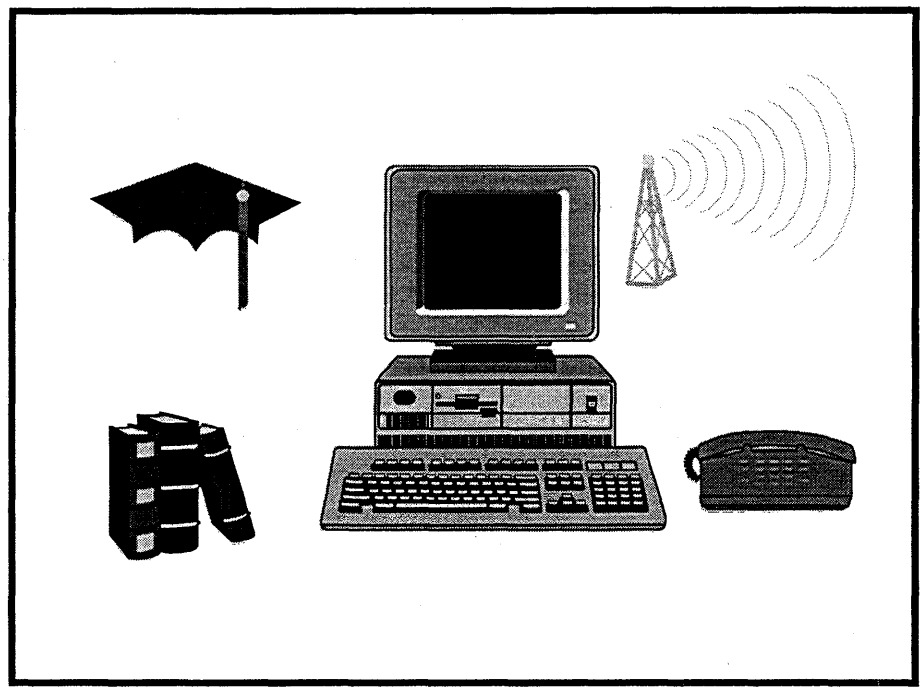
The Cambridge International Conference on Open and Distance Learning

# Learning and Teaching with New Technologies



Collected Conference Papers
September 1999

Edited by Roger Mills and Alan Tait
Editorial Assistant: Sue Sheppard

Open University
Cambridge

The Cambridge International Conference on Open and Distance Learning

# Learning and Teaching with New Technologies

Collected Conference Papers
September 1999

Edited by Roger Mills and Alan Tait
Editorial Assistant: Sue Sheppard

1999 Edited by Roger Mills and Alan Tait
Editorial Assistant - Sue Sheppard

Open University
School of Education
Cintra House
12 Hills Road
Cambridge
CB2 1PF

ISBN 0 7492 9153 2

Cambridge Conference on Open and Distance Learning

# Learning and Teaching with New Technologies

## Contents

# Introduction: Learning and Teaching with the New Technologies

## Alan Tait and Roger Mills, Open University, UK.

The advent of electronic means of communication and the use of CDROM as major innovative teaching and learning tools is rapidly changing the face of distance education in different ways in all parts of the world. We have moved through the period of elitism in the use of information and communication technologies (ICT) where only the privileged few had quality access, to a position where many educational systems throughout the world are based to some extent on the use of ICT. It is more or less universally accepted that ICT is a major tool for the future of all education and not simply distance education. Indeed Mills at the last Cambridge International Conference noted that ICT was a prime driver for the coming together of conventional and distance education ( Mills 1999)

### Do new technologies make a difference to teaching and learning?

Key amongst the issues concerning the use of new technologies for teaching and learning is the question as to the extent to which the same things will be done through new media, and the extent to which new things can be done. This is a useful if crude tool with which to explore: useful in that it provides a simple dichotomy which can bring immediate diagnostic reward, and crude in that the answers in many cases do not divide so clearly.

There are many instances where essentially the same thing is done but with new media, and here we can see continuity with many of the technologies which ODL has employed over the last 50 years. For example, the availability of on-line student application to institutions extends and speeds up rather than changes the opportunity for application through personal visit or by post. The downloading of documents through the web for local reading and/or printing by students results in the same activity, with speed and the defeat of distance as outcomes, i.e. quantitative rather than qualitative change. However, even here there is the potential for the latter, with the access provided by such technologies changing who can participate, and this in turn changing the nature of the activity. For example, the new technologies can extend the availability of programmes of study to an international basis, and this in turn can make demands on curriculum and systems of support which accord with the wider worlds of those learners now present. At the same time, the use of new technologies can restrict access to those who do not have the means to use it, and again that can change the ways in which that provision acts as opportunity in qualitative ways.

We suggest that there are however, over and above these, three key dimensions of the new technologies which can be identified as having a radical effect on learning.

## Interactivity

First amongst these is the potential for ODL of increased interactivity, both through the connectedness which is possible through electronic mail and even more importantly conferencing, and through asynchronicity. Neither are new in nature, but it is from their combination and reconfiguration that the radical potential derives. The connectedness of individuals and learning communities represents the former classroom and campus, where to a greater or lesser extent tutor-student and student-student interaction took place both formally and informally. The ways in which such connectedness principally takes place in the electronic environment has its own oral/written culture and conventions, which have been observed but as yet inadequately understood as characteristics which substantially influence the nature of the interaction. Thus key amongst the questions as to how the new technologies change the process of teaching and learning is that which relates to the posting of text from one individual to another, and amongst a group. The intervention of the keyboard between mouth and ear, so to speak, certainly has the effect of challenging what can be said, and in what ways, and by whom, in contrast to the former letter or internal memorandum. There is firstly a dimension of informality, which may be culturally derived, and to be specific may derive from the greater informality of American culture in comparison with those of Europe and Japan, and even more to the many less modernised countries in all their variety. Such informality is more easily transplanted however into the old Commonwealth countries such as Canada and Australia, dominated as they are both culturally and linguistically by cultural strands so strongly related to the USA and the UK (itself culturally located both metaphorically as well as geographically between Europe and the USA). Secondly, such informality can readily be observed in its capacity for flattening hierarchies based on status or age, and making discussion and challenge of established convention possible, and indeed within the electronic culture attractive and desirable. It creates the iconoclastic individualism on which contemporary capitalism is dependent, and which educational policy is more and more comprehensively dedicated, through concepts such as key skills and independent learning, to reproducing. The issue of gender is more complex, and there is certainly evidence of access to Internet activity being gender discriminatory. This may however be a temporary stage, and the medium may already support participation by those women present in ways that would be suppressed in a conventional classroom. Such informality however can further be situated within the privileging of the English language within the globalisation process, the creation of a more uniform global business and governmental culture, and the economic, military and ideological dominance of a restricted range of socio-economic models. In other words, the interactivity which the electronic media offer through its informality and speed serve as a global modernising mechanism, advancing some kinds of communication and social structures, and destabilising and marginalising others. As we work with the mediation and development of teaching and learning through the new interactivity, we should ensure we are not blind to this, especially when working, as increasing numbers of institutions do, on an international basis.

**Information and resources**

The second area where qualitative change has taken place lies in the availability of information and resources in the home or other place of study. While the asynchronous and disembedded availability of information has long been available through the book, with its concomitantly radical effects on the transformation of ideas on an international basis, both the WWW and CDROM transform both the volume of information and resources available, and equally importantly their searchability. There is much that is yet to be researched from the perspective of learning and teaching (the reversal of the order is significant in this context, as teachers will learn from their students to a great extent here). The best we have available at present are a number of metaphors, principally those of navigation and paths. Both find their basis in terms of travel through territory, where the route is negotiated along the way, dependent on orientation and direction-finding. The reinforcement of the tradition of independent study is likely to be one of the most significant outcomes. This change reverses the earlier uses of technology in education, for example for programmed learning or for learning from televised lectures. It also impacts on the lack of provision for a range of study skills for which ODL has been criticised, especially those systems where students had no learning resources but those which the institution provided through its course materials, with clearly identified learning routes. Thus students become travellers in learning, but as route-finders, sometimes alone and sometimes in a group, but less overall as if in a guided party. There are implications for guidance and student counselling also, where significant elements of the information that students want can be accessed independently by them (Tait 1999). From the perspective of one scenario, this can free those working in guidance and counselling for the most precious activities of individual and to some extent group interaction. From another perspective, this can exclude or substantially diminish the guidance process, in favour of a much diminished 'information and enquiry environment' (familiar from current trends in personal banking).

As is already apparent, these developments have significant implications for teaching, guidance and assessment strategies. There will be continuity with the facilitating role which has been so substantially developed in the tutoring function within ODL, working around rather than delivering the curriculum. However, the availability of information and other resources on the scale offered by the WWW and CDROM, including access to databases of so many kinds and of such a variety from so many institutions, organisations, countries and from such a wealth of individuals, changes the notion of what the curriculum is in many areas of teaching and learning, and thus of the activities carried out in its support. The wealth of variety however tells us little of quality and verifiability, nor indeed of those voices which do not speak on the web, and whose exclusion from contemporary discourse may be further entrenched and indeed legitimised. Here, in the development of discrimination and triangulation – core skills in the new environment for us all - there will certainly be new activities for those working in support of learning.

**New literacies**

The third area developed here lies in the changes in what has been a widespread constant for some 500 years, namely what is understood by literacy. There are two main impacts on this. The first concerns the ways in which word-processing permits a new fluidity of text. This derives both from the range of editing functions and the portability of text. These change the status of text to one of fluidity and provisionality, where single authorship is less often the case: in being moved around at draft stage text can become to a greater extent a social rather than an individual expression. This has enormous implications for co-operative and collaborative learning. The fluidity is also evident in the use of CDROM, where the notion of starting from the top of the page gives way to the individual construction of paths through a range of text, images and sound (Laurillard 1997). The second development lies in the introduction of multi-media, that is to say the mixing of graphics, audio, video and text, to create new experiential combinations. These combinations, most often used on CDROM and on the web, expand the notion of literacy to include oracy, graphic art, the moving image, live voices, and graphic data analysis. A considerable element of performance can enter into the production of the communicating artefact, with role and mask entering the vocabulary of analysis of the communications process in education. Documents become provisional, with hotspots offering links which may or may nor be followed up: thus a document is not the same for every user. The observation of these developments is widespread, but analysis can itself only be provisional at this stage. It is sure however that today's learners are likely to be ahead sooner in their understanding of these new literacies, if only implicitly, than many of today's teachers. Thus what we have understood as literacy is becoming a more complex and varied range of abilities, widening the scope of analytic and creative skills in ways that will be more rewarding for many students whose abilities have been undervalued by the narrower conventions of literacy hitherto.

**The ubiquitous nature of ICT**

The value and use of ICT in education is becoming global but of course it will be used in many different ways according to particular circumstances...but it will be used one way or another! This chapter now turns to a review of the content of this collection of papers overall.

In the calling note for this conference, contributors were asked to consider such questions as:

- In what ways do the New Technologies alter the ways in which learning takes place?
- How do we identify successful strategies for teaching with the New Technologies?
- How do we balance principles of access and universality for learners, with innovation and variety in adopting the New Technologies?
- How do we reskill teachers at a distance and evolve professional development programmes?
- How is interaction supported and/or diminished by the New Technologies?

- How is counselling and guidance at a distance restructured through the New Technologies?

We think that the papers which follow address most of these questions and in this introductory chapter we highlight some themes, which we hope, will be elaborated during the course of the conference, through the keynote addresses and the parallel sessions.

- Interaction and independence: is the balance still right?
- Are there fundamental differences in approaches to QualityAssurance/Assessment in web based courses from those through more traditional methods?
- What assists students to learn most? Good quality materials, guidance and counselling or efficient administrative services? How can we make the most of the new technology for these different elements of a distance and open learning system?

**In what ways do the new technologies alter teaching and learning?**

Delvaline Mowes from the Centre for External studies in the University of Namibia in her contribution to these proceedings quotes a 1995 World Bank Report (1995) on 'Increasing Internet Connectivity in Sub-Saharan Africa' "If African countries cannot take advantage of the information revolution and surf this great wave of technological change, they may be crushed by it" She points out in her paper the vital importance of "ICT for education, training and the social and economic uplifting and empowering in Africa and but stresses that this will have to be measured against the harsh realities found on the African continent." At the other end of the economic spectrum, Lee Herman and Alan Mandell from Empire State College, the State University of New York reflect on the dilemma that the "very technology which can remove the traditional obstacles of distance, can also obliterate the intrinsic value of differences- the natural, cultural and individual signs of authenticity".

Some papers are concerned with the process of using technology for teaching and Douglas Butler, Director of the new iCT Training Centre based at Oundle School in the UK in his paper on 'the Training Implications of the ICT Revolution on Secondary Mathematics looks at costs opportunities and challenges for the teaching of mathematics in schools. Marion Phillips and Peter Scott report on developments providing students with 'Multimedia Advice, Guidance and Counselling on the Web' whilst another angle on the use of ICT comes from Hirohide Haga in Japan who describes the potential of ICT to monitor student activity and student/tutor interaction using *trapper architecture.*

**Interaction and independence: is the balance still right?**

David Murphy from Monash University, Australia, in his contribution revisits the seminal paper by Daniel and Marquis (1979) and reflects on the current balance between studying independently and interaction. He argues that most courses to date have failed to integrate the interactive and independent aspects of online study and describes a new software tool *InterLearn* which allows students to read each other's

work and collaborate in forming a shared understanding of ideas and concepts without adding to teaching loads. Denise Kirkpatrick from Charles Sturt University Australia points out that making technologies available does not guarantee interaction. However that the advent of ICT communication systems such as Soft Arc First Class™ have certainly provided more opportunities for interaction than in the past, confounding those who believed that an increasing dependence on computers would increase isolation of the learners.

Denise also quotes Gaver (1996) " new technologies seldom simply support old working practices with additional efficiency or flexibility. Instead they tend to undermine existing practices and demand new ones". This is a particularly topical issue in the UKOU where many believe that the value of the new technology is to supplement existing practices, for example, face-to-face tuition and residential schools rather than replace them.
Others believe that new approaches entirely Web-based are the way forward. Indeed looking at what is now available on the Web it is clear that many educational opportunities are being provided entirely through electronic means. This issue is one we hope will be debated fully at this conference.

**Are there fundamental differences in approaches to Quality Assurance in web based courses from those through more traditional methods?**

Shona Butterfield, from the Open Polytechnic of New Zealand will address issues of quality assurance in distance education in her keynote address on Quality Assurance (QA) in Virtual Learning. A good deal of thought has been given to this topic (see Daniel(1999) UK Quality Assurance Agency(1999) and the thinking has had a positive influence on the traditional approaches to QA in higher education. Although some aspects of distance and open learning do require additional QA systems e.g. timely production and delivery of materials, others are exactly the same as conventional systems, e.g. the response times to student queries and the timeliness of the return of student assignments. The basic principles of QA apply across all forms of education. It has been argued that to set up a separate QA systems solely for web based courses could lead distance education back to the highly criticised commercial and unaccountable correspondence education ghetto of the past (Mills 1999)

**What assists students to learn most effectively?**

A number of contributors address this theme from different perspectives. Stevenson reports that a study of social science and foreign language ODL students from a number of European Countries still expect to use the old technology and ' the technological revolution is still to bite as far as ODL students are concerned'. Taking a somewhat similar line, Manning argues that ICT support to students helps them to feel a sense of belonging especially when geographically remote, as an *additional* input to face to face support. O'Rourke having now a different perspective after 15 years on the production side of courses, stresses the importance of the use of ICT behind the scenes to support the unglamorous day to day activity of keeping in touch with the learner

Taking a different approach, Ribold and Weber reflect on the use of the Net to develop 'intercultural competencies of learners'.

**Partnerships in ODL and the Impact of New Technology**

Successful ODL systems have always been based on creative partnerships between those who provide the teaching materials, those who support students and those providing the administrative oil, which ensures the whole system works. The development of ICT has interesting implications for such partnerships. Where large numbers of students are studying a particular course, such as the OU UK course, 'You, Your Computer and the Web', administrative and student support systems are not dissimilar from those provided for non-web based courses. However the Web will make more specialist courses available at a distance, where small numbers of students are working on a course with an individual academic. In such circumstance a whole range of quality assurance issues arise some of which have already been addressed in some institutions. For example, the academic may have to devise the curriculum, present it on the Web, reply to student queries, deal with administrative queries, mark assignments and keep records of assignment grades. This requires a different kind of staff development and a different approach to the management of the teaching process to ensure the student gets a quality service from the institution and that this service is not simply reliant on an individual.

Whilst such a situation is common in 'conventional universities' it does pose problems for year round support to students especially when a student can start a course at any time. These are issues which ODL will have to face; who covers when an individual academic takes sabbatical leave, when they are ill, what systems are in place to monitor the quality of teaching both in terms of materials and interaction. There are, of course, huge advantages for the academic and for the student in having direct contact with the person who originates the teaching material and as Jennifer O'Rourke points out "course authors can have direct feedback about how the course worked for learners". She also reports student evaluations of course materials which indicate that students can be more influenced by the quality of interaction than by the quality of the materials.

We hope we have given you a taste of what is to come in the following conference papers and look forward to the conference sessions and informal discussions.

**References**

Daniel, J.S. (1999). Building in Quality: the transforming power of distance learning. US Council for Higher Education Accreditation, Second Annual Conference, San Diego, California.

Gaver, W. (1996)'Situating action II: Affordances for interaction: The social is material for design', Ecological Psychology 8: 111-130.

Laurillard, D. (1997) *The Convergence of Independent Learning with New Technologies:* Keynote Paper - Cambridge International Conference on Open and Distance Learning 1997.

Mills, R.(1999) *'Diversity, convergence and the evolution of student support in higher education in the UK'* in Tait, A. and Mills, R.(Eds.), Patterns of Flexibility for the Individual Learner: The Convergence of Open and Distance and Conventional Education, pp 71 – 85, Routledge, London.

Mills, R.(1999) *'Current Academic models; open and distance education: a perspective from the UK'*, in Proceedings of Engineering Education 'Unbounded: Lifelong Learning any time any place', Santa Clara California July 1999.

Quality Assurance Agency for Higher Education (1999) *Guidelines on Quality Assurance of Distance Learning*, Gloucester,

Tait A (1999) *Face to Face and at a distance: the mediation of guidance and counselling through the new technologies*, in British Journal of Guidance and Counselling, 27:1, pp 113 – 122.

# The Training Implications of the I.C.T Revolution on Secondary Mathematics

**Douglas Butler**
**Director, ICT Training Centre, Peterborough,UK.**

**Abstract:**
Mathematics is possibly unique amongst school subjects: not only it is taught the world over, but school children in nearly every country learn much the same content. The language of delivery of course varies, but a growing number of mathematics teachers are now beginning to discover what the I.C.T. revolution has to offer, not only in their own personal productivity, but as a teaching aid in the classroom. This paper aims to summarise some of the variety that can be added to a lesson if the teacher is trained and has access to appropriate software and hardware. Some of the methods are cross-curricular (eg the use of the internet, spreadsheets and data), but others are specific to this subject: dynamic geometry and symbolic algebra systems, graph plotters and graphic calculators. The corresponding visualisation of the subject can dramatically improve pupils' motivation. The training the teachers to use these new methods is not trivial. Classroom hardware and software need to be budgeted for and in place, and the teachers need to be convinced that it is worthwhile. Direct training by trainers is likely to be the first option, but the only practical way to train the world's mathematics teachers will be through internet-based programmes.

