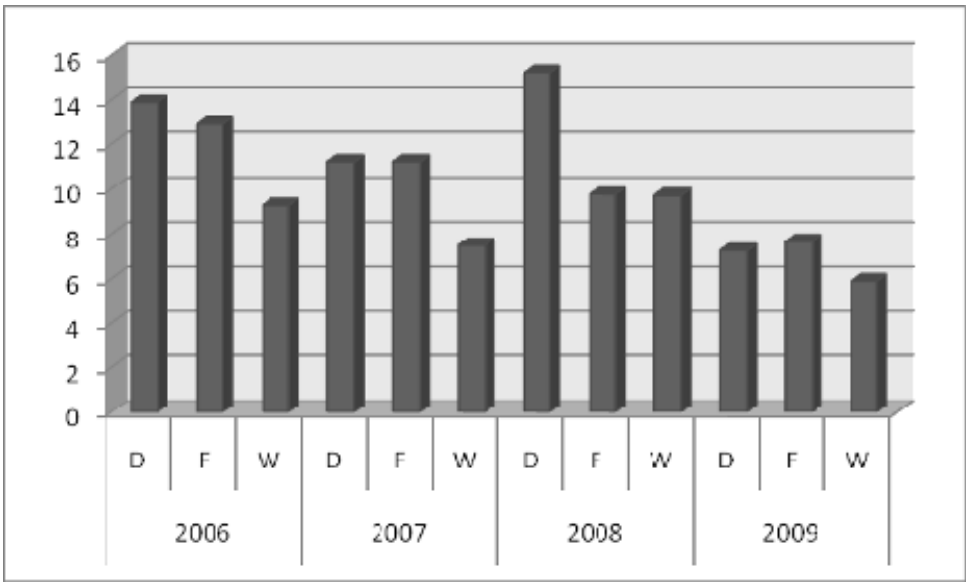

Figure 8-DFW detailed rates

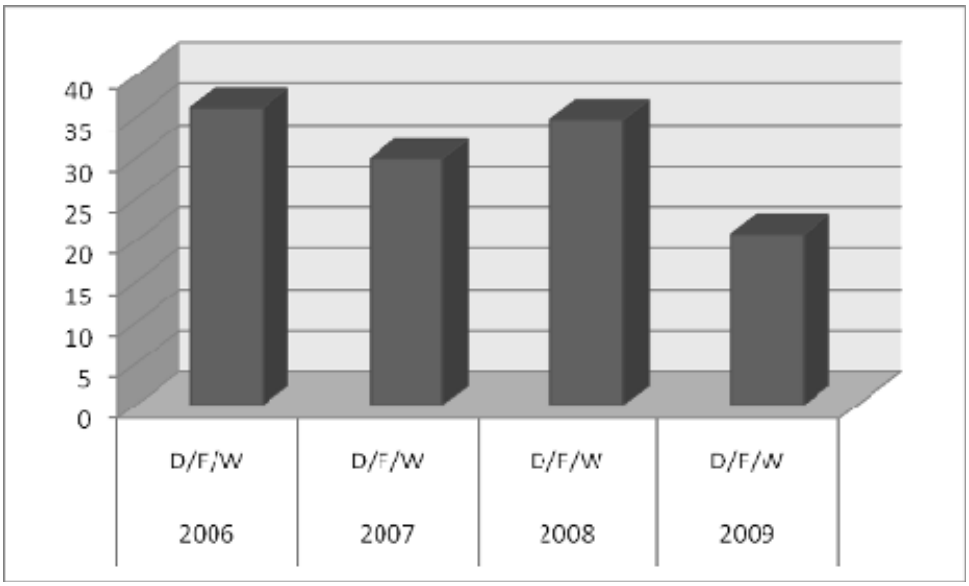

Figure 9-DFW overall rates

Figure 6 and 7 illustrate the DFW detailed and overall rates obtained in the course in comparison with the previous years. The overall D/F/W rates is around 20% in comparison with rates around 30% in the last three years.

Conclusion

In this paper, we presented a case study for implementing the Peer Assisted Student Success (PASS) programme at the Arab Open University - Lebanon. We described the application of this programme in a difficult second level course, while taking into consideration the open learning context. We also evaluate the implemented programme regarding course attrition rates and student performance.

We intend to extend the application of the PASS programme to other "at risk" courses, in particular for the first year courses. However, our criteria upon which PASS coaches are selected from students registered in the course would need modification, given that first year students have no record that can be used to judge their abilities to lead PASS study sessions.

Finally, even though a one year experience is not sufficient to draw a complete image of the benefits of the PASS programme, we believe that this programme should not be narrowly viewed as a programme to help students improve their grades but rather to consider it as an enriching programme for all students that can help them master rigorous content material and improve their analytical and communication skills.

References

AOUL (2009): Arab Open University – Lebanon official website, http://www.aou.edu.lb

Arendale, D. & Martin, D.C. (1993): "Understanding the Supplemental Instruction model", Supplemental Instruction: Improving first-year student success in high-risk courses, second edition, pp. 3-10.

Arendale, D. (1993): "Fostering Multicultural Education with a Learning Assistance Model That Works: Supplemental Instruction".

Lewis, D., O'Brien, M., Rogan, S. & Shorten, B. (2006): "Do Students Benefit From Supplemental Instruction?" Journal of Economic Education, 2006

Salah, M. (2003): "Open learning in the Arab world: The experience of the Arab Open University".

Topping, K. (1996): "The effectiveness of peer tutoring in further and higher education: a typology and review of the literature", Higher Education, 32(3), 321-345.

UKMC (2004): "Supplemental Instruction (SI) National Data: Fall 1998 – Fall 2003", *University of Missouri –Kansas City*.

UKMC (2007): "Supplemental Instruction (SI) National Data: Fall 2003-Fall 2006", *University of Missouri –Kansas City*

UKMC (2009): "List of Supplemental Instruction programs", the international Centre for Supplemental Instruction at the University of Missouri-Kansas city, *http://www.umkc.edu/cad/si/si-programs.html* [last visited in13/06/2009]

Digital agricultural technologies and innovations for in-school youths in Nigeria

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Abstract

The purpose of the study was to determine the learning support materials and methodologies to teach agricultural technologies and innovations in the digital age. A total of 350 teachers and lecturers in the 170 secondary schools and 4 tertiary institutions in Ekiti State, Nigeria, were sampled as respondents for data collection. Frequency distribution, percentage, ranking order, mean and standard deviation were used for data analysis. Arising from the study are 20 methods and media, 22 learning support instructional materials and 25 basic learning concepts that are required for effective teaching of agricultural technologies in schools and colleges in the digital age. It was also observed that though some of the learning support materials were adjudged to be important, 13 of them were not available in most of the schools. It was recommended, among others, that government should provide more electronic instructional materials for schools and colleges in the State. Workshops, seminars and conferences should be organized for new and old teachers of agricultural science to re-orientate them on the use of modern learning support materials. Similarly, teachers should give assignments that would allow students to explore the use of digital facilities outside the school.

Introduction

Effective teaching and learning of agricultural innovations and technologies in the digital age requires specialized learning support facilities and methodologies. It also requires that learners should have access to scores of electronic instructional devices such as internet services, cable T.V., radio telephone, online facilities among others to complement classroom instructions.

The consideration of the learners as an important factor in the selection of learning support materials and methods depend on many factors. The factors include the differences among individuals, objectives in focus, environment, and background of the learners and the demand of agricultural productivity modern age technologies. The modern technologies provide the advantages of Information and Communication Technology [ICT], and electronic devices which can be employed to facilitate effective teaching and learning of agricultural technologies and innovations to youths in schools and colleges in order to enhance production oriented agricultures.

The differences among individuals required different learning support facilities and methodologies to facilitate effective learning. Learning in this case can be defined as a process of acquiring new knowledge, behaviours, skills, values, preferences of understanding, and may involve synthesizing different types of information. The appropriate selection of methods and materials for instructions is expected to be based not only on identification of types of learning, but on learning activities, competencies

to be emphasized, tasks and subtasks, enabling objectives and expected performance of the learners in the field after graduation from school.

Performance, according to Fatunsin (1996), is the actual accomplishment of learning tasks as distinguished from potential ability. In which case, instructions are not complete in the process of teaching and learning the skills required in agricultural innovations and technologies, unless the students can perform a task adequately through practicals and learning by doing using mechanized implements, and learning support facilities to facilitate a quick adoption process.

The adoption of new innovations and agricultural technologies by youths plays an important role in the development of an agricultural productivity production oriented agriculture through the school. Olaitan (1996) defined agricultural technologies as a systematic use of the knowledge of science to solve practical problems on the farm. Such problems and technologies may include the process of developing and usage of resistant varieties of crop and livestock to pest and diseases, genetic manipulation, bio-environmental control, biotechnological initiatives, irrigation, use of hormones, agricultural mechanization, water management, soil conservation, integrated pest control, effective use of fertilizer and herbicides and so on.

Effective teaching and learning of all the new areas in agriculture requires specialized learning support facilities and methodologies. One of the primary roles of the teacher of agricultural education in the school is therefore to 'help' the youths in the school to be involved in various proficiency activities so as to acquire appropriate knowledge, skills and values that can be employed on the farm for production agriculture, thereby increasing food and raw materials production, processing, packaging and marketing

The Problem

Many developing countries are very rich in agricultural resources but have acute food shortages. Nigeria, as one of these countries, needs more food for the increasing population to prevent starvation and malnutrition. The population of Nigeria is about 140 million. The teaching of agriculture in Nigeria schools and colleges is one of the strategies for increasing agricultural productivity on a long term basis (Olaitan, 1984).

The teaching of agricultural science is faced with many problems requiring attention in the modern digital age. Most of the graduates of Nigerian schools and colleges are unskilled. They are conservative using the old methods of farming. Hence, food production in the country has never improved significantly (Olagunju 2008). Though many factors may be responsible for the low food production, one that appears significant is the lack of, or inadequate, use of modern electronic devices, appropriate learning support facilities and methodologies by the teachers of agricultural science in schools and colleges. However, one of the primary roles of the teachers of agricultural science is to get the in-school youths involved in various proficiency activities, in order to acquire appropriate knowledge, skills and values that can be employed on the farm for a production-oriented agriculture. There is the need for a rethink about the phenomena.

This study therefore intends to identify the learning support instructional materials and methodologies for effective teaching and learning of agricultural technologies and

innovations to enhance agricultural productivity among youths in schools and colleges in Ekiti State.

Purpose of the Study

The major purpose of the study was to determine the following:

(a) methods appropriate for teaching agricultural innovation and technologies to in-school youths in Ekiti State;
(b) learning support instructional materials or media for teaching agricultural technologies and innovations to in-school youths in Ekiti State;
(c) basic concepts required for teaching agricultural technologies and innovations to in-school youths in Ekiti State.

Methodology

This study was a survey research. The sample for the study comprised a randomly selected 350 respondents currently teaching agricultural science in Ekiti State secondary schools (300), College of Education, Ikere Ekiti (10), the University of Ado-Ekiti, Ado Ekiti (8), the Federal Polytechnic Ado Ekiti (8), and the University of Education Ikere Ekiti (4). The secondary schools were stratified across the 16 Local Government areas of the state. A self administered structured questionnaire was used to collect the data used for the study. Face and content validity were used to test the appropriateness of the instrument used. The test re-test reliability of the instrument gave a coefficient $r = 0.87$. The instrument consisted of three sections: seeking information on methods, learning support instructional materials and concepts required for teaching agricultural technologies and innovation to youths in schools and colleges. Out of the 350 questionnaire distributed, 250 were collected back and found usable for this study; that is 230 from teachers and 30 from lecturers. The response yielded a 71.4% return rate. Frequency distribution, percentage, mean, rank order and standard deviation were used for data analysis. The statistical test was analyzed at 0.05 level of significance.

Findings

The findings of this study are based on the three research questions identified. Data required to answer the research questions are analysed as follows:

Table 1: Rank order correlation (rho) analysis of the methods for teaching agricultural technologies and innovations to youths in Schools and Colleges in Ekiti State, Nigeria.

S/No	Methods	Teachers Rank 230	Lecturers Rank 30	D	D^2
1	Field Trip	17	20	-3	9
2.	Problem Solving	7	4	3	9
3.	Discussion	8	6	2	4
4.	Operation Research	16	19	-3	9
5.	Group	11	12	4	16
6.	Individual	19	10	0	0
7.	Teaching Machine	19	18	1	1
8.	Demonstration	2	3	-1	1
9.	Project Method	6	9	-3	9
10.	Ownership	5	7	-2	4
11.	Advance Organizer	12	15	-3	9
12.	Lecture	20	16	4	16
13.	Programmed Instruction	18	14	4	16
14.	Questioning	9	8	1	1
15.	Assignment	4	1	3	9
16.	Discovery	14	13	1	1
17.	Laboratory	15	11	4	16
18.	Concept mapping	13	17	-4	16
19.	Experimental Methods	3	5	-2	4
20.	Learning by doing	1	2	-1	1
			Total	151	

[[Rho] p = 0.886 > table p = 0.475 at 0.05 level of significance]

Analysis of the data in Table 1 reveals that learning by doing method was ranked first by secondary school teachers, while the lecturers ranked assignment method as first. The lecturers ranked demonstration method as second. The rank order correlation (rho) p = 0.886 (between teachers and lecturers) is greater than the table p = 0.475 at 0.05 level of significance, which shows that there is a positive significant relationship in the ranking of lecturers and teachers on the methods required for teaching and learning of agricultural technologies and innovations to youths in schools and colleges in Ekiti State, Nigeria.

Table 2: Respondents' opinions on the importance and availability of learning support instructional materials required for teaching agricultural technologies and innovations in schools and colleges

S/ No	Media/Instructional Materials	V.I %	F.I %	U %	N. A %	A %	Not A %	Remarks
1.	Cable T.V.	62	38	0	0	16	84	V/I Not Available
2.	Adhesives	0	65	30	5	30	70	F/I Not Available
3.	Rolliograph	0	60	40	1	22.8	72.2	F/I Not Available
4.	Chalkboard	40	47	11	2	98	02	V/I Not Available
5.	Bulletin board	36	47	15	2	62.5	37.2	F/I Not Available
6.	Realia	85	15	0	0	82	18	V/I Not Available
7.	Models	74	26	0	0	84.4	15.6	V/I Not Available
8.	Templates	0	74	26	0	22	78	F/I Not Available
9.	Overhead Projector transparencies	52	31	15	2	48	82	V/I Not Available
10.	Micro film	40	48	10	2	10	90	F/I Not Available
11.	Internet services	51	42	4	3	16	84	V/I Not Available
12.	Pictures	51	42	7	0	100	0	V/I Not Available
13.	Charts	47	48	3	2	100	0	F/I Not Available
14.	Radio	22	54	22	2	100	0	F/I Not Available
15.	Video tape recorder	63	32	3	2	18.8	81.2	V/I Not Available
16.	Television	48	47	5	0	32	68	F/I Not Available
17.	Textbook	35	53	12	0	92	08	V/I Not Available
18.	Resource Personnel	94	6	0	0	97.2	2.8	V/I Not Available
19.	Exhibits and Exhibitions	80	20	0	0	21.2	78.8	V/I Not Available
20.	Manuals	70	30	0	0	14.4	85.6	V/I Not Available
21.	Film and film strip	36	53	10	1	40	60	V/I Not Available
22.	Mobiles	0	54	44	2	10.8	94.2	F/I Not Available

VI = very Important, F.I. =fairly important, U. =Unimportant, N. =No Answer, A. =Available, Not A =Not Available

Data presented in Table 2 show that all the 22 learning support instructional materials were adjudged to be important, though at different levels. 6 items are very important and available, 7 items are very important but not available, 3 items are fairly important but available while 6 items are fairly important and not available. For example, Cable T.V. was identified as very important 62% but not available 16% in most schools, Video tapes was rated as very important, 63% but not available 81.2%.

Table 3: Mean and standard deviation of respondent opinion on the Basic Learning Support Concepts required for teaching agricultural technological skills to youths in schools and colleges in Ekiti State, Nigeria.

S/No	Basic Concepts Initiatives	N = 250	Remarks
1.	The use of various methods of teaching	4.12 0.74	Required
2.	The use of various learning supporting practices like instructional materials	4.35 0.75	Required
3.	Use of internet services	4.20 0.78	Required
4.	Use of ICT facilities	3.39 0.65	Required
5.	Use of Agricultural Software packages	3.25 0.80	Required
6.	Use of varieties of instructional methods and media	4.76 0.54	Required
7.	Experiential programmes for youths going into farming	3.72 0.63	Required
8.	Supervised Agricultural Experience programme	4.61 0.96	Required
9.	Ownership/Improvement, Supplementary projects	4.77 0.51	Required
10.	Learning by doing activities	4.58 0.88	Required
11.	Recognize individual differences among learners	4.73 0.49	Required
12.	Using Competency based approach	4.47 0.61	Required
13.	Psychoproductive teaching strategies	4.57 0.53	Required
14.	Relevant and required teaching abilities and skills by teachers	4.53 0.79	Required
15.	Using task analysis approach	4.88 0.65	Required
16.	Use of checklist to evaluate accomplishment	4.68 0.59	Required
17.	Setting achievable performance based objectives	4.44 0.53	Required
18.	Measure student achievement against set standard	4.13 0.83	Required
19.	Conduct needs assessment programmes	4.66 0.69	Required
20.	Identify and use educational principles and procedures in teaching	4.42 0.71	Required
21.	Be knowledgeable in each subject area to be taught	4.77 0.64	Required
22.	Use resource persons and community resources	4.02 0.86	Required
23.	Involve students in preparing instructional learning materials	4.68 0.72	Required
24.	Develop and give performance Based Test for evaluation of students achievement	4.81 0.65	Required
25.	Design a follow up or feedback programme for students	4.58 0.46	Required

Mean (x) were based on SA = 5, A = 4, UD = 3, D = 2 and SD = 1

Information contained in Table 3 reveals that all the respondents agreed with the 25 learning support concepts needed for effective teaching and learning of technological skills required for agricultural productivity. The mean range of the respondents opinion ranged between (x= 3.25 to 4.88) which are quite above the cut off point of 2.55. All the standard deviations were less than 1.00, with a range of (SD = .46 to .96). However, all the respondents agreed that the concepts are required for effective teaching and learning of agricultural technologies and innovations to youths in schools and colleges in Ekiti State, Nigeria.

Discussion of the findings

The findings in Table 1 revealed that learning by doing, assignment, experiential, demonstration methods were ranked highest as methods of teaching agricultural technologies and innovations to youths in the schools and colleges to enhance agricultural production in the country. This finding is supported by Akanbi (1988) that the teachers' ability to select appropriate methods and mix them in any teaching – learning situation is very necessary and required in all teaching and learning situations to enhance productivity. It is observed that if appropriate methods are well mixed' it will facilitate effective teaching and learning.

Data contained in Table 2 shows that the identified 22 instructional materials could be employed to teach the various skills, tasks and competencies required for adoption of agricultural technologies and innovations by the youths in the school. The findings is congruent with Okeke and Ukinze (2003) that properly prepared **instructional** materials and media would facilitate the teaching of psycho productive skills in agricultural disciplines with increasing effectiveness at all levels of learning. The study suggested that all instructional materials are important, depending on the type of learning outcome to be emphasized. He stressed that though ICT facilities are not common in most of the schools in the country, where they are available they provided the easiest and most detailed means of teaching.

The findings in Table 3 show the basic concepts that are required in teaching agricultural technologies and innovations to youths in schools in Ekiti State. The findings are supported by Olagunju (2009) that basic concepts are guidelines or principles to enhance the success of a task.

Conclusion and Recommendations

The findings of this study revealed the different methods, learning support instructional materials and the basic concepts that could guide the successful teaching of agricultural technologies and innovations in schools and colleges in Ekiti State, Nigeria. The study also identified the materials that are not readily available in most schools and colleges. Based on the findings of this study it was recommended that schools and colleges in Ekiti States should [1] adopt the use of the identified methods, learning support instructional materials and basic concepts to facilitate the effective teaching and adoption of agricultural technologies and innovations in schools and colleges in the state; [2] Government should provide more instructional materials, most especially the electronic devices, like ICT facilities, cable T.V., audio visual aids for schools and colleges in the state; [3] in-service training, workshops, and conferences should be organized for new and old teachers to re-orientate them on the use of modern learning

support materials and [4] teachers should give assignments that would allow students to explore the further use of digital facilities outside the school .

References

Akanbi, I. (1988) Selection, utilization and evaluation of instructional media. *Fundamentals of Educational Technology*. (Ibadan, Associated Book Makers)

Famiwole, R.O. (1997) Developing policy and criteria for establishing and sustaining a viable in–school youth organization in agriculture in secondary schools. *Ph. D. Thesis*. *University of Nigeria, Nsukka.*

Famiwole, R.O. (2003) *Rudiments of Farm Mechanization, Farm Power and machinery,* (Ado-Ekiti Nigeria. Petoa Education Publishers.)

Fatunsin, L.O. (1996) Developing and standardization of performance–based test of assessing students in agriculture in secondary schools in Ondo State. *Ph.D Thesis, University of Nigeria*.

Ojoko, S.S. (1993) An assessment of educational media in agricultural instructional process in River State of Nigeria high school. *Nigeria Journal of Agricultural Teacher Education, 2(2), 57-63*

Okeke, A.U. & Ukinze, Z.A. (2003) A survey of business centre operations in Enugu urban to determine ICT skills needed for entrepreneurship success. *Journal of the Nigerian Vocational and Technical Education No. 1, 66-72*

Olagunju, D. (February 23, 2009) *Education is more than schooling, it's a life long venture*. Ikeja, Lagos. Tell Communication Ltd. P. 40-41.

Olaitan, S.O. (1984) *Agricultural Education in the Topics*. (London. Macmillan Publisher)

Oluwasanmi, J. O. (2007) *Nigeria, Which Way Forward*. (Akure, Nigeria Madtex Publishers.)

Omolewa, M. (2009) *A case for a University of Education in Africa*. *The University of Education Ikere – Ekiti, Nigeria* keynote Address at the University of Education, Ikere Ekiti 10th Jan. 2009

Importance of ICT/mobile technologies in underpinning pedagogies, learning and peer group relationship reinforcement

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Abstract

Mobile technologies as an aspect of information technologies have a significant impact on the globalization of information communication and education. These positive effects of technologies can be experienced at all levels of education as they improve the instructional delivery process of teachers and educators.

Information and communication technology (ICT) is an umbrella that includes any communication device or application such as radio, television, cellular phone, computer network, hardware and software, satellite system as well as various services and applications associated with them, like video conferencing and distant learning. The development and utilization of the personal computer, a powerful computing device small enough to fit on a desk or in a lap and inform of GSM (Global System Mobile Network) handheld has influenced most of our day to day activities because communication is one of the important aspects in human existence. Information is power, power to influence, control or produce, it is the basis of everything a person does.

This paper examines the importance of mobile technologies in underpinning pedagogy, learning and peer group relationship reinforcement.

Introduction

The concept of mobile technologies under the ICT umbrella

Abimbade, Aremu and Adedoja (2003) stated that technology basically is a systematic and integrated organization of man, machines, ideas and procedures to achieve a desired goal. Erwat (2007) opined that Information Technology is the creation, collection storage, processing, transmission display and use of information by people and machines. Jarvis, cited by Ighafe (2002), defines IT as computer and other forms of technology that both share and generate information which can be transmitted widely by electronic means. Information communication technologies transmit or disseminate information to audiences, these cover internet service provision, telecommunication equipment and services, media and broadcasting. Among these information communication technologies are the **Mobile Technologies** which are the main focus in this context.

Mobile Technologies comprise of GSM (Global System Mobile Network) handheld, Hybrid Mobile Phone, PDAs Personal digital assistants devices, Smart Phones, Personal Computers, Laptops.

Public Technology Journal (2005) estimated that there are 1.5 billion mobile phones in the world today and more than three times number of Personal Computer (PC); it stated further that today's most sophisticated phones have the processing pattern of mid 1990's PCs and many people in the near future will start to see the mobile phone as an alternative to PC. As more individuals have access to mobile technologies, information and resource that once took several days or possibly weeks to obtain will be available in seconds. The continuing development of hardware and software will result in faster, easier to use, more powerful systems that will be indispensable in daily business, educational activities and personal life.

Mobile technology positive influence on educational pedagogies and learning

Charles (2004) expressed that Education and information technology in which **Mobile Technology** subsumes share a common phenomenon. Both are dynamic in the way they impact men's experience. Education, whether viewed as training, a learning process, the gaining of new skill and knowledge, a systematic accumulation of ideas, knowledge or as growth and development is catalytic to man's ability to adjust to the norms and values of his environment and society. An educated person is viewed by Ajayi (1997) as one who is able to fulfill the objectives of self realization, human relationships, economic efficiency and civic responsibility as applied to such things as citizen responsibility to his fellow men, to his society and country. He stated further that if an individual's educational experience is to achieve societal relevance and usefulness, there must be advancement in technology information.

Willis and Raines (2000) among their findings stated that the education sector has not been left out in the field of technology as there is evidence of various products of technology being introduced into the teaching learning process, such as **Mobile Technologies**. Bamikole (2001) opined that education technology is the creation, collection storage, professing, transmission, display and the use of information by people and machines.

NCET (1995a) described **Mobile Technologies** as concerned with the handling and processing of information using electronic devices, it creates opportunities to handle text and images, numbers and graphs, instructions, sound and music and to process information by organizing, storing and retrieving, sorting and analyzing, presenting and communicating.

Mobile Technologies have made pedagogies work easier faster and less stressful. Through computer based teleconferencing, a single teacher can teach a thousand students in various lecture theaters simultaneously. Public Technologies Journals (2005) stated that Media Board developed through collaborative tools for e-learning enables tutors to set up their own multimedia message boards for a class or project as students can add comments by sending messages or picture messages from their **Mobile** Phones. The m-Portal Page builder tools allows them to create and edit their own mini web pages for viewing on mobile devices; these pages can contain a number of different elements including text, pictures, movies animations, audio, web logs etc. **Mobile Technology** expedites literature searches as various automated searching machines within the internet facilities present in various GSM (Global System Mobile Network) handheld, Hybrid mobile phone, personal digital assistants devices, smart phones, Personal Computers, Lap tops, etc, provide more effective and efficient access to

indexes and information than does manual searching. Mobile technologies can also be used to analyze data collected from research through packages such as SPSs, Microsoft Excel, EPI Info, etc. Yumba (1996) stated that teachers can also visit specialist websites on the World Wide Web (www) which has become the most popular way of locating and retrieving information. Website information will keep the busy lecturer current, confident and in control of his classroom and content of lecture.

NCET (1995) highlighted the positive effect of **Mobile Technologies** in teaching and learning for pupils. It says there are frequently gains in maturation, presentation, questioning skills, problem solving, information handling and techniques of modelling. It says further that teachers often find that using mobile communication could lead to rethinking teaching and Learning Strategies, more opportunities for differentiation, greater expectations of their pupils, more opportunities for individual teaching and group work and better understanding of their pupils' learning.

The use of **Mobile Technologies** can facilitate almost all the learning experience in the classrooms, such as direct experience, various experience, making, creating, investigating, reasoning, deciding, problem solving, cooperating, individual work or role playing, which the learner is expected to be engaged in (Crompton 1989). He asserted further that the uses of personal computers and **mobile technology** have actually helped the child's reading process, encouraged the children to talk to each other and make decisions, argue and think things through.

Roschele, Patton, Pea and Princeton (2002) in their paper titled "To unlock the learning value of wireless mobile devices understanding coupling" stressed that handheld computers will become an increasingly compelling choice of technology for K12 classrooms because they will enable a transition from occasional, supplemental use to frequent, integral use, as they found out in their early evaluation in which teachers and students responded to hand held computers favourably.

Abioye (2004) conducting a research on perception and use of internet via **Mobile Phones** by adolescents in Ibadan **Nigeria** found out that students use internet facilities via **Mobile Phones** for Educational pursuit more than any other variables as entertainment, shopping, job placement, sports, fashion, etc. Kumor Lexman (2009) in his paper "Facilitating adult mobile technology-based learning through problem solving" opined that the use of problem based learning (PBL) within curriculum design has gained momentum in the recent few years due to the pervasive penetration of internet.

Public Technology Journals (2005) enumerated key findings of mobile learning advantage to young people as follows: it helps young people to improve their literacy and numeracy skills and to recognise their existence; helps to remove some of the formality of the learning experience and engages reluctant learners. (Collaborative mobile learning tools were popular, but some young people appreciated the opportunity offered by Mobile devices to learn independently and privately in their own time.) It helps to combat resistance to technology and bridge the gap between mobile phone literacy and illiteracy. (Experimental group were more confident about using PCs after using the mobile palmtop computers.) Mobile learning helps young people to remain more focused for longer periods. It helps to improve self-confidence, raises self esteem, builds trust and encourages greater personal responsibility.

Mobile technologies and distance education

Distance education takes place when a teacher and students are separated by physical distance. Technologies, e.g. video, data print, etc, are often used to bridge the instructional gap. These types of programmes provide adults with a second chance at a college and university education. It also reaches those disadvantaged by limited time, distance or physical disability and updates the knowledge base of workers at their places of employment (Abimbade, Aremu and Adedoja 2003). With the advent of ICT, there is a wide range of technological options that can be used in the delivery of instructional contents; among which are **Mobile Phone**, Audio Cassette, Television, Video cassette, Fixed Telephone, Fax facility, slow scan television, Radio Satellite conferencing, Tele conferencing, computer, internet and electronic mail. The powerful **mobile** devices are hybrid PDA/Phone devices running the pocket PC operating system (the XDA II) and hybrid Phone/PDA devices running the symbian operating system (Sony Ericsson P800/P900). These devices are more sophisticated and costly, but there are other cheaper mobile phones that have internet facilities.

In a research conducted by Nwizu (2004) on analysis of ICT usage in information generation and dissemination by Distance Education (DE) participants, citing universities in **Abuja, Lagos** and **Abia** states in **Nigeria, Mobile** Phones were found out to be one of most accessible and used a great extent in academic information generation and dissemination, among other variables listed above.

Mobile Phones using GPRS with internet facilities, which is the largest and most powerful computer network in the world, encourages students to use electronic mail (E mail) and the World Wide Web (www). Using Email for information correspondence will enable learners to have feedback from instructors more quickly than messages sent by postal mail while the **World Wide Web (www)** provides users with a uniform convenient means of assessing the wide variety of resources (pictures, test, data, sound video) available on the internet, for the users' convenience (William, Grawthan, Robert and Patton 1998).

Bulletin boards such as USENET and LIST SERV can be accessed by the instructor and learners both by regular and distance through internet. LISTSERV provides discussion fora on a variety of topics, while the USENET is a collection of thousands of topically organized news groups ranging in distribution from the whole world to single institutions (Abimbade, Aremu and Adedoja 2003). The use of magic board (magnetic media board) made teaching, learning easier as students can be given and answer assignments from their Laptops, through internet services; it also enhances the school authority to access the quality of the lecturers' lectures direct from their (authorities) office. Luckin, Boulay, Smith and Underwood (2005) opined that using mobile technology creates flexible learning context.

Mobile technology, a reinforcer of peer group relations

Mobile technology provides a wide range of possibilities for professional communication, cooperation and contact through the availability of the internet facilities. Eseyin (2001) cited Yumba (1999) listed two areas where internet promotes peer group relations such as **list serve** where messages can be sent through E-mail to

many people such as members of associations, shareholders, as well as communication of meetings, conferences and announcements. While the **News group** does not send messages to members' e-mail addresses but members have to go the newsgroup to read the mail. This can link to the SMS/MMS way of sending messages on the GSM having GPPS facilities of sending messages either to one person, many people or groups. Beth Brunk (2009) opined that mobile technology enhances peer group relations. She cited an example of what students might do to complete peer critiques, "Students are to enter Web CT, Click on Discussions, Find and Click on group, Locate thread entitled peer critique 1, then read the directions". She concluded however that 'that little voice inside your Head should be saying----- Don't get frustrated. It might not work the first time, but don't give up'.

Information technologies relevance in college and university

One cannot continue to talk about mobile technologies advantages in pedagogy and learning without mention of the general relevance of Information Technologies in school, college and University. Abimbade, Aremu and Adedoja (2003) quoting Cox (2000) submits that IT increases students' motivation and interest and instills in them a commitment to learning. It makes the lesson more exciting and interesting in science education for the teacher as well as for students. Some of the skills that ICT tools have developed in science education are: identification, organization, decision making and evaluating skills.

NPCE (1989) enumerate the objectives of computer education at the college and university as: build confidence in the handling of computer hardware and software; encourage the teacher to develop sense of rapport with the computer and appreciate its potential for solving teaching and learning challenges; manage small computer laboratories and workshops; the development of hardware, courseware and software designs, training of various levels of personnel for maintenance services. In the university level, the computer literacy programme should be directed at establishing and entrenching a computer culture that permeates all activities in the university, producing university computer literate graduates, irrespective of their course of study or specialization. Producing computer science and engineering graduates who would constitute the core of professionals in the practice and advancement of technology and conducting research and developing hardware, software and course ware that will enable this country to attain the latest computer technology capacity. The University of Education Ikere Ekiti, Ekiti State **Nigeria** is one of the Universities in this country that gives Laptops to all her students and Lecturers, making use of the interactive media board for pedagogy and learning, thus harnessing the potential of mobile and Information Technology, making the institution ICT driven and incorporating the above NPCE objectives into her Curriculum. Penttinen and Minkkinen (2007) submitted that a limitation of future development is the lack of ability to use technical equipment. To avoid this problem it is necessary to concentrate on pedagogy of technology - how to learn and teach technology.

Conclusion and recommendation

This paper has looked at the importance of **Mobile Technologies** on the educational pedagogies, learning and peer group relation reinforcement. Non-formal Education in the form of distance learning benefits from mobile technologies was examined.

However, these benefits are better achieved by the developed countries, while the developing countries are lagging behind because of hydra-headed factors such as finances, brain drains and political instabilities. The developing nations must awaken to this information revolution which is progressing very fast for the achievement of the relevant, current information which is a catalyst for accelerated educational, socio-economic and political development.

References

Abidoye, A. (2004) Perception and use of Internet by Adolescent in Ibadan. Nigeria. *Contemporary Issues and Researches on Adolescents*. Network for Health Education and Welfare of Special People. Royal People Nigeria Ltd.

Abimbade, A. Aremu A and Adedoja G.O. (2003) Providing Information Communication Technology (ICT) Environments for Teaching and Learning in the Nigeria Education System. In Oluremi, Nwazaoke and Abiodun *Education this Millennium Innovation in Theory and Practice*. Macmillan Nigerian Limited Ibadan, Nigeria.

Ajayi, T. (1997) "Citizenship Education" In *Essentials of General Studies: Culture, Agriculture*, Computer Vol 2: Ago Iwoye Ogun State University pp. 463-477.

Bamikole, B.B. (2001) Importance of Information Technology on Primary Education in Nigeria "Paper presented at the 23rd National Conference of *Nigeria Association for Educational Media and Technology*" (NAEMT). September 11-14 2001.

Beth Brunk, C. (2007) *Collaboration, Technology, Pedagogy and Writing.* http://www.slideshare.net/blbrunk.

Charles, O.O. (2004) Advances in Information Technology: Implications for the Future of Education in Nigeria. In *Teachers Mandate on Education and Social Development in Nigeria*. Faculty of Education, University of Ibadan, Nigeria.

Cockcroft, W. (1985) Does Mathematics Still Count? *In New Scientist*. London: New Science Publications.

Cox, M.J. (2000) "Information and Communication Technologies, their Role and Value of Science Educator" In Monik M. and Osborne J. (eds) *Good Practice in Science Teaching – What Research has to say*. U.S.A. Open University Press.

Crompton, R. (Ed.) (1989) *Computer and the Primary Curriculum* 3-13 U.K. The Falmer Press.

Erwat, E.A. (2004) Information Acquisition and Management Capacity as Correlates of Administrators decision making Effectiveness in Tertiary Institutions in Southwestern Nigeria: Unpublished Ph.D. Thesis University of Ibadan, Ibadan.

Erwat, E.A. (2007) Information Communication Technology ICT and Social Transformation. In Education for Social Transformation Journal Faculty of Education U.I.

Esseyin, E.G. (2001) Application of Modern Technology in Legislative Libraries: Paper Presented at the National Workshop on Information Strategies for Legislative Libraries in Nigeria Jos 23-25 July.

Ighafe, F.A. (2002) Audio Technology in Distance Education in Nigeria. African Journal of Educational Planning and Policy Studies (AJ EPPS), Vol 3 (1) June pp. 10-24.

Kumar, L. (2009) Facilitating adult mobile technology based learning through problem solving. *International Journal of Mobile Learning and Organisation* vol. 3. No. 1. Pp. 15-24.

Luckin, R., Boulay, B., Smith. H. and Underwood, J. (2005) using mobile technology to create flexible learning context *journal of Interactive Media in Education.* www.Jime ope.ac.uk.

National Policy on Computer Education (NPCE) (1989) Lagos: Federal Ministry of Education.

NCET (1995a) Approaches to IT capability key stage 3: Coventry National Council for Educational Technology.

Nwizu, S. (2004) Analysis of ICT usage in Information Generation and Dissemination by Dissemination by Distance Education (DE) Participants: Implications for the attainment of millennium development goals in Nigeria. *In Education for millennium Development. Essays in Honour of Professor Michael Omolewa.* Vol II pp 575-592.

Penttinen, R. and Minkkinen, S. (2007) *Technology and Pedagogy.* How to learn Technique studies in computational intelligence (Sc 1)62, 255-283. www.springer-link.com

Public Technology.net. (2005) *Mobile e.Learning via phone achieves real success with the young.* http:llwww.pubictechnology. net/modules.*Ph.p.*

Roschelle. J., Patton, C., Peu, R. and Princeton, N.J. (2002) To unlock the Learning Value of wireless mobile devices, understanding coupling. *Wireless and Mobile Technologies in Education, Proceedings* IEEE International Workshop.

William C. Grantham, Robert W. Patton, Tracy D. York, Mitchell L. Winick (1998) *Health Fitness Management*. Human Kinetics. United States of America.

Willis, E. and Raines, P. (2001) "Technology and the Changing Face of Teacher Preparation" in Role of IT in teacher Education by Salisu S.O. Presented at 23rd National Conference of NAEMT September 11-14 2001.

Yumba, D. (1998). Internet in the Library Potentials *African Journal of Library, Achieves and Information Science*, Vol 7, No. 2. October pp 163-165.

Digital Divides: learning and lessons from opposite sides

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Abstract

In this paper we explore the concept "digital divide". Results from studies of computer use among 290 seventh graders in four South African schools (data collected in 2007) are compared with results from an ongoing study among learners of similar age in Icelandic schools (data from 1998 to 2008). The Icelandic learners reported higher numbers of Information and Communication Technology (ICT) related skills (particularly online skills) than did the South African learners, although skills among the latter group varied a lot by school. Numbers of ICT-skills were positively correlated with home computer access and use which tended to be very high for the Icelandic learners but varied by school for the South African learners. However, the South African learners tended to express more positive attitudes than the Icelandic learners and the latter group reported various physical and social problems they associated with computer and/or Internet use. Common and different challenges and educational opportunities these nations face are pointed out.

Introduction

One of the educational challenges we are facing today is the uneven access to and skills in ICT. These differences have often been characterized by the term *digital divide.* However, the whole discourse around the digital divide and ICT has been criticized for being predominantly Western based and strongly connected to power structures in the world (Gudmundsdóttir, 2009; van Grasdorff, 2004; Wasserman, 2003). Kanwar (2007) has also criticized the use of the metaphor of bridging the digital divide because bridges will not eliminate chasms but only provide temporary solutions. She asks instead how we can convert a digital divide into a "digital dividend" and urges us to look at successes and failures on both side of the divide. With that vision in mind, in this article, we present results of a study conducted in 2007 on computer use among seventh graders in four South African schools and compare the findings with an ongoing study in Icelandic schools, which shows how learners' computer use has developed from 1998 to 2008. Our aim is to explore computer skills and attitudes of young people in South Africa and in Iceland in order to point out some of the challenges and educational opportunities these nations face, thus hopefully contributing greater understanding of the meaning of ICT within education in different cultural contexts.

Background

A Digital Divide

As the use of computers and the Internet has developed, the concept digital divide is being used as the term to describe the differences in access and digital competence (Monroe, 2004; Norris, 2001; Warschauer, 2004). Many studies have pointed out that ICT has not lived up to expectations when it comes to equalizing opportunities for learners in the world. There are also studies showing the downside of too much access (Jakobsdóttir, 2006; Konráðsdóttir, 2007). Another paradoxical problem was noted by Cuban (2001) when he found schools in the Silicon Valley that were relatively well equipped, but in which computers were just occasionally used in the teaching practices. Similar findings can be seen in Icelandic schools which are well equipped, but in which teachers do not use computers as actively in class as might be expected (Empirica, 2006).

The centre of attention is increasingly moving away from material or physical access and more towards the skills needed and the opportunities that one has to use ICTs. Van Dijk (1999) declares the new divide as the problem of mental and material access versus the skills to apply the technology. Thus, even though we see an increase in basic material access, digital skills, user mentality and cultural appropriateness remain a constraint (Norris, 2001; van Dijk, 1999).

On Opposite Sides of a Divide?

According to an estimate from the Internet World Statistics (2009) there were in March 2009 1.6 billion people connected to the Internet in the world, or roughly 24% of the world's population. Out of these, 48.9% of the European population was connected, while only 5.6% of inhabitants of the African continent have access to the Internet; in South Africa, 9.4% of 49 million inhabitants. The African continent, together with the Middle East, has the highest usage growth for 2000-2008 with an average growth of over 1000%. This creates challenges, but also opens up new opportunities.

The Nordic countries have been in the forefront of investing in ICT in education and have by far the highest computer use and Internet diffusion in the world (Pedersen, et al., 2006). In Iceland the access for households with children under the age of 16 years in Iceland reached 98% with access to computers and 96% with access to the Internet. The lifestyles of young people are increasingly characterized by online activities (Jakobsdóttir, Gautadóttir, & Jóhannesdóttir, 2005). A major challenge in Iceland may thus be the extent to which educators and parents limit or monitor computer use and Internet access as well as the promotion of safe use of the Internet (SAFT, 2009).

In Iceland, studies have indicated problems related to computer use among children and adolescents, both physical (Jakobsdóttir, 2006) and social/psychological (Jakobsdóttir, 2006; Konráðsdóttir, 2007). South African learners deal with a lack of access, whereas Icelandic learners deal with the consequences of excessive access. Icelandic homes are equipped with computers, not only one but several. In Icelandic schools, ICT skills are seen as an integrated part of most subjects in the curricula. In South Africa the situation is the opposite. The use at home is often very limited, but, due to policy reforms and emphasis by educational authorities, access to computers is increasing quickly in South African schools, e.g. in Cape Town (Scipio, 2006; Western Cape Education Department, 2008).

However, South Africa and Iceland deal with some of the same challenges when it comes to computer implementation and use within the educational sector. Both countries have, for example, a special language situation. A common challenge is to provide teachers and learners with digital resources in their own languages (Gudmundsdóttir, 2009; Hólmarsdóttir, 2001; Macdonald, 2008).

The Methodology of Comparison

To compare our study cases, we use a school computer culture framework (SCCF) developed in the mid 1990s by Jakobsdóttir (1996). The framework was initially developed to examine the use of computers in schools in a contextual manner, to help understand why a gender gap emerged in relation to computers and their uses in some studies but not others. Jakobsdóttir applied Dobbert's (1982) culture definition to define a school computer culture in terms of interrelated factors: computer implementation (customs/patterned way of life), hardware and software (materials and technology), social context (interrelationship between people and groups), and learners and staff within the culture of different ages and gender with their attitudes and beliefs (beliefs/ideologies/values). The factors Jakobsdóttir referred to as *internal* were a part of the culture itself and affected learner computer uses and their reactions to computers directly in the schools. Furthermore, Jakobsdóttir identified *external* factors that were not a part of a school computer culture, but which nevertheless helped shape and influence it as well as affect the people involved in it. The external factors can be located within the school, school district, community, homes, and the culture as a whole and include home computer access, technology funding and support, and media messages. There are several other more recent frameworks and models exploring the digital divide. Warschauer (2004), for example, uses a division of physical resources, digital resources, human resources and social resources, arguing for the importance of access to all of these resources for a technology that will benefit social inclusion. His framework matches components of the computer culture model quite well.

We will apply the SCCF, which can help us compare our cases. We will identify factors that affect learners' digital competence, related attitudes and challenges. The research questions are:

- How do Icelandic and South African learners evaluate their computer skills and what are their attitudes in relation to computer use?
- What are the ICT related challenges and opportunities learners and the educational sector face in the different cultural contexts of Iceland and South Africa.

Method

Table 1 gives an overview of the participants in the studies involved and the data collection methods. In the South African schools the participants were in grade seven but in grades seven to eight in the Icelandic schools. An estimated average age was 13 for all groups. The schools in the South African study belonged to the greater Cape Town area (inner city and suburban) whereas the Icelandic schools were in the capital area (Reykjavik) as well as in smaller villages or towns in rural areas.

Table 1: Overview of the studies: types of data gathering, number of schools and participants.

Country	Year	Method	No. of Schools	Grades (age range)	No. of learners
South Africa	2007	Interviews, observations, learner survey	4	7 (12+)	290
Iceland	2008	Learner survey, school survey	5	7-8 (11-14)	179
	2004	Learner survey	7	7-8 (12-14)	197
	2002	Learner survey, school survey	11	7-8 (11-14)	493
	1998	Learner survey, school survey	6	7-8 (11-14)	178

In Iceland an online questionnaire was used, with minor changes from 1998 to 2008. The questionnaire used in South Africa was similar to the latest version of the Icelandic one but not quite identical. In both countries, learners indicated whether they had acquired various ICT related skills (see Table 2).

Table 2: ICT skills assessed by questionnaires in South Africa (2007) and Iceland (1998 to 2008). The nine skills on both lists that are the same or similar are in bold.

Skills – categories (no of skills on both lists)	**South Africa**	**Iceland**
Basic skills/file management (0)		install software save files delete files print link to Internet
Information finding and retrieval (1)	**seek information on the Internet** seek information on a CD Rom copy from the Internet copy/download music from the Internet	**find information on the web**
Online communication (2)	**chat** **blog**	**chat** **blog** (not in 1998) use e-mail use conferences; social networking (2008)
Creative/presentation (4)	**design web pages** **draw/design** **make presentations** **write text**	**create web pages** **create pictures** **make slides** **write with word processor**
Analytical/programming (2)	**program software** **use data calculations**	**program software** **use spreadsheet to calculate**
Play (0)	play computer games play Internet games	
Total (9)	14 skills	14-17 skills

Results

Learners: ICT Skills, Attitudes and Motivation, Problems

Figure 10 shows the mean number of skills (only the nine exact or very similar ones were counted) which learners claimed they had in Iceland 2002, 2004 and 2008 and in South Africa in 2007. The figures show higher means for the Icelandic learners. The means were 4.7 to 5.7 skills, whereas the mean for all the schools in South Africa was 3.7. ANOVA for the Icelandic learners (also including learners from grade nine to ten) revealed a difference in the mean number of skills by year ($F(2,859)=23.1$, $p<0.001$). A post hoc test revealed that the mean number of skills for 1998 was lower than for both 2002 and 2004, but there was not a significant difference between 2004 and 2008. Looking at 14 ICT related skills which were on all the Icelandic lists from 1998 to 2004, learners gained on average half a skill per year from 1998 to 2004. The 2008 group did not report more skills than the 2004 group. It should be noted, however, that a new skill had developed. About 70 % of the seventh to eight graders in the 2008 group claimed to know how to create a social network. Supporting that claim was that in an open-ended question regarding the learners' last computer use, many learners reported the use of MySpace, Facebook and/or MSN.

Figure 10: Mean number of skills reported by learners in Iceland (IS), grade seven to eight; and South Africa (SA), grade seven.

What is most striking from the South African study is the difference between the schools in the study (Figure 2). Learners in two of the four South African schools indicated similar number of skills as did the Icelandic learners in 2008 but in two schools much lower numbers were reported. There was a significant difference between the South African schools in the number of skills, $F(3,280) =42.8$, $p<0.001$. The means were from 2.2 to 5.2 skills regarding the nine skills involved in the comparison but from 3.1 to 9.1 ($F(3,280)=63.34$, $p<0.001$) if all 14 skills in the South African questionnaire were included. On the other hand, the range between the five participating Icelandic schools in 2008 was much smaller, only 5.0 to 6.3 skills, a difference which was not significant.

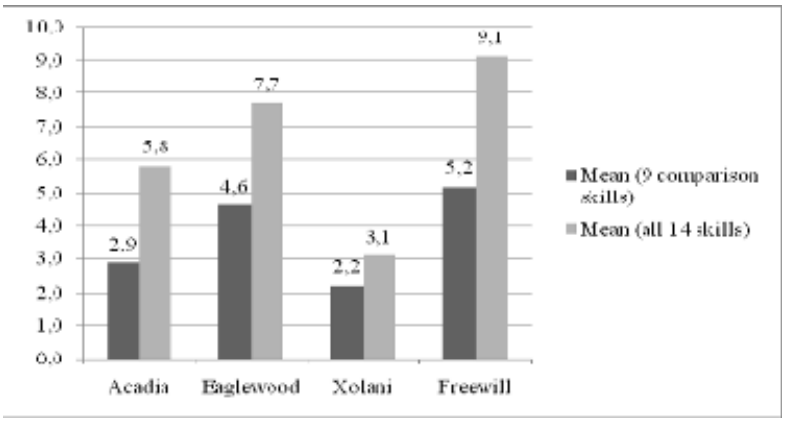

Figure 2: Mean number of skills reported by learners in the four participating South African schools.

Figure3 shows the percentage of participants who claimed having individual skills (the nine skills on all questionnaires). The 5-6 skills the Icelandic learners most commonly reported having in 2008 were to find information on the web (90%), chat online (81%), create a web site (73%), create slides (65%), create pictures/graphics and blog (62%), and calculate with spreadsheet (59%).

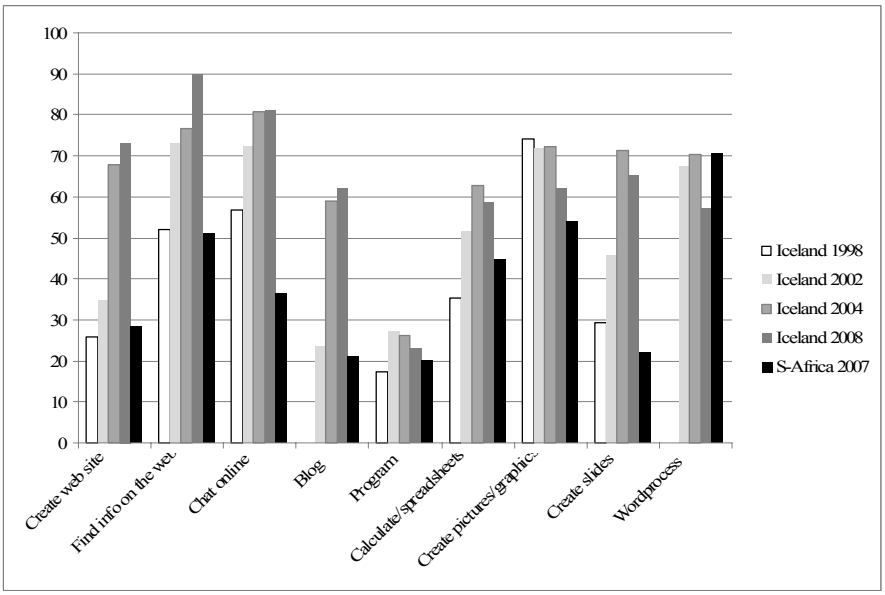

Figure 3: Individual skills by country and year. Percentage of learner group who report they have each skill.

Online skills were not as prominent among the South African learners. They most commonly stated that they knew how to write with word processing (71%). The other most commonly reported skills by the South African learners were creating pictures/graphics (54%) and finding information on the web (51%). Programming and blogging were, the skills the fewest of them indicated that they had (20 and 21%).

South African learners were more positive and motivated regarding school computer uses than the Icelandic learners, which can at least partly be explained by the novelty effect. According to the survey in South Africa, the learners were highly motivated and interested in computers. This was common for all the four schools, despite the

somewhat monotonic use of ICT in the least resourced schools. During the observations, this finding was confirmed. The Icelandic learners have started to mention the downside of too much use and are aware that too much computer use can have negative health and social effects. Also, heavy exposure at home to entertaining activities, game playing and interacting socially online with friends may cause some learners to view school computer use as less interesting.

The Icelandic learners reported physical and social problems in relation to computer use. There appeared to be more learners complaining of physical rather than social problems (see Figure 4). Headache, eye problems and shoulder and neck pain were most commonly reported in the former case but problems related to potential Internet and/or game addiction in the latter. In an open-ended question where learners could report the main problems they associated with computers, many learners reported social problems (e.g. that they or those they knew were spending too much time on the Internet and/or playing games). Perhaps the physical problems were thought to be more manageable.

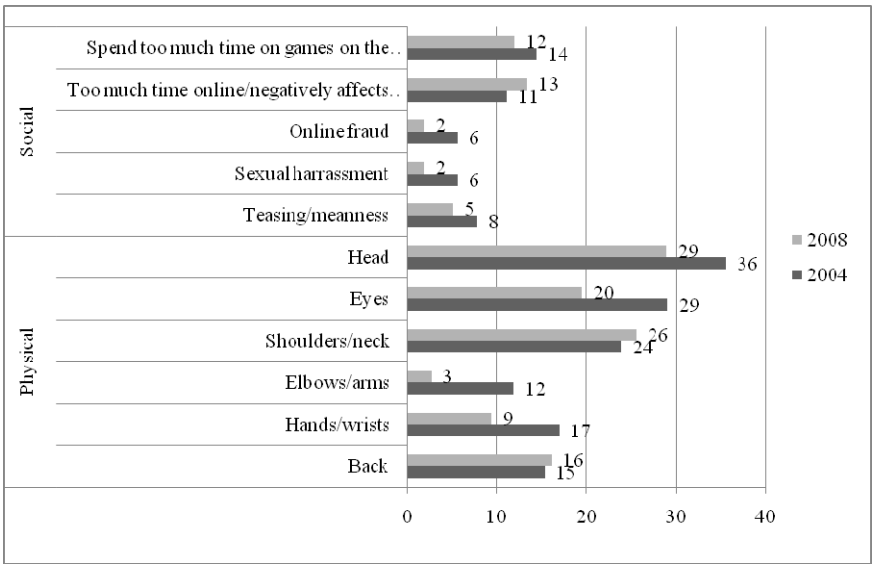

Figure 4: Percentage of learners in Iceland in grade seven to eight reporting problems related to computer use of physical or social nature in 2004 and 2008 to be medium, large or very large (answer rates are 90 to 93%).

In the South African study questions on physical or social problems, due to excessive use, were not included as they were not considered relevant. The problems in the South African schools were rather connected to limited use.

School Computer Culture - External Factors

In Table **3**3 below we provide a comparison of some external and internal factors shaping the school computer culture in the South African and Icelandic schools. For a more detailed coverage see Guðmundsdóttir and Jakobsdóttir (in Press).

Discussion

Some maintain that the digital divide is diminishing and people will eventually get equal opportunities and become active participants in the global information society. In

the age of globalization there is a growing trend to find global solutions to global problems. But to a certain extent local context and cultural relevance has been ignored, for example, with regard to educational challenges across the world (e.g., Crossley & Watson, 2003). However, even though there may be similar challenges found in the educational system of many countries, the culture is hugely different. In this article we have discussed some of the challenges and opportunities we have found through our study of computer use of young people in two countries on opposite sides of the so-called digital divide, Iceland and South Africa.

Applying the SCCF (Jakobsdóttir, 1996), we examined interrelated internal and external factors of these cultures; and investigated which could affect learners' skills, attitudes and reactions to computer use. The learners in Iceland have been exposed to computers for a longer time than the South African learners. There is a much greater range in ICT skills between the learners in South Africa than between the learners in Iceland, which signals a special challenge for South African educators and policy makers. This can partly be explained by varied out-of-school access. Our study supports research that shows a strong correlation between home use (out-of-school use) and computer competence (see for example Facer, 2002; Ito, et al., 2008; Selwyn, 1998).

Table 3: South Africa and Iceland: School Computer Culture - Comparison of Factors

School Computer Culture	South Africa	Iceland
External factors		
Society, culture	Great differences from no use/basic use of technology to high tech equipment. Technology valued high	Technocentric. Nearly everyone with access to computers and the Internet. Social/economic differences small but might increase due to financial crisis which may effect funding and policy emphasis in education
Homes	Access to computers and Internet limited (52 and 31%) but 85% to mobile phones. Huge range in access at home due to costs. Strong correlation between access and class/population groups.	Great majority of homes have several computers and good Internet connection (97-98%). 94% have personal access to mobile phones. Computer and Internet use tends to be much more extensive/frequent than at school and is correlated with number of ICT-skills learners report.
District, schools	Four different school communities from affluent to very poor. Political support to increase equity through implementation of ICT. Lack of support and training for teachers.	Schools in both rural and urban areas, considerable variation in life styles but little variation between schools or districts in computer and Internet access.
Internal factors		
Hardware, settings	One computer room in each school with 20-25 operative computers. On average 5 computers per 100 learners.	Computer room and computers located in classrooms. Mobile laptop labs in some of the schools. On average 18 computers per 100 learners.

Digital resources, language	Drill & practice in numeracy and literacy. Software from Cami, Comp4kids and MS office. Use of Internet varies a lot but all schools had connection. Limited language resources in Afrikaans but especially in isiXhosa.	Use of different software but limited availability in the local language, Icelandic. Use of Internet common.
Computer implementation	The Khanya initiative installs computer rooms, provides initial training and some support for teachers. Teachers' experience and use varies. Clearly important to have institutional support (leadership-headmaster). Learners and educators enthusiastic and motivated. Learners use computers individually up to 2-3 together. The classes consist of 30-50 learners.	Computer use in one main subject but also in different subjects of the curriculum (on average one other subject, variable by school; e.g., social science, English, Icelandic, math, Danish). In 2008 only 17% of learners indicated more than 2 hours per week of computer use in schools. School use is significantly correlated with ICT- skills in 2008.

In multicultural and multilingual South Africa the rhetoric around ICT is optimistic and it is argued that ICT can have an equalizing effect. In Iceland, which has been a homogeneous population and monolingual nation for centuries, the situation is changing quickly. Increased immigration makes communities and schools far more pluralistic than before, which has already resulted in some increased language challenges and more stratification in society. This is certainly a field where Iceland can learn from South Africa.

It is of great importance for both countries to stimulate development and use of digital content and educational software in their own languages. This can be done, for example, through supporting the National Centre for Educational Materials in Iceland and the National Portal of Educational Materials Thutong in South Africa, as well as regional initiatives such as the Khanya initiative. The problem is, however, that the Icelandic language community is small and it is very costly to produce local material. The same applies for South Africa with its eleven official languages, if all material is to be produced in all of the languages. The cost is also a challenge when it comes to maintenance, updating hardware and software and buying new software licenses.

With an international financial crisis new ways need to be sought that are less costly. The Open Education Resource movement (OERs) promotes collaboration instead of competition and open course content, open source software, and free course development (Kanwar, 2007). In developing countries, including South Africa, there is hope that the use of open resources can cut costs, increase flexibility and open up for better localization of content (Translate.org.za, 2008). It may be debatable whether the total costs are lower (Northwest Regional Educational Laboratory, 2008), but there may be a question of how money is allocated. Should we pay high license fees to foreign companies or involve local people who can help adapt open content to local needs? There is a movement in Iceland for the use of open source in education and there is also

a recent policy from the office of the Prime Minister about the use of open source in public institutions (Prime Minister's Office, 2007).

Even if computer access was far better in the Icelandic schools than most of the South African ones, the time each learner gets to use computers in school is a challenge in both countries, and computers are more likely used to support the curriculum rather than to extend or transform it according the CPF framework (Twining, 2002). However, most of the Icelandic learners had easy access to computers in their homes, while the South African learners did not get much time practicing and adding to their skills at home. On the other hand, increasing access does not guarantee the ability to make constructive and pedagogic use of the technology.

Of note is the gap between the Icelandic versus the South African learners in Internet-related skills and online activities and access, whereas mobile phone access appears more similar. These findings have implications regarding the development of online and mobile learning in those countries. It is not surprising that distance learning opportunities are growing fast at the upper secondary level in Iceland and a rising number of distance learners are learners in the middle grades (lower secondary level) completing courses online from the upper secondary schools (Jakobsdóttir, 2008). On the other hand, a lot may be learned about mobile learning from South Africa and other countries where access to mobile technologies is much greater than to "heavier" technologies.

Acknowledgements

Dankie – Enkosi – Takk – Thanks! To all the learners and teachers in South Africa and Iceland who participated in the surveys and to the graduate students in Iceland who collected data and helped in the research. Special thanks to our South African colleague Dr. Allyson McDonald, professor at the University of Iceland for valuable comments regarding our writing about the studies presented here.

References

Crossley, M., & Watson, K. (2003). *Comparative and international research in education : globalisation, context and difference*. London: Routledge.

Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.

Dobbert, M. L. (1982). *Ethnographic research : theory and application for modern schools and societies*. New York: Praeger.

Empirica (2006). *Use of computers and the Internet in schools in Europe 2006. Country brief: Iceland.* Bonn: European Commission.

Facer, K. (2002). *What Do We Mean by the Digital Divide? Exploring the Roles of Access, Relevance and Resource Networks.* Paper presented at the A collection of papers from the Toshiba/Becta digital divide seminar: 19th February 2002. from http://www.becta.org.uk/page_documents/research/digidivseminar.pdf

Gudmundsdóttir, G. B. (2009). Language implications of implementing information and communication technology in classrooms in the Western Cape, South Africa. In M. Qorro, Z. Desai & B. Brock-Utne (Eds.), *LOITASA Reflecting on Phase I and entering Phase II*. Dar es Salaam: E & D Vision Publishing Ltd.

Guðmundsdóttir, G. B., & Jakobsdóttir, S. (In Press). A digital divide: Challenges and opportunities for learners and schools on each side. In H. Hólmarsdóttir & M. O'Dowd (Eds.), *Nordic voices: Teaching and researching comparative and international education in the Nordic countries*. Rotterdam: SensePublishers.

Hólmarsdóttir, H. (2001). Icelandic: A lesser-used language in the global community. *International Review of Education, 47*(3-4), 379-394.

Internet World Statistics (2009). World Internet users and population statistics. Retrieved 22. April, 2009, from http://www.internetworldstats.com/stats.htm

Ito, M., Horst, H., Bittanti, M., Boyd, D., Herr-Stephenson, B., Lange, P. G., et al. (2008). Living and learning with new media: Summary of findings from the digital youth project. Retrieved December 9, 2008, from http://digitalyouth.ischool.berkeley.edu/files/report/digitalyouth-WhitePaper.pdf

Jakobsdóttir, S. (1996). *Elementary school computer culture: Gender and age differences in student reactions to computer use.* University of Minnesota, Minnesota.

Jakobsdóttir, S. (2006). Up on a straight line? ICT-related skill development of Icelandic students. In E. Pearson & P. Bohman (Eds.), *Edmedia - World Conference on Educational Multimedia, Hypermedia and Telecommunications* (pp. 67-74). Chesapeake, VA: AACE.

Jakobsdóttir, S. (2008). Waltzing from needs and necessity to comfort and convenience: Online and distance learning at the upper secondary level. In J. Luca & E. R. Weippl (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications* (pp. 129-134). Chesapeake, VA: AACE.

Jakobsdóttir, S., Gautadóttir, H., & Jóhannesdóttir, S. (2005). Life was bacalao - life is Internet. Should we develop a fishing culture mentality in schools? In A. M. Vilas, B. G. Pereira, J. M. González & J. A. M. González (Eds.), *Recent Research Developments in Learning Technologies. III International Conference on Multimedia and ICTs in Education (mICTE2005). Caceres, Spain, June 7-10th 2005* (Vol. 3, pp. 1205-1210). Badajoz, Spain: Formatex.

Kanwar, A. (2007, 27. September). *Digital divide or digital dividend? Postcard from the South.* Paper presented at the 12th Cambridge International Conference on Open and Distance Learning Cambridge.

Konráðsdóttir, S. H. (2007). *Sofið á verðinum? Tölvunotkun og tíðni netfíknar meðal nemenda í 6.-10.bekk á Íslandi [Sleeping on Guard? Computer use and frequency of Internet addiction among students in 6 to10. grade in Iceland]. [In Icelandic]*. Unpublished Master's thesis, University of Iceland, Reykjavik.

Macdonald, A. (2008). *OECD/CERI Project: Digital learning resources as systemic innovation. Background report - Iceland*. Reykjavík: Ministry of Education, Science and Culture.

Monroe, B. (2004). *Race, Writing and Technology in the Classroom*. New York: Teachers College Press.

Norris, P. (2001). *Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide*. Cambridge: Cambridge University Press.

Northwest Regional Educational Laboratory (2008). Open options. Retrieved 14 January 2008, from http://www.netc.org/openoptions/pros_cons/comparing.html

Pedersen, S. G., Malmberg, P., Christensen, A. J., Pedersen, M., Nipper, S., Græm, C. D., et al. (2006). E-Learning Nordic 2006: Impact of ICT on education. Retrieved from http://itforpedagoger.skolverket.se/digitalAssets/177565_English_eLearningNordic2006.pdf

Prime Minister's Office (2007). Frjáls og opinn hugbúnaður - Stefna stjórnvalda [Free and open access software - Governmental policy]. Retrieved 14 January, 2008, from www.forsaetisraduneyti.is/media/verkefnisstjorn-radstefna-rafraen-framtid/Frjals_og_opinn_hugbunadur_-_Stefna_stjornvalda.pdf

SAFT (2009). SAFT - Samfélag fjölskylda og tækni (Society, family and technology, project web - Icelandic participant in Safer Internet Action Plan). Retrieved January 13, 2009, from http://www.saft.is

Scipio, J. (2006). The Khanya methodology for ICT implementation in schools. Retrieved from www.khanya.co.za

Selwyn, N. (1998). The Effect of Using a Home Computer on Students' Educational Use of IT. *Computers and Education, 31*(2), 93-101.

Translate.org.za (2008). Open software translation project. Retrieved 14 January, 2008, from www.translate.org.za

Twining, P. (2002). Conceptualising Computer Use in Education: introducing the Computer Practice Framework (CPF). *British Educational Research Journal, 28*(1), 95-110.

van Dijk, J. (1999). *The network society: Social aspects of new media*. Thousand Oaks, CA: SAGE.

van Grasdorff, E. (2004). *African Renaissance and Discourse Ownership in the Information Age*. Hamburg: Lit Verlag.

Warschauer, M. (2004). *Technology and Social Inclusion: Rethinking the Digital Divide*. Cambridge, Massachusetts: The MIT Press.

Wasserman, H. (2003). Dial-up Identity: South African languages in cyberspace. In H. Wasserman & S. Jacobs (Eds.), *Shifting Selves: Postapartheid essays on Mass Media, Culture and Identity* (pp. 79-96). Cape Town: Kwela.

Western Cape Education Department (2008). Khanya - Summary of the Project. Retrieved 12 July, 2008, from http://www.khanya.co.za/projectinfo/?catid=32

What's the alternative? Widening participation by making VLE-based distance learning available to those without internet access

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Abstract

The Open University, an open distance learning institution, is moving to a Virtual Learning Environment that requires internet access. This paper investigates how the move to a VLE is impacting one group of students who do not have internet access – offender learners studying in prison.

Widening participation policy is aimed at socially disadvantaged groups, some of which are also technologically disadvantaged. E-learning design practitioners assume that students have easy access to the appropriate technology when developing modern distance learning courses but this is not always the case.

An action research project investigated how practitioners involved in offender learning use alternative approaches to activities that require internet access. Forum discussion contributions from 34 tutors found that practitioners are developing diverse approaches tailored to the different prisons regimes. Alternative approaches for course websites, podcasts and videos, collaborative working, information retrieval and assignment submission are examined and discussed.

It is suggested that incorporating alternative approaches into courses is a learning design issue. The author proposes an EDO framework which identifies those activities that require internet access and classifies them as Essential, Desirable or Optional. Practitioners can then select an appropriate approach from a range of alternatives provided as a central resource.

A trial of the EDO framework with centralised support is taking place with six offender learners. Feedback from the trial will inform the expansion of the scheme, thus ensuring that offender learners continue to be included in, not excluded from, higher education distance learning.

Introduction

The Open University (OU) is a distance learning institution that 'promotes educational opportunity and social justice by providing high-quality university education to all who wish to realise their ambitions and fulfil their potential' (The Open University). Putting this mission into practice has resulted in a strong presence in British prisons where around 1400 offender learners are currently studying approximately 200 courses with the OU. As the OU increases the number of courses delivered via a Virtual Learning Environment (VLE), its ability to provide higher education in prison is threatened as few offender learners have internet access. The Prisoners Education Trust, who provide initial funding for OU offender learners, found that 'Most prisoners have little access to the telephone, no email communication with tutors and no internet access' (Prisoners

Education Trust et al., 2009) and Honey (2009) concluded that 'The survey confirms that finding a safe way for prisoner learners to access the internet is an important priority.'

Trials are taking place to provide restricted internet access in selected prisons (HM Government, 2008) but it will be many years before internet access becomes the norm in prison. Even then it cannot be assumed that every offender learner will have access to all the materials available to students outside prison. Some sites will be blocked as unsuitable for a prisoner, internet access is likely to be seen as a privilege that can be withdrawn as a punishment, government reaction to breaches of security and media reporting may result in internet access being removed without notice - these are just a few reasons why offenders learners in prison will continue in the view that it is the 'lack of internet access for research material that is often the fundamental problem for OU student inmates' (Ben, 2009).

Without internet access, the OU's offender learners are finding that their course choice is severely limited. The situation is rapidly deteriorating. Over a 6-month period in 2007 the number of OU courses available for study in prison dropped by over 10%, mostly due to problems with internet access (Adams and Pike, 2008). If this trend continues, the OU will be unable to offer a viable degree path to offender learners and will have failed in its mission to be open to all. To reverse the trend the OU must find alternative approaches to those activities that require internet access and it must do so without delay.

Background: Widening participation and learning design

In 1999 Daniel opined that 'by restricting access to those with a networked computer it narrows rather than broadens the clientele served'. This is still the case today. Khokar (2007) noted that a solid technology infrastructure is an institutional barrier that needs to be overcome to enable engagement with e-learning in excluded groups. Conole, et al. (2007) considered that there is a paradox in promoting e-learning as a means of widening participation when non-traditional learners are unable to work in online environments. Attempts are made to resolve this paradox by providing the appropriate technology, as in the government's restricted internet access in prison trials, but, nevertheless, there will always be students whose access to appropriate technology is either spasmodic, limited, or prohibited for reasons beyond their control. These students need alternatives to e-learning activities to be an intrinsic part of a course to prevent their exclusion.

E-learning design practitioners use technology to support teaching and learning. Practitioners have straightforward access to current technology and are inclined to forget that students will be struggling with technology that is old, unreliable or non-existent (Selwyn and Gorard, 2003). When accessibility is considered, learning design focuses on students whose accessibility issues are of a personal physical nature, i.e. disabilities (Seale et al., 2007). Practitioners assume that easy access to appropriate technology is available to all and unintentionally exclude groups of students for whom access is either difficult or impossible.

Research methodology

An OU student gains a degree by studying a number of separate courses typically over a period of six years. For most courses the OU allocates a specialist course subject tutor, known as an Associate Lecturer (AL), to support a group of students for the duration of the course. Face-to-face and/or online tutorials are usually available and the tutor will mark the student's assignments and provide rich teaching comments to further the student's understanding of a topic. Tutors are available by phone or email should the student wish to contact them for advice.

If the student is in prison, this support model must be adapted to fit in with the prison regime. A member of the prison's education staff is assigned as an intermediary and the tutor will communicate via phone or email with the intermediary, not the student. The intermediary may arrange face-to face tutorials between the student and the tutor and will conduct all administrative procedures, such as submitting assignments, on the student's behalf.

The introduction of a VLE has meant that tutors and intermediaries have been forced to find ways to circumvent the problems caused by lack of internet access and consequent inability to access the VLE.

The author has initiated an action research project to find out which activities cause problems and what alternative approaches are utilized. The aim of the project is to provide a bank of alternative approaches which can be used across faculties and which will be suitable for the diverse prison regimes. An online forum, labelled Prison Tutors, was made available to OU tutors in order to gather information about their experiences with offender learners. Around 750 tutors are currently allocated to students in prison. 34 tutors contributed their experiences to the forum and 372 tutors read the forum. Some of the contributions are quoted in this paper. Tutors related the challenges they faced due to lack of internet access and how they had overcome them. To appreciate the students' perspective, six OU offender learners were formally interviewed. Informal interviews also took place with the intermediary prison education staff responsible for these students.

This paper reports on the initial findings of this project. It suggests a method for identifying the modifications that are necessary to allow a course to be studied by students without internet access.

Findings: The challenges and the alternatives

Course website

The OU VLE hosts a course website for each course. This website is central to a student's participation in the course and students are advised to check it regularly. At the heart of the website is a study calendar indicating what the student should be studying each week with links to appropriate materials. Further links are provided to additional materials grouped by type. A typical website will have links to pages where students can download assignments (known as TMAs within the OU), online course materials and online versions of printed matter. Course News will alert students to errata in course materials, including errors in assignment questions, as well as providing

any information not available at the start of the course. None of this is accessible to students in prison.

It was found that tutors and prison education staff intermediaries printed these online materials and gave them to the student. The tutors often did this at their own expense and mailed the materials to the intermediary to pass on to the student.

> *'I'm not clear on who provides the student with TMA questions when they are only available online (I sent a hardcopy of TMA01 just in case)'*
>
> (Prison Tutors forum)

In some cases the intermediary had internet access in the prison and was able to check the website regularly and print off the course materials for the student. This, however, required the intermediary to be issued with an OU computer user id and password to access the site on the student's behalf. In other cases the intermediary would access the website from their home computer and print off materials to bring into the prison. It was felt that this task would become onerous as the number of VLE-reliant courses increased. An RSS feed alerts students to important site updates and may provide an acceptable means of moderating the intermediary's workload.

Podcasts and videos

Podcasts and videos are increasingly used as an alternative medium for providing learning materials. Typically these media are streamed to the student's online computer. An offline version is often available for downloading. Students can then play the downloaded podcast or video on another device such as an MP3 player. Students without internet access cannot play the streamed media but may have a suitable device for playing the downloadable version which can be provided as an attachment to an email or on a CD or DVD.

Some OU courses provide podcast and video transcripts for disabled students. These transcripts provide an alternative approach for offender learners where it is not possible to provide podcasts and videos in an electronic format.

Collaborative working

Many courses are now using VLE tools to integrate collaborative working into the course. Forums, blogs and wikis are all employed to varying degrees. If online collaboration is not possible, an alternative offline approach is required that provides the collaborative materials in either printed or digital format.

> *'I got around this one by anonymising examples of the messages post [sic] to the TGF [tutor group forum] and printing it off for my student to use for his assignment'*
>
> (Prison Tutors forum)

Students in prison are able to relate their contribution to their tutor who can, if required, add it to the collaborative tool on their behalf. To pass the course it may be sufficient for the student to write a narrative account of collaborative activity. In this way the

learning outcomes of the course can be met without any collaboration actually taking place.