*(This paper will be an updated presentation of an **Education and Technology Reference Guide** prepared recently by the Author for the Commonwealth Secretariat in London).*

## 1. New Opportunities and Challenge for the Secondary Mathematics Teacher

Mathematics is possibly unique amongst school subjects: not only it is taught the world over, but school children in nearly every country learn much the same content. The language of delivery of course varies, but the written notation (certainly in the 'western' cultures) is mostly the same, and the opportunities presented by I.C.T. (Information and Communications Technology) are there to be shared by all. Since the subject came into being, the dedicated enthusiasm of countless generations of teachers has educated the worlds' school children in the finer points of mathematics using no more than a piece of chalk – and this is how it still is in the majority of mathematics classrooms today. A growing number of mathematics teachers are now beginning to discover what the I.C.T. revolution has to offer, not only in their own personal productivity, but as a teaching aid in the classroom. This paper aims to summarise some of the variety and sparkle that can be added to a lesson if the teacher is trained and has access to appropriate software and hardware. The corresponding visualisation of the subject can dramatically improve pupils' motivation - in particular it can open the eyes of the more reluctant pupils who regard mathematics as a dreaded necessity!

| Profits | -101 |
|---|---|

| Ticket | 7 | 10 | 18 | 19 | 34 | 41 |
|---|---|---|---|---|---|---|

| Prize | 0 |
|---|---|

| Lottery | 2 | 4 | 34 | 35 | 36 | 41 |
|---|---|---|---|---|---|---|

| Correct | Draws |
|---|---|
| 0 | 56 |
| 1 | 45 |
| 2 | 9 |
| 3 | 1 |
| 4 | 0 |
| 5 | 0 |
| 6 | 0 |
| Total | 111 |

*An example of a spreadsheet simulation of a series of national lottery draws: this visual approach is appealing and can illustrate the underlying principles of probability and chance (from the DISCUS project, University of Coventry, UK)*

**The Challenge**

It is a major concern that the world's schools are becoming more and more polarised between those that have plenty of access to I.C.T., and those that have none. It is also the intention of this paper to explore what can be achieved in I.C.T. using modest resources, and to try to prioritise spending when budgets are inevitably tight.

Teachers who are fortunate enough to have new I.C.T. resources to hand are now faced with an embarrassment of riches. The challenge is to train teachers to select them carefully, and above all to use new methods sparingly. Many observers of computer-enabled classes are surprised at how little, but how effectively, the new methods are employed – the majority of a lesson is still undertaken by traditional means. The I.C.T. opportunity is easily wasted if mis-used or over-used.

## 2. Impact and Scope of New Software in the Secondary Mathematics Curriculum

Mathematics has a rich source of new methods to draw on using I.C.T, possibly more than any other school subject. It is convenient to group them as follows, though inevitably there will be more and more overlap as the products evolve:

**The Graph Plotter** eg Graphmatica, Autograph, Omnigraph, Coypu

This is probably the most important software group: the graph plotter has great scope for visualising many of the basic concepts in mathematics. Also, this group is not expensive, and there are some very adequate plotters available for free down-load from the internet.

**The Spreadsheet** eg *Excel*

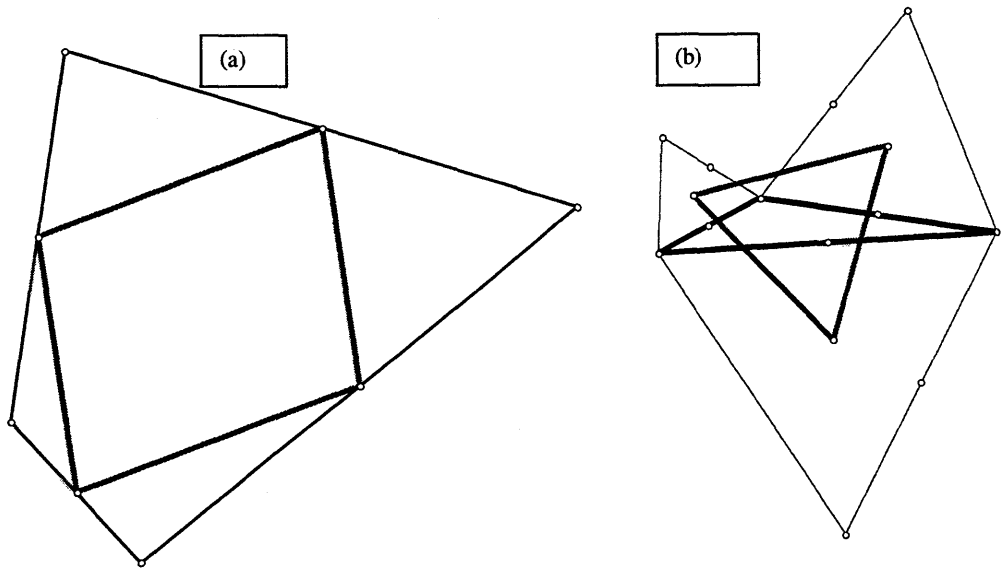
This important tool, designed for the business community, is now firmly established as a mathematical tool for schools. The ability to perform repetitive calculations and create graphs from data can give great satisfaction to pupils.

**Statistical Analysis** eg *DataDesk, Fathom, Minitab, Discus*

With the increasing occurrence of statistics in the world's school mathematics curricula, teachers can bring in 'real life' data from the internet and enliven their classes with computer-assisted analysis.

**Dynamic Geometry** eg Geometer's Sketchpad, Cabri II, Geometry Inventor

There is plenty of evidence that this visual approach to the teaching of a fundamentally visual subject is very popular, and pupils are motivated by this. However, the dynamic approach offered by the computer can very rarely substitute for a rigorous pencil-and-paper proof.




*Two examples of dynamic geometry: (a) illustrating the theorem that the mid points of the sides of any quadrilateral form a parallelogram, and (b) Napoleon's Theorem (from Geometer's Sketchpad).*

**Mathematical DTP** eg *Word (MS Equation Editor)*, FX-Draw

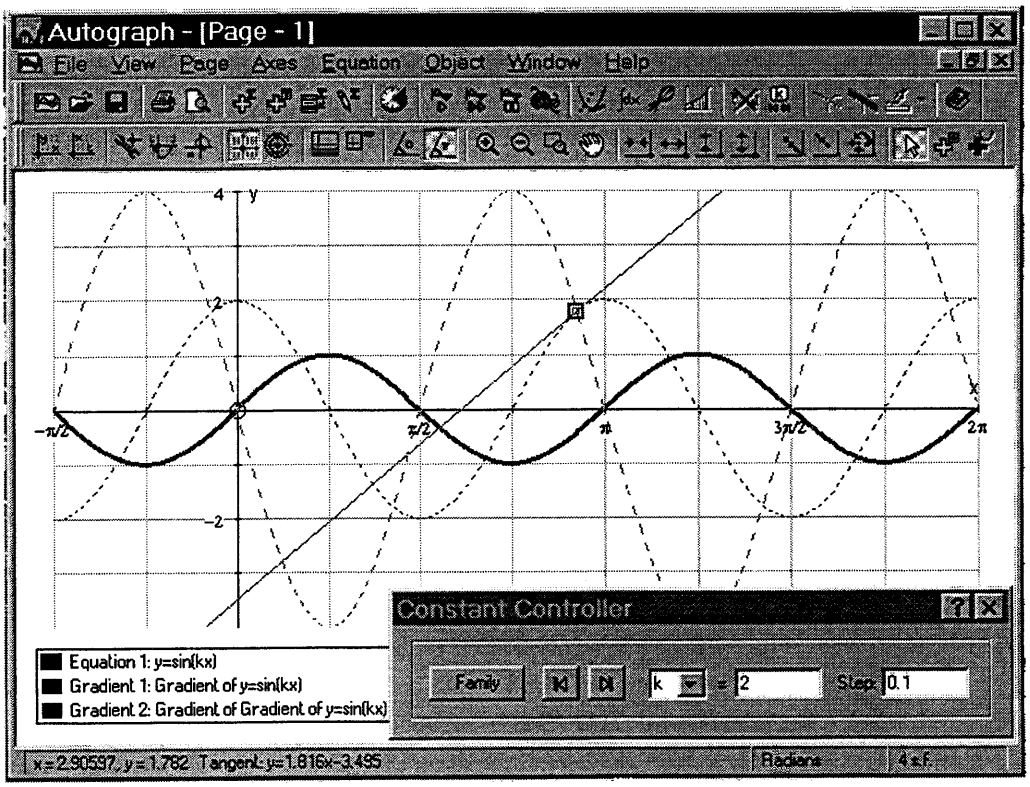
The simple way to type mathematics is to use a combination of superscript (for indices) and the standard symbols font (for various mathematical signs). For more complex expressions, the Equation editor that comes with *Word* is effective, and 'FX-Draw' can be used for diagrams.

**CDs** eg Escher, Art and Mathematics, MathWise, TransMath

This medium may prove to be short-lived as the Internet takes over, but in the meantime a number of important resources are available on CDs: eg Escher pictures and a growing number of CDs for revision, or for structured learning (known as 'Interactive Learning Systems').

**Symbolic Algebra systems** eg *Derive, MathView*

What is becoming clear from this category is that algebraic software can now *do* much of the mathematics that is taught in schools. The challenge therefore is increasingly not only *how* to teach the subject, but *what* to teach.




*The use of a dynamic interface enables concepts to be visualised in new ways. Here the Autograph plotter is being used to illustrate the chain rule by varying 'k' in y = sin(kx) and its 1st and 2nd derivatives.*

**Hand-held calculators**

These are getting cheaper and more powerful almost daily. So far solar-powered calculators are restricted to the small screen 'scientific' category. Graphic models can handle numerical, graphing, algebraic and statistical operations. Many calculators can connect to OHP pallets for class display. The disadvantages are the low resolution images and awkward keyboard entry.

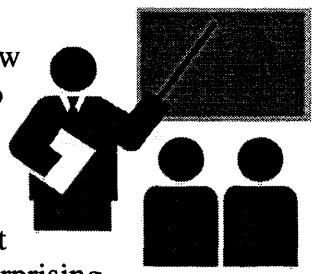
**The Internet, Email and Video-Conferencing**
This category is the most significant development so far and easy warrants a paper in its own right. Mathematics is a global subject and there is already a huge bank of resources available to teachers from all over the world. Teachers need to learn how to find them, and how to incorporate data and graphics into their worksheets, and in their day-to-day teaching. Oundle School has made a good starting resource available on: http://www.argonet.co.uk/oundlesch/.

Email has a special potential, as teachers can use specialist discussion lists to contact other teachers and professional organisations.

The ability to send and receive pictures and sound over the internet is now a reality. The PC camera is cheap (or you can use a regular video camera); the communications software is very versatile and its free (*Net-Meeting* from Microsoft). This allows both parties to share a white board, chat line and any applications that one or other is running (eg a spreadsheet). We can now look forward to the prospect of affordable distance teaching.

## 3. The Impact and Scope of New Hardware on the Learning Environment in Secondary Mathematics

### WHOLE CLASS TEACHING



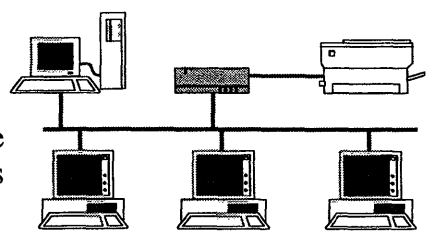
Whole-class instruction can now benefit from a dynamic new teaching environment using computer-generated images. To achieve an image that is large enough to be seen by the pupils, the options are:

(a) **a large TV** (with a suitable adapter) – the image is a bit grainy, but this is the most affordable solution, and has the surprising benefit of being able to write on the TV screen with an ordinary white-board marker.

(b) **a 'Cruiser' laptop** – this is a new concept: a high performance PC laptop with a detachable screen that then acts as an OHP pallet. The image is bright enough for most conditions, and a remote keyboard and mouse can be passed round the class for pupil input.

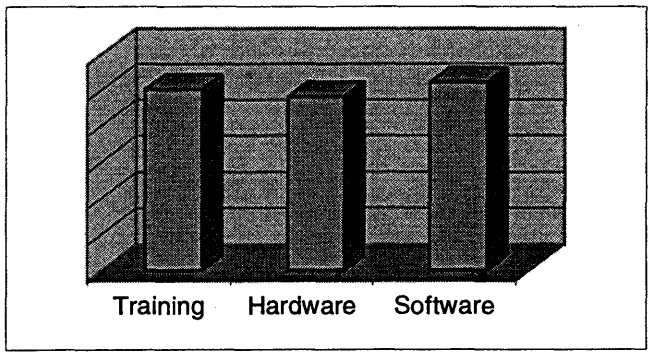
(c) **a computer projector** – ideal, but at the time of writing is still prohibitively expensive for schools. Ideally it should be ceiling mounted, shining onto a white writing surface. This avoids the glare that follows from projecting horizontally, and the teacher can also write on the image.

### USING THE I.C.T. LABORATORY



With a classroom display system, the teacher remains in control, driving the pace. Taking a class to a lab needs careful thought, and the essential ingredient is the well-planned worksheet to ensure that the students benefit from a worthwhile learning experience. Pupil-controlled images add interest and there is scope for working with peers.

## 4. Training Strategies for a Secondary Mathematics Department

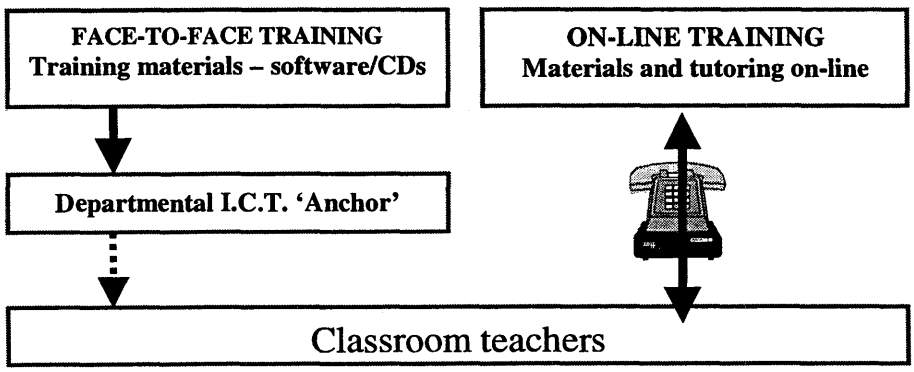



**The first objectives are:**

- To plan for an equal provision of the three essential ingredients: training, hardware and software. Lagging behind with any one will lead to opportunities in the other two being wasted: for example trained teachers with no I.C.T. support, or brand new equipment being ignored by teachers unaware of the possibilities. The most common error is to assume that funds are needed only for hardware and that somehow the other two will just happen!

- To convince school and curriculum managers that mathematics is a subject that can materially benefit from investment in I.C.T. Despite the many opportunities that will be obvious to the committed user, this objective can be difficult to achieve in the light of many centuries of successful teaching without them. Also without the informed backing of school Heads and Deputies, an I.C.T. departmental programme is likely to founder.

### FACE-TO-FACE Training



Within each academic department a member of staff needs to be asked to act as an I.C.T. 'anchor'. This person will provide the leadership necessary to see a training programme launched and followed through in the department.

The 'anchor' would attend a regional training day, which would aim to cover an introduction to the general and subject specific skills. The format should be part presentation (when the trainer dictates the pace) and part hands-on workshop, with no more than 16 in the group. The departmental 'anchor' should be have the confidence to start using I.C.T. methods to improve personal productivity (word-processing and spreadsheets) and consider the following objectives:

- Review existing hardware and software provision in the department
- Review existing I.C.T. expertise within the department
- Recommend hardware and software purchases, probably a rolling programme over 2-3 years
- Advise over the integration of a departmental network with the school's networking plans
- Recommend which parts of the syllabus can benefit from I.C.T. methods
- Compose a 2-3 year training schedule for the rest of the department
- Indicate how I.C.T. can increase personal productivity using word-processing / spreadsheets
- Lay the foundations for a departmental intranet for electronic storage of resources.

This is a significant challenge even for an I.C.T. literate teacher.

**ON-LINE TRAINING**

Those schools that are fortunate enough to be able to send an 'anchor' teacher to a regional training day will have made a good start, but training must be on-going, and there is also the requirement to train the other members of the department. There can never be enough trainers for this 'face-to-face' approach, and the Internet offers a very practicable solution, requiring:

- teachers who are motivated to learn this way
- reasonably fast internet connectivity
- training materials of sufficient quality, and in the local language
- tutorial help on-line

**TEACHER OWNERSHIP OF HARDWARE**

It is important that any training programme that is devised for mathematics teachers includes the use of I.C.T. to help with their personal productivity. This should include word-processing for work-sheets, using email as a professional communications tool, and using the internet as a classroom resource, etc. Experience has shown that confidence with this technology cannot be really secure until a teacher owns a computer or has easy access to one at school and at home.

It should be a high priority in any I.C.T. Masterplan, to assist with a teacher purchase scheme (if there is a likelihood of the teachers being able to afford one). It is also likely that portable computers will get cheaper and more powerful. Already mentioned is the 'Cruiser' laptop with detachable lid for whole-class teaching. If a school authority is encouraging teachers to own their own machines, this solution is attractive because it provides the classroom computer and display system all at once. The solution is also particularly appropriate for schools that do not have classrooms dedicated to mathematics.

## 5. Cost Implications of Technology in the Curriculum

This has to be the most difficult area of this subject, with all three costs centres (training, software and hardware) wildly affected by local variations.

### FACE-TO-FACE TRAINING

When any country starts to total up the man-hours of training required to bring even one teacher per school up to speed with the use of I.C.T. in the classroom, the figures immediately suggest a major investment in time and resources. One full day per 'anchor' teacher and at least 2 half-day follow-ups are recommended. The cost of training and supporting the trainers is also significant, especially as they are likely to be seconded from the classroom.

### ON-LINE TRAINING

This would need to be set up by local governments, tailored to local needs, language, etc. The on-line tutors would need to be trained and in place.

### PURCHASE OF SOFTWARE

There is an increasing availability of high quality software free of charge from the internet. The list includes Graph Plotters, a Dynamic Geometry package and a large number of 'Java' internet applications that can be down-loaded quite legally. These are obviously not as polished as the commercial applications, but represent a good start for a cash-starved mathematics department.
Of the commercial products, a graph plotter, a word-processor, a spreadsheet and possibly a dynamic geometry package should be the first items to go for. The unit cost can be reduced considerably by buying site licences.

### PURCHASE OF HARDWARE

With so many schools in the world struggling to find the most basic of resources it will be useful first of all to consider what you can achieve with the bare minimum, and progress from there:

1. No electricity

- Wind-up technology is here, and able to power simple computers such as the Apple E-mate.
- Solar powered devices are not yet powerful enough to perform more than simple calculations.
- Mobile power units that generate electricity to run a small network have been trialled.

2. No telephone connection

The only feasible way to connect to the internet without a land-line is through a satellite connection. With the internet having such enormous potential in remote areas, it is likely that this method of connectivity will be a priority for the local educational technology planners.

3. Just old computers and no funds to upgrade

There is a surprising amount that mathematics teachers can achieve with old equipment (say 286- and 386-DOS computers). A number of important mathematical products were sufficiently well developed before the advent of *Windows* that their early DOS versions are still useful and still available. In particular *Excel* (spreadsheet), *Derive* (symbolic algebra) and *Cabri Geometre* (dynamic geometry).

4. With a school network in place

The network is the backbone of I.C.T. success, with it resources and applications can be shared round the community. Another significant development is a networking tool that will allow older computers to sit on a modern network and act as 'dumb terminals' (or 'thin clients'). The picture is only just becoming clear, but the implications for under-resourced schools are obvious: the hardware that sits on the end of a network is likely to get cheaper and cheaper.

## 6. Conclusions

The main concern with I.C.T. in schools is that there is a serious likelihood of scarce resources being wasted on software and hardware that is inappropriately used or not used at all. Everyone is clamouring for computers and far too many are being installed in schools throughout the world without due thought for their use. The hardware that delivers the software is certain to change, and become more and more affordable, especially when connected to a network. It is also likely that the comparatively inexpensive calculators and palm-top categories will gradually close the performance gap to provide rich learning tools for pupils to use in the classroom.

Mathematics is fortunate – there are many obvious advantages to using I.C.T. methods in the teaching and learning process, and this is not the case in many school subjects. However obvious the advantages may be, the training of teachers to put them into practice is vital. What is now clearly needed is an international initiative to set up a programme for training the trainers, and at the same time a parallel initiative to put these training resources on the internet so they can be made available to all.

# Impacts of Technology in Distance Learning: A view from the Trenches

**Gail Crawford, Centre for Distance Education, Athabasca University, Canada.**

## Introduction

The enthusiasm and excitement associated with increased access to communications and electronic technologies and their associated new options for course design, development and delivery in distance education are palpable among faculty and students. There is a continuing growth in knowledge, skills and potential as, each term and each year more and better technological options become available. The 'upside down' pleasures of acquiring new skills and facilities continues as does the 'down side' pain. The range of reactions to new technologies spans a continuum from ecstatic enthusiasm to dismay, sometimes occurring in the same people over a short span of time. The constancy of change can become fatiguing and the range of potential and problems, exhausting.

For those of us engaged in designing, developing and delivering courses and programs for students, some difficult questions and choices continue to 'haunt' us. These are not 'new' questions and choices; rather they are 'old friends' in newer, sometimes more urgent forms. They include basic questions of: when, how and which technologies to use for which purposes and to what ends.

This paper draws upon the experiences of academics in AU and the comments of students in a AU graduate program in distance education using technologically supported distance education methodologies. Beginning with the premise that technology has always been part of the distance education experience, this paper looks at how the increasing application of new and changing technologies affects the working and learning environments for AU faculty and students.

## Technology Then and Now at Athabasca University (AU)

In the early years of distance education at AU, technology, both as a process and as product, sustained the divisions of labour associated with the 'industrial model' of distance education, that is, a team of specialists evolved that had relatively high level skills in different areas required in the development, production, dissemination and delivery of distance education courses. Over time, substantial numbers of AU faculty themselves acquired a considerable range of these skills in a wide variety of areas. Further, the technologies have continued to evolve and develop over time, providing a plethora of types, styles, and options in terms of both hardware and software.

During the planning process for the Master of Distance Education (MDE) program (1992-1993), the combination of the faculty skills and recent changes in technology allowed for the planning of a much more interactive. 'high touch' programme in

which faculty would play many of the roles previously allocated to other specialists in the distance education 'team'. For example, the faculty were all experienced instructional designers, they had all been course managers, they were all experienced distance educators, some of whom had also been course coordinators and tutors. It was decided that the graduate programme would create its own course development and production model and, rather than employing the tutorial model of the undergraduate programmes, would use an instructor model. Those who planned and developed the courses would also teach and evaluate the students. Interaction between faculty and students would not be mediated through tutors but, rather, would be direct with faculty and students continually interacting via electronic mail, file transfers, computer conferencing with recourse to fax machines and toll free telephone services as well. Further, because of a philosophical commitment to interpersonal interaction, the courses would be scheduled and institution-paced to ensure sufficient numbers of students available to facilitate group interactions.

Much of the planning has resulted in positive outcomes with continuing high demand for admissions, considerable success for graduates and continuing positive evaluations. It should be noted: however, that this is a very young programme first enrolling students in1994. There are 19 graduates as of June 1999 and limited evaluation data available. The first, formal external programme evaluation is scheduled for the year 2001. At the same time, to date, it appears that many of the initial aspirations are being achieved. But the process is continuing and the infusion of more and newer technologies is unending. Some questions are becoming insistent and more urgent. With each update, upgrade or change in technology that becomes available, the University, the MDE faculty and the students are asking themselves about the relative benefits to be achieved. Along with both the capital and the operating costs that changes require, come some less viable costs to faculty and students. These costs are both financial and personal. While there are recognizable benefits to these changes do we really know and understand the human costs? Both faculty and students are beginning to make muttering sounds about the relative demands and workloads they are experiencing and about the uncounted increases in time for learning and interacting that these changes bring.

**Some Impacts of Technologies on AU MDE Faculty and Students**

First time distance educators and distance learners quickly discover that there are many things to do in distance education that were invisible to them as conventional educators and students in conventional education agencies. This is especially true with respect to the roles and responsibilities of faculty in course authoring, course development, tutoring and student support but it is also true for students who must also learn to manage their time and their tasks differently. For those engaged in teaching graduate students at a distance, providing high quality courses and student support, can be exceedingly demanding in somewhat surprising ways. There is also some self-report evidence received from students that indicates that computer-mediated and on-line courses can become excessively demanding for them. The infusion of new technologies, in addition to opening exciting possibilities, may also add substantially to student and faculty workloads while simultaneously reducing flexibility in terms of time, place, pace and mode of study.

**Benefits and Costs**

In the past, the multiple roles and functions of distance education academics were supported with an array of professional, technical, administrative and support personnel. For example, there were course development personnel including: subject matter experts, typists, editors, visual designers, instructional designers and course managers. There were course production personnel including: text entry clerks, graphic artists, typesetters and press operators. There were materials management personnel who located purchase materials, scanned materials, ordered, received, stored and distributed materials. There were media production specialists who arranged, managed, and provided expert help in the production of non-print materials and services. Some of these personnel and services continue to exist in AU and the MDE as they do in many other distance education agencies, especially in those where the 'industrial model' is still prevalent.

Now, within the AU MDE program, much of this work is done by the faculty with the help of the three technical / support personnel within the administration unit. For example, faculty now: write and prepare course content, type their own manuscripts, assist in the format and layout of course materials, do most of their own copy and substantive editing, arrange for the purchase or ordering of their own materials and, if they are using web pages, locate and verify the addresses and, increasingly, take responsibility for creating their own web pages. This is not to say that they have no assistance, they do: but, increasingly, the trend is towards more of these responsibilities in the hands of individual faculty members. Further, while in the past, revision cycles tended to be relatively lengthy (e.g., 3-5 years), using new technologies, revision may occur between four month academic terms or, at a minimum, annually. This transfer of responsibilities is not all negative. Indeed some has been gladly assumed in order to gain control, to prevent wait time and to bring the teaching functions closer to those who do the teaching.

When courses are delivered, it is again the faculty who do the teaching / tutoring and provision of student support. This is not to dismiss the tremendous contributions made to the process by the Unit's administrative assistant or the University's computer Helpdesk: but rather, to highlight a new reality. Specifically among the changes that have occurred over the past decade as newer technologies have become increasingly integrated into the distance education system and in the context of 'high touch' characteristics desired by the MDE programme planners, is that after creating and to some extent, producing and disseminating the course materials, the faculty proceed to interact directly with the students in continuing dialogue and discussion. There is toll free telephone access across North America, electronic mail, file transfer, and asynchronous conferencing across the world as well as the conventional print-based materials, audio and video tapes and, potentially, synchronous communications, real time audio and video materials as technologies and costs permit.

Some of the consequences of this increased accessibility were not anticipated. For example, unlike the undergraduate programme with scheduled 'tutor hours' (usually 3-5 hours per week), MDE faculty don't set 'office hours', students may call at almost any time. With the ease of communications through electronic mail, voice mail and conferencing, there is a concomitant imperative to respond quickly. The programme expectations include 48 hour response to e-mail and voice mail and seven days for assignment feedback. Many faculty respond much more quickly. Similarly when computer conferences are active, faculty report spending one-two hours per day five or six days per week on this. While high levels of responsiveness are positive and appears to be greatly appreciated by students, maintaining this can be a significant burden. Further, as one report (the LapTop College 1999, p. 4 ) suggests, there is a tendency for student expectations to rise in response to levels of support that they are given. With respect to other academic roles, for example, research, publications, presentations and community service, technologies have also provided new opportunities. On-line searches, document preparation and presentation tools such as word processors, desktop publication software and Power Point have all made contributions. However, the time spent learning to use these tools may sometimes be inordinate and, in some cases, the time might have been better spent elsewhere.

For students, the opportunities have also increased substantially. The speed and frequency of interaction with faculty, other students, other programme personnel, the library, computer helpdesk and, potentially, with anyone whose electronic mail address is available to them is very powerful. Indeed, many are demonstrating phenomenal initiative in locating and engaging other people including authors, researchers, administrators and other distance educators in constructive dialogues and fruitful discussions. In addition to access to the World Wide Web, MBE students receive a 'rich' array of course materials including print-based Study Guides, texts, journals, and articles and, sometimes, audio or video tapes. In all courses they use asynchronous conferencing, e-mail, file transfers and attachments. In some courses, they may also use on-line audio and video, synchronous 'chat' and other technological applications as circumstances, costs and availability determines.

What are the consequences to students of these new configurations? Clearly the consequences can be many and varied. The following comments are based upon course evaluation questionnaires, informal surveys, and spontaneous comments from students and are not presented as representative of all MDE students; however, they do exemplify strong and recurrent themes. While the ease and speed of communications and access to multiple resources appreciated by most students, there are also some problems, for example:

Rising Expectations:

- "Dr. X responds to my questions in less than 24 hours why can't all faculty do that ?"
- "Assignment feedback should be sent within 48 hours."

Concern with Workload but conflicting views:

- " I would like more time in conferences, so there should be fewer assigned readings."
- " I would like more time to do assignments and less time in conferences."
- "Conferencing should be less formal and more chatty."
- Conferencing should be more 'content-centred'."

Place / Pace Constraints

- " Conferencing requires me to sit at my computer for longer periods."
- "Interacting with other students slows down my progress."
- "I would like to work more at my own time and pace."
- "Group assignments can be fun, but I can do the tasks faster on my own."
- " I usually end up doing more of the work in group assignments but get the same grade."
- "We are in competition for grades and scholarships, so group assignments can be problematic."

In three recent MDE course offerings in which the option to do an assignment alone or with other students was available students 'voted with their feet'. The nature of the assignments and credit weighting was the same in all three instances. In course A: 50% opted to work together, in course B: 80% opted to work together and in course C: 20% opted to work together. Further, 50% or more of the 'course C' students in response to a questionnaire also indicated that :

- Collaborative assignments were a very low priority for them
- Working at their own pace and place was a very high priority for them.
- Having direct interaction with an instructor was their highest priority.

Student preferences do not seem to be in conflict with the literature at this time, especially since much of the literature currently both advocates the use of CMC and, at the same time, cautions that the potential gains are not automatic and further: indicates that the anticipated gains can be difficult to document (e.g., Bates 1995; Eastmond 1993; Berge and Collins 1995; Bullen 1997; Tait 1996; and, Kanuka and Anderson 1998). The literature also indicates that there is a great deal of variability in rates of conferencing participation. While no systematic data is available about this for MDE conferences, faculty observe wide ranges of participation (e.g., 0-50 entries in one recent conference) and, further, in some courses there appears to be decreased levels of participation if grades are not allocated to conferencing.

**An Activity / Productivity Paradox**

It appears then that both MDE faculty and students are engaged in an increasing number of activities associated with a variety of technologies. It also appears that these activities have mixed consequences, that is, while there are more activities of certain types going on at higher frequencies, and in greater volumes, it is much less clear whether these activities are having the effects that were anticipated or desired.

Clearly among the goals of increased uses of technologies were: reductions in costs, improvements in performance and provision of previously unavailable opportunities. That is, improvements in the teaching and learning environments for faculty and students are among the aspiration underlying the increasing use of technologies. This could be happening. However, there is little evidence available to indicate whether the 'costs' are worth the 'benefits'.

With reference to the financial costs, some have argued that it is relatively easy to create an electronic system that costs more than an equivalent paper-based system (Thomas, Carswell, Price & Petre 1998). In terms of improvements in the learning environment, Miller (1996, p. 36) claims that " for the past century, almost every attempt to introduce new technologies has served only to limit student access without dramatically improving the learning environment." Nixon and Salmon (1996, p. 89) suggest that "obsolescence is likely to prove to be a major obstacle in the future." That future may be very close, indeed. The human costs, especially in the form of increased time, effort and energy of faculty and students may be the very least of the costs administrators will consider but they may also be among the most critical for distance educators to address.

Just because faculty are themselves doing 'more' of the multiple functions of distance education, can we conclude that they are more productive? Is the time spent in developing, producing and disseminating course materials via desk top publishing software, web site tools and etc....well spent? Are the courses substantively better? Is the time spent interacting via synchronous or asynchronous electronic communications well spent? Are the students learning as much, more or less? Is the time spent interacting individually with students by e-mail, voice mail and fax effectively spent? Are students feeling well supported? Are we achieving our individualization goals? Is the time spent in on-line searches, producing Power Point Presentations and, etc., well spent? Do we produce more or better research, publications or presentations?

It seems that there are many unanswered questions about how technology contributes to productivity in distance education. The same question has been raised in business and industry. Fahy (1999) reviews the concept of the 'productivity paradox' in the business sector. Essentially he argues that technology does not necessarily result in increased productivity and / or profitability. He draws attention to the fact that this may be equally true in distance education. Indeed, in this paper, it has been argued that technologies have facilitated an increased range of activities and made possible previously unattainable levels of interaction between and among faculty, students and others. Access to resources has also expanded. A key question remains, do the increased levels, types and varieties of activity and increased access to resources, reflect real increases in productivity and performance? Has student learning

improved? Do we really serve more students more effectively or; rather do we serve different students differently?

The basic questions we faced in the past, with our older technologies, remain to be addressed. How do we deploy our resources, and the students' resources more efficiently and effectively and to what ends? Is MORE necessarily BETTER ? If more students and faculty can communicate more easily, more frequently and with more people, that certainly increases activities. However, if time is spent on 'talking ' to each other, interacting through conferencing and electronic mail, is that time better spent than in reading books, journals and published articles? Clearly, given that everyone's time is a finite resource, we need to address how to balance our activities to produce the best possible learning outcomes with our students. It seems then, that we may well have a 'productivity paradox' to be faced when using technologies in distance education. Maybe it is time we began to address it.

**References**


Bates, A.W. (1995) *Technology, Open Learning and Distance Education.* London: Routledge

Berge, Z. and Collins, M. (Eds) (1995) *Computer Mediated Communication and the Online Classroom.* 3 Vols. Cresskill, N.J.: Hampton Press.

Bullen, M. (1997) A case study of participation and critical thinking in a university level course delivered by computer conferencing. Unpublished doctoral dissertation. University of British Columbia, Vancouver, Canada.

Collins, D. and Bostock, S.J. (1993) Educational effectiveness and the computer conferencing interface. *Educational and Training Technology International,* 30, 4, pp. 334-342.

Eastmond, D.V. (1993) Adult distance study through computer conferencing. *Distance Education,* 15, 1, pp. 129-151

Fahy, P (1998) Reflections on the productivity paradox and distance education technology. *Journal of Distance Education,*. 13, 2, pp. 66-73.

Kanuka, H. and Anderson, T. (1998) Online social interchange, discord and knowledge construction, *Journal of Distance Education,* 13, 1, pp. 57-74.

Miller, G. (1996) Technology, the curriculum and the learner: Opportunities for open and distance Learning. Pp. 34-42. In R.Mills and A. Tait (Eds), *Supporting the Learner in Open and Distance Learning.* London: Pitman Publishing.

Nixon, T. and Salmon, G. (1996) Computer–mediated learning and its potential. In R.Mills and A. Tait (Eds), *Supporting the Learner in Open and Distance Learning.* pp. 88-100. . London: Pitman Publishing.

The Laptop College (1999) *Learning technologies report* (On-Line) Available: http://node.on.ca/tlreport/april1999/printfile.html

Tait, A. (1996) Conversation and community : Student support in open and distance learning. In R.Mills and A. Tait (Eds), *Supporting the Learner in Open and Distance Learning.* London: Pitman Publishing.

Thomas, P., Carswell, L., Price, B. and Petre, M. (1998) A holistic approach to supporting distance learning using the Internet: transformation, not translation. *British Journal of Educational Technology.* 29,2, pp. 149-161.

# Agent-based Activity Monitoring for Asynchronous Network Learning System

**Hirohide Haga, Doshisha University, Japan.**

**Abstract**
In this article, a new client/server architecture named *trapper architecture* is proposed for monitoring users' behaviour on an asynchronous network-based learning system. In traditional classroom-based learning or a *synchronous* computer mediated learning system, it behaviour is relatively easy to monitor a learner's behaviour. However, in an asynchronous network-based learning system, it is not so easy because learners are distributed and they access computer networks at their own convenience. In an asynchronous network-based learning system, e-mail is primarily used for communication among learners and between learners and lecturers. Students often access databases, Web servers and other service servers to collect and browse information. Therefore, to monitor learners' behaviour on an asynchronous learning network, it is necessary to monitor the exchange of the e-mail and access to the database and Web sites of the learners. This article proposes a basic framework for implementing monitoring without modifying the software of the learners. The trapper architecture is an enhancement of the proxy server in the Web server. This architecture is also considered to be a variant of the software agent. The software named *trapper* is inserted between the server and the network, where it mediates the communication between the two. We reported the development of the prototype systems for trapping e-mail and database access.
**Keywords:** asynchronous learning network, monitoring, proxy server, agent

## Introduction

Personal computers (PCs) and computer networks such as the Internet now allow network-based learning and on-line education (Harasim,1990). In a network-based learning system, users (learners) contact the computer network through their PCs and as a result, they can exchange e-mail, access databases and observe Web sites. Almost all learning activities are performed on the network. Furthermore, in an asynchronous learning network (Harasim et al , 1995), users make their learning activities at their convenience, which is quite different from traditional classroom-based learning or synchronous learning environments. In a traditional classroom-based learning or synchronous learning environment, monitoring learners' activities is not so difficult. Lecturers can *monitor* what learners are doing because all of the learners are in the real or virtual classroom. Monitoring is one of the most important activities for lecturers. By monitoring a learners' situation, lectures come to understand what learners are doing, possible problems, needs, and so on. How to implement monitoring facility under asynchronous environment is, therefore, an important issue in a network learning environment.