Information retrieval

Most courses rely on the student being able to retrieve course-related information from the World Wide Web. Where web references are given in course materials intermediaries and tutors often provide students with printed versions of the relevant web pages. As with the course materials, this is largely dependent on the goodwill of the intermediary and the tutor.

If students need to search the web for suitable material, then an intermediary or tutor must act as a proxy and perform a mediated search. The student provides search terms and the proxy enters the search terms in an appropriate search engine. The student then identifies suitable sites from the resulting list. Material from the selected sites can thus be provided in a suitable format. This can be a very lengthy process with inevitable delays at each stage if internet access is not readily available to the intermediary in prison.

The OU library can also perform mediated searches. The library already carries out mediated literature searches on behalf of disabled students and is willing to extend this facility to offender learners.

Non-internet based materials are often overlooked by those outside prison who take easy internet access for granted. Offender learners have access to books in the prison library and CD/DVD–based materials (e.g. Encarta) that may provide the required information.

Assignment submission

OU students now submit over 60% of assignments electronically, instead of on paper, using either a web interface or email. On some courses submission in an electronic format via an electronic submission system is optional, on others compulsory.

> *'There is no alternative to electronic submission of the ECA and if it can't be submitted electronically he will fail the course'*
>
> (Prison Tutors forum)

Assignments can be either hand-written or in digital format. If internet access is not available, hand-written or printed digital format assignments can be submitted by post together with the appropriate paperwork. Details from the paperwork can then be entered into the electronic system.

Electronic submissions can be either by e-mail or via the electronic assignment submission website if internet access is available to the intermediary. Electronic submission can initially be intimidating for intermediaries who are not comfortable using computers but once the procedures have been established it is generally preferred by all concerned.

Howsoever the assignment is submitted, it is important to determine an appropriate means of returning the marked work to provide timely feedback. Printed work can be returned by post. Assignments in electronic format can be returned via email. However, email attachments can be rejected because of size or content so it is essential to check that the marked assignment has been returned successfully. If internet access is available to the intermediary the marked work can be downloaded and then either printed off or passed to the student in electronic format.

EDO Framework: Essential, Desirable, Optional

It is clear that providing alternative approaches to activities that require internet access is currently a time-consuming activity for both intermediaries and tutors who are often developing identical approaches independently. If the tutor is allocated another offender learner, they may be in a different prison operating a different regime and the alternative approaches developed previously may no longer be appropriate. As more courses rely on internet-based components, the burden on intermediaries and tutors is increasing. The goodwill and underlying desire to support offender learners in these two groups is being severely tested.

> *'I think it is too much to expect either the prison Education Officer or myself to provide hard copies of everything they need.'*
>
> (Prison Tutors forum)

If the OU is to continue to provide higher education in prisons it must address the issue of lack of internet access for offender learners and formalise its approach to the alternative approaches available. This is a learning design concern.

Re-use of resources is a principle of learning design that is not inherent in the OU's current approach to prison education. Tutors are independently developing their own alternative approaches and have no means of sharing these resources across course, faculty or geographical areas. If alternative approaches are incorporated into courses at the design stage there will be consistent standards and economies of scale.

A trial to centralise support for all prison tutors on one specific course is in progress. The course has been analysed to establish in detail where internet access is required. Each activity requiring internet access has been classified as **E**ssential, **D**esirable or **O**ptional (EDO). For essential activities an alternative approach must be found if the student is to complete the course successfully. Although students can pass the course without the desirable activities, their overall grade is likely to be affected and so every effort should be made to provide alternatives to at least a selection of these activities. Optional activities are those either clearly marked as optional in the course activities or those where it is felt that a large proportion of students outside prison do not engage with the activity.

By using the EDO framework, tutors can immediately see where they or the intermediary need to deliver an alternative approach to a course component. As centralised support is available, tutors can select from a range of possible alternative approaches.

Seven students and six tutors are involved in the trial. Both students and tutors will be invited to complete questionnaires at the end of the course to assess its success and evaluate the appropriateness of the suggested alternative approaches. Initial reactions have been favourable, resulting in the centralised support being made available to a second cohort of eleven students and six tutors.

Conclusion

Students who do not have internet access wrongly assume that they are excluded from courses that have components requiring internet access. To facilitate distance learning on internet-based courses suitable alternative approaches must be identified that match the technology available to the student. Lack of internet access may inhibit distance learning but does not prohibit it. Traditional channels of communication in distance learning still exist and can be utilised if required.

Rating the internet-based course activities as essential, desirable or optional using the EDO framework is a new learning design process. Finding alternative approaches makes a course accessible for those who might otherwise be excluded. Alternative approaches introduced to make courses accessible to disabled students can also make courses accessible to those students who have problems with internet access. Centralised support provides economies of scale and profits from the wealth of experiences of those practitioners who have developed their own practical alternatives on an ad hoc basis.

Internet access is taken for granted by many but, when constructing distance learning courses, we must not forget those for whom internet access is spasmodic, limited or prohibited.

References

Adams, A. & Pike, A. (2008) *Security issues within prison and health ODL programmes,* [online], Paper presented at PCF5 conference, London, Available from: http://www.wikieducator.org/images/a/ab/PID_461.pdf (Accessed 8 April 2009)

Ben (2009) A high score makes it all worthwhile in: *Inside News*, March 2009 Issue 6, [online], Available from: http://labspace.open.ac.uk/mod/resource/view.php?id=365212&direct=1 (Accessed 8 April 2009)

Conole, G., Smith, J. & White, S. (2007) A critique of the impact of policy and funding, in: Conole, G. & Oliver, M. (Eds) *Contemporary perspectives in e-learning research* (Oxon, Routledge) p40

Daniel, J. (1999) Open Learning and/or distance education: which one for what purpose? in: Harry, K. (Ed) *Higher education through open and distance learning* (London, Routledge) p297

HM Government (2008) *Delivering digital inclusion*, [online], 08RPD105574/B (Communities and Local Government Publications, London) p 68 Available from: http://www.communities.gov.uk/documents/communities/doc/1061687.doc (Accessed 8 April 2009)

Honey, P. (2009) Endpiece in: Prisoners Education Trust, Inside Time, RBE Consultancy Ltd, *Brain Cells: Listening to prisoner learners*, [online], p27, Available from: http://www.prisonerseducation.org.uk/fileadmin/user_upload/doc/offender_learning_matters/BRAIN_CELLS._THE_REPORT.pdf (Accessed 8 April 2009)

Khokar, B. (2007) *Widening participation: how can new technologies best be used to enhance, learning and teaching and ensure educational inclusion and engagement for excluded groups?,* [online], Paper presented at The Cambridge International Conference on Open and Distance Learning conference, Cambridge, Available from: http://www2.open.ac.uk/r06/conference/CambridgeConferencePapers2.pdf (Accessed 8 April 2009)

Prisoners Education Trust, Inside Time, RBE Consultancy Ltd (2009) Foreword in: *Brain Cells: Listening to prisoner learners*, [online], Available from: http://www.prisonerseducation.org.uk/fileadmin/user_upload/doc/offender_learning_matters/BRAIN_CELLS._THE_REPORT.pdf (Accessed 8 April 2009)

Seale, J., Boyle, T., Ingraham, B., Roberts, G., & McAvinia, C. (2007) Designing digital resources for learning, in: Conole, G. & Oliver, M. (Eds) *Contemporary perspectives in e-learning research* (Oxon, Routledge) pp125-128

Selwyn, N. & Gorard, S. (2003) Reality bytes: examining the rhetoric of widening educational participation via ICT, *British Journal Education Technology*, 34 (2), pp169-181

The Open University, *About the OU*, Available from: http://www.open.ac.uk/about/ou/p2.shtml (Accessed 8 April 2009)

Open and flexible ICT - support for student thesis production - design concept for the future

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Abstract

The non-completion rate of thesis in higher education is universally high. Students need a lot of feedback from supervisors in order to complete their work. At the same time the supervisors' time, both the allocated (paid) and actual available is limited. To educate students in acquiring scientific skills is a core task for universities. However, the private dialogue between the student and supervisor needs to be technology enhanced and expanded with new organisational models in order cater to large student cohorts and to enable a more efficient learning mode.

The overall aim is to suggest a design concept for a flexible and semi self-adaptive ICT-system for mass-individualisation of supervision in thesis works at various levels.
The following features of a new ICT-based model for supervision are suggested and discussed in the article: supervision pathways, Hypervideo (built in scientific courses), chatter bots, anti plagiarism methods, and social learning (web 2, peer support).

Introduction

The increasing number of students at universities does not match an equivalent increase of university funding and increasing staff. According to a report from the Organisation for Economic Co-operation and Development (OECD) 2008, the resources available per student in compulsory school and high school has increased since 1995, while it has decreased for higher education. This is a global and fundamental structural problem and it is getting worse. As an example, the number of PhD students in Sweden today equals the number of upper secondary students in the 1950's. Furthermore, "Education for all" is a vision that calls for radically new teaching methods in order to enable fair opportunities for much larger numbers of individuals. In Sweden the number of students attending university studies has increased from 15,000 (1930's) to more than 300,000 in 2002 (Husén, 2002). The large number of students now admitted implies that many are not as qualified, therefore requiring more teaching and supervision time. University staff face ever increasing teaching loads as well as more students to supervise.

Thesis supervision has been an exclusive, expensive and often private process. Our experience shows that these core activities require on estimate 4-5 times more efforts

per individual student compared to the payment/time allocated. For example, at our department 120 hours per year is allocated for supervising a PhD student who is supposed to work fulltime, and 30 hours for a bachelor thesis. Scaling up the numbers of students in this mode of teaching and learning will burn out staff, which needs to invest a lot of private unpaid time in order to fulfil the student needs. This lack of resources for supervision influences students negatively. Looking at statistics from SCB (Swedish Statistical office) (2004) this problem becomes even clearer, 35% out of the students completing three years of study (meaning they have their thesis left) never completed their education. Looking at the OECD as a whole we can see a similar trend where 31% of the starting students never complete their degree (2008). During the academic years 2001 through 2006 a total of 1,737 students registered for a masters course at the Department of Computer and Systems Sciences (DSV, Stockholm University/Royal Institute of Technology), out of these, 1,207 have finished the masters course, hence 30 percent of those enrolled have not finished the thesis work. Obviously there are many reasons why students do not complete their degrees, such as job opportunities and other interests, however, we strongly believe that lack of supervision and help during thesis work leaves students in a void that makes them lose interest and motivation.

Point of departure

To learn the knowledge creation process is complicated and cannot be rushed, because students need time: to think, reflect, test, modify, get feedback, redo, defend, give arguments and motives, etc. A large part of the process is dependent on communication. This is time-consuming and can be frustrating. It is much easier for a student to just complete a course; in thesis work the student has to identify a problem, motivate why it is of interest, set up a research plan with aims, methods, time plan, and expected results (Creswell, 1994 and Cohen et al, 2005). The demands on the student to change from a knowledge repeater (courses) to knowledge producer (thesis project) can be too much and many drop out. The ability to systematically create knowledge based on sound scientific methods may be the most important skill to acquire at the university. Thesis writing students share many of the known problems facing a distances student, working alone, structuring his/her own time, etc. Lessons learned from effective and qualitative distance education will benefit also the thesis writing campus student and his/her supervisor (Muilenburg and Berge, 2005). Creative implementation of a new ICT design has a great potential in alleviating these problems and, at same time, encourage international collaboration in higher education. Merging the best of campus and distance education (Soomyoung and Berge, 2002) is one of the objectives in the project, making it a flexible educational model useful in local campus face-to-face supervision, mixed mode or pure online supervision.

The thesis, general research, and business processes are essentially the same, even if the requirements vary. The process includes scientific methodological skills, innovative ideas, independent and critical thinking, and ethical considerations, all of which is fundamental in higher education (Biggs, 2007). This knowledge creating process is also becoming a necessary basic skill for citizens in a society where employability is based on knowledge and continuous acquisition and updating of knowledge.

The design concept aims at providing faculty and students with an ICT-based tool enabling mass-individualization of supervision. A lot of the feedback students need for

their thesis work is general information about the structure, theory and methods in science. This information can be provided in a much more engaging, flexible, economic and time-efficient way, leaving the unique dialogue between students and supervisor to innovative and critical aspects of that particular project. The quality of learning is to a great deal dependant on the quality of communication (Kalman and Leng, 2007). In a situation when a large number of students need quality education, part of this communication has to be provided in other ways than private unique face to face dialogues.

Aim and objectives

The overall aim of the design concept is to provide a flexible and semi self-adaptive ICT-system for mass-individualisation of supervision in thesis work. The proposed system will also support knowledge creating project work in the business sector. Implementing the concept will facilitate, increase, improve, internationalise, and efficiently support the knowledge creating process by developing a smart ICT based model for supervision, allowing for flexible adaptations to local and international academic criteria and other preferences as well as non-academic project based processes.

The concept is generic in terms of academic disciplines and scientific methods. Supporting and enhancing the living communication between learner and peers and learner and supervisor is the focus of the design concept. Face to face supervision combined or substituted with asynchronous and synchronous distance communication enable a flexible way of monitoring the thesis process useful for both campus and online students.

The design concept will address the following important issues in higher education:

1. The negative economics of scale
2. Learning at its core, namely direct communication with individual students
3. The slow uptake of ICT in higher education
4. The slow and low completion rates of scientifically based theses at bachelor, masters and PhD levels
5. Knowledge creation, creativity and innovative thinking
6. Scientific methodological skills and critical analysis

These issues are relevant and important beyond academia. The business sector and society at large depend on these skills and competencies.

Limitations

The design concept focuses on the dialogue part of the supervision not the whole educational program. The use and integration of resources in digital libraries is at the core of this concept as well as creation of multimedia content in the form of searchable instructive hypervideos. However, the proposed system is not a digital library, but rather a digital library utilisation system. The vast digital resources developed so far have rarely been integrated into specific learning contexts. In the foreseen system the interface to digital libraries and open content resources will be developed in order to exploit the benefits and provide a more unified learning experience. Also the assessing

of authenticity of students thesis texts will be part of the overall complexity in this concept. In a "copy paste culture" authenticity is important especially when students graduate on the basis of their thesis texts.

The design concept will use novel forms of interacting and expressing multimedia content and story telling in a nonlinear way. The interface will be usable via computer screens and smart phones.

Economies of scale and the ICT potential

An important aspect is the development of economies of scale in the supervision process. By using the proposed ICT support system the supervision resources that are consumed when motivating and reviewing each step of the thesis-writing process will decrease, at the same time as the supervisor can devote more time to discussing the actual research problem, rather than focusing on practical issues of thesis writing. Thus each face-to-face or online meeting with the supervisor will be focused on theoretical, methodological, and empirical issues, which leads to a possibility of handling a larger number of students with increased quality. The lack of student motivation is partly due to lack of social contact, peer support, collaboration, and the sharp contrast between teacher led education and thesis writing, where teacher led education is inherently guided and social, thesis writing is to a much higher degree self-propelled and individual (Phillips and Soltis, 1998 and Schunk, 2004). This contrast is devastating for many students who have little or no experience in guiding their own research/education. This problem can be compared to guidance and motivational problems in distance education, where students are often faced with the task of finding guidance and motivation either themselves or by communicating with the teacher. By using an ICT support system for alleviating these problems, students will be aided in their transition from teacher led education to individually propelled education. The aim is not to create a fully automated student production line; rather it is to use ICT technology to facilitate higher quality face-to-face meetings with the supervisor, and between peer students.

The basic structure for the thesis's production process

A basic structure for the theses production process will be elaborated in the design concept along the following lines. Note that the flexibility and options deviating from this model are considerable depending on context such as, type of education, local versus international scope, target group, etc. The dynamic and adaptive options are described more in detail later in the paper about structure and flexibility: supervision pathways (S-ways). The process is divided into phases in an ordered sequence. Each phase is related with audiovisual instructions and lectures, an area to upload thesis text, automatic checks, peer-review interaction, a revised uploaded thesis text and contact with the supervisor. The phases can also be assigned with a time frame, for instance a 10 week full time bachelor thesis work, require as a rule of thumb: one week for phase 1, 2, 3, 4, 5, 8 and two weeks for phase 6 and 7.

The following table illustrates activities related to contextual phases in the thesis production process. Note that here is the process described in a linear way for clarity of what dimensions a thesis work involves, but the "pathway" for an individual thesis work is in reality a much more nonlinear process and this process is described later in "Supervision-ways".

Table 3: The preliminary description of major phases of writing a thesis

Phase and sequence	Audiovisual Instructions /teaching material	Thesis text Version 1	Automatic check of thesis guidelines	Peer review	Peer Community Sharing, Tips, links, resources	Thesis text Version 2	Super-visor
1. Research plan	Steaming video with researchers discussing and informing about the theory to be covered in the phase: access to digital library materials.	Upload to area. Available for peer review		Obtain three peer reviews and do three peer reviews on other students texts		Upload to area. Available to peers and supervisor	Check version 2 and the peer reviews. Rework? Or OK = next phase
2. Background and methods	…						
3. Data collection method	…						
4. Data collection	…						
5. Data summary	…						
6. Data analysis	…						

Technology enhanced learning: Added value to all modes of supervision

The classical supervision process is typically based on personal and oral encounters between one supervisor and one student. The design concept does not intend to change this mode of interaction, but to enhance and improve the quality of these meetings. The meetings can be more effective and qualitative, with the help of the preparatory and follow up structure, also as a reference tool when meeting an individual student, for instance via video conference. After the meeting one can check up things and add reflections, thoughts, texts, etc. making learning a continuous process with multiple modes of interaction.

Structured and flexible process – supervision pathways (S-ways)

The concept of supervision pathways is a centrally guiding concept for the platform. Through the supervision pathways the system is intended to support the students and supervisors in the full thesis writing process from defining the thesis proposal to the thesis defence. This will be achieved through multiple and varying feedback loops, both between peers, and student-supervisor, but also serve as a gateway to online and offline research content. The model supports different ways of communicating and giving feedback, but it is also important to note that any given supervision pathway will enable both face to face meetings with peer students and supervisors, as well as online collaboration and social integration. By supporting the thesis writing process in multiple ways, weak students from non-academic backgrounds that tend to drop out in phases of individual work will get better support. By guiding, multiple feedback loops and organization of small scale student teams the student numbers completing within the set time frame and with high quality is expected to increase.

In the supervision pathway, thesis work is divided into steps in the thesis writing process. Through each successive step in the supervision pathway the institution can define the criteria that must be fulfilled for entering into the next phase. Each criterion has to be reflected upon before entering the next phase, e.g. what is a good problem description, different research methods. Thus the student is guided to meet the local and/or an international criterion depending on which pathway is relevant and activated in a particular case. Through the locally defined steps, the system helps the student receive a tentative end-date for the thesis, thus creating an individual timetable for each student. Each supervision pathway is both sequenced and iterative, thus a supervision pathway must not be seen as a linear process from definition to defence but, just as all research is, must be understood as a multi linear and iterative process where students can participate in multiple discussions, feedback loops, and checkpoints in a semi-structured manner. Thus the aim of the thesis supervision pathway is to facilitate flexibility and mass-individualisation, but without succumbing to chaos or setting up a rigid, narrow minded and boxlike linear structure. Too much flexibility and students will get lost. Too little flexibility will set rules, guidelines, and modes of interaction, etc. in a too standardised model allowing too little of thinking and working "out of the box", not allowing for the most important cognitive skills, i.e. being critical, creative and innovative. Through the use of supervision pathways each participating university/department will have the possibility to either create a locally defined supervision pathway, thus opting for a locally defined supervision model using their mother tongue as language of instruction.

Hypervideo and creative content integration

In the design concept online hypervideo lectures will provide inspiring audiovisual lectures giving overviews and summaries of central methodological aspects and link to existing resources. These hypervideos will be searchable on demand and contextualized for each phase of the thesis' work. The hypervideo concept implies a short audiovisual narrative of topics related to science and scientific methods, i.e. the general and formal aspects of a scientific work. The hypervideo films are linked in context of the actual narrative to other sources of relevant scientific information such as supplementary video or e-journals, e-books, and references to printed journals and books.

The project utilizes interactive video with three layers separating different types of content and with different purposes:

Layer 1 – The Attention Layer: 30-60 seconds. It works like trailers on the television to get the viewer emotionally involved and to front different entries to the content.
Layer 2 – The Program Layer: 2-5 minutes. These video clips contain specific subjects like short television programs.
Layer 3 – The In depth Layer: This layer is for those who really want to know more. The content can be uncut interviews, doctoral theses and deep explanations.

The proposed future point of direction

The current model of supervision of academic work does not harness the great potential of using ICT. There is a need for a model which uses ICT more focused, specifically tailored and integrated in order to support student thesis production. This would reduce staff work load, increase student completion rates, utilise available digital content

smarter and provide more innovative and useful project results. The proposed system is a holistic approach in order to solve a number of problems in this area. The system for the support of knowledge creation based on scientific methods and content will be valuable in settings far wider than academia, in particular for the business sector which needs to constantly update their skills and competencies and produce knowledge based products and services.

The design concept proposes a future point of direction by creating an ICT based system, which:

- Enables borderless scientific project support
- Supports supervisors and students/learners at all academic levels in scientifically structured business projects
- Support more learners within existing university resources and thereby significantly saving money, time and increase access to higher education
- Provide adaptations to institutional, regional and national requirements and needs based on optional modules
- Will help learners to achieve their learning needs and academic goals faster in their thesis/project work thus increase interest and capacity for scientifically based problem solving
- Will attract and engage students in the scientific knowledge producing process in a motivating way
- Will knit together existing resources for communication and content to enhance quality of thesis/project work
- Will enable a transparent and fair basis for judgment of thesis/project work according to the Bologna agreement
- Will provide the academia and business sector with more knowledgeable individuals
- Create and support international networks working together in technology enhanced supervision project.

The design concept will further this by:

1. Exploration of and incorporation of WEB 2.0 technologies within virtual supervision system (e.g. wikis, blogs, personalisation, filtering, eportfolio, chatter bots) as a support for social learning
2. Consideration and development of open content approaches that facilitate the ‘tagging’ of and reuse, remix, repositioning of contents available in existing and future repositories as a support for individual learning
3. Advanced communication, including video chat and VOIP, as a support for learning by exchange of ideas and thoughts
4. Cost effective use of open source materials, rather than proprietary, which allow future upgradeability and development – reciprocal relationship between the developer community and developers in the project as a support for economics of scale in learning processes
5. Development of strategies to increase systems integration and sustainability as a support for administration of learning.

The proposed system will pull together resources that now are fragmented, often unknown or hard to find and develop the missing links in order to create a coherent system for knowledge creation processes.

References

Biggs, John B. (2007). - Teaching for quality learning at university - what the student does. - 2007 - 3rd ed. / John Biggs and Catherine Tang. - ISBN: 9780335221271

Cohen, Louis, Manion, Lawrence & Morrison, Keith (2005). Research methods in education. 5., completely rewritten and updated ed. London: Taylor & Francis Group

Creswell, John W. (1994). Research design: qualitative and quantitative approaches. Thousand Oaks: Sage Publications

Husén, T. (2002). Pedagogisk forskning i Sverige 2002. Vol. 7. pp 164-167.

Kalman, Y, M & Leng, P, H. (2007). A Distributed Model for Managing Academic Staff in an International Online Academic Programme. Interactive Learning Environments Vol. 15, No. 1, April 2007, pp. 47 – 60

Muilenburg Lin Y. and Berge Zane L. (2005). Student Barriers to Online Learning: A factor analytic study. Distance Education. Vol 26. No 1. May 2005. pp 29-48.

OECD. (2008). Education at a Glance 2008: OECD Indicators. http://www.oecd.org/dataoecd/16/60/41262258.pdf. Retrieved 2009-05-27.

Patton, Michael Quinn (2004). - Qualitative research & evaluation methods / Michael Quinn Patton. - 2004 - 4. ed.

Phillips, Denis Charles & Soltis, Jonas F. (2004*)*. Perspectives on learning*. 4.* ed. New York: Teachers College Press

SCB (2004). Utbildningsväsendet. http://www.scb.se/statistik/AM/UF0504/2004A01/UF0504_2004A01_BR_06_AM78ST0401.pdf. Retrieved 2009-05-28.

Schunk, Dale H. (2004*)*. Learning theories: an educational perspective. 4. ed. Upper Saddle River, N.J.: Pearson/Merrill/Prentice Hall

Soomyung Kim Cho and Zane L. Berge (2002). Overcoming Barriers to Distance Training and Education. Education at a Distance - the USDLA Journal. 16(1).

Wolfer, Loreen Therese (2007). Real research: conducting and evaluating research in the social sciences. Boston, Mass.: Pearson/Allyn and Bacon

Integrating new technologies in management of ODL Institutions: experiences of University of Mumbai

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Abstract

The University of Mumbai is one of the oldest Universities in India, established in the year 1857, and in 2007 celebrated its 150 years. As a part of sesquicentennial celebrations, the University used technology in imparting teaching and learning, especially in the Institute of Distance and Open Learning. To begin with, the online submission of admission forms was thought of and introduced in the academic year 2008-09, followed by submission of assignments online in some selected programs like B.Sc. Nautical Technology and distribution of hall tickets in some programs online. This program was selected as the students are mainly seafaring people and remain away from the Institute most of the times.

This paper is an attempt to analyse the obstacles that the University of Mumbai faced during the transition from traditional to online submission of admission forms and the extent of benefit it has accrued to its students from submission of online assignments. This paper also discusses in detail the mindset of the people in accepting the new technology.

About the University of Mumbai

The University of Mumbai (earlier known as University of Bombay) is one of the oldest and premier Universities in India. It was established on 18th July, 1857, and it is one amongst the first three universities in India, including Calcutta and Madras.

It has been accredited Five Star status by National Assessment and Accreditation Council, Bangalore, and University with Potential for Excellence Award by University Grants Commission, New Delhi. It is one amongst the top 500 Universities of the world.

The University of Mumbai has two campuses, with an area of 230 acres at Vidyanagari Kalina, Santacruz (East), and 13 acres at Fort. There are around 550 affiliated colleges and 55 Departments, with an enrolment of 650,000 students. It has established its name in industrial collaboration and runs various professional courses. The University is leading at national level in sports, cultural and other activities.

About the Institute

The University started its correspondence education on 24th March 1971. It was known as “Directorate of Correspondence Courses”. In the year 1985 the “Directorate of Correspondence Courses” was upgraded as “Directorate of Distance Education” and in the year 1993 was further upgraded as “Institute of Distance Education”. In the academic year 2008-09 it is now “Institute of Distance and Open Learning” (IDOL). Since its inception, IDOL has given high priority to human resource development by introducing various traditional Degree courses as well as technical and professional

courses through distance mode.

The Institute has 75 permanent staff members, including Professor-cum-Director, Dy. Director (Academic), 5 Teaching Faculty and 4 part-time co-coordinators of I.T. Courses, 2 Deputy Registrars, 5 Assistant Registrars and 5 Superintendents and 150 Seasonal Clerks and peons are also working in this Institute. Apart from this, 1500 visiting faculty also work in this Institute for examination, counselling and other academic works.

The University of Mumbai is the 7th University in the country which started Distance Education Programmes in a conventional set up. Initially it started with the registration of 845 students, which has grown to a staggering figure of about 70,000 in the last academic year. Students are also giving excellent results by topping the merit list of the University and have bagged Gold Medal in M.A. Sanskrit, M.A. Marathi and Chancellor's Medal in M.A. Hindi. There are a good number of students securing 1st Class at B.A. / B.Com. and M.A. / M.Com. level during last year. Many students of IDE have gone abroad to seek higher education in USA, UK, and Australia, Canada, New Zealand, etc, during last year. Many well known film personalities have been also enrolled in IDOL.

Programmes offered by the Institute

The Institute offers the following programmes:
B.A, B.Com, B.Sc.(IT), B.Sc.(Computer Sc.), B.Sc.(Nautical Technology), M.A., M.Com. MA/M.Sc. (Mathematics), M.Sc.(IT), M.Sc.(Computer Sc), M.C.A., PGDFM, PGDORM .

About B.Sc. Nautical Technology Programme

To be eligible for admission to the B.Sc. Nautical Technology Degree Course, a candidate must have passed the Higher Secondary School Certificate Examination conducted by the Maharashtra State Board of Secondary Education, Mumbai, or an examination of any other body recognised as equivalent thereto, with the following subjects: English, Physics, Chemistry and Mathematics, or Standard XI for candidates who have passed before 1978, with the following subjects: English, Science and Mathematic (SSTP) by the Directorate General of Shipping, Ministry of Shipping, Road Transport and Highways, Govt. of India, or has already performed a minimum of twenty-four months of practical shipboard training as approved sea-going service as an officer trainee in the Nautical Department of a sea-going ship.

On-Line Admissions, assignment submission and examination procedures

The on-line systems were introduced in the academic year 2008-2009 and the instructions for the process are quite detailed. One example (obtaining a 'ticket' for examinations) is given in detail below. The admissions procedure involved can be undertaken online or by printing out forms to be processed and assignment submission can be undertaken via the University's website.

The Procedure for online Hall – Ticket for examinations

Students of B.Sc. Nautical Technology please follow the following procedure for On-

Line Hall-Ticket:

1. First go to University Website (www.mu.ac.in)
2. See University Home Page and go to Distance Education Link.
3. Find out E - learning Option and click on the same.
4. Select Your Seat Number from Students List.
5. Enter Your Seat Number then you will see your Hall-Ticket.
6. Select it and give Print option, and then you will get your Hall-Ticket.
7. After printout, affix photograph on it and take Seal and Stamp of the Institute.
8. Then this Hall-Ticket will be valid for the examination.

The Transition Period - the problems of a dual system

As education providers in both face to face and distance education modes embrace the use of technology to facilitate student learning and to minimize the distance between the student and teaching institution, the boundaries between face to face and distance education are becoming increasingly blurred. Since 2008, faced with increasing numbers of students for distance education courses, the university started online submission of admission forms and entrusted this task to Tata Consulting Services (TCS) which provides the service to the Institute of Distance and Open Learning (IDOL). Of the 69,792 students admitted during the year only 511 students visited the website for submission of their forms online. However only 102 students took printout of online submission of forms and got admission. The experience was not very encouraging. Moreover, the Institute had difficulty in decoding the data from the soft copy as per our requirement. We felt that the dual mode distance learning is not synonymous with online learning. In many cases students felt it convenient to come to the Institute personally for a day and get their work done. However, we found that all these 102 students who took submission online were mostly from technical programmes. Then we thought of introducing online programmes for B.Sc. Nautical Technology students and no option was given for manual submission of forms.

The Mindset

The Maharashtra Knowledge Corporation Limited (MKCL) has been successful in launching online submission of forms for admission into B.Ed. programmes in the entire state of Maharashtra. There has been no option to submit the forms by any other means. Going by this success, online submission of forms for B.Sc. Nautical Technology was introduced. For successful implementation of the use of the online technology, there needs to be paradigm shifts within the following areas:

Institutional level, where the proper agency for administration of online technology be identified, training for the staff be arranged and the necessary infrastructure support provided.

Pedagogical level, where appropriate curricula are designed and methodology is developed, teacher training and technical support systems put into place so that teachers move away from the typing pool mentality to integrate technology seamlessly into the curricula.

Student level, where students feel that the technology facilitates their learning and they adopt it without any fuss. Perhaps the most significant challenge is the need to change mindsets and shift paradigm.

The Challenges

One of the major challenges is to persuade the educational establishments that distance education is an opportunity. Dual mode universities must be more hospitable than they have been and better equipped to integrate distance education to their systems so that it is part of the mainstream. It can help widen access to education and improve its qualities and support systems. It will not only strengthen their capabilities, add new dimensions to the programs but it will enhance their place in the society making them more responsive to its needs.

We must acknowledge that to be successful distance education requires both the trained people as well as technology that are appropriate, affordable and accessible. Conventional face to face and dual mode distance education must work together and harness their respective capabilities. There are, however, some barriers to the adoption of new technologies. While learners may embrace them, it may take longer for institutions to adopt and implement them. Administrative policies, as well as the organisation's culture, can slow down or halt their adoption. The consequence of not serving the needs of learners to keep up-to-date with these new ways of learning challenge the relevance of formal training and learning in our Institute. Hence, the Institute planned some training sessions for the staff. Nevertheless it is essential to conduct such training schedules at regular intervals.

Biblical teachings tell us that "where there is no vision the people perish" This is a time for vision and that vision is for using technology.

Student Reactions

During the first few days when online admission was introduced in general for all, there were many students who expressed frustration while using technology and they were doubtful. In short, there was not enough training time to enable students to learn to use the technology competently and comfortably. One suggestion is that perhaps having a structured training session is required. This will alleviate student frustration and confusion. Most students expressed the view that they were confused most of the time but they were happy with the timely response to their questions.

The use of technology especially in B.Sc. (N.T.) Programme is appreciated by the students. In fact, the students were so happy that they have expressed that it has eased their tension of coming to the Institute personally for everything. Moreover, it helps them to keep a track of the recent activities of the Institute, like the last date of submission of exam forms, Admission forms, etc. There has been wide media coverage in local newspapers about the use of technology for B.Sc. (N.T.) students. Going by this experience, the Institute is now encouraged to introduce it more vigorously in other programmes too.

References

Hope, Andrea (2006), Factors for Success in Dual Mode Institutions, Commonwealth of Learning, Consultant's Report, Vancouver.

University of Mumbai (2008), Prospectus of B.Sc. (N.T.) for the year 2008-09, Institute of Distance Education, Mumbai.

Role of mobile technology in learning and teaching

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Abstract

People in educational institutions, Government departments, and training organizations are always seeking to find innovative and more cost effective means to provide quality education and training.

Mobile learning is one such means that is accessible virtually from anywhere which provides access to all the different learning materials available. It is collaborative which, in turn, also leads to receiving instant feedback and tips. It also brings strong portability by replacing books and notes with small RAMs filled with tailored learning contents. In addition, this kind of learning is engaging and fun. Mobile access devices are generally used to access electronic learning resources such as e-mail, simple website and virtual learning environment.

Today's technical and economical environment is developed enough for the broad use of mobile learning, so recommendations for mobile learning should be deepened and broaden the use of mobile learning in more attractive and effective ways. However, the usefulness of any technology can be analysed on the basis of the 'Actions Model' criterion developed by Tony Bates (1997):

Access
Costs
Teaching Functions
Interactivity and User friendliness
Organisational Issues
Novelty and
Speed

This paper provides an introduction to the use of mobile technology in learning and teaching. It describes the role of mobile learning in support of learning and teaching.

Concept of mobile learning

Mobile learning is a natural extension to conventional e-learning practice through which mobile technology allows a greater degree of access to learning resources. Currently most e-learning experiences are based on learner's accessing resources through fixed modes, such as desktop PC, to which access is generally restricted by either location, time of day, or both.

Mobile learning has different meanings for different communities. Although related to e-learning and distance education, it is distinct in its focus on learning across contexts and learning with mobile devices. One definition of mobile learning is:

Learning that happens across locations, or that takes advantage of learning opportunities offered by portable technologies.

In other words, mobile learning decreases limitation of learning location with the mobility of general portable devices.

The term covers: learning with portable technologies, where the focus is on the technology (which could be in a fixed location, such as a classroom); learning across contexts, where the focus is on the mobility of the learner, interacting with portable or fixed technology; and learning in a mobile society, with a focus on how society and its institutions can accommodate and support the learning of an increasingly mobile population that is not satisfied with existing learning methodologies.

Growth of mobile learning

Over the past ten years mobile learning has grown from a minor research interest to a set of significant projects in schools, workplaces, museums, cities and rural areas around the world. The mobile learning community is still fragmented, with different national perspectives, differences between academia and industry, and between the school, higher education and lifelong learning sectors.

Current areas of growth include:

- Testing, surveys, job aids and just-in-time learning
- Location-based and contextual learning
- Social-networked mobile learning
- Mobile educational gaming
- "Lowest common denominator" mobile learning to cellular phones using two-way SMS messaging and voice-based Cell Casting (podcasting to phones with interactive assessments).

Scope of mobile learning

The scope of mobile learning includes:

- Children and students using handheld computers, PDAs or handheld voting systems in a classroom or lecture room.
- Students using mobile devices in the classroom to enhance group collaboration among students and instructors using a Pocket PC.
- On-the-job training for someone who accesses training on a mobile device "just in time" to solve a problem or gain an update.
- Learning in museums or galleries with handheld or wearable technologies;
- Learning outdoors, for example on field trips.
- The use of personal technology to support informal or lifelong learning, such as using handheld dictionaries and other devices for language learning. Mobile Assisted Learning Languages (MALL) is a term used to describe application of handheld computers or cell phones to assist in language learning.
- Improving levels of literacy, numeracy and participation in education amongst young adults.
- To provide audiovisual support in order to enhance training that has been provided in a corporate business or other classroom environment.

- Using the communication features of a mobile phone as part of a larger learning activity (e.g. sending media or texts into a central portfolio, or exporting audio files from a learning platform to your phone).
- Class management (especially for distance education or students whose course requires them to be highly mobile), through text SMS notices regarding availability of assignment results, venue changes and cancellations, etc.

Challenges of mobile learning

Technical challenges include:
- Connectivity and battery life
- Screen size and key size
- Ability for authors to visualize mobile phones for delivery
- Multiple standards, multiple screen sizes, multiple operating systems
- Repurposing existing e-Learning materials for mobile platforms.

Social and educational challenges include:
- Accessibility and cost barriers for end users: digital divide
- How to assess learning outside the classroom
- How to support learning across many contexts
- Developing an appropriate theory of learning for the mobile age
- Conceptual differences between e- and m-learning
- Design of technology to support a lifetime of learning
- Tracking of results and proper use of this information
- No restriction on learning timetable
- Personal and private information and content
- No demographic boundary
- Disruption of students' personal and academic lives
- Access to and use of the technology in developing countries.

Technology in mobile learning

Most personal technologies can support mobile learning, including:
- Personal Digital Assistant, in the classroom and outdoors
- Tablet PC, UMPC, mobile phone, camera phone and Smart phone
- Learning Mobile Author, e.g. for authoring and publishing WAP, Java ME, and Smart phone
- Personal audio player, e.g. for listening to audio recordings of lectures
- Handled audio and multimedia guides, in museums and galleries
- Handled game console, modern gaming consoles such as Sony PSP or Nintendo DS.

Technical and delivery support for mobile learning:
- 3GP For compression and delivery method of audiovisual content associated with Mobile Learning
- Wi-Fi gives access to instructors and resources via internet
- GPRS mobile data service, provides high speed connection and data transfer rate

There are many ways in which m-learning is conducted, depending on the device one is using. One of the better devices to use in m-learning is PDAs. On a PDA, learners can

access rich media resources (animation, sound, photography…) which will make the platform ideal for mobile learning. There are already tools available to create content for PDA devices, one of them being My Learning Author and Learning Mobile Author from Hot Lava Software.

Criteria for decision making on use of m-learning

Before taking decisions about the application of mobile technology in teaching and learning, each institution needs to ask whether it fulfils the following criteria based on action model:

Access: How accessible is the technology for the learners? How flexible is it for a particular target group?

Cost: What is the cost structure of the technology? What is the unit cost per learner?

Teaching and Learning: What kinds of learning are needed? What instructional approaches will best meet these needs? Is this technology best for supporting teaching and learning?

Interactivity and User friendliness: What kind of interaction does this technology enable? How easy is it to use?

Organisational Issues: What are the organisational requirements and the barriers to remove before this technology can be used successfully? What changes in the organisation needs to be made?

Novelty: How new is this technology?

Speed: How quickly can courses be mounted with this technology? How quickly materials can be changed?

Rules for using mobile technology

Clear objectives, good teaching materials relevant to learners need are essential.

Professional production and design is essential.

All media should be available to teachers and learners.

High quality interaction with learning material and interaction between teacher and other learners is essential for effective learning.

Teachers and instructors need training in the choice and use of appropriate technology.

Team work is essential because subject experts, media specialists and instructional designers are essential on every team.

Technology is not the issue but how and what do we want the students to learn and where is the main concern.

Therefore, we should concentrate on designing the learning experiences and not on tasting the technology. There is more than enough technology around now to allow us to teach in whatever way we choose.

Mobile learning is one such means that is accessible virtually from anywhere which provides access to all the different learning materials available. It is collaborative which, in turn, also leads to receiving instant feedback and tips. It also brings strong portability by replacing books and notes with small RAMs filled with tailored learning contents. In addition, this kind of learning is engaging and fun. Mobile access devices are generally used to access electronic learning resources such as e-mail, simple websites and virtual learning environment.

Today's technical and economical environment is developed enough for the broad use of mobile to use mobile learning in more attractive and effective ways.

As mobile industry develops, mobile phones are getting more and more powerful. Mobile phones will have better processing capability and better display quality. Mobile learning should take advantage of this developing trend to develop better materials.

Mobile has the potential to be used in a big variety of ways for the education purpose. For example, mobile phones can also be used for education administration. Mobile phones can be used to inform students about changed schedules.

Suitable and sufficient studying material and contents is one of the key aspects to implement mobile learning successfully. According to our experience, students are fully capable of developing contents and materials for mobile learning. So schools and educational institutes can look to learning mobile author for different ways to encourage students to develop these materials. With more and more learning materials available, mobile learning can make greater and greater contributions to the improvement of education.

References

Bates, A.W. (1995),"Technology, Open Learning and Distance Education", London, Routledge.
Website: www.wikipedia.org
Website: www.canterbury.ac.uk

New challenges for eLearning: supporting learning content through semantic web technology

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Abstract

Nowadays, the web has become an important learning platform. Its accessibility has made it a successful environment particularly for eLearning education. However, the emerging technology of the Semantic Web sets out challenges that need to be explored in bringing the eLearning platform to the next level. This paper discusses the potential of semantic technology for supporting learning content in the eLearning environment. A conceptual model is referred to present the idea of learning content development through semantic web technology in the educational context. Furthermore, the ontological development model describes the process involved in building concepts and ontologies from learning content. Lastly, this paper also explains the impacts of semantic technology that contribute to the changes of a longer-term aim of eLearning education.

Introduction

Currently, the World Wide Web is primarily composed of documents written in HTML (Hyper Text Markup Language), a very useful language for visual presentation. HTML is a set of "markup" symbols contained in a Web page intended for display on a Web browser. Most of the information on the Web is designed only for human consumption. Humans can read and understand Web pages but their inherent meaning is not shown in a way that allows their interpretation by computers. One way to enable machine-to-machine exchange and automated processing is to provide the information in such a way that computers can understand it. This is precisely the objective of the semantic Web is to make possible the processing of Web information by computers.

Semantic Web is an extension of the current Web in which information is given well-defined meaning, better enabling computers and people to work in cooperation. (Berners-Lee, Hendler et al., 2001). The semantic web initiative aims to support explicit semantics and its automated processing (W3C, 2006a). E-learning is an area that can benefit from Semantic Web technologies. Recent advances in technologies for Web-based education provide learners with a broad variety of learning content available. Adaptive support based on learners' needs, background and other characteristics can help in selecting appropriate learning and during the learning process.

Numerous resources may be used during eLearning education. Some are internal and made by several factors implied in the eLearning, others are available on the Web, such as online courses, online forums, course supports, slides, bibliographies, frequently asked questions, lecture notes, and so forth. Ontologies are a way of representing such formal and shared information. They can be used to index data indicating their meaning, thereby making their semantics explicit and machine-accessible. Ontology technology as the knowledge representation and inference core of the Semantic Web, promises this

wide applicability (Berners-Lee, Hendler, & Lassila, 2001). An area such as education, where access to information is central, depends on the representation and organization of knowledge both for the content but also the meta-data level.

This paper represents research efforts to discuss the potential of semantic web technology for eLearning content development process. The discussion starts by referring existing model for content development, followed by ontological development process and finally the impact of semantic web technology in the eLearning education.

Conceptual Model of Learning Content Development

In this study, a referred conceptual model (based on Pahl & Holohan, 2009) shown in Figure1 below is used to adapt the potential of eLearning content development using semantic web technology for our eLearning system. This model provides an overview of content development process as a whole by defining the information exchanged (input, results, etc) and actors' role for each activity.

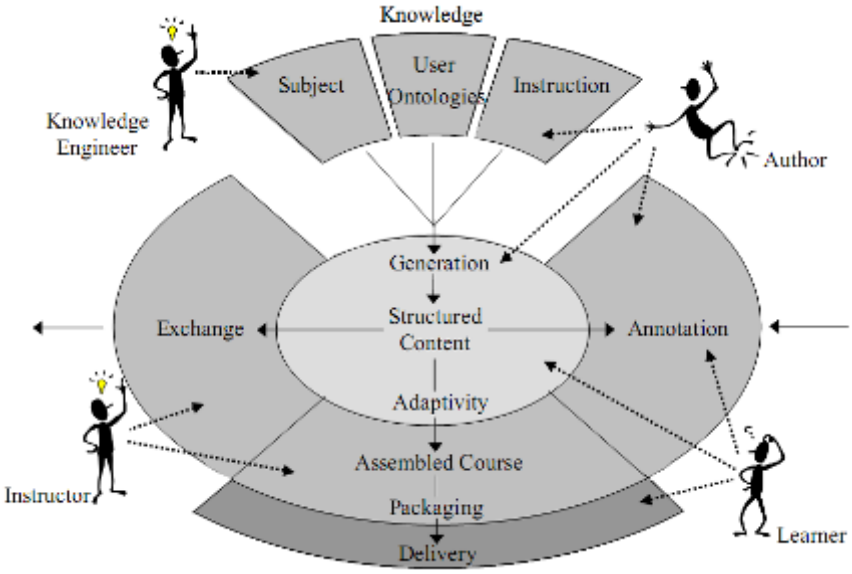

Figure 1: A conceptual model of learning content development

Based on the model in Figure 1, authors (Pahl & Holohan, 2009) have identified seven classifications of different forms of application using semantic web technologies for learning technology systems. These application types are organized into four contexts, determined by the activities and actors. The relevancy of the model referred explained in the next section from the perspective of our eLearning content development and actor's role.

The roles of the actors and activities involved are as follows:

- Knowledge engineers, or known as ontologists, are needed to develop subject, user and instruction ontologies. Subject domain ontologies are used to classify learning objects according to their subject. Instruction ontologies are used to represent the context of the subject which require education expertise as input and some activities

such as scenarios, links, examples, exercises, topic analysis or discussion. User ontologies describe the user type, the user's knowledge level and user preferences.

- The author, or known as subject matter expert, plays the crucial role in monitoring the overall development process. The focus is on the ontology-aware creation and organization of individual content units or known as learning object. It involves the creation and generation from unstructured content to structured content with content adaptivity. The task of content adaptivity to adapt the content to the needs or preferences of the user which requires the matching of learner's knowledge with knowledge represented in the learning content.
- The instructor, which can be a tutor or subject matter expert, assembles the learning object to larger units of study and packages it to particular subjects taught. Packaging needs to consider the interoperability, organization and sequencing of learning objects in an educationally sound way. A learning object is any chunk of learning material, regardless of whether it is a small piece or whole content. An important component of learning objects is learning object metadata (LOM) (Brase and Nejdl, 2003), or resource profiling (Downes, 2004) to facilitate standardisation of learning content.
- Once this eLearning content is ready by courses or subjects, instructors and learners can start their learning process by using the content available. Sharing and reuse are most important aspects for all actors involved. Learners, instructors and author can freely contribute to annotate the eLearning content from time to time. Instructors play an important role for exchanging content essentially to share content resources with the learners.

Ontology Development

Compared to traditional learning in which instructors play intermediate role between learners and learning content, the learning scenario in eLearning is completely different. Instructors no longer control the content delivery and learners have a possibility to combine learning content by their own. However, regardless of the time or expense put into creating advanced learning content, the content is useless unless it can be searched and indexed easily. This is especially true as the volume and types of learning content increase.

One solution to this problem is to use ontology. Ontology is defined as "an explicit specification of a shared conceptualization" Gruber (1995), where conceptualization refers to the objects, concepts, and other entities that are assumed to exist within some domain of interest and the relationships that hold among those entities. In other words, ontology helps us to make the knowledge represented in the eLearning content explicit. The significance for using ontologies are the sharing of common understanding between human and computer, reuse of domain knowledge, making domain assumptions explicit, the separation of domain knowledge and the operational and analysis of domain knowledge.

Ontologies have the potential to facilitate the creation of semantic relationships between various pieces of relevant and useful information, which is the backbone of semantic web, to enhance the learning experience in an eLearning environment. Ontologies can also facilitate provision of consistent vocabulary and word representation for clear communication within knowledge domain. Ontologies have been widely applied in the

context of integration and representation of various knowledge resources (Berners-Lee et al., 2001).

Before we can proceed with ontology development process, which plays a main component in the conceptual model explained in Figure 1, the concept and relationships understanding from learning content need to be addressed very clearly. Figure 2 explains the idea of general process of concept and its relationships (based on Boyce & Pahl, 2007). The advantage of separating concepts from learning content is that content aspects in the system can be changed without affecting the overall structure or vice versa. In fact, learning content (either learning objects or fragments) can address different learning aspects. Some might define and explain concepts and others might provide examples of a concept.

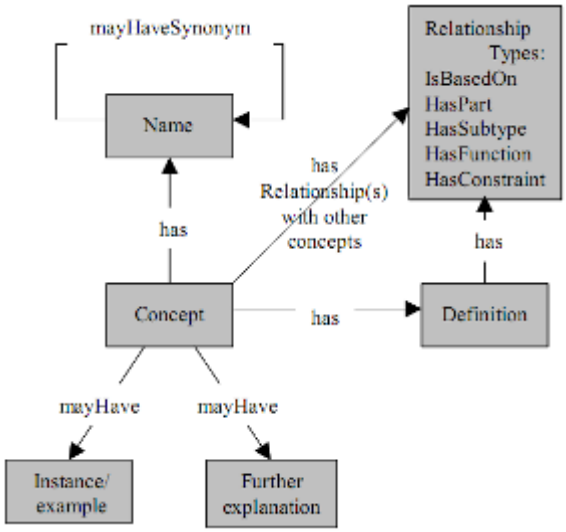

Figure 2: Overview of Concept Modeling and Relationships

Organizing concepts into hierarchy is a key aspect of building ontologies. The idea is similar to the process of abstraction and inheritance in object-oriented programming. The concept modelling explained in Figure 2 is also used as part of the ontological development process known as concept identification and concept organization. Figure 3 further explains the overall component involved in ontological development process.

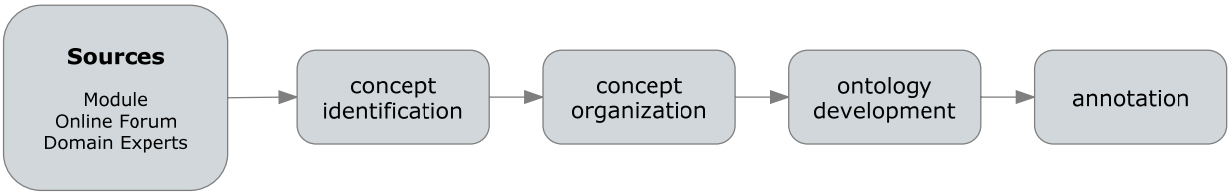

Figure 3: Overview of Ontological Development process

Initially the author starts by outlining desired subject content as set of concepts and associated relationships. This process is known as concept identification. The author can refer to existing resources such as modules, domain experts and online forum as source of the process. There are advantages of using each of the sources. For example, the module provides a good grounding of the subject and when each new topic is introduced, new terms are explained, thus providing the basis for concept identification.

Though not following the sequence, the online forum generally discussed various topics and using thorough observation authors can identify which learning concept is mostly being discussed and how comprehensive it should be.

- Domain experts can play their role in finalizing the concept identified and concept organization.
- The next task is to organise the concept in a top-down approach which means the most general concepts will be explained and evolve to more specific concepts. This structure matches the format provided in the module. Collection of learning concept will be used to organize into a larger learning concept based on inherent dependencies and sequencing that is derived from the subject content. In the scenario of content organization, knowledge is explicit and separated from the representation of content in the form of learning objects (Garlatti & Iksal, 2003). Different types of relationships have to be dealt with in the process of arranging the content units in a suitable sequence (Fischer, 2001).
- The next task is to develop ontologies by knowledge engineer using ontology tools provided. Subject ontologies can be richer than a vocabulary or concept hierarchy. Often it forms a conceptual model describing a full domain. The knowledge in instructional ontologies can comprise a vocabulary to classify educational units, such as definition, example, or exercise. User ontologies comprise user profiles such as learning styles, past experiences and motivation. These ontologies will use the sequencing algorithm in the ontological reasoning facilities of an underlying logic to determine the ordering dependencies.
- In order to support sharable resources from eLearning content that have gone through the ontological development process, finally, author, learners and instructors will involve in semantic annotation process. Ding (2005) defined semantic annotation as "…a process to label web page content explicitly, formally, and unambiguously using ontologies". In addition, Scerri et al. (2005) defined it as "…the process of attaching semantic descriptions to Web resources by linking them to a number of classes and properties defined in ontologies." Learning Object Metadata standard LOM (IEEE 2002) provides a metadata framework for the annotation of learning objects. LOM defines the attributes required to fully describe a learning object.

The main part of Semantic Web is that ontologies should provide a formal description for a shared domain conceptualization. Ontologies applied to the Web are creating the Semantic Web (Fensel et al, 2001). In practice, ontologies are often developed using integrated, graphical, ontology-authoring tools, such as Protégé (Protégé, 2009), OntoEdit (Sure et al., 2002), TM4L (Dicheva and Dichev, 2007) and HOZO (Hozo, 2009). They are used to develop new ontologies and modify existing ones. They allow the author and ontologist to edit and develop ontologies concentrating on the domain's concepts and relationships, without worrying much about ontology-representation languages. The author can choose ontologies from a list, choose attributes and relations from another list, edit, add, remove, and merge ontologies. The output is usually produced in a specific high-level ontology-representation language such as OWL, RDF/RDFS, HTML, or in plain text.

RDF (Resource Description Framework) and OWL (Web Ontology Language) standards enable the Web to be a global infrastructure for sharing both documents and data, which make searching and reusing information easier and more reliable as well.

RDF is a standard for creating descriptions of information, especially information available on the World Wide Web. What XML (Extensible Markup Language) is for syntax, RDF is for semantics. OWL provides a language for defining structured Web-based ontologies which allows a richer integration and interoperability of data among communities and domains.

Technology Benefits

The key ideas of semantic web, namely common shared meaning (ontologies) and machine-processable metadata, establish a promising approach for satisfying the eLearning requirements. Expectations for this technology contribute to longer-term aim of educational change which are (a) increase the effectiveness of education, (b) to increase the flexibility and accessibility of education, (c) increase the attractiveness of education and (d) to decrease the workload for staff (or more in general: to decrease the institutional costs). Thus the relevancy of this semantic web technology for eLearning education depends on how much it contributes in the accomplishment of these aims.

When we are able to represent eLearning courses in a semantic way, it opens the possibility to realize the needs of eLearning education:

- *Sharing and re-use of learning content* is one of the major objectives in the field of eLearning, more specifically learning objects (Littlejohn, 2003). This sharing and re-use is needed to make course development more efficient; however sharing is hard to do when the learning objects are not semantically represented.
- *Adaptation to individual learner characteristics* is highly desirable since no two learners have the same learning pre-requisites, skills, aptitudes or motivations. However, such adaptation can only be done realistically when the adaptation is wholly or at least partially automated. Otherwise it becomes too much work for the learners and tutors.
- *Learning content* dynamically changes constantly through learners and tutors interactions, input, experiences or new practices. The Semantic web enables the use of distributed knowledge provided in various forms, enabled by semantically annotation of content. Distributed nature of the Semantic Web enables continuous improvement of learning content. This enables an effective co-operative content management.
- *Nonlinear Access.* Knowledge can be accessed in any order the learners wishes, according to his/her interests and needs. This can be done by performing semantic querying for the suitable learning content. Learning content can be retrieved in the context of actual problems, as decided by the learners.

These benefits could result in more flexibility in the creation and management of eLearning content and, as a consequence, will reduce cost. The wealth information available in our eLearning content can be harnessed using semantic web technology with incorporating pedagogical theories and processes to provide a complete paradigm change towards more active-learning environment. Ultimately, the learners will benefit from these through extended availability.

Conclusion

The purpose of this study is to discuss the potential of semantic web technology to be applied in supporting eLearning content effectively. These discussions lead with an overview of model in learning content development using this technology in eLearning platform. Then the overview of ontological development process is described to reuse and sharing the wealth information available in the eLearning resources which can be semantically represented using concepts and ontologies.

This new approach to produce semantic eLearning content from existing resources enables the next generation of eLearning intake will be better than the current offerings. The next stage of eLearning will see diversification of content and models better fitted to particular learning needs and applications, instead of a one-size-fits-all approach. By focusing on machine representation and understanding the content infrastructure, eLearning can be realized as efficient learning in more productive and innovative learning organizations.

References

Berners-Lee, T., Hendler, J. and Lassila, O. (2001). *The semantic web*. Scientific American, 284 (5), 34 - 43.

Boyce, S., & Pahl, C. (2007). *Developing Domain Ontologies for Course Content*. Educational Technology & Society, 10 (3), 275-288.

Brase, J. and Nejdl, W. (2003). *Ontologies and metadata for e-learning.* Springer Verlag. 579-598.

Ding, Y. (2005). *Study of Design Issues on an Automated Semantic Annotation System*. AIS SIGSEMIS Bulletin 2: 45-51.

Fensel, D., van Harmelen, F., Horrocks, I., McGuinness, D.L., & Patel-Schneider, P.F. OIL (2001). *An Ontology Infrastructure for the Semantic Web*. IEEE Intelligent Systems 16 (2), 38-45.

Garlatti, S. & Iksal, S. (2003). *Declarative specifications for adaptive hypermedia based on a semantic web approach*. Proceedings of the User Modeling Conference, 81-85.

Gruber, T. (1995). *Towards principles for the design of ontologies used for knowledge sharing*. International Journal of Human Computer Studies, 43 907-928.

Dicheva, D. and Dichev, C. (2007). *Helping courseware authors to build ontologies: the case of tm4l*. IOS Press, p.77–84.

Downes, S. (2004). *Resource profiles*. Journal of Interactive Media in Education, 5.

Fischer, S. (2001). *Course and exercise sequencing using metadata in adaptive hypermedia learning systems.* Journal on Educational Resources in Computing (JERIC), 1(1).

HOZO (2009). Hozo ontology editor, Osaka University and Enegate Co. Ltd. Available at: http://hozo.jp. Accessed on: 03/03/2009.

Littlejohn, A. (2003). *Reusing Online Resources: A Sustainable Approach to eLearning*. London: Kogan Page.

IEEE Learning Technology Standards Committee LTSC (2002). IEEE P1484.12/D4.0 *Draft Standard for Learning Object Metadata (LOM)*. IEEE Computer Society.

Pahl, C., & Holohan, E. (2009). *Applications of Semantic Web Technology to Support Learning Content Development*, Interdisciplinary Journal of E-Learning and Learning Objects, 5, 1-25.

PROTÉGÉ (2009). The protégé ontology editor and knowledge acquisition system. Available at: http://protege.stanford.edu. Accessed on: 03/3/2009.

Sure, Y., Erdmann, M., Angele, J., Staab, S., Studer, R. and Wenke, D. (2002). *OntoEdit: Collaborative ontology development for the semantic web*. Springer-Verlag. p. 221–235.

Scerri, S., Abela, C. and Montebello, M. (2005). *SemantExplorer: A Semantic Web Browser*. IADIS International Conference WWW/Internet, Lisbon, Portugal.

Taking off: encouraging deeper learning and cohort identity through dialogic learning

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Abstract

This paper explores the use of dialogic learning with distance learners to promote deep learning and an increased sense of cohort identity. The case study describes an experiment which took place as part of a new lecturers' exploration of the possibilities afforded by CML for delivering tutor-led discussion of a defined topic area. The main purposes of the exercise were to try to encourage deeper learning outside of the traditional learning materials and to encourage students to use the VLE as a means of keeping in touch as a cohort. In this paper, the academic responsible for running the discussion and the distance learning development advisor consider both the academic and learning support offered by such an exercise.

Introduction

This paper describes an experiment and post case study evaluation in 'dialogic e-learning' using FirstClass, the Department's VLE at the time. The aims of the experiment were two-fold, firstly to engage new students who had recently met in a face to face context in order to encourage a 'cohort identity' within a flexible distance learning programme and secondly to encourage deep learning beyond the module using discursive online methods with a small group of students working in the same professional field.

Distance Learning in the Department of Information Studies

The Postgraduate Archive Administration course has been taught by distance learning since 2002. Distance learning students must be in archive-related employment for the duration of their studies. The primary method of delivering course content to students is through high quality learning materials supported by the Department's VLE. These are designed to encourage self-reflective study of academic materials in the context of work-based experience.

All distance learning programmes at DIS Aberystwyth allow a great deal of flexibility in terms of the pace at which students progress in their studies. They have 2-5 years in which to complete the degree and can submit assignments across an annual series of set dates in accordance with their individual study plans. Students are also required to attend three study schools; at the start, after completion of 50 credits and prior to undertaking a dissertation. The Archive Administration programme also has an optional study tour.

Although students value this flexibility, which leads to higher retention and completion rates, at the same time it is more difficult to retain a notion of 'cohort'. Some students find that the relative freedom to plan their pace of progress can mean that it is sometimes more difficult to prioritise their studies against other professional, social and family responsibilities.

In addition, the Department was exploring the provision of new VLE environments and staff wished to investigate the use of these to enhance the learning experience, particularly for postgraduate students. While there are many resources on the VLE, actual discussions are more limited due to the flexibility of the programme, the students' busy professional and personal lives, access to technology and time factors for international students. However, an experiment to bring students back into discussion only a few weeks after study school seemed an ideal opportunity to encourage a sustained cohort identity amongst the group. Students starting a new programme are often feeling at their most motivated about their studies and will start the same module at the same time and retain a cohort pace during the first year to 18 months at least.

Traditional learning materials with explicit objectives have long been critiqued by the DL community for being over-determined, and limiting learning to the sometimes narrow learning objectives of the module (Mason and Rennnie, 2008, p21) as well as having a somewhat limited form of 'interactivity'. The introduction of CML and VLE appeared to improve this by allowing a greater amount of genuine interactivity for students at a distance, through learning objects, online quizzes, etc. This development was seen as the way forward in terms of banishing 'distance' and isolation and some considered that this would quickly lead to a 'revolution' in which the face to face experience was replicated through online learning communities. However, in practice, the use of online environments for discursive peer learning has not yet been fully exploited for distance learners and is still developing in terms of social networking, wikis, blogs, etc.

The authors wished to look at these issues in terms that were relevant to the particular profile of DIS distance learning postgraduates. In many ways this was an ideal group with whom to explore discursive techniques, a small group, working in the same broad field and with much to contribute in terms of prior work-based knowledge. They brought much intrinsic motivation to their studies and, in addition, they had met face to face a few weeks previous to the start of the exercise. This was an ideal scenario for 'scaffolding' the discussion and creating a trusting and secure online environment. The use of asynchronous discussion allowed the tutor to encourage thoughtful and focused responses over a set period of time.

Learning Design

The discussion was asynchronous rather than real time as it allows students to enter the conversation at a time convenient to them. Distance learners balancing a number of demands (home, work, study) are not always capable of logging on and studying at a particular time, which synchronous discussion requires. The discussion was initially set to run over a two week period so as not to intrude too much into student time; this was after all an additional activity for them on top of their usual study time. It became clear during the course of discussions that this time period was too short, as will be seen later.

It was decided that the topic for discussion should not focus on the assignment questions as this may have led to some students being reluctant to share ideas with peers on material that was to be assessed – particularly as participation in discussion boards is rarely one hundred per cent. Instead the topic chosen for discussion was archival ethics which is alluded to in the module but is not covered in any real depth. This particular topic, with its lack of 'correct' answers, lends itself to more detailed discussion beyond the module. It was also a particularly good topic for students to share and learn from each other's experiences in the work place.

In designing the activity, two particularly important works were Gilly Salmon's *E-moderating: the key to teaching and learning online* (2000) and Garrison, Anderson, and Archer's *Community of Inquiry Framework* (Garrison et al, 2000). Each of these stressed the importance of being clear about what students were expected to do, how long they were being given to spend on it, and the need to build a comfortable environment for learning to take place. Salmon conceptualises a five-stage approach to learning in an electronic environment, starting with access and motivation, moving through online socialisation, information exchange, and knowledge construction, to the final phase which is development (Salmon, 2000, pp. 25-37). This stepped approach was helpful in terms of thinking about the learning activity, it needed to provide technical support and motivation, a social environment for learners to feel secure in, interaction between the moderator and peers, an opportunity to deepen knowledge by responding to the ideas of others, and independence from the constraints of the discussion forum. Garrison et al visualise a similar environment where cognitive, social, and teaching presence combine to provide a successful educational experience. These two works formed the basis of the design for the discussion forum.

Students were introduced to the idea of a discussion board at their first study school, enabling them to meet both the tutor and their fellow contributors. Two weeks before the start of the discussion a reminder was sent to students to let them know when the discussion was starting and to contact the tutor if there were any technical difficulties. This was sent to the VLE and individual email accounts in case of any technical difficulties. The discussion itself was designed to move from relatively straightforward tasks to more complex ones during the discussion period. There were four tasks set for students to respond to.

1. A welcome message was posted by the tutor inviting everyone to make an initial posting to check the technology and reintroduce themselves to the group, reminding the participants where they worked and how they were getting on with the course so far.
2. A reading exercise was set using readings in the module packs. Students were asked to explain why these authors thought ethics was an important issue for archivists and to say whether they thought ethics were important on the basis of their reading so far.
3. Students were then asked to comment on their own experience of ethics in the workplace – what ethical dilemmas had they faced?
4. Finally, students were asked whether, on the basis of the discussions and their own experience, they thought that professional codes of ethics were still relevant.

Starting with a reading exercise meant that students did not have to come straight out and say what difficulties they had experienced in their own workplace, which may have made them feel uncomfortable. Students were then encouraged to make postings and to respond to the postings of others and some of these did refer to individual issues. The final question then brought students back to the wider professional implications of archival ethics.

The discussion ran for four weeks in the end, rather than two, and of the eighteen students invited to take part, eleven students made postings, with a core of about five students making the majority of postings.

The Discussion

Students responded quite quickly to the first request to reintroduce themselves to the group and even when students came into the discussion at a later stage, they still made this introductory posting. What became apparent from subsequent postings is that, although one or two might respond quite early on, a number of students held back on posting until the time which had been allotted for discussion was nearly up. There was often then a flurry of postings just before the next task was due to be posted by the tutor. This made it very difficult from a moderating perspective – should discussion be allowed to carry on, with the moderator responding and encouraging discussion, or should the timetabled plan continue regardless? As this was a learning process for staff and students, the tutor decided to postpone moving on to the next discussion point while the discussion continued. This was the most difficult aspect of moderating discussion – knowing when to come in and when to leave students to discuss amongst themselves. In the initial guidance for making postings students were asked to think about how their own posts fitted with previous postings and it was interesting to see that rather than use the environment to simply paraphrase one another as some commentators suggest happens in the online environment (Wijekumar and Spielvogel, 2006), students related what other students had said to their own experiences in the workplace, for example,

> *"X's mention of 'judicious cataloguing' has reminded me that it's not always qualified staff who are having to make decisions about material…".*

One of the other criticisms of tutor-led discussion forums is that they perpetuate the idea that learning is tutor rather than student focused. One of the aims of this exercise was to try to take learning outside of the prepared learning materials and open it up to the students. To that end, one of the last postings made in the discussion forum was particularly interesting as rather than respond to one of the specific questions asked, one student posted a link to an article they had seen in the weekend press on ethics and Holocaust archives. This opened up discussion beyond the tutor-set aims of the discussion into a wider professional discussion about the role of archival ethics in society. Students responded to this posting too, although the discussion itself ended soon after.

Although the area remained open, and students continued to look into this area, no further postings were made. With hindsight, more thought should have been given as to how to 'finish' this particular exercise, whilst leaving the area 'open' for further contributions and discussion.

Feedback

Feedback was solicited from all invited participants, whether they had made a contribution to the discussion board or not. Of the eighteen invited participants, ten responses were returned, including two from students who hadn't been able to make a posting. The following is a summary of their responses.

1. **Did you read any of the messages in the discussion on archival ethics?**
   Yes – 8
   No – 2

2. **Did you post any messages (including an introductory message) to the discussion?**
   Yes – 8
   No – 2

   Of those students who did not post a message, reasons given were those of time, in particular getting back into study after a period outside of formal education, and technical difficulties with the VLE.

   Of those students who did make a posting, most said they did so because they wanted to hear the opinions of fellow students and to keep in contact with others on the course.

3.
   a. **I found the messages from other contributors helped me to develop my own ideas on ethics:**
      Strongly agree – 2
      Agree – 5
      Neither agree nor disagree - 1

   b. **I found the tutor's comments helpful in guiding the discussion**
      Strongly agree – 1
      Agree – 7

   c. **I understand more about the ethical issues facing archivists**
      Strongly agree – 3
      Agree – 5

   d. **I found the discussion extended my understanding of the section on ethics in the module**
      Strongly agree – 3
      Agree - 5

4. **What did you like the most?**

In terms of what they most enjoyed about the discussion, most students mentioned the importance of peer contact and support. The subject of the discussion was also noted as being important as this is a professional 'grey area' and students found it valuable knowing that they were not alone in not having a convenient 'right answer'

to everything – something which may not have come through so strongly had they relied on just the literature and the professional codes of ethics.

Students also commented on the presence of the tutor and valued the input in discussions while not finding it too intrusive.

5. What did you like the least?

Responses to this question were both procedural and subject-specific. One student found that the discussion did not fit her particular work-place situation. It was not the case that ethics did not apply, but they did not apply in the way they were being discussed in this particular instance. Other concerns were the high quality of the postings and of the time involved in reading and contributing to the postings. Some felt that it would have been more helpful if discussion had focused on the assignment themes.

6. Any final comments?

On the whole, feedback in this section was very positive. Students wanted to see more use made of the VLE for this kind of exercise. The importance of tutor input was picked up by one student, as was the benefits of hearing from students who had not contributed in class discussions at study school.

Reflections

Overall this experiment was successful in encouraging a good level of dialogue on the subject and in renewing the contact that students had made at study school. The majority of the targeted cohort took part by posting at least one message, although some made more repeat postings than others.

Feedback from those students who did take part was mostly positive, and some students said that they felt they had gained a deeper understanding of archival ethics. As one student commented:

> *"I liked the feeling that I was not alone in having ethical dilemmas. Initially in the archive part of my job, I felt I wanted plain yes and no answers as to who was allowed access to what in the archive and whether they should be charged. I found it difficult to get simple answers and now I realise there are no simple answers"*

suggesting that deeper learning, moving from content to reflecting on the process, was evident.

It was interesting to note, as an academic new to this type of teaching, the high quality of the postings. Students made postings which were far more 'in-depth' and considered than those usually made in face-to-face teaching, and perhaps some of the quieter students in class had also been put off contributing online due to the level of discussion taking place. One student responded in feedback that they were:

"a bit intimidated to write more than one response as others made such good points and sounded very intellectual".

There were, as always, a number of 'lurkers' who regularly checked in and never posted and, with hindsight, it might have been useful to get more specific feedback from them about why they did not post. Many of these lurkers were people who had already completed the module and were monitoring the area out of interest. These observers could have been directly invited to join the discussion by the tutor, although at the time primary consideration was given to the original, existing community. In future repetitions of this exercise it will be interesting to see if it is possible to integrate these observers into the community without disruption to the pre-existing one.

The timing of this exercise needs to be considered in future discussions. The two weeks initially set aside for this discussion was far too short, and more consideration needs to be given to the time students need to take to consider their responses and read the postings. What began as a two week exercise ended up twice that length due to discussion only taking place towards the very end of the allotted discussion time. Whether this is a result of external pressures (due to many students being in full time employment) or a reluctance to post until someone had started the discussion is something that warrants further investigation when running the exercise in the future. This lack of clear guidance on when the cycle would finish was picked up in some of the postings.

The impact of this exercise on students and lecturer has been interesting. The feedback, on the whole, was very positive and students requested more of this kind of activity. In terms of students progress, it is interesting to note that the students who were more active in the discussion forum have progressed through their studies at a much quicker pace than those who did not take part, or those who only made limited postings. It is impossible to say at this point, however, whether only the most highly motivated students are likely to frequently contribute to such discussions - or whether this type of activity can increase students' pace of progress. This exercise was interesting in the sense that, anecdotally, it seemed to build a more coherent sense of cohort amongst students. Those students who contributed to the discussion were far more likely to use the VLE for their own discussion and for keeping in touch with one another socially, although this use seems to have become less frequent as time progressed. This would seem to suggest that students would benefit from regular tutor-led discussion at set intervals throughout the course of their studies, not only in terms of furthering academic knowledge within and beyond the module but also in terms of continuing to build on social support structures.

References

Garrison, D. R., Anderson, T., and Archer, W. (2000) Critical thinking and computer conferencing: A model and tool to assess cognitive presence, *American Journal of Distance Education*, 15(1), 7-23

Mason, R. and Rennie, F. (2008) E-learning and social networking handbook (London; New York, Routledge)

Salmon, Gilly. (2004) *E moderating: the key to teaching and learning online*. 2nd ed.

(London; New York, Routledge)
Wijekumar K. and Spielvogel, J. (2006) Intelligent discussion boards: promoting deep conversations in asynchronous discussion boards through synchronous support, *Campus-Wide Information Systems*, 23(3), 221-231

E-Learning in Pakistan: studying the practices of designing, developing and delivering instructional materials

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Abstract

The study was conducted with the objectives

a) to discuss the role of e-learning in Pakistan;
b) to identify the practices of designing and developing of instructional material used in e-learning in Pakistan;
c) to examine the strategy of virtual instructional delivery in Pakistan;
d) to examine the problems of virtual delivery of instruction in Pakistan.

The populations of the study consisted of the students and tutors of the virtual University of Pakistan. The samples of the study (500 students and 50 tutors/academicians) were taken through convenient sampling technique from Islamabad, Lahore, Karachi, Peshawar, Quetta and Bahawalpur regions. Questionnaires were used as research tools and data was collected from the respective respondents. The researchers analyzed data quantitatively through percentage. The study revealed that the instructional material is developed by a team of experts and delivered through Internet and Virtual Television Network supplemented by CDs. However, there were some problems such as lack of facilities, proper training of the teachers, curricula and general attitude of the people. The researchers recommended that awareness about the importance of virtual education may be created through a media campaign. Proper training of virtual education tutors and appropriate training manuals may be designed for the tutors.

Introduction

Education enables individuals to adjust in the society and world of work through innovations and inventions leading to development. Among other innovations and inventions of the 20th century, information and communication technologies seem to have a greater impact on education and training, particularly distance education (Hussain, 2005). Distance education has become an established reality and currently encompasses and relies on the use of emerging technologies for effective instructional delivery (Hussain, 2007b, Rashid, 2002) and provision of 'practice-based knowledge' to help 'information savvy students' (Porter, 2008) learn through interactions in collaborative learning environments (Hussain, 2005). Different terms are used to describe such learning through distance education including, "distance learning, distributed learning, online learning, e-learning, virtual learning, asynchronous learning, computer supported collaborative learning and web-based learning" (Delich, Kelley and McIntosh, p.15, 2008). Whatever the term one uses, the nature and mechanism remains

the same for designing, developing and delivery of the instructional materials. However, Clark (2003) used e-learning to describe digitized course contents stored in electronic form to help individual learners learn and achieve educational goals. Digitization of contents and delivery through technology seems a basic component of e-learning. Digital delivery of contents and student support services make the learning process more effective and efficient (ODL QC, 2001).