This article proposes a new architecture named *trapper architecture*, which realises the monitoring facility under an asynchronous network learning environment. In trapper architecture, an agent (Brenner et al., 1998) program is inserted between the server and the computer network. This agent program traps the communication between servers and clients.

## Trapper Architecture

- Requirements for realising monitoring facility

In an asynchronous network-based learning system, teaching and learning are mainly performed by exchanging e-mail, accessing databases, and browsing the appropriate World Wide Web sites. These facilities are usually provided by the various kind of service servers such as e-mail, database and web servers. Therefore, monitoring activities on the net will be put into practice by monitoring access to such kinds of service servers.

However, the system administrators who have the super user privileges usually operate these servers and not all lecturers can have such access privileges. Furthermore, these servers also provide services to users who are not on the learning network. Therefore, it is unsuitable and sometimes impossible by the lecturers to implement the monitoring facility on the servers.
Monitoring can be realised by modifying the client software instead of modifying the servers. However, modifying all client software is actually impossible. There are many kinds of client software. For example, Netscape Navigator and Internet Explore are the various Web browsers. Of course, there are many more variations of e-mail clients. Preparing modifications for all of this client software is practically impossible, and many of these client programs are provided in a binary (executable) form that cannot be modified. Modification of both service servers and client software are hard to realise. We need another method (architecture) for the monitoring facility.

## Overall Structure of the Trapper Architecture

Here, we propose the concept of *trapper architecture* in order to realise the monitoring without any modification of the server or client. This trapper architecture is an extension of the *proxy server*, which has been widely implemented on the Internet access networks (Laurie, 1996). Figure 1 shows the overall structure of the trapper architecture.
In traditional client/server systems, clients are virtually connected to the service servers directly via computer network. They directly exchange commands and data through the network. In our proposed *trapper architecture*, a new component named *trapper* is inserted between a server and a network. The *trapper* looks

- like a server from the client, and
- like a client from the server.

Each service server and each client communicate with the trapper. However, they do not recognise the existence of the *trapper*. It can be said that the trapper is a *transparent mediator* between the server and the client. A trapper can include some programs since it is implemented in a software component. Therefore, by embedding the monitoring facility, users (lecturers of the learning network class) can monitor the access to any service server.

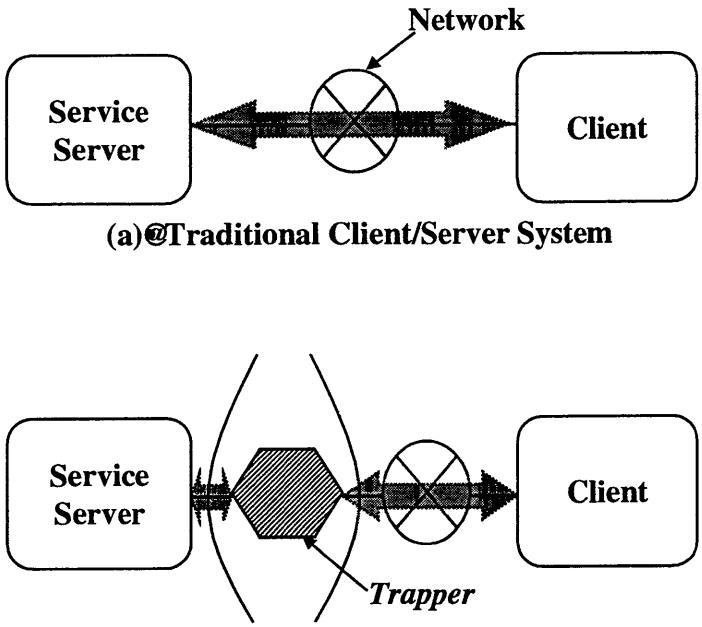



Figure 1. Architecture of the *trapper.*

**Implementation outline of Trapper Architecture**

The current computer network is built on the OSI's seven-layer model of the network. Especially, the TCP/IP (Transmission Control Protocol / Internet Protocol) model (Stevens, 1994) is adopted for the Internet system. In the TCP/IP model, there are four layers: the network layer, the internet layer, the transport layer, and the application layer. The network layer determines the physical characteristics of the network such as signal voltage. The internet layer determines the routing control strategy. The transport layer determines the method of controlling the data flow and correcting transmission error between two communication nodes. The application layer defines the transmission protocol between various kinds of application programs.

In implementing the trapper architecture, we pay attention to the internet layer and transport layer. In internet layer, the IP (Internet Protocol) is defined and TCP (Transmission Control Protocol) is defined on the transport layer. We focus on how the communication partner is defined in the TCP/IP.

In TCP/IP, every node has its unique address described by 4 byte numbers such as 111.222.123.234. This address is called the *IP Address*. Furthermore, a 2 bytes number called the *port number* is assigned to each service process such as e-mail, ftp (file transferring application), and World Wide Web. Each service has its unique port number. All clients must specify the IP Address and port number to connect to the server.

The port number is not *fixed* to each application. Of course, there are some *default* port number assignments. For example, the ftp service usually has a port number 21 and the port number 80 is usually assigned to WWW service. However, there is no *technical inevitability* for assigning port number 21 to ftp service. The ftp service can have port number 22.

The administrator can assign any port number to an application. In order to implement the trapper architecture, we use this flexibility of the port number assignment.

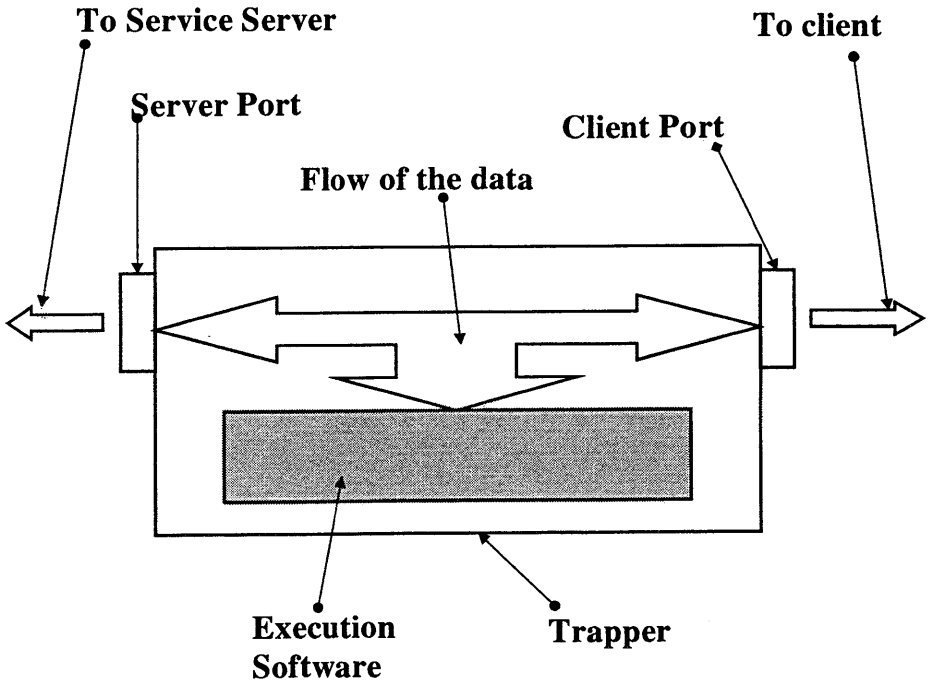



Figure 2 Conceptual illustration of *trapper* software.

Figure 2 shows the conceptual illustration of the structure of the *trapper* software. There are two communication ports, server port $p_s$ and client port $p_c$ in trapper. The server port $p_s$ is connected to the service server and each client of the service server connects to the client port $p_c$ of the trapper. There is a user programmable part in the *trapper*. Data flows between the server port and the client port, and the copy of the data flows to the embedded program. This embedded program can *trap* the data communication between the server and the client. If this embedded program has certain functions such as parsing the flow data, the *trapper* can analyse the contents of the flow data and can generate the required report.

The port number of $p_s$ should be set to the original port number of the service application, such as 21 for a ftp and 80 for the WWW. The system administrator can assign an arbitrary port number to the client port $p_c$ because the client of the service servers usually specifies the port number of the service servers explicitly and different port numbers from *default* number is often used. The administrator is only required to announce the assigned port number of the server to the end users.

**Prototype Development**
Classification of the users
While developing the prototype systems, we classified the user into two categories.

**Trapping administrator group**: A users included in this group is a *super user* of the trapping architecture. The user of this group can set the trapping condition, embed the application program into the *trapper* software, and receive the trapping result.

**End user group**: The users included in this group is an *end user* of the trapping architecture.

In a network-based learning system, lectures should be included in the administrator group and learners should belong to the end user group.

**E-mail trapper**
The first prototype of the trapper is the *e-mail trapper*, which traps the exchange of the e-mail between learners. The e-mail trapper has the following functions.
It traps the e-mail sent by a specific user. A notification is sent to the user who sets the trap condition by e-mail. It traps the e-mail that includes the specific character string such as a keyword. The notification of the trapping result will be sent to the user who set the trap condition by e-mail as well.

Figure 3 illustrates the overall structure of the e-mail trapper. There are basically five components in the e-mail trapper.

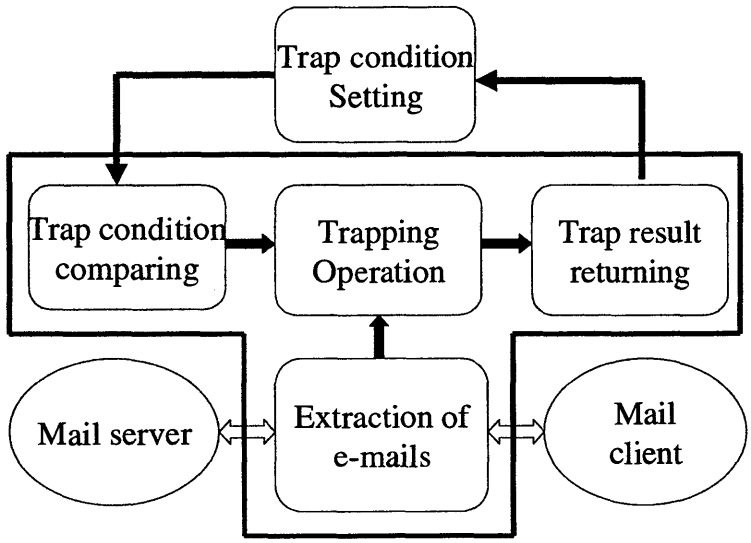



Figure 3. Architecture of the e-mail trapper

**Database access trapper**
The second prototype of the trapper is named the *database trapper*. It traps the access to the database. The database trapper has the following functions.
It traps the database access transaction whose query includes specific information such as a keyword, a user name, and the name of a database.
It traps the database access transaction whose query result includes the specific information such as a keyword, a user name and so on.

The result is also notified by e-mail. The software architecture of a database trapper is same as that of a e-mail trapper. There are basically five components in the trapper: the condition setting, the condition comparison, the trapping operation, the extraction of the query and the result of the database access, and the trapping result analysis.

**Implementing two trappers**

We have developed the two above mentioned prototypes on IBM-PC compatible personal computers. The operating system of the mail server and database server is Linux and that of a client is Windows 98. All software is developed in the C++ language.

These two prototypes prove the availability of the trapper architecture. The e-mail trapper can trap the appropriate e-mail and the database trapper can trap the required database transactions.

**Some lessons learned**

Prototype trappers were applied to the private learning network of the author's laboratory. The students in the laboratory studied some lessons about the basics of computer science such as programming in Java on this learning network. As no modification was applied to the end user client software and trappers were implemented on the service servers, end users did not recognise the existence of the trappers. All trapped results were sent to the author (the lecturer of the lesson). About 200 transactions were trapped and were sent to the author. All results fulfilled to the lecturer's requests. By analysing these results, the lecturer could understand the situation of the learning (learning process and problems of the students).

The experimental usage of the prototype trapper software revealed some problems to be resolved.

- Trapping for multi-users: The current trapper can only cope with one user's transaction. If some users access the server, only one user's transactions are trapped. However, this problems comes not from the architectural or conceptual level but from the level of the implementation. For example, we can solve this problem by invoking plural processes of the trapper simultaneously. This is similar to the situation when plural web service processes are simultaneously invoked.
- Security and privacy: Currently, the two trapper software programs are implemented on the in-house private learning network. Only students and teaching assistants use this network. All information in this network is about the process and result of the learning activity. Therefore, the lecturer has the *right* to get them. In this case, the problem of security and privacy is not so serious. However, if the trapper is implemented on a service server in some other sector such as a business sector, security and privacy becomes a serious problem. For example, an executive director might send data that a section manager *should not* read or private e-mail may be sent. In this case, the trapper should not be set. Introducing a *ranking of each user* is one possible solution to this problem. This ranking information determines the setting right of trapping condition. Higher ranked users can trap the information exchange of lower ranked users, but lower ranked users cannot set the trap condition that specifies the trapping of higher ranked users' transactions.

## Conclusion

In this article, a new architecture named the *trapper architecture* was proposed to realise a monitoring function on an asynchronous learning network. The trapper architecture is an enhancement of a conventional *proxy* architecture. It is also considered as a variant of the agent program. A new software component named the *trapper* is inserted between the servers and the computer network. The trapper mediates the exchange of the data between servers and clients. The trapper receives data from the servers and then analyses the contents of the data. The trapper *traps* it if the data satisfies the trapping conditions. The requests from the client to the server are also sent to the trapper. After analysing and extracting the appropriate data, these requests are sent to the server. When the assignment of the port number of the server is contrived, the trapper software is transparent to the users of the servers. Two trapper software prototypes, e-mail trapper and database trapper, were developed and implemented on the learning network of the author's laboratory. The usage of the prototypes showed the advantages of the trapper architecture on the asynchronous learning network, and revealed two problems to be solved in practical usage.

## Acknowledgement

This work was partially funded by the Doshisha University's Research Promotion Fund.

## References

Brenner, W., Zarnekow, R., and Wittg, H. (1998) *Intelligent Software Agents* (Berlin, Heidelberg, Springer-Verlag)

Harasim, L. (ed) (1990) *ONLINE EDUCATION Perspectives on a New Environment* (New York, Paeger Publishers)

Harasim, L., Hiltz, S.R., Teles, L., and Turoff, M. (1995) *Learning Networks* (Cambridge MA, The MIT Press)

Laurie, B. and Laurie P. (1996) *Apache The Definitive Guide* (Cambridge, O'Reilly)

Stevens, W.R. (1994) *TCP/IP Illustrated, Volume 1: The Protocols* (Reading MA, Addison Welsey Longman)

# The Given and the Made: Authenticity and Nature in Virtual Education

**Lee Herman, Alan Mandell**
**State University of New York/Empire State College**

"No reason to get excited," the thief he kindly spoke.
"There are many here among us for whom life is but a joke.
But you and I, we've been through that, and this is not our fate.
So let us not talk falsely now, the hour is getting late."
Bob Dylan, "All Along the Watchtower" (1968)

It is said that distance learning technology promises access to learning. By transcending the limits of space, time and situation, this technology makes it increasingly likely that any person, of any status, in any place, can learn anything, at any time. The technology of virtual education can revise or remake the limits which are given us by our histories and by nature. Distance learning promises to free us from those limits. It promises more freedom for more people to learn what they choose.

This distance learning technology also increasingly proliferates in the place formerly occupied by the traditional academy. Diverse texts and kinds of information, as well as a multiplicity of consumers and facilitators of learning, increasingly appear in the places formerly held by the canon and the professoriate. Thus, within this technological world, not only can any aspiring learner approach any given body of knowledge, that body can be made approachable to any learner. In this way, the abiding separation between any knower and anything to be known can approach a vanishing point. More precisely, in virtual reality everything "seems" to be, and thus everything that seems to be given, can, in fact, be made. What we know, how we know, the conditions of our histories, and even nature itself can be made over into what suits our purposes. In virtual reality, everything is malleable.

What would learning mean in such a world? What sort of world is constructed through a technology which promises that every reality given by history and nature can be made virtual? Would it be endurable to learn, to realize, that anything given to our knowledge can made into something other than what it is? We might want to take it back, but could we?

A world entirely virtual presents us with a reality in which every single thing can be constructed and reconstructed. But when nothing needs to be as it is, when nothing is hidden from our ability to understand and remake it, what can we rest on or rely upon in the way we take confidence in the reliability of natural things? Is anything simply given and indefinitely reserved from being made over into something else? In such a world, what is authentic? The authenticity of something, as Walter Benjamin describes, depends upon its "uniqueness" in a particular time, place and history. This is a kind of "distance" which can not be overcome through any technology of reproduction or representation, because, necessarily any such effort to bring something "closer" removes it from its uniqueness (Benjamin, pp. 222-223).

Authenticity is distance, in space, in time, and in the particularity of what or who dwells there.

A human life resting upon total construction, in which there is nothing authentic, offers no place to dwell, no place to give rest from the perpetual work of making over. Such a life would be unendurably frantic. Such a life, ever given over to constructing, results from subduing the natural or given world to a certain kind of knowing, the knowing of technology. This kind of knowing construes the world according to unambiguous rules or algorithms. They represent that world as a product. Thus, this way of knowing the world also produces it; the distance between the activity of learning and the object of knowledge is progressively obliterated. As a former professor and now a researcher for an international software company exclaimed, "To me, this corporation is my power tool. It's the tool I wield to allow my ideas to shape the world" (Leibovich, p. 29). This way of knowing is knowledge as power.

It would feel terrifyingly empty to live entirely in this place where there is nothing to rely on but the ceaseless activity of making and remaking. Everything would be utterly clear and yet boundlessly brittle. We could not endure it. And so, the more completely "virtual," the more completely made our lives become, the more obsessively we search to rediscover something simply given, something authentic. In short, the more successfully our knowledge enables us to make the world entirely according to our plans, the more we desire to encounter a world resistant to them. Enacting this desire demands a certain kind of unlearning, a letting go of the kind of knowing through which we have made much of the modern world. We experience this desire as anxiety. Our anxious search for authenticity can range from seeking solace in anything, from the spiritual to the savage. A reality entirely virtual may be de-humanizing, but in our effort to undo it, we risk the violence and helplessness of reverting to a state of nature. More benignly, we try to re-find the authentic in what is distant from our control and understanding. We try to rest by being apart from or ignorant of things so that they might go on of themselves. Ironically, the outcome of a kind of learning which promises to obliterate distances is that we want to learn how to recover them; we want to recover the happiness of distance.

Considering learning technology is a particularly appropriate way to appreciate this tense new reality. Although this technology of virtual reality is still remote from the ordinary experience of most people in the world, it is nonetheless the dominant means by which human beings are currently remaking the world as a whole: the production, transfer, receipt and representation of digital information. The technology so prominent and popular in distance learning is the same technology by which we increasingly conduct manufacturing, commerce, entertainment, even civic and affectionate association, and, above all, war. The technology of virtual reality is a regime, which requires its own education.

The medium of power in this regime is also its literacy: information. Learning in virtual reality erases the distance between "the academic" and "the real." To "wield the tool" of learning in virtual reality is the same as to wield the tool of power in this regime of information technology. Participating in virtual education involves us immediately in making a natural reality into "data" (from the Greek for "given things"). That is, we make our experience into the kind of given thing which can be made over into something else; we make it into information. When we learn to revise

our experience in this way, by learning to communicate at all in virtual reality, we also become citizens of that regime. Those who do not have access to this technology or fail to commit themselves to the particular kind of learning it insinuates -- those who can not or will not embrace knowledge as power -- are the underclass of the regime. But full citizens have become so at the price of authenticity. Thus, to understand distance learning in virtual reality is to understand the state of a new kind of "nature."

The basic means of digitally mediated distance learning is email. It is rapid, variably asynchronous, epistolary communication. Having constructed thoughts and images into words and graphics, and those into digitalized data, we send them off to a recipient who reverses the construction. As though to recover the personal or the confiding nature of old fashioned letter writing, we who frequently depend upon the artifice of email can readily observe how even the very business-like exchanges between teachers and students in distance education become confessional. People we don't know very well at all and, likely as not, never will, present very personal information. It as though when we communicate in a medium so thin and so abstract—those ephemeral streams of digits, just sets of on/off electrical pulses, far more generic and impalpable than the handwriting of "real" letters—we want to supplement our offerings. Frequent and easy as they may be, we want some evidence that they are authentic.

But even here, the constructedness, the artifice of our activity obtrudes: As easily as we can be confessional on email, we can lie. When receive a heart-catching statement from someone whom we know no where but in virtual reality, we can not judge its sincerity, no more than we can readily tell if the emailed work of entirely "virtual" students is authentically theirs. Virtual reality is the perfect Prufrock place "to prepare a face to meet the faces that you meet." The medium that gives us so much power to present ourselves as we choose and to access such presentations of others, leaves us helpless to distinguish between the authentic and the inauthentic. The state of nature in virtual reality, a nature so entirely comprised of information, forces us to be uncertain about the truth.

Perhaps we long then to receive from a distant student or colleague a bit of handwriting, the feel of a handshake, a shift of posture, a quick grimace or flutter of eyes, even an odor of stale tobacco. Something to betray, something helplessly revealing the unconstructed presence of another person. We want something inaccessible to digits. But, very possibly, nothing is. Utterly clear sounds and 3-D images of course, smooth motion, the feel of surfaces—all of these can be melted into data streams. Why not smell and taste, balance and proprioception? The telos or goal of virtual realism is "total immersion" (cf. Heim 1998).
These challenges are merely problems of technique, money and power. We know that the proliferation of expertise and usage in the macro-economy of the information age makes those problems solvable, at least for those people who can afford the technology.

Further, we know that once the given has been liquefied into data, the stream can be channeled, sorted, and temporarily frozen into any appearance one chooses. In the online chat rooms, these constructed presentations of self are called "avatars"—incarnations of gods, digital epiphanies. In such a world, teachers can program their

avatars to lecture and to test; teachers need not be authentically present at all. Similarly, students can program their own avatars to receive, repeat and re-present assigned material as directed. In such a world, who teaches, who learns, who knows?

These are questions about a technically possible world, but not one we can endure, even if we were all equal there. They arise because students and teachers now reach out over huge distances to engage each other in learning, and the very technology allowing them to connect also swells the tensions always present in education between freedom and control, authenticity and acquiesence. These distances are spatial, temporal, and multitudinously cultural. In virtual reality, we experience these distances as obstacles, but we can also experience them as a relief from inauthenticity:

My college receives a hit on its WWW site. Someone wants to study philosophy, metaphysics; and so, an email is passed to me, from Calvin Smith. He's preparing for graduate school in theology; he wants to study some of the main Western metaphysicians: the Greeks, the Scholastics, Descartes, Kant, Heidegger and so on. During our early emails in which we exchanged ideas about what his guided independent study would be, I learned that Mr. Smith is actually Brother Calvin Smith, dwelling in a Trappist monastery in Arkansas, a monastery with a Website and a chicken farm. Apparently not bound by a vow of silence in audial any more than in virtual reality, "Brother Cal" (as he asks me to call him) tells me during a phone conversation about a draft syllabus I'd emailed him, "This will be a helluva study." I don't know whether I was struck more by his slang or by his rich West Indian accent. As we made our way from Parmenides through Aristotle and towards Aquinas, I learned from his essays and other emails that Brother Cal was having more trouble managing 20,000 chickens than understanding the nature of Being. Eventually, the needs of the monastery's chickens overwhelmed all of Brother Cal's non-liturgical activities. He had to take an indefinite break in his studies. It's unfortunate that he could not finish, but the accessibility of the Web and the flexibility of my college will allow Brother Cal to pick up where he left off. Our academic business fragmented, but our companionship felt whole. If Brother Cal continues metaphysics, I'll easily remember him and comfortably resume our dialogue. I'll do so because of the distances that virtual reality did not obliterate. Because of that single phone conversation, in which I heard the particularity of his voice, and because of those demanding chickens, I knew Brother Cal was for real.

I miss Brother Cal, but not strictly because of our unfinished conversation about Being. Rather, I miss the quirky interweave of our somewhat generic philosophical study with the monastery, Arkansas, the West Indies, and, of course, the chickens. Strangely, although those idiosyncratic features of Brother Cal's individuality, which make him "other than" or "distant from" me, contributed to interrupting our work, it was exactly those features which have made our work vivid and, in a way, enduring. I know that, just as one resumes conversing with a friend after a long absence, Brother Cal and I will be able to re-enter our inquiry if and when he emails me again. It was the irreducible localness of Brother Cal—in space, in time, and within several layers of culture—that make him an authentic intellectual presence. I miss the liveliness given by distances.

These distances do matter. Certainly learning in virtual reality makes possible an efficiently abstract relationship between teacher and student. Generically professional teachers dispense and evaluate the learning of generically dutiful students. Individual differences of curiosity, ability or circumstance do not count. And yet in some way, the peculiarity of a monk chicken farmer struggling to study the meanings of Being with his Jewish professor in a secular state university a thousand miles distant, returned an invaluable charm to the world.

To be sure, there is nothing technically prohibiting "making up" a Brother Cal in virtual reality. Certainly the chicken story could be concocted and even his accent could be produced from digital sampling. However, a technology which can obliterate distances, in which teaching and learning can be entirely constructed and rationalized -- this technology so easily avoids such idiosyncrasies and renders them irrelevant. In all one's abstract calculations about how teaching and learning "ought" to go, one would never choose to produce a Brother Cal. And thus the imposed "givenness" of his circumstances, his "nature," comes as a relief.

Academic cheating on the Internet shines an ironic light on this problem of authenticity. Of course, prior to digitally constructed reality, students found plenty of ways to make themselves appear to know that which they did not. In answer to the professorial desire for control, students can effectively dissimulate the appearance of learning. Malicious or not, academic cheating is a way to free or distance one's authentic self from the work and commitment required by professors. Internet education simply makes this effort much easier than ever. Virtual but inauthentic learning is now commonplace, profitable and, so far, legally protected (Fritz; Rao). Websites such as "Evil House of Cheat," and "school-sucks," at least aknowledge an distinction between one's own learning and someone else's. But termpaper mills advertising themselves as "research services" deliberately blur even this line. So, when we actually do catch a student out, not only do we proudly uphold intellectual honesty, we are also relieved to experience the difference between what is authentic and what is not. It's ironic that when students fail to cheat successfully, we are then given the opportunity to make a genuine connection with them. We can talk with them about what they really had hoped to do, what they really desired, and what they really feared. Such uncomfortable moments one would never choose or need to program into a completely planned virtual education. Yet, like the chickenfarm, they break open the regime of artifice and control.
In one kind of fulfillment, virtual reality education can erase even these unexpected features of authenticity. "Courseware" can be programmed to allow for a limited variety and number of predetermined paths of interaction between student, academic material and teacher. Such courseware is sometimes designed by people who rarely, if ever, have any communication with students. In this flow of knowledge transmission, teachers can largely administrate the delivery of the material and certify the results generated by an automatized learning evaluation instrument. Matching these techniques of professorial control, students can deploy a variety of devices to reproduce responses they know will pass. Indeed, students can even shrewdly simulate authenticity—the authenticity of imperfection - by using ready-made work which is not first class or to which they can add little slips. Thus, students have their own manipulations in this regime of knowledge as power. Everyone, both students and teachers, becomes a technician.

Distance learning in electronic virtual reality creates nothing utterly new. But it fulfills several related tendencies in university mass education. To be sure, some critical theorists have optimistically envisioned "flexible mixed mode methods and autonomous learning" in a new generation or "post-Fordist" model of distance education. Students and teachers can make good use of the possibilities of sophisticated communication technology to create opportunities for genuine interaction and mutual inquiry. However, even these theorists worry that such opportunities in both "production" and "consumption" of learning materials will not be widely accessible, due to the customary organizational hierarchy of academic institutions (Farnes, pp. 10-20). Although we share this hope and this worry, it is the very lure of power offered by virtual reality that may well hold teachers and students within the regime of control. Economically, distance learning, like the often caricatured version of lecture-hall teaching in the "multiversity," can be extraordinarily cost-efficient. A huge number of students, supplied with identical textbooks or courseware, can be serviced by a tiny number of teachers (whether part time or adjunct). In this way, university education perfectly applies tenets of post-industrial productivity. Second, the virtual university can project the reach of professorial power to literally any point on the globe. No longer limited by the lectern rising at the front of an auditorium-sized classroom, professors and the expertise they've deemed canonical can now be world-class.

Finally, this "ideal type" of education, learning and teaching fulfils Weber's dark vision of rationality as "calculation." What is known is completely systematized; what is to be learned and how it is be acquired are programmed; and who the learners are, doesn't matter. This depersonalized intellectual culture is orderly and controlled. It is completely, as Weber says, "disenchanted." The knowledge likely to be achieved there is precise but irrelevant to illuminating the intrinsically precious and wondrous ends of human life: beauty, virtue, happiness (Weber 1946).

This most sophisticated development of academic access, delivery, and production is supposed to spread learning and prosperity. It also constructs a huge void. In the place of authenticity, destructive impulses grow. In their efforts to control and outwit, teachers and students become ever more contemptuous and cynical about one another's practices and intentions.
Both experience the corroding dignity of the institution -- the academy as an authentically collegial space—on which they depend. Little slips and cracks appear in the regime: cheating scandals, students dropping out, professors feeling deskilled, people uneasily sensing that colleges have become merely credentialing businesses.

These distortions or pathologies poignantly remind us of the call of authenticity. However faint that call, there must remain some mote of authenticity in any genuine intellectual transaction. Were there not, even the value of knowledge as mere currency in a system of power would become counterfeit. The rare occasions, for example, when Socrates becomes exasperated happen when his interlocutors threaten to tell him merely what he wants to hear rather than what they really think. It's not an accident that these moments appear in the dialogue when it has degenerated into "eristic," a game of verbal control. It's also significant that these moments of exasperation occur when the claim in dispute is that power alone creates justice and truth. Both Thrasymachus in the *Republic* and Callicles in the *Gorgias* try to protect themselves from Socrates' attack on that claim. They produce the answers they know

he wants to his leading questions. Socrates nearly begs them to speak their authentic minds, lamenting that if they do not, then they will have given up the search for truth (Plato, 350e; 495a). Socrates knows that there is no virtue in winning an argument against simulations.

But perhaps Socrates himself has not done quite enough to honor authenticity. To be sure, we root for the truth and nobility of his claims. And, Thrasymachus and Callicles are rude, their positions malignant. Nonetheless, there remains something sympathetic about these two characters. All of us have probably felt some solidarity with even the most obnoxious students whose pride and ideas are pureed by the overwhelming force of professorial intellect. If those hapless students are really going to learn something new and valuable, their integrity, whatever they give to the dialogue, has to be respected. Therefore, two conditions are necessary to sustain educational authenticity: The participants must assume that they can safely say what they really believe and can reliably assume that they are hearing what others really believe. But in order for this trust to persist, the participants must respect the differences which will undoubtedly appear among them. If we try to obliterate those "distances," whether by the force of authority or by technology, we reduce learning to simulation. Truth becomes, precisely as Thrasymachus and Callicles assert, just what the powerful make it seem to be.

Whether the educational environment is an august lecture hall or its infinitely expanded version in virtual reality, if teaching and learning are constructed for control, a disturbing state of nature will appear: What will be given in these super-sophisticated environments, is education as a battle of wills, a struggle to extend or protect one's authenticity, if necessary, by hiding it. Hiding and revealing. The first virtuoso of simulated and authentic realities in our culture is Odysseus. He is insatiably and adventurously curious—a perpetual student—but he loves to lie. He lies to bend dangers to his will, to visit and safely leave fascinating places, and, always, to protect his quest to return to Ithaca, his true home.

Kalypso, a beautiful, agreeable deity with whom he's dallied for years, offers him immortality and perfect, bountiful comfort if he will stay with her forever. She offers him a life in virtual reality, where everything can be made to suit his desires. All of his desires but one: To be who he really is. Odysseus declines this ultimate wish fulfillment. Though he will therefore die, he chooses to return to wife and home, his authentic bonds, however imperfect they are. To Kaplypso's offer, he replies:

"Goddess and queen, do not be angry with me. I myself know
that all you say is true and that circumspect Penelope
can never match the impression you make for beauty and stature.
She is mortal after all, and you are immortal and ageless.
But even so, what I want and all my days I pine for
is to go back to my house and see my day of homecoming."
(Homer, Book V, l.215-220)

Yet for all his homing desire, Odysseus genuinely loves to experience strange, even horrible places for what they are. Whether it's the Sirens, the cave of the Cyclops, or even Hell itself, he is always ready to say, "So let this adventure follow" (V, 224). Odysseus loves distances, as much as he loves to be "at home in sunny Ithaca" (IX,

21). Thus, it's at the boundary between the given and the made that he lives most intensely. He thrives between his eager perceptions of strange places and bizarre creatures, and his clever stratagems for making his way among them towards home. Some deep and intrinsic connection exists between authenticity and distance, loyalty to one's self and readiness to discover what is other. Imagine how teaching and learning would thrive if students and teachers would meet each other at this boundary. There, teachers would not succumb to the desire to be gods, who mold students to their image; nor would students succumb to their desire to insincerely reproduce what their teachers profess. Nonetheless, virtual reality invitingly beckons us to forget such a lively but often anxious society of reciprocal relationships, and instead, to enter the regime of control, a world which seems to support the belief that we can re-make any object, including another's curious mind, to suit our will.

Virtual reality offers us this chance to become god-like. The Homeric gods can indeed pretty much have their way with the world and all the mortal things and creatures within it. Calm and confident in their power and immortality, they have no need of human goods and virtues: courage, endurance, love, temperance, wonder or even justice (cf. Nussbaum 1990, pp. 365-377). The gods have power but they lack passionate attachments, the very faculty which makes us authentically human (Nussbaum 1994, pp. 227-230). So Odysseus declines the invitation to be a god.

But, our tradition records the persistent lure of this offer and the terrible consequences of accepting it. Gods flourish in virtual reality; we humans, suffering the ultimate alienation from our authentic natures, become nobody. In a world where we could not die or fail, where everything is artifice, we lose our selves.

"Nobody." That is how Odysseus names himself to Polyphemus, the Cyclops whom he thereby tricks to save himself and his men so that they can continue their journey home. He is a virtuoso of lying, at creating inauthentic representations of himself in order to manipulate others. However, this power depends entirely upon his absolutely certain knowledge of who he really is and his uncannily acute sense of what others expect. Odysseus gets away with his love of lying and playing these godlike games, because he is passionately curious about the unfamiliar and passionately attached to going home. He is the restless seeker, the exuberant human in the world. Unlike many of his gullible literary descendents, Odysseus, the greatest liar in our literature, sustains his identity by exquisitely understanding the difference between appearance and reality and by playing with making, without losing his allegiance to the given.

Faust, another archetypal figure in our tradition, lacks this playfulness. Despite his immense learning, he makes a foolish bargain with the Devil in hopes of achieving omnipotence. Nothing given to him in nature or by his scholarship has satisfied him. When he acquires the esoteric, magical, or, as we might now say, "hi-tech" knowledge to make the world and even the people in it be as he wishes, he loses everything. Marlowe's Faust conjures up Helen of Troy, and he is carried off to Hell. We first come upon Goethe's Faust translating the Gospel of John. He transforms, "In the beginning was the Word" into "In the beginning was the Power," and finally, as "In the beginning was the Deed" (Pt. I, Sc. 5, l. 1224-1237). Once the Devil has granted the wish behind this distorting translation, Faust is able to charm Gretchen into falling in love with him. Eventually, he is responsible for the death of her beloved brother, for Gretchen murdering the illegitimate child Faust has fathered, and

for her suicide. His power brings him nothing but despair. Thomas Mann's 20th century Faust character, the composer, Adrian Leverkühn, altogether loses the ability to love. This, he believes, is the price the Devil has commanded in exchange for granting him the power to literally remake the world with his music. A normally cold and immensely learned man, he does have one genuine love, his young nephew. When the boy dies in slow agony from spinal meningitis, the composer decides to create one last piece, an oratorio which parodies Beethoven's "Ode to Joy." He announces that through this composition, he will "take it back," take back the very possibility of "the good and the noble" from the world (Mann p. 634).

The Faust legend usefully cautions us not to take too seriously the avatars, the little gods, we can make of ourselves in virtual reality. Otherwise, we lose our selves, our passionate attachments, our very ability to love. Faust's awful fate shows us that we should preserve and savor, as Odysseus does, the distances that technology can misleadingly appear to safely remove. Our health and happiness require that, during our forays into virtual reality, we keep in play the knowledge that we inhabit a world in which we helplessly but dearly are who we are. If we do so, we shall not merely struggle to control a world in which knowledge is power. We shall be taking care of a world in which teaching and learning are acts of love.

So we search for the authentic, something to cherish, in a world which contains a virtual world. This is what we are given. What can we make of education in such an ontologically complex state of nature?

Virtual reality will not go away. Everyone's lives will become more dependent upon it. More of our experiences, more of our educational experiences will occur there. Virtual reality may have begun as an artifact, a construction, but now it is as much a part of the world we're given as a weathered, crowded city. It may as well be a part of nature. We would no more give up the power of simulation and crossing distances than we would relaxing in buildings and under trees. We must acknowledge and savor this digital nature (as Odysseus most certainly would), just as we do the roar of hurricane winds, the din of angry mob, or soft voices in earnest conversation. Odysseus happily moves back and forth between simulation and solidity. We should relish the thought that learning within virtual reality also invites us to learn about it.