Different factors affect e-learning but motivation may be the more pressing. It is the basic element of effective learning and e-learning that it "incorporates self-motivation, communication, efficiency and technology" (Comerchero, 2006). Students may create an environment of social interaction over the net for intrinsic motivation, eliminating the sense of isolation and creating belongingness with fellow students, instructors and institution. Mummert (2002) found that a prominent majority (8%) of Internet users were motivated to corresponding through Internet. Mummert (2002) concluded that e-learning faces some deficiencies and problems in provision of student support services, quality of teaching/instructional delivery, development of content and its marketing, and motivation in students.

Therefore, e-learning appears to be an electronically enabled form of education having transformed instructional material and its delivery into virtual learning environments. It would have employed interactive learning experiences virtually breaking the barriers of time and distance through the application of electronic media. It seems appropriate to describe that technologies, particularly telecommunications, have opened up new dimensions of teaching and leaning. Technology-based teaching and learning would require special skill and craft in designing and developing courses/contents and their delivery for effective learning. It embraces educational software and web resources for display and delivery of the instructional materials. Learners can have an access to the material(s) directly from their homes or workplaces on their own pace and place (Rashid, 2001). They do not meet in conventional settings but interact in virtual learning environments through the application of electronic media (Hussain, 2007a).

Currently, e-learning is imparted in almost all countries of the world through virtual universities, even in developing counties like Pakistan. A virtual university offers its courses virtually through electronic media at different levels of study nationally or internationally. The Virtual University of Pakistan is one of them offering its programmes and courses through this approach.

Virtual University of Pakistan

The Virtual of Pakistan was established in 2002 with the aim to provide quality education throughout the country as well as overseas (Hussain, 2007a; Toor, 2005). The Virtual University of Pakistan adopts a mix of media for its functioning. Sherazi and Ikram (2001) stated that a virtual university adopts a Hybrid Model for knowledge dissemination and Toor (2005) viewed it as the most appropriate delivery model for the Virtual University of Pakistan because it:

(i) provides students with interactive learning opportunities using modern technologies facilitated by classroom instruction,
(ii) broadcasts recorded lectures of the eminent scholars on its virtual television network to disseminate knowledge, and

(iii) makes an extensive use of the Internet, providing students access to the courseware and interaction opportunities with their faculty.

The Virtual University of Pakistan is committed to cater to the educational needs of the country, providing quality education through emerging technologies. It is imparting market-based skill oriented education to address the issues of globalization in the 21st century. It would produce competent manpower skilled with computer literacy and its application to work more vigilantly in an organization's enhancement to their capacity and potential. The virtual university of Pakistan adopts the following pedagogical strategies;

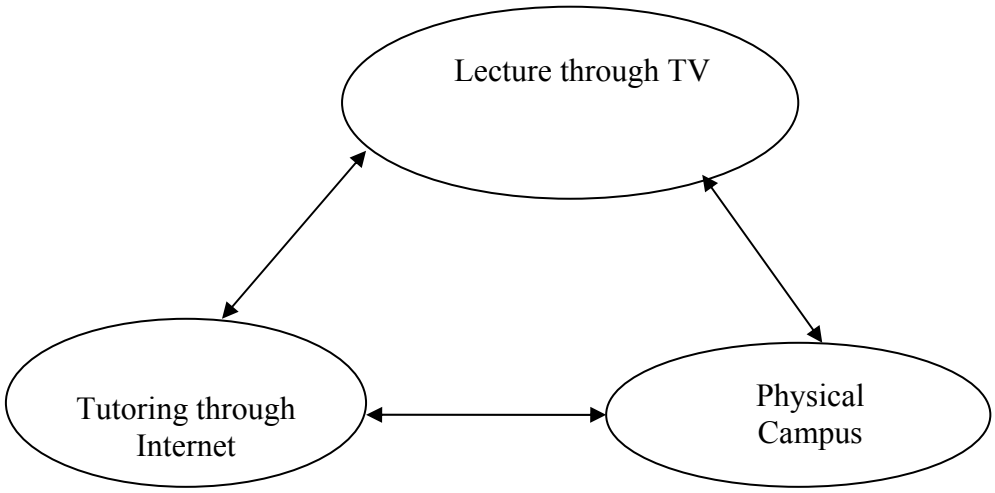

Figure : ***Hybrid Model of Education***

Source: Toor, S. K., (2005). "Hybrid Model for e-Learning at Virtual University of Pakistan" *The Electronic Journal of e-Learning* Volume 3 Issue 1, p. 68.

Partnership/Collaboration with Private Institutions - Private Virtual Campuses

Social interaction may be helpful in grooming student's personality and social earning. These interactions are carried out through cyber interactions. However, to provide opportunities of real time interaction in traditional classrooms, the Virtual University of Pakistan has established collaboration with private institutions in different cities of the country. In 2005, these collaborating campuses were 118 in 62 cities of the country where about 5000 students were receiving education (Toor, 2005). These campuses provide all necessary facilities and help and guidance to the students for their effective learning. All accessories of a virtual classroom even urgent power suppliers are available in the virtual campuses. Students enjoy a formal educational environment and continue their studies.

Development of Courses/Contents

In e-learning systems the distance is bridged by the use of technology and contents are prepared in such a way that learners may have an access from computer terminals equipped with the Internet. It is based on the principle of active pedagogy, therefore

contents or course material requires a learner's involvement. According to Hussain (2007) experienced educationists from different universities and higher education institutions develop contents and courses for virtual university. They have extensive experience in the field with foreign qualifications.

Instructional Methodology

The objective of any teaching activity is the transfer of a particular knowledge and development of some specific skill(s) to the learners. The Virtual University intends to transfer knowledge through developing some computer and work related skills to the students; therefore, an appropriate language is necessary that may be understood clearly and without any ambiguity. For this purpose the university adopts a bi-lingual approach (Urdu and English) in preparation of contents and instructional delivery.

Instructional Delivery

The Virtual University of Pakistan adopts a multi-media approach for instructional purpose. It broadcasts recorded lectures on its own television channels. Students view and listen to the lecture and interact with their faculty/instructor through the Internet. Students can do this in their homes, work place or in a classroom environment at virtual campuses spread all over the country.

The University provides videos/CDs of the lectures as instructional material. These are also available in all courses through major bookshops and virtual campuses all over the country. Students and faculty members of other universities may also benefit from the lectures and instructional material prepared by the Virtual University of Pakistan.

Use of Learning Management System (LMS)

A Learning Management System is a "specialized learning technology system based on the state-of-the-art Internet and WWW technologies in order to provide education and training following the open and distance learning" (IEEE LTSC 2001). The Virtual University works with and through its Learning Management System (LMS) on servers. It provides the facility of Moderated Discussion Board (MDB) for students to put their questions and have answers from the respective faculty for each lecture. Students enjoy the facility throughout the semester and it forms an extensive source of knowledge. Students may also use e-mail facility and send their queries to their respective instructors. However, MDB is used preferably by students.

Rationale of the Study

E-learning is an emerging concept, particularly in developing countries like Pakistan. E-learning is a technology mediated teaching learning process which requires specialized courses and their delivery mechanism. Contents and their delivery may be used to achieve the educational objectives in terms of students learning through technology. Effective teaching learning processes involve the active involvement of teachers and learners. Different models and approaches are used in the preparation of contents and instructional delivery. Such practices specify the intentions and objectives of the teaching organization and learning outcomes. The study attempted to evaluate the practices in developing and delivering instructional materials for e-learning.

Objectives of the Study

The study was conducted with the objectives

a) to discuss the role of e-learning in Pakistan;
b) to identify the practices of designing and developing of instructional material used in e-learning in Pakistan;
c) to examine the strategy of virtual instructional delivery in Pakistan;
d) to examine the problems of virtual delivery of instruction in Pakistan.

Research Methodology

The present study was descriptive in nature; therefore, researchers adopted survey approach to collect the data and completed it. The populations of the study consisted of the MBA final (Spring 2008) semester students and their tutors of the Virtual University of Pakistan. The samples of the study (500 MBA Semester Spring 2008 students and 50 tutors/academicians) were taken through convenient sampling technique from Islamabad, Lahore, Karachi, Peshawar, Quetta and Bahawalpur regions. Researchers developed two questionnaires on a five-point (Likert) scale with one open-ended question at the end of each questionnaire. Questionnaires were validated through pilot testing in Bahawalpur and Lahore on 30 students and ten tutors and finalized for administration. However, pilot tested questionnaires were not included in the final analysis. The finalized questionnaires were administered to students and tutors/academicians through academic coordinator of the Virtual University of Pakistan. The overall response rate of students and tutors was 82% and 90% respectively. The data collected through questionnaire were coded and analyzed through Ms- Excel in terms of frequencies and percentage. The results from the data analysis are presented below

Results of the Study

The study revealed the following results:

- In Pakistan, e-learning is imparted by the Virtual University of Pakistan. Majority of the respondents (78% students and 82% tutors) were of the view that instructional material for e-learning is cost effective. They do not have to pay for extra tuition/books during the course of study.
- Instructional material plays an important role in promoting learning of the students. According to 72% students and 85% tutors, it is prepared keeping in view the learning experience, individual differences and mental level of the students. The language of the material is easy to understand and all the concepts are clear to the students.
- Instructional material is available in different forms, i.e. cassettes, CDs, web-pages, etc. 83% of the students and 88% of the tutors agreed that experts of different subjects from all over the country develop material for students and design instructional strategies.
- Instructional strategies and technologies account for the success of an e-learning programme/course. A majority of the respondents (92% students and 95% tutors) commended the efficiency of instructional media of the University. E-learners are mostly employed adults and they learn on their own pace and place. Therefore, a

significant majority of the respondents (94% students and 95% tutors) were of the opinion that the lectures were broadcasted in the afternoon and at nights that best suited them helping in their learning.

- Comments on the assignments make students understand and recognize their ability but comments in positive and constructive way create and sustain motivation in students. Majority of the respondents (71% students and 80% tutors) reflected that tutors give comments on assignments. However, students (77%) and tutors (62%) were of opinion that tutors need training to equip them with pedagogical skills.
- Personality of the presenter/teacher/tutor has an effect on students to shape their attitude and thinking. According to a significant majority of the respondents (91% students and 89% tutors) the personality of the presenter was good looking with appropriate dress. The presenter used a blend of Urdu and English languages in an easy and understandable way (86% students and 93% tutors).
- Interaction enhances learning of the students. Majority of the respondents (77% of students and 80% tutors) were of the opinion that interaction of students with their faculty and fellow students is promoted through Internet. Their queries are satisfied quickly.
- Virtual University of Pakistan works in collaboration with Private Virtual Campuses throughout the country. Majority of the respondents (77% students and 60% tutors) were of the opinion that students of far flung areas face difficulty to have an access to the campus.
- E-learning is an emerging strategy of distance education with a potential of accommodating a large student body in collaboration with private virtual campuses. But majority of the students (79%) complained of electricity failure during the session/lectures.

Conclusion

Instructional material is developed by teams of experts and delivered through Internet and Virtual Television Network supplemented by CDs. However, there were some problems such as lack of facilities, proper training of the teachers, curricula and general attitude of the people.

Recommendations

The researchers recommended that awareness about the importance of virtual education may be created through media campaign. Proper training of virtual education tutors and appropriate training manual may be designed for the tutors.

References

Clark, R.C., and Mayer, R. E. (2003). *E-learning and the Science of Instruction*; San Francisco: Pfeiffer

Comerchero, M. (2006). *E-learning Concepts and Techniques* (http://iit.bloomu.edu.Spring2006_eBook_files/Chapter1.htmal)

Delich, P., Kelly, K., and McIntosh, D. (2008). *Emerging Technologies in E-learning*. In Hirtz, S. (Ed.) *Education for A Digital World: Advice, Guidelines and Effective Practice from Around the Globe*; Canada, Commonwealth of Learning

Hussain, I. (2007a). *A study of student's attitude towards virtual education in Pakistan*. *Turkish Journal of Distance Learning, 8*(2). Retrieved June 1, 2007 from: http://tojde.anadolu.edu.tr/

Hussain, I. (2007b). *Emerging Technologies: An Overview of Practices in Distance Education*. *i-manager's Journal on School Educational Technology*, Vol. 3, No. 2; India, i-mnager Publications

Hussain, I. (2005). *A Study of Emerging Technologies and their Impact on Teaching Learning Process*; Un-Published PhD Thesis, Islamabad, Allama Iqbal Open University.

Mummert (2002). *E-learning braucht Nachhile* (http://www.mummert-de/deutsch/press/a-press-info/022506.html)

Open and Distance Learning Quality Council-ODL QC (2001). *A Definition of E-learning* (http://www.oldcqc.org.uk/oldqc/n19-e.html)

Porter, D., (2008). *Introduction*. In Hirtz, S. (Ed.) *Education for A Digital World: Advice, Guidelines and Effective Practice from Around the Globe*; Canada, Commonwealth of Learning

Rashid, M., (2002). *Trends and Issues in Distance Education*; Islamabad, Allama Iqbal Open University

Rashid, M., (2001). *Educational Technology*; Islamabad, National Book Foundation

Sherazi, S., and Ikram, M.J. (2001). *A Hybrid Distance Education Model for Pakistan*

Toor, S. K., (2005). *Hybrid Model for e-Learning at Virtual University of Pakistan; The Electronic Journal of e-Learning* Volume 3 Issue 1, p. 68.

Long distance short: modern technologies impact on AIOU ODL System

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Abstract

Open Distance Learning (ODL), using modern technologies, can take education to more and more people. Correspondence education is more than three decades old in Pakistan. The Open Distance Learning system at AIOU through correspondence is facilitated by the medium of print in conjunction with the mail system. As a result, this method affords the learner considerable independence with regard to both place and time of study. For many students, correspondence education has broken down these insurmountable barriers to continuing education.

The transition from traditional ODL to virtual or new ODL is always difficult for the developing or underdeveloped countries like Pakistan but with intelligent and hard working people and limited resources we have made it possible. AIOU is the 4th Mega University in the world; each year the university enrolled almost 1 million students from undergraduate to PhD level programs. A few departments launched their programs online with full use of ICT, the remaining departments are in a transitional stage and nearly all the departments will be able to offer their courses online in the future.

The results of this small study conducted by the researchers show very impressive and encouraging data which indicates that the teaching learning process is more efficient and effective in online courses. The interviews conducted by the researchers reflected the opinions and experiences of students, tutors and non academic staff of AIOU. The results and conclusions were presented to all the departments for motivation and encouragement to adopt the modern technologies so that AIOU can be a Mega University using the latest technologies.

Introduction

The 21st century with its charms and challenges has begun and nations that have better human capital and technological advancement in terms of education are destined to rule the world (Butt, 2009). Technology is the tool, not the end. We have to keep that in mind or will not get used. The internet is often hyped as an excellent tool for facilitating collaboration between geographically distant people. Such collaboration occurs in wide variety of areas as in ODL (Carnor, 1996). The internet has become an important form of communication in modern society. Its increased use and accessibility have led to cyber communities, where people of like minds and common interest transcend geographical barriers and communicate with one another on a range of subjects, some trivial, some controversial, and some intensely private (Frankel, 1995). The impact of

technology on learning is fragile and inconclusive (World Bank, 2005). The same conclusions were drawn from the Cox et al study conducted in the UK in January 2004. Another study conducted by the University of California in 2005 draws the same findings. Professor Karmer has confirmed that it is generally accepted that the use of technology in higher distance education is beneficial for the student population at large.

The Allama Iqbal Open University (AIOU) was established in July 1974 and is the first open university in Pakistan, Asia and second in the world. It is a unique institution in many ways, particularly in terms of employing distance education as its basic teaching methodology. It affords an opportunity to working people to enhance their qualification without giving up their jobs or place of living. It also provides them with opportunities to acquire knowledge, skills and techniques relevant to their jobs, which can enhance their job effectiveness and output through a variety of non-degree programs. Distance education in Pakistan is particularly suited to the female population as it affords them an opportunity at home. Similarly, people living in the tribal and far flung areas where the formal education system has not been reached as yet, also get an opportunity to be educated.

Open and Distance Learning system is flexible in terms of age, and even time. The university developed specialized study guides and reading materials to enable the student to study on the basis of self-learning. To help them study at home, however, the university provides support of radio and television programs. The new information technologies are forcing major changes on both traditional campus-based institutions and the large autonomous open universities (Bates, 1996). The computer center and an education department conducted a small research entitled Long Distance Short: Impact of Modern Technologies on AIOU's ODL system. The researchers followed the Bates (1995) actions model for assessing learning technologies. Recent innovations in the field of Information and Technology are making the system of Distance Education even more effective.

As more and more students get access to Personal Computers and learn to use the Internet, teaching through Open and Distance Learning is becoming more effective. The AIOU also signed an agreement with Intel Pakistan for provision of Personal Computers to their students on easy instalments. This will be a milestone for the use of ICT. Although students are facing a number of problems with respect to use of ICT but with the efforts of AIOU's computer center these will be solved. The university has taken many steps to use latest information communication technologies like online access for admission, results, tutors' names, mailing status, online roll number slips and many more. The computer center brings a number of changes in Open and Distance Learning system of AIOU. The pilot programs and these initiatives have encouraging motivation for the use of ICT.

Objectives of the study

The salient objectives of the study were

- to study the effectiveness of use of ICT in ODL systems;
- to study the efficiency of the teaching and learning process with modern technologies;
- to explore the economic benefits with the use of modern technologies in ODL;

- to analyze the communication system between tutors and students.

Research question

What is the impact of modern technologies on AIOU's ODL system?

Methodology

The descriptive research design and survey method was adopted for the research. The population consisted of students on PGD Computer Science and COL MBA/MPA. Almost 86 students were enrolled in PGD Computer Science and 890 in COL MBA/MPA programs. The interviews were conducted from the students by the researchers themselves. The students were selected through random sampling technique. Thirty students from each program were selected. In each group 50% were male and 50% were female. A total of five tutors from each program were also selected through random sampling technique. The researchers selected all the staff members of the computer center who were attached with online programs. It was ensured that all the sampled students had personal computers at home with internet facility and had completed at least one semester. Semi-structured interviews were conducted with the students, tutors and non-academic staff (computer center staff). The computer center as well as departments offering online courses conducted online need assessment surveys. The purpose of the surveys was to find out how the use of ICT (modern technologies) can help ODL student in effective learning. There were 24 items in the survey. More than 3000 students responded online and keeping in view their comments and feedback, a postgraduate diploma in computer science and the COL MBA/MPA were launched. The researchers had asked 10 main questions linked with sub-questions (semi-structured interviews) to the students, tutors and computer center staff. The areas of the interviews were the use of ICT/modern technologies, cost effectiveness, communication between tutors and students, relevancy, reflective thinking, interactivity, tutor support, peer support, interpretation, computer center support, internet problems, computer related problems, timings, quality of learning material, use of online portal/website and support from the concerned departments (academic support). The results and findings are discussed in the next section.

Results and discussion

Many institutions worldwide, particularly in North America, Australia and New Zealand, the United Kingdom, and several other European countries, such as Norway, Denmark and the Netherlands, have started to invest heavily in online teaching but it is very rare in developing or underdeveloped countries. The AIOU is one of them, offering courses entirely at a distance, targeted mainly at students who cannot access a conventional university or college campus. Other systems might better be described as distributed learning, in that they combine some elements of on-campus teaching with online access to materials and discussion forums (Bates, 1999).

There is a big question in ODL systems of underdeveloped countries as to why institutions across the world are investing so much in online learning? Are they investing with justification? The answer in AIOU is yes; annually we spent almost 53 million rupees on publishing or printing books for students (VC Report, 2009). One of the aims of use of ICT/Modern Technologies in ODL is to save money. AIOU has

developed online programs and has had good feedback, encouraging all departments to develop online courses for increasing access and to improving the quality of learning, to reduce costs and to preparing students better for a knowledge-based society to respond to market demand (Dolente and Norris, 1995; Katz, 1999).

The computer science and MBA departments are the pioneer departments which offered online programs and achieved all the objectives of online courses. The results of the study were impressive and now other departments are also planning online courses or using other modern technologies in their programs.

The impact of ICT in general was analyzed through questions and desk review. In the past, before the use of ICT, it was very difficult to trace the student's record. Staff from the examination and admission department reported that a query from students about their record 10 years ago caused real difficulties. It is now a one click matter - we just enter name or roll number or registration of the student and we have all the history of the student and we respond to the students within seconds. The Director, Computer Center, responded in interview that the use of ICT in ODL enhances our efficiency, lowers the burden on staff, and improves the quality education, economic benefits and fast communication among students, tutors, community, administration and academic departments of the university. He also informed that the tutors are very happy because they had all the information on the university site or from the computer center. They are provided with students' computerized details, assignments result sheets and their problems are dealt with through emails from the students and university staff. One of the online course tutors said

> *'Thank God; I am so happy that now I am not worried about having to prepare long lists of students and paste students addresses on the envelopes and also much comfortable that I am not on the phone all the time to answer the students. The students now send me emails and discuss their problems and ask their questions on web page discussion portal.'*

Another student shared her experiences and said that 'use of ICT in ODL was a blessing especially for girls and girls from far flung areas:

> *'We can download our date sheet and roll no slip directly from the university website. Before that I still remember my father went to Islamabad just for roll no slip and it was very expensive. Now just at home or with 10 rupees from any internet café we can do all these easily.'*

The results of the study showed that respondents held a fairly positive view of the different advantages that ICT can bring to learning and education. The findings are the same as found by Professor Nevena Mileva in 2008 (Mileva, 2008). This positive view of ICT was accompanied by a rather contrary attitude towards learning with traditional education methods and one which questioned the value of ICT in education. In the interview, many of the respondents (90%) responded on a question that they were interested in ICT use for the purpose of information exchange, to communicate with tutors and the parent department. One of the purposes of the use of modern technologies was to share information and ideas with class fellows. Some traditional followers of distance education systems have argued that they had observations and

doubts about the quality of education and effective learning when there is no face to face contact (Mileva, 2008).

This study also confirmed that it is generally accepted that the use of technology in ODL systems is beneficial for the students and tutors (Kramer, 2008). A large majority (87%) of participants in the study responded that ICT/modern technologies facilitated the part time (on job) students' easier access to material. They also confirmed (69%) that the application of ICT to support learning and teaching and providing Internet access to student administrative processes has improved distance education. On relevancy they argued (83%) that the material provided by the department and tutors were very much relevant and up to date and helpful in their professional development. The tutors responded on this question;

> *'we tried hard to provide latest and up to date allied material or reading material to our students for their professional development as well as to achieve the goals of the programs'.*

The question on reflective thinking asked by the researchers to the students had very interesting answers or feedback. The students and tutors both agreed that the online courses material and discussions with tutors and class fellows developed the reflective thinking skill and now they took the things in positive critical thinking manner. They not only welcomed critical thinking on others' ideas but also on their own. The tutors (69%) agreed that the online programs and use of ICT in ODL helped to stimulate the students' thinking, motivation and praising the students' contribution.

In web page discussion on courses or other problems and issues developed good sense of interpreting the others' lines or discussions. The students, tutors and computer center staff (87%) agreed that learning is enhanced by the use of multimedia for presenting the ideas and concepts. The students said that they were fed up with lectures and white board writing and use of ICT is a welcome change in the ODL system. The majority of students and tutors were agreed that the use of ICT/Modern Technologies enhanced group and individualized learning programmes.

On the whole, the results concluded that the use of ICT and modern technologies were helpful in effective and quality learning, making learning easy to access, cost effective, time efficient, interactive and user-friendly.

References

Bartolic-Zlomislic, S. & Bates, A.W. (1999). Assessing the Costs and Benefits of TeleLearning: A Case Study from the University of British Columbia. URL Access: http://det.cstudies.ubc.ca/detsite/researchproj.htm. Accessed on 21st June, 2009

Bates, A.W. (1995) Technology, Open Learning and Distance Education, Routledge, London & New York.

Bates, A.W., and Escamilla, J. (1997) Crossing Boundaries: Making Global Distance Education a Reality. Journal of Distance Education, 1997, 12(1/2), pp.49-66

Butt, M. H. (2009) Vice Chancellor's Annual Report 2007-2008. Islamabad, AIOU.

Carnor, F. L. (1996) Internet collaboration: good, bad and downright ugly, cm crossroiads student magazine.

Cox, M. J., & Webb, M. E. (2004) ICT and pedagogy: A review of the research literature, Coventry and London, British Educational Communications and Technology Agency/Department for Education and Skills.

Dolence, M. and Norris, D. (1995) Transforming Higher Education: A Vision for Learning in the 21st Century Ann Arbor, MI: Society for College and University Planning Mileva, 2008

Frankel, M.S., & Siang, S. (1999) Ethical and legal aspects of human subjects research on the Internet. Retrieved from American Association for the Advancement of Science Web site. Retrieved June 13, 2006, from http://www.aaas.org/spp/sfrl/projects/intres/main.htm

Kramer, P. (2008) The impact of new technologies on distance learning students. URL Access: http://eleed.campussource.de /archive/4/1422/. Accessed on 17th June, 2009

Mileva, N. (2008). The effect of adaptive performance support system on learning achievements of students. International Journal of Continuing Engineering Education and Lifelong Learning, 18 (3), 351-365.

World Bank Report (March, 2005) The Impact of New Technologies on Distance Learning Students. URL Access: http://www.ericsson.com/ericsson/corpinfo/programs/the_Impact_of _new_technologies_on_distance_learning_students/. Accessed on 21st June, 2009.

E-learner support: using learner support forums to enhance the student experience

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Abstract

The United Kingdom Open University has experimented with a range of information and communication technologies to support learners including: online resources, email, e-messages, SMS messaging, and Second Life. We have a particular interest in learner support forums and are developing a core programme built around topics such as welcome, study skills, course choice, careers and disability. We have found that forums encourage peer support, help students overcome isolation, build subject communities, as well as improve access to information, advice and guidance. But, at the same time, forums also raise questions about accessibility, how comfortable our diverse student population feels about using ICT, as well as a number of training and resource issues for the university. We provide an overview of the recent development of learner support forums, as well as the impact on learner support.

Introduction

Distance is the problem with distance education in the United Kingdom (UK). There is no huge appetite for distance teaching methods as such. Students choose the United Kingdom Open University (UKOU) primarily because it is the only or the most convenient mode of higher education available to them. We may use the attractive language of 'open learning', or 'flexible study', but many hear the less appealing 'isolated learning', or' remote learning'. This is not surprising as most schooling and workplace training is group based, face-to-face, and led by a teacher or trainer.

But things are changing and distance is not what it used to be in the sense that information and communication technologies have transformed our ability to communicate and maintain relationships at a distance. In the UK there is widespread access to mobile telephones, computers and the internet for personal, social and employment purposes. The UKOU has integrated e-learning into the system of teaching, learner support and administration and prospective students are advised:

"E-learning and Computers
Using computers and the internet to enhance your study is an essential part of our undergraduate programmes. You'll need regular and reliable access to the internet and a computer so that you can take full advantage of our online services, including online forums and our vast library, and get access to support from your tutor and fellow students. All our courses have a course website that will help you to plan and organise

your study and allow you to get involved with the University's learning community – the largest in the world!
For most courses you will be expected to spend at least a couple of sessions a week working on computer-based activities and some of this work may be assessed"

(The Open University, 2009)

In relation to learner support there have been three stages of overlapping development:

- The creation of study support resources within the StudentHome website (the main portal for registered students) to support induction, preparation, study skills, and career development.
- The development of e-messages sent to students at regular points during study and providing timely information and links to additional online resources and sources of advice. In 2008, over 200,000 students opened an e-message and more than 30,000 followed links to other support resources.
- The piloting of learner support forums moderated by experienced educational advisers or associate lecturers (part-time tutors responsible for delivering our courses) and covering topics including: study skills, course choice, careers and disability. In 2008, more than 15,000 students participated in learner support forums.

The objective is to create an e-learner support strand as part of a blended approach which makes best use of all the available media to support student success, retention and progression.

Forums as part of e-learner support

For the Open University, forums have primarily been used in teaching and many faculties offer a combination of face-to-face tutorials and tutor group forums. In some cases, forums have been used to replace face-to-face tutorials; for example, on a suite of writing courses which are wholly taught online. Furthermore, forums provide a social space in which students can interact with others regardless of where they live; where they can work collaboratively, as well as help and support each other and engage in reflective thought (Macdonald, 2008).

Exploring the potential of forums for learner support is a natural extension. The Student Services area has piloted a range of forum topics both through the standard learner support provision and through the Personalised Integrated Learning Support (PILS) Centre for Excellence in Teaching and Learning (CETL) which has a specific focus on support in the context of a subject area or programme of study. Between 2007 and 2009, we have experimented with a range of forum topics: Welcome, Careers Advice, Study skills, Disability, Keeping Up with Study and Course Choice. This paper will focus on two forums as exemplars: Welcome and Course Choice.

Getting Started forums

Helping new students to make a good start with their studies is very important to the University. Up to 40% of students lack standard university entrance qualifications, others may have no recent study experience, and almost all are unfamiliar with the system of study. New students receive a Welcome booklet which introduces university

study and signposts online induction, preparation and study skills resources. This is a useful but passive resource which offers no interaction with other students or with the university.

New students taking languages, social science and business, science and technology courses were invited to take part in Getting Started forums running for six weeks in the period immediately before the start of the course. The main objectives of the forums were to:

- Support initial orientation and start building a relationship with students in order that they would have a clearer sense of the system of study, feel more confident and be better prepared to start their course.
- Create an opportunity for students to ask questions about any aspect of their studies and receive information and advice from experienced staff.
- To reduce the sense of individual isolation and help create a sense of academic community.

The forums were moderated by three associate lecturers supported by an educational adviser. In total 3371 students participated in the forums, making 7300 visits and reading over 4000 messages. The main themes related to being new to the university and anxiety about starting study. The primary motivation in visiting the forum was to make contact with the university and with other students taking the same course or courses in the same subject area. The moderators supplied a brief personal profile as an introduction and many students responded in kind talking about themselves and their reasons for doing a course. Worries about study, prompted by the recent arrival of the course material, were commonplace:

> *My course materials arrived yesterday and like a lot of you it was a bit daunting, so much information! It's nice to see that there are others in the same boat though*

Students also had a diverse range of practical queries about course content and workload, managing time, preparation, tutorial support, assignments and study skills. The moderators were able to provide reassurance as well as practical advice and support. Almost all of the information students needed was available in written or online resources, but it is not always easy to find, and students can feel reluctant to get in touch with staff about minor matters. The forums appear to have offered a comfortable environment where new students could ask questions or own up to concerns. A notable feature was the extent to which students supported each other with everything from tips about working with the virtual learning environment, to preparatory suggestions and strategies for studying with a new baby.

> *I had questions, which might sound stupid to others, but when I went on the forum, other students were in the same boat. Some of my questions were answered. I felt so relaxed when I introduced myself and answered another student's question. NO QUESTION IS STUPID and this getting started forum put all my fears to rest. Fantastic way of finding your way around*

The moderators found that the forums reinforced their empathy with new students:

> *Moderating the forum was a good exercise for me to appreciate once again what it is like to be a student for the first time. The panic by students is overwhelming. It has made me think again about what can be done to support students in overcoming confusion.* Jewitt (2009)

Only a small number of students (less than 1%) completed the online forum questionnaire but the great majority who did respond found the information from the moderator helpful and would use study support forums in the future. The real value can be found in the student comments and in particular the reassurance students gained from finding that they were not alone.

Course Choice forums

The OU curriculum is modular and offers considerable freedom of choice. Students may seek advice on planning their studies from a number of sources including other students, their associate lecturer, advisory staff or the university website. However, we have found that around one in five say that they do not have enough information about the order in which to study courses, so offering course choice forums just after students have taken their exams or submitted their end-of-course assessments presents an ideal opportunity. During 2008 two course choice forums were piloted over a four week period: one for History students and one for Sociology and Social Policy students. The forums were moderated by educational advisers; one was also a careers adviser, and two were also associate lecturers. The main objectives of the forums were to:

- Offer students the opportunity to receive information, advice and guidance on their options from expert moderators
- Develop a subject-based, mutually-supportive community space in which students could discuss their course choice and pathway planning
- Engage students with their academic subject area outside of academic discourse (adapted from Osborn, Stevens and Wheeler, 2009)

The total number of students who visited the forums over the four weeks was 2847. These students made 6276 visits, reading approximately 944 messages. The content of the History forum largely focused on discussions surrounding undergraduate courses:

> *Just wondering if anyone has done […Film and Television History] as it looks fantastic. I want to do it as one of my level 3 courses, but would love some feedback from someone who has completed it. How heavy was the course load and what was the exam like?*

Students also sought advice on their chosen pathway of study through a qualification, and there was some discussion of postgraduate study. Unsurprisingly, the forum generated some questions associated with, but not strictly related, to course choice - for example, transferring credits from previous study, study load, preparing for the next level of study, the pros and cons of taking different degrees, and help with careers.

Although the themes in Sociology/Social Policy forum were broadly similar, it did develop a clear study support strand, specifically amongst students finishing the level one course, 'Introduction to the Social Sciences':

> *I know it's a little late in the day to ask about […my final assignment] as the deadline is tomorrow, but has anyone else found it hard*?

Comments like these led moderators to reflect on one particularly useful aspect of the forums: an insight into the reality of studying specific courses:

> *I'm […] learning quite a bit about things I just didn't know the answer to, like experiences of courses that I can convey to other students.*

Students were invited to participate in an online feedback questionnaire. Although the response was minimal (less than 1%), students did say that they greatly valued the opportunity to 'meet up' with other students in the virtual space we had provided.

What have we learnt?

Benefits

The pilots have shown that there is student interest in forums. Nearly half of those invited to the getting started forums participated and found the forums easy to use without any special training. This is a cost-effective use of staff to offer information, advice and guidance to large numbers and students provide a great deal of mutual reassurance and support.

The forums enabled us to create an important feedback loop between the student experience the University. The evident anxiety of new students is helping to inform the re-development of our induction programme. The History forum generated ample feedback for the Arts faculty, such as requests for information on specific course modules (new, planned, or discontinued), study pathways, and new developments within the curriculum, like the new MA in History.

One of the underlying objectives was to reduce the 'loneliness of the long distance learner' and the forums showed considerable potential:

- **Community building**

Moderators really felt a sense of community being fostered between and amongst students. One moderator recorded a video diary, in which she reflected:

> *One thing again I took away from today was that we've got an incredible amount of classics students. In my day job I don't talk to many Classical Studies students. There is a real sense of community amongst them.*

One of the reasons why students logged onto the forums was because they wanted to feel part of a subject community:

> *I was craving human contact with other OU history students during the 'off season :-)*

The fact that the forums had a specific learner support focus was, however, paramount, and a number of students were disappointed when that focus drifted:

> *If you could try and restrict the postings to the subject of course choices it would be much more useful, it was full of people chit-chatting about their [Introduction to Social Sciences] DD100 […assignment] results.*

However, the opportunity to meet and chat with others was evidently an attraction, which meant that some postings did move from discussions about the curriculum into the realm of social networking. Such interactions were, though, limited which does suggest that the majority of students engaged in the forums primarily for an educational reason. Indeed, it is likely that without a clear focus such communities would not exist at all (Cameron, Morgan and Williams 2009). It is evident that some students continued to meet after the forums finished. One moderator discovered this posting on the 'Exploring History' Facebook group page:

> *Just a quick note to anyone who noticed the message on the OU student homepage. There is a student services forum for students doing history. I have had a quick look and it is brilliant. Loads of questions been asked. I have got a lot of info from it and I am sure you guys will get help from it too […] Also lots of advice on history careers. I have been sent some links about becoming a history teacher. Just thought I would let you guys know about this. I am finding it really useful.*

- **Creating support networks**

A notable feature of the forums was the extent to which students supported each other; moderators commented on the supportive atmosphere and the 'good advice' students gave each other. There were a number of occasions where students appeared to be actively looking for peer support to reduce the isolation of distance learning:

> *Starting [Introduction to the Social Sciences] in Feb, haven't looked at materials yet, but excited. Hoping to get a few study buddies to keep me motivated*

The forums were designed to create an environment for students to talk openly about their studies, and one moderator hoped that the forums provided a space

> *where students might ask those questions they never dared to ask and [where] they [would] feel comfortable to ask them*.

There was much evidence to suggest that students found a mutually supportive environment in the forums, whether they were looking for some help with kick-starting their studies:

> *[Name] - I wonder if I might encourage you? I am due to start [Introduction to the Social Sciences] in February and haven't a clue what to expect BUT like you, I'm at a certain stage in life and wondering how I will cope. You have completed the work - that for me is really encouraging - it tells me "It's possible!"*

Or some encouragement to keep themselves motivated:

Thank you for all your support and messages throughout [my assignment]. I am happy and still confused how I managed it. But THANK YOU, knowing that you were all out there kept me going.

Issues

Although using computers and the internet is an essential part of Open University study, we also know that, 'The use of computers, and particularly online study, presents challenges for students' (Macdonald, p. 121). Without students having the necessary skills, or having the necessary equipment and internet connections, we are always in danger of only being able to reach those who can reach us. And, for those who *can* reach us, forums are just one of many online tools the University uses to communicate with students; thus, we run the risk of overloading students with a multitude of different media.

Moderating forums requires time and distinctive skills. Some of our moderators completed an internal training course designed for associate lecturers, but it's fair to say that moderators are still learning by experience. What we do know is that our moderators found the work rewarding and all of them said they would do it again.

Conclusion

This is very much a report of work in progress. We have done enough to be convinced that there is an important role for learner support forums but cannot yet offer a fully developed model. There is still much to learn about the number of topics and duration, skills of moderation, managing student expectations and developing a forum etiquette which successfully balances student and moderator contributions. There are considerable challenges, notably IT access and skills, but also the extent to which students are happy to engage with this medium. E-learner support and forums do not work for all students and some would prefer face-to-face contact if this was an option. However, considerable numbers of UKOU students, more than 15,000 in 2008, do appear to be comfortable in this environment. We have made extensive use of quotes from students not only to indicate some of the practical benefits in terms of the provision of information or advice but also to illustrate how forums can help to reduce the sense of isolation often felt by distance students and help to build communities of interest and support built around subject areas.

References

The Open University (2009) Undergraduate Prospectus: An introduction to studying with The Open University, 2009/2010, The Open University, SUP 008432.

Jewitt, K. (2009) Getting Started Forums: Social Science and Business, OU internal report

Macdonald, J. (2008) *Blended Learning and Online Tutoring: Planning Learner Support and Activity Design*, Gower Publishing. pp. 15-16, p. 43, 53

Cameron, B.A., Morgan, K., and Williams, K.C. (2009) Group Projects: Student Perceptions of the Relationship Between Social Tasks and a Sense of Community in Online Group Work *The American Journal of Distance Education* 23, 20-33.

Open University (2005) Personalised Integrated Learning Support internet site available at: http://www.open.ac.uk/pils/about/ (Accessed 22 April 2009).
Clark, N. (2001) Education, Communication, and Consumption: Piping in the Academic Community In Werny, C. and Mowbray, M. (eds) *Online Communities*, Prentice-Hall.
Osborn, J., Stevens, C., and Wheeler, J. (2009) PILS Course Choice Forums October – November 2008; Kelly, L (2009) Online Getting Started Forums: Executive Summary, OU internal reports.

Reshaping distance and online education around a national university in regional Australia

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Abstract

A recent independent review of Australian higher education has made a series of recommendations that Government has largely accepted and which have the potential to alter dramatically that country's university system. In combination, some of the consequences of the review have significant implications for regional education, particularly new criteria for the designation 'university', the removal of a cap on student numbers, and targets for participation both generally and for students from disadvantaged groups, including those from regional and remote areas. In response, two universities have proposed the establishment of a new, merged institution to be based in regional Australia but with a national mission, which would necessarily have a significant - and possibly unique - distance education mission. A scoping study for this institution has been funded by Government.

These developments come at a fortuitous moment in the history of Australian distance education, a field which, while strong in practice, has lost some sense of its own identity as a result of a general movement in Australia's dual mode university system from distance education for some to flexible delivery for all. De facto leadership of much of the discussion surrounding online delivery has been assumed by information technologists and online enthusiasts who do not necessarily understand the milieu of the distance student.

The position taken in this paper is that the developments proposed afford an opportunity for the distance education community to focus its energies under a new mandate and with a more specific student base. There are, however, significant challenges to which both the present system and distance educators in particular will have to respond. One of these relates to the role of online delivery within the university sector and particularly for such a national university in the context of an existing diverse and dispersed approach to distance delivery in higher education across the country.

These issues will be explored within the paper.

Reshaping distance and online education around a national university in regional Australia

This paper argues that the proposal for a national university in regional Australia (Goulter, 2009) is both a bold initiative in the context of regional development and a timely opportunity for Australian distance educators to reassert their distinctive contribution to the delivery of higher education. A critical factor in the realisation of this opportunity will be a reshaped approach to the use of online technologies in the development and delivery of university programs. One could hardly overstate the boldness of the proposed initiative. While the advantages that might follow from such a

development are considerable, the challenges are equally substantial, involving no less than a restructuring of the Australian university sector, including the possible demise of some present institutions, which for some would constitute a barrier to the new university proposal. Yet Government seems disposed to treat the proposal seriously and has funded a scoping study (Gillard, 2009). Some of the issues are considered here, in particular those relating to distance and online education, although others (eg the complexities of implementing any necessary institutional mergers) are well beyond the scope of the present paper.

The context for the proposal involves: (1) the Bradley Review of Higher Education (Bradley, et al., 2008), (2) the response of Charles Sturt and Southern Cross Universities to issues raised in Bradley Review consultations, (3) the distinctive pattern of distance education that evolved in Australian universities, and (4) the present uncertainties about the role of distance education that are the consequence of technological change. Finally, (5) there are major questions about what implications such a new institution might have for distance and online delivery more generally that are of consequence here. Each of these matters will be discussed below.

The Bradley Review of Higher Education

On 13th March, 2008, the Hon. Julia Gillard MP, Deputy Prime Minister and Minister for Education in the Australian Commonwealth Government, initiated a Review of Higher Education, to be chaired by Emeritus Professor Denise Bradley AC, "to examine and report on the future direction of the higher education sector, its fitness for purpose in meeting the needs of the Australian community and the economy and options for reform" (Bradley, et al., 2008). The Review reported on 12th December 2008 and in a series of subsequent forums in early 2009, the Deputy Prime Minister indicated the Government's general acceptance of the approach and way forward recommended by the Review panel while acknowledging the funding constraints on action resulting from the 2008-9 international economic crisis.

Key elements of the recommendations that have consequence for this paper include:

- setting significantly increased targets for attainment of degree qualifications and participation of low socio-economic status students and monitoring of institutional performance in securing the achievement of such targets,
- providing a study entitlement for all qualified students that would follow their choice of institution,
- the removal of limits on student enrolment by institution,
- increased funding for low socio-economic status [low SES] students and for provision in rural and regional areas, and
- the accreditation of all higher education institutions, including universities (Bradley, et al., 2008).

There is a narrative in these points that needs to be understood. The first three effectively allow institutions attractive to students to flourish at the expense of others with more limited appeal. In Australia, this favours both older and larger city-based universities with strong research performance.

The fourth point creates an opportunity, with funding rewards, for institutions that can demonstrate quality delivery to people from low SES groups and those located in rural and regional areas. The Report commented "serious consideration should be given to the development of a university with special expertise in provision of higher education across regional and remote Australia" (Bradley, et al., 2008).

The final point constitutes a major change from the present state of Australian universities as self-accrediting institutions (although private non-university providers are required to be accredited by relevant State authorities). The Review recommended more rigorous criteria for university designation, including the capacity to undertake research and offer research higher degrees in (initially) three broad fields of education and subsequently more (Bradley, et al., 2008).

It may be difficult for some smaller, existing universities with strong teaching programs to meet this criterion and this would inevitably include some presently located in regional areas. In short, the very future of some smaller, teaching-oriented regional universities is now problematic. Equally, a new and significant regional opportunity has been created for an institution, or institutions, prepared to accept the accreditation challenge.

There was one other aspect of the Bradley Review that serves as an interesting pointer to future developments in Australia. In chapter 4.3 "A broader tertiary education and training system" the Report points to the difficulties of the present separation of responsibilities between Commonwealth and State governments for higher education and vocational education and training respectively" (Bradley, et al., 2008). Put simply, the argument runs that given the need for higher level skills and training in the light of global economic competition, the country needs to have greater coordination (and minimise barriers) to planning and operating tertiary education. The Review recommended that the national government assume full responsibility in this area by 2010 (Bradley, et al., 2008). While this recommendation has not been accepted, the Minister has indicated an intention to consult with the States and better align the two sectors.

The persuasive argument of the Review regarding the need for a cohesive approach to educational planning in the national interest has two significant implications for the proposal for a national university in regional Australia relating both to servicing distance students and the role of online educational delivery. These will be elaborated later.

The response of Charles Sturt and Southern Cross Universities

In an attempt to stimulate discussion, the Bradley Review held consultations across the nation with representatives from universities, other private higher education providers, state and territory governments and other stakeholders. Members of the Review Panel discussed Australian higher education performance and canvassed options for the future. At such a meeting in New South Wales, the Vice Chancellors of two regional universities began to formulate a strategy for responding to likely recommendations from the Review, having considered the implications of these for their own institutions. What they conceived was a possible integration of existing capacities in a new institution with a targeted national mission to service regional Australia but the

reputation and capacity to attract and support students across Australia and overseas. Subsequently, representatives of the Review and the Government were informally briefed on the strategy and responded positively.

Charles Sturt and Southern Cross Universities are both principally regional institutions, the former being mid-sized relative to other Australian universities and one of the two leading distance education providers nationally in terms of student enrolments. Southern Cross is one of the smallest universities and has a relatively limited distance commitment.

Both Review Panel and the two Vice Chancellors were critically aware of the under-provision of higher education to regional Australia generally, despite the relative success of both universities in meeting the needs of their local communities. This situation is not new: in 1999 the higher education participation rate in rural and regional Australia was 65% of national population share (Goulter, 2009).

The Vice Chancellor of Charles Sturt University (Professor Ian Goulter) commented:

> *"Mal-distribution of participation to university education not only denies the right of all Australians to the equal enjoyment of the opportunity and benefits of higher education, but exacerbates the serious shortage of skilled professionals in areas of greatest need ..." (Goulter, 2009).*

Goulter proposed that a national response would require resourcing institutional capacity in the regions in three key areas: course profile, national reach, and scale (Goulter, 2009). He argued strongly against deficit views of institutional provision in regional areas that are predicated on perceptions of (1) inadequate local demand for high-cost programs (eg dentistry) and (2) the incapacity of a regionally located university to attract students from non-regional areas to achieve scale, commenting that not only had his own institution's performance repudiated such perceptions but that it had the tangible benefit that "our graduates would be significantly more likely to choose to practice in a rural or regional community" (Goulter, 2009). Further, the proposal envisages a high profile distance and online delivery function such that the new institution would attract students from non-regional areas, including overseas.

In summary, the argument for a new university to serve regional Australia is that by government investment to achieve a comprehensive course profile related to regional need, national reach and scale, existing institutions with demonstrable regional success could be encouraged to merge to meet the proposed new criteria for university designation. The argument about profile is essentially a counter to negative perceptions that regional institutions should not be permitted to develop expensive program options because of inadequate demand. The counter is that where students have choice and course profile is underpinned with quality staff and resources, demand will follow. Profile, of course, also relates to capacity to undertake research and mount higher degree programs and, as such, will be critical to the designation and status of the providing institution.

National reach and scale will only be achieved by a mechanism – other than physical relocation of students to regional areas, although some do this – such as distance delivery and Goulter correctly points to the need for a new approach to distance

education, appropriately resourced and extended to program areas beyond such low cost, high volume fields as business studies, employing new technological developments to transform the notion of the campus across real and virtual learning environments and providing educationally rich teaching and learning experiences to students in regional, metropolitan, and overseas contexts (Goulter, 2009). He envisages an institution

> *"offering a broad range of course, and engaged at the cutting edge of world-class digital education, [operating] at a scale that will generate sufficient critical mass of expertise and resources for continuous re-investment in curriculum design, technology, equipment, facilities and distributed campuses." (Goulter, 2009)*

Implicit in this proposal, underscored by the use of 'national' is that this would be a prestigious institution, resourced not merely to service regional areas, but to provide leadership in the forms of delivery employed to do so. At least implicitly, there is an assumption that the designation "National University" would be recognised in the name of the new institution, as an acknowledgement both of the Commonwealth's role in creating the merged entity and the response being made to an area of national need. At present, only the Australian National University, located in the national capital Canberra, bears such designation and it has a leading role in Australian research activity. Such designation would have consequences for perceptions of status and credibility, including in the important area of international student recruitment.

This is a challenging concept involving considerations for institutions not immediately connected with the proposal. And it will be difficult, as any proposal involving institutional mergers inevitably threatens the self-perceptions of those working in the affected universities and provokes internal resistance. The issue of additional funding has been endorsed by the Bradley Review and government has acquiesced to the extent of funding a scoping study. But there are other, far-reaching implications relating to the provision of distance and online programs in Australian higher education that are of interest for this paper and these will be taken up in the final section.

The distinctive pattern of Australian distance education

Australian distance delivery of university courses has always involved dual mode institutions where generally (but not exclusively so) the same academics have simultaneously taught the same courses to both on-campus and distance students. Both modes typically shared parity of levels of government funding, content, expectations of students and intended outcomes. Distance teaching has generally been supported by dedicated infrastructure for admission and enrolment of students, program development, materials preparation including instructional design, printing and other duplication services, student counselling and library resources, assignment collection and return, course evaluation, and professional development of academic staff.

In large part, the quality of distance education programs in Australian universities was a product of these support systems. The presentation of teaching materials was shaped by editors and instructional designers often using standard templates for print and subsequently online study resources, audio and video materials were produced in professionally-run studios, pastoral care and academic advising of distance students

were handled by counsellors using phone and email from a dedicated centre, and dispatch of teaching materials and the collection and return of assignments were centralised and logged allowing turn-around times and patterns of assessment results to be monitored. Libraries had efficient print distribution and online resources readily available for distance students, often at no cost to them.

In the 1980s, the Australian Government understood the contribution distance delivery could make to servicing unmet demand for higher education and sought to create a network of eight national Distance Education Centres. The centres would support, on a fee for service basis, the off-campus delivery from other universities that had smaller cohorts of distance students and less specialised administration and support systems. While this initiative was very shortlived, it underlined a recognition that servicing distance students required significant institutional commitment and sought to rationalise the use of such resources across the sector (King, 1988).

Something of an anomaly in Australian distance education has been Open Universities Australia (OUA), a brokering company established in the early 1990s that offers enrolment in extant distance education subjects offered by partner universities. Its entry requirements and program structures are typically more flexible than in its partners although parity of academic standards is maintained between OUA-brokered and university delivered distance courses. In the last few years, the agency has become extremely successful, with a per capita student enrolment equivalent to a larger conventional university. While it provides additional support for students, and sometimes fosters the development of distance delivery for programs offered on-campus in its partners, it tends to rely on the infrastructure – including online platforms - of its provider institutions. OUA is not funded at the same level as universities yet it has developed a profitable distance education business model.

A characteristic of the dual-mode approach to distance education adopted by Australian universities over the half-century to 1990 was that the role of the teaching academic was both more constrained by central systems but also better supported by the institution than when the same staff taught on-campus.

The model, however, was significantly undermined by developments in information and communications technology in what I have described at an earlier Cambridge Conference as the move from distance education for some to flexible delivery for all, which had consequences both for specialist distance education infrastructure and the role of the teaching academic (King, 2003). This is taken up in the following section.

Technological change and the role of distance education

As indicated in that paper, the democratising nature of online developments has blurred the distinctions between on- and off-campus delivery. By this, I mean that several functions previously requiring systemic responses can now be realised by the individual academic teacher. In other instances, at institutional level, what were options only for distance students have become commonplace for students in general and are typically provided with a greater degree of sophistication and efficiency than was previously the case. These include: student administration, communication between institution and student, provision of course content, assessment activity and assignment submission, and course and program evaluation.

The downside, and this may only be a concern in dual mode institutions, is that the preparation of study materials is now very much the unmonitored domain of the individual teacher with, I think, serious implications for quality assurance. I should introduce a caveat at this point; there are some institutions – and Charles Sturt University is one – that have a preponderance of distance (and typically more mature age) students in their overall cohort. These universities may well have maintained a greater degree of control over distance teaching, but I suspect this to be truer of courses which still rely significantly on the production of paper-based resources for students than it is for those with principally online components.

Beyond doubt, however, has been a diminution in a distance education ethos or culture, which the former Secretary of the Commonwealth Department of Education, Richard Johnson, described as:

> *"a belief in distance education; an awareness of the techniques, the technologies and the production processes; respect for expert advice and recognition of the need for it; a sense of precision and structure in development of course materials; and an awareness of a range of possibilities in approach." (NBEET, 1992*)

This is hardly surprising. Much of the discussion about servicing students in other than face-to-face situations has been focussed for more than a decade on considerations of the applications of technology to teaching and learning. Technology issues have dominated conference agenda; professional organisations in the online arena have multiplied while those serving more a more traditional distance education community have languished. The latter appear distracted by coming to terms with the push of technological change, even to the point of querying their own reason for existence, as has been the case with the peak Australian body, the Open and Distance Learning Association of Australia. The organisation ran a workshop in 2004 to debate the matter and the issue was still current during the 2009 annual general meeting. A sampling of three consecutive issues of the Association's journal, *Distance Education,* from 2007 (Vol. 28, nos.1-3) reveals that thirteen of the twenty published articles were principally concerned with technological issues.

Again, the very rate of technological change is such that those concerned to sustain a distance education ethos have found the ground constantly changing. To the more conservative, developments sometimes appear shaped by what can be done, rather than what should be done. Sometimes there is an unhelpful normative dimension to discussions of applications of technology to education; teachers must change what they do because students, who have an alleged greater affinity with the new media, have changed in the way they approach and engage with learning (see, for example Pesce, 2009). But, as Susan Greenfield has argued (Greenfield, 2009), there could be quite a negative dimension to the way students engage with technology and, at very least, there should be more discussion amongst a range of interested parties concerning how we should shape technology-supported education. In short, there is significant conflicted debate about how we should use technology in education and, to be blunt, positions are frequently advocated without an appropriate underpinning in research. This has implications for the proposed new institution that are taken up below.

The implications of a national university in regional Australia for distance and online delivery

The problem for distance educators in mixed mode Australian universities over the last decade has involved a number of compounding factors: (1) the fragmentation of their distinctive clientele, (2) a marginalisation in their commitment to the ethos of distance education because of the force of emerging technologies within universities generally, (3) in some instances, the breaking down of specialist administrative and student support services because of the democratising nature of online technologies, (4) the removal of political support from distance education enterprises, e.g. the abolition of the Distance Education Centres (King, 1999), (5) a movement away from the intellectual leadership that some Australian academics had provided in relation to the servicing and support of students off-campus which created institutional flagships for the distance education community, and (6) a sense of personal dislocation in that many necessarily became involved with technological developments and recognised that what many would have seen as their educational commitments were being brushed aside in compromises required by the rate of change to their practice.

Now, this is a personal view, some aspects of which are only corroborated by anecdote, but it is underpinned by a direct involvement over twenty-five years in many of the developments mentioned.

What the new regional university proposal potentially offers is (1) a targeted clientele, comprised in the first instance of student groups that suffer present educational disadvantage but with the capacity to recruit subsequently well beyond those groups, (2) an ethos of service to that initial – and continuing - clientele, (3) the forging of new administrative and teaching arrangements to provide high quality distance delivery in fields that have sometimes not been so available, (4) political commitment to the enterprise, (5) an opportunity to create a flagship institution that can model best practice nationally and on a comparable basis with overseas institutional leaders, and (6) the chance to create an approach to online delivery that connects with the distance education ethos, is underpinned by research about student learning, and offers a model of best practice that could provide leadership in online developments nationally.

I want to emphasise and elaborate on some of these points.

First, and critically, what is – and should be - being contemplated is a prestigious national institution, built on the strength of present regional provision but with a funded commitment to providing a new level of excellence in the servicing of students for whom a conventional on-campus university experience is not a consistently realistic option. Regional students should seek it out as the flagship provider focussed on their educational needs. The institution should aspire to national leadership in forms of off-campus delivery that make it attractive in addition to metropolitan and international students. Its profile over time should position it as one of the great national open universities, strong in research but with a primary obligation to distance teaching excellence.

To be frank, other regional institutions should have to consider seriously their relationship to the proposed institution. While existing campuses could, in part, provide for dispersed regional settings for face-to-face teaching, and intensive clinical and

practical experiences, excellence in distance delivery will only come from rationalised and improved performance. The under-representation of regional and remote students in Australian universities warrants concerted efforts to forge a national response at a level of quality to which other regional campuses should subscribe or be overshadowed by.

An essential component of the proposed institution must be a commitment to online education that extends well beyond the levels of present practice in Australia. Resources need to be made available to concentrate national efforts to achieve an approach to technological applications to teaching and learning that are more sophisticated and educationally sound than much current practice. One consequence of this would be that both staff and students from overseas would be attracted to the institution.

The new university should research theory and practice such that online delivery becomes an educationally sound form of university teaching that both models best practice to other institutions and affords leadership in a national higher education response to the Australian Government's commitment to a universal fibre-optic network to all homes and workplaces. Given the importance of achieving greater participation in the development of high order skills for the national economy, the new institution will need to build on present commitments to extending educational pathways and planning for easy student movement between educational sectors. A parallel development that is beyond the concerns of the present paper could be the formulation of a national educational strategy for the application of information and communication technologies to teaching and learning such that the online student experience across the educational sectors is both consistent and unified.

Such considerations have implications not only for other regional institutions, but organisations such as Open Universities Australia, which will have to determine the extent of their cooperation and potential integration with the proposed national body.

Summary

The present Australian Government was elected with a mandate to implement an educational revolution and it has demonstrated its commitment to this already with decisions relating to schools and in its general acceptance of the Bradley Review recommendations. The proposal for a national university serving regional Australia would be a bold step to making university provision more inclusive of students from regional and remote areas, which is essential for reasons of economic prosperity. It offers the prospect of an institution, located outside the capital cities, with the propensity to attract both staff and students from anywhere in Australia, and overseas. As a distance educator, however, it holds out the promise of substantial gains in the growing sophistication of distance delivery in this country, and for distance and online delivery to be drawn more closely together with a strong research base, a genuine and consistent educational philosophy, and a commitment to improving services to those students whose educational opportunities would otherwise be constrained.

References

Goulter, I., (2009), Serving Regional Markets, paper presented to the Financial Review Higher Education Conference 2009, Sydney, 9th March.

Gillard, J. (2009), Deputy Prime Ministerial Keynote Address, the Financial Review Higher Education Conference 2009, Sydney, 9th March.

Bradley, D. et al., (2008), Review of Australian Higher Education, Final Report, Department of Education, Employment and Workplace Relations, Commonwealth of Australia, Canberra, December.

Bradley, D. et al., op. cit., p. ix

Bradley, D. et al., op. cit., pp. xix – xxv

Bradley, D. et al., op. cit., p. xiv

Bradley, D. et al., op. cit., p.125

Bradley, D. et al., op. cit., pp. 179-184

Bradley, D. et al., op. cit., pp. 187-189

Goulter, I., (2009) p.2

Bradley, D. et al., op. cit., p. 28.

Goulter, I., (2009 p. 2

Goulter, I., (2009) p.3

Goulter, I., (2009) pp. 4

Goulter, I., (2009) pp. 5-6

Goulter, I., (2009) p.6

King, B., (1988), "Distance Education in Australia", chapter 11-1 in Harry, K. (Ed.) (1999), *Higher Education Through Open and Distance Learning – World review of distance education and open learning: Volume 1,* Routledge and the Commonwealth of Learning, London and New York, pp. 264-276.

King, B., (2003), "Has Distance Education a Future", keynote address to Cambridge Conference on Open and Distance Education, Madingley Hall, Cambridge, 26-28th September, 2003.

National Board of Employment, Education and Training (NBEET) (1992), *Changing Patterns of Teaching and Learning: The Use and Potential of Distance Education Materials and Methods in Australian Higher Education,* Canberra: Australian Government Publishing Service, page 6.

Pesce, M. (2009), 'Digital Citizens', paper presented to the Australian College of Educators Digital Fair, Geelong, 16th April, see blog.futurestreetconsulting.com.

Greenfield, S. (2009), Television interview with Kerry O'Brien, *7.30 Report*, Australian Broadcasting Corporation, 19th March, transcript at www.abc.net.au/7.30/content/2009/s2521076.htm

King, B., (1999), op. cit., pp. 267-269.

What really matters in distance learning? An invitation to a conversation

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> "As we get older, we repeat ourselves. I have said that before. Still, there was once a man who banged his head against a brick wall for 20 years: he suffered terrible headaches and everyone mocked him; one day the wall fell down." (Alan Ryan THS 21st May 2009)

Introduction

Proponents of distance learning (DL) have always been adept at adapting it to the wider context and changing demands, harnessing arguments to justify an approach that meets what is required. But as David Vincent argued at a previous Cambridge conference (in the context of funding), this pragmatism frequently comes back to bite one. The versatility of DL to duck and dive and meld with other practices may have caused DL to morph into some generalised, blended approach, lacking the unique features that made it so significant in the first place.

This diversity, convergence, mainstreaming, blending - call it what you will - led us into a trans-continental conversation about the viability of the original DL principles, and if, or how, these principles (what really matters) can apply to current DL practice. These questions continue a conversation started at Cambridge in 2007 about whether we could identify a credo of DL professional practice that is based on fundamental principles.

During the past decades in distance learning, there have been many changes in the field, each bringing its own proclamation of revolutionary improvement. This paper is a prelude to our conference session to explore the tensions and balances between principles and strategies in open and distance learning, in the face of changing mandates, shifts in learner demographics and motivations, political and economic imperatives, and several generations of new technologies. Our exploration presents a brief background on the early years of DL, examines the cumulative impact of the past decades' significant developments, and proposes a continuing conversation about the essential principles of distance learning.

How it was in the beginning

Distance learning had a renaissance in the early 1970s with the start-up of the UK Open University (OUUK), and the strengthening of open and distance learning in Australia, Canada, and many countries in Europe. The OUUK's mission was to span social distances and thereby provide greater access to higher education. Distance learning in Australia and Canada primarily addressed geographic and cultural distances.

A range of widely held beliefs about education and society influenced the rapid expansion of open and distance learning in the 1970s and 1980s. Education was seen as:

- a fundamental human right, essential both for individual fulfilment and for acquiring skills and knowledge needed for employment;
- a social good, underpinning a robust society and economy.

Distance learning, regarded as a means to increase access to education, and deserving of state funding, was shaped to varying degrees by the following concepts:

- adult learning principles of respect for learners that emphasised individuality, capacity for self-direction, and a need for meaningful learning activities;
- community-based learning, emerging from social activism and post-colonial social developments, and influenced by Freire's concept of social learning that builds on collective, innate knowledge;
- behaviourist approaches to instructional design that resulted in rigorously structured learning materials;
- continuing interest in exploring the potential of using new communications technologies for learning.

This renaissance of DL occurred when governments “saw it as both a duty (arising from egalitarian arguments) and a need (arising from thinking on human capital and modernisation) to meet the costs of educational provision" (Rumble, 2007).

However, more recent economic thinking (neoliberalism) has “pressed for a greater privatisation in the provision of basic services including water, health and education, coupled with a demand that individuals meet the costs of their own consumption of such services” (Rumble, 2007). John Daniel, former Vice Chancellor of the UKOU, observed that former UK Prime Minister Margaret Thatcher "believed that it (the UKOU) would help those who wished to better themselves, reinforce self-help, and aid the occupationally mobile. She also assumed that the OU would cost less than other universities" (Daniels, 1998). Many of those working for the OU in the 1970s would have given a very different emphasis to the purpose of the UK OU. Thus distance learning's renaissance coincided with a gradual, but increasingly widespread drift from social welfare approaches to those of neoliberalism.

How it seems now

Now that some DL methods have become mainstream, especially with the growth of web technologies, convergence, as predicted in the DL literature, may be nearly complete. But a recent article in The Times Higher Education indicates convergence may not be going in the anticipated direction of improved learning for all. Campus students reported feeling very “distant” to the university when electronic teaching and communications replace face to face interaction, as a strategy to handle large staff student ratios. And the allocation of class contact hours in some campus institutions would be unacceptably low for DL providers offering tutorial support.

Many argue that DL is now blended into mainstream provision – indicated by the shift of former DL professional associations towards more amorphous interests in technology in learning. But, at the same time, more HE institutions (in the UK) claim they are doing

DL. Motivations for this are clear - income generation in the burgeoning international market for higher education. There is great diversity and variety of practice and, sadly, some very dubious practices in global provision – which has led to attempts to regulate provision by the QAA and to sort out "brand UK" DL in higher education.

We started our careers in DL in the renaissance period – won over and committed to DL's social agenda. But in the last two decades, the social development agenda of the post war settlement was abandoned in favour of enabling deregulated markets to accelerate growth and the individual accumulation of wealth (Broadbent, 2009). The prevailing rationale and rhetoric for DL is that it supports individual initiative and benefits those who take responsibility for ensuring their employability by pursuing education and training.

This emphasis on economic rather than social benefits of education provided the rationale for the following trends:

- Funding models based on fee for service rather than investment in the advancement of a whole society, resulting in less emphasis on access, meeting the needs of disadvantaged learners, or the intrinsic value of learning;
- A focus on profitable programs and income generation that address niche markets for professional development or specialised qualifications, which might not take into account the actual costs of operating fully functioning DL systems;
- Innovation (including the introduction of technologies), that is driven by quick gains and short term project funding, rather than by identified needs and evidence of sustained positive outcomes;
- Short term, contingent, and targeted funding that provides few incentives for longer term planning, continued commitments to program provision, or ongoing research about effectiveness;
- Competition to find educational applications for new technologies, rather than to match appropriate technologies with clearly identified needs;
- A managerial rather than collegial approach to program development, implementation and evaluation, along with a tendency to fragment each component into separate divisions and/or to outsourced suppliers or "partners".

Not all of this is new. Nor is it necessarily "bad", or all that went before it "good". Education has always opened the door to better opportunities, and learners have always been instrumental in focusing on their goals. Finding new ways and new opportunities to provide education has been fundamental to the growth of DL. In many contexts, distance learning has had to manage scarce resources carefully, demonstrate cost effectiveness and/or operate on cost-recovery models. But the cumulative and overwhelming nature of recent changes has altered the DL landscape, profoundly affecting what we do, how we conceptualise what we do, and how we talk about what we do.

What really matters: a conversation about principles and practice

The 2007 Cambridge conference began a conversation about what is unique about DL, given the changes that have taken place and the use of DL methods in other contexts. In the process of preparing this paper, we debated whether there are enduring principles in

distance learning and asked ourselves if we could definitively state "What Really Matters" in distance learning.

We decided we could articulate two equally important principles that counterweigh each other, i) respect for learning and learners and ii) sustainability. While these principles are just as relevant to education in general as they are to distance learning, there are several unique implications for distance learning practice.

Respect for learning and learners implies well-prepared, effective, academically sound, accessible learning resources that are appropriate for learning needs, and accessible, appropriate, effective learner services and tutorial support.

Sustainability implies a model of provision that:

- focuses on clear objectives that meet the needs of clearly identified learner cohorts;
- includes appropriate staffing resources to ensure continuity, consistency and quality;
- is based on realistic financial costs and business planning to provide reasonable assurance of continued provision of programmes or courses in a way that meets quality standards.

These broad summaries of the implications of the two principles sound reasonable in theory, but in day-to-day practice, meeting the implications of each principle can create either a useful balance or an unworkable tension.

We will continue the conversation by exploring whether these principles are relevant for present-day DL practice, and by examining how to weigh the implications of each principle.

At the Cambridge conference, we hope to engage in a conversation about what matters in distance learning with people who have a wide variety of experiences and perspectives. To stimulate the conversation, we will table some scenarios that demonstrate the challenge of balancing the two principles on the fulcrum of context.

After the Cambridge conference, we will incorporate your thoughts on these issues and develop a more in-depth consideration of what really matters in distance learning.

References

Broadbent, E., (2009) Barbarism Lite: Political assault on social rights is worsening inequality, CCPA Monitor, Vol. 16, No. 1, May 2009, Canadian Centre for Policy Alternatives, Ottawa

Daniel, J. (1998) Have we been faithful to our founders? Jean Postuma Memorial Lecture, http://www.open.ac.uk/johndanielspeeches/postuma.htm

Rumble, G. (2007) “Social justice, economics and distance education,” Open Learning, Vol. 22 No 2.

Activity design in online professional development for university staff

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Abstract

Professional development for distance tutors is traditionally delivered through texts or websites, supplemented by face to face workshops. However, one of the major challenges is to ensure that tutors engage with the materials and carry away something which is of value to their practice. At the Open University (UK) our 8000 tutors work from home, and have few opportunities to meet fellow tutors on the course that they tutor. We have been exploring the use of online activity design to support tutors in learning by undertaking activities in online communities. This provides opportunities for professional development and discussion with their peers while, at the same time, offering some flexibility in participation.

This paper describes a case study of an award winning initiative at the Open University (UK) which now delivers professional development in online communities of distance tutors, operating at scale: some 2000 tutors have been trained to date, and our courses have a 75% completion rate. Drawing on data from 370 recent participants, it discusses some of the lessons we have learnt on the reasons for the widespread success of this initiative and the factors influencing effective activity design on the course.

Introduction

Traditionally the professional development of distance tutors is delivered through texts or websites, supplemented by face to face workshops. However, the challenge is to ensure that tutors engage with the materials, and carry away something which is of value to their practice. We have been exploring the options for encouraging tutors to make use of online communities which can provide opportunities for professional development and discussion with their peers while, at the same time, offering some flexibility in participation. According to Wenger (1998), communities of practice are groups of people who share a concern or a passion for something they do and who interact regularly to learn how to do it better. Although used originally in the context of professional and social practice in 'real-world' settings, the concept of the community of practice is now increasingly used in relation to virtual environments, and has obvious application for professional development initiatives.

Alongside a growth in interest in online communities has been a rise in activity design, an approach which replaces course content with a series of learning activities. The underpinning constructivist pedagogy starts with the premise that students learn better by doing, and by sharing their understanding with their peers. The way in which they do this is related to a variety of factors, including their individual context: the experiences they have had in the past, their motivation and the purposes to which they intend to put the new knowledge. Biggs' (2003) influential model of constructive alignment underlines the importance of aligning such activity with assessment strategy, and this thinking underpins principles of learning design. At the Open University (UK)

activity design has been in use for some years on a number of undergraduate courses (see for eg Macdonald 1999; Macdonald, & Twining 2002) and is now widely in use: a recent initiative to share activity design amongst staff and across Faculties as part of the OU Learning Design project has resulted in a database of 44 case studies. We describe here its adoption to support the learning of staff in a major online professional development initiative.

One of the practical challenges to effective activity design which makes use of interaction in an online community is in achieving a balance between developing a community with "buzz", and avoiding overload with an excessive message base. On achieving engagement there has been considerable debate in the literature, for example Rovai (2000) describes eight factors which impact on a sense of community in an online group including the student – instructor ratio, transactional distance, social presence, lurking, social equality, collaborative learning and group facilitation. Gorski and Caspi (2003) found that group size was a major determinant regarding levels of interaction in large non-mandatory discussion groups, and the nature of interactions changed with group size, with larger groups having greater potential for learner-learner interaction. While Macdonald & Twining (op cit) demonstrated that small online groups where students are identifiable individuals have little chance of viability unless activity is framed within the assessment strategy, Holliman & Scanlon (2006) report some success in sustaining the viability of small groups using near-synchronous activity, where students must complete activities within a fixed time frame.

There are also implications for estimating or anticipating workload in activity design which involves online interaction. While there are fairly well established procedures for estimating reading speeds for content whether paper or web based, the workload for activities which depend on interaction with a community is problematic to estimate, because it depends on the levels of engagement of other individuals in the group. Macdonald (2008) has illustrated the minimum size of message base, from the number of participants in the group, the number of activities and the duration of the activity, with obvious consequences for workload. For example:

Case A
Activities: 3, each requiring 4 message postings
Group size: 20 students
Duration of activity: 1 week
Message based: minimum 240 messages per week, plus moderator messages

Case B
Activities: 2, each requiring 3 message postings
Group size: 30 students
Duration of activity: 2 weeks
Message base: Minimum 90 messages per week, plus moderator messages

Figure 1: Illustrations of minimum message base

This paper describes a case study of an award winning initiative at the Open University (UK) which set out to provide professional development using activity design in online

communities of distance tutors, operating at scale. It discusses some of the lessons we have learnt from participants on the reasons for the success of this initiative and the factors influencing effective activity design on the course.

The Open University

The Open University (UK) employs 8,000 part-time tutors, who act as the human interface between the university and its students. Tutors work from home, and rarely have the opportunity to meet fellow tutors on the course that they tutor. All tutors must have access to the internet for administrative purposes and for supporting learners. They are increasingly required to make use of the new VLE, for both student support and tuition and the electronic assignment submission system.

In terms of professional development, opportunities for conversations on course teaching and the exchange of good practice commonly take place in an initial face-to-face briefing for tutors at the outset of a new course, with a debriefing after the first year on some courses. In addition, tutors are encouraged to attend professional development events which provide course or Faculty specific workshops alongside more generic sessions. Online communities are already enthusiastically embraced by tutors on some courses, where a staff forum caters for ongoing discussion as the course proceeds, and they can be particularly significant during assignment marking, when tutors may use the online group to discuss their understanding of the question, or of marking criteria. Not surprisingly, core duties associated with tutoring students drive the habitual use of these groups, and make a discussion of other aspects of teaching more likely to occur (Macdonald & Hewling, 2008). The challenge is how to create an online community to discuss online facilitation which tutors will find sufficiently attractive and engaging to persevere with.

Tutor Moderators

Our most successful innovation in online peer communities for professional development has to be the course Tutor Moderators, which provides a three week introduction to the facilitation of online groups. Developed at the OU in Scotland in 2004, it has become standard provision for tutors on level one courses and is delivered at scale to staff throughout the University, indeed a total of 1500 staff had undertaken the course by April 2009. Reflecting the Faculty demand to provide induction for their staff of relevance to their courses, the course has been run on two platforms, on FirstClass and also our Moodle VLE. The course has proved to be a model of online professional development which works, and which promotes engagement through activities and reflection with a peer community.

The course runs with cohorts of up to 25 participants, and relies heavily on experiential and collaborative learning within a community. In a choice of three out of five activities per week, participants are required to undertake a task and leave a message reflecting on their actions in the course forum. Activities range from experimenting with functionality of a tool, whether that is a forum, wiki or other VLE tool; observing how others have used the tool, and learning from their peers or the course moderator.

The course has an automated self-certification system where participants check off a record of activities as they are completed; then on finishing the course the checklist generates an automated certificate of completion.

Activity checklist

Please check at least three activities in each week.

First name: Janet Surname: Macdonald OUCU: jrm24

Week 1 Activities	**Section**	**Complete**
A. Post an introductory message	1.1	☑
B. Reply to a colleague's message	1.3	☑
C. Enter your profile	1.5	☑
D. Comment on sorting discussion topics	1.6	☐
E. Discuss forum purposes	1.7	☐

Week 2 Activities	**Section**	**Complete**
A. Discuss what helped you feel at ease	2.1	☑
B. Ice breaker	2.3	☑
C. Investigate purposes for tutor groups	2.4	☐
D. Summarise an online debate	2.5	☐
E. Discussion topics and keeping to the point	2.6	☑

Week 3 Activities	**Section**	**Complete**
A. Relate student participation to forum purpose	3.1	☑
B. Discuss encouraging reluctant contributors	3.4	☐
C. Reflect on your time management	3.5	☑
D. Relate codes of conduct to difficult messages	3.8	☐
E. Discuss what makes a successful forum	3.9	☑

Save Send

Figure 2: Automated activity checklist for Tutor Moderators course

The student as "identifiable individual" is a central premise of tuition and support at the OU, and we use this principle on Tutor Moderators to enhance completion rates. If participants have signed up for the course and do not join within a couple of days, then we get in touch with them. If at the end of the course a participant has not completed, then we write again, allowing them an extra two week's grace to complete, with a reminder to complete the activity checklist. Course moderators are required to give strong pastoral input in Week 1, and to respond to each individual, but to stand back somewhat in Weeks 2 & 3.

Participant perceptions on the course

A total of 600 participants in 34 cohorts completed the course between June 2008 and March 2009. The cohorts were sponsored by a variety of Faculties, in response to the need to train tutors for new courses coming on stream. Courses were also sponsored by regional or national centres of the OU, which are responsible for organising continuous professional development for staff in their geographical area.

Completions Jun08-Mar09		**Percentage**
Region/Nation	161	27
HSC	155	26
Science	45	7
Arts	186	31
SocSci	15	3
FELS	38	6
Totals	600	100

Table 1: Percentage course completions Jun 08 – Mar 09 by Unit

The course has an average completion rate of 75%, which suggests that participants are highly motivated to complete it. Since roughly three quarters of completions in this period were sponsored by Faculties it seems likely that this motivation is related to the urgent need to upskill, either as a direct requirement of, or expectation of the course team.

An exit questionnaire completed by 373 participants (a 62% response) in the period Jun 08 – Feb 09 has given us a graphic illustration of their perceptions with respect to a growing confidence and competence.

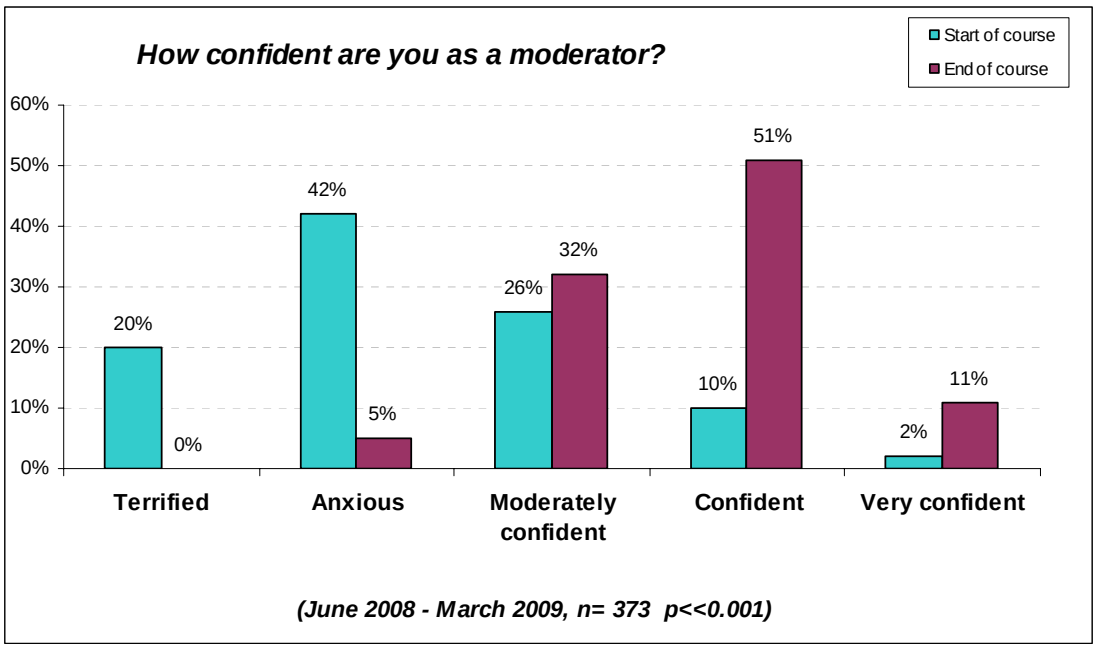

Figure 4: Perceptions of confidence before and after the course

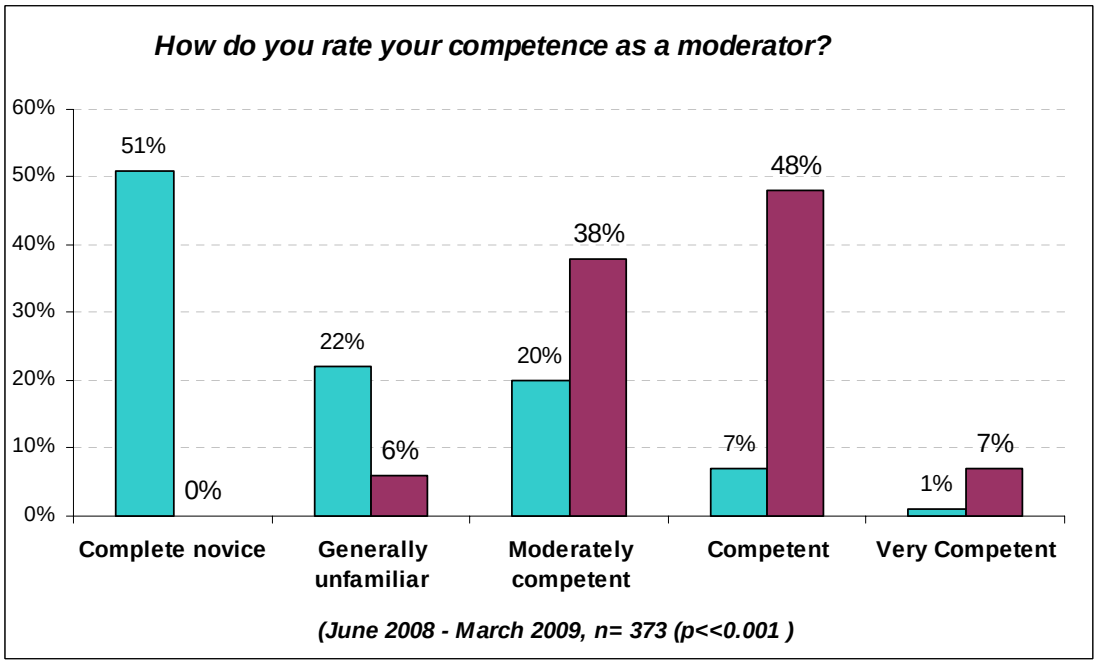

Figure 5: Perceptions of competence before and after the course

We believe a number of factors have contributed to the success of this online course. Perhaps the first issue is the motivation of participants, who are eager and often anxious to learn about the support of online groups because of the new duties associated with the increasing use of online media for supporting students, and the steady adoption of VLE tools for teaching, as new courses come on stream. We note that 60% of completions were associated with the Faculties of Arts, Health and Social Care and Social Science, which have just recently begun to adopt online technologies for supporting their students: they probably belong to what Rogers (1995) refers to the "late majority" in

terms of adoption of technology for working practices, and do not have a long tradition of belonging to online communities. This is reflected in the low levels of confidence and competence of tutors before completing the course.

In the same exit questionnaire (n=373), respondents were asked in what ways the course had helped them: this section draws on the qualitative data we have collated in response to this question. Around half of the responses refer to the design of the course, in terms of the value which participants attach to the experience of learning by doing, in the opportunity to engage in reflective practice, and in belonging to an online community:

> *There's nothing like learning by doing. This was my first experience of an online forum so doing it was great.*
>
> *...the most important learning came from being a participant.*
>
> *It has made me aware that I can be quite long-winded - aim to cut down - overlong messages can be intimidating! It's been reassuring too, in that for instance, my use of the telephone to try and tempt reluctant students to go online/try contributing, is something others seem to do too.*

Because we recruit cohorts of participants to work together, the groups can develop an identity and sense of community over the three weeks. They have the opportunity to share ideas and best practice with their peers, not only learning from those who are experienced, but also sharing the realisation that not all problems have easy answers.

> *I felt part of a community and have been able to benefit enormously from the comments of all colleagues, many of whom speak from experience.*
>
> *Good discussion about problems I was having. Lots of very good ideas and discussion from tutors facing the same problems and issues that I am facing.*
>
> *I've also learned a lot from other colleagues about what doesn't work.*

Clearly, the affective issues associated with online facilitation were of pressing interest. Many referred to the confidence building which comes from being part of a safe environment, and discovering that by joining an online community they were no longer alone in their concerns and anxieties. For Faculty sponsored cohorts, there was added currency and relevance in belonging to a group with common interests and approaches to teaching.

> *It was also a great way of feeling connected with other tutors, who were experiencing the same anxious moments as myself.*
>
> *It has been great to feel less isolated. I no longer feel my students are weird…*
>
> *I also realise I'm part of a large group of moderators many of whom share my excited apprehension about the task in hand.*

Many also commented on the opportunity to reflect on their actions and feelings associated with being a newcomer in an online community, and of recognising how

their students might feel in the same circumstances. There were implications for ways in which they might help their own students more effectively.

> *You gain from the collective experience of colleagues and you learn new skills. You know how it feels when your tutor replies with enthusiasm to your posting and when a forum member responds to your ideas positively.*

> *Also, having experienced the forum as a student has been really helpful: I should be able to empathise with the participants and I am aware of how difficult it is to take the initial plunge and join in.*

> *I've really learned a lot about the role of the forum moderator as someone who encourages, actively participates (Bert, your involvement has been a fantastic example of what I should be doing!)*

> *Increased confidence, skills, knowing where to go for information. its been a helpful supportive resourceful on line community.*

The near-synchronous approach, created by contributions which must be made within each week gives participants limited flexibility over a restricted period, and has helped to develop a sense of presence. The focus which is lent to participation within a limited timeframe gives participants the motivation to concentrate on professional development which otherwise can be overtaken by more pressing tasks.

> *... the activities make you think but the course still lends itself to being fitted into the kind of time you can devote to it, whether that is short bursts or a long run.*

Returning to the exit questionnaire, when asked what improvements might be made to the course, while the majority found the limited flexibility fitted well with other commitments, a significant minority felt the course might be close to their limit in terms of workload, particularly in week 1.

> *I've been rushing it a bit I think.*

> *I sometimes had the impression of everyone talking at once at a very noisy party! The number and enthusiasm of the participants meant that a great deal of reading was generated.*

In summary, participants value the course because it not only gives them the opportunity to try out new tools and discuss their use, but also because it allays fears and gives them a chance to understand what it feels like to be an online student. While the near synchronous design has been successful, there is inevitably a balance to be struck between engaging staff in near-synchronous activity, and in overloading them with an excessive message base.

Participation levels and message base

Although course activities require participants to undertake a variety of tasks involving various tools, they are asked in each case to reflect on their experience in the course forum, therefore size of message base is a realistic reflection of participation levels. We

set out to establish exactly what the average size of the message base was for the course, and how that compared with estimates of minimum contributions. Using Macdonald's (2008) illustration we worked out the anticipated minimum size of the message base. From a cohort of 25, the average number of participants actually starting Week 1 is 23; and by Week 3 it is 18. Each activity requires one posting. For weeks 1 and 3 we have estimated the message base for two scenarios: participants completing the minimum of 3 or alternatively all 5 activities per week.

We then set out to compare these estimates with actual activity, drawing on data from 18 of the cohorts which were run between June 08 and Mar 09 on our Moodle VLE. A count of the message base for two of the three weeks of this course illustrates the mean level of contributions, see table 1. The data is still being analysed.

Week	Participants	Activities completed	Estimated message base	Actual message base (moderator msgs)
1	23	3	69	
1	23	5	115	286 (73)
3	18	3	54	
3	18	5	90	148 (28)

Table 2: Comparing estimated minimum message base with actual

The figures show that the mean message base was considerably in excess of these estimated minima even assuming participants completed all five activities in each week, which suggests overall how a group of enthusiastic participants will do far more than the minimum required of them if they are sufficiently motivated to do so.

The levels of participation vary week by week. For example, the message base for Week 1 is by far the largest, being almost double the size of that in Week 3. While this may partially be explained by the fact that there are in any case fewer participating by Week 3, we have observed an atmosphere in Week 1 of initial excitement and enthusiasm, which may underlie the large message base. Contributing to the message base in Week 1 is of course the enhanced support from the course moderator, which is reflected in the large number of postings: a mean of 73 in contrast to 28 in Week 3.

In addition to their responses to the required activities, we found that participants contributed additional threads or conversations (20% of total messages in Week 2; 11% of total messages in Week 3). These additional conversations covered issues related to the course material, as well as incidental discussion on other topics related to work with the OU, illustrating the value which staff attach to this opportunity to talk to each other, but which considerably adds to the workload of both participants and moderator if these messages must be read.

In summary, while it is possible to estimate minimum levels of participation and size of message base, our observations in this study have illustrated the extent to which these levels can be exceeded in practice. In particular, we have illustrated how the motivation

and enthusiasm of participants can have a dramatic influence on participation levels. The findings support many studies of student participation, where engagement in small online groups has been minimal and rarely successful unless aligned with assessment strategy. Our intention in requiring participants to contribute to a minimum of three out of five activities in each of three weeks, underpinned by the activity checklist and self certification system was that this would effectively work as an informal assessment strategy, aligned with the activity structure. While some work has highlighted the danger of encouraging a strategic approach by tying activity to assessment there is no evidence in this study to indicate that participants were driven to strategic participation by the prospect of a certificate, although clearly the 75% completion rate indicates that most followed the checklist and completed the required activities. We therefore feel justified in the adoption of this particular aspect of the design.

In the area of professional development, similar problems have been reported with participation and engagement (Kimble & Hildreth 2008) but this study has illustrated how this need not be the case if the activity is sufficiently relevant and core to the job, so it is particularly gratifying to be able to report on a success story.

Conclusions

We believe this case study illustrates a remarkable success story of online professional development provision at scale for part-time tutors at a distance. We have demonstrated the value of a near-synchronous strategy which enhances a sense of presence, while providing sufficient flexibility to accommodate part-time working. The activity based approach combined with the opportunity to discuss online teaching is valued by tutors as it provides a safe environment in which to try out new techniques and tools and to reflect on what is a pressing concern for many tutors at our institution. The activity checklist and certification scheme have provided a framework for engagement and encouraged high completion rates. At the same time, our observations on the size of the message base underline the tensions in designing activity which is of an appropriate workload for the target market, and in balancing that tension against the need to provide a degree of limited flexibility and focus. Somewhat unusually, we have demonstrated the influence of participant enthusiasm, and the interest and relevance of particular themes and activities, in driving high levels of participation and engagement.

Acknowledgements

My heartfelt thanks go to Anne Campbell and Clive Buckland for their sterling work in collecting and analysing the data on which this paper draws. I would also like to acknowledge the contribution of the Tutor Moderators team, who have worked so hard over the last few years to make the course so successful. They include: Anne Campbell, Fiona Barnes, John Berriman, Peter Blackledge, Charlotte Brownhill, Clive Buckland, Pat Crawford, Gill Duncan, Paul Easterbrook, Sarah Falcus, Gill Farnen, Andrea Gibson, Jean Gordon, Julie Hirst, Hong Yu, Dave Horan, Peter Hull, Sybella Kirkbride, Vicki Lawson-Brown, Pat Lanham, Rae Simpson, Keith Wakeman.

References

Biggs, J. (2003) *Teaching for quality learning at University.* (Buckingham; SRHE/OUP, 2nd ed)

Caspi, A, Gorsky, P. & Chajut, E. (2003) The influence of group size on non-mandatory asynchronous instructional discussion group. *Internet and Higher Education* 6 227-240

Holliman, R. & Scanlon, E. (2006) Investigating cooperation and collaboration in near synchronous computer mediated conferences. *Computers and Education* 46 322-335

Kimble, C. & Hildreth, P. (2008) *Communities of Practice: creating learning environments for educators*, (Information Age Publ)

Macdonald, J. (1999) *Appropriate assessment for resource based learning in networked environments* (unpublished PhD thesis, OU UK)

Macdonald, J. & Twining, P. (2002) Assessing activity based learning for a networked course. *British Journal of Educational Technology* 33 (5) 603-618

Macdonald, J. (2008) *Blended learning & online tutoring. Planning learner support and activity design.* (London, Gower, 2nd ed)

Macdonald, J. & Hewling A. (2008) Exploring the potential of online communities of practice for distance tutors. In*: Communities of Practice: creating learning environments for educators*, ed by Chris Kimble and Paul Hildreth, (Information Age Publ)

Rogers, E.M. (1995) *Diffusion of innovation*. New York: Free Press, 4th ed

Rovai, A. (2000) Building and sustaining community in asynchronous learning networks. *Internet and Higher Education* 3 285-297

Wenger, E. (1998) *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press.

The impact of web based resource material on learning outcomes in an open distance higher education course

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Abstract

One of the most powerful educational options in open and distance education is web-based learning. A blended (hybrid) course combines traditional face to face and web-based learning approaches in an educational environment that is nonspecific as to time and place. The study reported here investigated the impact of web based resource material practices on MPhil, Teacher Education course of Allama Iqbal Open University. A sample of 68 students was selected. Thirty-eight students comprised the control group, whereas another group of 30 students was named as experimental group. The study package for the control group included self instruction materials comprising two study guides (six credit hours course), recommended book, four assignments, and an assignment submission schedule. The experimental group received the same package plus a CD having web based articles related to each unit of study guide, and a list of web sites for further reading. After the submission of assignments a one week workshop was held. Participation in the workshop was assessed by the oral presentation of students on the topic assigned to him/her before the commencement of workshop. The final examination was held at the end of the semester. The marks obtained by both groups were compared by t-test. The scores of the experimental group were higher on all assessment components. The study concluded that integration of IT in teaching-learning increased the understanding of subject related knowledge.

Introduction

Among the emerging trends in pedagogies, computer aided teaching continues to expand. The main purpose of the use of computer technology as a pedagogical tool not only empowers the teachers, it also maximizes the student's learning potential. The current pedagogical practices in higher education focus on multiple learning approaches. A degree of commonality can be achieved by integrating constructivism, behaviorism, developmental theory, etc. In addition to this, teachers whose pedagogy is grounded in constructivism, multiple intelligence theory or learning style will utilize the rich learning experiences provided by diverse material, collaborative learning where knowledge is inseparable from practice.

An extensive body of research points out the advantages of the use of computers in motivating students to learn which, in turn, enhances their cognition. No doubt the advent of ICT is expanding the frontiers of knowledge. The utilization of IT has made the students less dependent on teachers and books on one hand and on the other hand it serves as a catalyst for teaching. The learning material in the form of on line journals, e-libraries, access to libraries, and on-line web based teaching-learning material, Google etc. provides a rich content and skills to teach and to learn. Todd (1997) was right to declare that 'a real learning revolution has started, in which educators use Information Technologies to provide learning experiences that are quantitatively different than from

their predecessors". Thirteen years back, Tinsley and Van Weert (1995) concurred with Hawkridge (1990) and stated that computers are useful tools for building intellectual structures, data retrieval and data manipulation. The introduction of ICT has changed both the process of learning and the content to be learned in many ways (Boshuizen & Wopereis, 2003). Kizlick (2003) while emphasizing the impact of computers on learner said:

> *When students are using technology as a tool or support for communicating with others, they are in an active role rather than passive role of recipient of information transmitted by a teacher, text book, or broadcast. Moreover, when technology is used as a tool to support students in performing authentic tasks, the students are in the position of defining their goals, making decisions, and evaluating their progress.*

This great impact of technology enables the learners not only to increase their technical skills but also to accomplish more complex tasks by regulating their own learning styles.

Menon (2004) while presenting an argument in the favor of use of Networking for quality assurance in alternative modes of teacher education said:

> *Developments in open and distance learning and technology made it possible to think of alternative modes of teacher preparation. Many countries are benefiting by the use of ODL and ICT for teacher training.* (p.205)

Among the quality assurance tools 'Curriculum' is an important and foremost indicator. With the explosion of knowledge a dictated syllabus or only a book produced by one person is not considered sufficient. Therefore, it is important to update the curriculum. Allama Iqbal Open University has a system for developing the curriculum through its various committees and statutory bodies. Normally it is observed that revision of a course takes a great amount of time due to the University's strict structure. Therefore, most of the courses of Faculty of Education of AIOU are more than five years old. This becomes an obstacle in providing quality teacher training. Curriculum design with reference to teacher education is more critical for open distance systems. As we see that in the advanced countries, information and communication technologies have boosted distance education. There is now an explosion of information around the world. Information in massive quantity is available not only to some groups but to the majority of groups. The printed material is no longer the source of providing information or knowledge and nor is the main source of access to information. In fact, the current information available on a number of web sites is influencing the traditional printed material in distance learning courses and the current ICT is emerging as a tool for enhancing quality in learning.

The Allama Iqbal Open University has taken the initiative to revise courses while involving web based resources. The first step taken by the Faculty of Education was to prepare courses out in the light of global trends. At initial stage MPhil and PhD level courses have been developed after the approval of the course outline from various committees, a study guide has been written by different resource persons who have been identified from the related field. The resource person first identified web based topic related latest articles, online books or chapters, and researches and saved them on CD.

For each unit 5-14 items (related material) were included. Their references have been properly cited in the study guide. An extra list of web sites has also been provided. This material before final approval will be sent to students for pilot testing. The feedback provided by the students will enable the course development coordinator to revise/improve the course. It is envisaged that Allama Iqbal University will revise its courses on two year cycle. It can only be done by involving computers and the internet. It will not only save the teacher's time but rather will save students' time in searching relevant latest material and will be more effective. The importance and utility of ICT has made ICT literacy a compulsory part of MPhil/MS course. The MPhil/MS students of the Faculty of Education study this course in their first semester. By keeping in view the awareness amongst teachers about ICT and its use in teaching-learning, this study was designed to develop competency among the teacher trainees of using on-line and off-line electronic resources and use internet for personal academic improvement.

The main purpose of this pilot testing was to find out the extent of dependability of learning on ICT (computers and the internet). Integration of computer technology has brought profound educational changes. Infusion of technology in educational contexts must underlie reliable pedagogical assumptions to ensure the quality of application of the technology. Keeping in view the above mentioned arguments, the use of ICT in this study has been taken as an independent factor in the teaching-learning process. Therefore, this study has investigated the technological applications in content learning at higher education. In addition to this, on one hand, this study investigates the enhancement in learning through web resources and, on the other hand, it measures the ability of teachers to use network resources to help students collaborate, access information, and communicate with external experts to analyze and solve their selected problems (ICT Competency Standards for Teachers, UNESCO, 2008).

Method

Sample

MPhil students of the Secondary Teacher Education Department, Faculty of Education, Allama Iqbal Open University (AIOU) enrolled on the course 'Measurement and Evaluation in Education" (code-742) from Autumn Semester 2002 to Autumn Semester 2007 constituted the sample (the course is offered in Autumn Semester only). There were 78 students who enrolled in six Semesters, i.e. from Autumn 2002 to Autumn 2007; data on 68 students who had completed their program was available from the student's certification files. Therefore, a sample of 68 students was taken for the present study.

Design and material of the study

The sample was divided into two groups: Control group and Experimental group.

Control Group: Students who enrolled in Autumn Semesters of 2002, 2003, and 2004 Academic Sessions were named as the control group. AIOU offers ODL mode, therefore, the learning package contained the study guide, recommended book, four assignments, and instructions on how to solve these assignment, and the schedule of submission of each assignment. For six credit hours course 18 units covering a wide range of related content of specific subject area is included in the study guide. The study guide is written on self instructional pattern by a course development team. The course development team comprises unit writers, unit reviewers, course coordinator, course

development coordinator, course development team chairman, course designer, and editor. The assignments are prepared by the course coordinator by giving equal weighting to each unit of study guide.

The solved assignments submitted by the student according to the schedule are evaluated by the tutor on 100 point scale and are assigned letter grades according to AIOU grading system.

The next continuous component is holding of 10 days workshops of five sessions per day (one hour per session). The sessions of the workshops are conducted by different resource persons/experts from the related field. The attendance of students at the workshop is mandatory. Besides attending the workshops, each student presents a seminar paper of 15-20 minutes on the topic assigned to him/her by the course coordinator. The presentation is evaluated by the coordinator on 10 points scales. The workshop is followed by final examination.

Experimental Group: The group of students who enrolled in Autumn Semester 2005, 2006 and 2007 was named as the experimental group. In addition to the study package mailed to the control group, web based content related material (on-line articles, book chapters, e-library resources, different related web sites) on a CD was provided as additional reading. Students were directed to read articles related to the unit of study guide before solving the assignment and for preparing the workshop presentation. They were further directed to prepare a power point presentation.

Both the groups evaluated all components of the course on a five point Likert scale as feed back for the improvement of course material.

Analysis

To examine the impact of IT on learning outcomes a t-test analysis was performed. The comparison between the control group and experimental group was made separately for assignment evaluation, workshop evaluation, final examination scores, and conflated marks. The results of the descriptive statistics are given in Table 1. The analysis given in Tables 1 and 2 explains the relationship among the assessment components of the control group and experimental group.

Table 1: Descriptive statistics of continuous and final Assessment

Assessment Factors	Group	Descriptive Statistics					
		N	Minimum Score	Maximum Score	Mean	Std. Deviation	Std error of Mean Score
Assignment	1	30	75.00	92.00	82.10	5.44	0.99
	2	38	68.00	89.00	78.53	6.49	1.05
Workshop	1	30	6.00	9.00	7.00	0.83	0.14
	2	38	5.00	8.00	6.37	0.88	0.16
Final Exam	1	30	60.00	83.00	66.50	6.31	1.13
	2	38	50.00	81.00	62.66	6.46	1.04
Conflated	1	30	63.00	87.00	72.73	5.90	1.08
Marks	2	38	50.00	83.00	67.58	7.27	1.18

Group 1 experimental group Group 2 control group

There was an increase in mean scores of continuous components and final exams of the experimental group which was provided with web based related learning material on CD and list of related web sites for further exploration of related knowledge beside study guide and recommended books (Table 1) by the course coordinator.

Table 2: Correlation among assessment components of experimental group

	Assignment	Workshop	Exam	Conflated Marks
Conflated Marks	0.81**	0.81**	0.94**	1
Exam	0.70**	0.68**	1	
Workshop	0.69**	1		

**correlation is significant at the .010 level (2-tailed)

The correlation coefficients among the assessment components of the experimental groups are significant at the .01 level. These inter-correlations indicate that increase in mean score of one component shows increase in the other component. The highest positive correlation coefficient is between exam marks and conflated marks. It is obvious because of the reason that 70% of obtained marks in the examination are added while calculating the conflated marks. The same pattern has been observed between the relationship of final exam and conflated marks of control group (Table 3).

Table 3: Correlation among assessment factors of control group

	Assignment	Workshop	Final Exam	Conflated Marks
Conflated	.61**	.34*	.73**	1
Final Exam	.53**	.29ns	1	
Workshop	.42**	1		

**correlation is significant at the .010 level (2-tailed)
* correlation is significant at 0.05 level (2-tailed)
ns not significant

All correlations displayed in table 3 are significant at 0.01 level and 0.05 level except the relationship between the final exam and workshop that is not significant. It can be concluded that students of the control group did well in the workshop but not in the final exam or vice versa. In other words there is no consistency within the scores of final exam and workshop.

Table 4: t-test statistics between experimental group and control group

Groups	Mean	Mean difference	Standard error of difference	t-value	Significance level (2- tailed)
Experimental	82.10	3.57	1.47	2.41	.018
Control	78.53				
Experimental	7.00	.63	.21	2.04	.046
Control	6.37				
Experimental	66.50	3.84	1.55	3.84	.016
Control	62.66				
Experimental	72.73	5.15	1.63	3.14	.002
Control	67.58				

Mean differences between assessment components of both groups as shown in Table 4 are significant. It indicated the positive impact of web based material. This material served as catalyst in bringing improvement. Specifically the non-significant correlation between workshop scores and assignment scores of the control group increased significantly for the experimental group. It implies that extra web material besides the conventional study guide and printed material helped the student to prepare quality assignments and a good class presentation with the support of IT.

Analysis of Students Feedback

The majority of students from the experimental group gave positive feedback. They liked the way they were delivered instructional material. They apprised that information and content provided in the form of article were appropriate and fulfilled their need.

It was also observed that almost all students from the experimental group prepared power point presentations. In this regard they searched for extra material. They were also able to identify new topics to be included in the course that were not previously included.

Some of the students from the 2005 session said that information found on the CD should be made available in printed self-instructional format so that those who have no access to computers may not be deprived of the same information.

The main difficulty students from the experimental group faced was the electricity breakdown. That continued for hours. They were handicapped without the facility of electricity. Therefore they have to get the print-outs of some articles. Otherwise most of the students were able to schedule their study timings according to electricity breakdown.

Conclusion

Emerging pedagogies have brought radical changes in the teaching-learning process. Gone are the days when only the teacher or book was considered a sole provider of knowledge. Information and communication technology has changed the whole scenario. Every sphere of life is influenced by the new advances in technology. How teachers use these technologies effectively is the main issue. The findings of this study have provided the answer to this question.

Web based resource material accelerated the achievement level of the experimental group. Results show that use of different web based resources have positive effects on writing assignments, preparing power point presentations, for preparation for the exam. This, in turn, affected conflated marks. Specifically, the study found significant correlation between marks obtained for the scores of final exam and marks of presentation for the experimental group that was non significant for the control group.

The students were asked to provide their feedback for the improvement of content. In the light of their comments the course has been improved and revised so that is ready for pilot testing.

Methods of delivery of courses of programmes vary all over the world. We must realize that it is the developing world that has the most need for education and information; this can be found and obtained via the internet, CDs, and other multimedia resources. But unfortunately like other developing countries Pakistan lacks even the most basic form of electronic access or, even if it is available, it is unstable or incompatible. Therefore, it is recommended that ICT may be made compulsory part of teacher training programmes of all levels.

References

Boshuizen, H.P.A. & Wopereis, I.G.J.H. (2003). Pedagogy of Training in Information and Communications Technology for Teachers and Beyond. *Technology, Pedagogy and Education, 12,1*.

Hawkridge, D. 1990. Computers in Third World Schools. The example of China. *British Journal of Educational Technology,* 21 (1): 4-20.

Kizlick, P. (2003). Effects of Technology on Classroom and students. http://www.adprima.com.w105.htm.

Menon, M. (2004). Networking for Quality Assurance in Alternative Modes of Teacher Education. In Rama Kondapali, and Mohan Menon, (editors). *Innovations in Teacher Education: International Practices of Quality Assurance.* The National Assessment and Accreditation Council, Bangalore, India

Tinsley, D. and van Weert (1995), (Eds). *World Conference on Computers in Education V1 (WCCE 95) Liberating the learner. Proceedings of the Sixth IFID World Conference on Computers in Education*.

Todd, R. 1997. IT and learning a never-ending beginning. *ACCESS,* 11 (1): 11-14.

UNESCO (2008). *ICT Competency Standards for Teachers*, Paris: UNESCO

The baby or the bath water? Computerised technologies, educational provision and social injustice in New Zealand

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Abstract

The purpose of this paper is to report on an exploratory study examining the impact of e-enhanced technologies on equity of access to tertiary distance learning in New Zealand. There is evidence to suggest there is potential for social injustice to occur if the use of technology is not approached with care. The study identified a perception held by government and TEOs that e-delivery of education is cost effective means of delivery and the assumption that all students will have an equal ability and desire to access this form of learning. The findings of the paper reveal that social injustice can occur if the use of technology in education is not approached with care. This paper also provides a model by which education providers can assess the suitability of changes in policy with respect to the introduction of technology. This paper has implications for both educators and policy makers to ensure that equity of access is maintained. Care must be taken to ensure that the 'baby is not thrown out with the bath water' and flexible, student centred approaches are implemented to ensure that social justice is maintained.

Introduction

> *"I just prefer the course materials to be printed as I tend to run through it with highlighters, write notes on the pages and take it with me so I can make the most of my time e.g. at the hairdressers!"*

It was this comment that led the authors to engage in this exploratory study. It is often difficult for distance students to have their voices heard as they do not have the advantage of organised student bodies; many are working and/or have other priorities that preclude them from engaging in collective activity that would support their voices being heard. As a result these voices may be lost when policy and strategies are being formulated and implemented. To ensure that these voices are not lost, this paper highlights the issues confronting specific groups of students and provides a model of interaction to serve as a base upon which to assess the ability of specific student groups to engage with e-enhanced distance learning. It is the authors' contention that when formulating strategies concerning the delivery of learning materials and learning interactions the voices of students must be heard.

Access to education in New Zealand has historically been based on a premise of equity for all citizens. The egalitarian mores upon which this premise is based are deemed to

have their origins in the nineteenth century European colonisation. The colonists, primarily from Great Britain, immigrated to New Zealand to escape the inequities experienced as a result of the class system and the poverty arising from land reforms and the urbanisation of the Industrial Revolution. The emphasis on egalitarianism in the education system has expanded the student population beyond the elite groups that typified the consumers of higher learning of nineteenth century Britain (Lamond & White, 2008). This led to a more inclusive student population in New Zealand's tertiary institutions. To achieve equity of access, New Zealand removed the barriers of time and space by investing in a quality distance education model. At tertiary level historically there have been two distance providers, one university and one polytechnic. The primary mode of delivery has been and still is in many instances, print based. Tertiary distance provision has been funded on the same cost basis as contact mode delivery and has varied according to government policy at a given point in time.

However, the provision of high quality distance education has not been without its challenges as New Zealand is a geographically isolated, small island nation, of just over 4 million people. This small population has the effect of limiting the tax base available to the government for funding of educational services. In addition, New Zealand comprises three main islands and a number of smaller inhabited islands, many of these some distance from the main group. While the majority of the population is centred in 3 main urban areas, the remainder is scattered throughout the small off-shore islands, isolated farming communities and small rural towns, the typography combining islands, mountains, isolated fjords and plains. Equity of access to quality tertiary education was made possible by a well developed infrastructure, for example, a highly efficient postal system, where often the only barrier encountered was inclement weather that hindered the delivery of materials by sea, air or rural postal cars. The development of the infrastructure at all levels of education was made possible by the wealth generated from the young colony's agricultural industries, and mineral resources, for example, gold and coal. However, in the 21st century the advent of e-enhanced learning delivery has created a different set of challenges for distance education providers.

In a period of economic uncertainty, computerised technologies have created a requirement for investment in new, expensive infrastructure, new ways of thinking and teaching and new modes of delivery, all which have created tensions for government agencies, educationalists and students. The speed with which technology is changing educational delivery, led the President of the Distance Education Association of New Zealand (DEANZ) in 2007 to appeal for the development of a deeper, more holistic knowledge of distance education and practice to be combined with an expansion of the research base in the field, so that an effective foundation for the development and practice of e-learning can be established (Cooper-Taylor, 2007). This paper is a response to this call and aims to answer the following proposition:

> *How far is it legitimate for government policy in New Zealand to use e-enhanced learning as a primary mode of delivery of tertiary education?*

Defining the terminology

The lack of an empirical research base has been blamed for the confusion that appears to exist between the terms *distance education* and *e-enhanced learning*. This

confusion has manifested itself in situations where *distance education* has been equated with *e-learning* and vice-versa and is evidenced even at government agency level, for example, in May 2007, the New Zealand Qualifications Authority sought guidance as to the advisability of changing the name of the qualification standards from *open and distance learning* to *'e-Learning'*. For the purposes of this paper, open and distance learning is defined as:

> *Distance education is planned learning that normally occurs in a different place from teaching, requiring special course design and instructional techniques, communication through various technologies, and special organizational and administrative arrangements (Moore & Kearsley, 2005).*

And e-enhanced learning is defined as:

> *E-Learning is a learning that is enabled or supported by the use of digital tools and content. It typically involves some form of interactivity, which may include online interaction between the learner and their teacher or peers. E-Learning opportunities are usually accessed via the internet, though other technologies such as CD-ROM also used in e-Learning(Ministry-of-Education, 2004, p. 1).*

Government policy and e-learning

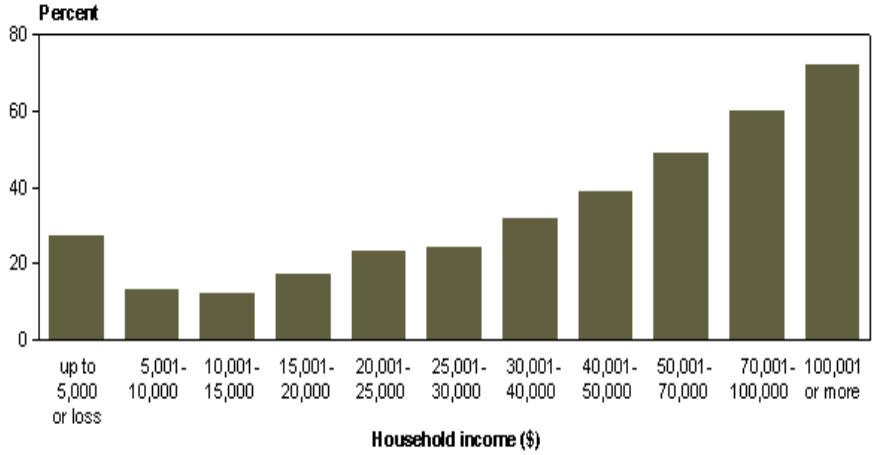
Jaffe (1998) argues that the new and emerging informational and instructional technologies represent one of the more significant institutional challenges facing tertiary education. The New Zealand government's policy on tertiary education reflects the need for cost effective provision while, at the same time, attempting to maintain quality and ensure equity of access. This has led to e-enhanced learning becoming the preferred mode of delivery, the perception being that the use of new technologies is one way equity of access and cost effectiveness can be achieved. As a result, government policy has focussed on the development of national platform for e-enhanced delivery, Ministry of Education (2004) policy stating that, e-learning is the means by which the education sector can achieve efficiencies of delivery, leading-edge provision and ensure currency for learners (Ministry-of-Education, 2004).

This policy direction has occurred at the same time as government policy required educational institutions to move from a competitive model of provision to one of collaboration with the aim of removing duplication of portfolio offerings. Combined with a decentralisation focus, where each institution is able to develop programmes specific to the needs of their region, this new direction has resulted in an increase in the number of institutions becoming involved in e-enhanced distance delivery. Simpson (2004) argues that if the Internet has the potential to increase equity of access to education then it must ensure all groups in society have the ability to engage by that means. Therefore, the challenge for the New Zealand government is to ensure that issues of social injustice do not arise as a result of any strategy that relies on one mode of delivery or that compromises flexibility and student choice.

The factors influencing internet access

In New Zealand access to the Internet is influenced by two variables, the first is income and was identified by Statistics New Zealand as being the most important variable (Welch, 2007). Households having an income over $40,000 are more likely to have access to the Internet (See Figure 1).

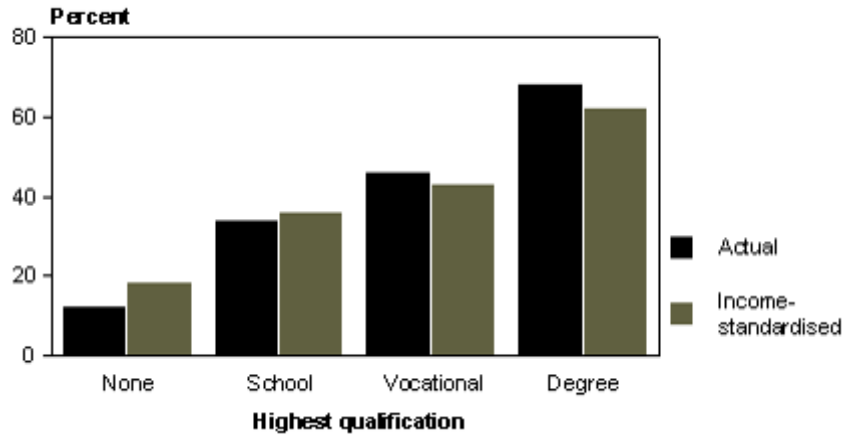
Figure 11**: Household internet access by income**



Source: Statistics New Zealand, 2004 Digital Divide

The second variable is the level of education in a household (See Figure 2). That is, households with higher levels of educational qualification, specifically vocational and degree qualifications are more likely to have access to the Internet. This positive correlation between income and education and Internet access reflects the findings of research from Canada which has identified similar links between internet usage and the level of education attained (Sciadas, 2002).

Figure 12**: Household internet access by highest qualification of occupants**



Source: Statistics New Zealand 2004: The Digital Divide

The implications of the positive correlation between the two variables is that those with a low income and a low level of education are those who are most likely to be excluded from e-enhanced learning. Therefore, the presumption that the use of internet based technologies will reach a greater number of students may be flawed. Rather, it has the potential to exclude those who do not possess the means to access this learning, that is

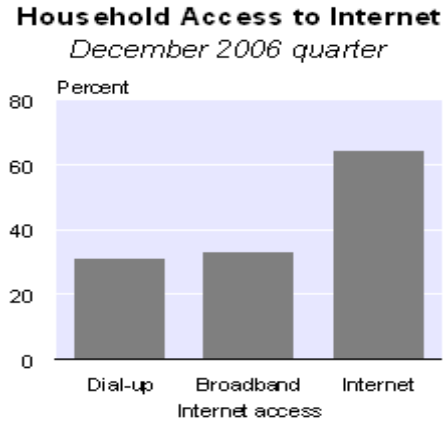
they have neither the income nor the education qualifications that predispose ease of access to the internet.

Consequently, the tools that are touted as being the means by which to extend access to education may be the very reason some groups in society are excluded. In the past, New Zealand could be deemed to have been successful in meeting the challenges created by its geographic isolation, disbursed isolated communities and diversity of population while, at the same time, ensuring equity of access for its citizens. However, it is acknowledged that the introduction of new technologies to tertiary education while creating opportunities, also create barriers. The three areas identified by this study as potentially being marginalised are; distance students, Maori and Pacifica and rural students.

The distance student and access to e-learning

One of the first groups disadvantaged by the introduction of e-enhanced learning are distance students themselves. First, the underlying premise of internet-based learning is that the student has sustained, reliable access to a computer and high-speed broadband. However, there is an ongoing debate about the limited extent of the reach of broadband and, when it is available, the low speeds of the service. The distance student's ability to access the internet is constrained by the quality of broadband access in New Zealand. While two-thirds (almost 1 million) of New Zealand households are connected to the internet, with just over 50% of these connections using broadband technology, the remainder are dial-up connections (Welch, 2007) (see Figure 3). In addition, 50% of the broadband connections are located in the largest urban area, Auckland (Statistics-New-Zealand, 2004).

Figure 13**: Household access to internet by type**



Source: Statistics New Zealand (2007)

Government policy is currently focussed on improving the speed and reach of broadband provision, however, this will be at a cost to the user and unless distance students are able to afford to access broadband then they are disadvantaged in comparison with contact students who have access provided by their institution. As stated previously, one of the key variables determining internet access is income; therefore, distance students from lower socio-economic groupings are less likely to have access to the internet and are further marginalised within the education environment.

The second factor that disadvantages the distance student pertains to the level of services provided by the institution itself. The provision of e-enhanced learning is made on the presumption the student has the ability to purchase or has sustained reliable access to hardware of a standard that enables them entrée to the learning materials. Contact students have the advantage of computer labs with computers, proprietary software and the networking and internet facilities. In addition, they have the advantage of technicians who maintain the facilities and specialists and tutorial staff who assist them with learning to use the specific software programmes. In contrast, the distance student has to possess a higher than normal level of computer knowledge if they are to engage in e-enhanced programmes. They have to supply their own computer, install the software, finance their own Internet access, learn how to use the software and ensure that they are able to fund appropriate technical support should things go wrong, as they invariably do.

A distance student may not be able to access a computer at all, making the possibility of internet access nigh on impossible. This may because they cannot afford a computer or are in an institution where they are not permitted access, for example, prison, or they may be precluded by the nature of their work from spending time near a computer. The 2006 census revealed that almost 40% of New Zealand households did not have access to the Internet (Statistics NZ 2006 Census). Therefore, a significant number of potential students are prevented from engaging with e-enhanced learning delivery. Furthermore, it cannot be assumed that if a household does have Internet access that it was used for educational purposes. The New Zealand Household Labour Force Survey (2007) identified that in the 12 months to December 2006, 69.0 percent (2.2 million) of New Zealanders used the Internet. The majority of this was for email, general web browsing and to obtain information on goods and services. *The accessing of the internet for educational purposes was significant by its absence* even when the place of access was an educational institution.

It has been suggested that distance students can avail themselves of facilities provided by employers and the local library, however these are not satisfactory substitutes for home based technology as they are unlikely to provide the high-level sustained access required for education related activities (Lamond & White, 2008). While in New Zealand public libraries do provide some free internet access, there are charges for any printing of materials or what could be deemed lengthy usage. Furthermore, these alternatives should not be assumed by the educator; for example, it is unlikely employers would be pleased by the assumption that they are expected to subsidise the state in this manner. Furthermore, in some workplaces personal internet access is prohibited and many occupation and geographical locations of distance students preclude them being able to sit in front of a computer, let alone access the internet. In addition to the challenges encountered by distance students, this study identified access constraints encountered by both Maori and rural students.

Ethnicity and equity of access

The study identified the potential for Maori and Pacific peoples to be marginalised by modes of delivery that rely solely on computerised technologies. As discussed earlier in the paper the first variable determining access to the internet was income. The higher the income the more likely the household was to have access to the internet, specifically incomes $40,000 and above (Statistics-New-Zealand, 2004). Therefore, it could be

viewed with some concern that the results of the 2006 Census identified that the median income of Maori aged 15 years and over was $20,900. Further concern is raised when the occupation classes of Maori are examined, the majority employed in occupations that do not have computers and internet access readily available and are situated within low income groupings, for example, labourers, machinery operators and drivers and technicians and trade workers. This constraint on access to computer facilities further marginalises Maori, particularly male Maori.

When the second variable of educational qualification is included the situation deteriorates still further. Reflecting on the point made earlier in the paper where households with vocational or university qualifications are more likely to have access to the internet, over 76% of New Zealanders aged 25–64 years have achieved secondary or tertiary educational qualifications (Statistics-New-Zealand, 2008). However, 39.9% of Maori have no school qualifications and only 5.5% had Bachelor's degrees. Therefore, given the two critical variables that determine ease of access to the internet, then Maori are less likely to be able to engage in e-enhanced education or training.

The Statistics New Zealand (2004) *Digital Divide Report* identifies that ethnicity is a factor in the predisposition to access the internet. Asian households are more likely to have access to the internet, then European households in second place. Maori and Pacific Island households are third and fourth respectively (Statistics-New-Zealand, 2004). Further qualitative research is required to ascertain the exact reasons for this ethnic division, however, it is valid to state at this point ethnicity and potentially different learning preferences of these ethnic groups may have an influence on the potential to engage in e-enhanced learning. When this is combined with the third factor, that of geographic location, rural Maori are further excluded from engagement. The next section of this paper examines the rural-urban divide.

Geographic region and social justice

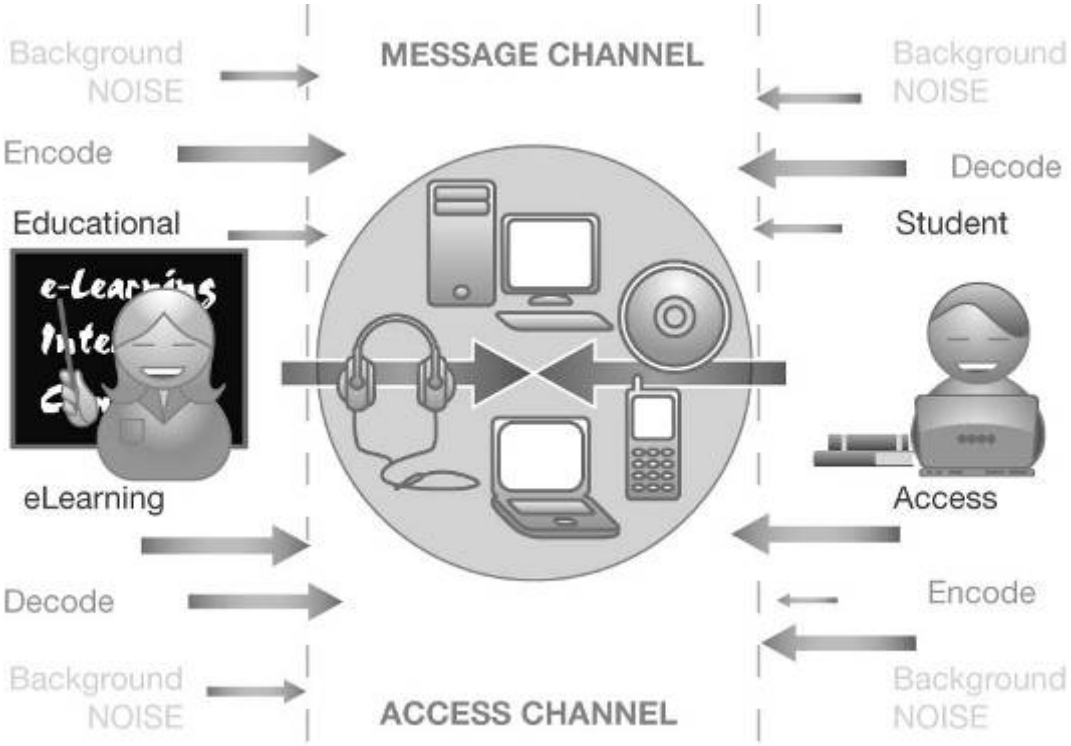
While New Zealand does have an apparent high level of access to the Internet, closer examination reveals that the majority of the internet connections are located in three main urban areas, with the largest, Auckland, having the highest uptake at 43.01 percent and, as stated earlier, 50% of all New Zealand broadband connections are in the Auckland area. Households in the minor urban areas are the least likely to benefit from opportunities associated with access to the internet as only 25% of them are connected to the internet (Statistics-New-Zealand, 2004). Therefore, those students outside the three main urban areas are more likely to have their access restricted if the mode of delivery is reliant on internet access. Research in Canada supports this assertion as there are geographic differences in Internet diffusion, with urban connectivity levels exceeding rural (Statistics Canada, 2002, p.6). In New Zealand there is evidence to indicate that in rural areas the quality of telecommunications is less reliable. The Minister of Education, Steve Maharey (2000), stated that households situated some distance from a major urban area may be confronted with slow, unstable Internet connections and limited access, as infrastructure is a major problem. The Telecommunications User Group in New Zealand argues that there has been no significant progress to alleviate this situation in the intervening period.

There is a relationship between population size and internet access, those living in smaller centres less likely to have reliable internet access because the economies of scale preclude the provision of high-speed broadband. Therefore, even if the student has a computer and an internet connection, they still may not be able to afford the cost of high-speed broadband access and are restricted to dial-up facilities.

Discussion and recommendations

This paper has attempted to approach the provision of e-enhanced learning from the perspective of marginalised groups in New Zealand. However, it is conceded that there is a requirement for more in-depth investigations into the tensions created by the introduction of e-enhanced learning delivery. The use of computerised technologies in the provision of distance education has been based on the premise that the technology would be able to provide accessible and enhanced learning support in a cost effective manner (Daniels, 2005; Grimwood, 2006). However, as Freed (1999) contends, one of the biggest barriers to the success of e-enhanced learning has been the difficulties students face accessing the internet and interacting effectively with the technology and their instructors, an ability inherent in the contact classroom (Lamond & White, 2008). The recommendation of this paper is that the educational transaction should be visualised as a cycle of interaction (See Figure 4).

Figure 14**: The cycle of educational communication**



The interaction occurs between the education provider and the student, the provider is the sender of the educational service and the student is the receiver. As with any form of communication, there are several barriers to ensuring the messages are sent and received intact. If any of the links between the sender and the receiver are interfered with or indeed absent then engagement with learning is diminished or ceases to exist. When implementing new delivery channels the ability of the student to engage is of paramount importance. The students' needs and preferences and ability to access must be accorded an equal priority with the needs of the provider if the cycle is to be complete. It is the recommendation of this paper that to ensure social justice is maintained that e-enhanced learning is adopted as an enhancer of delivery as opposed to being the primary mode. Using internet based technologies as the sole means of delivery has the potential to create a greater divide between different groups. It is imperative *that the baby is not thrown out with the bathwater* when adopting new technologies and the delivery of learning should encompass a multiplicity of delivery mechanisms. This paper closes with the following statement by the President of the Commonwealth of Learning, Sir John Daniels, who states: "education offers the best strategy to break the cycle of poverty, misery, and violence".

References

Cooper-Taylor, C. (2007). Proposed change to domain name "Open and Distance Learning". Unpublished Response to the New Zealand Qualifications Authority The Distance Education Association of New Zealand (DEANZ).

Daniels, J. S. (2005). Learning for development. *Commonwealth of Learning* Retrieved April, 16, 2007, from http://www.col.org/colweb/site/pid/2875

Grimwood, P. R. (2006, July, 4.). *Distance learning and e-learning in New Zealand's ITP sector. Options and opportunities - Keynote address*. Paper presented at the Distance Education Association Conference, Auckland.
Jaffe, D. (1998). Institutionalised resistance to asynchronous learning networks. *Journal of Asynchronous Learning Networks, 2*(2), 21-31.
Lamond, H., & White, B. (2008). *Issues in equivalence: Information literacy and the distance student*. Paper presented at the Distance Education New Zealand.
Ministry-of-Education. (2004). Tertiary e-learning in New Zealand: What is e-learning. Retrieved April, 28, 2007, from http://www.minedu.govt.nz/index.cfm?layout=document&documentid=11313&data=l
Moore, M. G., & Kearsley, G. D. e. A. s. v. (2005). *Distance education: A systems view* (2 ed.).
Sciadas, G. (2002). Unveiling the digital divide. *Connectedness Series* Retrieved 29 June, 2007, from http://www.statcan.ca/english/research/56F0004MIE/56F0004MIE2002007.pdf
Simpson, O. (2004). Social exclusion and online learning. In Carr-Chelman (Ed.), *Global Perspectives on E-learning – rhetoric and reality* (pp. 89-100). London: Sage
Statistics-New-Zealand. (2004). The Digital Divide. Retrieved April 7, 2007, from http://www.stats.govt.nz/domino/external/pasfull/pasfull.nsf/web/
Statistics-New-Zealand. (2008). New Zealand Census 2006. Retrieved 11 June, 2009
Welch, D. (2007). Household use of information and communications technology. Retrieved April, 27.

Teaching European Studies online: the challenge of quality assurance

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Abstract

This paper will be looking into the issue of quality assurance in online learning from the perspective of the e-learning tool developed by the Institute for European Studies in Brussels - the E-modules. The E-modules have been designed with the purpose of offering a structured and interactive way of learning how the European Union functions. As European law and policies exert an important influence in the everyday life of European citizens, the E-modules aim at providing the essential information and, at the same time, helping the users to find their way through the complexity of existing information sources. Therefore, assuring the quality of the content is an essential feature for the developers of the E-modules and is also a great challenge, taking into account, on the one hand, the complexity of social science and, on the other hand, the quick pace with which the European Union evolves.

The Context: E-learning and Social Sciences

E-learning has become in the past decade a relevant learning method, bearing in mind the globalisation of services and the aim towards improving accessibility to information for all categories of population, regardless of their location and background. The quickly developing new technologies have been used more and more often in the educational field, be it in the academic environment or in a corporate context. They brought about the advantage of de-localisation and flexibility, allowing a departure from the "classroom paradigm" and using the virtual space as a facilitator of knowledge and information exchange.

The increasing use of online learning tools for various purposes and in a multitude of domains is a phenomenon worthwhile analysing, in order to grasp the essential features of the new teaching/studying paradigm, as well as its influence on the teacher-student and student-student interaction. At the same time, it is important to note that while, in some fields, e-learning has developed more successfully, becoming a self-standing educational method, in others it is still in an incipient phase, being used mostly in conjunction with classical face-to-face courses, as support material.

Even though e-learning methods have been continuously spreading in the last years in the academic community, they remain confined, to a certain extent, to natural sciences, with fewer examples from the area of social sciences. This evolution can be explained by the difference in nature between the two fields of science, the type of knowledge they involve as well as the specific skills necessary for specific disciplines. While, in the case of natural sciences, the information to be transferred is precise, and so are the results of practical exercises, in social sciences, the content is much more subjective, open to interpretation, thus requiring extensive reading and debate and, implicitly, a more flexible approach, including permanent interaction. Moreover, from the point of view of quality assurance, online courses in social science require tight and continuous

control of the content, in order to avoid any inaccuracy and to delineate clearly between facts and opinions in order not to mislead the user.

Nevertheless, having in mind the latest developments that aim at "digitalizing" and, thus, "democratizing" education, it is becoming increasingly important to create suitable frameworks for teaching social sciences online. This can prove to be beneficial in the broader context of "life-long learning", as the new methods would address not only students but also citizens in general and could thus contribute to the development of civic and political culture.

In this context, the idea of designing online courses in the field of European studies can be seen as an educational initiative that is not confined to students, but is aimed at any citizen who wants to understand better how the European Union functions. Nowadays, when the EU and its policies are becoming more and more relevant for the everyday life of millions of citizens, in Europe and beyond, it is increasingly important to have access to knowledge about the functioning of the EU. Moreover, taking into account the broad and diverse audience, the knowledge must take a user-friendly shape, the information has to be clear and concise, touching upon the essential issues.

E-modules: European Studies Online

After looking into the broader context of e-learning and social sciences, this paper will focus on analysing the E-modules, from the point of view of the concept they are based on as well as their content. The mechanisms that the developers are using in order to assure that the quality of the modules is maintained will be analysed.

The Concept and Content

The idea behind the E-modules is to present relevant information about the European Union in a well- structured, clear and concise manner, avoiding the specific jargon and making it, thus, accessible to every citizen. However, within the main idea lies also the main challenge: keeping the content balanced and up to date and maintaining a certain level of academic nature.

This is what the designers of the E-modules had in mind when creating the online learning system. Acknowledging the fact that information on the European Union can be found in a multitude of sources, claiming a monopoly in the field was not regarded as an option. Instead, the E-modules tried to build on the advantage of the flexibility provided by the virtual environment, and profile themselves as a provider of essential and concise information on the various aspects of the European Union, compiled in a clear and user-friendly way and accessible at any time and from anywhere. Moreover, the E-modules can also be used as a reference tool and a practical guide to the many existing information sources on the topic.

Knowledge and skills acquisition

The concept behind the E-modules is structured in two pillars: knowledge acquisition and skills acquisition. While "knowledge acquisition" leads us to think of classical learning methods, whereby the student is acquiring knowledge at various levels and in various fields, "skills acquisition" is a concept with practical connotations. It involves

"learning to do something", rather than "learning something", bringing thus to the front the idea of skills development as a vital feature of the learning process. The two pillars are equally important and they complement each other to create a complete learning experience.

Flexibility

As mentioned before, being an online application, the E-modules were aimed to cater for the needs of people who have a full time job or do not have entire weeks or months at their disposal to dedicate exclusively to studying European Studies. Furthermore, since they can be accessed from anywhere, at any time, they can prove very useful for people who are active in a dynamic environment and who need a reference tool easily available at any time. The E-modules allow the users to study at their own pace, including useful tools of self-tracking and self assessment; users can also opt for taking an exam at the end of the chosen study period, leading to the issuing of an academic certificate. All these options and features make the E-modules appealing for people with various geographic but also educational backgrounds. That is precisely why the language has to be kept clear, focusing on explaining the essential notions and avoiding the technical jargon often found in other information sources. Moreover, the content has to be very well structured and the search engine extremely precise, to allow quick access to any piece of information at any time.

Learning by association

Unlike a classical textbook, the E-modules were conceived to encourage a process of "learning by association". The information is thus structured in chapters and pages, and there are multiple internal links that allow the users to browse through the tool in a personalised way, according to their specific interest. This principle also contributes to the afore-mentioned aim of skills acquisition, as the users are put in a position to find connecting elements among different issues and are being helped in the process by the recommended internal and external links.

Case studies and real-life scenarios

It is acknowledged that a learning tool, in order to be successful, needs a knowledge/ theory component, as well as a practical component. The latter can come in the form of case studies, examples or exercises. Addressing a topic that has an impact on everyday life, like European policies, the E-modules contain a series of examples and real-life scenarios that help users understand better the issues discussed. Moreover, the practical exercises included in the chapter tests are aimed at testing the skills of information retrieval and use acquired by users throughout the modules. In order to better illustrate the complex EU legal framework, the E-modules (and especially the one module dealing with EU law) includes reference to case law, explaining the essential implications of cases decided by the European Court of Justice.

The interactive component

Last, but not least, an online learning system, lacking the natural interaction between teacher and students and among students, has to develop other interactive components in order to keep the users connected and interested in the content. The E-modules were

designed to have a user-friendly interface that allows the user to control the learning process. There are various mechanisms that point out what chapters have been studied and what new content has been added, as well as a "quiz" function that was embedded in the system in order to help users test the knowledge accumulated at any point in the course.

Mechanisms of quality assurance

In order to ensure that all these principles are soundly respected and put into practice, the developers of the E-modules have set into place various mechanisms that allow for a regular check-up and quality maintenance.

Taking into account the content volume, currently reaching to two thousand pages, not counting the links and glossary that need to be considered as well, it becomes obvious that a regular check-up of all items is not possible. The key element here is a very thorough content management system that allows the developers to structure the content in a meaningful manner, thus facilitating a permanent overview.

The biggest challenge for the E-modules is to be constantly updated to match the ever-changing realities of the European Union. Without intending to replace a news website, the modules must nevertheless present the political and legal structure of the EU in an accurate manner, while mentioning the latest important events, Treaty changes and changes in portofolios. Moreover, the course must keep the pace with the policy developments and, therefore, the content must be enriched to include relevant updates. All this is currently done within the content management system, by marking pages that need regular review so that they can be easily filtered from the rest of the content. In other words, the E-modules content is split between "stable" items that are not likely to evolve (e.g. history, biographies) and items that are changing constantly (e.g. institutions, names). A system of alerts can be thus linked to the items that need to be updated at certain intervals. As an example, the European Commission and the European Parliament change every five years, so all the pages related to their composition are to be reviewed at the respective time. However, even if this system works for the general updates, unexpected changes also take place (e.g. one Commissioner changed, a Treaty not ratified, etc), leaving no other option to the developers than setting up a personal information management system that helps them stay on top of EU developments in all fields.

Another issue that has to be taken into consideration is the regular check-up of the links included in the course. As mentioned previously, the E-modules are based on a "learning by association" principle that means that pages within the modules are related and they are also related with external websites that provide additional information. A system of automatic check-up for links has been set into place, ensuring that the readers can follow their "journey" of knowledge without interruptions caused by dead links.

Not less important is the need to keep the content's academic nature while, at the same time, using an informative style, accessible to a large range of people with various backgrounds. Being a University department, the Institute has the resources to back up the E-modules with thorough academic research in specific fields. Moreover, the online courses provide the users with direct contact with specialists in numerous policy fields, both academics and policy makers. However, all this does not in itself guarantee the

quality of the teaching methods, as the experience shows that, in many cases, there is a need for an intermediary level that can facilitate the transmission of knowledge through the online media. Therefore, the role of moderator in forums and chats and information filter in the case of written chapters, is essential in ensuring a positive teaching and learning experience.

These are just a few of the most relevant issues encountered as regards quality assurance. With the continuous expansion of the content, this remains one of the main concerns in the further development of the E-modules. The lesson learned from experience is that an essential factor is to be able to establish a disciplined and straight-forward system of back-end administration that offers a permanent overview of what is already in the course, what needs to be checked regularly and what gaps have to be filled. Moreover, where teaching is concerned, great attention must be paid to the way information is conveyed in order to achieve clearly established learning objectives.

Challenges and future developments

Due to their very nature, as well as the topic they are addressing, the E-modules are placed in a continuously changing environment. On the one hand, as technology advances very quickly, the IT components have to be updated in order to provide full support to new applications. On the other hand, the European Union is also a moving target, thus requiring a regular thorough revision of the content and multiple updates to keep up the pace with the events and institutional developments. Both the technical and the content updates are extremely important to ensure that the E-modules are achieving their target. An outdated interface, lacking essential elements of usability, would surely put off potential users; similarly, information on the EU that is no longer correct or relevant would drastically reduce the value of the tool to that of an old newspaper.

Moreover, content-wise, apart from continuous updating, the E-modules developers have to refresh the approach in order to provide added value when compared to the increasing number of existing online sources of information on the European Union. Innovative perspectives are the ones that make a learning system stand out and, therefore, the content development of the E-modules has to be looked upon as a dynamic process of constant renewal. As mentioned earlier, the need to strike a balance between an academic approach and a tool dedicated to citizens in general is one of the ideas to be kept in mind when moving forward. Another challenge is the depth in which the topics are discussed: while some users prefer a very clear overview of the area, including all the essential facts, others favour a more flexible approach, whereby the facts represent just a starting point for debating various concepts. While, in the classroom environment, this dilemma is solved by the division between lectures (where knowledge transfer takes place) and seminars (where certain topics are discussed in depth, in smaller groups, based on reading materials), in the virtual world this division has to be clearly stated in the aims of the course and followed up by applications that allow, to a certain extent, the reproduction of the classroom experience.

This brings us to the main challenge facing the E-modules, which is interactivity. With Web 2.0 technology currently taking over various aspects of life, no e-learning system can afford to ignore the new developments. Social networking, collaborative knowledge creation, blogging, are just a few examples of tools that gained an important place in many fields. The E-modules must seize the opportunity and make use of some of these

tools, after a thorough evaluation of needs and potential, in order to continue to attract new users.

Interaction can take various forms of which two are relevant in the present case: the classical teacher-student interaction and the student-student interaction. The first type, a natural occurrence in face-to-face education, can be replaced, in the virtual environment, by online support and evaluation, whereby the teacher can give feedback to the student. Moreover, an idea that is used already and gives positive results is to mix the online learning with face-to-face sessions, be it introductory courses or specialised trainings. They offer the opportunity for students and teachers to meet up and have direct contact, creating a feeling of familiarity, which proves helpful later on during the online studying process. Secondly, the student-student interaction is a rather difficult thing to achieve in e-learning, which is inherently an individual learning system. However, from an educational point of view, better results can be achieved if students collaborate and exchange views regarding the topics they study. That is why an important element that will have to be embedded in the E-modules is a tool for collaborative project work. That would enhance both the practical aspect of the course and the interaction among the users, proving to be also beneficial for further content development. This latter idea is touching upon yet another type of interaction, this time more familiar to online learning rather than to classroom education, namely student-content interaction. As the content of the e-learning course is constantly evolving, well-directed input from users can also constitute a valuable source that should not be underestimated. Furthermore, the result of the student-student and student-knowledge interactions can be the creation of a "study community" that can bring about the benefits of peer review and the useful experience of group work.

From the perspective of quality assurance, interaction is both a positive sign, that users are scrutinizing the system and getting involved (be it in the form of feedback, debate or even new content creation) and a real challenge. In order to preserve the high academic level of the information presented, it is crucial that the input is well filtered (not censored) and directed towards a constructive aim. Well-moderated debates and contributions from the users can certainly enrich the content, but special attention has to be paid to striking a balance between facts and opinions; labelling them accordingly facilitates the learning experience, as it enables the user to place every piece of information in the appropriate box.

Beyond the technical issues, the other great challenge that the E-modules are facing is that of communicating Europe and making its functioning well understood by the citizens. This is becoming, nowadays, an increasingly important task, that requires academic knowledge, but also communication skills and the ability to put complex realities in an accessible form and language. Using an online platform has proved so far an advantage, due to its flexibility and versatility. Making full use of the tools offered by the virtual environment in the learning process is the key to transforming challenges into opportunities and achieving the educational goals.

Computer attitude of educational professionals in India

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Abstract

This paper presents the results of a sample study made to professionals of Educational Institutions in India on their computer attitude to use ICT for education. There is no doubt that human factors like attitude are important for implementing and improving technical provision of ICT for different uses in an institution. Attitude is an important aspect often used to understand and predict people's reaction to an object or change and how their behaviour can be influenced. The results illustrate that computer attitude of the group of professionals working in educational institutions is positive. Computer access and work experience of this group showed differences but age, gender and other personal characteristics did not have any relation with computer attitude.

Introduction

Today all countries have an integral vision of educational use of ICT. Countries are making attempts to organize the education system to strengthen the use and development of new technologies at all levels, taking care of the importance of educating people for its inclusion in the so-called *knowledge society.* However, in many cases the progress has been slow or not effectively implemented by institutions to feel the impact of use of ICT. As cited by Imran (2009), according to Scott (2001) institutions are made up of formal constraints (e.g., rules, laws, constitutions) and informal constraints (e.g., norms of behaviour, conventions and self-imposed codes of conduct), which are also called institutional pressures. Normative pressures come from the similar attitudes and approaches of professional groups, ongoing practices and socializations. Institutions usually vary in their members attitudes toward new technology, which can range from supportive to resistant and from proactive to reactive. As such, an institution needs to understand and develop tactics that will foster favourable attitudes among its members before adopting ICT innovations. Studies have shown that the successful implementation of educational technologies depends largely on the attitude of educators who eventually determine how they are used in education. Woodrow (1992) asserts that any successful transformation in educational practice requires the development of positive user attitude toward the new technology. Bullock (2004) found that teacher's attitudes are a major enabling/disabling factor in the adoption of technology. Therefore, gaining an appreciation of the attitudes of professionals in educational institutions towards computer use may provide useful insights into technology integration and acceptance and usage of technology in teaching and learning. With this rationality, a sample study was undertaken to find the computer attitude of professionals in educational institutions in Delhi to use ICT in education.

Attitude: meaning

Attitude is an important concept and there are several definitions of attitude. It is often used to understand and predict people's reaction to an object or change and how their behaviour can be influenced (Fishbein and Ajzen, 1975; Allport, 1966, cited in Usoro

2000). Usoro (2000) describes attitude as a complex, mostly learned and enduring but changeable system of cognition and affection which predisposes an individual to favourable and unfavourable action or reaction to an object. Object could be people, events, actions, things, ideas or institutions (The Open University, 1977).
Attitude theorists widely agree that the concept of attitude can be broken into the following components (Krech *et al*, 1962, cited in Usoro, 2000):

- Affective - the person's feelings about the attitude object;
- Cognitive - the person's beliefs or knowledge about the attitude object;
- Behavioural - the person's inclination to act toward the attitude object on a particular way.

As cited by Albirni (2006), Zimbardo et al (1977) contends that "even though we cannot predict the behaviour of single individual, we should be able to predict that people (in general) will change their behaviour if we can change their attitudes….". This assertion explains to a large extent the wide interest in the study of the attitudes toward technology.

The study

Sample

The participants in this study were professionals working in four educational institutions in Delhi. These institutions are not only involved in policy formulation on use of ICT in education but also provide educational programmes and services for different target groups. Due to paucity of time and resources, a convenient sampling was considered in which it was decided that data would be collected from willing professionals in an institution. Therefore, a notice in this regard was displayed on the notice board of each of the institution requesting the professionals working there to participate on a specified day and time. In all there were 49 willing participants who could take out time from their daily routine to participate on the day. The study is to be considered as an exploratory one where individuals from different institutions collectively are considered as a group of professionals working in the field of education. The study is within the qualitative and interpretative domains. Limitations to this approach need to be acknowledged.

Tool

The tool comprised of a questionnaire comprising of sections on participants' background with respect to age, gender, qualifications, work experience, training on using computers, and computer access along with an adapted version of the *Computer Attitude Scale* (CAS) from the Ohio State University Attitude towards computer technology questionnaire.

The CAS comprises of 20-item questionnaire dealing with the attitude toward computer and its use in education. Items 1-6 are designed to measure the affective domain, items 7-15 measures cognitive domain and items 16-20 measures behavioural domain of the computer attitude.

Participants responded to the CAS using a five-point scale of strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5). The scores from the items on each component were aggregated to provide individual scores on each component as

well as the total. In this study, the negative items were reversed coded in order that meaningful analyses at the sub-scale level could be conducted. The CAS has been reported (Albirini, 2004) to possess high reliability (Cronbach's ∝ reliability co-efficient= 0.9).

Results

The characteristics of the professionals in the sample are given in Table 1. It is seen that more than half (67.34%) are in the age range between 30-49 years. 65.31% have work experience for more than 15 years. Only 16.33% have less than 6 years of work experience. Majority (79.59%) of the participants were qualified up to Masters Degree. More than half (63.27%) had attended some training course/workshops/seminars.

Table 1: Characteristics of Participants

	%
Gender	
Male	59.2
Female	40.8
Age Range	
20-29	8.16
30-39	32.65
40-49	34.69
50-59	22.45
60 and Over	2.04
Years of work experience	
1-5years	16.33
6-10 years	18.37
11-15years	22.45
16-20 years	22.45
Over 20 and above	20.41
Highest Degree Held	
Bachelors with teacher certificate	8.16
Bachelors degree	12.24
Masters degree	79.59
Training course/workshop/seminar on computer use attended	
Yes	63.27
No	36.73

In other words, it can be said that majority of the participants were qualified, experienced professionals having attended some training related to computers.
As highlighted by Albirini (2006), some studies have shown that there is a significant association between computer access and computer attitudes. Making computers accessible to users is an important factor that influences computer utilization (Schiffman et al, 1992). Considering this, participants were asked to rate their level of access to potential computer places: at home, at workplace and other places. The aggregate of the ratings of level of access to potential computer places is considered as Computer Access.

Table 2: Computer Access at potential places in percent

Scale	At Home	At workplace	Other (internet café etc)
Daily	56.25	68.75	6.52
2or 3 times a week	18.75	18.75	4.35
Once a week	14.58	8.33	4.35
Once a month	4.17	0	26.09
Never	6.25	4.17	58.70
Mean	1.85	1.2	4.26
SD	1.20	0.97	1.16

Table 2 indicates that more than half (56.25%) of the participants have daily access at home and 68.75% had daily access at the workplace. About 84.79 % never or once a month access computer at other places like Internet café as they would have computer access either at home or at work place and would probably visit other places when they face a problem with their accessed computers. Those who visit other places for computer access probably go for internet facilities which they may not have access to at home or at workplace.

Overall profile of Computer Attitudes

Attitude toward computer was measured in terms of Affective, Cognitive and Behavioral components in the CAS. Table 3 presents the participants' mean scores with the standard deviations of the three subscales.

Table 3: Descriptive statistics and reliability coefficient for each subscale (n=49)

Subscale	No of items	Mean	SD	Alpha
Affect	6	4.15	0.62	0.75
Cognitive	9	4.16	0.53	0.84
Behavioural	5	4.33	0.51	0.70
Overall Attitude	20	4.22	0.46	0.89

The participants scored almost equally on the subscales. The means suggest that participants were equally positive about their affect and cognitive components of attitude towards computers with equal behavioural intentions to use computers. The mean for overall attitude is well above the mid-point of the scale (3.00) and this indicated that participants held a positive attitude towards use of computers in education.

The relationship among the subscales and Attitude is shown in Table 4. There is a strong positive correlation between all the subscales and attitude. Also all subscales correlate positively and significantly with each other at the $p < .01$ level and the coefficients range from .45 to .64. This suggests that the three components were fairly independent to be used as independent variables which allow examining the computer attitudes of professionals by each subscale.