What is its nature? Virtual reality intractably endows every phenomenon within it with infinite malleability. We can not change this condition, but in its bounds, we have the power to construct and reconstruct appearances as we please. Yet, each of us in this environment is vulnerable to the fictions of every other person and institution. Moreover, each of us knows this. In our anxiety to retain and extend power, we can choose to play with each other an ultimately unwinnable game of controlling appearances. That is, importing regimes of control from the non-virtual world, we can be trapped in the futile assumption that knowledge is merely power: "But you and I, we've been through that, and this is not our fate." Instead, realizing that knowledge is also uncovering, we might choose to reveal ourselves: "So let us not talk falsely now, the hour is getting late." This elaborate ethical and actual presence is the authentic nature of the virtual.

Again, what does education mean in this strange new part of nature? Professors could try to become godlike. We can minutely program curricula and learning activities. We can define generically appropriate student profiles. We can automatically filter acceptable and unacceptable responses. We can monitor student communications. And we can create a finely tuned, unhesitating and implacable system of evaluation. Moreover, we can exercise these powers without any regard for the authencity-giving particularities of person, place or time. But in this Hobbesian construct of virtual reality, any student of even modest technical literacy can respond in kind. With the extraordinary variety of virtual devices, students can be as powerful as their professors. They can fabricate and hide, so as to produce and re-produce whatever will pass scrutiny. They need learn little and become genuinely committed to nothing, except the manipulations which will help them beat the system. This temptation to power must be especially strong in virtual education, where access is so touted and easy, where the value of academic certification is so great, and where knowledge is not merely the currency of action but its very purpose. So we professors uncomfortably confront two principles in this battle to control knowing: Like gods, we can seem to work our will on whatever and whomever sits below us. But, like helpless mortals, we realize that any offering made to us can be a deception.
In the very moment that we seem able to make the world from our knowledge, we are given the understanding that our ambition is futile. What kind of education can make this condition of virtual nature endurable?

Since anyone can dissimulate anything in virtual education, no one need authentically submit to another. Everyone is Odysseus. Everyone needs to explore and everyone needs a true home. So what if we—both teachers and students—choose reciprocity rather than control? We might mutually agree to respect and get to know our distant places and times, our authentic identities. Then, as in every curious person's dream of education, all the whole wide world—in all its enchanting and uncontrollable strangeness—becomes uncovered. I, like Socrates in the afterlife, can travel through the virtual environment and ask anyone, anywhere, at any time, what he or she really thinks about a good and happy life. I can discover that on a chicken farm in Arkansas, there is a man in a monastery who wants to learn about the nature of Being, what it gives us and what we can make of it.

References

Benjamin, W. (1968) 'The work of art in the age of mechanical reproduction', *Illuminations*, trans. H. Zohn, ed. H. Arendt, New York: Schocken Books.
Farnes, N. (2/93) 'Modes of production: Fordism and distance education', *Open Learning*, 8(1): 10-20.
Fritz, M. (3/99) 'Draw conclusions but cite your own work', *Los Angeles Times.*
Goethe, J. (1949) *Faust, Part I*, trans. P. Wayne, New York: New York.
Heim, M. (1998) *Virtual Realism*, New York: Oxford University Press.
Homer (1967) *Odyssey*, trans. R. Lattimore, New York: Harper.
Leibovich, M. (4/12/99) 'A new brain drain from America's universities', *The Washington Post.*
Mann, T. (1947) *Doktor Faustus*, Frankfurt am Main: S. Fischer Verlag.
Nussbaum, M. (1990) 'Transcending humanity', *Love's Knowledge*, New York: Oxford.

Nussbaum, M. (1994) *The Therapy of Desire: Theory and Practice in Hellenistic Ethics*, Princeton, NJ: Princeton University Press.
Plato (1963) *Republic*(trans. P. Shorey), *Gorgias* (W. Woodhead), E. Hamilton and H. Cairns (eds.), *Collected Dialogues*, Princeton, NJ: Princeton University Press.
Rao, N (4/20/99) 'Paper trail', *Village Voice*.
Weber, M (1946). 'Science as a vocation', trans. H. Gerth, C. Mills, *From Max Weber: Essays in Sociology*, New York: Oxford.

# Flexible Learning and Globalisation: Knowledge Transfer as Democratisation or Colonisation

**Viktor Jakupec and Hae Young Yoon,**
**Faculty of Education, University of Technology, Sydney**

## Introduction

As we are approaching the third millennium, policy makers within and outside universities, academics, university administrators and practitioners in flexible learning are increasingly focusing on utilisation of Computer and Information Technology (CIT) as a vehicle for dissemination of knowledge, information retrieval and proliferation in a global educational environment.

This phenomenon has emerged as a 'byproduct' of a much greater picture and political and social events. It is couched in the concept of globalisation. The proliferation of knowledge (or the transfer of knowledge, if you wish) has been made possible through the increased use and access to Computer and Information Technology (CIT). CIT has become an efficient and effective tool for 'transferring' knowledge from intellectual elite to the wider sector of the society, in much the same way as transfers capital, intellectual properties, news and other across countries, regions and continents. It is the ability to use CIT to compress time and space (cf. Giddens 1994) that makes it an integral part of the concept of globalisation. It allows individuals and groups to participate in learning otherwise not possible—and it is a participation, which claims to provide flexibility of learning. We should note here, however, that there is much political rhetoric about alignments between CIT based flexible learning and economic needs, as much as there is a debate about changes to traditional teaching-learning practices and theories (see for example Campion 1996, Bates 1994, Candy 1991, Tiffin and Rajasingham 1995).

Currently the changes to learning in higher education seem, from a political rhetoric point of view, to be taking on a direction portraying itself un-problematically in a global context. Taking account of the changes to learning and political rhetoric, our point of departure is the thesis that we can ascertain a direction. But it is not a linear 'progressive' one, leading to a new brave world in which all nations and their population will be a part of a global village with a level playing field. We see CIT based learning as having a multi-direction character with different types of interplay such as economic, social cultural, educational and political, which so far has not been resolved and which need to be opened to debates. We intend to pursue some of these problems focussing on inequalities between developed and developing nations, but also within a society. In the latter case, we are referring to gender based and economic disadvantages, and disabilities. If our thesis stands to reason, one of the important questions that need to be addressed is: Does the development of CIT based flexible learning, foster and enhance democracy?

In order to respond to this question we will in the first part of this paper give a brief conceptual sketch of 'globalisation' and CIT within a context of flexible learning'. For the ease of reading we will henceforth use the term Flexible Learning to denote CIT based flexible learning. We will discuss discourses that govern ideologies of and

interrelationships and commonalities between globalisation and flexible learning. Subsequently we will examine the effects of knowledge transfer through CIT, in particular expected democracy within the society and the global environment. However, there is the problematics of colonisation, which is the other side of the same coin, and which needs our attention. These concepts and notions will provide the basis for the discussion of future directions for transfer of knowledge between developing and developed countries.

## Brief conceptual sketches of the major themes: Globalisation and CIT based flexible learning

We will begin this paper by providing a brief conceptual sketch of each of the major themes, namely globalisation and flexible learning. The focus in each theme will be on its characteristics in relation to the other. The purpose of this is to provide a background against which the interplay between these two concepts can be projected in order to make democratisation of knowledge transfer more transparent.

### *Globalisation*

Before we examine the interplay of globalisation and flexible learning, it is useful to briefly address the question: what is globalisation and how does it manifest itself? Not dissimilar to flexible learning, globalisation is difficult to define, because it is not a single phenomenon. It has become what many commentators have called, a 'catch all phrase'. It describes, contextualises and outlines a magnitude of predilections and dynamics changing the economic, social, cultural and political world we live in (Kayman 1997; George 1994).

Globalisation is essentially an economic phenomenon, based on neo-conservative ideology of free market enterprise. It manifests itself as a shift from a world of nation states with individual national economies to a world of declining power of nation states that are required to operate in accordance to the free-market forces of a global economy. In such economy, production and service are globalised and financial and other forms of capital (including intellectual capital and knowledge) can move and be moved freely and instantly between countries and around the globe. In broader terms, globalisation is also referred to as a political, cultural or social phenomenon, yet in each case it is influenced by economic concepts. For example, globalisation as a cultural phenomenon is governed by the ideas of consumerism. In a social sense, globalisation is about transformation and compression of time and space. It is what Giddens (1994: 4) calls 'action at a distance'. The latter signifies the interrelationship between economic, political, social and cultural activities in a global environment, bringing about, not only, 'the rise of 'large-scale systems', but also re-constructive changes to social experiences in 'local and personal contexts' (Giddens 1994: 4-5). In the context of 'action at a distance', globalisation is both a cause and a consequence of the information revolution. It is driven by significant improvements in telecommunications, exponential growth of CIT including information networks such as the Internet. These communications technologies are helping to overcome the barriers of physical distance. Communities of various types, including academic and scholarly communities can now function across national borders, offering courses and access to information on a global scene.

Thus, it is not surprising that in higher education globalisation is characterised by consumption of knowledge and the influence of CIT, cyberspace and 'McDonaldisation' (Ritzer 1993). In relation to universities, as Slaughter (1998: 57) suggests,

[g]lobalisation theories underline the importance of higher education to technoscience, to industrial policy, and to intellectual property strategies. Universities are the central producers of technoscience, the primary product of postindustrial economies.

However, as noted previously, we should not perceive globalisation as an uni-directional force. Although it is changing the context in which universities will operate, the need for universities to become market oriented through transfer of knowledge using CIT is just one aspect of a changing higher education environment. The multi-dimensionality of globalisation will make challenge to policy makers in the higher education sectors more acute than ever before. The multi-dimensionality and diversity of globalisation are characterised by aspects such as population movements, life-long learning requirements and demographic changes brought about by aging of the population in many developed countries. It is also characterised by colonising the nation state under the umbrella of 'democratisation' and a notion that there is a level playing field for all participants. This includes considerations about the need of personal belonging to communities, value systems and cultural traditions that are not global. The local or domestic roles adopted by universities— as polities charged with constructing, disseminating and maintaining knowledge— are no longer in control of the transfer of knowledge, and thus learning in the broadest sense. Knowledge production and dissemination today are increasingly effected overtly and covertly by international organisations and actors such as the International Monetary Fund and the World Bank. National governments cannot control the purse strings for either the flow of knowledge or its production or consumption. Thus greater attention than ever before must be paid to the impacts of globalisation on the transfer of knowledge at micro level, namely within with a nation state between the advantaged and disadvantaged; and the macro level being between the developed and developing nations.

### *Flexible learning*

Flexible learning as a concept is extremely difficult to define. Nevertheless, in the last decade of the twentieth century it has become a central feature of the higher education in many OECD countries (Jakupec 1997). It is a part of the information technology age and as such has become a central feature of education policies throughout a significant number of countries (Taylor *et al*, 1996). It is a product as much as a catalyst for the epoch of 'knowledge workers' and workplace reforms especially from the Fordist to post-Fordist production modes (Campion and Freedman 1998).

It provides for mobility and flexibility of knowledge accumulation. The globalisation of the labour requirements and corresponding workplace reforms are aspects of powerful discourses that are fostering the demand for flexible approaches to learning, through CIT (Kirkpatrick 1997). Flexible learning is itself therefore connected to economic discourses (Edwards 1997).

In operational terms, flexible learning denotes learning in whatever ways seem most effective; it means being flexible about achieving results. In procedural terms, flexible learning in higher education context is generally characterised by (a) flexible course offering on part of the university and (b) empowering learners to make course and

curriculum choices in order to increase the flexibility of what constitutes a course of study. It is essentially student centred. This requires a focus on learner's autonomy and provision of multiple modes of delivery (especially CIT) in diverse settings (including home and work place). Flexible learning aims to offer diverse learning experiences. In this context, flexible learning provides for the needs of different students including individualised pacing and temporal study patterns, and course content, according to individual needs and demands. Flexible learning thus stresses, through learner centredness, a shift in responsibility to individuals learners for deciding what, how, when and where to learn. The removal of barriers and opening of access in terms of where, when, how and what together denotes strong 'consumer' rather than discipline oriented approach.

The trend to more flexible modes of learning is accelerating rapidly with the effects of changes in government policy, economic conditions and emergence of 'new educational technologies, especially CIT. The argument for aligning flexible learning with CIT is that the latter utilises new user interfaces and international networks, utilising powerful computing facilities. CIT has the capacity to support teaching and empower the learner in exceptional ways by fostering interpersonal communication and interaction with peers and outsiders and construction of knowledge outside the normal parameters of the 'modern' university.

At a more conceptual level, flexible learning has also brought about affinities and convergences between pedagogies and the capacities of CIT with an aim to enhance learner centred approaches to knowledge acquisition.

Knowledge acquisition in the traditional learning was ordered and homogeneous. Knowledge acquisition and transfer also developed critical stances allowing the learner to investigate the coherence of such knowledge. This is in some contrast to flexible learning in which the question is how to organise knowledge so that it is flexibly accessible in the midst of the information produced within and without the academe and disseminated through culture-media-information networks. For example, the rise of new education technologies, such as CIT, makes flexible learning not only possible but also accessible independent of time and place. But it also creates problems for those who are not part of this information revolution.

Not withstanding the impact of CIT, which have played an important role in advancing globalisation, the changes termed copiously as globalisation are essential of an economic nature emphasising a shift from production to consumption in many spheres of the public life. These shifts have been embraced equally by many international organisations, national governments, international capital and a significant number of teaching organisations. This allows for example for 'flexibility' of knowledge at epistemological level and at content level, and 'flexibility' of learning modes and 'flexibility' of time and space. In essence there is a notion of a regime of 'flexible accumulation' and 'flexible transfer' of knowledge brought about by 'commercial, technological and organisational' changes we have witnessed over the last two decades (Harvey 1989). This however, does not necessarily bring about a democratic dissemination of knowledge nor democratisation through transfer of knowledge at micro or macro levels.

Let us now conclude this section by bringing into focus the interrelationships and commonalities between globalisation and flexible learning. Firstly, globalisation and flexible learning have the notions of consumerism in common. At the most basic level, there is the need in a global environment for consumers to have access to a flexible mode of knowledge accumulation, irrespective of time and space constraints. This however, cannot take place without adequate resource allocation. And here is the crux of the issue. Resource allocation is an economic concept and unless all participants have equal access to the resources there will be limited access. Developing and developed countries have unequal resources, as have individuals in these countries. At micro level the same can be said with each of these societies. For example, the economic resources and access to them are unequally distributed even in the most developed and economically advantaged countries. There is simply no level playing field and if this stands to reason there is no democratic participation in either knowledge production or consumption.

**Transfer of Knowledge**

Prior to the transfer of knowledge through technology, knowledge was solely existed in the 'province of scholars who rigorously pursued wisdom either for self-enlightenment or to exercise intellectual leadership' (Evans and Nation, 1996: 170). In other words, as Carnoy points out (Kraak, 1998), the groups of political and economic elite seemed to mostly control the movement of knowledge. However, as the global economy is changed rapidly and competitively, knowledge becomes newly defined as the crucial catalyst which improves the outcomes of products and processes through continuing innovation (ibid.). Thus, it is important considered that the production of knowledge should be changed from the performance of the elite to the work of public and lifelong learning. Indeed, through much larger and more open learning institutions, many people appear to access to the process of knowledge production, consumption or generation.

Additionally, the increasing convergence of various digital technologies stimulates the new realm of knowledge, which is more accessible and flexible. As the scope of learning becomes incorporated with increasing range of technologies, it is feasible that many people will be able to participate in production of knowledge. People who were placed at the margins of opportunities due to economic and geographical distance seem to benefit from the development of communication technologies in forms of consumption. For example, distance education based on Computer-Mediated Communication (CMC) represents the way of lifelong and mass higher education by catering for part-time workers and remote people. This of course is a limiting view as there are others who will not be able to benefit due to a variety of impediments. Nevertheless, there is political rhetoric proclaiming that the different feature of the new communication technologies from face-to-face communication dismisses the conventional unequal stance of knowledge production. Reducing social and socially structured non-verbal cues generated by the new communication technologies which encompass 'spatial features, artifacts, physical adornment and personal appearance' (Walther and Burgoon, 1992: 53)... 'much different affective and relational patterns' (ibid., p.51) of setting, will emerge in comparison to face-to-face communication. Hence, the provision and consumption of knowledge via the new technologies seem

to have an emancipating characteristic overcoming unequal social status and bias, especially those reflected by social cues.

It has been claimed that beyond the context of nation, technology cultivates the critical cross-cultural links (Dehler and Porras-Hernandez, 1998: 54) motivating international exchange of knowledge, and the awareness of multi-culture (Berge and Collins, 1995). By doing so, the political or economic gaps between the countries will be narrow through the global movement of knowledge, providing better opportunities for globalising and democratising the world.

Regardless of these expected implications and claims of democratic transfer, and universal access to knowledge there is still a need to overcome social biases and inequalities that are strongly evident in developed society. The technologies are not 'value-neutral' but are either 'beneficial' or 'disadvantageous' tools for human life depending on our interpretations of the change (Loader, 1998: 6). The pessimists about the equality through technology point out that the gap in the society already encompasses social and economic inequality. This inequality will become greater wider because there will remain a minority of people and groups which will dominate the sources of knowledge due to the privileged access to technology. In particular, the groups of women, people with disabilities and economically poor people, who have expected the emergence of accessible technology able to liberate form their disadvantageous stances, still have difficulties to overcome social bias and classification even in on-line space. Besides that, compared to the developed countries, it is possible that the developing countries with underdeveloped human and technological resources will also in the future remain inferior in knowledge production and dissemination.

***Inequalities within the spheres of gender, disabilities and economy***

Knowledge produced and consumed equally by many people and at the same time providing access and participation generates the democratic ideology of the society. Irrespective of classifications of gender, physical disabilities and economic status (Spears and Lea, 1994: 431), *every* member in the society is encouraged to contribute the proliferation of knowledge. That is, increasing access to and participation in knowledge production and consumption using 'information highway' seems to be no longer the privilege of the minority of society (Rantan cited in Ebo, 1998: 4). Nevertheless, one would be hard pressed to sustain the argument that the new communication technology represents 'technology of freedom' (de Sola Pool, 1983) or 'the Great Equalizer' (Wolf, 1998). Access to and participation in knowledge mainly conveyed through technologies is not necessarily enhanced or even conceived in the context of equality and democracy. Although CIT provides great opportunities for access to and participation in knowledge production and consumption, there are nevertheless significant social and economic inequalities which remain and manifest themselves as a reflection of marginalisation of disadvantaged people.

At micro level, gender inequality remains resolved and as long as it remains as such, there is little prospect for democratisation. The masculine culture is still dominant in the on-line environment (Ebo, 1998: 7). Also it attempts to control its own sources of production, namely knowledge, and in doing so it extends the unequal gender relationship. In other words, males who are generally 'socialised' to be more close to computer at home as well as at school (ibid.) constitute most of current knowledge

that this change of knowledge will be able to challenge cultural colonisation between the nations.

Within the context of social and cultural values we cannot escape the danger of colonisation. We intend to look at colonisation from a Habermasian point of view as an invasion of the cultural life and the betrayal of its symbolic and normative content (cf. Habermas 1983; 1987). The concept of colonisation of the cultural world of a society creates a new tension between developed and developing countries. Similarly, at micro level, there is a potential for colonisation of gender, which is represented in feminism movement in its various forms of engagement with the tensions and contradictions of the dominant masculine notions.

Harbermas refers especially to media, but the same can be said about CIT because both invade global cultures and habits of social and cultural fabrics. The main conflicts and tensions arise not primarily form knowledge production but from the socialisation processes which are superimposed by developing countries upon the cultural systems of developed countries through knowledge transfer and consumption. The colonisation of the cultural and social values through knowledge transfer from developed to developing countries becomes, if uni-directional, the process of rationalisation.

Following from Harbermas, our thesis concerning cultural colonisation is based on a critique of functionalistic reason found in the ideology of globalisation. It is a manifestation of a repressive integration of cultures emanating from oligopolistic and authoritarian culture. This creates a conflict between, on the one hand, a centre composed of countries and institutions involved in the knowledge production processes and interested in maintaining their dominance and growth. On the other hand, there is the creation and maintenance of a periphery composed of array of developing countries and disadvantaged social groups in developed countries that are lumped together as passive consumers. Here we are concerned with countries and disadvantaged groups that are becoming increasingly removed from production of knowledge and participation in knowledge acquisition.

The apparent economic and cultural inequalities manifested for decades remain huge barriers for the developing countries to eliminate economic and intellectual colonisation imposed by globalisation . More open and equal opportunities to many people, in particular in the context of learning, rely on the widely spread application of technology and its infrastructure (Guy, 1991: 164). Also, adequate human resources which will drive the change of knowledge and technology will be needed for further development of individuals in the globalising world. Still, these demands of change of knowledge consequently expand the existing advantages of the developed countries. This allows developed countries to support and further develop costly knowledge and technology resources. It also facilitates the marginalisation of developing countries in terms of knowledge production and consumption. In particular with the current uses of technology, such as the Internet, it becomes more difficult for *information-poor* world to access the sources of knowledge. For example, amongst eight million documents available on the World Wide Web (WWW), 70 per cent of the host computers has a basis on the United States (Holderness, 1998). Moreover, only fewer than ten African countries have an accessible basis of the Internet (ibid.). Therefore, the gap between developing countries' and developed

providers and consumers, and strongly overshadow the circle of knowledge production (Nielsen Media cited in Ebo, 1998: 7). For example, in the electronic discussion groups, it is noticed that males do not endeavour to admit females as equal partners. Although in some cases that male and female participants have equivalent academic qualifications, a small number of male learners marginalise their female colleagues from the process of sharing knowledge by ignoring or de-legitimising the opinions of them (Hearing, 1993).

In the context of people with disabilities, access to knowledge through technology delivering non-social cues provide a valuable opportunity to contribute to the process of knowledge production. Yet, there is only evidence that a small numbers of disabled people can afford computer and network facilities. This is due to their indigent financial situations (Bowers, 1996). Hence, it could be argued that for people who have disabilities employing technology for access to knowledge is both a *promise* to and a *risk* of their life (Tobias, 1994). By this we mean that there is a promise for greater possibility to contribute to knowledge production than ever before. This is to be achieved by allowing equal and random access. However, it seems that the cost of technology builds much more rigid obstacles than it is generally acknowledged. These obstacles are of a different kind, but not less insurmountable that those from another era. They militate against democratic access to the sources of knowledge and thus against disabled persons to find a 'more equal social footing with one another' (Harasim cited in Althaus, 1997).

More importantly, although knowledge created by equal access and participation through use of CIT aims at being exploited by more people and more realms of society, knowledge construction is still controlled by a few electronically and economically affluent people. Powerful individuals and corporations who have already placed at the centre of knowledge movement are in the position to manipulate ongoing process of knowledge, and thus society itself. A large remnant of society which is relatively *unknown* and *poor* to accept technology and its knowledge is continuously governed by *clerics* of technology. Consequently, 'electronically illiterate' (Slouka, 1995) and economically indigenous people tend to face a new *Dark Age* in which the division of social class will be emerged strongly.

***Inequalities in the sphere of developing and developed countries***

For the developing countries, increasing access to knowledge seems to motivate some of the crucial initiatives for the economic advancement. Through the increased opportunities of participating in knowledge production in terms of flexible learning and lifelong learning, the developing countries intend to improve the rate of basic literacy (Arger, 1990). By doing so, the potential to develop highly skilled human resources which are competitive in the globalising market tend to be fostered at the expense of cultural and social values.

In addition, it is considered that transfer of knowledge via randomly accessed technology offers the chance to the developing countries to contribute the heterogeneous global environment, in which different sources of knowledge and cultures are cultivated equally. In the sense of the cultural understanding, the developing countries can be emancipated from unequal position of knowledge movement, which reinforces only the stance of recipient of knowledge. It is expected

countries' in achieving an equal global production of knowledge will widen continuously (Harawira, 1998), resulting in the dangers of economic, cultural, political, social and educational colonisation of communities and nations.

Apart from social and economic dangers, knowledge is created by the dominant languages in the world, mainly the English. This seems to bridge or homogenise cultural boundaries for people speaking other languages. However it also has a strong potential to destroy the cultural fabric, cultural identity and cultural values of communities and nations, inducing a new form of cultural poverty.

**The way ahead**

Facing the rapidly changing world, developing countries can not avoid the globalised aspect of knowledge transfer. However, rather than the one-way knowledge transfer from developed to developing countries there is a need to accept that there should be a two way knowledge transfer. This will allow the maintenance of indigenous knowledge found in specific cultures and nations and at the same time it will enrich the dominant knowledge emanating from developed countries (Guy, 1990).
The importance of knowledge network that mediates the developed countries and the developing countries, therefore, needs to be recognised as an important contribution to a non-colonial international education market. For example, the Project Columbus, which was developed to connect the Latin American universities with the European universities in 1997, not only has improved the quality of higher education of the Latin American universities, but also has offered the broad understanding of different culture to the European students (Samoilovich, 1993). That is, through a collaborative network between the nations, knowledge flows beyond the borders of the nations and cultures, irrespective of the status of the countries and thus it will enhance the ideologies of a common academic community, producing and disseminating a more democratic knowledge. As Samoilovich states,

'...academic networking across different cultural environments can provide the framework in which partners put aside their differences and concentrate on combining their strengths to overcome common problems (Samoilovich, 1993: 21)'.

It is important to note the continuing investment and endeavour from governments of developing countries towards building a knowledge society. This endeavour will have limited affect without the support of knowledge production emerging from developed countries. Without significant support, developing countries will continuously depend on the import of knowledge, which reproduces the unequal position in the world. Also, countries can effectively collaborate with each other countries, irrespective of their status as either developed or developing, as long as it is understood that this collaboration enables collaborators to accept equal position in terms of articulation and participation in the new partnership.

For the developed countries, rather than conceiving the developing countries as a big group of consumers in the education market, it is necessary to consider them as partners, which is inevitably necessary to develop a more democratic and de-colonised world. As it stands, given the unequally fostered educational circumstance, developed countries seem to maintain the economic benefits by dominating the movement of knowledge. However, ultimately, they will not have the opportunity of

enriching the scope of knowledge and foster cultural and social development of any society beyond the status quo.

If we are not careful the consolidation of the ideology of globalisation within a flexible learning environment will become an exchange process embedded in a culture of consumption. It will shape and condition learner behaviour, by resituating knowledge as a commodity in a complex assemblage of flexible social and personal meanings. The developed nations will be the producers whereas the developing nations will be either left behind or at best become passive consumers.

References

Althaus, S. (1997) 'Computer-mediated communication in the university classroom: An experiment with on-line discussion', *Communication Education*, v. 46, n. 3, pp. 158 ~ 174.

Arger, G. (1990) 'Distance education in the third world: critical analysis on the promise and reality', *Open Learning*, v. 5, n. 2, pp.9~18.

Bates, A. (1994) 'Hello technology! Goodbye, distance teaching institutions', *Open Praxis*, v. 2, pp.5~7.

Berge, Z. and Collins, M. (1995) Introduction in Z. Berge and M. Collins (eds.) Computer mediated communication and the on-line classroom, Volume III: Distance learning, New Jersey: Hampton Press, pp.1~10.

*Bowers, C. (1996) Virtual community and computer-mediated communication:* Opportunities for people with disabilities, Michigan: University of Michigan.

Campion, M. (1997) 'The changing nature of academic work: implications for professional continuing education', *Studies in Continuing Education*, v. 19, n. 2, pp. 143~157.

Campion, M. and Freeman D. (1998) Globalisation and distance education mega-institutions in J. Currie and J. Newson (eds) *Universities and Globalisation,* Thousand Oaks, London etc: Sage.

Candy, P. (1991) Self-direction in lifelong learning: A comprehensive guide to theory and practice, San Francisco: Jossey-Bass.

Dehler, C. and Porras-Hernandez, L. (1998) 'Using Computer Mediated Communication (CMC) to Promote Experiential Learning in Graduate Studies', *Educational Technology*, v. 38, n. 3, pp. 52 ~ 55.

de Sola Pool, I. (1983) *Technologies of Freedom*, Cambridge, MA: Harvard University Press.

Ebo, B. (1998) Internet or Outernet?, in B. Ebo (ed) *Cyberghetto or Cybertopia? Race, Class, and Gender on the Internet*, CT, United States: Praeger Publishers, pp.1~14.

Edwards, R. (1997) Changing places? Flexibility, lifelong learning and a learning society, London: Routledge

Evans, T. and Nation, D. (1996) Educational futures: globalisation, educational technology and lifelong learning in T. Evans and D. Nation (eds.) *Open Education-Policies and Practices from open and distance education*, London: Routledge.

George, J. (1994) Discourse of global politics; A critical (re)introduction to international relations, Boulder: Lynne Rienner Publishers.

Giddens, A. (1994) Beyond left and right: The future of radical politics, Cambridge: Polity Press.

Guy, R. (1990) Research and distance education in the third world contexts in T. Evans (ed) *Research in Distance education I*, Geelong: Deakin University.
Guy, R. (1991) Distance education and the developing world in T. Evans and B. King (eds.) *Beyond the text: contemporary writing on distance education*, Geelong: Deakin University.
Harbermas, J. (1983) Modernity-an incomplete project in H. Foster (ed) *The Anti-Aesthetic: Essays in postmodern culture*, Port Towsend: Bay Press.
Harbermas, J. (1987) *The philosophical discourse of modernity* (tran. F.G. Laurence) Cambridge, Mass: MIT Press.
Harawira, M. (1996) Globalisation and its Implications for Maori Education within *Mainstream Secondary Schooling.* (http://www.trican.com/~rsantos/maori.htm)
Harvey, D. (1989) *The condition of postmodernity.* Oxford: Basil Blackwell.
Hearing, S. (1993) 'Gender and democracy in computer-mediated communication', Electronic Journal of Communication, v.3, n.2.
Holderness, M. (1998) Who are the world's information-poor?, in B. Loader (eds.) *Cyberspace Divide: Equality, agency and policy in the information society*, pp. 35~56, London: Routledge.
Jakupec, V. (1997) Guest editorial, in *Studies in Continuing Education*, v. 19, n. 2, pp. 95~100.
Kayman, E. F. (1997) Globalisation, state, identity/difference: Towards a Critical Social theory of international relations, Atlantic Highlands, NJ: Humanities Press.
Kirkpatrick, D. (1997) 'Becoming flexible: Contested territory', *Studies in Continuing Education,* v. 19, n. 2, pp.158~168.
Kraak, A. (1998) *Higher Education and The Knowledge Economy: Critical Issues Facing South Africa's Post-Apartheid Transition.* (http://chet.hsrc.ac.za/debates/310798f.htm)
Loader, B. (1998) Introduction in B. Loader (ed) *Cyberspace Divide: Equality, agency and policy in the information society*, London: Routledge, pp. 19~34.
Ritzer, G. (1993) *The McDonaldization of Society*, Newbury Park: Pine Forge Press
Samoilovich, D. (1993) 'Networks in International cooperation: the experience of project Columbus', *European Journal of Education*, v. 28, n.1, pp. 19~29.
Slaughter, S. (1998) National higher education: Policies in a global economy, in J. Currie and J. Newson (eds) *Universities and Globalisation,* Thousand Oaks, London etc: Sage.
Slouka, M. (1995) War of the worlds: Cyberspace and the high-tech assault on reality, New York: Basic Books.
Spears, R. and Lea, M. (1994) 'Panacea or Panopticon?: The Hidden Power in Computer- Mediated Communication', *Communication Research*, v.21, n.4, pp. 427~459.
Taylor, P., Lopez, L. and Quadrelly, C (1996) Flexibilities, technology and academics' practices: Alluring tales and muddy maps, Canberra: AGPS.
Tiffin, J. and Rajasingham, L. (1995) In search of virtual class: Education in an information age, London: Routledge.
Tobias, J. (1994) 'Introduction', *Technology and Disability*, v.3, n. 3.
Walther, J. and Burgoon, J. (1992) 'Relational Communication in Computer-Mediated Interaction', *Human Communication Research*, v. 19, n. 1, pp. 50 ~ 88.
Wolf, A. (1998) Exposing the Great Equalizer: Demythologizing Internet Equity, in B. Ebo (eds.) *Cyberghetto or Cybertopia? Race, Class, and Gender on the Internet*, CT, United States: Praeger Publishers, pp.15~32.

# The writing on the wall: the need for centrally led student support

**Bruce King, Flexible Learning Centre, University of South Australia**

**Abstract**
Innovation in teaching and learning at university level is conventionally thought of as something brought about by individual academics, or sometimes collegial groups, with the administration of any given institution seen as remote from this element of the core business, more concerned with budgetary and administrative concerns. This paper argues that in some instances, it is the administration of institutions that is both more progressive on educational issues and the catalyst for innovations that are directed to providing greater levels of support for students as they engage with their learning programs. As a corollary, it is sometimes the academic teaching force that act as a constraint on such change.

Why this should be so is examined. There are contextual factors reshaping higher education that impinge so significantly on the teaching and learning environment that they alter the ways learners behave. Accordingly, if students are to be supported in their learning programs, support needs to be configured in ways that recognise the changes in context. In some instances, it appears that only significant intervention is likely to produce innovations supportive of students and this requires institutional rather than individual program-based action. Further, administrations are sometimes more attuned to the competitive pressures confronting higher education institutions and see the political imperative to manifest student-focussed and customer-service dimensions in the program of the university.

## The writing on the wall: the need for centrally led student support

Graffiti is too often these days the urban iconic representation of the inarticulate demand for individual recognition, but it can have its moments. A favourite of mine, located on a shabby wall in suburban Adelaide, was "Flaming faggots of the World: Ignite!", with its combination of wit, historical allusion, and the appeal to wild-eyed 'sixties style activism. It faded over the years and is sadly gone.

Another that pleased was "Universities are sheltered workshops for the educationally gifted". For those of us who work in higher education, there is the amusement of recognising a caricatured partial truth in the depiction of some colleagues as unquestionably bright, but perhaps less practical than the wider community norm. It is my observation, though, that graffiti as social or political critique tends to mirror, rather than lead, identifiable sectors of public opinion.

If this is so, and it holds for education, then those teaching in universities should be going about their business with some sense of anticipation. The writing has been on the wall for some time: universities are changing. Yet the mood appears more often one of trepidation or, worse, denial. Too much teaching practice fails to acknowledge the wider changes in society or the pressures on higher education institutions that give rise to the need to work differently with students.

In part this can be explained because it is still possible to ignore what is happening and to behave as though traditional forms of teaching behaviour are perfectly

appropriate without suffering consequences that are too serious. One might wonder what students who reflect on the disparity between events in their lecture room and the changing technological and socio-economic circumstances that so shape the rest of their lives think about the process. For the present, most seem polite enough not to make too much of the difference. Yet, for so many teaching academics, one wonders when the message will register.

James Hall, writing in 1996, was unequivocal:

*'Driven by economic, social and technological forces, the processes of educating students at all levels is changing dramatically. This world-wide phenomenon is rapidly altering the ways that students learn and teachers teach. Although these processes in the past have been thought to be stable and unchanging, resistant to the forces that have already acted upon the worlds of business, manufacturing, finance and government, we are witnessing throughout the world a transformation in teaching and learning which has all the hallmarks of a paradigm shift, a fundamental change in the way we think about knowledge and learning.* (Hall, 1996:27)'.

I am not sure what is happening in the United States but I suspect Hall is describing the real innovators when he talks about discernible transformation in teaching and learning. In my own country, the pressures are there and the excitement generated by those pockets of academics genuinely initiating change is evident. Nonetheless, the norm in universities is face to face teaching, reliance on the white-board and Xeroxed handouts, and the widespread prevalence of unreconstructed transmission models of teaching and learning. Where there are instances of university-wide change they seem largely to be the result of management, as opposed to teaching academic, initiative and too often exist at the level of policy commitment with partial and very uneven implementation. And much distance education is still print-based, with the occasional enlivenment of video and audio taped materials.

What I want to do in this paper is consider some of the pressures for change on teaching and learning in universities, what challenges these give rise to in relation to supporting students, and how appropriate response requires significant central initiative in individual institutions.

Two Australian Vice Chancellors have pointed to the forces reshaping the contours of higher education. Bradley (1997:1) has identified the following:

- globalisation of economic systems;
- the development and convergence of communications and information technologies;
- changing patterns of work and employment; and
- growing economic and social inequalities within and between nations.

Reid (1997:1) mirrors some of these but adds:

- the political economy of higher education;
- the reconfiguration of knowledge within and between traditional fields of scholarship;

- the increasingly interventionist tendencies of government, the professions and employers;
- the funding and deregulation of higher education; and
- competition for the potential client base of universities.

She also points to the remarkable similarity of "multiple reforms and policy shifts of the last decade" across universities in OECD countries (Reid 1997:1). In Australia, the response to the contextual pressures within which universities have to operate has seen most institutions beginning to engage with the application of new technologies to teaching and learning. This is largely about cost. The forces described above impact on the expenditure patterns of universities and the capacity to respond to needed change is shaped by resource availability. In an environment of declining government funding and increasing competition for students "it is increasingly difficult to maintain conventional patterns of working and traditional models of teaching and learning" (Ford et al, 1996:9).

What I suspect is that this is not a widely held view amongst teaching academics. Or, at least, where there is acceptance of this view, the resolution is not seen in some changed pattern of practice, but dogged perseverance with familiar ways of teaching. This determination is progressively soured by the constant pressure of having to meet increased demands, the sense of not being able to cope, the growing certainty that one's personal standards are eroding, and the inevitable dissatisfaction of knowing one is expected to do more with less.