Table 4: Correlation matrix of Attitude and the Subscales*

	Attitude	**Affect**	**Cognitive**
Affect	0.83*		
Cognitive	0.88*	0.59*	
Behavioural	0.81*	0.45*	0.64*

*p<0.01

Figure 1 shows the matrix plot of attitude and the three components.

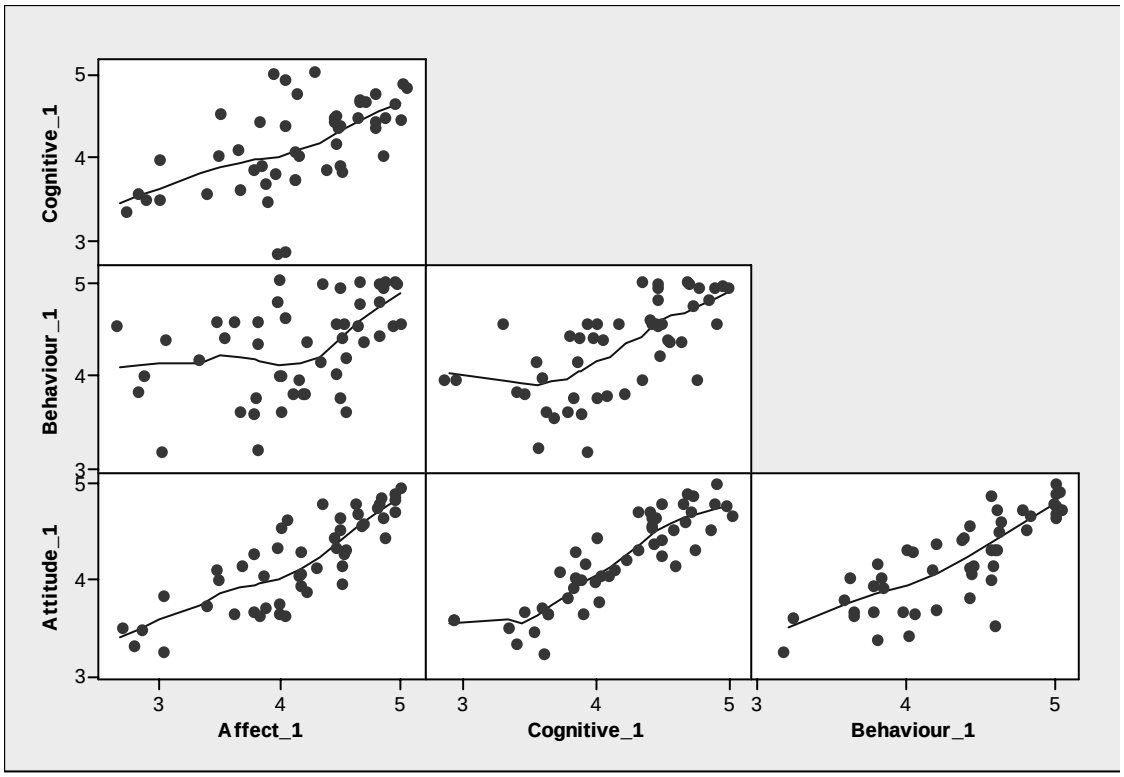

Figure1: Matrix Plot of Attitude, Affect, Cognitive and Behaviour

With a small sample size, Kruskall-Wallis Test which is a nonparametric alternative to a one-way ANOVA was used to find the relationship between attitude and personal factors of gender, age, work experience, educational qualifications, training in computers and access to computers respectively. Access to computers is the aggregate of the scores in availability of computers at home, at workplace and at other places like internet café.

The results of Kruskall-Wallis Test for Attitude versus Gender, Age, Qualifications, Work experiences, Training and Computer Access are shown in Table 5. The test statistic had a p-value of nearly 0.05 (both adjusted and unadjusted) for attitude versus work experience and computer access respectively indicating that there is difference in attitude in the group for these two factors.

Significant differences is seen in Attitude versus access to computers at other places where mean rank for rating 1(=daily) differed least from mean rank for all observations. Mean rank for rating 5(=never) is higher than the mean rating for all observations as the z value is positive (z=2.62).

Table 5: Kruskall-Wallis Test for Attitude versus Gender, Age, Qualifications, Work Experiences and Training

Factors	**Test statistic (H)**	**p-value (both unadjusted and adjusted for ties)**	**Attitude difference**
Age	0.40	0.98	None for any age group
Gender	0.02	0.88	None for any group
Qualifications	3.56	0.31	None at any level
Work Experience	9.28	**0.054**	Exist among the groups
Training	1.21	0.27	None at any level
Computer access	**15.31**	**0.053**	Exist among the groups

Considering the result of the Kruskall-Wallis Test for Attitude versus Work Experience, the z-values indicate that the mean rank for category 5 i.e. work experience over 20 years differed least from the mean rank for other observations. The mean rank for category 4 i.e. work experience in the range 16-20 years is higher than the mean rank for all observations as the z value is positive (z=2.84). This prompted to undergo Kruskall-Wallis Test for each of the components of Attitude versus work experience to find out which component contributed to the difference. Table 6 gives the result.

Table 6: Kruskall-Wallis Test for Attitude components versus Work Experience

Attitude Components	**Test statistic (H)**	**p-value (both unadjusted and adjusted for ties)**	**Work experience difference**
Affect	7.30	0.121	None for any group
Cognitive	**8.12**	**0.087**	**Exist between groups**
Behaviour	5.68	0.224	None at any group

The difference among groups is nearly significant for Cognitive component versus work experience. Further analysis showed that the mean rank for category 5 (z=- 0.69) i.e. work experience over 20 years differed least from the mean rank for all observations while the mean rank for category 4 i.e. work experience in the range 16-20 years is positive and higher (z=2.80) than the mean rank for all observations in the cognitive domain (refer to Table A in appendix).

To find out what aspect of cognitive attitude differed with work experience, Kuskall-Wallis Test for work experience versus each item that measured cognitive attitude was undertaken. Results are as in Table 7.

Table 7: Kuskall-Wallis Test for Work Experience versus each item that measured Cognitive Attitude

Items measuring Cognitive domain	**Test statistic (H); p-value unadjusted**	**Test statistic (H); p-value adjusted for ties**	**Work experience difference**
Q7: Computers save time and effort	**10.54; 0.005**	**10.99; 0.004**	**Exist significantly between groups**
Q8: Schools would be a better place without computers	5.61; 0.132	5.85 0.119	None at any group
Q9: Students must use computers in all subject matters	4.03 0.402	4.20 0.379	None at any group
Q10: Learning about computers is a waste of time	**8.04 0.045**	**8.39 0.039**	**Exist significantly between groups**
Q11: Computers would motivate students to do more study	5.73 0.126	5.98 0.113	None at any group
Q12: Computers are a fast and efficient means of getting information	**7.44 0.024**	**7.77 0.021**	**Exist significantly between groups**
Q13: I do not think I would ever need a computer in my classroom	2.26 0.521	2.80 0.423	None at any group
Q14: Computers can enhance students' learning	2.69 0.442	2.80 0.423	None at any group
Q15: Computers do more harm than good	1.41 0.495	1.47 0.480	None at any group

It is found that there were significant differences in three items measuring cognitive domain and work experience. The mean rank for the scale 4(=Agree) differed least from the mean rank for all observations having also the least z values for the three items respectively (refer to Table B in Appendix). The mean rank for scale 5 (= Strongly agree) is higher than the mean rank for all observations and the z value is positive for all the three items. However, the mean rank for scale 2(=Disagree) is highest than the mean rank for all observations for all the three items which has lead to significant differences in cognitive attitude within the group. Except item Q12, the z value for scale 2 were less than scale 5 indicating the difference within the group that disagrees and those who strongly agree that computers are a fast and efficient means of getting information.

Discussion

The study illustrates that:

- Professionals in educational institutions showed a positive computer attitude towards the use of computers in education. The mean (4.22) for overall attitude is well above the mid-point of the scale on a 5-point scale.
- The overall computer attitude of the professionals showed positive correlation with affective, cognitive, and behavioural domain.
- Computer attitude showed no significant differences within the group for age, gender, qualifications and training in computers. With respect to such personal factors, there are different findings from many past studies. Some studies (Czaja and Sharit, 1998; Woodrow, 1992; Teo, 2008) found no difference in overall attitude between young and old while some (Chio, 1992; Blankenship, 1998 cited in Cavas et al, 2009) found that age has critical effects on attitude. Pope-Davis and Twing (1991) concluded in their study that neither age was an unequivocal determinate of attitude, nor gender played a role in determining differences in attitude, which is in consistence with the results of this study. However, considering what Kay (1992) had to report, no generalisation can yet be drawn from a body of conflicting evidence regarding gender influences on attitude towards computers. Further research addressing the issues of gender needs to be done.
- The non significance of educational qualification and some training to computer attitude suggests that the form of education and training obtained by these professionals is not relevant to their use of computers in education. This is consistent with the study by Usoro (2000). However, as pointed out by Usoro that such a finding is in contrast with the study by Igbaria and Chakrabarti (1990) who found that computer training contributes strongly to decrease computer anxiety to form positive attitude. Probably in this case regular use of computers in daily life whether at home or at work place has led against the development of differences within the group.
- The computer attitude versus computer access showed nearly significant difference within the group. Studies (Shashaani, 1997; Teo, 2008) have shown that computer attitude could be attributed to the availability and accessibility to computers. Further, Huang & Liaw (2005) pointed out that the length of computer use is associated with the successful use of the computer in order that positive feelings can be fostered. In this case, about 75% had daily or 2 to3 times a week access to computers at home. 87.50% had daily or 2 to3 times a week access to computers at workplace. Computer access at other places showed highest differences in the group ($z=2.62$) indicating that access in other places was need based. Lim & Khine (2006) states that a prolonged unsuccessful period of computer use may serve as a barrier instead of facilitating further usage of the computer.
- Computer attitude seem to differ most for those with work experience between 16-20 years. Individuals in this range of work experience are in their prime workforce age and age showed a positive correlation ($r =0.633$, $p<0.01$) with work experience.
- Among the three components of attitude, the cognitive domain versus work experience showed nearly significant difference within the group. Three items measuring cognitive domain viz. Q7=computers save time and effort, Q10=learning about computers is a waste of time and Q12=computers are a fast and effective means of gathering information, showed significant differences with work experience within the group.

Those who strongly agree that computers save time and effort and learning about computers is a waste of time and those who disagree, that computers are a fast and efficient means of getting information, have undoubtedly developed these aspects of attitude from their work experience. The study by Idowu (1998) states that current usage (knowledge of computer usage) of computers at work influence a positive attitude towards the computer. However, according to Stern (2004), Triandis's Theory of Interpersonal Behaviour (TIB) suggests that experience was positively related to usage. Furthermore, computer anxiety was negatively related to experience. Stern (2004) found that experience and support were positively related to computer self-efficacy, and computer self-efficacy was negatively related to anxiety and positively related to usage. It appears that in this case the work experience of the professionals made them to believe that even though computers save time and effort, it is not necessarily the fastest and most efficient means of getting information. Also their work experience made them to believe that learning about computers is a waste of time. This may be attributed to the kind and quality of training experience encountered by the individuals.

Conclusion

In today's world one cannot visualise a typical workplace without some kind of computerized technology. Wilson (2004) conceptualizes and defines ICT which involves the use of computers as a scarce and desirable resource that groups and individuals contend for in order to consume or control for their own purposes. Individuals and groups who believe they will be disadvantaged will tend initially to block and oppose its diffusion, partly through ignorance of its full effects but also through an evaluation that their personal and professional status will be compromised. In other words, attitude plays an important role in the effective investment in computer technology in education to support instruction and successful integration in teaching learning situation (Lawton & Gerschner 1982; Koohang 1989). This sample study showed that overall attitude of professionals affiliated with educational institutions towards the use of computers in education is positive. Positive attitude enhances the knowledge and creativity of computer users, whereas negative attitude may limit the use of computer as learning and teaching tool and inhibit the information technology assimilation in the educational systems. It is believed that individual cognition influence users' attitude toward an ICT innovation, which is essential to achieve good outcome for an organization (http://cms.unescobkk.org/index.php?id=1451). In this study individuals did show differences in cognitive domain of the attitude to indicate that there may be cognitive dissonance in some ideas about use of computers, like learning about computers is a waste of time. This can be changed when such individuals are provided with appropriate training experiences which will positively relate computer self efficacy to usage. It can hence be said that because of the positive attitude of the professionals, all the four institutions with which they are affiliated, are able to use computers in education.

Organizations are making significant investments in information and communication technology (ICT). However, if individuals do not use ICT applications as anticipated, successful implementation can be hard to achieve. In this context it is to mention that one of the major factors affecting people's attitudes toward a new technology is the attributes of the technology itself (Rogers, 1995, cited by Albirini, 2006). Rogers

identified five main attributes of technology viz relative *advantage, compatibility, complexity, observability and trialibility* that affect its acceptance and subsequent adoption. Further, as highlighted by Albirini (2006), Rogers (1995) and Thomas (1987) emphasised the importance of the cultural/social norms of a given country to the acceptance of technology among people. It is important for all educational institutions to recognise these aspects also for effective use of ICT in education.

Acknowledgements

I would like to express my sincere gratitude to all the participants and Institutions for allowing me to collect data. I am sincerely thankful to Prof Vasudha Kamat, Dr Savithri Singh, and Dr O P Sharma for assisting me in this research study**.**

References

Albirini, A. (2006) Teachers' attitudes toward information communication technologies: the case of Syrian EFL teachers. *Computers and Education,* 47(4), 378-398

Cavas, B., Cavas, P., Karaoglan, B. & Kisla, T. (2009) A study on science teachers' attitudes toward information and communication technologies in education, www.tojet.net/articles/822.doc Retrieved in June 2009.

Czaja, S.J. & Sharit, J. (1998) Age Differences in Attitude towards Computers, *Journal of Gerontology Series B-Psychological Sciences and Social Sciences,* 52 (5), 329-340

Huang, H.M. & Liaw, S.S. (2005) Exploring user's attitudes and intentions toward the web as a survey tool. *Computers in Human Behavior,* 21(5), 729-743.

Idowu, Adetoun O. (1998) Relationships Between Training/Experience, Knowledge of Computer Usage and Attitudes of Nigerian Librarians Towards Computers, *The International Information & Library Review,* 30 (4), 303-309

Imran, A. (2009) Knowledge and Attitude, the Two Major Barriers to ICT Adoption in LDC are the Opposite Side of a Coin; An Empirical Evidence from Bangladesh, *Proceedings of the 42nd Hawaii International Conference on System Sciences – 2009.* http://www2.computer.org/plugins/dl/pdf/proceedings/hicss/2009/3450/00/09-12-04.pdf?template=1&loginState=1&userData=anonymous-IP%253A%253A127.0.0.1 Retrieved in June 2009.

Kay, R.H. (1992) An analysis of methods used to examine gender differences in computer-related behaviour, *Journal of Educational Computing Research,* 8(3), 277-290.

Lim, C.P. & Khine, M.S. (2006) Managing teachers' barriers to ICT integration in Singapore schools. *Journal of Technology and Teacher Education,* 14(1), 97-125.

Pope-Davis, D.B. & Twing, J.S. (1991) The effects of age, gender, and experience on measures of attitude regarding computers. *Computers in Human Behaviour* 7, 333-339.

Schiffman, S., Meile, L. & Igbaria, M. (1992) An examination of end-user types, *Information and management,* 22(4), 207-215

Shashaani, L. (1997) Gender differences in computer attitudes and use among college students. *Journal of Educational Computing Research,* 16, 37-51.

Stern, N. (2004) An empirical investigation into the relationship between computer self-efficacy, anxiety, experience, support and usage, *The Journal of Computer Information Systems,* http://www.allbusiness.com/technology/computer-hardware-desktop-computers/932037-1.html Retrieved in June 2009.

Teo, T. (2008) Pre-service teachers' attitudes towards computer use: A Singapore survey. *Australasian Journal of Educational Technology*, 24(4), 413-424.

The Open University (1977), *Attitudes and Beliefs* Sussex: Coes the Printers Limited.

Usoro, A. (2000) Attitude as a Factor for the Use of Information and Communication Technology for Global Planning, *Computing and Information Systems*, 7, 58-64.

Wilson, E.J. (2004) The Information Revolution and Developing Countries. London: MIT Press. 431.

Woodrow, J.E. (1992) The influence of programming training on the computer literacy and attitudes of ore service teachers. *Journal of Research on Computing in Education,* 37, 64-72

Appendix

Kruskall-Wallis Test for Attitude versus Work experience

Table A

Work Exp	**N**	**Median**	**Ave Rank**	**Z**
1(1-5yrs)	8	76.00	18.3	-1.46
2(6-10yrs)	9	81.00	20.3	-1.10
3(11-15yrs)	11	85.00	25.1	0.02
4(16-20yrs)	**11**	**93.00**	**35.8**	**2.84**
5(<20yrs)	10	86.50	22.7	-0.57
Overall	49		25.0	

Kuskall-Wallis Test for Work Experience versus each item that measured Cognitive Attitude

Table B

Items	1=Strongly Disagree		2= Disagree		3= Neutral		4=Agree		5= Strongly Agree		Overall Av rank
	Av Rank	Z value	Av Rank	Z value	Av Rank	Z value	Av Rank	Z value	Av Rank	Z value	
Q7	-	-	34	1.13	-	-	17.1	-3.21	30	2.62	25
Q10	-	-	34	0.64	28.8	0.38	17.1	-2.81	29.1	2.39	25
Q12	-	-	44	1.97	-	-	20	-2.22	27.9	1.43	25

Attitude Questionnaire

Instructions: Please indicate your reaction to each of the following statements by circling the number that represents your level of agreement or disagreement with it. Make sure to respond to every statement.

	Items	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1.	Computers do not scare me at all	1	2	3	4	5
2.	Computers make me feel uncomfortable	1	2	3	4	5
3.	I am glad there are more computers these days	1	2	3	4	5
4.	I do not like talking with others about computers	1	2	3	4	5
5.	Using computers is enjoyable	1	2	3	4	5
6.	I dislike using computers in the instructional process.	1	2	3	4	5
7.	Computers save time and effort	1	2	3	4	5
8.	Schools would be a better place without computers	1	2	3	4	5
9.	Learners must use computers in all subject matters	1	2	3	4	5
10.	Learning about computers is a waste of time	1	2	3	4	5
11.	Computers would motivate learners to do more study	1	2	3	4	5
12.	Computers are a fast and efficient means of getting information	1	2	3	4	5
13.	I do not think I would ever need a computer in my instructional methods.	1	2	3	4	5
14.	Computers can enhance learners' learning	1	2	3	4	5
15.	Computers do more harm than good	1	2	3	4	5
16.	I would rather do things by hand than with a computer	1	2	3	4	5
17.	If I had the money, I would buy a computer	1	2	3	4	5
18.	I would avoid computers as much as possible	1	2	3	4	5
19.	I would like to learn more about computers	1	2	3	4	5
20.	I have no intention to use computers in the near future	1	2	3	4	5

Digital dialogic learning for inclusion and for learner empowerment and intercultural democratic citizenship

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Abstract

The paper addresses the challenge of designing intercultural e-learning processes. It investigates the possibilities for producing digital learning environments and teaching/learning strategies that are likely to promote and enhance Learner Empowerment (LE) and Active Intercultural Democratic Citizenship (AIDC). While recognizing the communicative dialogic potential of digital technologies and acknowledging the need for promoting global orientation and democratic skills in citizens, the paper explores the notions of Learner Empowerment (LE) and Active Intercultural Democratic Citizenship (AIDC) and discusses to which extent an e-learning design perspective inspired by meta-learning (Bateson, 1976) and dramaturgic thinking (Brecht, 1957) may produce digital learning environments and teaching/learning strategies that are likely to promote and enhance learner awareness, Learner Empowerment (LE) and Active Intercultural Democratic Citizenship (AIDC).

Introduction

The perspective of globalization and global citizenship has entered the educational arena. Important vehicles for empowering participants to meet the intercultural challenges and digital divides involved are collaborative educational activities and programmes, enabled by communication technologies (incl. Web 2.0 media) and unfolding in a cluster of VLEs (Virtual Learning Environment) and VMEs (Virtual Meeting Environments).

With the vision of digital technology as a vehicle for promoting active intercultural democratic citizenship on a global scale, educators and designers of e-learning are facing a need to expand digital learning models and instructional methodologies to fit a *wider* global society (Brown & Davis, 2004).

This paper addresses communication and e-learning architectures as potential pedagogical-methodological constructs for enhancing democratic communication, learner empowerment and global citizenship.

The paper acknowledges the concept of Continuous Partial Attention (CPA) as descriptive of people's relationship with digital technology in the 21st century, and elaborates from the assumption that digital learning environments (including features of Web 2.0) possess an educational potential for promoting empowerment (incl. some

democratic values and competencies associated with global citizenship) through dialogic participation/negotiation and shared knowledge construction across cultures.

From the notions of active intercultural democratic citizenship (Sorensen et al., 2008) and learner empowerment and through an optic of drama and play, the paper asks the question: What are the sustainable methodologies and communicative techniques, which can be applied within higher and continuing education to foster and maintain active democratic competence and intercultural understanding in citizens? It investigates and discusses, theoretically, pedagogical-methodological features of digital learning environments conducive to furthering the type of dialogic competence in learners that are essential to produce and maintaining active citizens prepared for global collaboration and shared knowledge generation amongst participants.

Finally, the paper asserts the usefulness of using the concepts of drama and play as pedagogical-methodological inspiration for design, and a list of appropriate pedagogical-methodological principles cultivating global citizenship is presented.

Learning in the 21st Century

The general empowering interactive/dialogic potential of networked communication technology for educational purposes is widely recognized (e.g. Conner, 2004; Miyake & Koschmann, 2002, Bang & Dalsgaard, 2008). The educational usage includes communication technologies as e.g. so-called Virtual Learning Environment (VLEs) and Virtual Meeting Environments (VMEs) (Sorensen et al., 2008). Over the last years, Web 2.0 technologies (also known as Social Software) have added their powerful communicative potential for network creation and interaction in social spaces.

Digital technology

Digital environments for organizing dialogic/communicative processes (Dalsgaard & Sorensen, 2008):

Dialoging

- **Text forums**
- **Chat**
- **Video phone**
- **Etc.**

Networking & Awareness

- **Person-centered social networking sites**
- **Networked weblogs**
- **Etc.**

Digital environments for organizing resources (Dalsgaard & Sorensen, 2008):

Creating

- **Weblogs**
- **Podcasts**
- **Wikis**
- **Application sharing services**
- **Etc.**

Sharing

- **Object-centered social networking sites**
- **Social bookmarking**
- **Etc.**

Continuous partial attention (CPA)

The notion of CPA (Linda Stone):

§We're shifting into a new cycle, new set of behaviours and motivations: attention is dynamic, and there are sociocultural influences that push us to pay attention one way or another. Our use of attention and how it evolves is culturally determined.

§CPA (Linda Stone, 2005): In 1997 I coined the phrase "continuous partial attention" (CPA). We are so busy keeping tabs on everything that we never focus on anything. This can actually be a positive feeling, inasmuch as the constant pinging makes us feel needed and desired. The reason many interruptions seem impossible to ignore is that they are about relationships ≒ someone, or something, is calling out to us. It is why we have such complex emotions about the chaos of the modern office, feeling alternately drained by its demands and exhilarated when we successfully surf the flood.

§CPA: For almost two decades, continuous partial attention has been a way of life to cope and keep up with responsibilities and relationships. We've stretched our attention bandwidth to upper limits. We think that if tech has a lot of bandwidth then we do, too. With continuous partial attention we keep the top level item in focus and scan the periphery in case something more important emerges.

CPA: Continuous partial attention is motivated by a desire not to miss opportunities. We want to ensure our place as a live node on the network, we feel alive when we're connected. To be busy and to be connected is to be alive. We've been working to maximize opportunities and contacts in our life. So much social networking, so little time. Speed, agility, and connectivity at top of mind. Marketers humming that tune for two decades now. Now we're over-stimulated, over-wound, unfulfilled

Suggests a 20-year cycle (defined by a tension between collective and individual):

§**1945-1965**: Organization/institution center of gravity. We paid attention to that which we serve. Lucy paid full attention to phone conversations, Seinfeld does not. Belief that by serving institution of (marriage|employer|community) we'd live happy and well-ordered lives. Marketing, command-and-control lifestyle, parents and authority figures, all fit in. Service to institution would bring us satisfaction. We paid full-focus attention to that which served the institution: family, community, marriage. We trusted experts in authority to filter the noise from the signal, to give us the information that matters. As those things failed us, we embraced what we'd suppressed.

§**1965-1985**: Me and self-expression. Self and self-expression new center of gravity. Trusted ourselves, entrepreneurial. Apple, Microsoft, Southwest Airlines. Marketers said we have our power to be our best. Fashion broke free. We paid attention to that which created personal opportunities. Paid attention to full-screen software like Word and Excel. Willing to fragment attention if it enhanced our opportunity. Multitasking was adaptive. Our sense of commitment dropped: rising divorce rate, 3 companies/career, etc. Became narcissistic and lonely, reached out for network.

§**1985-2005**: Network center of gravity. Trust network intelligence. Scan for opportunity. Continuous partial attention is a post-multitasking adaptive behaviour.

Being connected makes us feel alive. ADD is a dysfunctional variant of continuous partial attention. Continuous partial attention isn't motivated by productivity, it's motivated by being connected. MySpace, Friendster, where quantity of connections desirable may make us feel connected, but lack of meaning underscores how promiscuous and how empty this way of life made us feel. Dan Gould: "I quit every social network I was on so I could have dinner with people." So now we're overwhelmed, underfulfilled, seeking meaningful connections. iPod is as much about personal space as personalized playlists. Driving question going from 'what do I have to gain?' to 'what do I have to lose?

Active Intercultural Democratic Citizenship (AIDC) and Learner Empowerment

In a previous study (Sorensen et al., 2008) I have argued that an understanding of the Notion of Active Intercultural Democratic Citizenship (AIDC) may be derived from the various elements that act as describers of the core concept of citizenship. The following characteristics are emphasized:

- Active *(*citizenship) refers to an identity of participation, attitudes, and values.
- Intercultural (also referred to as cross-cultural) is associated with the philosophy of exchanges between cultural groups within a society. In practice, however, the concept is more commonly associated with contexts of communication, in which interculturalism is a field of study that looks at how people from differing cultural backgrounds endeavour to communicate.
- Democratic is considered to be the overall system of rule by the people. It strives to create opportunities for all members of a political group to make meaningful contributions to the process of seeking consensus and reaching decisions, and seeks to broaden the range of people who have access to such opportunities.

To focus on development of AIDC as an essential competence in education is important as many societies show signs that indicate a continuous declining engagement of citizens in traditional democratic and political processes in the world. Studies of citizenship conducted by e.g. Hoskins (2006) indicate that distances, for instance, between citizens and their political representatives are increasing, and that individuals appear to be less and less willing to participate and become involved in decision-making processes within their community, at work, at a higher political level, etc.

Reinforced by the rapid transformation of civil processes moving to the digital arena, citizens are likely to become more and more alienated to the functioning and growth of society – and, not least, to their own identity and to understanding themselves as active citizens with a possibility for influencing and delivering input to the decision making processes associated with the function of society. In the very extreme case, this lack of interest amongst citizens may, inevitably, give rise to serious concern amongst many governments, when dealing with e.g. intercultural challenges of war, terrorism, etc.

> As globalisation continues to confront the European Union with new challenges, each citizen will need a wide range of key competences to adapt flexibility to a rapidly changing and highly interconnected world. (Hoskins, 2006, p. 130)

What then, is the educational thinking that lies behind the idea of AIDC? What are its characteristics, the key competences it wishes to cultivate? According to the

Commission, the following examples of core skills/competences are covered by AIDC (Hoskins, 2006):

- Communication in the mother tongue
- Communication in foreign languages
- Mathematical competence and basic competence in science and technology
- Digital competence
- Learning to learn
- Social and civic knowledge
- Sense of initiative and entrepreneurship
- (Inter-)Cultural awareness and expression

While Sorensen (2004b) agrees with Hoskins (2006), she adds a number of more personal characteristics to the desired profile of a democratic citizen, such as e.g. tolerance and support of a fellow human being; openness to new ideas and alternative solutions; a desire to learn from others, to collaborate and share knowledge and goals; initiative and ownership; lack of a desire to control others, respect for the quality of an argument rather than power of authority; using no other sword than that of the word and the argument.

The earlier mentioned declining engagement in traditional democratic processes among citizens also raises concern about democracy in the context of *empowering* the learner. As Bryony Hoskins (2006) states:

> The fundamental principle of democracy is the participation of citizens in processes that aim at reaching decisions that reflect consensus by the majority, whilst preserving minority rights. It can be questioned whether a democracy still works when such participation is only exercised by a few. (Hoskins, p. 54)

This concern becomes even more significant when considered along with the decrease in political engagement and the growing levels of individualism, which also may affect attitudes of solidarity and interest in community development. Both sense and actions of citizenship may be very subtle and personal issues, and becoming an active citizen is likely to be the result of a continuous lifelong process formed by history and relations with others.

Although the term *learner empowerment* is not explicitly mentioned above by Hoskins (2006) as one of the skills covered by AIDC, it is still strongly associated with citizenship and included as a prerequisite for e.g. “sense of initiative and entrepreneurship”, “digital competence”, “learning-to-learn” and “social and civic knowledge” in the profile of an active citizen. More generally, the notion of empowerment denotes an ability to gain power, authority and influence over institutions or society, and it includes the following characteristics and competencies:

- Having decision-making power of one's own
- Having access to information and resources for taking proper decision
- Having a range of options from which you can make choices (not just yes/no, either/or)
- Ability to exercise assertiveness in collective decision making

- Having positive thinking on the ability to make change
- Ability to learn skills for improving one's personal or group power.
- Ability to change others' perceptions by democratic means
- Involvement in the growth process and changes that is never ending and self-initiated
- Increasing one's positive self-image and overcoming stigma
- Increasing one's ability in discreet thinking to sort out right and wrong.

In short, empowerment is defined to be the process that enables a person to obtain the knowledge, the skill-sets and the attitude needed to cope with the changing world and the circumstances in which one lives.

While the definition of Active Citizenship offered by the Commissions emphasizes aspects of active participation in civil society, community and/or political life as well as mutual respect, non-violence and democracy (Hoskins, 2006), it could be argued that a more appropriate alternative definition should explicitly include the intercultural learning dimension (Sorensen & Takle, 2004b). Education and learning of human rights and duties in democratic contexts ought to not only be descriptive, but need also to function in the cause of social change, as they promote ideals about equity, cultural diversity, solidarity and social justice (Sorensen et al., 2008).

Hoskins concludes (2006) that it is difficult to precisely draw periphery of what, in detail, defines active citizenship. Active citizenship contains various groups of democratic values (concerning participation) and basic rights (civic attitudes), with different manifestations. But above all, the core focus when defining citizenship is concerned with empowerment and the correlation between the individual and the community.

Designing e-learning for empowerment and global citizenship in the 21st Century

For global citizenship to be cultivated, dialogue is vital. The power of dialogue in a learning process is widely recognized as a general facilitation in processes of learning, regardless of context, content or subject (Sorensen & Ó Murchú, 2005).

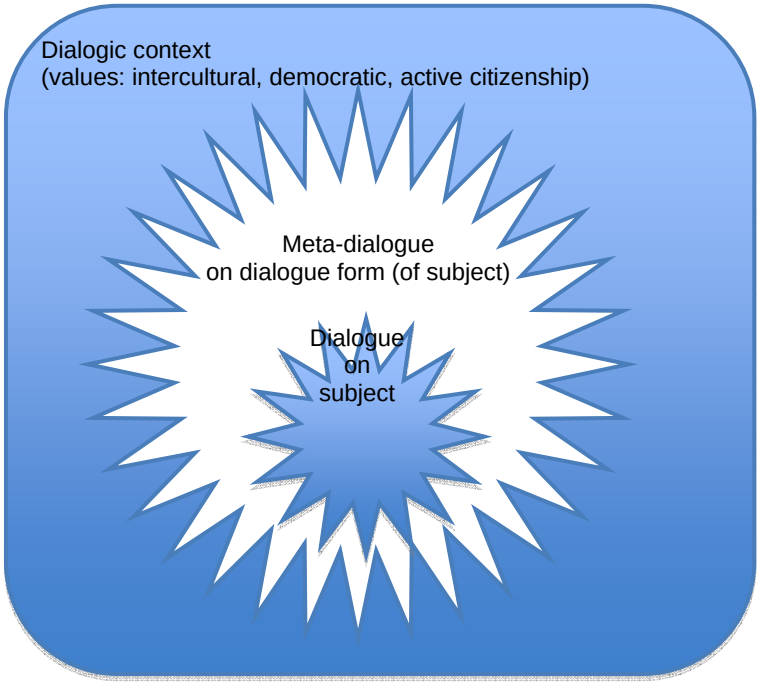

Figure 2: The different (meta-)layers of dialogue

Applying digital communication technologies for the purpose of promoting shared knowledge construction, empowerment and global citizenship - as indirect learning outcomes regardless of subject taught - suggests a need for the chosen instructional approach to address *the meta-communicative space* in a learning process (figure 2). Two important principles appear to be fruitful, regardless of the subject taught.

Designing for dialogic collaborative knowledge building (D-CKB) is vital (figure 1, "Dialogue on subject")

The notion of dialogic collaborative knowledge building (D-CKB) emphasizes meta-learning and learning-to-learning.

> This dialogic interpretative framework implies the need for a pedagogy of teaching dialogic, that is the ability to sustain more than one perspective simultaneously, as an end in itself and as the primary thinking skill upon which all other thinking skills are derivative. This pedagogy can be described in terms of moving learners into the space of dialogue. Tools, including language and computer environments, can be used for opening up and maintaining dialogic spaces and for deepening and broadening dialogic spaces.
>
> (Wegerif, 2006b, np.)

We know that shared knowledge building requires both "genuine collaboration" (Salomon, 1995) and "genuine interdependence" (Salomon, 1995) between individuals in a process of "negotiation of meaning" (Wenger, 1998). According to Sorensen and Takle (2002) it implies activities like mutual exploration of issues; mutual examination of arguments, agreements, and disagreements; mutual questioning of positions; dynamic

interaction; weaving of ideas; convergence of perspectives – with the aim of creating, sharing and pooling knowledge together.

In a similar way that communication technology may be viewed as media for facilitating and progressing inter-human interaction, I argue that inter-human interaction itself, i.e. student engagement in dialogic processes of collaborative knowledge building (D-CKB) (Sorensen, 2009) may be considered the medium for engagement in global, inter-cultural learning (figure 2). While agreeing on a dialogic strategy as an essential for learning, Wegerif (2006) emphasizes the potential of a dialogic strategy to further intercultural understanding and the significant implication of this for human matters.

In other words, a digital technology combined with a dialogic teaching/learning strategy is likely to support the education of citizens through conceiving some essential democratic attitudes and intercultural skills of a global citizen, simply because it is likely to leave significant indirect "imprints" (meta-learning) on learners in terms of their self-perceptions and radius of action in their process of becoming global democratic citizens.

> Whilst being able to participate in the construction of shared knowledge is clearly an important aim of education, the dialogic perspective (…) claims that it is even more important, as both a preliminary requirement for construction and as the context of construction, that students in the networked society learn how to listen to other voices. (Wegerif, 2006, np.)

Among essential skills cultivated in a digital dialogic setting are (Stahl, 1999; Sorensen & Takle, 2002 & 2004; Sorensen 2008) the ability to initiate and participate in digital discussion and shared generation of knowledge (one is active to achieve a common goal), the ability to listen to other peoples' opinions and apply democratic attitudes in the negotiation of meaning accompanied by a resulting intercultural insight.

Designing for meta-dialogue – a neglected space of empowering awareness (figure 1, "Meta-dialogue on dialogic form (of subject)")

Less in focus of dialogic learning is its potential at the meta-learning level (Bateson, 1976). The learning that is acquired from the methodological level, i.e. "the way things are learned" – in other words, the "hidden" methodological learning from the methods used to teach/learn a given content. The meta-learning level is usually recognized. In an optimal case, a meta-learning effect is also looked upon as being of great value. But only in the very rare case is it consciously employed (and its value envisioned) in the design of e-Learning. The meta-dialogic level seems a neglected space of learning.

Dialogic e-learning at a meta-level may be viewed as evolving in the intersection between three basic dimensions:

1) Consciousness:

- Digital meta-learning creates *awareness* of own learning processes (personal e-learning methods - "teachable", and sensitive to the teaching methodology of formal e-learning situations)
- Digital meta-learning provides opportunity for learning how to learn: evaluate and modify your own path for most effective learning, yourself, your capacity to learn,

successful path used in the path - and your interest in, knowledge of and motivation for the subject you wish to learn.

2) Meaningfulness:

- Digital meta-dialogue is co-existentially meaningful to you and your peers as its process evolves through – and reflects on – collaborative dialogue and knowledge building, build on a shared *Ethos*.
- Digital meta-dialogue is *personal* in the sense that you become an independent process owner of your own learning processes – in a perspective, which is "true" for you (Colaizzi, 1978). It is an essential part of your life.
- Digital meta-dialogue makes you aware that you construct your own theories/hypotheses and test them continually in your own life, both in empirical experiments (practice) and in theoretical "experiments" (thinking and thought).
- Meaningful digital meta-dialogue demonstrates that whatever you learn is relevant to you, as it is connected to your prior knowledge on the issue.

3) Sustainability (in the light of future global e-learning contexts):

- Digital meta-learning creates *awareness* of learning processes (Bateson, 1976)
- Digital meta-learning promotes the promotion of a global, *co-existential Ethos* (Sorensen & Ó Murchú, 2006)
- Digital meta-learning supports *personalization* of learning, as it creates process independence and ownership (Gibson, 2006; Sorensen & Ó Murchú, 2006)

While there is no doubt about the promising profile of new technology and e-learning networks, the empowering effect for learners depends to a high extent on design decisions. These decisions in turn are susceptible to underlying theoretical philosophies and pedagogical methodologies of teaching and learning in ways that may indirectly promote or, alternatively, hamper the advancement of non-authoritarian democratic processes and students' activity (Sorensen, 2004b); in other words, those aspects of the instructional/learning process that are pertinent to aspects of empowerment, i.e. the promotion of learner initiative and entrepreneurship (see the section above on AIDC). Thus, associated with the actual e-learning designs is also the accompanying need to become conscious of their underlying theoretical philosophy and pedagogical rooting.

More theorists are addressing the potential and nature of dialogic processes for enhancing human insight. One of them, who recognized the potential of theater and the dialogue of drama for educating citizens, is Bertolt Brecht (1957), one of this epochs most considerably dramatists. Looking to his vision of educating citizens through dramatic understanding as inspiration for designing e-learning (as attempted earlier by Fjuk and Sorensen, 1996) is likely to further promote a type of learning environment or digital learning architecture, which develops active awareness (meta-insight), consciousness and critical thinking in people (Bang, 1993; Brecht, 1957). A critical reflective relation, on the one hand, to *learning subject* (plot) and *learning context* (stage), and on the other, to the *teaching/learning strategy* (creating an awareness or meta-insight in the learner). The process of engagement and participation in the current practice (awareness of the learning method) becomes the valuable and sustainable meta-learning (Wenger, 1998). The actors and the audience of a Brechtian play join in a kind of shared reflective endeavour, in which they critically meta-communicate on the plot and its roles (Brecht's "Verfremdungseffekt") in the case of citizenship on the principles of democratic dialogue.

A design metaphor of drama and a concept promoting, on the one hand, a simulated mode of involvement with the topic and narrative of the drama itself and, on the other, an active participation and critical reflective participation in meta-interaction and dynamic meta-dialogue (while exercising the democratic principles in the relation to other citizens) appears promising for the advancement of AIDC.

Conclusion / Question

Reminding ourselves that we *cannot* design learning (Wenger, 1998) - but only *for* learning - leaves us as educational designers with the option of taking qualitative meta-pedagogical initiatives, which cultivate growth through a quality of learning-to-learn, and for practicing learning methods and prepare for learning to take place in alternative ways which support the furthering of awareness and which support learner-centeredness:

- applying non-authoritarian methodology (again, reminding ourselves that the method we are exposed to and by which we learn, is the most important part of what is learned)
- highlighting the initiative of the individual learner and creates ownership
- supporting learners in their own learning and their constructing new knowledge to be integrated in what they already know
- making visible and actually operationalizing what the learner brings to the shared learning process
- allowing for a practicing of student-centered collaborative dialogue.

In a meta-learning perspective, learning together globally in an online learning architecture, while at the same time being submitted a pedagogical methodology and practice, based fundamentally on collaborative dialogue and the sharing of values – is likely to cultivate democratic skills, attitudes and intercultural perspectives on citizenship in the learner for the benefit of global prosperity. Through learning designs that methodologically are conducive to illustrating and promoting (through both example and content) democratic principles and values, we (the nations on our globe) are more likely to be equipped with the means to interact with each other, collaboratively, constructively and diplomatically.

References

Bang, J., Dalsgaard, C. 2008, "Digital forskningsformidling - Kommunikative potentialer ved at anvende Web 2.0 til videnskonstruktion", *Læring og Medier (LOM)*, nr. 1,

Bateson, G. (1976), Bateson, G. (1976). *Steps to an Ecology of Mind*. Chicago: The University of Chicago Press.

Brecht, B. (1957), Om tidens teater. En ikke-aristotelisk dramatik. København: Gyldendals Uglebøger. ISBN 87 00 41041 1

Brecht, B. (1968). On the Experimental Theatre. In J. L. Calderwood. & H. E. Toliver (Eds.): *Perspectives on Drama* (pp. 270-277). New York: Oxford University Press

Brown, A. & Davis, N. (2004). Introduction. In A. Brown & N. Davis (Eds.), *Digital Technology Communities and Education* (pp.1-12). London: RoutledgeFarmer.

Mayer et al. (2007), Intercultural Active Citizenship Education. Specific Targeted. Research Project. Thematic Priority 7: Citizenship and Governance in Knowledge Based Society. ***http://www.ces.uc.pt/interact/documents/final_activity_report.pdf*** A Study on Active Citizenship Education DG Education and Culture. CIT2-CT-2003-506023. INTERACT

Elam, K. (1980), The Semiotics of Theatre and Drama. London: Methuen and Co. Ltd.

Gibson, I. W. (2006). Enhanced Learning and Leading in a Technology Rich, Global Learning Environment: The Global Forum Series for School Leaders. In a 21st Century Global Application of Type II Computing. In E. K. Sorensen & D. Ó Murchú (Eds.), *Enhancing Learning Through Technology*. Hershey, PA: Idea Group Inc. (pp. 75-102)

Heidegger, M. (1986): Sein und Zeit. Tübingen: Max Niemeyer Verlag.

Holzl, A. (1999). Designing for diversity within online learning environments. Presented at QUT, Brisbane, Queensland, Australia for the annual Australasian Society for Computers in Learning in Tertiary Education (ASCILITE 99) Conference, December 5-8, 1999. http://www.ascilite.org.au/conferences/brisbane99/papers/papers.htm

Hoskins, B. et al. (2006): Measuring Active Citizenship in Europe, European Commission, DG JRC-CRELL. Centre for Research on Lifelong Learning. Institute for the Protection and Security of the Citizen. CRELL Research Paper 4. ISBN: 92-79-03738-2

Johnson, M. (1987): *The Body in the Mind. The bodily Basis of Meaning, Imagination, and Reason*. Chicago: The University of Chicago Press.

Mason, R. (1998). *Globalising Education. Trends and Applications*. Routledge: London, UK

Mayer et al. (2007), Intercultural Active Citizenship Education. Specific Targeted. Research Project. Thematic Priority 7: Citizenship and Governance in Knowledge Based Society. ***http://www.ces.uc.pt/interact/documents/final_activity_report.pdf*** A Study on Active Citizenship Education DG Education and Culture. CIT2-CT-2003-506023. INTERACT

Mason, R. (1998). *Globalising Education. Trends and Applications*. Routledge: London, UK

Senge, P. M. (1990), Den femte disciplin. Den lærende organisations teori og praksis. København: Klim. ISBN 87-7724-839-2

Sorensen, E.K., Fibiger, B., Dalsgaard, C. 2008, Digital Dialogue in the Game of Collaborative Knowledge Building, Proceedings of ECGBL 2008, s. 423-432

Sorensen, E. K. (2008), Design of dialogic eLearning-to-learn: meta-learning as pedagogical methodology. *Int. J. Web Based Communities, Vol. 4, No. 2, 2008. p. 244*

Sorensen, E.K. & Ó Murchú, D. (2004). Designing Online Learning Communities of Practice: A Democratic Perspective. In Journal of Educational Multimedia (CJEM), Vol. 29, Issue 3.

Sorensen, E. K. (2004). Reflection and Intellectual Amplification in Online Communities of Collaborative Learning. In Roberts , T. S. (ed.), *Online Collaborative Learning: Theory and Practice*. Hersley, PA: Information Science Publishing. pp. 242-261.

Tolle, E. (1999). *The Power of the Now*. London: Hodder & Stoughton.

Wegerif, R. (2006a). Dialogic, Educational and Technology: Convergence in the Space of Learning. New York: Springer-Verlag.

Wegerif, R. (2006b). A dialogic understanding of the relationship between CSCL and teaching thinking skills *ijcscl*. **1** (1), pp. 143-157

Wenger, E. (1998). *Communities of Practice. Learning, Meaning and Identity*. Cambridge. UK: Cambridge University Press

Wenger, E. (1998). *Communities of Practice. Learning, Meaning and Identity*. Cambridge. UK: Cambridge University Press Williamson, Ben (2009): Computer games, schools, and young people - A report for educators on using games for learning, from Futurelab, retrieved 18-05-0 from: http://www.futurelab.org.uk/resources/documents/project_reports/becta/Games_and_Learning_educators_report.pdf

Wilson, B.G. (1997). Reflections on Constructivism and Instructional Design. In C. R. Dills & A. A. Romiszowski (Eds.), *Instructional Development Paradigms* (n.p.). Englewood Cliffs, NJ: Educational Technology Publications. Retrieved March 16, 2005 from http://carbon.cudenver.edu/~bwilson/construct.html

CIT2-CT-2003-506023. INTERACT. Intercultural Active Citizenship Education. Specific Targeted. Research Project. Thematic Priority 7: Citizenship and Governance in Knowledge Based Society. ***http://www.ces.uc.pt/interact/documents/final_activity_report.pdf*** A Study on Active Citizenship Education DG Education and Culture

http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTEMPOWERMENT/0,,contentMDK:20244572~isCURL:Y~pagePK:210058~piPK:210062~theSitePK:486411,00.html

http://en.wikipedia.org/wiki/Empowerment

Wikipedia: http://en.wikipedia.org/wiki/Interculturalism

The peer support of the new technologies in teaching and learning vocational/technical courses in Nigeria tertiary institutions

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Abstract

The new technologies enable a country to harness its natural resources and then use them for the betterment of the people in the country in different areas. This paper focuses its attention on the peer support of the new technologies on the teaching and learning of vocational/technical courses in Nigerian tertiary Institutions. The paper clearly defines technology and categorises it as developed and under developed. It gives a clear definition of vocational education and the justification for it in Nigeria schools. The paper finally identifies the support the new technologies provide for vocational education, including access to foreign books, use of computer for graphics, communication, magnification of prints, enhancing the use of machines, provision of safety devices, data storage and utilization of new technologies.

Introduction

'Technology' and 'Vocational Education' are twin brothers which are difficult to separate from one another. The two are interrelated and interdependent. They both rely on each other for self sustenance and for economic development of any nation. Nnoli (1987: 35) was of the opinion that a nation's economic development depends on its level of technological development. While Olaitain (1996: 46) cited America and Japan as the examples of the nations that are well developed technologically, he attributed their development in this area to the fact that they have many schools that are vocational education oriented. Olaitan; (1996:35) went further to state that fifty percent of the American schools are vocational while that of Japan is seventy percent.

For clarity's sake, the two concepts will be well defined in this paper

The meaning of technology

Technology can simply be defined as the application of science in the practical sense.

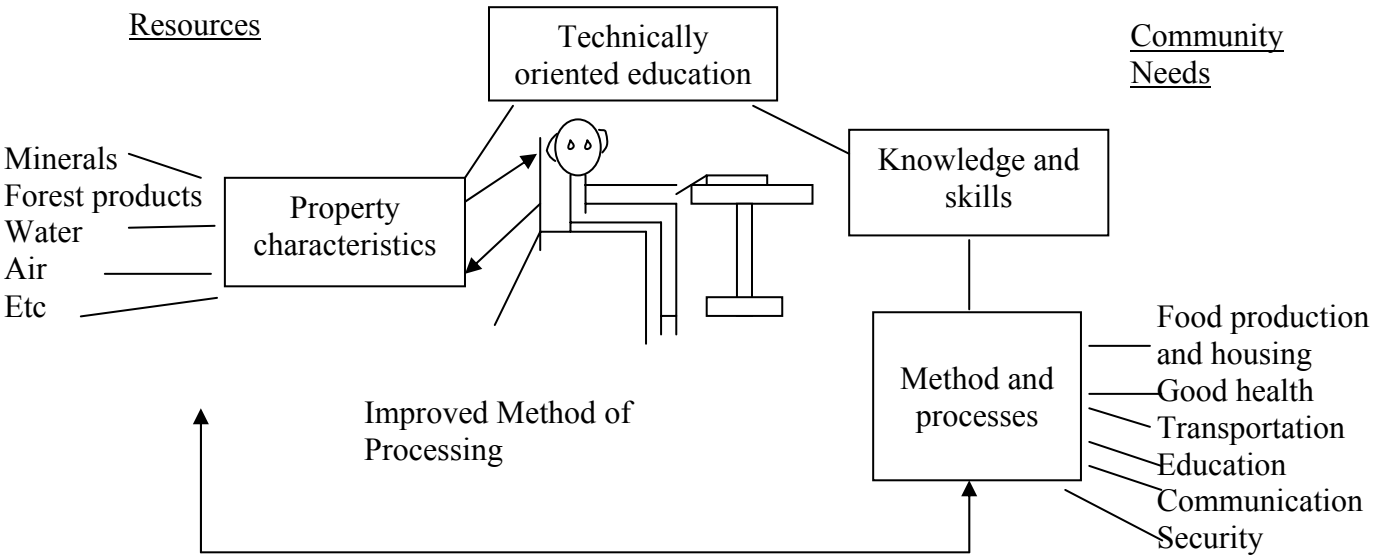
Elekwa Banuro and Olopade (1983:2) saw technology as natural traditions developed in human communities for dealing with the physical and biological environment. These natural traditions include bodies of knowledge of skills and procedures for making, using and doing things.

Dymand (2002:18) defines technology as a social process of generating and combining know-how of people in order to extend the physical range of men. In addition, Tajudeen (2007) expressed that technology is the process by which humans modify nature to meet their needs and wants. Therefore, Tajudeen (2007) stated that most people see technology in terms of the aircrafts, computers and software.

More than this view, technology according to Elekwa et al (1983:2) involves:

1. The methods and processes by which people produce and process what they eat, drink, wear, and where they live;
2. Means of communicating with people outside;
3. Means of defending oneself from external attack;
4. Provision of materials for personal health and so on.

However, the technological development of a country depends on the natural resources found in the environment. Therefore, it will take a nation to study its environment and therefore utilize what it finds to develop its own technology. This can be illustrated as seen in the diagram.



Types of technology

Technology has been classified as under-developed and highly developed technology. People developed their technology when they improved their knowledge, skills and procedures for making, using and doing things. The developed technologies we have today did not appear overnight. They went through decades or even centuries of refinement. Thus technology can only be developed and not transferred (Elekwa et al, 1989:3).

The level of technology of a nation varies from one to another. Technology does not only depend on the level of development of a country, it also depends on the level of utilization of the economy of that nation. A nation can be rated as developed, developing, and under developed on the basis of its security, technology and information technique available in that country (Tajudeen, 2007:55).

Nature has given every country some natural resources. The extent to which each country utilizes the gifts depends upon the country's technology. A country with a well-developed technology makes maximum use of the gifts for the benefits of its people; while a country with under-developed technology cannot make adequate use of its resources. It will rather sell its new materials at low prices to developed countries and buy the end-product at exorbitant prices.

It should also be noted that what is regarded as new or highly developed technology in a country at a particular year may be regarded as under-developed technology in another country at that particular year. For example, let's consider the technological classifications of Elekwa et al (1989) in the table below.

Economic activities	Under-developed technology	Highly developed Technology
Farming	Use of cutlass, hoes for cultivation, and hand-picking during harvest	Use of tractors and combine harvester
Food preservation	Drying	Refrigerator, canning etc
Fishing	Use of hooks and nets	Use of sophisticated and fast-moving fishing vessels
Transportation	Trekkery, use of horses and horse-drawn carts	Use of complex motor cars, railway engines aircraft etc
Communication	Oral message and letter writing	Telephone, telex, radio message, satellite

Under-developed and highly developed technology, Adapted from Elewa et al (1989:6)

From the table above, one can see that the level of technology in Nigeria, most especially in the aspect of communication, by now (year 2009) is more developed. There is use of mobile phones which enhances sending of text messages, etc. While in America, the use of mobile phones has been in existence since the year 1996.

Concept of Vocational Education

The concept of vocational education is quite relative. According to Okerie (2001:88) who cited UNESCO (1973), Vocational Education is education designed to prepare skilled workers for industry, agriculture, commerce, etc, which is usually provided in the upper secondary level. Programmes of vocational education include general studies, practical training for the development of skills required by the chosen occupation and related theory. The proportion of these components may vary considerably but the emphasis is usually on practical training. These programmes may be full-time in schools or other educational institutions or part-time as supplementary education for apprentices or others receiving their practical training in employment.

Okoro (1993:2) used the term vocational education to refer to a form of education whose primary purpose is to prepare persons for employment in recognized occupations. Here, vocational education is seen as a precursor of skills, knowledge and attitudes necessary for effective employment in specific occupations. It is therefore

assumed that a choice of an occupation has been made and that appropriate training is needed to make the individual enter and progress in his chosen occupation.

Some of the stipulated vocational education courses offered in Nigeria colleges according to Oke (2001:60) include: Electrical/Electronics, Automobile Engineering, Metal Work, Building Technology, Woodwork, etc.

The Goals of Vocational Education in Nigeria

The major goals of vocational education as stipulated in the National Policy on Education NPE (1998) are to:

1. Provide trained manpower in the applied sciences, technology and business, particularly at craft, advanced craft and technical levels.
2. Provide the technical knowledge and vocational skills necessary for agriculture, commercial and economic development.
3. Give training and impart the necessary skills to individuals who shall be self-reliant.

To achieve these goals, three levels of vocational education are created within the administrative set up of Nigeria educational system as presented in the National Policy of Education (NPE). They include: the prevocational education at the Junior Secondary School (JSS), vocational subjects at the Senior Secondary School (SSS) and the post secondary level. The fragmentation of vocational education at the post primary level is to prepare students adequately for future placement in various occupations after graduation, while the post-secondary level skills and knowledge acquisition are mostly emphasized.

Okorie (2001:89-90) opined that Nigeria is rich in natural resources such as mineral products, animal life, water and good soil. In order to develop these resources, professional and technical know how is needed. In other words, more good teachers, scientists, technicians, machines and maintenance workers of all kinds must be trained.

Nigeria anxiously wishes to attain essential economic planning, agriculture, industrial and commercial development. Therefore, it sought for a good flexible vocational technical education system that will enable it to enhance useful skills needed to progress.

The justifications for the vocational education programme in Nigeria according to Okorie (2001:91) include:

1. Failure of Nigeria's school system to train workers for farm and factories
2. Failure of Nigeria's polytechnics to train enough technicians for the nation
3. The poor image of agricultural, technological and business education in Nigeria's educational system
4. Need for legislation to promote and finance vocational education
5. Poor assessment of the importance of agricultural and industrial education in the economic growth and technological take-off of a developing nation like Nigeria.

The Nigerian government is working seriously to promote the teaching and learning of the vocational courses most especially in the higher institutions. Parts of the efforts being made are the award of scholarships for students, procuring of machines and equipment, building of standard workshops, provision of internet facilities and other funds to facilitate the utilization of modern or new technologies to improve the teaching and learning process.

The support of the new technologies in teaching and learning vocational subjects

As earlier stated, the level of technological development varies from one country to another. In teaching and learning vocational education courses, most institutions are now equipped with modern tools and machines. The workshops are well ventilated and illuminated, unlike what was available in the last century. Most institutions are now using computers instead of the old typewriters.

Apart from this, many institutions are internet connected, while the information system is now superb unlike what the situation was in our country about ten years ago. Vocational students can easily get linked to their lecturers, colleagues and friends at home and abroad. It is therefore, necessary to state that the present level of new technologies in Nigeria is having positive support in the teaching and learning of vocational education courses in our higher institutions in the following areas:

1. **Access to books, magazines and other foreign publications:** In Nigeria, presently, books published in vocational education are very few. This is as a result of the low number of the institutions and the students offering vocational education. Most people in the past viewed it as a 'Cinderella' (Oke, 1998:60) a woman who is not attractive to people". In western Nigeria, most universities are not including the courses (most especially the technical courses) in their curriculum, while in Eastern and Northern Nigeria, where vocational education programmes are more emphasized, most universities do not run it up to the Masters and Doctoral Degree level. Hence, the number of lecturers available is limited: The internet has made it easy to consult online foreign textbooks.
2. **Use of Computers for Graphics:** A very important application of computers in vocational education is that they serve as a tool for learning. Here, the computer does not deliver instruction on practice opportunities, instead, it becomes one of the many tools that students use to participate in the learning process instead of working with pencil and paper (Okorie, 2001:91) meaning that students may write with a computer and word processor. Instead of consulting a standard print reference book to prepare a report, they may search electronic encyclopedia on a CD-ROM disc.
3. **Communication:** The use of computers, such as electronic communication aids are used by students to confer with their classmates and their lecturers. Dange (2000:6) said that communication is a process of information exchange between two or more individuals or organizations. Information can also be downloaded and forwarded to students by their instructors and vice versa through the internet.
4. **Magnification of Prints:** Some prints are very tiny to the extent that they may not be legible. The use of computers enhances magnification to enlarge prints to a size that is readable.

5. **Use of Power Tools/Machines:** The use of power tools/machines to cut, smooth, sharpen, etc, materials are enhanced. This has thus replaced the use of manual methods of handling and working on materials in workshops.
6. **Safety Devices:** The new technologies have provided opportunities for safety in workshops. There are provisions of fire extinguishers, safety guides on rotating machines, provisions of lamps for illumination, and in-built-fans for ventilation.
7. **Data Storage:** Computers can be used to compute and store data. The data can be accessed at any time provided the computer is protected from viruses.
8. **Bringing the World into the Lecture Room:** Electronic materials can be used to give instructions to students. They can view what is going on in another country without necessarily visiting the place.
9. **The New Technology gives room for the Discovery of New Materials:** In times past, some structures were built using one material or another. Development in technology is making one material give way to another. In the olden days, leaves, woods, palm fronds were used in Nigeria to build houses (Elekwa et al, 1996). The new technology has not introduced the use of cellophane for wall construction.

Summary and Conclusion

There is no gain-saying that Nigeria can be categorized as a developing country. Its technology is also being developed gradually as it is harnessing its natural resources for the use of its citizenry.

The structure of education in the country emphasizes vocational/technical education programmes and the level of the technology attained in Nigeria is utilized to enhance the teaching and learning process of the vocational courses in our higher institutions.

Hence, the new technologies are playing peer support for the development of vocational education in the country.

References

Dange, A.K.D. (2000) *The new to De-emphasise information technology in developing* countries in Ogowa, BBU, Science and *Technology Education for National Development* Jos, Zimeu Comm. Pp6

Dymand, A. (2002) Access to technology in Africa PC World West Africa Vol 2 WWW PC World Africa Feb 2002. pp 18

Elekwa, I., Bamiro, O.A, Olopade, O.L. (1983) *Introductory Technology* for Schools and Colleges. Book 1 Nigeria: Evans Brothers Limited Pp 1-6

NPE (1998) *National Policy on Education* Yaba Lagos: Government Press

Nnoli (1987) Path to Nigerian Development Dakar: Senegal Gordria, BP 3304. pp 36

Olaitan, S.O. (1996) *Vocational and Technical Education*, Nsukka, Enugu: University Trust Publisher. Pp 46

Oke, J.O. (1998) Principles and Practice of Technical Education. In India Technical Review. *Nigeria Association of Technical Education* pp 60

Oke, J.O. (2001) The role of Vocational Education in the Economic Development of Nigeria. *UNAD Journal of Education.* University of Ado-Ekit. Pp 152

Okorie, J.U. (2001) *Vocational Industrial Education*. Bauchi: League of Researchers in Nigeria PP 88-91

Okoro, O.M. (1993) *Principles and Methods in Vocational and Technical Education* Nsukka, Enugu: University Trust Publishers. Pp 2

Tajudeen, L. (2007) The use of Information Technology in Nigeria Schools. In *Educational Focus* (EDUFO.C) Institute of Education, University of Ado-Ekiti pp 55.

The impact of mobile technologies on learning science

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Abstract

The paper enumerates how mobile technology supports learning. The concept of mobile technology is also highlighted. Mobile technology is described as an act of using portable or handheld devices to impart knowledge to the learners. Handheld devices, especially networked handheld devices, are growing in importance in education. These devices are affordable and accessible and thus create an opportunity for educators to transition from occasional, supplemental use of computers, to frequent and integral use of portable computational technology. Examples of these handhelds are graphics calculators, probeware, image maps, mobile phones, PDAs, laptops, etc. How each of these contributes to and support learning are enumerated. The support in the area of formatting assessment is also mentioned. All stakeholders in the education sectors have been enjoined to absorb the use of mobile technology to enhance the learning processes by integrating it into the social practices of schools.

Introduction

Mobile technology has played and continues to play a very important role in enhancing learning in this digital age. Before the advent of mobile technology, conventional technology made little or no improvement on the learning system. Students did not have access to personal devices to study the task assigned to them and check feedback. Mobile technology is an act of using portable or handheld devices to impart knowledge into the learners. Handheld devices, especially, networked handheld devices, are growing in importance in education, largely because their affordability and accessibility create an opportunity for educators to transition from occasional, supplemental use of computers, to frequent and integral use of portable computational technology Soloway et al, (2001); Tinker and Krajcik, (2001). Despite this innovation, educators have been excited about many waves of technology, from film projectors to audio tapes to personal computers and most waves of technology have failed to make a substantial impact on school learning (Cuban, 2003). The seeming failure of the history of technology in education has necessitated the build-up found in modern technology using networked handheld devices to make the difference.

Using mobile handled devices can allow a 1-1 student device ratio enabling ready-at-hand access to technology throughout the school day and throughout the learner's personal life, Chan et al. (2006). Although merely increasing access to technology in schools and in students lives may not be enough, educational studies, according to Schelle et al (2001), have shown that those technologies that make an impact in learning do so by changing how and what students learn. Learning that takes place with the help of these mobile devices is termed mobile learning (M-Learning), Quinn (2003). M-Learning according to Wikipedia, (2008) is the learning that happens across the locations, or that takes advantage of learning opportunities offered by portable technologies.

Furthermore, successful technologies like mobile technology must be integrated into the social practices of schools, which require integrating with teaching practices, curricular, assessments and school leadership. This seems to be difficult but is very important because 21st century societies are increasingly organized around knowledge work and innovation, both of which depend mightily on the high quality of school learning. Without utilizing technology in learning, it is hard to imagine how societies might produce sufficient gains in student learning. Therefore, it is not out of place to assert that technology creates new conditions for all and sundry, Ibara (2008). In this paper, the use of networked handheld devices to support learning in modern technology will be discussed.

Why mobile technology

In contrast to traditional desktop computers, handheld devices are relatively inexpensive, allowing for each student to own a device or for teachers to have a classroom set with enough devices for every child. In addition, handhelds are mobile and flexible allowing for easy use in and across classrooms, field sites and home environments. These unique characteristics hold the promise of enabling many more students to experience integral uses of learning technologies. In fact, graphics calculators, which are well-established and effective handheld devices, have highly improved the learning of mathematics, according to a report credited to NCES (2001). Since handhelds can be used much more frequently than traditional computer laboratories, they drastically increase the potential of computational technologies to positively impact on the learning process, Consortium for School Networking (2004).

There are two qualities that have been most associated with successful learning through mobile technology. These are frequent use and integration of the technology into the classroom teaching experience. According to Cortez et al (2005), wirelessly interconnected handhelds provide a unique opportunity to create a learning environment where technology is a transparent, non-invasive support to group learning. Use of technology should, in the classrooms, not be limited to productivity tools and web browsing alone, rather it should be extended to tools that allow more learners to master difficult concepts as they explore and interact with data and ideas. For example, White, (1993) observed that computer simulations can enable both 6th grade students to master Newtonian physics concepts at level that surpasses ordinarily 12th grades.
In another study of 100 palm-equipped classrooms, Crawford and Vahey, (2002); Vahey and Crawford, (2002) reported that handhelds were effective instructional tools with the potential to impact student learning positively across curricular topics and instructional activities.

The notion of one-to-one computing is the hallmark of mobile technology. In the keynotes addressed in the IEEE International Workshop on Wireless and Mobile Technologies in Education WMTE (2002) and International Conference on Intelligent Tutoring System ITS (2004), the stakeholders argued that today's "personal computer" is not personal to students at school, since students most often have to share with others at a computer laboratory. The researchers also pointed out that the process of learning changed when all students were able to afford a pencil and again when all students obtained their own books, Papert (1980). A similar change can happen if every one

owns and regularly uses a personal computing device as an integral part of his learning experience.

In the same context, it is anticipated that personal, portable, wirelessly networked technologies will become common and pervasive with lives of learners, both in and out of school. Indeed, in many countries, devices like mobile phones or graphics calculators already have a high adoption rate among school-aged children. In Nigeria for example, mobile phones are cheap and therefore affordable to many school-aged children. As these devices become affordable for the majority of parents and college students, mobile connected and personal devices will increasingly come to the attention of educational institutions. The question now is how will learning in classrooms and everyday life be transformed, using mobile technology? Answers could be found to these by exploring the functionality and capability of the following handhelds.

Graphics Calculators

Graphics calculators have become one of the most widely adopted handheld technologies in education. They are inexpensive, mobile and readily adaptable to existing classroom practices. These qualities, combined with the instructional affordances of the technology itself, indicate that graphics calculators have a powerful potential to help students master important concepts in mathematics. When graphics calculators are employed as an instructional technology, they can enable teachers to foster a problem solving approach to mathematics and help students to reason mathematically.

The unique contributions of graphics calculators to problem solving and reasoning include:

- Increasing attention to conceptual understanding and problem solving strategies by offloading laborious computations;
- Examining the related meanings of a concept through the display of multiple representations, such as exploring rate of change (i.e. slope) in a graph and table;
- Encouraging students with interactive explorations,
- Giving students more responsibility for checking their work and justifying their solutions;
- Introducing topics that were previously too difficult for many students, (e.g. modeling) and
- Providing a supportive context for productive mathematical thinking.

The results of various researchers have shown that frequent use of calculators is associated with mathematics achievement. Further, it was also revealed that the association between frequent use of graphics calculators and high achievement holds for both richer and poorer students, for both girls and boys, for varied students with varied race and ethnicity; and across states with varied policies and curricula. National Centre for Education Statistics, (2001, p. 144).

Generally, mobile technology has been very successful in supporting learning as one of its components like graphics calculators succeed in bolstering mathematics learning. Not only this, they are also relatively cheap, simple and robust. They are also remarkably free of much of the complexity that accompanies full featured computers.

More importantly, there is deep scientific linkage between the capabilities of the technology and how people learn.

Furthermore, students learn best with increased learning time, scaffolding, formative assessment and opportunities for reflection and revision. All these qualities can be achieved with mobile (graphing) technology.

Probeware

This is another mobile technology used as instructional technologies for science classes. The technology has longest track record in electronic probes and sensors and associated software, hence the term "probeware" when used in classrooms, probeware instantaneously gathers and graphs data from live experiments rather than the practice whereby students gathered data in class, graphed it at night and analysed it the next day Mokros and Tinker (1987); Nachmias and Linn (1987). The radical innovation of this technology is the ability to collect, graph and analyse a whole series of experiments in one class period.

This technology (probes) also supports the long term pedagogical drive towards "inquiry-centred" science classrooms, Tinker and Krajcik (2001). Probeware can be used in all areas of science: pH sensors in Biology, pressure probes in chemistry, and motion recorders in physics. They can be used in the classroom but are also commonly used in the field. Handheld probe is very popular in water quality evaluation, Vahey and Crawford (2002). For example, students take their handhelds and probes to a nearby stream and each student takes measurements at different points along the streambed. The students combine their data by beaming or aggregating onto a common teacher machines. On getting back to the classroom, students use their handhelds to graph and analyse the combined data set.

The major benefits of using probeware are:

- Ease of collecting and recording accurate data;
- Ability to collect time series data;
- Use of the computer or calculator for instant graphing and analysis of data;
- Possibility of exchanging or pooling data sets among students.

Through the immediacy of data collection and data display, probeware directly connects observation in the real world to abstract representations and allows for the investigation, variation and play that provide better understanding of important scientific concepts.

Another networked handheld application is *Image-Map*. The teacher role during Image-map engagement is like that of a "conductor of performances" for an orchestra, with the students contributing to an overall performance. In the imaging application, students contribute to a joint performance, verbally and with input technology, generating an overall aggregate representation, with a coherent gestalt. The teacher attends primarily to group performance, not to each individual student.

We also have mobile phones, Personal Digital Assistants (PDAs), laptops, etc. as mobile devices.

In *mobile phones*, Multimedia Messaging System (MMS), Short Message Services (SMS), Instant Messaging (IM) etc are available to enhance M-Learning. Distance learners can receive short lecture notes, pictures, audio and video through these mobile devices.

Also, distance learners can share assignments and work collaboratively using *Personal Digital Assistants* (PDAs). Here, learners and practitioners can e-mail, cut, copy and paste text, pass the device around a group, or beam the work to each other using the infrared function of PDAs or a wireless network such as Bluetooth. Not only these, continuous assessment can be packaged through the mobile phones to the learners and the latter package the feedback to the teachers who mark and record the learners' responses.

Mobile Learning (M-Learning): the Nigerian experience

Mobile learning is set to achieve great feat in Open and Distance Learning (ODL) in Nigeria because of the daily increasing access to mobile technologies with improving mobile functionality, Adedoja and Oyekola (2008). In the words of Bruns (2006), the use of mobile learning potentially brings the rewards of placing institution at the pedagogical practice that addresses student needs for flexibility and ubiquity, that is anywhere, anytime and any device that learners engage on. He further emphasized that this trend makes learning highly situated personal, collaborative and ideal learner-centered. The use of mobile phones and other handheld devices is gradually making the Nigerian populace to be digitally literate. More importantly, mobile devices have scientifically independent and collaborative learning opportunities, identify learners' areas of need and assistance. This, in effect, promotes self-confidence in open and distance learners.

Ibara (2008) stated that the demand on the higher education delivery system in Nigeria is high and persistently on the increase that the system itself cannot guarantee. In the light of this, the need for open and distance learning with the use of common tools like mobile phones to achieve this education delivery system cannot be over-emphasized. A prominent example of ODL in Nigeria is National Open University of Nigeria (NOUN). This institution has however not started using M-learning devices despite the benefits endowed in this method of learning. Nigeria can now boast of wireless network services like ZAIN, MTN, GLO, STARCOM, MULTILINKS, etc, which can be of great use in M-learning in order to bring to fulfillment the goal of distance education as entrenched in the revised National Policy on Education NPE, (2004). This includes:

- To provide access to quality education and equity in educational opportunity for those who otherwise would have been denied;
- To meet special needs of employers by mounting special certificate courses for their employees at their workplace;
- To ameliorate the effect of internal and external brain drain in tertiary institutions by utilizing Nigeria experts as teachers regardless of their locations or work places.

The prospects of M-Learning in Nigeria are bright. This is because the percentage of Nigerians carrying various categories of mobile phones both in conventional institutions and outside is high. Succinctly put, mobile devices are still underutilized in Nigeria because all inherent potentials have not been fully utilized, Adedoja and Oyekola

(2008). Not only this, but many schools in the rural areas of Nigeria are not covered with the available network services, therefore impeding the use of M-learning. With the recent level of development, only about 70% of Nigeria has been covered with different network services.

However, the use of mobile phones to enhance learning in Nigeria does not go without its negative sides. Mobile phones have been used to perpetrate examination malpractices. Students pass information in form of questions and answers to one another through the SMS. This causes examination leakages, making some students take advantage of others. Many thanks to the government of the Federal Republic of Nigeria that has taken stern measures to combat this menace. Despite this shortcoming, mobile learning in Nigeria continues to have positive impact on learners, especially those in the sciences who have mastered the use of mobile phones in calculations.

Conclusion

In discussing successes of these mobile technologies, it is noted that successful applications of the learning technology do not insert technology into schools in isolation from other factors. Mobile technology, because of its affordability and simplicity has eased the tension associated with teaching-learning situation in the classrooms and field. One of the ways the technology can be of help to teachers and students is by improving the ability to offer formative assessments of a learner's knowledge and skills, assessments that can support teachers and learners in the classroom. In the light of the above, stakeholders in education sectors are enjoined to imbibe the use of mobile technology in enhancing and supporting learning processes especially in the sciences.

References

Adedoja, G.O. and Oyekola, A.H. (2008). M-Learning: An Emergency Trend in e-learning and its application in Nigeria. www.nou.edu.ng./noun/2008/acde-en/papers.pdf/

Bruns, A. (2006) Emergency Technologies Coming to the MALL: Mobile Assisted Language Learning. Leaning and Technology 10 (1:9-16) in Adedoja, G.O. and Oyekola A.H. (2008) eds: M-Learning: An Emergency Trend in E-Learning and its application in Nigeria.

Chan, T., Roschelle, J., Hsi, S., Kinshuk, Sharples, M, Brown T. et al (2006). One-to-one technology-enhanced learning: An opportunity for Global Research Collaboration. *Research and Practice in Technology Enhanced Learning*. 1 (1), 3-29.

Consortium for School Networking (2004). *A guide to handheld computing in K-12 Schools* Washington DC. Consortium for School Networking.

Crawford, V. and Vahey, P.(2002). Palm Education Pioneers Program: March 2002. Evaluation Report, Menlo Park CA, SRI International.

Cuban, L. (2003). *Oversold and Underused computers in the Classroom* Cambridge, MA. Harvard University Press.

Federal Republic of Nigeria (2004) National Policy on Education: 4th Ed. Lagos NERDC

Ibara, E.C. (2008): Open and Distance Learning: An Emergency System for Alternative Higher Education in Nigeria in Turkish Online Journal of Distance Education – TOJDE 9(1) Article 7 January 2008.

M-Learning – 2008 Wikipedia, the free encyclopedia; Wikipedia Foundation, inc us. http://en.wikepedia.org/wiki/m-learning accessed 27 February 2008.

Mokros, J.R. and Tinker, R.F. (1987). "The impact of microcomputer based labs on children's ability to interpret graphs". *Journal of Research in Science Teaching* 24(5): 369-383.

Nachmias, R. and Linn, M. (1987. "Evaluation of Science Laboratory data: The role of computer-presented information", *A journal of research in Science Teaching.* 24:491-506

National Centre for Education Statistics, NCES (2001). *The Nations report cares*: Mathematics 2000. Washington DC, U.S. Department of Education.

Papert, S. (1980). Mindstorms: Computers, Children, and Powerful ideas. New York Basic Books.

Quinn, C. (2003) M-Learning. Wireless in your pocket learning – LINE, zine. Fall.

Roschelle, J., Pea, R., Hoadley, C., Gordin, D., Means, B. (2001) Changing *How and What Children Learn in School with Computer-Based Technologies*. The Future of Children 10(2). LOS Altos, C.A, Packard Foundation. 76-101.

Soloway, E.C. Norris et al (2001). "*Devices are ready-at-hand*" Communications of the ACM 44(6): 15-20.

Tinker, R. and Krajcik, J., Eds (2001) *Portable technologies; Science Learning in Context*. New York, Kluwer Academic/Plenum Publishers

Vahey, P. and Crawford, V. (2002). *Palm Education Pioneers Program*: Final Evaluation Report. Menlo Park, C.A. SRI. International.

White, B. (1993). "Thinker Tools: Causal Models, Conceptual Change, and Science Education" Cognition and Instruction 10(1): 1-100.

Open access through open and distance learning (ODL): are gaps narrowing? The Kenyan experience

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Abstract

In an attempt to achieve the Education for All (EFA) goals many countries have adopted many approaches with an aim to expand educational access to different populations. In particular, ODL has been embraced and tried by both the developed and developing countries as a vital means of bridging various gaps in the education sector. This paper therefore attempts to explore the extent to which ODL has been used to create equitable educational opportunities in Kenya. Focus has been on the following dichotomies:

- The employed and the unemployed in ODL
- The aged and youth in ODL
- The rural and urban populations in ODL
- Participation in ODL at basic and higher levels
- Female and male participation in ODL
- Application of old and new technologies

From the discussion, it is clear that ODL practices have existed in Kenya since her independence in 1963 and that attempts have been made to reach various groups through this system. However, a number of challenges regarding disparities in education remain and threaten successful application of ODL to all the segments of the Kenyan population. Both government and non-governmental organizations need to intensify their efforts to tackle these challenges for greater application of ODL as an alternative system of education in Kenya.

Introduction

Kenya attained her independence in 1963 against the background of numerous social, economic and political challenges. However, poverty, disease and ignorance were identified as the most critical ones. Faced with serious shortages of skilled manpower the new government embarked on various educational programmes aimed at eradicating these problems. The appropriate education system therefore was to address not only the challenges but also the diverse needs of the Kenyan populations. The Kamunge report therefore stated:

> 'The process of bringing social and economic development through Education is an important objective of education and training. The government has therefore embarked on a policy of providing equal education and training to all areas in Kenya in attempt to correct imbalance and disparities which existed at independence.' (Republic of Kenya, 1988: 14)

Providing equitable access to all citizens therefore remains one of the most important commitments of the Kenyan government. Attaining this goal has however been

challenging and illusive due to many factors. There are still problems of drop-out at both secondary and primary levels while there are millions of Kenyans who have not attained any form of education and are, therefore, termed as illiterate. For example, when the current regime came to power in 2003, there were over 1 million children of primary level age who had not gone to school. Over 1.5 million youth aged 6-14 were not able to access formal education (Republic of Kenya, 2005b:26).

Furthermore, there is evidence that formal education, paradoxically, widened educational and other social gaps in Kenya. The Gachathi report (1976) lamented that formal education was primarily designed to meet the requirements of the modern sector of the economy. The report continued to make an even more controversial remark against formal education by claiming "some studies have demonstrated that in an actual performance of agricultural and other labour-intensive tasks, those with more years of formal education tend to perform less productively than those with less formal education " (Republic of Kenya, 1976:13). Recognition of the fact that formal education was not a panacea to all economic and social problems strengthened the case for an alternative system of education, especially non-formal education from which open and distance learning originated.

Open and distance learning in Kenya

Strictly speaking, ODL is not a new phenomenon in Kenya. At independence, and indeed before, some kind of distance learning existed in the country. It was notably known as correspondence education which was mainly provided by foreign based commercial and private organizations (Thompson 1981:212). This is an indication that perhaps the colonial government had no interest or capacity to provide an alternative form of education especially for the out-of- school populations. Pre-independence and post-independence ODL was therefore print-based since access and availability of electronic media was very low. However, in 1963 the year of Kenya's independence, the British Broadcasting Co-operation (BBC) introduced a radio based educational programme for the first time. Later this programme was transferred to Kenya Institute of Education which aired it in collaboration with Voice of Kenya (VOK) now known as Kenya Broadcasting Co-operation (KBC) English service.

Television has not been widely used in Kenya for educational purposes due to limited coverage and lack of infrastructure, especially electricity. At independence and many years later television was mainly an elitist tool whose access was concentrated in major towns. Though scarce, broadcast media, radio and television, were used to provide non-formal education in Kenya. The programmes were broadcast in English, Kiswahili and other vernacular languages which provided basic life skills on subjects such as agriculture, nutrition, co-operative development, music and many others (Voice of Kenya (VOK) Vol. 10, Ud).

One important point to note here is that broadcast media even in those early times of independence attempted to provide equal access by broadcasting in various vernaculars. The use of media was also significant as it was intended to cater for the diverse populations of Kenya. The broadcast media, radio and television, however, might not have been very effective learning tools due to their ephemeral nature. It was, therefore, difficult to get instant feedback from listeners to gauge the effectiveness of the programmes.

Today infrastructure has improved to enable wider access to telecommunications. There are new information and communication technologies like cell-phones and internet. Furthermore, the government of Kenya has greatly liberalized ownership and access to media, leading to more coverage even in the rural areas. With these developments, the question is, has open and distance learning enhanced equitable access to education to different segments of the Kenyan population and at different levels? Are the new technologies equally distributed and accessible to the diverse Kenyan population?

The remaining part of this paper attempts to explore these pertinent issues.

ODL and the employed versus the unemployed

We have limited data to help us tackle this subject as few studies have been done on the area, especially in Kenya. However, studies done by Omosa and McCormick in a remote part of Nyanza province indicated that 3% of computer users are university graduates with high incomes (cited in Pozz, ud). Other distance learning programmes mentioned in Kenya similarly favour the working group. The correspondence course unit run by the University College of Nairobi in 1970s, targeted teachers who were obviously in employment and only wanted to get a recognized teaching qualification, though there was another group which was pursuing an academic school certificate at 'O' level whose employment backgrounds are unknown. Nevertheless, other groups enrolled by CCU included accountants and accounts clerks who were pursuing higher or recognized professional qualifications (Republic of Kenya: 1988.84). The same institution later offered an upgrading course for S1 and diploma teachers to enable them obtain a degree in education (Ibid: 85).

A non-governmental organization, African Medical and Research Foundation (AMREF) has dedicated its ODL programmes to improving health services in the rural Kenya. Its target group is mainly para-medics who probably enjoy some kind of financial support and therefore may be regarded as the "employed". However, analyzing profiles of ODL participants, as said earlier, presents considerable difficulties. When the profiles are analyzed in terms of occupation you find diverse segments of society participating in ODL. In Kenya, and many other countries where non-formal education was developed in the early years of independence, many groups were involved in these forms of education. They also came from humble economic backgrounds. They included farmers, carpenters, carvers, builders, technicians, mothers, traders and businessmen (Young et al, 1980:62). We are aware that learning to improve or acquire knowledge and skills for immediate use has been one of the basic principles of ODL and here it served these groups perfectly. ODL in non-formal systems has therefore stimulated self-reliance and self-employment as opposed to salaried jobs. We can logically conclude that ODL despite many challenges has, to some extent, reduced the gap between the employed and unemployed in Kenya.

Reducing the age gap through open learning

One of the basic goals of ODL is to promote access to all regardless of age. In Kenya learning taking place out school system has been referred to adult education, an implication that the youth or children are not participating. Adult Education Department, however, has been credited with the promotion of education of many

women and men of different ages outside the conventional schooling system. Information on distribution of ODL participants in terms of age is limited but we have a few cases we can turn to for this purpose. Another problem is definition of terms related to age. Kenya. for example, defines children as those under 18 years and youth falls between 15 and 35 years, earlier it was 15 to 24. The elderly are regarded as persons aged 64 years and above (Republic of Kenya 2000:17-18). Assuming we have accepted the definitions we can now study the table below which shows age distribution of persons who attended non-formal adult classes in 2006 during the preceding 12 months.

Table 1*:* Table showing those who attended literacy programs in the past 12 months

AGE	**MALE**	**FEMALE**
15-19	52.0	5.9
20-24	47.1	47.2
25-29	33.3	32.2
30-34	15.3	25.0
35-39	0.0	30.4
40-44	20.8	14.2
45-49	36.1	1.4
50-54	7.8	14.1
55-59	17.5	7.7
60-64	0.0	2.0
65-69	6.5	8.4
70+	2.2	5.3
TOTAL	**19.9**	**15.1**

Source: Kenya National Adult Literacy Survey 2007 p. 14

The table makes interesting revelations. 52% of the male participants, which is the highest, are between 15 and 19 years of age compared to only 5.9 % of women in the same age bracket who have attended.

Both male and female in the ages between 20 and 24 represent an impressive 47%. Although participation of males between 45 and 49 years is at 36%, it reduces as age advances. The same trend is visible in the female column. From these figures it is interesting to note that the so called adult education is primarily "youth education" as majority of participants are youth aged between 15 and 24 years. According to this table interest in learning reduces significantly from the age of 50 and above. These findings in Kenya are supported by Carr-Hill (1991: 38-39) who indicates that most participants in ODL in developing countries are young. It is however encouraging to note that persons of various ages do participate in out-of-school education.

ODL has also been applied to formal schooling in Kenya as well. The much publicized Radio Language Arts project targeted children aged 8 and 9 years. The radio project is said to have made significant success although learners depended heavily on the teacher and there was a problem dealing with absenteeism (Koul and Jenkins 1990:157-160).

Despite the problems we give credit to this initiative for trying to apply ODL to children.

Another ODE initiative that has been mentioned frequently by educationists is the Correspondence Course Unit of University of Nairobi. Although we don't have data on their ages, those who participated in correspondence course units were generally young. The fact that they hadn't trained as teachers, though in service and that some of them were studying for school certificate, attest to this fact. They presumably still had a future they could devote to education and active public service.

To open greater access for children in marginalized areas where participation in primary school is only at 26%, the government of Kenya is intending to strengthen mobile schooling. According to a government report this system has been tried in those areas with significant success (Republic of Kenya 2005(b):129). Though face to face is the main mode of learning, it is significant that it enables learning to take place anywhere learners have moved to. Mobile learning, therefore, has been instrumental in improving access and participation in pastoralist and nomadic areas in Kenya. Apart from mobile schooling the government intends to enhance non-formal schooling for children affected by HIV/AIDS pandemics, child labour and negative cultural practices. To realize this, the government is working on an alternative curriculum coupled with well-tailored teaching and learning materials for children enrolled on non-formal programmes. However, this approach is faced with some difficulties such as lack of skilled personnel in this field and also the lack of explicit policies to deal with children living and learning in difficult situations as nomadic children (Ibid: 103). From the foregoing discussions it appears that learning in Kenya especially ODL is beginning to be all inclusive in terms of age. Clearly children, youth and the elderly have the opportunity to participate in some kind of education through ODL.

Rural and urban access through ODL

Since Kenya became independent, reducing disparities between rural and urban populations has been a challenge as well as priority of both government and other development stakeholders. Indeed, various non formal programmers such as adult education, agricultural extensions, radio rural forums, health care campaigns and many others have mainly targeted the rural and peripheral urban populations.

African Medical and Research Foundation (AMREF) has for many years been providing distant programmes focusing on rural health. AMREF has impressively used innovative approaches such as flying doctors services, health journals for rural personnel, medical communication radio and learning materials simplified to suit the levels of the rural population (AMREF journal July-September, 1984). Health programmes are also aired on television in order to reach rural communities. Promotion of rural health programmes has been enhanced by liberalization of mass media where vernacular radios transmit health programmes and obtain instant feedback from the audience who call on their mobile phones.

These vernacular radio stations have been used to provide informal education for a long time in Kenya. The curriculum includes human rights, agricultural skills, entrepreneurship among others. Combination of radio and cell-phone calls, which is a recent development, is promising. It has increased participation and reduced isolation

learners have been experiencing in the past. Both technologies enjoy massive access in rural areas since they don't require high levels of literacy to operate. Kenyans can today call from any part of the country to participate in an educational debate being aired on radio. Reducing the educational gap between the rural and urban population is a priority of tertiary institutions as well. ODL is being seen as the most appropriate means of achieving this goal. For example, the Methodist University in Kenya states:

> *"The Kenyan society being predominantly composed of rural communities which are located in space away from the most institutions of higher learning, distance learning is increasingly becoming a popular mode."*
> *(Kenya Methodist University prospectus 2004:19)*

We may conclude that attempts have been made to make ODL accessible to both urban and rural ODL audiences.

Levelling the ground for all through open and distance learning

In the preceding sections of this paper several ODL activities in Kenya have been mentioned. A quick look at them shows that they cut across all the educational levels and attempt to involve various segments of the Kenyan population. Mention has been made of language arts, radio broadcast to schools and correspondence course unit, all of which aimed at enhancing learning and training at both primary and secondary levels. NGOs as AMREF have endeavored to provide education at non-formal levels. However, it is at university level that ODL seems to be gaining unprecedented momentum. Currently, all Kenyan public universities, and some private universities as well, have established various entry levels. For example, Kenyatta University offers courses at certificate, diploma and degree levels (Mwiria, et al, 2006:51). To actualize the philosophy of open access most universities have lowered entry requirements to enable those with modest education, but with considerable experience as primary teachers, obtain university education. This has generated a heated debate across the country as some employers and even universities argue that quality has been compromised in the name of open access. It remains to be seen how these conservative and liberal views will be harmonized to open access at all levels.

Closing gender gap through ODL

Gender disparities in education are a challenge to many countries, including Kenya. For convenienc, our discussion will concentrate on how these disparities have featured and been tackled in the field of ODL. Though data on this is also quite limited, we have a few studies done in Kenya which can guide us.

Table 2: Table showing percentage of persons who are aware of literacy programmes and said they participated in it

AGE (YEARS)	MALE (%)	FEMALE (%)
15-19	1.3	1.4
20-24	1.7	2.0
25-29	2.0	2.8
30-34	3.4	4.3
35-39	3.2	4.2
40-44	6.7	5.7
45-49	4.8	11.4
50-54	5.2	18.0
55-59	9.7	21.1
60-64	7.5	16.8
65-69	14.3	19.6
70+	13.0	15.4

Source: Kenya National Adult Literacy Survey Report 2007 P.14

The findings above may lead us to conclude that in Kenya more women have shown greater interest and participated in non-formal education than men. They concur with research findings in other developing countries which indicate the countries the proportion of women participants in adult education is superior to that of men (Carron and Carr-Hill, 1991:40-41). These studies, however, found that women's participation was only greater in specific trades (Ibid). At a higher level, Perraton (2000:92) argues that gender balance within open universities tend to reflect the national balance within higher education. Studies in Kenya confirm these trends at tertiary institutions. According to sessional paper No.1, 52% of regular students are enrolled in business studies while less than 5% pursue engineering courses (Republic of Kenya 2005(a):10). Interestingly, gender gaps are wider in some open learning institutions than in conventional ones. The figures below from the Institute of Open Learning of Kenyatta University give more details:

Table 3: Enrolment at IOL, Kenyatta University January 2008

SCHOOL	MALE	FEMALE	TOTAL
Education	162	135	297
Humanities & social science	61	15	76
Pure & applied science	33	9	42
Business	43	13	56
Total	299	172	471

Source: Kenyatta University Institute of Open Learning charter (ud)

According to the figures above, men's enrolment surpasses that of women not only in total enrolment but also in all courses offered at the institute. It is only in education discipline that women have come close to rivaling men at the institute in terms of enrolment. To many observers this would indicate failure of ODL. However, in some countries women's participation in both ODL and even science courses surpass that of men. For example, a study in Sri-Lanka found that the majority of the ODL students

studying for a BSc. were women (Perraton 2000:93). To increase women's participation in such areas perhaps affirmative action in the form of scholarship is necessary to enable more women to pursue further studies through open learning system.

ODL through Open Information and Technologies

The last section of this paper explores the importance of ICTs as a fundamental prerequisite for open access in education. It is more or less a review of the preceding section though focus will be availability and usability of ICT for open learning in Kenya. We may argue that ICTs have been applied at all levels of education in Kenya since independence in 1963. The process started with radio and television, then audio and video followed. All have been tried in Kenya to enhance access and quality of education. The new technologies, internet, computers and cell-phones are being used to some extent by institutions and individuals in Kenya for education. The table below summarizes the status of ICTs in our institutions.

Table 4: Delivery systems by various open learning institutions in Kenya

INSTITUTION	DELIVERY SYSTEMS	LEVEL
KIE	• Radio • Audio • Video • Print	• Primary • Secondary • Tertiary
KISE	• Audio • Print • Face- to-face	• Tertiary
UNIVERSITY OF NAIROBI	• Print • Video • E-learning	
AMREF	• Print • E-learning • Video • Audio • Radio	• Certificate • Diploma
KENYATTA UNIVERSITY	• E-Learning • Print • Face-to-face	• Certificate • Diploma • Degree
AFRICAN VIRTUAL UNIVERSITY	• E-learning	• Degree

Source: Mwiria-et-al (2006), Kenyatta University IOL, Odumbe (ud) and Perraton (2002)

From the table above we may argue that higher educational institutions are moving towards open access through the use of different technologies and delivery systems. However, the majority of them still rely on the so called traditional technologies and approaches such as print, radio and audio. Studies done in Kenya and developing countries paint a grim picture of technology-based learning in these countries. They also show that availability of media varies widely among and within these countries.

In some countries, Kenya included, the use of television and computers are concentrated in major towns, making internet education a dream. Further studies done in Kenya show that print is the major method of delivery in many Kenyan universities (Juma (ud):13). These studies reveal further that in Kenya there is lack of clear understanding of DE. The institutions are not innovative and continue to use traditional methods of teaching. This has resulted in the use of out-dated DE facilities. The studies continue to show that use of telecommunications is hampered by slow connectivity, lack of skills in information and high costs of ICTs (ibid:23-24).

Lack of skills to use a computer is of grave concern, especially in the rural Kenyan. One study found that only 42% of a population in an area knew what a computer was. In the same area 2/3 of the interviewed persons saw a computer for the first time in a shop or bank or at work place. The study found that only 9% of the respondents knew what a PC is and had knowledge of using it (Pozz: 2008). This may be the situation in many rural areas in Kenya and is a real challenge to efforts being made to promote ODL among rural populations.

The government of Kenya acknowledges these problems and states the following as factors hindering application of ICTs in education:

- High levels of poverty
- Limited rural electrification
- High costs of internet
- Frequent power disruption

(Republic of Kenya 2005a:78)

However, there are prospects of increased access to ICTs in Kenya, especially radio, cell-phone, television and internet.

Currently there are 16 operational television stations with 24 FM radio stations permitted to operate. 90% of the Kenyan population has access to radio while 60% can access television (Okatch 2009:16-17).

There is significant increase in the use of cell phone, which has now 15 million or about 40% subscribers of 30 million Kenyans (Cellular news 2009:3). Internet access, however, is still low and stood at about 8% by the end of 2008 (Freedom house: 2009:2).

To promote the use of ICTs in education the government of Kenya plans to facilitate universal access to ICTs infrastructure and improve connectivity in all areas. It also intends to provide teachers and education managers with access to information tools to enable them deliver educational services (Republic of Kenya: 2005:80-81). If implemented, these policies will greatly enhance the use of telecommunication-based learning in Kenya.

Conclusions

In the paper I have made a modest attempt to explore issues of disparities in open and distance learning in Kenya. It focused on the subtle question, is the gap narrowing or is it the other way round? I have no obvious answer. However, from the discussion a

number of conclusions can be made regarding the social dichotomies that were focused on.

Although many of those who participated in ODL programmes might have been unemployed, it became clear that the majority of them are in some kind of occupation. The desire to improve skills or knowledge could be the drive behind their decision to learn.

The majority of ODL participants are seemingly young, though some would be in advanced age. An attempt has been made to reach isolated populations through ODL. This has been done mainly through radio and print. Further, it seems the gap between urban and rural access to ODL is reducing as new telecommunications spread to the rural.

From the discussion it is clear that attempts have been made to provide ODL at all levels of education. However, it appears that currently higher education is favoured due to the over-reliance on print, which is not very friendly to ODL learners with low literacy.

We can also see that increased availability and accessibility to internet and cell phone is an indication that ODL is going to play a vital role in improving quality and equity in education for different populations.

The success of ODL in Kenya will very much depend on the government support. The cost of ICT hardware and software must be affordable to the majority of Kenyans. More awareness and capacity building on basic ICT skills, coupled with application of both traditional and new technologies, will greatly enhance the use of ODL in Kenya.

References

Africa Medical and Research Foundation Journal for Medical and Health Workers, vol.18, 1984, Nairobi Kenya.

Carron, G. and Carr-Hill, R. (1991) Non-Formal Education, Information and Planning Issues, International Institute for Educational Planning, Paris. Freedom House www.cellular-news.com/story/36535.php?s=h

Gachathi Report, 1076, The Report of the National Committee on Educational Objectives and Policies

International Extension College (1983) Basic Education for Adults. A report of a workshop on Southern Africa, Cambridge,

Juma, M.N. (ud) The Establishment of a Higher Education Open and Distance Learning Knowledge Based for decision makers in Kenya, Nairobi UNESCO

Koul, B.N. and Jenkins, J. (1990) Distance Education. A spectrum of case studies London. KoganPage and International Extension College.

Kenya Methodist University (2004) Academic Modes of Study, Department of Open and Distance Learning

Kenyatta University the Institute of Open Learning Charter, undated (ud)

Mwiria, K., Ngethe, N., Ngome, C., Ouma-Odero, D., Wawire, V. and Wesonga, D. (2006) Public Universities in Kenya partnership in education, NEW DELIVERY SYSTEMS, Nairobi

Odumbe, J., (ud) practice, Challenges and Prospects of ODL in Kenya, country presentation – Kenya at Commonwealth of Learning conference.
Okatch, F.O. Seminar paper on Services and Internet in Tanzania, Dar-e-salaam on 16th February 2009
Perraton, H. (2000) Open and Distance Learning in the Development world learning in the Development World London and New York, Routledge.
Omosa and McCormic cited in Pozz C. (2007) Distance Training of Teachers in a Rural Area in Kenya, presentation Transcript www.e-learning papers.eu
Republic of Kenya (2005a) Sessional Paper No. 1 of 2005 on a policy framework for Education, training and research government printers, Nairobi.
Republic of Kenya (2005b), Kenya Education Sector Support Programme 2005-2010, Delivering quality Education and Training to all Kenyans.
Republic of Kenya (2007) Kenya National Adult literacy survey report, Nairobi National Bureau of Statistics
Republic of Kenya (1988) report of the Presidential working party on the next decade and beyond, The Kamunge Report, Nairobi Government printers.
Republic of Kenya (1976) report of National Committee on Educational Objectives and policies Nairobi, Government printers.
Republic of Kenya (2000) Sessional Paper on national population for sustainable Development Nairobi Government printers
Republic of Kenya (2003) Demographic and Health Survey, Nairobi Government printers.
Thompson's A, R (1981) Education and Development in Africa Macmillan and Honking, 1981.
Voice of Kenya (ud) Radio and T.V. Times Vol. No. 10, Nairobi, voice of Kenya
Young, M., Perraton H., Jenkins, J., and Dodds, T., 1980, Distance teaching for the third world, Cambridge, International Extension College.

Effect of self-efficacy, the use of electronic and ICT for teaching and learning physics and mathematics in Nigerian schools

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Abstract

There are many factors that encourage students to seek out information in the library, especially its electronic resources. Research has shown that self-efficacy influences academic achievement. This study examined the effect of self-efficacy and the use of electronic resources on students, learning and performance. The sample comprises 500 senior secondary school students randomly drawn from ten senior secondary schools in Ekiti State and Ondo State of Nigeria. Three research hypotheses were formulated to guide the study. The results indicate that there is a significant relationship between the level of academic performances of students in both physics and mathematics by both self-efficacy and the use of electronic information resources; that gender efficacy affects the use of electronic information resources and thereby affects the academic performance of the students; and that more students use the internet as a source of information than any other electronic resources. The paper also highlighted the impact of ICT in the teaching and learning context and the role of ICT in the teaching and learning of physics and mathematics.

Introduction

Self-efficacy is a set of beliefs in one's own ability to successfully complete a task or series of tasks to achieve a specific goal (Bandura, 1997). According to Armitage & Corner (2001), self-efficacy is one's judgments of one's own abilities to perform given actions. These beliefs and judgments have been shown to be related to many aspects of human behaviour, including performance and persistence in college (Gore, 2006). Also, Robbins et al (2004) said that self-efficacy is positively correlated to student retention.

Bong and Skaalvik (2003) and Le et al (2005) emphasized that self-efficacy is a valid predictor of various academic features of students especially in the performance and achievement realms. Zajacova et al (2005) reported that self-efficacy is a more robust and consistent predictor of academic success than is stress. According to Waldman (2003), individuals develop self-efficacy beliefs through vicarious experiences by observing how peers have dealt with certain experiences, and from there inferring how they would handle a similar experience; however, this is a less significant way of establishing self-efficacy.

Schunk (1994) stated that when self-efficacy is too low, students will not be motivated to learn. Therefore different strategies will need to be devised to reach such students. Pintrich and Garcia (1991) showed that students with higher self-efficacy use more cognitive and meta-cognitive strategies and persist longer than those who do not. Waldman (2003) opined that academic self-efficacy beliefs vary according to subject matter, in that students may have high self-efficacy in one subject but not in another, Physics and Mathematics self-efficacy is independent of writing self-efficacy,

depending on their mastery and vicarious experiences in each subject. Pajares (1997) reported that students' self-efficacy beliefs are correlated with other motivation constructs and with students' academic performances and achievement. Constructs included attributions, goal setting, modeling problem solving, test and domain-specific, anxieties, reward contingencies, self-regulation, social comparisons, strategy training, other self-beliefs and expectancy constructs, and varied academic performance across domains.

We can imagine that students with high self-efficacy will be more likely to take advantage of what is around them. That is, if they are familiar and feel comfortable with computers, they will use them, and if they feel that learning about a library's resources will enhance their academic performance, they will learn about them.

The emergence of Information and Communication Technology (ICT) in education has transformed teaching and learning to a more viable and effective method and would likely set the standard for the future. Iloeje (2002) asserted that the interactivity in education and learning techniques brought about by the new technology has created a whole new learning environment and transformed the relationship among science teachers and the learners.

The ways and means of packaging and delivering information has changed. Information users desire a wave of service different from the traditional paper based service. Liverpool (2001) observed that this new wave of ICT has affected Universities, Polytechnics and colleges of Education other tertiary schools greatly as an information provider in society. These institutions struggle to maintain their credibility in the provision of adequate materials for research, teaching and learning through the acceptance and use of information and communication technology (ICT).

Hypotheses: the following hypotheses were tested for the study:

1. There is no significant relationship between the level of academic performance of the student by the self-efficacy and the use of electronic information resources.
2. There is no significant difference in the different levels of self-efficacy for the use of electronic resources and academic performance between male and female students.
3. There is no significant difference in the level of use of different available electronic resources by the students.

Methodology

Design: this study adopted a descriptive survey research approach to find out the effect of self-efficacy and the use of electronic information resources on the academic performance of the students.

Population and sampling procedure

The population of this study comprised of all Physics and Mathematics students in Ekiti and Ondo State of Nigeria. The sample consisted of 500 Senior Secondary School Physics and Mathematics students from ten senior secondary schools in both Ekiti and Ondo State. These were randomly selected from over 200 schools in both the states. Five schools were selected from each state. Two hundred and fifty students were

selected randomly from each state and this gave a total of five hundred students that took part in the study. Of these respondents, 230 (46%) were male and 270 (54%) were female. Their age ranged from 12 to 22 years, with a mean age of 17 years.

Instruments

Self-efficacy scale

The <organ-Jinks student self-efficacy scale (1999) was used. The instrument has thirty items scale and had an overall reliability coefficient of r = 0.8. The sub-scale alpha was 0.78 for talents, 0.70 for context and 0.66 for efforts. The instrument has a response format ranging from strongly agree (1) to strongly disagree (4).

Use of electronic information resources scale

The use of electronic information scale was developed to measure the impact of information technologies on academic achievement. This was adapted and validated. Responses to the instrument range from strongly agree to strongly disagree. The reliability co-efficient of the scale, r = 0.81 using a test retest reliability method.

Academic performance data

Data on academic performance of the respondents were collected through an aptitude test developed in the field of physics and mathematics. It is a multiple choice scale which was scores on 100%. The test contain 40 items with a reliability coefficient of r = 0.8 obtained through a split half reliability method.

Procedure for data collection

The three instruments were administered to all the 500 respondents who participated in the study. The instruments were administered separately on each school sampled. Out of over 500 questionnaires administered only four hundred and eighty (480) were returned and used for data analysis.

Data analysis

Data obtained from the study was analyzed using regression analysis Pearson product moment correlation and simple percentage.

Results and discussion

The results of the analysis are presented in tables 1-4 below.

Table 1: regression analysis of the relationship between the levels of academic performance of the students by self-efficacy and use of electronic information resource

Model	Sum of squares (ss)	Mean square (ms)	DF	F	Sig
Regression	1504.90	600.95	2	5.99	0.003
Residual	60300.50	110.32	277		
Total	61805.40		279		

Table 2: Pearson Product moment correlation of both male and female students' self-efficacy, use of electronic information resources and academic performance

Sex	Number of respondents	X	Self-efficacy	Use of electronic information resources	Academic performance
Male	230	4 8	0.39**	0.37**	0.32**
Female	270	52	0.35*	0.32*	0.26*

Table 3: Pearson Product moment correlation matrix of levels of self-efficacy, use of electronic information resources and academic performance.

Levels of self-efficacy	Number of respondents	X	Use of electronic information resources	Academic performance
High	290	56	0.41**	0.48**
Low	210	44	0.38*	0.31*

Table 4: levels of access of different electronic information resources used by the students.

Information resources	No of respondents	Rank	Percentage
Internet	178	1	35.6
E-mail	142	2	28.4
Electronic journals	97	3	19.4
Bulletin boards	10	9	2.0
CD-Rom Databases	25	4	5.0
Electronic Books	09	5	1.8
Electronic abstract	01	7	0.2
Bibliographic records	03	10	0.6
OPAC	20	6	4.0
CDS/ISS	06	11	1.2
SDI	04	12	0.8
Encyclopedia	05	8	1.0

From the results in Table I at $p>0.05$ and degree of freedom 2 and 277, the F-ratio obtained for independent variables i.e. self-efficacy and the use of electronic information resources is 5.99 of which was significant at 0.05 level. This result shows that there is a significant relationship between the levels of academic performance of the students by self-efficacy and use of electronic information resources. Therefore the hypothesis I, which states that there is no significant relationship between the level of academic performance of the students by self-efficacy and use of electronic information resources is rejected. The implication of the results in Table I revealed that there is a significant relationship between the level of academic performance of student by both self-efficacy and use of electronic information resources. This agrees with previous findings of Tella (2003), Ayeni & Omoba (2007) and Johnson (1996) that self-efficacy is a better predictor of academic performance. On the use of electronic information, Eliot (1996) supported the use of computers in the education of children by stating that

it promotes social interaction and academic achievement. Also, Day & Bartle (1998) supported the findings of the study by showing that electronic information sources had an impact on the academic staff and the students.

More so, Table 2 shows that male students have high levels of self-efficacy, use of electronic information more and perform better than their female counterparts.

For male respondent, self-efficacy, r= 0.39. Use of electronic information resources, r = 0.37 academic performance, r=0.32 had value greater than female respondents, self-efficacy, r=0.35, use of electronic information resources, r= 0.32 academic performance, r=0.26.

The result in Table 2 reveals that male respondents have high self-efficacy, use electronic information resources more and have a better academic performance than their female counterparts. This is in total disagreement with the result of Ford et al (2001) that finds no link between female gender and low self-efficacy. Dyck & Smither (1994) also stated that when the effects of computer experience were controlled, there was no gender effect on the use of electronic databases.

Table 3 shows that respondents with high self-efficacy, use electronic information more and perform better than their counterparts with low self-efficacy. High self-efficacy respondents, use of electronic information, r=0.41, academic performance, r-0.48 had values greater than respondents with low self-efficacy, use of electronic information, r=0.38; academic performance, r=0.31. The results in Table 3 reveal that respondents with high self-efficacy made the best use of electronic information and this eventually made them perform better than their low self-efficacy counterparts.

From Table 4, the result reveals that electronic information resources students use most often to search for information in internet with 178 respondents (35.6%). This is followed by E-mail with 142 respondents (28.4%) Electronic journals are next with 97 respondents (19.4%). And the least is the electronic abstract with only 1 respondent (0.2%). In Nigeria of today and other African countries the student usage of computer and internet has increased because students now frequently access facilities on the internet such as register for external examination and checking WAEC, NECO, UME, POLY JAMB results on the net, applying for admission into higher institutions and seeking job opportunities on the net.

The impact of ICT in the teaching and learning of physics and mathematics

Okurumeh (2003) described laboratory in physics and mathematics as a special equipped room which contained instructional materials and equipment. The laboratory method of teaching physics and mathematics makes use of these materials and equipment to facilitate learning, in fact, physics and mathematics laboratories act as sciences. The laboratory provides students with experiences that are needed in order to acquire the concept/principles and generalization in sciences. This involved performing an experiment, viewing a film, playing a game, discussing, reading, programming a computer, building a model, solving a problem, making a survey, drawing a design, drawing a graph, presenting a physics and mathematical skills, providing a theorem practically, etc.

In line with Ukpebor (2006), the computer is an essential component of information and communication technology which is increasingly becoming an essential equipment of instrumentation, measurement and experimentation in physics and mathematics laboratories. The major function of the computer in physics and mathematics laboratory is data analysis. The success of any teaching and learning process depends on the effectiveness of communication. Information and communication technology play the role of patience teacher – it consistently works at the learner's pace, assisting him to acquire sets of information, skills, facts, etc.

According to Asiriwa (2003), a teacher conveys his thoughts, states his facts, poses problems and evaluates his students by means of communication. Physics and mathematics teachers can take advantage of the dynamism of ICT to demonstrate difficult concepts, theories and principles. This gives meaning to classroom instruction and this enhances their teaching and makes class presentation an exciting one. Today, the development in ICT has brought about evolution of information and communication technology which is ever growing and continuously affecting every aspect of human endeavour, be it education, economy and politics. ICT helps students to become independent learners capable of developing critical thinking and problems solving strategies, collaborative works and inquiry physics and mathematic teachers can use computer to make learning experiences more effective and to offer students access to a variety of learning tools, expert opinions and alternative view points.

Conclusion

This study has shown the effects of the self-efficacy and use of electronic information resources on the academic performance of the students. It is concluded that both self-efficacy and the use of electronic information resources jointly influence and predict academic performance of the students. More so, students with high level of self-efficacy tend to use electronic information resources and have better academic performance than students with low self-efficacy. Gender efficacy predicts the levels of using electronic information resources by the students and thereby affects their academic performance. ICT is a power house for any physics and mathematics teachers.

References

Armitage, C.J. & Corner, M. (2001). Efficacy of the theory of planned behaviour: a meta-analytical review. British Journal of Social Psychology, 40, 471-499.

Asiriwa, D.O. (2005). The use of ICT as an instructional material in Science Education. A paper presented at the Annual National Conference of School of Science, College of Education, Ekiadotor-Benin.

Ayeni, D. & Omoba, T (2007). Information and Development of distance Education programme in Nigeria in the 21st century. Nigeria Journal of Education Studies 1(1), 1-11.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman.

Bong, M. & Skaalvik, E.M. (2003). Academic self-concept and self-efficacy: How different are they really? Educational Psychology Review, 15 (I), 1-40.

Day, J. & Bartle, C. (1998). The internet as an electronic information service: Its impact on academic staff in higher education. IRISS Conference Papers, Bristol, U.K.

available online at: http://www.intute.ac.uk/social sciences/archive/iriss/papers/paper 6htm.etrieved on September 9, 2008.
Ducy, J.L. & Smither, J.S. (194). Age difference in computer anxiety: The role of computer experience, gender and education. Journal of Educational Computing Research, 10(3), 239-248.
Eliot, A. (1996). Learning with computers. AECA Resource Book Series, 3(2), 14-20
Ford, N., Miller, D. & Moss, N. (2001). The role of individual differences in internet searching: an empirical study. Journal on the American Society for Information Science and Technology, 52 (12), 1049-1066.
Gore, P.A. (2006). Academic Self-Efficacy as a predictor of college outcomes: Two incremental validity studies. Journal of Career Assessment, 14(1) 92-115.
Iloeje, M.U. (2002). The challenges, innovations in technology to libraries and librarians. Paper delivered at the plenary session of the NLA 39th National conference and AGM. Newsletter: A biannual pub on NLA 13(1).
Johnsone, K. (1996). Students' Attitude towards the used of internet resources. Journal of Physical and Health Education, 10(1)
Le, H,. Casillas, A., Robbins, S.B. (2005). Motivational skills, social and self-management predicator of college outcomes. Educational and Psychological Measurement 65(3), 482-508
Liverpool, L.S.O. (2001). ICT and University Administration. Paper presented on the annual General meeting of the Committee of the Association of Nigerian university professionals.
Okurumeh, I. (2003) Self-Efficacy and academic success in college. Research in Higher Education, 40(6), 67-75
Pajares, F. (1997). Current directions in self-efficacy research. Advances in motivation and achievement 10, 1-49. available online at http://www.emory.edu/EDUCATION/mfp/effchapter.html.
Pintrich, P.R. & Garcia, T. (1991). Student goal orientation and self-regulation in the college classroom. Advances in motivation and achievement: goals and self-regulatory processes. Pp371-402.
Robbins, S.B., Louver, K., Davis, D. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis psychological Bulletin, 130(2), 261-288
Tella, A. (2003). Self-efficacy and locus of control as predictors of academic achievement among secondary schools students in Osun State Unity schools. Oyo Journal of Educational psychology, 1(1), 32-41.
Schunk, D.H. (1994). Self regulation of self-efficacy and attributions in academic setting issues and educational applications, pp.75-99
Ukpebor, N.J. (2006). The use of ICT as instructional materials in school mathematics for secondary schools. Journal of MAN, 31(1) 80
Waldman, M. (2003). Freshmen's use of library electronic resources and self-efficacy. Information research, 8(2)
Zajacova, A., Lynch, S.M. & Espenshade, I.J. (2005). Self-efficacy, stress and academic achievement in college. Research in Higher Education 46(6), 677-706

The use of modern technologies in Physics practical in the developing nations

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Abstract

Physics, as a subject, is dreaded by students at all levels, the university inclusive. It is therefore incumbent on physics educators to deliberately find a way of making this subject simple, straight forward and understandable in its entirety. The introduction of modern technology in teaching and learning pedagogy in physics as exemplified by classroom and laboratory activities appear to be the major focus of modern physicists. It has, however, been discovered that not much has been done on the exposition of our students in the developing world as to how modern technologies could be of great advantage in physics laboratory activities. These modern technologies include computers, Internet, digital laboratory equipment, video-scope and the use of online experiments in physics. The introduction of digital devices into many Nigerian universities to teach abstract concepts in physics, which scientists now consider to be of great advantage over traditional methods, is the major interest in this paper. The paper also considers the specific roles of modern technologies in physics practical lessons in the evolving developing nations.

Introduction

Physics is the bedrock of science and technology. Practical work in physics has contributed in no small way to the advancement of physics concepts and constructs to drive new technology globally. The fact remains that the electronic digital computer, the transistor, the laser and even the World Wide Web were all invented by physicists. The inventions make up the foundation of modern technology. Discoveries through physics, especially electromagnetism, led to the invention and development of many electronics gadgets such as LRT's computers, cellular phones, amplifiers or any electronics that use electricity. Like, for instance, the computer or cell phone will not work without the magnets and loops of wires which are essential elements in the study of physics. The place of physics practical lessons in advancing the study of physics and hence the evolution of modern technology cannot be over-emphasised.

Risley (2009) asserted that interactive teaching is a superior method of physics instructional strategy, emphasising the digital devices as significant parts of the interactive teacher's tool box. A thorough knowledge of available hardware and software facilities, along with ways to effectively use them, is a prerequisite of physics practical teaching. He stressed that hundreds of software programmes are available for hands-on learning of physics. For example inexpensive laboratory interfaces acquire data in real time and display the results in powerful presentations via modern digital equipment.

Armitage (1998) found that practical work in physics is intended to teach the students how to select and set-up apparatus skillfully and well, to make careful observations and

precise measurements, to employ and to use the experimental results obtained to the best advantage. In Nigeria secondary schools, Physics practical is designed by the West African Examination Council (WAEC) with the broad aim of providing a limited background of physical knowledge which will be enough to bring out the procedures of science especially the relationship between experiment, observation and theory. In science generally, emphasis is laid on how practical work could develop students' manipulative skills for investigation of problem based on an understanding of practical works and making accurate reports of observations and conclusions.

Modern technology has exposed our students to online experiments in physics. Edward (2002) discovered that computers equipped with measurement and control interfaces have become an accepted and necessary part of science and technology in school laboratories. In most colleges the use of computer-based instrumentation, software packages has been prominent and comprehensively introduced in physics and technology teaching. The traditional approach to the teaching of physics practical through the routine of presentation of formal definitions, concepts and laws by the teacher has gradually become absolute in Nigeria. The new approach which expresses the improvement in modern technologies through the use of internet facilities and digital equipment must be emphasised in all our colleges to enhance the understanding of physics. Laboratory work in physics with the use of modern technology through Computer Assisted Instructions (CAI) will help students to develop new concepts and understand abstract contents.

Physics is a practical oriented subject and almost every scientific discovery has been made as a result of experimental investigations. Therefore, to understand the theoretical aspect of physics taught in classrooms, it is highly necessary to master some of the techniques of experimental physics. The use of electronic media to teach science as "dogma" would misrepresent the fact about the nature of scientific enquiry. Booth (1978) suggested that children should be given opportunities to discover, invent and get caught up in the rapid expansion of scientific and technological information. It is therefore more appropriate to teach students how to learn; and to acquire skills that will enable them to learn on their own the use of modern technology through Computer Assisted Aid (CAA), Programmed Instruction, (PI), Information and Communication Technology (ICT), Internet or online training etc which are seriously being used to facilitate the inquiry method in physics practical.

Inquiry and discovery methods in Physics practical

It has been discovered that the adoption of new theories and models was justified only by the observational and experimental results which led up to them. Inquiry and discovery methods had been recommended in science teaching because they pay attention to individuals; that is, the individualized learning method encouraged through inquiry approach. Students acquire knowledge, skills and attitudes by finding out things for themselves. Broad generalized knowledge, according to Anthony (1973), is best conceived as knowledge of principles. As such, it may be attained in the context of instructional conditions which include discovery on the part of the learner. Knowledge of principles is not what is usually referred to in a depreciating manner as knowledge of sheer fact, nor is such knowledge best acquired under conditions of mere repetition. Knowledge of principles is a prerequisite to the successful understanding of the technique of inquiry.

Inquiry and discovery go hand-in-hand. Physics is an inquiry oriented subject for which practical work is very essential. It involves students' acquisition of a series of process skills such as observing carefully, classifying, interpreting, predicting events, designing experiment, organising information, reporting completely and accurately and, of course, generalizing (Akale and Isa-Usan, 1993). Inquiry in modern technology is designed to supplement the ordinary science classroom activities. It gives the student a plan of operation that will help him discover things through his own initiative. It is aimed at making the learner more independent, systematic, empirical and inductive in their approach to the problem of science.

Esiobu (1998) said that one of the purposes of the inquiry method in science is to arouse the curiosity of a learner to use his initiative and prove his potential skill to learn through exploration, given science a creative insight and making the learner an independent investigator. It also enables learners to acquire the necessary intellectual skills for new technology through laboratory activities. There will be no appreciable development in physics and technology without promoting project, experimental skill, fieldwork, inquiry and discovery methods. Self-discovery through modern technology such as Computer Instructional Aid, Internet and online practical training should be encouraged for effective learning of physics. Tobin (1986) lamented that most laboratory activities are insufficiently well implemented to facilitate genuine inquiry. It has been discovered that physics practical, which ought to be of great assistance and a motivating factor to students has been the major source of problems. There is mass failure in physics practical among Nigerian students because of poorly equipped physics laboratories, and overcrowding of students in the laboratory during experimental lessons (Owolabi, 2003). The Inquiry method through modern technology and laboratory teaching is one of the hallmarks of science education. Today, the inquiry method in physics is enhanced by video-tape, motion pictures, computer and internet and they play vital roles in physics research teaching and learning.

Physics practical and modern technologies

Physics has been viewed as an essential part of the intellectual life of man. The study of physics according to Ogunleye (1998) should be regarded as a necessary part of all human endeavours. The advancement in science and technology becomes easier when a premium is placed on the physical sciences, especially when research puts emphasis on the use of modern technologies in pedagogy. Laboratory experiments and fieldwork are central to the teaching of physics. It is a practical science subject through which students can easily relate concepts, theories, experiments and observations as a means of exploring ideas. Physics hence involves a lot of practical work carried out in the laboratory.

According to Nwokedi (1983), laboratory and fieldwork in physics give students deeper understanding of various concepts and the activities do encourage active participation which is a motivating factor in critical thinking. There is room for interactive demonstration methods in physics practical lessons which ranked among the best methods of learning physics. In this modern age students are provided with opportunities to interact through computer digital equipments and video-discs. A study by Dawanto, Lim, Cheong and Sow (2009) revealed that (digital) demonstration laboratory plays a significant role in promoting learning of physics among students in

secondary schools and junior colleges. A lot of time and resources are expended on the traditional offline and non-digital classroom experimentation because of ignorance on what to do when there is no guide on laboratory activities. The interaction with related concepts via the computer assisted instruction had been encouraged in the use of modern technologies to first expose the students to general ideals and then guide them for better performance.

Research revealed that interactive demonstration through modern technology is an important tool in teaching and learning of physics because it helps students to understand abstract concepts. Demonstration in science provides the platform for students to learn physics through self-discovery. Physics involves problem-solving activity; therefore time should be spent introducing the students to problem-solving digital programming and implementation procedures. The usage of new technology in experimental activities has hence become a centre of attention at all levels of science teaching. Laboratory methods through the use of modern technology have now been accepted as a means of which meaningful learning in science can take place in the developing world, Nigeria as a typical example. This is a means to involve students in inquiry. It provides ways to develop ideas and raise genuine questions, as well as to develop techniques and generate accurate answers which are easily attainable through computerization of scientific procedures.

Online training becomes easier with the use of laptop, notebook, palmtop, projector, flash drive, hard disk, compact disk and other electronic gadgets and with mobile technologies. If laboratory experiments are planned in the spirit of inquiry and investigative method using modern electronics, the learner will focus his attention on observation and analysis of the data collected with less stress and better results. Laboratory work is expected to change from demands, observation or verification of known information to raising problems, listing inquiry skill and providing discovery opportunities. Abdullahi (1982) suggested that skills to be developed in science laboratories should include: identifying problems; asking questions; formulating hypotheses; observing; measuring; classifying; analysing data, reporting and inferring. The teacher or instructor is expected to provide as many opportunities as possible for the students to be involved in collecting and organising information and also ensure accurate recordings.

Physics in the real sense should advance beyond the descriptive level, that is, should not merely describe what the teacher knows but rather, how the students themselves should discover things through electronic simulation of abstract scientific activities. There is need for innovation and advancement in science and technology, through physics practical so as to provide the opportunities to study physics in the right perspective in the evolving modern classrooms in the developing countries.

Conclusion

The new methodologies for teaching practical physics in developing nations are practically carried through the use of modern technology. It has eventually become sacrosanct when the students build on little information heard or experienced through simulation and other digital mobile technologies and begin to work on it until new discoveries are made. Science teaching, especially physics practical lessons in developing nations needs major reforms. There is need for curriculum change in physics

practical work to catch up with the developed world in advancement in modern technology.

References

Abdullahi, A. (1982): Science Teaching in Nigeria, Ilorin, Atoto Press.

Akale, M.A.G. and Isa-Usman (1993): Effect of Practical Activities on Achievement in Integrated Science among Junior Secondary School Students in Kaduna State. *Journal of Science Teacher Association of Nigeria 28, 1 & 2 102 – 108.*

Anthony, C.P. (1973): The Meaning of Inquiry, Discovery and Investigative Approaches to Science Teaching. *The Science Teacher* 24 – 27.

Armitage, E. (1998) Practical Physics in S.I. Wing Tony Printer, Hong Kong 2 – 11.

Booth, N. (1978) Science in the Middle Year Education 2 – 41.

Dawanto, G.Q., Lim. F.C., Cheong and C.H. Sow (2009): Physics Demonstration Laboratory: Use of Interactive Demonstration in Teaching Physics. *International Conference on Teaching and Learning in Higher Education. Singapore, 3-5 December 2008. 190-193*

Edward, F.R. (2002): Online Experiments in Physics and Technology Teaching; Education, IEEE Transaction on vol. 45, 26 – 32.

Esiobu, G.O. (1998): Innovative Integrated Science Programme for Junior Secondary School Level in Nigeria. *African Journal of Education 1 (1) 77 – 82*.

Nwokedi, R.E. (1983): Teaching Physics via Laboratory Activities, *Journal of the Science Teachers' Association of Nigeria 22 (1) 11 – 20.*

Ogunleye, A.O. (1998): Prospect and Problems in Physics Education in Nigerian Secondary Schools (1960 – 1995). *African Journal of Education 1 (1) 154 – 167.*

Owolabi, O.T. (2003): Design and Validation of Error Correcting Instructional Package (ECIP) in Physics Practical in Nigeria Secondary School. *Unpublished Ph.D Dissertation: University of Ado-Ekiti, Nigeria.*

Risley, J. S. (2009): Teaching physics using computers, North Caroline State University.

Tobin, K. (1986): Secondary Science Laboratory Activities. *European Journal of Science Education 8, 199 – 211.*

Creating an enabling classroom environment to quality assure learning and teaching in the digital age: experience of e-learning and distance education in Nigeria

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Abstract

A classroom is an institutionalized setting for the teaching and learning process. Creating an enabling classroom environment is very vital to quality assure teaching-learning in the digital age. This paper briefly examines the concepts of learning and teaching and posits that a learning environment is all the influences that surround a child and cause him to be interested in learning. Thus, it considers the classroom environment in relationship to the teaching-learning process in distance education programmes in Nigeria. It examines briefly the historical overview of distance education in Nigeria and the use of e-learning in Nigerian schools with the challenges. The impact of the classroom environment on quality teaching-learning in the areas of physical composition such as Information Communication Technologies (ICTs) which include internet services, laptops, electronic boards, computer sets and physical climate are all described as classroom environment basics. Some strategies that could be used to quality assure the teaching-learning process in the distance education programme are highlighted and briefly discussed. These include programme presentation in the classroom, providing motivational climate, provision of adequate instructional facilities and teaching personnel development. It concludes that creating an enabling classroom environment is very crucial at this time that knowledge has been broadened in the digital age and the need to equip the classroom environment with e-learning facilities to ensure the quality of education given to the products of distance education programmes in Nigeria.

Introduction

Learning as a concept is generally perceived as a relatively permanent change in behaviour as a result of practice and experience. Learning is referred to as a remarkable social process which could occur not as a response to teaching, but rather as a result of a social framework that fosters learning (Brown, 2008). Learning is a process that is developed according to steps. Aladejana (2009) notes that learning does not necessarily have to result from teaching as it can be by memorizing, reading, speaking, summarizing or other methods.

Bell-Gam (2004) defined learning as the process by which an activity originates or is changed through reacting to an encountered situation, provided that the characteristics of the change in activity cannot be explained on the basis of native response tendency, maturation or temporary states of the organism.

Teaching could be referred to as a process of imparting knowledge and skills into an individual for attitudinal change in behaviour. Scheffler (1998) observes that teaching may be characterized as an activity aimed at the achievement of learning, and practiced

in such manner as to respect the students' intellectual integrity and capacity for independent judgment. Brown (2008) notes that "to succeed in our struggle to build technology and new media to support learning, we must move far beyond the traditional view of teaching as delivery of information". Although information is a critical aspect of learning, it's only one among several other methods that could be used. When we look at teaching beyond the mere delivery of information, one could see a rich picture of learning that embraces the social context, resources, background and history within which information is enshrined.

A classroom is an institutionalized setting for the teaching and learning process. Frontana (1991) asserts that the classroom is the heart of any educational system; no curriculum is complete without implementation and evaluation, both of which are mainly carried out in the classroom. A classroom in which the teacher takes complete responsibility for guiding students' actions constitutes a different learning environment than one in which students are encouraged and taught to assume responsibility for their own behaviours.

A learning environment is all the influences that surround a child and cause him to be interested in learning. Thus, we consider the pupils, the classroom materials and the teacher. Creating a positive classroom environment depends solely on the teacher who can change an ordinary classroom into an environment for learning. Many of the current, and certainly most of the next generation of students who reach college age are remarkably immersed in technology, far more so than we or other members of any older generation can likely fathom. Today, digital kids think of information and communications technology (ICT) as something akin to oxygen; they expect it, is what they breathe, and it's how they live. They use ICT to meet, play, date and learn. It is an integral part of their personal identities (Brown, 2008).

E-learning is not a new phenomenon in promoting education in some parts of the world. Presently, some institutions in Nigeria are using it to promote distance education (DE) and life long learning (Ajadi, Salawu and Adeoye, 2008). Hedge and Hayward (2004) defined it as an innovative approach for delivering electronically mediated, well-designed, learner-centered and interactive learning environments to anyone, anyplace, anytime by utilizing the internet and digital technologies in concert with instructional design principles. The applications and process of e-learning include computer-based learning, web-based learning, virtual classroom and digital collaboration where contents are delivered via the internet, intranet/extranet, audio and or video tapes, satellite TV and CD-ROM (Islam, 1997).

Presently in Nigeria, only very few of our conventional universities are now carrying out their academic programmes through the use of Information and Communication Technology (ICT) while the urge for using e-learning is still a myriad to some universities because of poor ICT infrastructures.

Creating an enabling learning environment means careful planning for the achievement of goals and objectives of teaching learning process both through e-learning and distance education. The learning environment must be envisioned in both a physical space and a cognitive space. The physical space of the classroom is managed as the teacher prepares the classroom for the students. Some pertinent questions are raised in

achieving these, such as: Is the space warm and inviting? Do the students have access to necessary e-learning materials?

Teachers must also consider the cognitive space necessary for a learning environment. This cognitive space is based upon the expectation teachers set for students in the classroom and the process of creating a motivational climate. Thus, creating a positive classroom atmosphere cannot depend on the classroom; it is the teacher who can change an ordinary classroom into an environment for learning. It could be through the use of internet explorer/Navigator; it may be in form of Audio, Visual and or Audio/Visual.

Considering the rapid expansion of ICTs in Nigeria, there is need to commence planning for the introduction of more electronic media into the classroom, like CD-ROM, e-mail, internet and interactive e-learning systems for teaching delivery.
The modern role of teachers is that of mediators instead of instructors to pupils in search of knowledge in this digital age. The invention of technological materials such as internet, television, video tape, recorders, computer, overhead projectors, and the role of the teacher now concentrates on a conducive atmosphere for teaching and learning with an understanding of the sociological and psychological background of learners in the distance education programme.

Historical overview of distance education in Nigeria

The evolution of distance education in Nigeria dates back to the practice of correspondence education in preparing candidates for the General Certificate in Education (GCE) as a prerequisite for the London Matriculation Examination. However, with the emergence of many conventional higher institutions in Nigeria, what used to be correspondent becomes distance education which, in most cases, constituted an integral part of existing institution with the exception of the National Teachers' Institute (NTI), Kaduna. The NTI started in 1976 as solely independent distance learning institution in Nigeria saddled to train Grade Two teachers (TC II). In 1990, the Nigerian Certificate in Education (NCE) programme was introduced when the minimum teaching qualification in Nigeria was expected to be NCE.

The Correspondence and Open Studies Unit (COSU) of University of Lagos that started in 1974, which later transformed to Correspondence and Open Studies Institute (COSI) and is now known as Distance Learning Institute, was the first attempt made to establish a distance education unit as part of a University in Nigeria (Ajadi, Salawu & Adeoye, 2008). This institute is to produce university graduates in disciplines that are essential to national manpower needs in such areas as teaching, nursing, accountancy, etc. Ahmadu Bello University (ABU) also started its distance education through a training programme tagged Teachers In-service Education Programme (TISEP) in 1976, mainly to produce middle level teachers for Nigeria's primary schools. The University of Ibadan also joined the race of provision for distance education in Nigeria in 1979 as External Study Programme (ESP) of the University later centre for External Studies (CES), now Distance Learning Centre (DLC).

The report on the historical evolution of Open Distance Learning (ODL) in Nigeria will not be complete without mentioning the establishment of the National Open University of Nigeria (NOUN) which started its operation in 2002. The NOUN was established to provide opportunities for learners in professional bodies, governmental institutions that

intend to acquire degrees and certificates in law, business administration, sciences and education related courses.

There are many programmes designed under the umbrella of distance learning education which cut across various higher institutions in Nigeria, consequently this led to the establishment of various study centers and satellite campuses. Many of the classroom environments of these study centers are not conducive enough to facilitate an effective teaching and learning process. With the rowdy proliferation of programmes and growth in these campuses, the Federal Government clamped down on mushroom outreach study centres of many conventional universities all over the country, limiting their establishment within the radius of mother institutions. This is to ensure the good quality of education delivery in a more conducive and creative classroom environment. With the increasing acceptance of Open Distance Learning (ODL) as widening access to higher education in Nigeria, it has become necessary to quality assure the learning environment to be relevant and more functional so that the products could compete favourably with other products of conventional higher institutions who attended full time programme.

The use of e-learning in Nigerian schools

The commonest type of e-learning adopted in Nigerian schools is in the form of lecture notes on CD-ROM which can be played at the desires of the learners. The challenge of this method is that the numbers of students per computer in which these facilities are available are un-interactive as compared to when lectures are being received in the classroom. Some institutions have developed the use of intranet facilities, however, it could not be maintained due to poor power supply and high cost of running a generating set. Most students in Nigeria patronize the cyber café but because there are people of diverse intention on the net at the same time, and the bandwidth problem, a multimedia interactive can not be done. Despite the challenges facing e-learning in Nigerian schools, some universities, such as University of Ibadan, Obafemi Awolowo University, University of Benin, University of Lagos, University of Abuja, The University of Education, Ikere-Ekiti, National Open University of Nigeria among others, have the facilities for e-learning. The number seems very low when compared with other parts of the world. However, most of the educational institutions (public and private) have started setting up their ICT centres for internet services alone. All these could be networked into the normal classroom environment through the use of electronic boards and magic boards.

Challenges of e-learning in distance education in Nigeria

Some of the challenges facing the effective use of e-learning in distance education in Nigeria are highlighted as follows:

- Inequality of access to personal computer and laptop by learners due to high cost in Nigeria;
- Lack of computer education background;
- High cost of internet connectivity in the cyber café;
- Inability of many students to take responsibility for independent learning;
- Lack of adequate maintenance and technical support;
- Problem of electricity.

Some of the highlighted problems could be solved if adequate attention is given by the government of Nigeria to equip the classroom environment in the DE study centres with e-learning facilities. This will help the under privileged students who are unable to acquire personal computer or afford the high charges of cyber café operators in Nigeria to have access to e-learning.

The impact of classroom environment on quality teaching-learning in distance education

Research findings have indicated a significant relationship between a classroom environment and effective teaching-learning (Badmus, 1998). In essence, the nature of the environment determines to a large extent the success or failure of teaching-learning process.

The rapid expansion of ICTs in Nigeria provides an opportunity to consider its use in the classroom environment for the promotion of distance education. It increases students access to learning opportunities, convenience of time and place, making available a greater variety of learning resources, improve opportunities for individualized learning and emergence of more powerful cognitive tools.

Distance Education (DE) is a system of education characterized by physical separation between the teacher and the learner in which instruction is delivered through a variety of media including print and other ICTs to learners who may either have missed the opportunity earlier in life or have been denied the face-to-face formal education due to socio-economic, career, family and other circumstances (Ajadi, Salawu, and Adeoye, 2008). However, in Nigeria, most of the Distance Education providers have study centers located across different parts of the country. Some make use of primary and secondary schools classrooms for teaching and learning. Nigeria is generously endowed with human resources that need to be well equipped with literacy and skills to contribute to economic development, which is highly needed in this country. It becomes highly imperative to embrace DE but this has to be supported by all necessary financial and infrastructural commitments of which the classroom environment attracts high priority. For instance, in Nigeria, NOUN has 28 study centers spread across the length and breadth of the country as against the initial 18 temporary study centers approved by the Federal Government for take off of the university in the year 2002. The projection of the university is to have a study center at every local government of the federation. In the light of this, adequate classroom environment must be created to achieve this vision.

Programme presentation in the classroom

There is a need to take a look at the programmes which are packaged for learners in the classroom situation. Teaching goes beyond presentation of items in the syllabus. For the items presented to be effectively learnt, the teacher must be able to arrange the environment in the manner so that pupils interact with the environment for effective learning.

Madihah (2008) opines that learning takes place through the experiences emanating from learners reaction to their environment. There is need to put into consideration the cultural background of the learners in the presentation of ideas and concepts in the

classroom situation. Okoye (2005) posits that education is not simply a matter of give and take but a process which goes deep down in the personality influenced by the environment as well as the teachers.

The quality of course delivery influences the quality of learning which, in turn, permits the identification of criteria for quality delivery (Hunt, 1998). In a distance education setting, it becomes a question of getting appropriate quality assurance processes in place and administering them, especially in the areas of course contents, learning and teaching materials, accreditation of programmes and maintaining high standard.

Providing motivational climate

Motivation has been described as an inner drive that pushes one into action. It is an essential part of classroom environment to provide and develop a climate in which teachers encourage students to do their best and to be excited about what they are learning. There are two factors which are critical in creating an enabling motivational climate: value and effort. To be motivated, learners must see the worth of the work that they are doing and the work others do. A teacher's demonstration of value reveals to students how their work is worthwhile and is connected to things that are important for them, including other learning and interests. Effort ties the time, energy and creativity a student uses to develop the "work" to the value that the work holds. One of the various ways through which teachers could encourage effort is praise. This is by telling the students what it is that they are doing that is worthwhile and good (Evertson, 1997). This helps to arouse and stimulate the interest of the students to learn better. Hence teaching and learning in distance education must give room for feedback to determine the level of learning outcomes. However, when a teacher creates structure and order, as well as a learning environment in which students feel the excitement of learning and success, then the classroom can truly be said to be well directed towards the achievement of set targets.

Provision of adequate instructional facilities

The role of instructional facilities in quality assurance in the teaching and learning process cannot be over emphasised, especially in the distance learning programme. Classroom environment must be well equipped with adequate instructional materials that could positively affect the domains of learning.

Arisi (2001) observes that teaching aids, laboratories, libraries, furniture and text-books need to be provided in schools. He further stressed that inadequate classroom building has resulted in over-crowding of pupils. It is not enough for students to explore knowledge and information from the web, but other materials and equipment must be readily available to complement the knowledge that has been acquired and, at the same time, put into practice what they have gained. The availability and adequacy of these materials are quite essential for quality teaching and learning. These instructional media could help to create a dynamic and collaborative environment that generates workable solutions to real-life problems. Theory and practice are combined in a just-in-time approach to education, wherein students draw on educational resources as needed in support of their larger projects. The idea of setting up instructional laboratory technology in some of the higher institutions in Nigeria, for example, is a good development to enhance better quality in teaching-learning process. However, this could

be extended to all the study centres of the Distance education programme in Nigeria. Hence, the need to provide internet services and adequate numbers of computers to facilitate e-learning in the classroom environment.

The e-learning has several advantages in promoting distance learning institutions. Some of these include:

- Students will be able to learn at their own pace;
- The internet will provide DE students with the opportunity to make choices about the type and direction of their learning and gain feedback quickly and efficiently;
- Internet activities will enable DE students to discover how the information they gain fits into the real life.

Teaching personnel development

Teachers constitute not only a vital input to education but also a major drive in the production process and in the determination of the output system. In Nigeria, the National Policy on Education (2004) reiterates that "no education system can rise above the quality of its teachers". This calls for the development of teaching personnel to acquaint themselves with the technological innovations in teaching-learning process. Apart from being professionally trained in the pedagogy of teaching, there is the need to be abreast with modern day discoveries and challenges of learning in the digital age. Teachers must be well equipped to combine relevant input for the enhancement of teaching-learning process.

Teachers must develop ability to combine skillfully at a given situation the right teacher behaviour towards the achievement of school objectives. In as much as the same tutors are used for both the students in DE and regular schools, the major challenge for the DE providers therefore is to maintain high standards of the programme. Appropriate structures must be put in place to facilitate due processes on Ethics, standards and Curriculum Development. The teaching personnel must be adequately empowered so that they would be able to give of their best and the products of Distance Learning would cease to be seen as inferior to those produced in the conventional system of education in Nigeria.

Conclusion

In conclusion, creating an enabling classroom environment is very vital in assuring quality in teaching-learning process in the distance education programme in Nigeria. This is very crucial at this time that knowledge has been broadened in many ways through exposure to different instructional materials, especially internet services. This must start from the packaging of the programme of instruction to be presented for learning, providing a motivational climate that could stimulate teaching-learning process, providing adequate instructional facilities and develop the teachers to acquire modern day knowledge in the area of new innovations and recent ideas in teaching techniques. More importantly, there is need to maintain the learning environment to facilitate a better interactive process between the teacher and the learners. Considering the recent expansion of ICTs in Nigeria, Open Distance Learning could introduce some modern ICT, like e-mail web-based learning, for delivering its course materials through

e-learning for its learners. The government should equip the classrooms environment with e-learning facilities to ensure progress by all learners.

References

Aladejana, E.O. (2009) Self Esteem and Effective Learning, *Conference Paper,* Institute of Education O.A.U. Ile-Ife Nigeria.

Ajadi, T.O. Salawu, I.O. and Adeoye, F.A. (2008) E-Learning and Distance Education in Nigeria. *The Turkish Online Journal of Educational Technology* 7(4).

Arisi, R.O. (2001) The Universal Basic Education: Problems and Prospects, in: S.O. Oriafo, P.O. Nwaokolo & G.C. Igborogbor (Eds) *Refocusing Education in Nigeria* (Benin City, Dasylva Influence).

Badmus, G.A. (1998) Effect of Curriculum, Environment and Prior Achievement on Scholastic Aptitude: Welberg's Evaluation Model. *Nigeria Journal of Educational Psychology* 2(1), 223-234.

Bell-Gram, V.H. (2004) *Curriculum Studies: Issues and Perspectives* (Benin, Bellco Publishers).

Brown, J.S. (2008) *Learning in the Digital Age* (New York, McGraw Hill).

Evertson, C.M. (1997) Classroom Management, in: J.W. Herbert D.H. Genera (Eds) *Psychology and Educational Practice* (Berkeley, McCutchan).

Federal Republic of Nigeria (2004) *National Policy on Education Revised* (Abuja, Federal Government of Nigeria).

Frontana, S. (1991) Changing the Classroom Management Paradigm, *Educational Leadership* 49(7), 74-78.

Hedge, N. and Hayward, L. (2004) Redefining roles. University e-learning contributing to Life-long learning in a networked world. E-learning 1:128-145 http://www.nationmaster.com/country/ni/internet.

Hunt, C. (1998) Distance learning: Short term gain, long term commitment – a case study *The International Journal of Educational Management* 12(60) 270-276.

Islam, M.T. (1997) Educational Technology for 21st Century. *Observer Magazine* Dhaka, May 9, 3-4.

Madihah, K. (2008) Assessing Classroom Environment and Attitude of Technical Students towards Mathematics and Association Between them. *The International Journal of Learning* 14(4), 127-134.

Okoye, N.S. (2005) Factors Affecting Teaching and Learning: The Teacher, Subject-Matter and Environment Dimension, in: K.A. Oghamadu and N.S. Okoye (Eds) *Principles, Methods and Strategies for Effective Teaching* (Vitsha, Lincel Publishers).

Scheffler, L. (1998) The Construction of Lessons in Effective and Less Effective Classrooms *Teaching and Teacher Education* 4, 189-213.

Towards a culturally sensitive distance education model for Aboriginal teacher education: inclusion through collective vision and process

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Abstract

This paper presents the process of designing a culturally sensitive distance education model for a teacher education program for Aboriginal teacher candidates in Northern Ontario. The program is a joint undertaking by a university centre for Aboriginal research and education and a consortium of educational providers in remote communities. The model attempted to include the vision and the collective values important to the community, the recommendations of regional stakeholders, and the preferences in learning modes and communication styles. Lessons learned from the past decade in distance education with Aboriginal learners also guided the development of the model, which comprises intensive three-week face-to-face sessions for building community combined with gradual incorporation of technology and distance delivery. Group learning modes and visual communication through videoconferencing are used to support relationships and oral traditions. I discuss the tensions inherent in the case, including the structural, pedagogical and cultural issues that are embedded in technological and delivery choices. The study contributes to research on collective approaches to distance education and on applying Indigenous values to appropriation of technology. Implications for practice are the importance of visual and group-based modes of learning, and of multiple links to local and cultural community.

The last ten years have taught researchers and practitioners in distance education to be aware of values and approaches important to non-mainstream learners. Almost twenty years ago, when Haughey (1992) called on distance educators to recognize the ethnic, political, historical and gendered context of learners, most of the writings on the field seemed based on the assumption of a universal distance learner. Because distance education approaches are the product of a particular culture, this universal learner was most often white, middle-class and from a developed country. Many learners were thus excluded from access to quality learning environments, because these did not take their specific characteristics into account. More importantly, instructional models of distance education tended to "see learners as individuals instead of recognizing that education has a political and social focus as well as an academic one" (Haughey, 1992, 36). Recent writings have examined the forms of distance education that appear to benefit specific populations that are defined by the characteristics of their cultural group. Studies related to linguistic minorities in Canada (Paquette-Frenette, 2005; Thomas and McDonnell, 1995) and in Europe (Schürch, 1997), or to Australian Indigenous Peoples (McLoughlin, 1999) highlight the importance of access to education for marginalized or non-mainstream populations. More numerous studies have described technology use and distance education involving North American First Nations learners (Hodson, 2005; Lambert et al., 2002; Facey, 2001; Voyageur, 2001; Gruber and Coldevin, 1995; Sharpe, 1992; Fiddler, 1992).

This paper traces the development of a distance delivery model for Aboriginal adult learners in one Canadian province and describes some of the cultural dimensions that informed both the process and the model. The issues that have an impact on its implementation are discussed.

Positionality

Because the values of a program's planners are embedded in the type of program that is offered, many designers have grappled with either seeing the limitations of instructional models or finding ways to integrate culturally appropriate systems and methods (McLoughlin, 1999). I write this paper from a shared sense of these limitations, as I inhabit what Matheos (1997) calls the "border world" of a non-Native researcher working with Aboriginal communities and learners. I participate in the ongoing development of a teacher education program, a joint undertaking of a Southern Ontario university and an Aboriginal education council. This organisation is a consortium of educational providers that serves the educational needs of 24 remote communities in Northern Ontario, most of which are accessible only by airplane. Because distance delivery modes must be incorporated into the program's design, I serve on the team as specialist in teaching and learning through distance technologies. In this paper, I document the process of designing the distance delivery of the program using the terms and concepts of the distance education field, but I remain conscious of the interdependence between the design and the communal nature of how the model came about. Most importantly, I acknowledge the central role of the university's Aboriginal research and teaching centre in providing the leadership in this undertaking.

Context

The province of Ontario has the largest population of Aboriginal people in Canada, almost 160,000 persons who live in urban environments or remote communities, and who represent 1.4% of the total population of the province (Statistics Canada, 2009). Aboriginal school-aged populations in the province are increasing significantly, due in part to a higher birth rate and to the fact that First Nations people are a youthful population: 43 % of the overall Aboriginal population is under 25 (Statistics Canada, 2009). In spite of these relatively high numbers, however, Aboriginal children leave the school system early. The high school completion rate of Aboriginal people in Canada is 42% (Statistics Canada, 2009), and the participation in post-secondary education is significantly less than for any other identifiable group in Canada (Burton and Point, 2006). The major reasons attributed to this gap in schooling success are learning environments that do not meet the needs of Aboriginal children and adults with regard to language, curriculum, teaching methods and, most importantly, embedded cultural values (Poonwassie, 2001).

In the above context, teachers play a central role in creating environments that "facilitate the spiritual, emotional, social, intellectual and physical growth of (…) students and promote self-confidence, pride in identity, First Nations values, languages and culture" (NNEC, 2006). Currently, in North Western Ontario, many Aboriginal teachers lack qualifications from the Ontario College of Teachers. Native Teacher Education programs are considered out of date, especially to counteract the rapid teacher turnover rate in remote communities.

Community-based programs have been shown to be effective in training adults in areas of need identified by First Nations communities, including teacher training (Poonwassie, 2001). "The greatest strides in the development of culturally and community-based curricula have been made by Aboriginally controlled programs and institutions" (Hodson, 2005). Distance provision adds several benefits to community-based programs (KTA, 2005; FNEC, 2001; Voyageur, 2001; Spronk, 1995; Gruber and Coldevin, 1995; Fiddler, 1992; Spronk and Radtke, 1988):

- Distance technologies can empower Aboriginal learners to retain and enlarge their cultural traditions mostly because they enable Native children and adults to remain in their home communities while acquiring education needed to succeed in the majority culture
- Learners can meet their responsibilities to family, and the community is not robbed of valuable members for long periods
- Learners and the community can save on transportation and living allowances
- Children and adults can avoid the cultural dislocation and trauma of being viewed as second class that often accompany attending mixed classes and institutions
- Programs can tap into traditional community supports of elders and grandparents
- Graduates tend to seek employment locally and can serve as role models for others.

The program described in this paper is the result of a partnership initiated by a community-based Aboriginal education consortium with a university, in order to increase the number of Aboriginal teachers in the region it serves. To accommodate learners who already hold a position in remote schools, the program is offered part-time over five years, and includes distance delivery.

Aboriginal learners and distance education programs

There have been various reports of successful and less successful interventions at a distance involving Aboriginal learners. Researchers and practitioners have found a number of conditions that appear to suit specific cultural contexts, as well as curriculum and delivery models that do not work.

Distance programs based on individual correspondence study and phone tutoring have resulted in dissatisfaction and high dropout rates. Case studies of programs involving Aboriginal learners at Athabasca University (Spronk and Radtke, 1988) and teacher education in Labrador highlight the "dismal failure" (Sharpe, 1992, p. 80) of correspondence models involving a large amount of reading and writing university-level materials. Attempts at providing better study conditions and individual or group tutoring in access centres have also met with frustration and concerns about an inferior quality of education (Spronk and Radtke). In Montana's Salish Kootenai College, where 80% of students are American-Indian, one-way satellite educational television delivery was deemed unsuccessful because of the difference in time zones and the frequent loss of the transponder signal (Lambert et al., 2002).

The specific technologies best suited for specific groups of Aboriginal learners are still being debated. Audio-conferencing and satellite radio and television have been preferred in some contexts because they provide structure and direct contact with students, and allow for interactive strategies (Sharpe, 1992; Gruber and Coldevin, 1995). Recent projects favour videoconferencing (FENC, 2001), while others

recommend the use of computer-mediated communication (Lambert et al., 2002) or a combination of the two (KTA, 2005). Still others offer a "cultural critique" of the use of learning technologies (Henderson, 1996), feel they should be "harnessed appropriately" (KTA, 2005), and caution against their wholesale adoption (Hodson, 2004).

On the other hand, there is a broad consensus on conditions that foster learning for Aboriginal learners. The most common model includes site-based instruction for part of a course or program, such as bringing an instructor to a remote site where sufficient numbers of learners can be gathered, for 3 to 6 weeks (Sharpe, 1992; Spronk and Radtke, 1988; Furler and Scott, 1988). Although learners report feeling "honoured" that an instructor should come to their remote community (Carey et al.), such a long period of on-site presence remains difficult for both instructors and learners (Spronk and Radtke).

The following conditions are recommended by several studies involving secondary and postsecondary distance education involving Aboriginal learners (KTA, 2005; Lambert et al., 2004; Facey, 2001; McLoughlin, 1999; Gruber and Coldevin, 1995; Spronk, 1995; Furler and Scott, 1988):

- Curriculum and broad aims of the program based on the needs expressed by the community
- Local Aboriginal facilitators in each site
- Community involvement, through elders and members who hold special traditional knowledge, and local support for each learner
- Basing programs on the cultural values of specific Indigenous groups, such as relationships, family, the natural world, cooperation, spirituality, and respect
- Selection of educational technologies that allow Aboriginal learners to learn in relationship to others and to communicate with each other
- Use of teaching strategies that match learning styles associated with Aboriginal learners: a preference for story-telling, hands-on experiential learning, time for reflection, learning from mentors, and collaborative learning activities
- Inclusion of each community's language, spiritual dimensions and ceremonial practices
- Ownership of the service delivery process and consideration of different geographical and socio-political contexts.

The distance delivery model for the Aboriginal teacher education program described in this paper seeks to build on the lessons learned from these experiences, while taking into consideration the challenges involved in providing distance programs responsive to the needs of Indigenous learners.

The spiral of collective development

The model was constructed through a spiral-like collective process involving the community representatives of the First Nations people in the region and the university's Aboriginal centre for research and education. The process comprised a combination of needs assessments, research, elaboration of guidelines, testing the ideas in partnership with the consortium and university colleagues, trying out various technological systems, and ongoing discussion as the project evolved.

Two needs assessments were conducted in the territory with a wide variety of educators and stakeholders. From these community-based sessions, a collective vision emerged, that of a degree program that would enrich the experience of teachers through deep study of Aboriginal education, culture and language. Throughout the discussions, I noted how various decisions, expressed needs and preferred teaching and learning modes might be transferred into a distance delivery model. For example, when participants felt it important to include a painting by a recognized artist from the community, it became clear that visual and oral modes needed to be part of the learning environment, so as to include the possibility of telling a story while presenting its visual representation. Similarly, the deep involvement of teachers with families and community life needed to be translated into a choice of technologies and teaching methods that connect learners to the broader community in order to maintain these strong relationships.

Through a study of the distance delivery models of Canadian professional programs targeted at Aboriginal learners, using data available on websites of postsecondary institutions, a research assistant and I determined that the most common models included some form of face-to-face instruction combined with distance technologies. This blended approach matched the input from the partnership members, who felt strongly that distance delivery must be combined with physical presence.

The next phase consisted of telephone interviews with 8 stakeholders and distance education providers to determine the availability of technology in the region to be served by the program. Access varies greatly across the 24 communities and changes rapidly. Some remote areas have broadband connections and a well-qualified local technology expert; others make regular use of satellite radio and television; still others have neither. The recommendations from these stakeholders were very similar to the conditions for success culled from the review of related literature.

During this process, I conducted demonstration sessions for members of the program committee in order to select appropriate technologies. Aboriginal educational leaders from other provinces explained how they had used the systems under review to transmit oral traditions. During these sessions, I observed how important it was for participants to exchange information on their community connections and to overcome obstacles in order to include everyone in the discussion.

After analyzing the data gathered from these different sources and incorporating results of previous research, I developed guidelines for the distance education portion of the program. These guidelines were included in applications for accreditation and funding as part of the delivery model.

The Model

A distance delivery model includes the hard and soft systems put in place to provide courses to remote learners. It includes curricular, pedagogical, technological and organisational elements. In the case of a collective model, these elements are undertaken as a coherent whole rather than in a piecemeal manner, through the collaborative efforts of a cultural community (Paquette-Frenette and Larocque, 1995). The model described here attempts to answer the needs of learners who are defined by their deep links to the

community, who identify with their cultural group, and who learn best when curriculum design and teaching strategies flow from these social and cultural connections. The link to community is multi-fold: the program is conceived for and by the community; its aims are for the betterment of the collectivity; pedagogy is based on group interactions; technologies that allow community to be created and maintained are favoured; the community has responsibility for partial administration of the program and delivery.

The core features of distance delivery for the Aboriginal teacher education program support the "two-worlds" curriculum that emerged from the needs assessment. Courses are designed to help teacher candidates understand both Aboriginal and mainstream knowledge, and learn ways to enmesh both within their sense of cultural identity. Content is based on local Aboriginal culture and language and on the provincial curriculum.

Students gather for intensive three-week sessions in a central location. Mornings are allotted to classroom instruction; afternoons are devoted to study and preparation, group work, training on learning technologies, collaboration among students from different communities and support from instructors. The face-to-face portion of courses has an experiential component, including field experiences and labs, and is built around ceremonial practices and talking circles.

For several weeks before and after these intensive sessions, learners communicate among themselves and with instructors through various technologies. Adult students in remote communities are already proficient in the use of chats and email; through the first half of the program, they have developed skills in using presentation software and incorporating sophisticated visual components to course assignments that often surpass those of the university instructors.

The technology of choice for the distance components of the program is real-time audio- and video-conferencing through a course management system that allows voice, picture, and white-board transmissions. This choice is based on the possibility of incorporating oral traditions into pedagogy. Structure and pacing are thus introduced in order to consolidate relationships and maintain learners' engagement in courses between the face-to-face sessions. Distance communication is based on technologies already used in some of the communities, especially where local technical expertise is available. Learners are introduced gradually to technologies, moving from real-time oral and visual modes such as web-based videoconferencing to asynchronous written modes. Equity of access to equipment and Internet connections is crucial. Training for course designers, instructors and learners on each technology is provided. Learners should have access to a full-time helpline and to local support wherever possible. The teaching practicum is carried out in local schools. Asynchronous communications allow learners to post their reflections on their teaching experience under the supervision of university faculty.

Discussion

The joint construction of the design appears to meet an important condition for a responsive model. It follows the twin principles of ongoing consultation and negotiation with the Aboriginal community recommended by Furler and Scott (1988) as a means to design a model flexible enough to respond to changing circumstances. Changes in each

partner organization, uncertainty regarding funding and accreditation, and frequent turnover among the people involved contribute to the need for continuous revision. The partnership creates an opportunity as well as an obligation to discuss each proposed aspect of the model, to help ensure response to evolving needs that only First Nations people in the specific context of the region can know from the inside (Furler and Scott, 1988). However, the process is fraught with many ambiguities, in the "contested terrain" of programming developed jointly by postsecondary institutions and Aboriginal communities (Spronk, 1995).

The three main challenges to the implementation of the designed distance delivery model are structural, pedagogical, and cultural.

There are numerous structural challenges. Beyond the difficulties involved in launching a new program, there is the added strain of implementing a distance program in a dual-mode university at the first stage of sustaining distance training according to Berge's taxonomy (2001). The program is a new venture for both the Faculty of Education and the community consortium. The community-university partnership adds many levels of complexity, including the need to persuade colleagues in each organisation to accept the innovation, and arguing the case for provincial accreditation of a hybrid structure. The hybrid funding for the program also requires constant adjustment on the part of both partners. The economic model for small populations is different from Fordist principles and economies of scale found in mainstream programs. It must be based on the principle that demand will follow supply instead of the usual supply-demand model. In addition, the great geographical distance between the two partners is compounded by the need to focus on cultural aspects.

The second challenge is related to design, pedagogy, and the organisation of the teaching practicum. Instructional designers must develop courses that use different technologies, incorporate both distance and face-to-face components, and are based on the values and preferred learning styles of Aboriginal learners. The pedagogy that responds to the preferred learning styles of Indigenous adult learners has been part of Aboriginal communities for centuries (Poonwassie, 2001). However, facilitation of such courses is an innovation for Aboriginal and non-Aboriginal instructors because of the technologies involved. Motivation and retention of learners over 5 years will require innovative support mechanisms, especially those that recognize the multiple family and community responsibilities carried by these adult learners who are also full-time teachers.

The need to include a teaching practicum at different stages of a learner's journey is considered one of the most difficult aspects of teacher education programs at a distance (Anderson and Simpson, 2005). In this context, the supervision and placement of teacher candidates may place a strain on human resources in both organisations. Supervision carried out at a distance by faculty members based in Southern Ontario, who may have little understanding of the contexts of schools, may also present difficulties.

Most importantly, how much of the community's vision can be embodied and enacted into the actual delivery of the program? The overwhelming challenge for the partners will be to sustain the original vision and community involvement over the long term, once the initial excitement over the uniqueness of the program wears off. Will

mainstream university values and practices overshadow the collective dimensions? Will non-Aboriginal course designers and instructors misunderstand the original vision and purpose? Will the limits of technological systems impose other values on the principles underlying the delivery model? Will the difficulties of maintaining partnerships between heterogeneous institutions (Paul, 1990) lead to a misappropriation of the initiative by the more established partner?

Conclusion

This case study raises a number of questions. Can distance delivery models take socio-cultural context into account? More importantly, can such models be successfully implemented? Aboriginal teacher education at a distance is not an impossible dream, but it must be carefully nurtured by rethinking the meaning of inclusion, and striving towards culturally sensitive pedagogies and technology choices based on connections between learners. New technologies can best be used to enhance learning for Aboriginal teacher candidates if distance delivery models integrate collective values. The collective vision that underlies this project is a powerful force. The urgent need for qualified teachers who can help First Nations students survive and thrive in the "two worlds" they inhabit may constitute the determining factor in overcoming challenges inherent in this context.

Acknowledgements

I wish to recognize the work done by Mary Nyaoso as research assistant in exploring websites of postsecondary institutions serving Indigenous learners, and the key input of John Hodson, Janie Hodson, Mary Raynor, Merle Richards, and Brian Hawker in developing this model.

References

Berge, Z. L. (2001) *Sustaining distance training. Integrating learning technologies into the fabric of the enterprise* (San Francisco, Jossey-Bass).

Burton, W. E. & Point, G. (2006) Histories of Aboriginal adult education in Canada, in: T. Fenwick, T. Nesbit & B. Spencer (Eds) *Contexts of adult education: Canadian perspectives* (Toronto, Thompson Educational Publishing).

Carey, D., Gregory, D., Courtenay, M., Russell, C. & Hultin, D. (2004, May) *Experiences and impacts of learning with technology among Aboriginal nursing students,* Paper presented at the annual conference of the Canadian Association for Distance Education (Toronto, Canada).

Facey, E. E. (2001) First Nations and Education by Internet: The Path Forward, or Back? *Journal of Distance Education,* 16 (1), 113-125.

Fiddler, M. (1992) Developing and Implementing a Distance Education Secondary School Program for Isolated First Nation Communities in North Western Ontario, in: D. Wall & M. Owen (Eds), *Distance Education and Sustainable Community Development* (Edmonton, Canadian Circumpolar Institute with Athabasca University Press).

Furler, L. & Scott, C. (1988) Negotiating a new model for Aboriginal teacher education: ANTEP - A case study, in: K. Faith (Ed) *Towards new horizons for women in distance education: International perspectives* (London, Routledge).

Gruber, S. & Coldevin, G. (1995) Distance Education for Aboriginal Communities in Canada: Past Experience and Future Potential, *The American Journal of Distance Education,* 9 (3), 48-61.

Haughey, M. (1992) Trends and Issues in Distance Education with Implications for Northern Development in: D. Wall & M. Owen (Ed), *Distance Education and Sustainable Community Development* (Edmonton, Canadian Circumpolar Institute with Athabasca University Press).

Henderson, L. (1996) Instructional design of interactive multimedia: A cultural critique, *Educational Technology Research and Development,* 44 (4), 85-104.

Hodson, J. (2004) Aboriginal learning and healing in a virtual world, *Canadian Journal of Native Education*, 12 (2), 13-21.

KTA. (2005) *Crossing Boundaries: Draft Report for the Aboriginal Voice Ontario E-learning Forum* Retrieved February 4th 2005, from www.crossingboundaries.ca/aboriginalvoice

Lambert, L., Tyro, F., Mitchell, M., Burland, D., Hopkins, P. & Barber, K. (2002, May) *Incorporating culture and learning styles in online courses for First Nations and American Indians: A recipe for success*, Paper presented at the joint conference of the International Council for Distance Education and Canadian Association for Distance Education (Calgary, Alberta).

Matheos, K. (1997, June) *Community-Controlled Education through the Convergence of Distance and Community-Based Education* Paper presented at the conference of the International Council for Distance Education (Penn State University).

NNEC (2006) *The Northern Nishnawbe Education Council* Retrieved November 11th 2006, from http://www.nnec.on.ca/nnec

Paquette-Frenette, D. (2005) *Les fonctions du groupes dans les cours postsecondaires à distance selon des adultes franco-ontariens,* Unpublished Ph. D. dissertation (Montréal, Université de Montréal).

Paquette-Frenette, D. & Larocque, D. L. (1995) A Collective Approach to Distance Education, in: J. M. Roberts & E. M. Keough (Eds) *Why the Information Highway? Lessons from Open and Distance Learning* (Toronto, Trifolium Books).

Paul, R. (1990) *Open Learning and Open Management* (London, KoganPage).

Poonwassie, D. H. (2001) Adult education in First Nations communities: Starting with the people, in: D. H. Poonwassie & A. Poonwassie (Eds) *Fundamentals of Adult Education: Issues and Practices for Lifelong Learning* (Toronto, Thompson Educational Publishing).

Schürch, D. (1997, June) *Distance education, an opportunity for the development of the cultural and linguistic minorities* Paper presented at the conference of the International Council for Distance Education (Penn State University).

Sharpe, D. B. (1992) Successfully Implementing a Native Teacher Education Program through Distance Education in Labrador, in: D. Wall & M. Owen (Ed) *Distance Education and Sustainable Community Development* (Edmonton, Canadian Circumpolar Institute with Athabasca University Press).

Statistics Canada (2009). First Nations people: Selected findings of the 2006 census. Ottawa: Statistics Canada. Retrieved May 1st 2009, from http://www.statcan.gc.ca/pub/11-008-x/2009001/article/10864-eng.htm

Spronk, B. (1995). Appropriating Learning Technologies: Aboriginal Learners, Needs and Practices, in: J. M. Roberts & E. M. Keough (Ed), *Why the Information Highway? Lessons from Open and Distance Learning* (Toronto, Trifolium Books).

Spronk, B. & Radtke (1988) Problems and possibilities: Canadian Native women in distance education, in: K. Faith (Ed) *Towards new horizons for women in distance education: International perspectives* (London, Routledge).

Thomas, N. & McDonell, D. J. (1995) The Role(s) of Technology in Minority Group Distance Learning, in: J. M. Roberts & E. M. Keough (Ed), *Why the Information Highway? Lessons from Open and Distance Learning* (Toronto, Trifolium Books).

Voyageur, C. J. (2001) Ready, Willing, and Able: Distance Learning in Canada's First Nations Community, *Journal of Distance Education,* 16 (1), 102-112.

Rethinking the human element – expanding competency development and collaboration in online MBA education

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Abstract

This presentation is a story of a journey undertaken by a group of faculty members and our efforts to rethink the human elements needed to thrive in our online MBA program environment. We are distributed worldwide: from Alberta to UK by way of Australia, Brazil, Denmark, Dubai, Germany, Japan, Oman, Turkey, Ukraine, United Arab Emirates, USA, and various points in between.

Use of technology to support and extend the reach of business education developed rapidly at University of Maryland University College, USA. Our specific program, which began at the dawn of the new millennium, coincided with what has come to be known as the digital era or digital decade. With expansion to the online MBA program, there was a dramatic shift in preference for online education over other distance and face to face education. In 1997, 4% of student enrolment was online, and by 2003 that figure had jumped to 71% (Monaco 2004). Our history shows that in the past 61 years, UMUC has grown into a large, global institution serving almost 90,000 students in any given year. In 2007, individual online enrolments reached more than 177,000. We are the second largest online MBA program in the USA, offering face-to-face instruction in 20 locations in Maryland and more than 20 countries worldwide (UMUC 2009).

As the online MBA programme expanded along with the internet and digital technology, it became apparent that industry and student demands were changing too. Accordingly, we faced a variety of challenges and tensions as we strove to adapt, accommodate and adjust. With specific reference to *Managing Global Business,* an international business course following an eclectic interdisciplinary paradigm, most faculty members had backgrounds combining internationalism, business, technology and academics. From business we understood the imperative of professional accountability and competency-based learning. And from our international experiences we understood the need for flexibility and global thinking. In graduate education, however, introducing the competency approach was new, challenging, difficult and often controversial. In some ways we felt ill-prepared for the changes and that we were often on our own to make the technology and curriculum shifts required in a rapidly changing environment where program level aspirations could not always convert well into deliverable actions. As we moved from digital age pioneers to settlers, and assumed continuing explorer status, we struggled with competency integration and experienced a profound shift in our educational philosophy and practice. As we became more conscious of learning than teaching, and began to talk more about collaboration, knowledge and the responsibilities of classroom management, we found constructivism well suited to the online education emerging within our practice. We continue to discover however that online education is cyclical, cyclonic (Creed 2009) and profoundly in need of human elements to balance out what often seems to have become an environment influenced by technological imperatives.

The Human Element

The human element is a complex multi-dimensional approach which in a certain sense evolved from the recognition and utility it came to have in the hard sciences; chemistry, engineering, meteorology, transport, agriculture, etc. (Ross 1997). In a similar manner, as online education became technology based and driven (Ross 2004) it was easy to overlook and forget the essential human elements – "those moments of discovery that help us understand that life is elemental" (Dow Chemical 2009).

In our own course situation there was a period when we were constantly exposed to new technologies, often with limited testing prior to their introduction into our program and classes. It was difficult for faculty members to know how to push back in appropriate ways. It was not uncommon for members to talk about the apparent increase of "technology determinism" in our environment and with which we and our students were struggling. At times it seemed the human and social aspects of business and education were eclipsed. With the trend towards the introduction of ever more technology in online higher education, it became helpful for us to look to and learn from the hard sciences how they incorporated human element priority into their settings. Learning from them helped us to redirect our attention away from technology and our thinking more towards the human elements in what we do. Publications questioning technology and how it came to be extolled to such an extent were helpful, as were those recognizing the myth of multitasking (2009). Administrator guidance that we be careful when thinking about how we go about incorporating new technologies into our courses (Evanchik, 2009) also helped. More recently we are following trends that examine ways to globalize content without technology intervention during times of economic downturn (Berkeley Globalization Conference 2009), something that suggests the value of the human elements.

Recognition of the human element in operations involves the entire spectrum of human activities; everyone needs to co-operate. We realized that we could learn from the maritime sector especially and the powerful shift that occurred there in the 80s and 90s. Serious emphasis in that sector on the human element led to research and the development of a process tool to address human element issues within the maritime regulatory environment, an approach that accomplished a number of things. To name a few, fatigue-related problems were recognized, addressed and reduced, accident rates were reduced, and human health and safety conditions improved. Ultimately research-based interventions resulted in a paradigm shift where values for human safety and clean oceans are at the top of the priority list and provide a new orientation to business competitiveness and value creation (IMO 2009).

Collaboration – our journey

As we worked alone from our computers and our offices around the world, we developed a need for each other; a need for "company", mutual learning and shared expertise. One day, Andrew Creed (in Australia) observed and remarked that "we are teaching collaboratively". We knew what collaborative learning was – we expected and fostered team learning from our students. The revelation about collaborative "teaching" had a different emphasis that surprised us. Accordingly, we set out to explore what we had inadvertently discovered. We began to write about it and to give conference presentations about our collaboration (2004, 2005, 2006). In effect and without knowing

it, we had become a "community of practice" (Ross 2009; Wenger 1998). From our distributed, but close and interdependent relationship, we began to identify ways to support student learning – as well as ourselves and our own continuous learning. Although constructivism came to be recognized as the dominant paradigm in the last decade plus (Gaskell & Tait 2007), it is an approach which has not been easily achieved in our course and its continuous evolution.

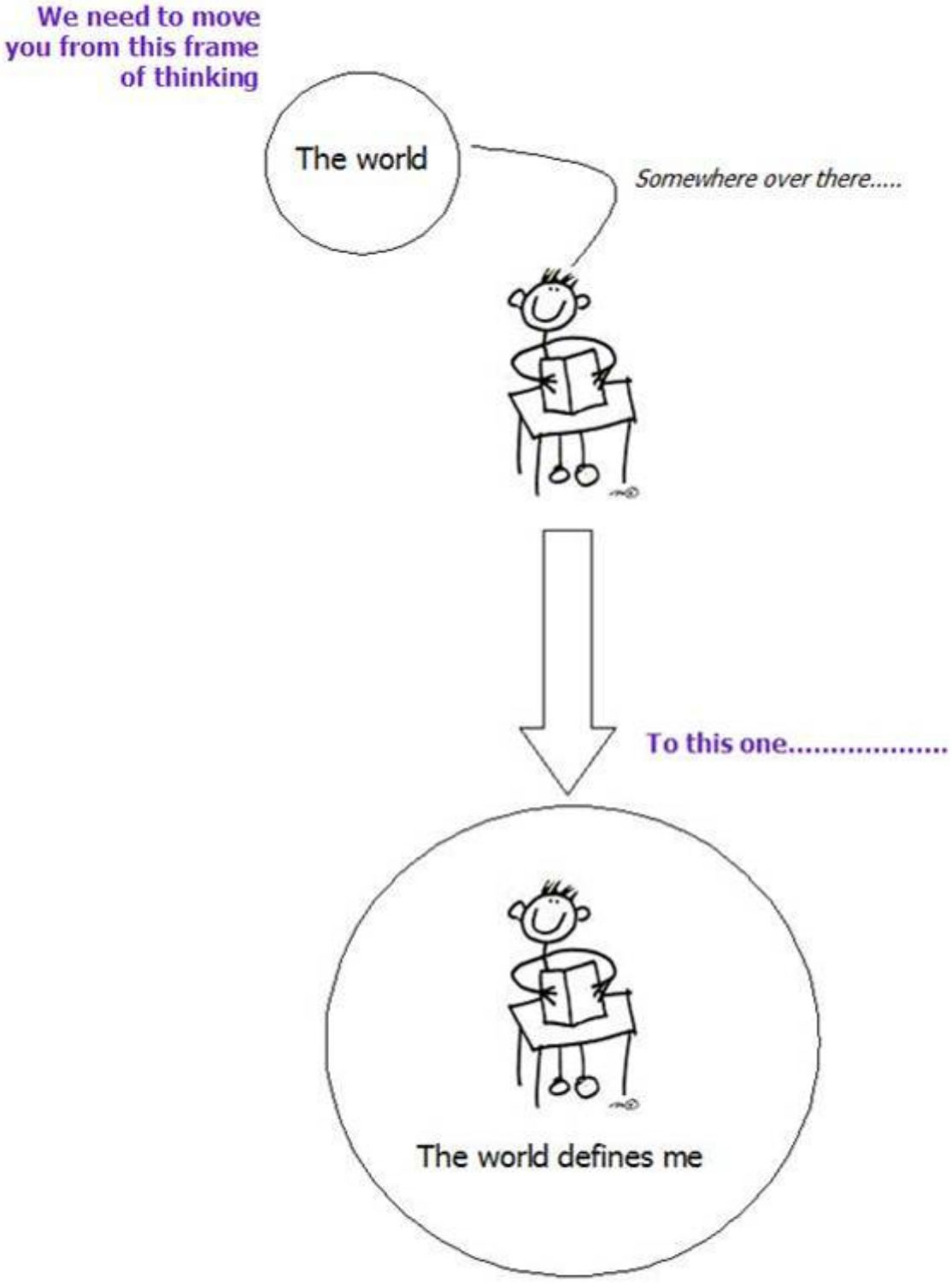
The constructivist paradigm – and why we adopted it

Our university strategy, vision and mission provided what appeared to be a clear mandate supporting andragogy and the construction of learning. University teaching and learning support also included numerous articles supporting andragological methods. As time went on, however, we noticed that reference to andragogy began to decline, likely due to a shift in the student population and expectations by some for approaches more geared to pedagogy.

We were intrigued by the constructivist paradigm and its relevance to our student situation. We also actively sought out the opinions of industry leaders and listened to what our MBA program advisors said. Their messages were consistent: "new holders of the MBA degree need to be prepared to hit the ground running". Once on the job, MBA holders are expected to be able to do what is expected of them – to have the required competencies. Accordingly, we set out to introduce the constructivist method and support our students in taking a more active role to learn and apply course content.

As Blossom (2008) explains, "This is an approach in which the instructor in effect does not teach but rather supports student-directed learning". Representing a significant departure from the ways education has traditionally been done, constructivism is difficult for some administrators and instructors to understand and apply. It is actively resisted by some on the grounds that the semester is too short, it places excessive burden on working adults, it is inappropriate and out of synch with the rest of the programme, and so on. Amidst these challenges we found the work of Rovai (2004) on constructivist methods, along with that of Hersey and Blanchard (1986) on situational learning, highly appropriate to our student needs and our situation. We believe that if students do not learn how to discover and create knowledge at the senior level of their program, the likelihood of being able to perform well in new management jobs is likely to be limited.

Ultimately, we worked out the constructivist diagram and the model that follows to assist students and faculty alike. We explain that one of the first things to learn in our course is the nature of globalization and the importance of having or developing a global mindset. This is an understanding of the world and the place of the manager and leader (including thought leader) in the world. The diagram is a statement about how the global environment of business alters our entire experience. The concepts are introduced to students by explaining that "when we learn effectively about global management we no longer 'do' business; we live it. Our identities are defined by culture, geography, legal requirements, access to resources, and the ripple effects of finance, economics, politics and history. Our identities and understanding of the world and our place in it are subject to change by conversation with each other".



Our model assists students assess their learning situation and direct their learning within the active, constructivist paradigm.

The Active, Contructivist Learning Context of AMBA 606 - Stage 3 in the program.

Stage 3. Active Learning is constructed collaboratively with others using guidance provided. There is little need for the 'taught' or teaching mode because you have the basic knowledge and skills to take the next steps in discovering and creating new knowledge. Emphasis is on working *with* your colleagues'. You take on new roles; form your own teams and lead individual learning conferences; work with team members to lead research in support of the case study you create for your client. Think of it this way, in the past you have been consumers of case studies prepared by others - in this course you create the case study from which others will learn. 	**Stage 2. Coaching Mode:** At this point you are well on the way to knowing the rules of the road, but still need some assistance and active teaching, especially in the form of coaching. Lectures and teaching are enhanced by some team work and learning in teams. Use of case studies prepared by others is common at this stage. Think of Stage 2 as program courses one to three, having some overlap with courses four and five.
Stage 4. Independent Mode: The knowledge and skills necessary for managing/leading are in place; you are capable of going out and replicating - teaching others the knowledge and skills you have acquired in the MBA program, and starting the cycle all over again. This stage is well underway by the time you reach the senior levels (capstone courses AMBA 606 and AMBA 607) of your MBA program. David Gauntiett calls this stage the "Making and Doing Culture."	**Stage 1. Novice or Beginner Mode**: starts in course one. At this point, there is considerable need (and expectation) for teaching and being taught. You know you know a lot of things and have numerous skills from other aspects of your life, but you are 'learning to become a manager and leader'. David Gauntiett refers to this stage as the 'Sit Back and be Told/Taught Culture."  The learner is dependent primarily on a teacher to show, illustrate or demonstrate the 'right' way. Tests are a common method to determine what levels of learning have occurred.

Low---------- High

Directive Behavior and Task Behavior

Inclusion is core to our model and online practice. It expands the community of learning and enables students and faculty to explore and learn together. Commitment to and involvement in the task makes it possible for everyone to expand and improve.

As exemplified in the email communication of May 4, 2009 which follows, application of the constructivist paradigm represents a change of academic stance and culture having the potential to challenge the established order and familiar ways of doing things that are considered to be part of education.

From: "Andrew Creed" <acreed1@bigpond.com>
To: "Jane Ross" <source21@telus.net>
Sent: Monday, May 04, 2009 12:25 AM

Jane,

Once again it seems the cohort that I have is crashing unexpectedly into the constructivist approach of 606. On a teleconference just a day or so ago, one team was explicit about the contrast they felt after being "guided" all the way through 600-605, and then the shock at me asking them to become the "masters" of their own learning. I feel the shock should not be so great, especially as some of these students proudly display their high GPA's from the past. Oh well, I feel well enough prepared to describe the rationale for 606 constructivism - If I'm not prepared after an entire thesis, well who else would be, right?

Andrew

Competency-based learning and teaching

The competency approach comes from a training application, but it is very good for academics (Clarke 2008).

The UMUC online MBA program adopted competency-based learning and features the integration of competencies into instruction, assignments and feedback as a key part of its curriculum, course design and assessment/accreditation endeavors. Accordingly, faculty members work with students to help them integrate programme competencies into their assignments and professional practice.

Our team is comprised of faculty instructors, faculty assistants and an executive in residence who contributes current practical insights from his position in a cutting-edge renewable energy business. Our aim is to make MBA education as relevant as it can possibly be for our students. In combination with constructivism, our faculty team has found that competency-based learning can lead to greater faculty/student collaboration and personal/professional development. The integration of competencies into the coursework encourages students to think critically about the relationship between the

assignments and their own ability to convert knowledge into competency development. Select competencies are highlighted each week; students must illustrate within each week's assignment how their skills are expanding and how they demonstrate the given competencies in the context of their professional, academic, or other experiences. In the constructivist approach, instructors and faculty assistants act as collaborator-facilitators, supporting students to determine their own goals, learning, and education. The student is an active participant who constructs knowledge, is self directed and self assessing. Students have the opportunity to exercise all of the programme competencies while working on a semester-long team case study. In turn, faculty members focus on competency development when providing feedback to student teams regarding ways to improve overall individual and team performance as well as the quality of their work in team assignments (Ross 2008).

Our working definition of a competency includes having the knowledge and skills to move from a tacit state to an explicit state where ideas are identified, clarified and expressed via a process of self reflection and group discussion. Team member Andrew Creed (2008) speaks about competencies as "a different kind of wisdom." There are echoes here of Jean Vanier's (1998) provocative work in which he shares his profoundly human vision for creating a common good that radically changes our communities, our relationships, and ourselves. Our own vision continues to grow, motivate and challenge us, especially amidst the pressures of higher education in the new global economic order which affects us all so deeply since autumn 2009. It is a different and demanding time; one that takes us well beyond the good but conventional competencies in place prior to the economic water shed and social-educational changes we now experience.

Conventional MBA Competencies
Ethical Leadership – The ability to foster mutual respect, trust, and high standards of ethics; develop and negotiate reasonable solutions to ethical dilemmas; make ethical decisions quickly in ambiguous, environment of rapid change.
Teambuilding - The ability to foster commitment, team spirit, pride, and trust; develop, inspire, and manage teams across organizational and cultural barriers to accomplish specific project or organizational goals; work effectively in both formal and informal teams.
Communication - The ability to express ideas, feelings, opinions and conclusions so others understand or are persuaded to act; ability to communicate understanding of another's statements, feelings or ideas; compose written material clearly and concisely at appropriate level for intended audience; ability to persuade others and maintain credibility by adjusting language of the message to fit the audience and the mode of communication.
Critical Thinking - The ability to formulate clear, defensible ideas that result from analyzing, synthesizing and evaluating information.
Systems Thinking - The ability to anticipate and understand the implications of decisions and actions across the entire organization.
Technology Fluency - The ability to use appropriate technologies to achieve personal, professional, and organizational objectives.
Execute Decisions – The ability to confront difficult and uncertain situations, effectively communicate future goals to others, involve the targets of the change in formulating appropriate strategies, and manage organizational transitions.
Make Decisions - The ability to identify and analyze problems, distinguish between relevant and irrelevant information to make logical decisions, and employ proven qualitative and quantitative reasoning techniques to solve complex organizational problems.
Diversity/Cross-cultural Perspectives - The ability to comprehend customs and beliefs of those in or from other social, and religious groups or countries and to employ and promote the attributes of those cultures and belief systems in attainment of organizational objectives.
Information Literacy/Research Skills - The ability to formulate research questions to access relevant and appropriate information resources, evaluate scholarly merits of sources, and use information to support or refute the research hypotheses. (MBA Competencies and Definition 2008).

As we indicate elsewhere (Ross, Bliss, Krive & Graul 2008; 2007), there is nothing wrong with the conventional competencies, providing they are understood and applied by students. Any sense that competencies can be absorbed by "osmosis" is erroneous and does disservice to students and instructors alike. Competencies that are left to remain as referenced in the syllabus or in the weekly assignments serve little function and contribute little of value in applied learning. In contrast, dedication to the values underpinning competencies with active applications of academic work to professional work can be transforming at all levels. We go further to stress that the competencies need to be deeply personal, believed and practiced – functioning at the elemental human levels in ways that challenge conventional understanding and contribute positively to social, economic and environmental change.

In contrast to the good conventional competencies listed above, we have come to think more along the lines of Gomez and Zentner (2009) including and augmented by the input of the individuals in our own community of practice. These are competencies for a renewed global era; competencies having the potential to inspire and stimulate deep social and workplace change. Somewhat surprisingly, all these competencies start with "c". We could say that in our AMBA 606 practice we strive for faculty and student performance where *"C is for collaboration, construction and competency"*.

Competencies for the New Global Era
Character and Compassion. These words reflect passion. Speaking merely of ethics often tends to remain just words. In contrast, emphasis on charter formation can penetrate to the root levels of human consciousness and stimulate visceral responses. Character formation and reformation is something that needs more attention at the individual, moral and civil levels (Gomez 2009; Backhaus 2008).
Community, Communities – Community Development. In the current economic state of affairs, it is not enough for academic work to remain inside academies or the heads of individuals. A practical application beyond the individual is needed, one that links individuals to needs and opportunities within local communities and with communities worldwide. At Augustana Campus, University of Alberta, students are demonstrating this competency in a lively way through increasing linkages with local organizations. The good will and excitement stemming from these connections is palpable by community members and the benefits are many. In Mexico, university students must complete a designated number of hours to earn their university degree.
Communication and Conversation - Conversation is active, it is an art, and involves balanced interaction amongst those in relationship. It is an intensely human activity requiring character, civility and mutuality in relational ethics (Creed, Zutchi & Ross 2009), intensely needed in the often technology intense global business arena of today.
Creativity and Creation – While universities have long fostered creativity, there are increasing tendencies to expand bureaucracy and increase managerial control – resulting in conditions that do not serve creativity well nor result in creations that necessarily serve communities, individuals and society as well as they could. Creativity can unify the arts, sciences, agriculture and other sectors by drawing in and on the whole person.
Career and Cash (Entrepreneurism) – "Cash" can be a bad word in academic circles. But if programs are to serve communities and social needs, legitimate and novel ways of spinning off entrepreneurial activities represent a competency worth pursuing as the adjustments from the well endowed years to these leaner times are made. Engagement in generating new forms of good work are to be desired.
Connections and Connectivity – Technological and human. Commitment to the human elements in the technological era are imperative. The ability to integrate these two dimensions is a competency worth pursuing.
Crisis masters – Gomez (2009) says everyone should be prepared to welcome at least one crisis a day! We are talking here about an attitude towards competencies that embraces ambiguity, and about people who can manage the "rough & tumble" of daily reality (Ross, Hladik & Connell 2005). President Park, President of South Korea is an example that comes to mind. After the war that nearly destroyed the country and its people he challenged everyone to play an active part in its rebuilding.
Cosmopolitan – Thinking and acting from a global mindset (Kedia & Mukherji 1997)
Change: Recognize and embrace the inevitability of change in ways that are reflected in personal behaviour and expectations, and that impact in corrective ways on institutions and authority patterns.

Towards a changing philosophy of education and practice

Looking back over what we have experienced and learned, we are definitely at the point where we believe that a more experiential way of involving (we deliberately choose not to say "training") members of the faculty team in the 'how to' of facilitating competency and constructivist learning-teaching is in order. At the present time we are exploring ways of doing this. We are drawing on our own learning experience and talking with individuals who have other kinds of organizational experiences and procedures. For example, we find our conversations about team building with the Belbin and associates (2009) particularly helpful. Working together in our team in relation to constructivism and the competencies approach is revealing the need for changes in how we approach our own teaching and learning. "Continuous learning" is not a term for students only – it applies equally to the faculty instructional team.

Rethinking the human element and its place in online team collaboration and competency development with students is a demanding process that requires hard work and significant contribution from faculty and students alike. It can thrive in an environment of open dialogue (conversation) and needs constant nourishment. As experienced online academics we know how to do our work, but recognize the need for more embodied interaction and direct contact with each other. We believe it is possible to work for long periods in relative isolation at a distance, but long for more.

As the title of this conference puts it so well, learning can be supported in the digital age – as in any age. The significant difference today is that the learners now include teachers and learners – and students as learners and teachers.

Our team has encountered many challenges and some successes in implementing a competency-based education approach in a graduate level learning environment. The approaches and successes presented in this paper are results of cooperation and collaboration between faculty, assistants, and students in the program – and represent the evolving journey of our community of teaching and learning practice. Our journey happens to coincide with the advent of the digital era, a decade of incredible shifts in which our own program emerged. By exploring and sharing some of our challenges in this way, we anticipate the discovery of new insights that will be of benefit to all.

References

AMBA 606. (2008). Welcome letter to students. UMUC.

Backhaus, W. (2008). Hume's touchstone and the politics of meaningful discourse. Treatise of human nature, literature criticism from 1400 to 1800, Vol 157.

Belbin, M. (2009). Team role theory. Retrieved at http://www.belbin.com/rte.asp?id=8

Berkeley Globalization Conference (2009). Language, society, technology. http://www.lisa.org/Globalizing-Content.1124.0.html

Blanchard, K. (2007). Leading at a higher level: Blanchard on leadership and creating high performing organizations (Prentice-Hall: Upper Saddle River, New Jersey).

Bliss, J., Ross, J., Krive, J., Graul, L. (2008). Competency Development in Online Business Learning Environments, MBA University of Maryland University College. (ICERI. International Conference of Education, Research & Innovation: Madrid).

Blossom, P. (2008). Active learning – construct your learning. A video retrieved on September 25, 2008 from Camtesia at http://www.dr-smartypants.com/.
Clark, L. (2008). Personal communication.
Creed, A. (2009). Action research of cyclonic transactions in online management education. Unpublished PhD thesis. (University of Exeter: Exeter, UK).
Creed, A., Zuthchi, A. & Ross, J. (2009). Relational ethics in global commerce. *Journal of electronic commerce in organizations*. 7/1:35-49.
Creed, A., Zutchi, A., Ross, J. 2007. E-learning and knowledge management in the global context, *Information Technology, Entrepreneurship and Innovation,* Fang Zhao, Ed.
Dow Chemical (2009). The human element. Retrieved May 5, 2009 from YouTube at http://www.youtube.com/watch?v=vsCG26886w8&NR=1
Evanchik, M. (2009). Email communication to UMUC MBA faculty members.
Gaskell, A., Tait, A. (2007). What do we know about using new technologies for learning and teaching? A ten year perspective. The 12th Cambridge International Conference on Open and Distance Learning. The Centre for Educational Research and Development, The von Hugel Institute (St. Edmund's College: Cambridge).
Gauntiett, D. (2008). *Participation culture, creativity and social change.* Retrieved May 1, 2009 from http://www.freshcreation.com/entry/participation_culture_creativity_and_social_change/
Gomez, J.A., Zentner, G. (2009). View of the future: New business models in the knowledge economy. The NAFTA Conference, Sustainable wealth creation through human capital transformation in the new knowledge economy. (University of Maryland University College: Adelphi).
Gomez, J.A. (2008). Strategic thinking and business vision in the knowledge society. Retrieved at http://www.stuart.iit.edu/explorestuart/podcasts.shtml
IMO. (2009). *The human element*. Retrieved April 20, 2009 from http://www.imo.org/HumanElement/mainframe.asp?topic_id=62
Kedia, B., Mukherji, A. (1999). *Global managers: developing a global mindset for global competiveness*. Journal of World Business. 34(3).
MBA Competencies and Definition. (nd). Retrieved September 13, 2008, from MBA classroom http://tychousa3.umuc.edu/DMBA606/0809/9044/class.nsf/Menu?OpenFrameSet&Login
Monaco, S. (2004).*Using technology to extend the reach of business education through e-learning.* (CORS/INFORMS Conference: Banff)
Ross, J., Bliss, J., Krive, J., Graul, L. (2007): *Competency-based active learning: Is your faculty onboard?* (14th Sloan-C International Conference on Online Learning: Orlando)
Ross, J., Backhaus, W., Creed, A., Stewart, J. (2006) *Faculty collaboration in teaching Global Business*. Academy for International Business: Quebec City)
Ross, J. (2006). *From Dubai to Edmonton via, Germany, UK and more – a community of learning in MBA Education.* Transformational Networks Conference, Creating Learning Communities. (McGraw-Hill Ryerson. Teaching, Learning and Technology Conference: Edmonton)
Ross, J., Hladik, M., Connell, C., Stewart, J. (2005). "*Rough & Tumble" – problem-based learning for global business studies".* Unpublished paper. (University of Maryland University College: Adelphi)

Ross, J., Backhaus W., Bolesta, M., Booth, B., Creed, A., Gupta, A. Stewart J. (2005). An exploration and critique of collaboration in an online education environment http://conference.merlot.org/2005/Web_Program_v2.4.htm (MERLOT Conference: Nashville).

Ross, J., Backhaus, W., Bolesta, M., Creed, A., Gupta, A., Stewart, J. (2005) *A Critique of Collegial Collaboration* http://conference.merlot.org/2005/UMUCNashville.ppt

Ross, J. (2004). *Collaborative Teaching, a Model for Online Education*. INFORMS (Institute for Operations Research & Management Sciences: Denver

Ross, J. (2004). *Human elements in effective e-learning*. Canadian Operational Research Society & INFORMS (Institute for Operations Research & Management Sciences: Banff).

Ross, J. (1997). Human elements and organizational factors. The 3rd China International Foodstuff Commodities Fair and Conference. Nanjing

Ross, J.W. (2009). Peer leadership in a global business virtual community of practice. Unpublished doctoral thesis. (University of Exeter: Exeter, UK).

Rovai, A. (2004). *A constructivist approach to online college learning*. Internet and Higher Education (7). 79-93

Vanier, J. (1998). Becoming human. (Anansi Press: Toronto)

Quality assurance in open and distance learning – making it work in the digital age

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Introduction

It is not uncommon for academics to recoil when the term quality assurance is mentioned, as it brings with it thoughts of audits, accreditation visits and interrogations, long reports and endless digging out of data for presentation to external assessors, etc.

What is often lost in the milieu of "quality assurance" activities is the fact that its purpose is to ensure that students are learning what they need and expect to meet their expectations, and that the measure of quality learning lies in how much value is added to the student's knowledge and wisdom during the learning process, and how to improve the learning experience for future students.

The increasing use of digital technology has added another dimension to quality assurance and quality improvement by extending the reach required across all aspects of the educational institutions.

This paper discusses a number of aspects of quality assurance (QA) related to Open and Distance Learning (ODL) in the digital age, namely:

1) What are the really effective constituents of a quality assurance system for an ODL institution?
2) How to integrate academic Quality Assurance (QA) and institutional QA
3) What does an effective Quality Management System (QMS) achieve in an ODL Institution?
4) Special needs for Quality assuring e-learning
5) What makes a good ODL academic staff member so as to ensure high quality learning?

Quality Management Systems

A number of models are available; the following two are reviewed based on the author's experience:

- The Porter holistic model of Primary Activities and Enabling Activities;
- A "Business Excellence Model" (BEM) is a systems approach starting with strategic challenges moving to outcomes/objects.

An appropriate structure in ODL to house the BEM is proposed and generic factors to ensure success are presented.

Internal and external audit functions are reviewed to determine their value, effectiveness, and acceptance by the organisation.

What parts of the E-Learning process need quality assuring and what are their impacts on the overall process?

The question "what makes people hate audits?" is addressed and solutions suggested.

Creating a risk-conscious organisation with good "sensing" mechanisms to detect possible aberrations.

Using the results of the QMS to good purpose or to cause drowning under a mound of reports.

The ODL staff member

A profile of an ODL Tutor, optimum skill levels and academic profile. How to attain them and maintain them is discussed.

Summation

Consider answers to the following questions:

a) Is Quality Assurance different in a fully ODL institution? If so how?
b) How do we know how good we are at ODL?
c) How to measure student satisfaction, provide feedback and does it matter?
d) How to tell the QA story to potential students and make it count.
e) How do we ensure that staff see quality assurance as part of everyone's role and not just the Quality Assurance Office's job?

References

"Education Criteria for Performance Excellence 2005" – *The Baldrige National Quality Programme, USA*

"Accreditation and Assuring Quality in Distance Learning," *CHEA monograph Series 2002 Number 1, Washington, USA*

CHEA – Roles of Accreditation and assuring quality in electronically delivered Distance Learning – September 2001

Carr, S. (2000) As distance education comes of age, the challenge to keeping the students – *Chronicle of H.E., Information Technology – February 2000*

Tinto, V. (1998) Limits of Theory and practice in student attrition – *Journal of Higher Education, 6, 687-700*

Porter, J. "Beyond Access – Student Perspectives on Support Service Needs in Distance Education" *Canadian Journal of University Continuing Education 29(1) 1998*

Trotter, A. "Cyber learning at online high", *Education Week, Jan 24, 2001*

Commission on Institutions of Higher Education

Policy for the Accreditation of Academic Degree and Certificate Programs Offered through Distance Education

Recent years have seen the emergence and increased application of new technologies for instruction by member colleges and universities. While evolving electronic media have had an impact in a number of areas, of particular interest to the Commission has been the establishment of technologically-based distance education programs. These initiatives have enhanced the capacity of many institutions to meet the needs of more students, but the nature of the new delivery systems has also introduced challenges for institutions and the Commission alike.

To assist institutions contemplating engaging in such activities, to provide a self-assessment framework for those already involved, and to give direction in the review of distance education programs as a part of the accreditation process, the following policy has been adopted by the Commission. It reflects principles endorsed by each of the regional accrediting associations to provide a common base for the evaluation of distance education throughout the United States.

This policy does not replace the *Standards for Accreditation;* rather this statement explicates the ways in which the Commission's *Standards* are pertinent to distance education programs. Designed to be applicable to a broad range of technologically-based, credit-bearing distance education programming, its goal is to assure that distance education is characterized by the same concerns for quality, integrity, and effectiveness that apply to campus-based instruction.

> Distance education is defined, for the purposes of accreditation review, as a formal educational process in which the majority of the instruction occurs when student and instructor are not in the same place. Instruction may be synchronous or asynchronous. Distance education may employ correspondence study, or audio, video, computer or other communications technologies.

In its review of distance education activities, the Commission will wish to be assured that the following have been adequately considered.

Mission and Purposes

- Distance education programming is consistent with the institution's mission and purposes.

Planning and Evaluation

- The institution's long-range planning, budgeting, and policy development processes reflect the facilities, staffing, equipment and other resources essential to the viability and effectiveness of the distance education program.
- The institution provides for assessment and documentation of student achievement in each course and at completion of the program

‘Between the idea/and the reality/Between the motion/and the act/Falls the shadow’: using the University of South Africa as a case study to face up to the reality of open and distance education in South Africa in a digital age

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The University of South Africa (Unisa) is the only dedicated open and distance university in South Africa and the largest of its kind on the continent. It has been designated a ‘mega’ institution since its student population exceeds 250,000. It has a long history and the singular status of being the oldest correspondence university in the world. But, as the title of this paper suggests, Unisa is poised at a critical juncture, with one foot in the past and one hovering in the future. I want to investigate the shadow that has fallen between what has been, what is, and what might be for open and distance learning in South Africa.

In particular, the paper questions the reality of the ‘digital divide’ and proposes that it does not only suggest the division between the haves and the have-nots in terms of access to technology. Far more worrying, are the differentials between our savvy students of the future and our stodgy academics, the former accustomed to multi-tasking, sharing, peering and fully techno-literate, the latter, an alarming majority, content to ‘teach’ business as usual, fearful of change and nervously clinging to private domains of expertise. The paper will unpack this conundrum and make suggestions for future practice.

> Despite all the interest and attention being given to e-learning, unless and until countries in this region are able to develop a cadre of institutional leaders and program directors who truly understand and can operationalize in a systematic and sustained fashion, the potential for this medium, and who make more effective use of existing resources, while at the same time seeking additional support for their enterprise, there will remain few grounds for optimism about the chances of significant progress in this arena (Beaudoin, 2007:451).
>
> A communications technology that increases in power a hundredfold decade after decade will soon allow human interaction with essentially any degree of fidelity we wish – 3-D, multimedia, telepresence, perhaps even directly linking our neural networks into cyberspace, a la Neuromancer, a merging of carbon and silicon (Duderstadt, 2001:59/60).

Here are two perspectives on using digital technology in university teaching: the one, frankly skeptical about the possible uptake of innovative technologically-driven teaching in African countries and the other buoyantly optimistic about the future of cyberspace universities. I would like to unpack the middle-ground between these two positions, a middle-ground which is both a threshold and a liminal zone.

A threshold is a point in space marking the division between inside and outside, operating as a pivotal point for entry or departure. A limen is a kind of threshold but signifies in social anthropology a transition from one kind of existence to another. The liminal space therefore is the clearing ground for old cultural habits and a rehearsal for new adoptions. When it comes to the adoption of new technologies about teaching and learning in an open and distance paradigm, we can go in two directions. We can cross the threshold or leave the room. We can face the inevitable or close our eyes and get on with business as usual. It is my unfortunate conclusion that many academic managers would prefer the latter path and that it falls to a relatively small group of enthusiastic drivers to cross the threshold. This is not only confined to the University of South Africa which often uses the digital divide as an excuse to get on with business as usual, but occurs on a global scale as part of the human condition of avoiding change.

I have decided to throw in my lot with the enthusiasts because the future for technology-driven open and distance learning is just too exciting to turn away from and because I am committed to meaningful change at my university.

That sets the scene. What follows will provide the substance.

South Africa is in a relatively privileged position in relation to other African countries with our advanced infrastructure and reasonably healthy economy, yet we fall behind many African countries when it comes to connectivity. For instance, a report on Internet usage and population statistics for South Africa reveals that in the past eight years, the number of people using the internet doubled (2,400,000 to 4,590,000) while during the same time the population increased from 43,690,000 to 43,786,115. More seriously, South Africa has been severely limited not only by the speed of its bandwidth but by its capacity for downloads which is painfully limiting, preventing anyone from downloading large files in periods of less than three hours. Unisa is severely limited by this bandwidth constriction which has impacted on its ability to deliver efficient and meaningful service to its students. For example, the web-portal Unisa uses, based on a Sakai model and called MyUnisa, frequently shuts down when the majority of students are submitting last-minute assignments at midnight. The new IT policy has clamped down on the use of Skype because this would cause a systems failure. Users cannot enter a Second Life site through the Unisa server since this impacts on the capacity of the server. These are a few examples of our restricted capacity to perform as a world-class open and distance university serving South Africa, Africa and further afield.

With the arrival of the Africa Coast to Europe (ACE) submarine cable system, connecting all countries along the West coast of Africa, from Morocco to South Africa, this is set to change, giving those with broadband access speedy download times for large files. However, for the University of South Africa whose teaching range also and largely extends up the East coast of Africa, this is not going to solve our broadband problems. One of our largest regional centres is in Addis Ababa, Ethiopia, which happens to be located along the East coast of Africa. The challenges will continue for some years to come.

Closer to home, other and more serious challenges exist. While the size and scale of Unisa distinguish it from other higher education institutions in South Africa and also from some of the other mega universities of the world, these same characteristics impede its potential to deliver quality service to its students. Unisa's student numbers

are in the region of 260,000, which is more or less on a par with the Open University UK and substantially less than Indira Gandhi but, more significantly, the number of its curriculum offerings (estimated at about 6000 courses) and its sites of assessment (599 in over 30 countries) mean that the supporting systems have to cope with an enormous number of complex variables and also that any potential innovation, any decision that affects core systems and processes, has the potential for massive impact.

A key example of such an innovation is the decision to institute a tutor system for selected pilot courses at undergraduate level. Unisa has of course always had tutors, but these have been placed at the larger regional centres across the country and have operated on a strictly face-to-face basis. The aim of such tutoring was to serve largely underprepared students or students who were caught up in a pattern of repeated failing. Now, however, Unisa wants to institute a more comprehensive system of student support and has decided that this should incorporate online assistance. A quick glance at the logistics will reveal the scale of the challenge involved in this initiative. 265,000 students and 1482 academic staff already indicates an impossibly large student to lecturer ratio. Using an 'ideal' student to tutor ratio of 1 – 40 (one tutor to forty students, less if the tutoring is online), this means that we need to source in the region 6625 tutors. While this is possible but not probable, the matter is compounded by the fact that these 265,000 students are engaged in different courses, all 6000 of them. Do we engage 6625 subject experts (frankly impossible in South Africa) or do we settle for a mentorship model wherein each tutor will take on forty students regardless of their expertise and only for the purposes of providing ongoing support ("you are doing well; keep it up; I notice you didn't submit an assignment this month. Can I help you at all?")? Then, there are, at the time of writing, no systems in place to ensure that at registration, each student will be allocated to a tutor. To compound the problem, the digital divide in our diverse student body means that we have to differentiate at the point of registration whether a student has access to online communication and decide then and there on the type of tutoring that student requires. At this point, staff shake their heads and the problem is shelved for another time, another workshop, another bright idea.

It is obvious, therefore, that at one level, the digital divide in South Africa and further afield, is hugely important in the way Unisa provides teaching and learning and learner support, but it is not an insurmountable problem. A recent report by Czernieiwcz, Brown, Lee-Pan and Moyo (2008) shows that 98% of students at Higher Education Institutions in South Africa have mobile phones and that for 43% this is the primary means of internet access off campus. In addition, most of these phones are 'owned' on a contract basis with free upgrades every two years. Most new phones are 3G-enabled which means that the majority of students would be able both to source information from Unisa and communicate with staff (and vice versa) at little cost. At a very basic level, it follows, Unisa could engage in student support, even if that support were in the form of an automated SMS delivery.

Another possibility is to ensure that every student receives a laptop with full connectivity at registration (one laptop per student), but the bandwidth problem referred to earlier will preclude many students from having satisfactory communication and this will lead to immense frustration for these students and compound the problems we already have in providing top-quality service. Moreover, there are still those amongst our students in the deep rural areas in South Africa who do not have electricity at home,

so providing them with a laptop will be of no benefit, unless we can source and provide them with wind-up laptops.

Unisa has toyed with several possibilities in engaging with this problem:

Item: mobile units to reach far-flung rural areas. Objection: the bandwidth problem persists.

Item: use local amenities such as schools, town halls and churches as internet centres in rural areas. Objection: high levels of theft mean that these will have to be secured and that will incur additional costs.

Item: partner with government departments such as the Post Office to ensure that all students can use a computer to reach Unisa. Objection: Post offices in South Africa are not efficiently run and cannot cope with large numbers of students.

Given these challenges, the preferred soft option is to maintain print delivery for the majority of students and to continue with business as usual.

What then are the possible innovations for Unisa? What are the feasible options that will bring our thinking closer to the mood of the second quotation at the beginning of this paper, closer to 'the idea' and away from the 'shadow'?

The first but most difficult option is to completely streamline the number of Unisa's courses to a more manageable number. This is something no-one at Unisa dares to contemplate for several reasons. Firstly, our PQM (programme qualifications mix) has been severely curtailed over the past three years, resulting in a drastic cut in courses and, in some cases, departments, especially in the already challenged Humanities faculty. By cutting courses and departments, Unisa involves itself in Human Resources problems, lawsuits and cases at the CCMA (the Commission for Conciliation, Mediation and Arbitration). Unisa doesn't need 6000 courses and 1482 core academics but it doesn't know how to get rid of them. That is the plain truth.

The second option is to investigate such initiatives as OLPC (one laptop per child) or other netbook marketing enterprises and purchase enough of these, equipped with Linux software if necessary, to ensure that every student has a laptop. Moreover, as e-readers become increasingly more efficient and user-friendly (the Kindle for example), Unisa could consider purchasing these and loading them with text-books and study material.

The third option, and the one I want to spend more time discussing is to base Unisa's transformation into a first-class global open and distance university on a series of very simple steps.

Step 1:
Get the basics right (first things first).

Unisa must ensure that its basic services are in place to meet the minimal standards for student service and support. These include the receipt and dispatch of student assignments and exam papers, study materials and supportive tutorial letters. Unisa is still, in 2009, receiving assignments by email, printing them out, delivering them to

lecturers or outsourced markers to mark, then posting them back to student by snailmail. Written assignments received by post are scanned at the various regional offices but returned to student by post. Given the wretched postal system in South Africa, delivery is slow and ineffectual. Students receive feedback far too late to be of any use and delivery to other African countries can take months. This is exacerbated by the adoption of a semester system which allows three months for a module to be completed.

Student support does not require sophisticated digital gadgetry. Students on the fortunate side of the digital divide are happy to work in their own time, linked to Unisa through its web portal and engaging in student discussion *fora*. But, depending on the course involved, lecturer or tutor input into these *fora* can be limited or non-existent. In a recent student survey, students lamented this lack of tutorial support, which should be a non-negotiable part of a lecturer's duties. The shadow, however, is that many academic staff are technological immigrants who are wary of web portals and, despite all efforts at training, are unwilling to commit to even a once a week digital input. A student studying at a distance must have access to lecturers and tutors on a regular basis either through email, the telephone, the web portal or through skype. Several efforts are being made to encourage academics to use MyUnisa for student support and the soft touch does not seem to be working. Perhaps it is time to make staff participation in MyUnisa both part of the working contract between staff and Unisa as well as a component of the performance management system.

Step 2:
Tackle the elephant by degrees or one step at a time:

Instead of committing the institution to radical overall change, we must proceed incrementally. The Unisa Power Courses is one such initiative. The idea behind this idea was to select a small number of undergraduate courses for special treatment. These courses would be designed from scratch with the necessary IT and other infrastructure in place for efficient, effective delivery. Most pertinently, these Power Courses would have a fully functioning tutor system in place. There is not sufficient space in this paper to discuss the shortfalls of this grand plan. Suffice it to say that by choosing large undergraduate courses and without sufficient support from the necessary infrastructure, the scheme is floundering and is in need of a rethink. Already, the name has changed from Power to Pilot courses and the envisaged number of targeted courses has decreased. Between the idea and the reality falls the shadow.

Step 3:
Rethink change strategies:

A change management portfolio has been in existence since Unisa merged with a major Technikon in 2004. It was clear that at many levels, people's mindsets had to change. Various initiatives were put in place, including 'thinking out of the box', conversation circles, workshops, training and a newly instigated performance management system with associated monetary rewards at senior levels for good performance. Mostly, however, change has been slow, and staff who are amenable to change tend to be the already converted. There is still an unmovable feast of people who are content to stay as they are. Recently, the Principal and Vice Chancellor, Professor Barney Pityana, unable to disguise his impatience with tardy thinkers (I realise that this is an oxymoron), called upon Unisa management to engage in 'uncommon thinking' (at the Gallagher Estates

Management Plenary, May 2009). He asked for new solutions for new times, and already the ripples of those waves are being noticed. 'Uncommon thinking' has been adopted as a phrase in several quarters of the university and soon it will become current usage. Perhaps this is the tipping point (thank you Malcolm Gladwell) for Unisa in the 21st century. Already the call is out for a new breed of managers, one such as the newly appointed Executive Director of Information Technology, Dr Sadesh Harichand Sookraj who has entered Unisa like a whirlwind, amazed at what we have got ourselves into and pumping people with adrenalin with his innovative thinking.

Step 4:
Reposition Unisa in the global learning factory:

Unisa has held a central place in South Africa as the only dedicated distance teaching institution. No other institution in Africa can match Unisa in its experience, its infrastructure and its global reach. No other institution in South Africa has Unisa's size and scope. But for how long will this last? As other universities switch to dual mode, offering face to face and distance education, as new developments in open source platforms and software become more available, how long can Unisa maintain its niche market? Already, Wikiversity is training volunteers as Wiki practitioners. Already, anyone with internet access can watch videos of top performing professors from Yale and MIT giving live classes. Anyone can enroll for the Open University's open source courses. Very soon, these online free and open courses will be giving credits to their students. What is to stop life-long learners switching from Unisa to open-source learning packages, particularly if they are credit-bearing?

The answer, I think, lies in what Unisa can offer that open-source-ware cannot and that is 24.7/365 online learner support plus a diverse range of socially responsive course offerings with an African flavour, scaffolded by innovative assessment such as e-portfolios and home-based exams. That will keep us going for a while.

Step 5:
Forward planning for 2025:

> It could well be that faculty members of the twenty-first-century university will find it necessary to set aside their roles as teachers and instead become designers of active learning experiences, processes, and environments. Tomorrow's faculty members may have to rely less on the present style of solitary learning experiences, in which students tend to learn primarily on their own through reading, writing, and problem solving. Instead, students will demand that universities offer collective learning experiences, in which students work together and learn together, with the faculty member becoming more of a consultant or a coach than a teacher (Duderstadt, 2001:60).

In the year 2025, the first millennials will enter university in South Africa. These are children who have grown up in a technological era. Their habits and mindsets, even their brains have been studied and researched. We know who we will be dealing with. Multi-taskers, whose thumbs move like lightning over tiny keyboards, while their ears are plugged by music coming in from ipods, at the same time as their eyes are trained on screens upon which are flashing short messages from g-mail and facebook. They will be used to sourcing their music, their movies, their TV and their news from open

sources, when they want it and where they want it. Their capacity to read a document longer than five lines will be limited but they will have an expansive capacity to absorb knowledge from different media streams. They will be used to sharing and peering. They will be creators of 'things' from years of practising life experiences from virtual media such as *Sims*. They will not want to sit in a classroom or wait for a download. According to Oblinger (2005) there are already marked differences in the approaches adopted by students from this generation and academics as observed in the following table:

STUDENT	ACADEMIC
Multitasking	Single or limited tasks
Picture, sound, video	Text
Random access	Linear, logical sequential
Interactive and networked	Independent and individual
Engaging	Disciplined
Spontaneous	Deliberate

How will we satisfy their needs in a tertiary environment? By using a variety of new and different approaches to distance learning, some of which include online worlds (Second Life), moving away from theory to practice (apprenticeship), developing pedagogies suitable for onscreen literacies (mutable, manipulable and multilinear rather than print literacies, 'new learning ecologies', focusing on problems rather than disciplines and on interdisciplinary projects than on single disciplines, partaking in dialogue, conversation and networking as pedagogical tools.

Concluding remarks

The shadow will always be with us as a natural component of light and shade, the obstruction that comes between our vision and the sun. Nor need we perceive this as a negative stumbling block rather a necessary pause, a momentary hiatus on our inevitable canter to keep up with time. But we shouldn't pause too long. I am concerned, like many others in higher education, that our thinking is not flexible enough, lacks the elasticity necessary to keep pace with the incoming generation of techno-savvy youngsters. We know enough already to anticipate their needs but do we have the will to adopt radical changes in our thinking and apply them effectively in our practices? Universities have taken it for granted that their job is to prepare students for mastery of a discipline. Most of us were trained in this way and have thus become practitioners of the discipline. But our students of the future will not necessarily need disciplinary knowledge. They will need to become 'bricoleurs' rather than 'masters', graduates who have learned to find the necessary knowledge, mash it up, add it to another branch of knowledge and in the process produce a new form or artefact. Most crucially, these future learners will have to acquire the critical acumen to know how to distinguish the useful from the trivial in the sources they use. John Seely Brown cites the four skills of the future as navigation, discovery, borrowing and judgment. Don Tapscott and Anthony Williams (2008:54) list the Net generation's norms and attitudes to work as speed, freedom, openness, innovation, mobility, authenticity and playfulness. These are not the skills or norms university teachers are known to possess, but to operate within a Web.2 environment, which is where we are now, we have to begin adapting.

Moreover, as the world adjusts to a new era which is destined to be less focused on the pursuit of wealth and more concerned with protecting our global environment, we will have to refocus our pedagogies toward *communitas,* commonalities, village ecologies, and local knowledges. The research being done by Sugata Mitra is a sturdy example of the shift in thinking needed by universities. Basing his ideas on the neurological principles of self-organising systems, he has been promoting the ideas of self-organising learners, showing that, left to themselves, children are able to learn new skills, new languages and new solutions to difficult problems if given access to broadband computers. This research has far-reaching possibilities for the way we think about learning.

What Unisa needs is what most universities in Africa need, good connectivity, good content, effective policies and, above all, a robust strategy to make intelligent use of emerging technologies for open and distance education.

References

Bayne, S. (2008) Higher Education as a visual practice: seeing through the virtual learning environment. *Teaching in Higher Education*, 13 (4):395–410.

Beaudoin, M. (2007) 'Dissecting the African Digital Divide: diffusing e-learning in sub-Saharan Africa'. E-Learning, 4 (4). www.wwwords.co.uk/ELEA.

Brown, J.S. (1999) 'Learning, Working & Playing in the Digital Age'. Conference on Higher Education of the American Association for Higher Education. http://www.johnseelybrown.com/pubs.html

Daniel J.S. (1996) *Mega-universities and Knowledge Media: Technology Strategies for Higher Education,* KoganPage, London.

Czerniewicz, L., Brown, C., Lee Pan, S., and Moy, A. (2008) 'Students make a Plan: ICT access and social and academic uses in higher education'. Sixth International Conference on Networked Learning 2008, 5-6 May, Greece.

Daniel J.S. (2000) *Mega-universities and Knowledge Media: Technology Strategies for Higher Education,* KoganPage, London.

Duderstadt, J. (2001) 'The Future of the University in the Digital Age'. Proceedings of the American Philosophical Society, 145 (1).

Lave, J., Wenger E. (199x) *Situated Learning: Legitimate Peripheral Participation.* New York: Cambridge University Press.

Teemu L. (2008) 'Wikiversity – the Attempt to Create a Free University on the Internet'. UOC UNESCO chair Fifth International Seminar. http://www.uoc.edu/symposia/unesco2008/eng/index.html

Oblinger, D. & Oblinger, J. (2005) "Is it Age or IT: First Steps towards understanding the Net Generation", Educause, sourced from www.educause.edu/IsItAgeorIT%3AFirstStepsTowardUnderstandingtheNetGeneration/6058

Smith, D.C. (Undated) *Educating the Millennial Student: Some Challenges for Academics*. Report commissioned by the University of Cape Town. http://www.sacla.org.za/SACLA2006/Papers/WP15%20Derek%20Smith%20Educating%20the%20Millenium%20Student.pdf.

Tapscott, D. and Williams, A. (2008) *Wikinomics; How Mass Collaboration Changes Everything*. London: Atlantic Books.

Optimizing the student LMS access frequency based on Shannon-theorem in developing countries

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Abstract

One of the advantages of the E-learning management system in an open learning environment is the ability to post dynamic information about new events that occur during the semester to a target group of students. However, one of the problems that arise is to make sure that students will read the newly posted information about an event in time. This problem appears mainly in developing countries such as Lebanon where a large number of students do not access the internet frequently, whether because of social conditions or because of the limited internet availability. Taking into consideration that more than 67% of the students at the AOU - Lebanon access the E-learning management system from outside the campus (AOU-LMS), it is imperative to know whether students access the internet in due time after posting new information. In order to address this problem, we have gathered statistics from the LMS at the Arab Open University - Lebanon about the time and the frequency of access to LMS made by the students after the posting of new information.

In this paper, we propose a tutor-student communication protocol based on the Nyquist-Shannon theorem widely adopted in the telecommunication systems (Shannon, 1948; Nyquist, 1928). By applying this protocol, one can make sure that a target group of students will read any new posted information on the LMS before a specific time without having to access the internet frequently.

Introduction

The ability of the students at the Arab Open University - Lebanon to access the internet frequently in order to browse the E-learning management systems for any update is mainly limited by two factors: the intranet availability and the cost. According to IDAL (2007), the number of internet subscribers in Lebanon after launching the new Digital subscriber line DSL services in May 2007 is around 450,000 by the year 2008; thus the ratio of internet users to the population number reaches 19.5%. Taking into consideration that the average cost of a monthly internet subscription is around 30 $ Lebanese telecom provider (OEGRO) and the minimum monthly salary is set to 300$ by the Lebanese Labour Ministry (LLM); the ratio of the internet monthly cost to the minimum salary is 10%. On the other hand, the newly introduced Digital subscriber line DSL service is mainly available in the big cities of Lebanon while most of the towns of the countryside still rely on dial-up internet services that have a very limited speed. All theses factors affect students' ability to access the internet frequently and thus constrain them from being able to continually follow the updated information on the E-learning management system about their courses. This may lead to the reduction of the learning skills achieved and, in the worst case scenario, this may lead to failing the course. If a student was for any reason not able to do a quiz in time and couldn't read the new information posted on the E-learning management system about the makeup quiz

condition and the cut-off date of applying for a makeup quiz, because of one of the reasons mentioned above, the student will end up having a zero. The same applies for tutor-marked assignment. The Course Coordinators at the AOU - Lebanon are having difficulties to deal with such problems, they are using alternative methods to inform the students about new events (such as makeup quizzes, or make up sessions), by sending SMS or by calling the students.

In order to make the LMS a more reliable media for informing the students about any new updated information without relying on other channels like SMS or telephone calls, which are expensive and time consuming, we have explored the different possibilities to improve the LMS. We did this first by gathering statistics (see Table 1 and Figure 1) from our e- E-learning management systems about the time and the frequency of access to LMS made by the students after the posting of new information, hoping that the analysis of the numbers will allow us to propose an adequate solution.

Student internet access frequency statistics

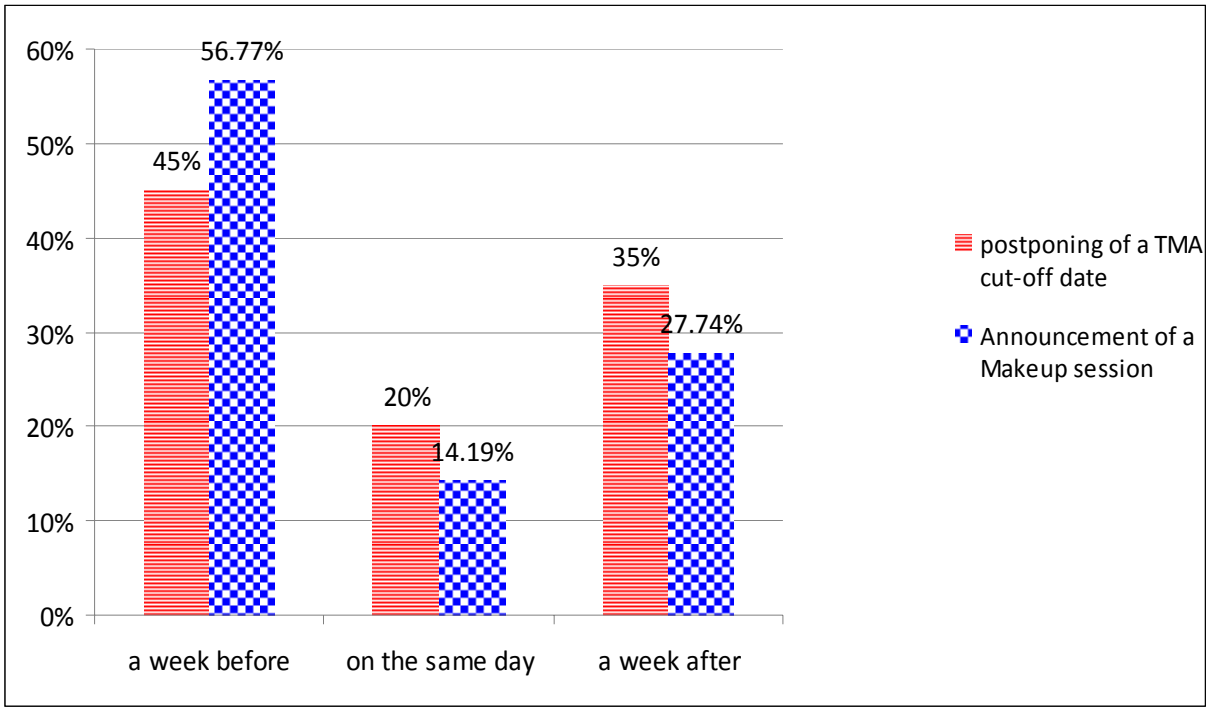

Figure 1.

In order to understand the problem we have gathered data from our LMS (AOU_LMS). The data gathered has the following header:

Table 1.

Date & time	IP	Student Name * ID	Information Viewed	Course Name
25/05/2009, 11:52	85.195.139.186	006490	Assignment view	T 305 Part II:

We have gathered the data a week after the announcement of a change of TMA cut-off date and after the announcement of a new makeup session. We are interested in the percentage of the students who were able to browse the LMS and hence were informed

in time about the new events, and the percentage of students who were not able to access information in time.

From Figure 1 we can infer that 35% of the target group of students was not able to read the new TMA cut-off date in time. Moreover, 27% of the target group of students was also not able to know about the date of the makeup session in time. TMAs can still be sent late, but missing a makeup session cannot be rescheduled. The target group of students who access the LMS on the same day can be added to the number of students who are accessing the LMS in due time, since they can still "benefit" from the information. From this number we can clearly identify the problem of informing the students in time about new events. The LMS in its actual state is not 100% reliable (in our best cases, 70%, see Figure 1). We decided to explore the different possibilities to improve the LMS in order to increase its reliability, rather than relying on alternative channels as stated above.

From Figure 1 we can deduce that all students are accessing the LMS but the problem lies in the difference between the time the information is updated and the time the students access the LMS. This led us to the proposition of a new protocol that is based on Nyquist-Shannon theorem.

Nyquist-Shannon theorem (Shannon, 1948; Nyquist, 1928) is widely adopted in the telecommunication systems. Shannon stated in his article (Shannon, 1948): "If a function of time f(t) is limited to the band from 0 to W cycles per second it is completely determined by giving its coordinates at a series of discrete points spaced 1/2W seconds apart in the manner indicated by the following result:

Theorem 13: let f(t) contain mo frequencies over W. Then

F(t)=∑Xnsin¶ (2Wtn) where Xn=f(2Wn)." Shannon, 1948).

Put in another way, if the frequency components present in a continuous signal extend from 0 to B Hz, then the signal can be completely represented by, and reconstructed from, a sequence of equally spaced samples, provided that the sampling frequency exceeds 2B samples per second.

Applying Shannon on Student's LMS access frequency

In order to apply Shannon's theorem on the Student's LMS frequency access, we propose the following protocol.

Let F be the highest frequency (the shortest time period, T) of dynamically posting information about new events on the E-learning management system (the frequency components in Shannon theorem), then this information can be completely represented and reconstructed from a sequence of equally spaced LMS access by the students, providing that the frequency of LMS access exceeds 2F accesses per second. In an analogy to the Shannon theorem stated above, we replaced sampling frequency by the student's frequency of accessing the E-learning management system. For instance, if the highest frequency of updating the information by the course coordinator on the E-learning management systems is once a week, then the student's frequency of accessing the LMS has to be at least twice a week. This will ensure that any update to the E-

learning management system by the course coordinators will be transparent to the students (see figure 2).

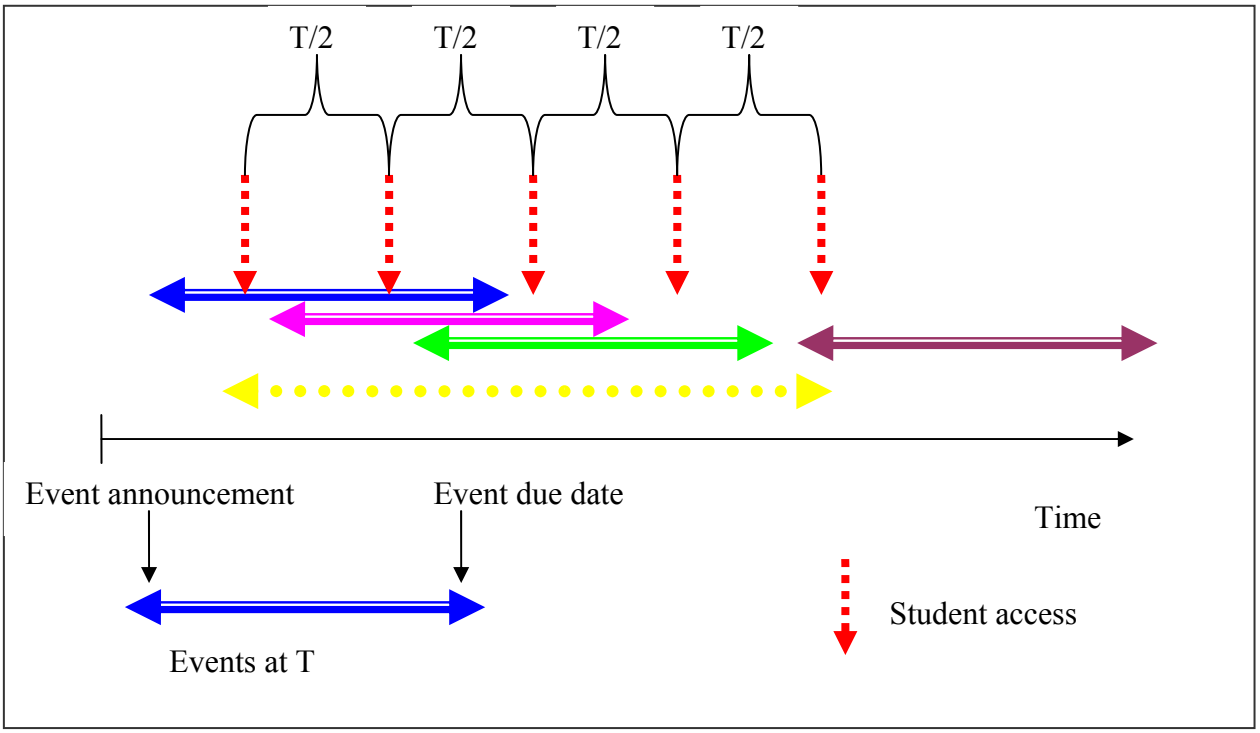

Figure 2.

From Figure 2 we can deduce that any new event that is announced at the beginning of T and is due at the end of T can be viewed by a target group of students provided they access regularly the LMS every T/2. From Figure 2 we can also deduce that four different events, even that some of them overlap in time, are clearly viewed by the students (dashed arrow) before they are due. It is crucial that students are able to view the announcements before they are due; given that any announcement is due after a T and the students are accessing the LMS twice during a period of time T, the students should not miss any newly posted information. Furthermore, we can say that if the tutor announces a new event that will take place at time greater than T, the students are also able to view it (see the horizontal pointed arrow).

Implementation

In order to propose a practical solution on how to implement our new protocol into the E-learning management system, we propose to split the proposed protocol into two parts, the client and the server part. We further define the course coordinator as a server and the student as a client.

At the beginning of each semester the server has to inform the client about the period T of announcing new information on the LMS. Based on this, the client (student) has to access the E-learning management system twice during T (the time interval between any two student's accesses has to be equal to T/2). The server has to respect the property that says any announced information has to be due strictly after T. For instance, if T has

been set equal to one month, then any new posted information about any event has to be due after a month, hence the client (student) has to access the E-learning management system twice per month. Moreover, the time interval between two consecutive student's LMS accesses has to be less or equal than 15 days.

In order to integrate this protocol into the LMS, we recommend adding a parameter into the LMS at the top of every course that indicates the value of T (the period the server (tutor) will announce new information on the E-learning management system). Thus, the students of a target group have to access the LMS every T/2; Moreover, to help the students keep track of their LMS accesses, another feature needs to be added to the LMS that does the following: every time a student accesses the LMS, the LMS prompts the next time (T/2) the student has to access the LMS.

T can be chosen based on many criteria, such as the level of the course, the geographic distribution of the students and information about the internet availability in the different regions. Moreover, the static events such as TMAs cut-off dates that will be set at the beginning of the semester can be chosen with respect to T, this will increase student awareness of their duties.

Conclusion

In this paper, we proposed a student-tutor (client-server) communication protocol based on the Shannon theorem that helps to increase the LMS reliability as a communication media in an open learning system between students and tutors. By applying this protocol, one can make sure that a target group of students will read any new posted information about course related events on the LMS before they are due, without having to access the internet frequently, and without forcing the tutors to make use of alternative methods (such as sending SMS's and making telephone calls) during the semester. Further we have shown how to integrate this protocol into the LMS. We are further looking to address the problem of informing the students each time they access the LMS about the new updated information since their last LMS access.

References

AOU-LMS, Arab open university-Lebanon branch, LMS website, http://elearn.aou.edu.lb/login/index.php

IDAl, The official IDAl website, http://www.idal.com.lb/Newsletter.aspx

LLM, The official website of the Lebanese labor ministry. http://www.labor.gov.lb

Moodle, Official Moodle website, http://moodle.org/

Nyquest, H. "Certain topics in telegraph transmission theory". Trans. AIEE, Vol. 47. PP 617-644 Apr. 1928.

Ogero, The official website of OEGRO, the unique Lebanese telecom provider. http://www.ogero.gov.lb

Shannon, C.E., "A Mathematical Theory of Communication", Bell System Technical Journal, vol. 27, pp. 379-423, 623-656, July-October, 1948.

Glossary

Client: student registered in a specific course.

Frequency: the frequency the server (tutor) is announcing new information on the E-learning management system.

Period T: (1/frequency) the period of time, that begins with the announcement of a new event and ends with due date of the event.

Server: Tutor, course coordinator who creates and updates the course information on the LMS.

TMA: Tutor marked assignments.

Mobile learning in distance education: learners' smart choice

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Abstract

In the techno-driven world, mobile learning is an indispensable element of teaching-learning activities. It helps distance learners in many ways by providing their required facilities. This paper discusses these facilities in an eclectic and summary manner. Thus, by implication, it is popularized among distance learners across the globe. Further, it discusses the reasons why learners are tempted to go for mobile learning: whether it helps them in their study skills and enhancement of their cognitive skills which they badly require in their learning activities. A critical analysis of these issues is followed by a crucial discussion. That is, whether it is possible to sustain quality assurance in mobile learning? The paper concludes with an assertive view that mobile learning is the smart choice of distance learners in Open and Distance Learning systems.

The expression 'Mobile Learning' is commonly abbreviated and familiarized as "M-Learning". It is interpreted in various ways depending on the context and user communities. If we treat M-Learning in the context of distance education in particular and teaching-learning activities in general then the possible interpretation would be: it is an exciting art of using mobile technologies to enhance the learning experience. Clark Quinn defines, "m-learning is the intersection of mobile computing (the application of small, portable, and wireless computing and communication devices) and e-learning (learning facilitated and supported through the use of information and communication technology)". It offers powerful and practical solutions to many distance learners. It helps distance learners, not only from the perspective of support services, but also assists them to browse and explore study contents at any time irrespective of location.

Consequent upon computer mediated learning, mobile devices are quickly becoming natural components in many distance educational institutions. A few years ago (not even one decade) there was a tendency where people believed that if the authority of an educational institution enabled the installation of enough computers, then many educational problems would be solved. True, this spirit encourages mobile technology in the educational domain, subject to well planned, suitable strategy and local needs of the learners. Mobile devices due to its multiple applications and functions not only encourage learners to adopt life-long learning but also motivate them to choose mobile learning settings. An essential feature of m-learning is to bridge the distance between learners and their pattern institutions in all respects.

M-Learning is considered as a higher version of e-learning (learning through computer enabled with internet). This is so because all the components of e-learning are found in M-learning, but not vice versa. Hence, a few distinctions are identified between these two forms of learning.

E-learning vs. M-learning

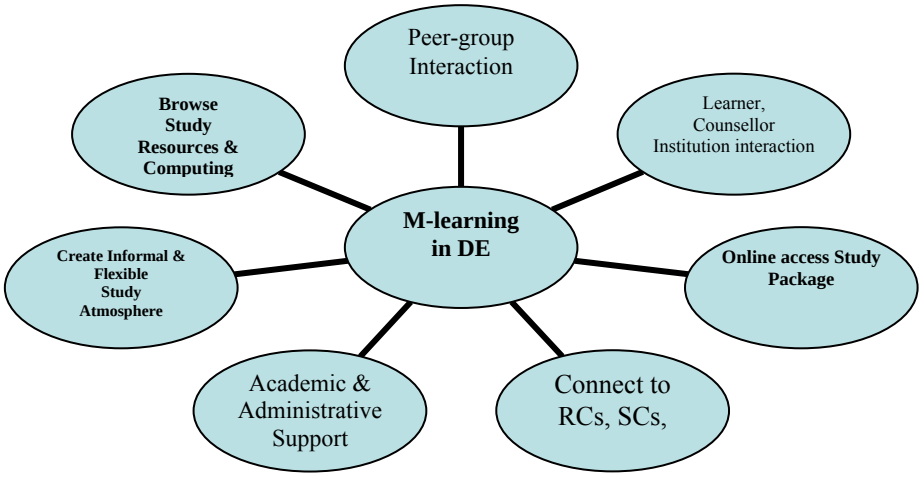
E-learning encompasses computer with Internet which is located in a fixed place. For example, desktops, laptops etc. On the other hand, M-learning comprises different mobile devices possessing the features; light weight, can be operated in one hand and handy to keep in pocket. In mobile devices ware connection is not needed while operated. It is an electronic device integrated of all the multimedia technologies. The devices are (not a complete list); iPod, MP3 Player, PDA, USB Drive, E-Book Reader, Smart Phone, Ultra-Mobile PC. Further, e-Learning takes place in a fixed place whereas m-Learning takes place in all places and all time, hence, always. Here, it is important to mention that all these devices subsume m-Learning and have both merits as well as disadvantages in a teaching-learning context.

Mobile learning - its advantages

Mobile technologies support learning experiences in that it is collaborative, integrated and accessible in a distance education context. The benefits derived from mobile learning are:

i) It facilitates learner centered learning and collaborative learning
ii) It encourages independent learning
iii) It helps to receive update information
iv) It helps learners to recognize their existing abilities
v) It assists learners to make learning informal
vi) It helps learners to raise self-esteem and self-confidence
vii) It facilitates to opt life long learning
viii) It provides access in real time and location independency
ix) Learners can access to study content at any time and any place
x) They can interact to their peer groups and instructors

The following diagram shows the benefits that are availed by distance learners by using mobile technologies in their learning activities.



[M-learning helps distance Learners in these ways]

M-Learning infrastructure includes all the educational technologies, such as; audio, radio, video, telephone, etc. Hence, it is treated as a learning management system. M-Learning, due to its multimedia function, caters for education not only to the normal learners but also to the different disabled learners. It is becoming more popularized among distance learners because of its various facilities such as SMS and MMS, audio, video, internet, phone, radio, uploaded and/or download files etc. It facilitates learners to learn independently of time and place.

M-learning provides a high degree of mobility, flexibility and independence. Learners can learn at anytime and any location according to their personal learning budget. They can use unexpected idle times for their learning. In this context, it is necessary to discuss the pedagogical issues for designing mobile learning in an effective and successful way in DE setup.

Pedagogical implications

This is an important aspect to be considered before using mobile devices in distance education institutions. Mobile computing/communication devices offer a unique opportunity for teachers and learners in distance education institutions through different kinds of instructional settings. Instructional settings cover the flexibility and freedom afforded by these devices. Further, they conceive new pedagogies and new approaches to deliver and facilitate instruction.

An appropriate instructional design and its facilitation in mobile learning benefits learners in many ways. For example, they can receive materials in digital mode, they can browse materials as and when they are free, they can interact with their peer groups, counsellors and institution concerned persons. The most significant aspect of mobile learning is learners can learn and interact while on the move. They can be informed and,

hence, update themselves by receiving SMS/MMS from the institution, which is very cost effective and affordable. In this context, Sharma and Kitchens argue that it is imperative for the instructors to learn and adopt the changing environments when and where it is appropriate. Naismith et al. assume that mobile technologies will have a huge impact on the distance learning environment because of its emerging trends. They assumed that

i) Learning will center on the individual learner's environment rather then the classroom.
ii) Learning will involve learners in making meaningful connections to resources and other people.
iii) The ability to instantly publish their observations and reflections in digital media will empower learners to become investigators of their own environments.
iv) The ability to easily capture and record life events will assist learners in recall and collaborative reflection.
v) Distributed collaboration and mobile team opportunities will largely enhance.

From these discussions it is assumed that the future of internet and web is operated in mobile devices.

In the 21st century, it is a well known fact that people prefer to carry three things with them always. These are; keys, wallet, and mobile phone. People most of the time carry mobile phones with them because they want to be reachable. Since mobile is easily accessible, it is a great tool for solving many problems. It helps learners to call or send SMS to their friends and ask their opinion or suggestion on any issue they wish for. The easy access makes mobile phones a great tool to spend time while waiting or traveling. Learners can play games when they get bored and do other interactive applications such as, listen to podcasts, watch videos, read news or even read some longer texts.

Most of the mobile devices today can have the facilities of sending and receiving text messages, voice mail, and e-mail. E-mail and SMS are the most easiest and convenient way to communicate information to the larger community. Clear text, a new product available in both free and commercial versions, enables users of the Blackboard learning management system to receive notice within minutes of information posted within a course, group, or organization. The technology sends a text message to a student's cell phone as soon as new information is posted.

Mobile devices allow people to access the web and e-mail from any location. Learners can play the audio and video files on their mobile devices and transfer them to other mobile devices. Therefore, peer group interactions continue to exist. Instructors can make better use of the limited time and provide the information that provokes learners' thought through mobile devices. Podcasting enables instructors to incorporate on-demand audio recordings into their curriculum. In this regard, Meng believes "the greatest opportunities for these technologies are in the ways they will be used that have not yet been imagined". The implications of mobile learning are far-reaching and its potential effect on education is profound. Mobile learning capabilities will continue to expand with the introduction of linear, smaller, more sophisticated and powerful gadgets capable of delivering data in various formats to any place in no time.

Mobile learning is considered as the most appropriate learning in distance education setting. This is so because it consists of the following features.

i) *Learner Centered*: It builds on the skills and knowledge of students, enabling them to apply reason from their own experience.
ii) *Knowledge Centered*: The curriculum is built from a sound foundation of validation knowledge, taught efficiently with inventive use of concepts and methods.
iii) *Assessment Centered*: Assessment is matched to the ability of the learner, offering diagnosis and formative guidance that builds on success.
iv) *Community Centered*: Successful learners from a mutually primitive community, sharing knowledge and supporting poor and average learners.

M-learning helps learners in various ways, starting from pre-admission information to attending convocation on fixed dates. By using and operating mobile devices learners can avail these facilities (not limited to those only): pre-admission information, admission processes, assignment-responses grades, examination dates, counseling session schedule, teleconferencing and Interactive Radio Counselling schedule, study centre and regional centre activities etc. It even helps learners to enable flexible learning where they can have better accessibility, choice and control of subjects. Thus, it has become a most popular device among distance learners.

A study report from Yashwantrao Chavan Maharashtra Open University, Nasik of India depicts that students entering B.Ed. and M.Ed. programmes, they say, they are more comfortable in using mobile phones then e-mails. The statistics report says, out of 126 students 94% of them are using mobile phones. They prefer (95%) to access information through mobile phones and this device for them is a helpful tool for quicker communication. A Mobile device gives comfort and makes competent learners by making use of its various usability aspects. Further, it helps them to keep in touch with those persons they wish for. These sorts of personal nature of mobile devices encourage learners for learning outside of classroom situation/formal education.

Mobile learning is more interactive, involves more contact, communication and collaboration with people (Vavoula, 2005). The increasing and ubiquitous use of mobile phones provides a viable avenue for initiating contact and implementing interventions proactively. For instance, short message service (SMS) is highly cost-effective for sending information to learners than sending mail through postal services. Besides SMS and MMS distance learners can use mobile phones to listen to their course lectures, watch videos, make storage and share the data among peer groups.

The use of mobile technologies can help today's educators to embrace a truly learner-centered approach to learning. In various parts of the world, mobile learning developments are taking place at three levels:

i) The use of mobile devices in educational administration
ii) The use of mobile devices in academic support
iii) Development of a number of mobile course or programme modules.

To a certain extent, it is not impossible to list the kinds of tasks that learners engage in mobile learning. In this regard, Rekkedal (2002) suggests that mobile learners need to be able to perform tasks such as studying the course materials, making notes, writing assignments, accessing a forum, sending and receiving e-mails, and communicating with a tutor. Luckin and Smith et al. (2005) state that a learning context as an 'ecology of resources' has shown how technology can link different resources within and across learning context.

By using mobile devices, distance learners can read and search the texts in several ways. They can learn with their personal learning budget. Although mobile devices have many usability features, yet in a distance education context, they are used in selected learning settings under certain preconditions. This is so because learners in distance education are heterogeneous in nature.

Now the discussion will be focused upon how mobile learning helps distance learners for the development of their study skills and cognitive skills, which they badly require in their learning activities.

Study skills and cognitive skills

Apart from the most popular and recognized SQ3R techniques, there are also some other techniques to help learners to develop their study skills. SQ3R stands for: S= Survey, Q= Questioning, R1=Read, R2= Review, R3=Recall/Recapitulation. Other techniques (not a complete list) include;

i) Effective time management
ii) Familiarizing with the course
iii) Be self motivated
iv) Coping with stress
v) Setting the possible goals
vi) Organizing the study materials
vii) Keep in touch with course coordinator and counsellor
viii) Develop good communication skills
ix) peer-group interaction
x) Evaluate your own progress regularly
xi) Develop online search skills
xii) Evaluate internet resources/contents

These techniques help learners to organize, plan and use their study time effectively. However, it is important to mention that it is not possible to abide all these suggestions because of learner's individual situations and circumstantial barriers. But they can always stick to a few more suggestions as highlighted in the above. As a result, they can achieve their goals within the expected time.

As mobile learning is the most sophisticated and attractive, it helps learners to develop their study skills. Through mobile devices learners not only do communicate but also do multiple applications. They can read the study content, type the questions and preserve them for future discussions in the counselling session, and do many more application oriented activities. They can survey the study content and go to their interested unit or page with some easy commands. They can record their future plan. Mobile devices with

modern technology of all possible media integration motivate learners to be self motivated and concentrate on their studies. When they are in stress, depending on their hobby, they can listen to music, watch videos or play games with the small portable devices. They can organize their study materials either in a folder or in a briefcase, hence, it will help them to browse and reach to the exact content in no time. By using mobile devices they can keep in touch with their peer groups, instructors/course coordinator, counsellor, etc. either by telephonic communication or by sending simple SMS/MMS, which is cost- effective in its nature. Through mobile devices they can search and read the relevant study material from the web and hence adopt the various methods of life-long learning.

Now the earnest discussion would be on cognitive skills. The focus is on how mobile learning enables learners to develop their cognitive skill, which is an important issue of their learning activities. Cognitive skills though have many interpretations but, in our discussion, it is understood as the mixture of problem solving skills and application of reasoning on a particular situation or an issue/event. Further, it is explained that cognitive skills are mental skills that are used in the process to acquire knowledge.

Cognitive skills include the following:

i) Logical thinking
ii) Concentration / attention skills
iii) Memory
iv) Perception

Logical thinking

To think logically is to think step by step. In this regard, Karl Albrecht expresses that "logical thinking is not a magical process or a matter of genetic endowment, but a learner mental process" (Albrecht, K., 1984). It is the process in which one uses his/her reasoning consistently to reach a conclusion. It helps the individual to get multiple solutions to a problem. Hence, it is an aspect of problem solving skills. Its functions improve the performance in reading, writing, and even arranging and organizing study content/materials. In the context of M-Learning, it helps not only to organize the study content but also to browse the study materials through online and find out the saved files from the proper location. It helps in discarding the irrelevant materials that pop up while searching or browsing an issue or a fact on the web.

Concentration / attention Skills

The expression 'concentration' should not be understood as 'paying attention'. This is so because concentration is an act of will and it won't take place automatically, whereas paying attention is a body function and, hence, may shift quickly from one object to another. In this context, since mobile devices are inbuilt with sophisticated technologies, they retain learners' concentration for a longer time while reading the self learning print materials, or listening to an audio file, or watching a video clip through the web.

There are three sorts of attention: sustained attention, distributed attention, and focused attention:

- *Sustained Attention*: It is an ability to stay focused on the task.
- *Distributed Attention*: It is an ability to focus on several important issues at once.
- *Focused Attention*: It is an ability to restrain all irrelevant incoming information and remain focused on a particular task

Memory

Memory skills are of five types. These are:

i) *Long term memory:*
Ability to retrieve information from the long past.
ii) *Short term memory:*
It lasts from a few seconds to a minute.
iii) *Receptive memory:*
Ability to remember the physical postures of objects of the recent past.
iv) *Sequential memory:*
Remembering things in an order.
v) *Rote memory:*
Ability to learn and remember certain information as a habit.

Long term memory becomes the library of facts upon which we build our concepts and accumulate knowledge, whereas short term memory receives data accurately during the learning time. While using mobile devices in learning framework, all these memories help either directly or indirectly to receive or retrieve the information.

Perception

The term "perception" is understood here as "close-observation" in the teaching-learning context. It is an ability to receive and manipulate visual information. Perception represents our apprehension of a present situation in terms of our past experiences. In this regard, Immanuel Kant (1724-1804) says, "We see things not as they are but as we are". This is an element of cognitive skills expressing that holding a correct perception helps in understanding an issue correctly. Thus, understanding an issue won't be a problem for an individual. Mobile learning helps learners to hold the right perception on any issue or fact either through peer-group interaction or through SMS query clarification method or by contacting the concerned resource persons.

In these ways, m-learning helps distance learners to develop their cognitive skills. Now we will be discussing whether quality can be sustained in mobile learning practice or not?

Quality assurance in M-learning

Mobile technologies are used not just as support systems for distance learners but also used in study materials delivery mechanism. Here, the prime concern is how we can sustain quality assurance in the delivery mechanism? Further, what curriculum and instructional design are to be structured for the check of quality assurance? How best learners receive their required and update information from the institution and institutional buildings like Regional Centers, Study Centers, etc.?

Quality assurance is the most concerned and debatable issues in distance education because of its wide association, large variations, and stretched scope. It does not have one definition because the parameter and definition are changed depending on the context. In the technology enabled distance education (DE) scenario, this is an important issue to look whether technology sustains the quality of DE or not. While talking on quality assurance in technology mediated learning environment, a significant question crops up, i.e. does m-Learning maintain the quality assurance in DE? It is observed that due to the rapid growth and advanced technology insertion a few learners would not be able to keep up with m-Learning and with its various functions and operations. However, it is highlighted that the benefit learners availed from m-Learning is remarkable and highly supportive for their learning activities.

Assurance of quality while delivering study materials to the learners through mobile devices is maintained because of its unique and magnificent design made by instructional designers. In this case, learners benefit a lot and they need not wait a longer time to receive the self-learning print materials. They can browse the content and send their feedback immediately. The content delivery method is so cleverly designed that learners can only access the materials but cannot edit those. Hence, there are no possibilities to attack the sanctity of the study content. Further, the content is not available in the public domain. It is strictly for those learners who are registered in a DE institution and registered their personal mobile devices in the institution. It adds further information, i.e. after completion of the course, a learner cannot access the study content supplied by the institution. Hence, study content maintains its purity.

Quality assurance in teaching learning activities through mobile devices in distance education passed through the following benchmarks, though there are other benchmarks available for other issues in different contexts:

- Course development benchmarks
- Teaching-learning benchmarks
- Learner support benchmarks
- Evaluation and assessment benchmarks

Course development benchmarks

The course should be developed keeping in mind the design, delivery and learning outcomes. It should be developed in such a manner that it would be easily accessible by the learners through their mobile devices. Instructional materials are reviewed in due time by ensuring that they meet programme standards. Courses are designed to engage learners in analysis, synthesis, and evaluation as part of their course and programme requirements.

Teaching-learning benchmarks

Learners' interaction with counsellors, institution, and peer-group are essential characteristics of the teaching learning situation and these are facilitated through a variety of ways, including less expensive and cost effective SMS and MMS, voice-mail, etc. Feedback received from learners, queries clarified to learners, and information conveyed to the learners at the right time is a positive approach of m-Learning. In m-

learning setting, learners are even instructed to use proper methods to do effective research including assessment of available resources.

Learners support benchmarks

Distance learners receive information about programmes, including admission requirements, counselling schedules, fee structure, admission procedures, assignment responses grades, and other support services. Learners are provided with hands-on training and information to aid them in securing materials through electronic databases. Throughout the duration of the course/programme, learners have the access to technical assistance, including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the course, and convenient access to technical support staff. Questions directed to student service personnel are answered accurately and quickly with a structured system in place to address student complaints.

Evaluation and assessment benchmarks

A program's educational effectiveness and its teaching-learning processes are assessed through an evaluation process by applying several methods and specific standards. Data on enrolment, cost, innovative uses of teaching are the parameters to evaluate programme effectiveness. Intended learning outcomes are reviewed regularly to ensure clarity, utility and appropriateness.

With all these quality benchmarks and assistance, M-learning is now a reality in the technology enabled distance education teaching-learning scenario. However, it won't be devoid of problems.

Shortcomings of M-learning in distance education

In distance education settings, using mobile devices in various purposes causes a few problems and that can be resolved with proper analysis and careful design. These problems are:

i) it may make it easier to cheat
ii) it can create a feeling of isolation
iii) because of rapid upgradation, the retrieved content from the internet may be treated as outdated
iv) Battery life and connectivity
v) Small key pad
vi) Limited storage space
vii) Needs utmost care for its use
viii) Small screen, hence, causes difficulty in reading materials.

Though there are problems and difficulties found in adopting and facilitating M-learning in a distance education setting, yet the advantages or benefits received by the learners are remarkable in the form of cost effectiveness and support services. Hence, it is appreciated and preferred by distance learners in a great extent.

References

Albrecht, K. (1984) Brain Building: Easy Games to Develop Your Problem Solving Skills, (London, Prentice Hall)

Attewell, J. (2005) Mobile Technologies and Learning: A technology update and m-learning project summary, Learning and Skills Development Agency, www.LSDA.org.uk, Retrieved on 24/02/2009 http://www.mobilearn.org/download/results/public_deliverables/MOBIlearn_D4.4_Final.pdf

Luckin, R., du Boulay, B., Smith, H., Underwood, J., Fitzpatrick, G., Holmberg, J., Kerawalla, L., Tunley, H., Brewster, D. & Pearce, D. (2005) Using Mobile Technology to Create Flexible Learning Contexts, in: A. Jones, A. Kukulska-Hulme, & D. Mwanza (Eds.) Portable Learning: Experiences with Mobile Devices. *Journal of Interactive Media in Education,* Vol. *22*. Retrieved February 14, 2007 from: http://jime.open.ac.uk/2005/22/

Rekkedal, T. (2002) M-Learning for PDAs: Enhancing the flexibility of distance education, PowerPoint presentation delivered to *Ericsson Education,* November 22. Dublin, Ireland. Retrieved February 14, 2007 from: http://learning.ericsson.net/mlearning2/project_one/presentation/torstein1911.ppt

Vavoula, G.N. (2005). D4.4: A study of mobile learning practices. MOBIlearn project deliverable. The MOBIlearn project website.

fOUndIt? Sharing online resources to support subject communities

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Abstract

This article reports the work in progress of an interview and questionnaire survey investigating students' participation in subject communities via fOUndit, a tool for sharing links to online resources. Harking back to Tim Berners-Lee's vision of the role of the Web as "a tool for furthering serious research communications between scientific researchers" (Naughton, 1999) this research investigates how students might use the Web to share online resources and support each other in an online subject community. The views of group of Level 1 Technology students were gathered on their use of fOUndit as part of integral course activities, focusing on their thoughts on whether the facility supported them as part of a community, and if they would be motivated to continue using the facility. These issues regarding how students use such a facility and their views on identity and community are explored, followed by recommendations for further research.

Introduction

Investigations into students' use of online resources have indicated that when the resources are presented as optional, their uptake is very limited (Calverley & Shephard 2003). In contrast, however "wherever links to on-line resources were included as an integral part of course activities (e.g. for specified activities, for project work or for critical analysis of primary sources) they were much more highly used by students" (Kirkwood 2006). This report explores this theory in the context of Level 1 Technology students at the UK Open University (UKOU) using a website, fOUndIt, to share links to online resources with fellow students within the context of a subject or learning community. Through a series of interviews with and observations of students, some of the key issues relating to students' use of fOUndIt are identified. Following on from the work of Atkins & Kelly (2008) at the UKOU on why and how we might build stronger communities around academic subjects for students to join and to identify with, this report aims to investigate a facility that might be used to support these communities. Atkins & Kelly's work aims to "create subject-focused websites for students" with "the ultimate aim […] to deliver an electronic 'home' for students which seems relevant to them, is dynamic and increases their sense of belonging to a community of learners". Investigating means of supporting this effort, this report examines students' views on their experience of becoming part of a subject community which has the potential to exist beyond the duration of their course (normally 6-9 months).

The technology

FOUndIt is a website which allows users to collect and rate online resources. In this research, through a series of course activities, students were directed to share links on fOUndIt to relevant online resources with others on their course. FOUndIt also provides the facility for users to comment and vote on others' submissions. In distance and online education, where students and tutors do not regularly meet face to face, a facility to bookmark and share links to online resources appears to be a useful means of supporting the subject community. In addition, students in the UKOU undertake their studies via a number of short (usually 6-9 month) courses which can be taken in any order. This means that many students do not move through their degree with the same group of peers and therefore can be even more excluded from subject communities. Aimed at providing technology which can act as the "conduit for discourse among participants" and as the "medium of engagement that binds the community together" (Schwier & Daniel 2008), it is anticipated that fOUndIt might be used to elicit best practice in terms of supporting subject communities online.

Method

Enquiries into the use of fOUndit were carried out on a level 1 Technology course in the UKOU. The key areas under examination related to students' views on their experience of using fOUndit. The questions asked aimed to investigate if students found the tool useful, if they felt that it supported them in becoming part of a community and if they would be motivated to continue using the tool beyond the requirements of their course assessment.

Activities for students

After a brief introduction to fOUndIt early in the course, students were given an activity as part of an assignment. This involved students voting on their preferred online resource from a set of three recommended by the Course Team and then some extended activities to encourage students to share useful links with each other. This approach of integrating the use of online resources with an assessed part of the course seems to be more successful in encouraging students to actually read the resources, indeed Kirkwood (2008) suggests that "most adult independent learners … are likely to avoid looking at resources that are recommended in coursework but are not obviously related to assessment". As a follow up to the activity, students were asked in their written assignment to provide a brief critique of fOUndIt in terms of usability and the degree to which they found it a helpful and useful resource.

Survey of students' experiences

Following the students' participation in the activity, a small group of 10 students were interviewed via telephone and online instant chat and then the full year group (around 500) invited to complete an online questionnaire surveying their experience of using fOUndit.

Results

The results of this study in progress take the form of a number of observations made from the feedback received from the survey of students.

Students stick to their own group

As had been anticipated, students tended to regard their subject category as the limit of what they would read. They felt part of the community for their subject and were not inclined to read or submit resources to other categories. This was backed up by user statistics on the site which showed that users who submitted links, only submitted to a single category. At a basic level this supports Wenger's (1998) stance that "we know who we are by what is familiar, understandable, usable, negotiable; we know who we are not by what is foreign, opaque, unwieldy, unproductive". Extending the boundaries of the community, some students commented that they would return to the subject category and related categories (those within the same sub category) after completion of their current course, especially those who were undertaking a degree pathway in a related subject.

Tags used are very specific

The means by which students label the resources they submit highlight some interesting points. Students tend to use very specific labels, or tags, to identify a resource. For example, tags used were often connected with the particular section in the course material that the link related to (e.g. block2pt3) which will be meaningful to the others in the subject community, but most likely meaningless to anyone outside it. This raises further interesting issues about identity and boundaries which would merit additional research, and confirms that some level of community is assumed by the participants.

Students browse and lurk

Many students have stated that they are more likely to read others' submissions than to submit links themselves. Indeed, fOUndIt allows users to browse through links, and see easily which links are the most highly rated by other users. One student (P75 S1) said:

> *"I thought that the vote system was very useful, by seeing how many votes each result had before clicking on the link to go to that site, meant that you were able to see how useful other people had found that particular site. I found this most helpful where there were a lot of search results for any given subject; this meant you could narrow your search by just looking at the results with the highest votes."*

While browsing maintains the readership of the postings, it is clear that if all students only 'lurk' and no one participates or submits links, the community itself cannot be sustained. This has implications for course developers who may need to allocate key people to regularly submit links at quiet times in order to keep students' interest and maintain positive perceptions about the facility. Indeed, in this project, the course activity was initiated by asking students to vote on their favourite of 3 sites submitted by the Course Team, and then move on to the activity of submitting their own course-related sites.

Useful for project work

Students working in smaller groups to share resources have indicated that they would regard fOUndIt as a useful resource for future group work. Anecdotal evidence with a research group of UKOU staff investigating online tools supports this view. Whilst this evidence is intuitive rather than empirical, it does suggest that a facility or repository for sharing links to online resources is a useful means of supporting the subject community.

Further research would be useful to establish firm ground rules for supporting subject communities beyond the duration of a course through online course activities during the course.

Conclusion

This article presents some of the key findings of a survey on students' use of an online facility to support their subject community. The findings indicate that students are motivated to continue using such a facility as part of a community, or group, when they have a particular goal to work towards. This supports Kirkwood's (2006) view that students' use of online resources is closely related to assessment requirements. However, there are some indications that a facility that allows students to share (and store) links to online resources does have longevity beyond the limit of the assessment period. Further investigations into the use of such a facility should be undertaken in order to establish the extent of this.

References

Atkins, Pat; Kelly, Patrick (2008): Bringing students and teachers together around their area of common interest. *The Open CETL Expert Forum*, February 2008. Available online from http://www.open.ac.uk/colmsct/events/details/detail.php?itemId=460a92cd18eaa (accessed 26th February 2009)

Calverley, G., & Shephard, K. (2003): Assisting the uptake of on-line resources: why good learning resources are not enough. *Computers and Education*, 41, 205–224.

Kirkwood, Adrian (2006): Going outside the box: skills development, cultural change and the use of on-line resources. *Computers & Education* 47 (2006) 316–331.

Kirkwood, Adrian (2008): Getting it from the Web: why and how on-line resources are used by independent undergraduate learners. *Journal of Computer Assisted Learning*, 24(5), pp. 372–382.

Naughton, J. (1999): *A Brief History of the Future*. Weidenfeld and Nicolson, London.

Schwier, R.A., & Daniel, B.K. (2008): Implications of a virtual learning community model for designing distributed communities of practice in higher education. In C. Kimble & Hildreth, P. (Eds.), *Communities of Practice: Creating Learning Environments for Educators.* Greenwich, CT: Information Age Publishing.

Wenger, E (1998): *Communities of Practice: Learning, Meaning and Identity.* Cambridge University Press.

‘Pedagogy with Learning Management Systems’: the tertiary educational organisation, the virtual learning environment, the academic and the student in e-learning

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Abstract

‘Pedagogy with Learning Management Systems’ addresses the question of how far learning with new technologies is underpinned by new pedagogies. The methodology involves making inductive inferences from an extensive literature review of pedagogy in Virtual Learning Environments (VLEs) and analytical reflection upon practical experience in distance education. The theories of French philosopher Paul Virilio are applied to the e-learning context. Virilio’s discussion of dromology (theory of speed) and the logistics of perception, explores the concepts of ‘telepresence’ and ‘teleaction’ examining the way in which ‘instantaneous’ media transform the experience of learning communication in contemporary society. This article will argue that Virilio’s theories have implications for the understanding of the pedagogy of virtual, digital, and open and distance learning and explores pedagogical developments in the virtual learning environment (VLE) of the Tertiary Education Organisation (TEO).

Virilio and ODL

Taking Virilio’s dromological theory as a starting point, this article develops a context for pedagogy in distance learning. Commentators have pointed to the profusion of articles on configurations and consequences of platform and technology of Learning Management Systems (LMSs) and Virtual Learning Environments (VLEs) in online and distance learning (ODL), but the relative scarcity of research on pedagogy and androgogy. This article contextualises the development of pedagogical practice in distance education organisations and offers an analysis of the current directions of pedagogy in ODL and e-learning. A pedagogical rubric in distance education is defined which problematises the salient characteristics of learning in the ‘fifth estate’ or Virtual Facilitated Learning (VFL). In so doing the paper identifies the pedagogical potential of e-learning practices and how these may be shaped and informed by learning concepts.

Virilio begins his commentary of impact of the virtual Information and Computer Technology (ICT) environment in e-learning and telepresence with the notion of the inversion of differences, in which he posits a syncopation of distance and time in the virtual sphere in which “appearances caused by the real-time perspective of telecommunications” offers a perspective “in which the old line of the horizon curls itself inside the frame of the screen” (Virilio, 1997, 3). Instantaneity or, in the context of learning curriculum, pedagogical engagement in the virtual sphere conforms to a chronoscopic medium in which “the third interval of light alongside those of space and time” engineers the emergence of a new medium for the conception of learning (Virilio, 1997, 3).

In ODL education the learning process begins when the learner signals an intention to study, provides the necessary identification and qualification to do so, purchases a learning package with the Tertiary Education Organisation (TEO) comprising access to learning resources, courseware and academic expertise over a set term or semester, or through the course of a degree. The learning takes place both in the learner's ICT environment and the TEOs' LMS or VLE; within the shared meeting ground of the virtual classroom, a learning proximity is transacted. This learning environment involves a relationship which collapses physical space by remote ICT communication between the learner, the TEO and the academic educational practitioner. This space can be described as 'telepresence' which enables the communicative learning relationship to be conducted in a virtual sphere capable of being both 'here and elsewhere' in real-space and involving educational interaction in the human-computer interface and packet switching exchanges of learning information.

Virilio describes this communicative exchange as 'temporal commutation.' Although not replacing physical culture, virtuality is suspended within it. The speed of light in fibre optical exchange becomes the 'absolute standard' of instantaneous telecasting in which the real-moment virtual exchange, the relationship between learner and educator and the pedagogical performance becomes the controllable moment of history, encompassing a syncopation of past, present and future, in a sphere of electronic dazzlement, which Virilio describes as a tactile telepresence at once 'out of distance' but 'within reach' between educator and students. Thus the learning environment is the transparent horizon between the apparent horizon of the everyday physical world and the deep horizon of a collective education environment. Within the *modus vivendi* of ODL and e-learning the virtual university is defined by the 'law of electromagnetic proximity' in which 'the far prevails over the near and figures without density prevail over things within reach.' Virtual education in tele-learning enables learner and academic-instructor to meet at a distance, in a virtual sphere and yet for learner and educator to be physically at opposite ends of the globe or in geographies remote from one-another.

Thus a central epistemic problem within e-learning involves managing not only the split between virtual and actual realities (for example, blended provision of print based and e-learning) but also between the 'apparent horizon' and the 'transparent horizon' of a screen that enables learners to interact at a distance. In theorising this form of learning, the space interval (negative sign) and the time interval (positive sign) collapse into the neutral sign of the speed-of-light information carrier, a form of positive telepresence which enhances the learner's environment in a tangible virtual reality (Virilio, 1997, 38). Thus the question posed by intermittent 'long-distance telepresence,' as Virilio puts it, "introduces a series of questions analogous to those posed in physics by Planck's famous length." Cognition occurs in the 'irreducible gap' produced when 'extreme spatial distancing gives way to the extreme proximity of real time exchange' (Virilio, 1997, 38).

E-learning takes place at a disjuncture of the meta-narrative of modernity in the beginnings of an 'end of space' of "a small planet held in suspension in the electronic… means of telecommunication" (Virilio, 2000, 7). So the claim might be made that we are not so much studying the end of history as industrial contact learners but rather the beginning of the continuation of the history of the post-industrial distance education learner, a paradigm in which the public realm has entered the virtual sphere. In post-

industrial culture there is a split valence between physical culture and the virtual sphere of a 'meta-cognitive geospatial reality' which regulates the tele-continents of a virtual reality and mobilizes the greater part of educational activity of TEOs.

Organisational characteristics, pedagogy and distance learning

In 'Virtual Learning and the network society', Martin Harris notes that Castells relates the emergent new techno-economic paradigm to the concept of informationalism, which is the term for the process whereby information technologies and networks create a new medium of exchange which increases productivity in the 'circulatory sphere' (Harris, 2002, 217). Castells also suggests that the 'vertical beaurocracy' is transformed into the 'horizontal corporation', which he describes as "dynamic and strategically planned network of self-programmed self directed units based on decentralization, participation and co-ordination (Castells cited in Harris, 2002, 217). Boyd-Barrett notes three main models of organisation type in distance learning which impact on the mix of pedagogical provision in determining the relationship between learner, tutor and organization (Boyd-Barrett, 2002, 186). These organisational types are produced in the table adjacent with a summary of the organisational characteristics of ODL learning environments (Harris, 2002, 226):

Organisation Type (Boyd-Barrett, 2002)	**Primary Organisational Characteristics (Harris 2002)**
Learning Utility Automated Maximising student numbers	**Private or Public** Mix of private and public funding sources Public good or private profit incentives
Networked Bureaucracy Permanent faculty Innovative Learning Technology Strong research	**Dedicated or Incorporated** Dedicated – sole activity Incorporated – partial activity or extension of contact campus
Interstitual Model Invest in technology plus conventional delivery Flexible, low-risk course-ware Diverse mix of distance/conventional teaching modes	**Strategic or Non-Strategic** Strategic – Whole institution Non-Strategic – particular departments

Whilst model two, the networked bureaucracy, is the most robust of these and does take into account the proportionately larger administrative role of the academic in ODL provision, these are maps of existing and planned educational organisational types. Obviously the structure of learning informs the style of learning. In the shift or transition to techno-learning paradigm all forms of production and exchange are subject to use of IT and networked organisational form (Harris, 2002, 226).

In the TEO in which the author teaches and researches, The Open Polytechnic, has researched market segmentation, in order to tailor organisational needs to the profile of the learning community in the attempt to increase internal organisational efficiencies

and provide better service for the learner, identifying three distinct learning channels in doing so. These are given in the table following:

Open Polytechnic 'Better for the Learner' Channels
The Learner at Work Workplace as learning environment National skills strategy Working with employers and industry to fill skill gaps Responsive, 'fit for purpose' training
The Learner as an Individual Supports self-directed, self-aware learner Varying levels of learner support based on need 'Low touch' for academically capable 'High touch' for those who need learning support
The Learner in the Community Community focus Qualification plus life-direction Quality control through partnerships

The profiling work done by the marketing department and executive of The Open Polytechnic of New Zealand in 2008 in discerning flexible patterns of market segmentation arguably enables the organisation to be more responsive in the delivery its teaching and learning capabilities. The profiling determines that portfolio architecture, courses and styles of learning are context dependent and socially and culturally defined in a market-context. Consequently, the inference can be made that the tertiary provider organisation, market segmentation, LMS and academic knowledge are all related to learner pedagogy and the production of the VLE. This reinforces Bell's (1999) acknowledgement of paradigm shift in organization of knowledge, the application of the Webberian rationalization to production of knowledge itself.

Garnham also points out that traditionally the Tertiary Education Organisation has three functions:

(1) To provide general training appropriate to professionalised roles,
(2) To provide a social filter with associated range of interpersonal and networking skills for intermediate and higher 'management roles',
(3) To develop or transmit from one generation to another, the critical intelligence of society as a whole and as a social resource.

(Garnham, 2000, 267).

Atwell (2004) comments also on the relative scarcity of comprehensive E-Learning pedagogies. Some have suggested that there is a tension between empowerment of learners' interaction with LMSs such as 'Blackboard, Moodle,' and noted limited applications of them – dependent on reciprocal technology, information access, stability of energy supply, and the technological and social support environments. One question

posed by Atwell is whether the format of LMS has restricted the possibility of pedagogical innovation? (Atwell, 2004, 1) The LMS is the common denominator of VLEs as far as pedagogical practices are constrained by the physical parameters of computer architecture and digital infrastructure. Obviously the relationship between technology development and usage and the management of learning is complex. However, VLEs offer several innovations with pedagogical implications:

(1) An electronic means for distributing materials previously in print,
(2) Providing access to tertiary education by those disadvantaged, for social, economic and geographical reasons,
(3) The augmentation of traditional forms of contact education,
(4) Providing opportunities for redefining pedagogical aims.

(Hirtz & Harper, 2008, vi-xi).

Under these conditions, instructional design needs constant pedagogical and learning refreshment. This brings to the fore the related concern of the need for Open Source Software standards (OSS) in the use of LMS. One such option is sequenced learning and the possibilities of education in Second Life, delivered by artificially intelligent agents or computed mediated avatars.

Characteristics of VLE include:

(5) New technical literacy for information navigation,
(6) Increasing use of discovery-based or experiential-based learning,
(7) The process of pedagogical bricolage, piecing together complex fragments in post-historical medium,
(8) Balance between absorption and action, learning partnerships between learners, teachers, technical developers, and educationalists,
(9) The use of learning and research repositories,
(10) The use of open courseware.

(Atwell, 2004, 3)

Doyle views ODL as characterised by a transactional distance between teacher and learner. She argues that in the ODL environment "The teacher will not have the degree of control that a classroom has, and the learner will have more control over interactions" (Doyle, 2004, 34). This is true in a limited sense in the dramaturgical context of contact education but not necessarily in the design and delivery of learning-based materials in the ODL context. The options for the learner to directly influence the composition of course materials are however equal in both contact and distance education because content and methods have been set in place months earlier, the (distance) educator retains pedagogical control.

It is true that in distance education there is limited opportunity for proximal physical interaction with fellow learners, even as the possibility to connect at a distance has generally increased because it is an expectation of the learning requirements. This interactivity is socialised electronically and, as a consequence, is of a different nature (more intentionally precise, language-based, impersonal). However, email is generic to any contemporary TEO.

Doyle identifies eight characteristics which define ODL learning: solving problems, critical thinking, communication, use of technology, working with others, self-management skills, learning to learn, subject-specific expertise (Doyle, 2004, 63). Added to these are: course navigation, 'local and person dependent' knowledge and skills, integration of learning materials, flexible geography, market-place relevance, life-long learning and so makes reference to the four-phased learning cycle devised by Kolb (1984). This involves: Concrete experience, reflective observation, abstract conceptualisation, active experimentation.

Non-linear web-based learning allows for learner to some extent to follow their own path, in terms of the combination of resources they bring to bear on an assessment-based problem. The flexible-organisation of the virtual sphere allows the congruent assembly of mixed-method resources and it is a pedagogical advantage in distance learning for educators to use as wide a variety of these as possible. It is possible that many of these activities enhance 'reflective learning.' Arguments for technological innovation in pedagogy also appeal to statements about flexibility and mobility of learner allowing them to move through lessons any time, anywhere and at their own pace (Fidishin, 2000, 4).

Any new model of learning in blended, online delivery, e-learning, virtual university, or telecampus also must involve an awareness of organisational pressures to standardise the learning environment for the student (Mayes and de Freitus, 2007, 14). VLEs include e-communication mediums such as: social networking tools, blogs, wikis, social bookmarking, folksonomy (Fowler and Mayes, 1999, 23). Biggs (1999) describes the task of good pedagogical design as one ensuring there are no inconsistencies between the curriculum taught, teaching methods, the learning environment, and assessment methods. However, this leaves flexibility for the educational instructor to exercise her or his own academic judgment and learning style in the virtual learning community.

The pedagogical e-learning network

There is some overlap between learning pedagogy and Instructional Systems Design in which competences are aggregated in sequences and tasks built step by step from smaller units. The task is to sequentially remove the constraints on level of complexity in these learning module aggregations. In ISD, combinations are not taught until the individual components are understood. The decomposition hypothesis involves an assumption that knowledge and skill are taught from the bottom up (Gagne, 1985, 16). Knowledge is discovered firstly in misrecognition, filling the gap between the known and the unknown. Cognitive learning involves: Schema theory, information processing, problem solving and reasoning, processing memory, competencies for thinking, mental models and metacognitive processes. Learning can be achieved by researching processes of interpretation and construction, using models of knowledge acquisition in computer enhanced formats or the LMS. Learning occurs in the attempt to organise, existing knowledge with new schemas, it is the outcome of interaction between new experiences and structures for understanding already existent.

There is a cognitive challenge for learners to acquire a framework for understanding that is mobile and may be used in different contexts (Gagne, 1985, 16). Piaget's constructivist theory (Gagne, 1985, 17) is based on the concept that people and society are more than mirrors, learners do not just absorb and copy but construct through active

experimentation. Learning is not seen as automation, rote, or even direct teaching of standardised disciplinary content, just as no two perspectives are the same, no two learning schemas are identical.

Vygotsky (1978) places emphasis on importance of social interaction, and the development of higher cognitive functions. Cunningham (1996) distinguishes between cognitive constructivism (deriving from Piagetian tradition) and socio-constructivism (deriving from the Vygotskian approach). Interactions with LMS, and the electronic socialisation of learning, involve discussions of developing and understanding competence. The learning is task-based but with a social context.

From the situative perspective, the learner is always subjected to influences from the social and cultural setting in which learning occurs, this partly defines educational outcomes. Knowledge is distributed socially. A positive sense of identity (self-esteem) for the learner is shaped by social forces as well as by curricular pedagogy. Learning is context dependent – the learning structure in ODL contains formal and semi-formal elements involved in a mixed-media cognitive apprenticeship. The e-learning education is informed by the individual's relationship with a group of people and relationship of activity to wider practice (Lave and Wegner, 1991, 19).

Learning also involves communication from the periphery to the centre of group activity; the socialisation of learning process is attenuated by the geographical distribution of distance learners. A vicarious element to e-learning through relating to others is also made apparent through the online classroom, enhanced through computer mediated forums, shared course materials, and learning platforms. Pedagogy also returns in the idea of a learning constellation – a group of beliefs, attitudes, values, specific knowledge built up over years that may be expressed in a particular pattern. The e-learner aspires to become an accepted participant of a community defined by expertise or competence in field of application. The second sense of educational practice is that of a shared network of understanding through a community of learners, for whom dialogue is also learning.

This approach enacts pedagogy in the VLE as a form of distributed cognition, in the learners' attempts to understand the LMS, the syllabus, course content and in which there are networks of professional communities informed by education as well as supported by a history of scholarship. Students are not just interacting in a virtual sphere, or with a single organisation but also with a distributed context of learning as the learning is distributed through a LMS and electronic and social network which is ultimately brought to fruition in the individual neural pathways of the teacher and learner in the expanded line of the horizon in Virilio's conceptualisation.

References

Atwell, G. (2004) ODL & Pedagogy. Retrieved January 7th, 2009 from: http://www.know-2.org/docs/Attwell.pdf

Bell, D. (1999, 1973). *The Coming of Post-Industrial Society. A Venture in Social Forecasting* (New York: Basic Books)

Biggs, J. (1999). *Teaching for Quality Learning at University* (Buckingham, Society for Research in Higher Education and Open University Press)

Boyd-Barrett, O. (2002) Distance education provision by universities. How institutional contexts effect choices, in: W. H. Dutton & B. D. Loader (Eds) *Digital Academe. The New Media and Institutions of HE and Learning* (London, New York, Routledge)

Castells, M. (2000, 1996) 2nd edn. *The Rise of the Network Society: The Information Age: Economy, Society and Culture*. 1. (Oxford: Blackwell Publishers)

Cunniff, D. & Langdell, T. (2007) Using new technologies to enhance learning and teaching by creating online worldwide research opportunities through synchronous (real-time) connections. *12th Cambridge International Conference on Open and Distance Learning* (Milton Keynes, England, The Open University)

Doyle, S. (2004). *On Transfer: The Distance Learner and the Transfer of Learning*. Open Polytechnic Working Papers (Lower Hutt, TOPNZ)

Duffy, T.M. & Cunningham, D. J. (1996) Constructivism: Implication for design and delivery of instruction, in: D.H. Jonassen (Ed) *Educational Communications and Technology* (New York, Simon & Schuster Macmillan).

Fidishun, D. (2000). Andragogy and Technology: Integrating Adult Learning Theory As We Teach With Technology. Retrieved 8th January, 2009 from: http://frank.mtsu.edu/~itconf/proceed00/fidishun.htm

Fowler, C.J.H. & Mays, J.T. (1999) Learning relationships: From theory to design, *Association for Learning Technology Journal*, 7 (3), 6-16.

Fowler, C., Mayes, T. & Bowles, B. (1994) 'Education for changing times', discussion paper presented for British Telecom.

Gagne, R. (1985) *The Conditions of Learning* (New York, Holt, Rinehart & Winston)

Garnham, N. (2002) 'Information Society' as theory or ideology. A critical perspective on technology, education and employment in the Information Age, in: W.H. Dutton & B. D. Loader (Eds) *Digital Academe. The New Media and Institutions of HE and Learning* (London, New York, Routledge)

Harris, M. (2002) Virtual Learning and the network society, in: W.H. Dutton & B.D. Loader (Eds) *Digital Academe. The New Media and Institutions of HE and Learning* (London, New York, Routledge)

Hinton, G.E. (1992). How neural networks learn from experience, *Scientific American*, 267 (3), 144-51.

Hirtz, S. & Harper, D. (2008). *Education for a Digital World: Advice, Guideline, and Effective Practice from Around the Globe* (Vancouver, Canada: Commonwealth of Learning)

Kolb, D.A. (1984). *Experiential Learning: Experience as the Source of Learning Development* (Englewood Cliffs, NJ: Prentice Hall)

Lave, J. & Wegner, E. (1991). *Situated learning: Legitimate Peripheral Participation* (Cambridge: Cambridge University Press)

Mayes, T. & de Freitus, S. (2007) (Eds) Learning and e-learning. The role of theory, in Beetham, H. & Sharpe, R. (Eds) *Rethinking Pedagogy for a digital Age: Designing and Delivering E-Learning* (London; New York, Routledge)

Piaget, J. (1970). *Science of education and the Psychology of the Child* (New York: Orion Press)

Renshaw, P. (1995) *Excellence in teaching and learning: External environmental scan* (Brisbane, Queensland, Department of education)

Rutland, P. (2007) Opportunities and concerns for new technologies and distance education in, A. Gaskell. & A. Tait. (Eds) (2007) *What do we know about using new technologies for learning and teaching?: a ten year perspective : collected*

conference papers and workshops. 12th Cambridge International Conference on Open and Distance Learning (Milton Keynes, England, The Open University)
Tait, A. & Mills, R. (Eds) (1999) *The convergence of distance and conventional education: patterns of flexibility for the individual learner. Routledge studies in distance education* (London, New York, Routledge)
Virilio, P. (1997). *Open Sky*. J.Rose (Trans) (London, Verso)
Virilio, P. (2000) *The Information Bomb*. C. Turner (Trans) (New York, Verso)
Vygotsky, L.S. (1978) *Mind in Society* (Cambridge, MA: Harvard University Press)
Young, G. & Marks-Maran, D. (1999). A case study of convergence between conventional and distance education: using constructivism and postmodernism as a framework to unconverge the mind, in A. Tait & R Mills (Eds) *The convergence of distance and conventional education: patterns of flexibility for the individual learner. Routledge studies in distance education* (London, New York, Routledge)

Semi-open-book examination - an innovative way for course assessment in distance education

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Abstract

The method of summative assessment of learning remains a key element in education due to its influence on course learning. Students in distance education are usually adults, and their courses have content and methods different from those in conventional education. We have reviewed all relevant assessment methods, and findings have suggested that distance education evaluation of learning be better designed to use different assessment methods more fitting to the contents and objectives of lifelong learning cultivation, and more suited to the basic principles of distance education and the characteristics of adult learning. We have accordingly developed 'semi-open-book' examinations as a new assessment method more suitable to the reality of adult distance education. This new method is effective in supporting and improving independent learning, and promotes more efficient utilization of knowledge. As an innovation by CRTVU, it will accelerate the social and academic validity of distance education throughout China, and become a model for worldwide adoption by distance education institutions in other countries.

Introduction

Examinations are a common and widely accepted way to assess student learning, and a summative examination plays a significant role in this assessment process. How and on what to examine students remains a core issue in distance education research. At the present time, the course examinations leading to academic credentials mainly involve a proctored paper-based test, while relatively few involve oral, interview-based, or audio tests. Paper-based tests are generally categorized as either closed-book type or as open-book type – with the major differentiation between them reflected in the level of stress put on to the student; that is, a closed-book examination emphasizes testing students' capability of memorization and application, while an open-book examination emphasizes testing their capability of comprehension and application. Our empirical and theoretical findings from educational research over the past 30 years at CCRTVU suggest that distance education evaluation of learning should be better designed to use different assessment modes more fitting to the contents and objectives of lifelong learning cultivation, and more suited to the basic principles of distance education and the characteristics of adult learning. In adult distance education, the main objective is for students to apply at work the knowledge they have learned, to exert their potential, and to improve their capabilities at their workplace. Therefore, new assessment methods

should be explored and developed that are more fitting and suitable to these curricular objectives.

CCRTVU, through extensive research and experiment, has developed a new assessment method termed semi-open-book examination, which differs from both the closed-book examination and the open-book examination. The definition of a semi-open-book examination is a summative assessment method which lies between closed-book examination and open-book examination. The differentiation between semi-open-book examination and open-book examination lies in the scope and amount of resources the examinee is allowed to access during the examination time. In the open-book examination, the examinee is allowed free open access to any resources he/she likes, while in the semi-open-book examination, the examinee is allowed free open access to one or more designated and pre-screened resources during the examination period. In semi-open-book examinations, the actual scope of resources is generally limited to only one piece of A4 paper on which the examinee is allowed to pre-write what he/she has earlier paraphrased about the courses, including some key points, difficult points, and formulae and theorems that are hard for the individual to remember. This allows the student to make choices and, additionally, examines skills such as coping with massive amounts of information in order to create a response, which are desirable objectives in adult learning theory and for a knowledge-creating society. This innovation in the assessment method has proven not only to be a reform in mode but has also proven itself to boost reforms in educational techniques and contents, which meets the needs of the assessment innovation of quality education.

Empirical studies, interview and survey

In order to explore the mode of this new semi-open-book examination, CCRTVU initiated the pilot project of semi-open-book examination for the course *Advanced Financial Management*, delivered by Tianjin Radio & TV University, in 2005. Teachers of this course were, first of all, invited for a seminar on this reform program in order to finalize the specific requirements and issues with regard to the organization and implementation of the course, design of our new evaluation system and the examination organization and management. Then, four classes, under the same teacher at Tianjin Radio & TV University, were chosen for comparative control tests. Two classes were selected for the semi-open-book examination, and the other two for the conventional closed-book examination. The reason why the course *Advanced Financial Management* was chosen is that the course featured theoretical learning, was skills-oriented and was highly practical. In this course it is rather important to understand conceptual questions, short answer questions and formulae, while the course requires no rote learning but applications which are of considerable importance. Therefore, the *Advanced Financial Management* course was chosen as the pilot course for the semi-open-book examination based on its course content and its features suited to the new examination mode from the perspectives of improving the overall quality and capacity of students.

Listed below are the profiles of the students in the pilot project: the total number of students in the two pilot semi-open-book examination classes was 61 (the actual number of students who took the examination was 51), while the total number of students in the other two control conventional closed-book examination classes was 79 (the actual number of students who took the examination was 66). Among the students of the four classes, 98% of them were in-service employees and 85% of them held jobs related to

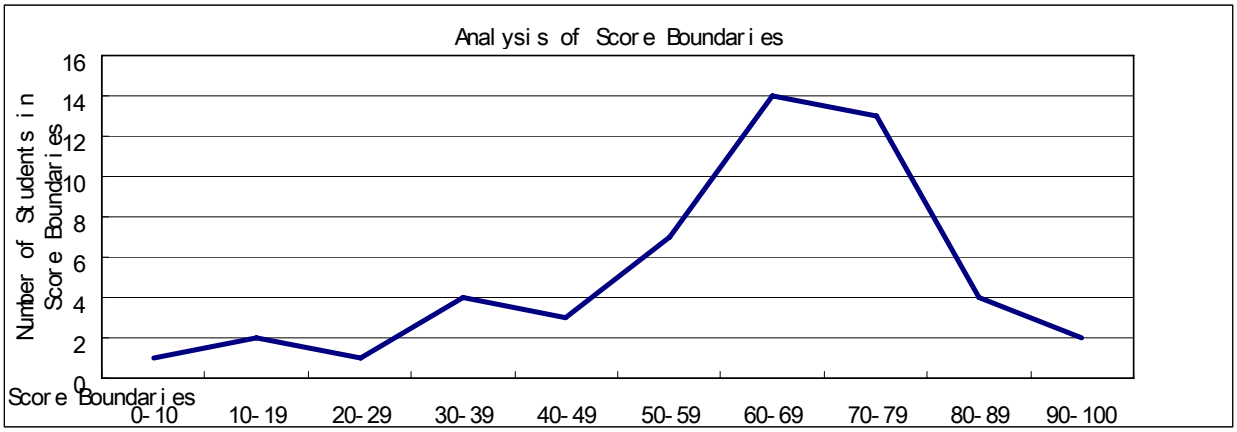
the course. The average age of the students in the pilot classes was 29.5 years (range from 20 to 55 years). They usually studied after work, and their memory was weaker than that of college students in conventional institutions while their ability in applying knowledge was better than that of college students. Their learning purpose was specific, to improve their abilities required in their jobs. The profile of the students in the course reflected the general characteristics of adult-learners in distance education.

Because of the differences in learning environment, age structure and motivations between in-service employees and college students, this new mode of teaching and assessment by semi-open-book examination needs a comparative analysis. Accordingly, the comparative analysis of the examination data from the two groups is as follows:

Data collected from Semi-Open-Book Examination and from the Closed-Book Examination in the *Advanced Financial Management* Course

Modes	Examinees	Number of Pass	Pass Rates	Number of Students in Score Boundaries									
				0-10	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
Semi	51	33	64.7	1	2	1	4	3	7	14	13	4	2
Closed	66	35	53.0	0	1	1	2	7	20	24	9	2	0

Distribution of the Score Boundaries in the Semi-Open-Book Examination in the *Advanced Financial Management* Course



The comparative analysis of the data from the summative examinations indicates that the pass rates in the pilot classes were higher than those in the other classes. The percentage of students in the score boundaries of 80-90 and above-90 among the total examinees of the pilot classes was slightly higher than that of the other classes. The table above shows that the results were normal and valid. In general, the curriculum reform based on the semi-open-book examination pilot project was in line with the characteristics of in-service employees in distance education. Thus, in the process of teaching, autonomous learning combines knowledge in course books, with work experience, the latest developments in social economics and with general integration of the disciplines. The idea of the overall development of knowledge, ability and overall quality are fostered for effective implementation of the philosophy of "teaching students according to their aptitude". In examinations, the new ability test using semi-open-book

methods is highlighted so that students can demonstrate their learning achievements as much as possible. Through semi-open-book examination, the issues in teaching for improving support to learning can be accurately found and, at the same time, effective measures can in turn be taken targeting different groups of students.

After the examination, the actual results of the semi-open-book examination were confirmed through triangulation with interviews with the teachers and students. The students generally agreed that the mode of semi-open-book examinations focused on developing their ability to learn instead of being limited to master the content only and, more significantly, on guiding students in learning to summarize, thinking over, digesting and absorbing the basic content they have learned. The semi-open-book examinations attach great importance to eliciting the students' abilities for thinking independently and analyzing problems, and they need to be linked to the training objectives of capability-orientation and skill-orientation; the use of semi-open-book examinations was valued, so the students' ideas of problem-solving will be made more flexible and innovative. Thus, the conventional examination mode with pre-determined standardized answers can be improved, and training students' logical thinking and reasoning ability was ranked as more important. One piece of A4 paper with references, in these new semi-open-book examinations, helped to reduce their state of anxiety in examinations so that their actual capabilities can be demonstrated in the examinations.

142 surveys were collected in the implementation of the semi-open-book examinations from students of different majors and different areas. 58.4% of students believed that the reform was successful, and 14.3% of them believed that the reform was not successful; 71.4% of them claimed that the semi-open-book examination was suitable for courses in the arts, while 23.4% of them believed that the semi-open-book examination was suitable for courses in the sciences; regarding comparative analysis of the closed-book mode and the semi-open-book mode, 84.4% of them believed that the semi-open-book mode met their needs, while 14.3% of them thought there was no effective difference. In regard to comparison of the open-book mode and the semi-open-book mode, 80.5% of them considered that the semi-open-book mode was preferred, while 16.9% of them thought that it makes no difference either taking the closed-book mode or semi-open-book mode. The results from the survey indicated that most of the students recognized the improved validity of the semi-open-book mode. They believed that the characteristics of a course determined whether the semi-open-book mode worked or not, and it was important to make sure which courses were more suitable for these new semi-open-book examinations based on analysis and studies.

Main achievements in Semi-Open Examination Practice

Based on our recent exploration and empirical validation of the new semi-open-book examination, the achievements are as follows:

1. A new summative assessment method has been explored. The empirical findings from applying in practice this new method provided a new way of thinking with the diversification of the examination form, and created a new assessment mode to be considered in formulating the curriculum, the content and the management of examination. The research has proved that the syllabus content and the training objectives adapted to this kind of examination method should be of relatively strong and practical application. As for the assessment content, the application of

knowledge at work should be our main focus. As for the organization and management of the examinations, there should be relevant regulations to be revised for future guidance to teachers and learners. In order to ensure the construct validity of the new examination, CCRTVU elicited opinions on the new Semi-Open-Book Examination Experimental Pilots of CCRTVU Open Education, and brought forward the relevant suggestions.

2. ODL students' autonomous learning abilities have been enhanced, and their learning effect has been promoted. For distance education learners, it is significant to learn how to learn. During the course of teaching and learning, through semi-open-book examination, the function of the teacher's guidance is exerted and strengthened. When imparting knowledge to students, teachers pay more attention to cultivating them on how to review and summarize what they have learned and consequently help to strengthen their autonomous learning capabilities. These involve when reviewing a course, how to sum up what has been learned on several pieces of paper and, by coordinating the learning content, the knowledge is consolidated, understood more deeply and the knowledge that has been missed out before is relearned and grasped. Then the key points and difficult points on these pieces of paper are elaborately re-chosen and summed up on one piece of A4 paper. During the process, learners build up their own deeper understanding of what they learned, and consequently check out and grasp what they have overlooked or inadequately learned. The purpose of semi-open-book examinations is to impel students to grasp knowledge systematically and develop their capabilities to learn and, thereby, learn how to learn. However, as an assistant tool, this A4 paper cannot be overused.

3. The examinee's state of anxiety about examinations could be diminished, and the authenticity of assessment was considerably strengthened. The purpose of our study was mainly to assess the educative effect and learning results. Because the learners have reviewed systematically and prepared a piece of assistant information before the examination, they have managed to reduce their own psychological burden and fear of examinations compared to those with the closed-book examination. The new semi-open-book examination thereby draws upon the examinees' normal performance and allows for a valid authentic and effective assessment result.

4. The new semi-open-book examination works to enhance the students' capability to make good, efficient use of knowledge and to apply what they have learned. Moreover, these courses with the semi-open-book examination encourage the teachers to focus on cultivating students' autonomous learning ability and promote the quality of education. With regard to the application of knowledge, the interviews with students have shown that students, by using the knowledge they summarized, managed to grasp systematical and practical methods to solve problems in their own working environment and strengthened their independent thinking ability, which helps the combination of theory and reality, learning and work. The effect has demonstrated that the courses with semi-open-book examinations have broken new ground in educational methods. Teachers pay more attention to learners' learning features and cultivate learners' practical ability appropriately with a clear aim which, no doubt, leads to a better educational effect and reaches the aims of both the learners and the teachers.

5. The new semi-open-book examination promotes educative feedback to be realized effectively. The feedback of the examination results is a key element of education. The feedback on the students' examination paper alone helps both the teachers and the students to reflect on the achieved learning results. As for its quality and quantity, however, the feedback on students' examination papers is not yet adequately integrated. This was because the content related to each examination paper was limited compared to a whole course and, therefore, as for semi-open-book examinations, the teachers can find, by analyzing the information from a sample of the A4 papers, where the prevalent teaching important points and difficult points are, and then make an analysis on the students' test paper. This method leads to more effective and exact results, which provide opportunities for improvement of education with useful reference and, hence, promotes the quality of education in the future.

Considerations on the Semi-Open-Book Examination Practice

Nearly thirty courses have so far carried out semi-open-book examinations since 2005 when the first pilot course was carried out. Through the following three-year exploration, it has been concluded that, for courses suitable for the new semi-open-book examination, four aspects should be considered concerning the pre-selection of courses, the teaching method, and the examination method.

1. It is necessary to investigate the characteristics of those courses most suitable for the semi-open-book examinations. Not all courses are suitable for a semi-open-book examination, and the type of examination should be dependant on the content and the objectives of the teaching, where those that emphasize the application of knowledge can be pre-selected as most appropriate for semi-open-book examinations. These courses are characteristically those that require students to understand and use basic theories and concepts, because what students acquire is not for research or exploration in academic fields but for solving their problems in daily life or at their workplace and increasing students' capabilities at work. Therefore, it is essential to determine and define the characteristics and cultivation objectives of each course when we decide whether or not we should apply the new semi-open-book examinations.

2. With regard to teaching, since examinations direct teaching, the reform of examination can direct impact and promote improvement in teaching. As for courses with semi-open-book examinations, the teachers should guide the students, on the basis of learning the overall knowledge, to understand important and difficult concepts, theories and formulations and put them into application. In this way, students can form their problem-solving habits, learn to summarize or conclude what they learned and become more capable of learning autonomously. Moreover, teachers should make the students more aware that semi-open-book examinations are not open-book ones, and explain clearly that differences exist between these two types concerning the items examined, the examination itself, and the arrangement of the examination. Therefore, an individual student should analyze what he/she learns, identify the difficult and important knowledge on his/her own and learn to accumulate and summarize this systematically. It is often wrong not to keep up with his/her study for semi-open-book examinations.

3. With regard to the composition of the examination papers, it is required, based on the basic principles and requirements of composing examination papers, to evaluate the capability of practical knowledge, to decrease or even to get rid of examining theories or concepts themselves, such as explaining the terms or filling in the blanks, to increase examination of comprehensive skills, link theories to practical problems, helping students work out their practical problems with theories and, at the same time, evaluate basic theories and knowledge to a certain degree. The type of items examined should focus on subjective methods rather than objective ones, for example, asking students to manipulate a process or analyze a case. Some items of examining the application of knowledge are also likely to be unique to semi-open-book examinations. Other factors, such as the distribution of knowledge points, setting items, degree of difficulty, distinctiveness and length of time, should also be considered so as to guarantee the effectiveness.

4. Ways of organizing the semi-open examination and the requirements of paper correcting.

Except that the discipline is the same as traditional examinations, semi-open-book examinations allow students to take an A4 paper into the examination room. Therefore, there are rules on it, where the paper may be specially-used, so as to fully discourage plagiarism and promote the ethical use of the student's own notes. Every student can take only one piece of paper into a single examination. Students can only write what he or she thinks is important with a pen, but cannot print, copy, or attach other papers on it. The paper will be handed in with the examination paper. By doing so, the management or analysis of feedback is enabled, and students would be encouraged to study, summarize and conclude.

On correcting papers, because the semi-open-book examinations consist of flexible, objective and comprehensive items, the workers who correct papers should have professional backgrounds with advanced professional or technical skills in the relative field so that the quality of paper correcting can be assured.

Conclusion

The trial on semi-open-book examination has witnessed an innovative way for course assessment in distance education, which addresses characteristics of adult learners and is compatible with the new learning environment and objectives. The significance of this reform lies in the transformation from traditional memorization-bias assessment to capability-bias assessment in applying and creating knowledge, which symbolizes a breakthrough in educational practice via open and distance education and is no doubt in accordance with the principles of adult education. When learning is not confined to a certain period of schooling, there is appeal for more diversified methodology in educational delivery and learning assessment. The trial of semi-open-book examination is, in effect, offering a new thread of thinking.

However, there is still much research to be undertaken on semi-open-book examinations as a new assessment method through control studies and experiments and wider applications. And we think that there are many elements which influence the effects of the semi-open-book examinations in its application, such as:

- there is not yet sufficient analysis of this new method;
- the old-fashioned teaching strategies related with closed-book examinations mislead students to regard semi-open-book examinations as open-book examinations;
- teachers are still not used to this kind of examination when they make teaching-learning integration system design.

Therefore, in order to improve the quality of distance education, more research on the relationship between courses and examinations should be carried out to enhance the outcomes, and further innovation in the examination content and method should be actively promoted.

References

LIN Kali, LIU Jingshi, LIU Bolan, Research on Semi-Open-Book Examination, *Journal of Gannan Medicine Institute*, 2007

GAO Rui, Pilot of Semi-Open-Book Examination in Urumqi Radio & TV University, *Journal of Xinjiang Radio & TV University*, 2007

Report on the Course "Advanced Financial Management" with Semi-Open-Book Examination in Tianjin RTVU, 2005

SUN Chongjiang Elementary Exploration on Semi-Open-Book Examination Mode, *Sichuan Normal Institute Transaction*, 2003

WANG Yonglu, CHEN Guoguang, LI Xueming, ZHANG Qi, The Application of Semi-Open-Book Examination Mode in Biological Pharmacy, *Pharmacy Education*, 2007

ZHANG Ning, Survey on RTVU Semi-Open-Book Examination, *Modern Distance Education Research*, 2007

ZHU Yuanjiao, WANG Linlin, CHEN Xiaopeng, TONG Zhangfa, Experiment and Research on Semi-Open-Book Examination Reform, *Higher Education Forum*, 2007

The Cambridge International Conferences on Open and Distance Learning

1983 – 2009

1983	First international workshop on Counselling in Distance Education
1987	Second international workshop on Counselling in Distance Education
1989	Interaction and Independence: student support in Distance Education and Open Learning
1991	The Student, Community and Curriculum: international perspectives on Open and Distance Education
1993	Quality Assurance in Open and Distance Learning: European and International Perspectives
1995	Putting the student first: learner-centred approaches in Open and Distance Learning
1997	The convergence of conventional and distance education: patterns of flexibility for the individual learner
1999	Learning and Teaching with New Technologies
2001	Supporting the Student in Open and Distance Learning
2003	The Future of Open and Distance Learning
2005	Reflective Practice in Open and Distance Learning: how do we improve?
2007	What do we know about using new technologies for learning and teaching? A ten year perspective
2009	Supporting learning in the digital age: rethinking inclusion, pedagogy and quality