How then should universities respond? My colleagues at the University of South Australia have tried to identify the sought components of a response:

*These changes have challenged universities to introduce teaching and learning strategies which cater for different client groups using forms of delivery which increase access to learning opportunities. In particular, there are demands for the university sector to provide for a larger and more diverse cross section of the population, to cater for emerging patterns of educational involvement which facilitate lifelong learning and to include technology-based practices related to the field of study as part of the curriculum.* (Hicks, Reid & George 1999:2)

So, to restate their position, they hold the specific challenges are to:
- deal with very different client groups (eg school leavers, professionals upgrading their qualifications, mature age students accessing a 'second chance' option, etc),
- use delivery mechanisms that enable more people to study (who might previously have suffered from geographical or psycho-social barriers to accessing programs),
- increase the size of the student population (in a context of declining resources and increased competition from other institutions, both local and international),
- foster approaches to study that students will use to upgrade and maintain knowledge throughout their lifetime (ie they learn how to learn and come to value that), and
- use technologies appropriate to the focus of the field of study in shaping the content and ways of engaging with the curriculum.

What is important to note here is that the demands have very little to do with changing the content or the substance of courses. They are about learning processes, workload, and delivery strategies. This accords with the influential work of Paul Ramsden (1992:96-103) who has identified several key principles on which the effectiveness of teaching in higher education can be judged. His clear message is that process is as important as content in relation to the support of effective learning.

So, in large part, the changes that universities, and within them academics who teach, confront are not principally about content, ie the disciplinary contribution to learning programs. They are about other things in which many of our best academics have very limited expertise, often because there has been no institutional expectation that they acquire non-disciplinary skills or understanding. It is no wonder that they find the changes onerous or despair at determining precisely how best to respond to them. This presents universities with a real dilemma. Those with central responsibility for a key component of core business have only modest contributions to make to the challenges that are widely acknowledged to confront the institution and the discharge of its mission. The likely outcome is that there will be a growing disparity between the manner in which lecturers arrange their teaching and what students deem necessary conditions to foster their opportunities for relevant learning.

In the past, attempts have been made to address similar difficulties by providing special form of support for students. By and large, these forms of support were predicated on two central assumptions: (1) that the educational program would normally involve a transmission model of teaching and learning and (2) that support mechanisms were basically remedial. These two matters are inextricably linked, although not exclusively so.

In short, if one believes that

- education is principally about the communication of information
- provided by an expert to a novice
- that is tested by the accuracy with which the novice can represent the material to the expert

then if things go wrong in the transaction, it is not an unfair assumption to make that the novice suffers from some deficit in motivation or personal study habits, or lacks appropriate learning skills to master the information and order it for assessment purposes.

But as Ramsden and my colleagues in South Australia indicate, this is an extremely limited analysis. Whatever the content, there are other processes at play in the teaching and learning transaction that, if inadequately prepared for or implemented, cause difficulties for all participants. Hicks, Reid and George (1999:6) argue:

The role of student support is to assist students to maximise the opportunities of the environment by providing for their needs. Indeed, these issues need to be considered as integral aspects of the design of the course or subject.

In short, as distance educators have known for years, delivery issues are key components of the overall judgements those responsible for planning educational programs make about their curriculum. Of course, curriculum here is being used in the broader sense of *the total arrangements necessary for students to engage*

*successfully with a course of study* rather than the restricted notion of curriculum as a skeletal list of content. But if academics are slow to recognise contextual pressures on teaching and learning, feel pushed to the margins of their competence by the methodological demands generated by new communications and computing technologies, or fail to recognise the growing diversity of legitimate students needs arising from the massification of higher education, then how can they exercise the necessary judgements?

In large part, I suspect that they cannot, or at least, not in sufficient quantity or in a short enough time frame for institutions to undergo the changes to their programs necessitated by the pressures discussed above. If they can't, then who can? My view is that this responsibility rests with university management. I suspect this judgement may lead certain of my colleagues to resort to graffiti themselves, possibly of the more personal and offensive kind.

"Why might you even think they could?" I can hear the incredulous ask. Clearly, any management-led initiative has to be generic and relies for implementation on individual academics, or teaching teams, recognising the importance of what is proposed and making appropriate adaptations of general changes to their own teaching area. The issue is about the initiation and macro-shaping of such change. In my view, this can be shaped by:

- familiarity with and commitment to the institutional mission and policies,
- understanding the context within which higher education institutions operate,
- knowing the debates about higher education in general, rather than focussing on discipline-specific concerns,
- relatedly, being aware of the data derived from national or other central sources, and viewing these from an institutional perspective,
- having a view of the students needs from a social and economic perspective, rather than intimate knowledge of the expectations of individuals, or even class groups, and
- being concerned with institutional reputation, rather than the academic excellence of a particular discipline or field of study.

In particular, I do not accept the fatuous distinction that identifies people who teach as having the only legitimate understanding of educational practice, while those who lead institutions do not. The latter are held more often than not to have arrived at positions for which they are not qualified and have little understanding of the 'real world' of academe. It is true that there has been a shift to the professionalisation of university management in recent years which involves different abilities from those traditionally associated with research and teaching roles. Nonetheless, individuals in management tend to be there because they have been identified by their colleagues as suitable for leadership on the basis of their understanding, skills, and breadth of perspective.

Some may feel that I have committed the reciprocal sin of damning all academic teachers as inadequate. That is not my intention. Rather, I wish to make a point that has some significance for the way institutions go about handling the processes of necessary change to teaching and support of students. Further, it would be foolish not

to recognise the very real dangers the approach I am recommending. Centrally-led initiatives run very real risks of failure because:

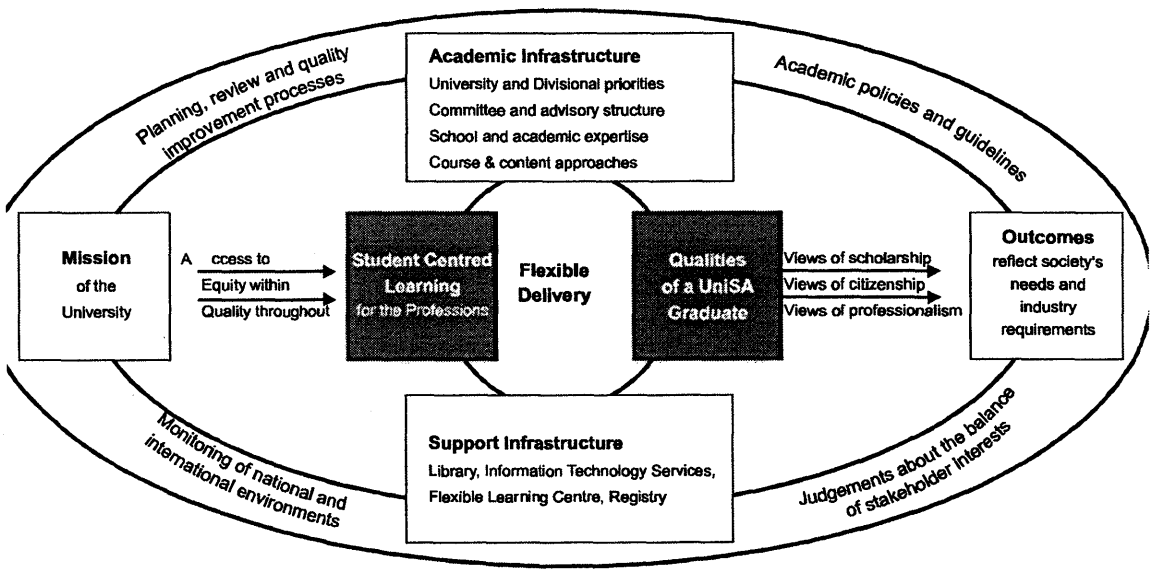
- innovation can be frustrated at operational level deliberately, unintentionally, by omission or through misunderstanding,
- there is a real danger of increasing the workload of others who see themselves as less advantaged within the institution,
- relatedly, matters can be represented as additional demands on an already pressed staff from a non-understanding administration,
- the real difficulties of dealing with the specific problems of individual students can get lost in the general analysis,
- teaching staff resent being pushed to the margins of their competence with new commitments or teaching and support approaches,
- academics perceive real threats to their discipline and the very nature of what a university should be because of the force of history and organisational culture,
- often staff simply lack the skills to implement necessary changes,
- there can be popular and derisory rejection of initiatives as 'flavour of the month' tinkering, and
- the need to address so many concerns leaves academic staff sometimes simply bewildered at the range of expectations on them, with little indication of what might be sacrificed to allow new inclusions in content, teaching approaches and student support.

There is the very real danger of the university concerned becoming innovative at the level of policy commitment and in documentation about its mission and expected achievements, but not in practice. This is exacerbated if the management is itself ambivalent about the ramifications of the changes being proposed and fails to make appropriate allocation of reserves for infrastructure, staff development, dissemination of the innovation and structures to support its embedding in institutional practice. These difficulties notwithstanding, can centrally led innovation, particularly that involving support for student learning, work? I would like to answer this by considering the approach of my own institution, the University of South Australia.

In 1994, Australian universities were obliged to consider the quality of their teaching and learning arrangements because of a national quality audit undertaken by the Commonwealth Government. The audit would consider both outcomes and processes and planning to improve the quality of student learning. Because potentially substantial rewards would follow the audit judgements, institutions were obliged to reflect on the actuality of their practice and its relationship to the requirements and constraints of the contexts within which they operated. At the University of South Australia, senior management exploited the situation to consolidate long-term commitments to a radically different approach to teaching. Documentation prepared for the Quality Audit Committee contrasted the current situation (in 1993) with the characteristics that would prevail in 2003 under a proposed Future Learning Environment. A critical outcome of the identified changes was to be a student-centred learning environment that was significantly technologically mediated. The strategy behind this is more explicable if one understands the thinking of senior management. The Vice Chancellor, Prof. Denise Bradley, AO, has written of other successful initiatives with which she has been associated

*'They happened because here in Australia we established at system level a planning framework which set targets, was tied to resource allocation and included public reporting requirements. A systematic approach ... within a strong policy framework was necessary, because, as is now acknowledged, it is futile for lone individuals in educational institutions to seek to change the organisation; they will fail to do so when operating outside any broad policy framework (Bradley 1995.)'*

The University had developed such a policy framework for the teaching and learning initiative through a series of needs analyses and carefully formulated plans in 1992 and 1993 and described an intended teaching context which derived its legitimacy from the learning needs of its students, that is, a flexible and student-centred environment. Further, the application of technology to teaching was to be strategic, directed to increasing student choice, and underpinned by a strategy to develop information literacy in students. Finally, the necessary changes to the teaching environment would be adequately resourced and supported by appropriate professional development of staff. In 1998, the University considered the progress made towards the Future Learning Environment and both described the steps taken thus far and outlined further commitments in a Teaching and Learning Strategy document. This is briefly discussed below because it identifies several initiatives that are strategically linked but for the purposes of discussion here have the distinguishing characteristic of being management led. The strategy is represented diagrammatically in the following figure.



This establishes that the two organising concepts of the strategy are (1) a commitment to *student-centred learning* (meaning the intention to increase student access to learning opportunities and control over the learning) and (2) an agreed set of *Qualities of a University of South Australia Graduate* (only some of which relate to disciplinary based understanding). The enabling concept that links these two is that of *flexible delivery* (meaning provision of resources and application of technologies to create, store and distribute course content, enrich communication, and provide support and services to enable both more effective learning and better management of learning by the learner). The University contends that the two organising concepts, one about how learning best occurs and the other concerning the educational outcomes the institution seeks to pursue, are inextricably linked. It cannot achieve the agreed qualities of a University of South Australia graduate unless students have the opportunity to practise the skills and attitudes which underpin them and in ways which foster the sense of personal ownership of those attributes. Of necessity, this can only happen in a study environment that invites and encourages choice, reflection and the possibility of exercising personal responsibility over one's own learning. So, flexible delivery describes the conditions the University is moving to establish to facilitate a student managed progress to agreed educationally, socially and professionally desirable outcomes.

What it is important to stress is that these directions are principally about supporting students. As a distance education advocate in the 'eighties, I argued that all teaching was properly a set of decisions about ways of supporting students (King and Forster, 1985). This was an assertion to challenge institutional practices relating to the way distance education students were treated, particularly in the mismatch between student needs and institutional requirements in any given situation, but it was ultimately predicated on a view that the institution took any necessary decisions about support provision. What is different in the current initiatives at the University of South Australia is that there is a genuine attempt to see the locus of control over learning decisions pass to the student and that where support exists it should most ideally be in a form which establishes conditions within which students can exercise such control. This direction is not peculiar to this one University, of course. Many higher education institutions are pursuing similar goals. What I wish to emphasize here, however, is that such a strategy to support the educational aspirations and self-management of learning by students is necessarily management driven if it is to be more than ad hoc and limited to individual and scattered instances of good practice. Initiation of the components of this supportive strategy was as follows.

The articulation and promulgation of both the Future Learning Environment and the Teaching and Learning Strategy documents, the principal sources of legitimacy in relation to teaching and learning practice within the institution, were a specific intervention by the Vice Chancellor, although other senior staff contributed to their development and elaboration. The strategies for realising their component parts were initiated as follows:

The agreed Qualities of a Graduate of the University of South Australia, now an obligatory component of student workload in every subject of all undergraduate courses, was initiated by a working party of eminent stakeholders convened by the Chancellor. Development of the concept, its articulation within disciplinary groups,

and an implementation strategy were undertaken by senior staff of the Flexible Learning Centre, a central support unit established to add value to the teaching and learning mission of the University. The proposal and implementation strategy were accepted unanimously by the Academic Board which is the largest and most senior academic collegial decision-taking body of the of the University.

Student-centred learning was enshrined as a key organising concept in the Code of Good Practice: Teaching and Learning, which had its origins in a charter produced by the Australian Vice Chancellors' Committee that was essentially about improving *teaching*. The document was substantially recast by a senior manager of the University in terms of support for learning. This was revised by the (then) Acting Director of the Flexible Learning Centre and adopted as University policy by Academic Board.

UniSAnet, the on-line teaching and learning environment of the University, which is common, universal, and scaleable to all staff, students and courses of the University, was presented as a concept in a discussion paper by the present author at the specific directive of the Vice Chancellor. An essential requirement was that there be close collaboration with the University's Manager of Information Technology Services and that the environment should take as its foundation existing IT commitments. The Senior Management Group adopted the paper in May 1998 and UniSAnet was developed inhouse by the Flexible Learning Centre and operational by March 1999. This illustrates another element of management led change. It can direct the resources of various institutional agencies to a concerted support for initiatives in a strategic manner that is unlikely to be achieved by individual, or groups of, academics.

It is important to make the following observations at this point: (1) the management initiatives introduced above have been overwhelmingly endorsed by the University's Academic Board and (2) these interventions are accepted as shaping the teaching and learning program of the institution as a whole.

However, it must be acknowledged that progress in practice has only been partial. This is hardly surprising, given the obstacles to management-led change identified above. The initiatives are at different stages of implementation, have been accepted into educational practice with varying degrees of difficulty and enthusiasm, and are embedded in the delivery of programs on a scale that ranges from minimal commitment to full adoption. But the institution is committed to achieving the Future Learning Environment over the next three years and is targeting its professional development program, its reward structures, and commitments to technical and social infrastructure to that end. I want to mention briefly each of these.

The professional support for the teaching and learning program is the responsibility of the Flexible Learning Centre. Each of the four teaching Divisions identifies its priorities for staff development, support of the learning program, and development of materials to facilitate online and resourced-based learning during the annual planning cycle. Specific resource commitments to each area are negotiated with the Flexible Learning Centre and become the subject of a service contract that is formally signed off and then reported upon at the end of the year. In keeping with the institutional commitment, support of the learning program has been reconceived by transforming the role of Study Advisors to Learning Advisors. This is significantly more than a

change in name. The former Study Advisors worked with individual students, and sometimes groups of students, to address problems identified as a result of those students participating in University programs, reflecting the transmission/deficit models discussed above. The focus of activity has shifted dramatically with the redesignation. The staff concerned now principally work with teaching academics to create curriculum conditions that allow students greater opportunity for success in their study programs. These arrangements are in keeping with an institutional commitment to professional development of academics being pursued for strategic ends and directed to the furtherance of the University mission.

The reward structures include such matters as tenure and promotion, for both of which evidence of success in contributing to the teaching and learning program is an essential requirement. More directly, however, substantial internal grants for innovation in teaching and learning are awarded annually on a competitive basis and bid criteria include evidence of commitment to University priorities such as online learning and the Graduate Qualities program.

The technical infrastructure has been developed to enable all academic staff to have a degree of success with online learning programs without having to undergo specific training or acquire more than minimal computer literacy. Major university commitments have included the provision of a common email account for every staff member and student, upgraded computer pools on every campus, and academic authoring and assessment tools that can be accessed and engaged with by both staff and students using only a standard web-browser. The Flexible Learning Centre has developed a seven-stage professional development program to assist in the roll-out of this innovation, but several staff have already made commitments to using the new system without requiring specific support.

In conclusion, I want to stress that I do not have a naïve view about management-led change and am particularly conscious of the difficulties associated with implementing the kinds of intervention in support of student learning pointed to in this paper. Nonetheless, it is my view that little is likely to be achieved in other than a sporadic and essentially limited manner in any university unless the change process is management driven. By this, I mean more than the essential endorsement management must give to legitimate any innovative process. I believe that such changes will occur because (1) they are congruent with the mission and guiding philosophies in particular universities, (2) resources are allocated to their development and implementation, (3) an institutional rather than a discipline based approach is taken, (4) a view of student learning is adopted that is predicated on a sophisticated general view of the desirable outcomes of higher education rather than one derived from a discipline-based view of an emerging professional, and (5) the management infrastructure of the university encourages and fosters collaboration between its component entities to create an environment in which such a view of student learning can prevail in practice that is tangibly supported.

**References**

Bradley, D. (1997) 'Inventing the future: Australian higher education responses.' Keynote address to Third Symposium, Indonesian Distance Learning Network Conference, ***Future Visions***, Bali, 17-20, November.

Hicks, M., Reid, I.C., & George, R. (1999) 'Designing responsive online learning environments: approaches to supporting students', paper accepted for Australian Association of Research in Education Conference, Melbourne, 29 November – 2 December.

King, B., & Forster, A., (1985) 'A South Australian Perspective on Student Support', in Castro, A., Livingston, K., & Northcott, P. (Eds), ***An Australian Casebook of Study Centres in Distance Education***, Deakin Open University Monographs, No 1.

Ramsden, P. (1992) ***Learning to teach in higher education***, Routledge, London and New York.

Reid, J. (1997) 'Summary of Discussions', paper prepared for the Higher Education Council and the National Academies Forum: ***Joint Seminar on the Undergraduate Curriculum***, University House, Australian National University, Canberra, 6-7 July.

# Encouraging Learner Interaction in On-line Environments

**Denise Kirkpatrick,**
**Centre for Enhancing Learning and Teaching, Open Learning Institute, Charles Sturt University, Bathurst, NSWAustralia**

**Abstract**
Traditional views of distance education include a view of a lone student, often geographically isolated working their way through a package of print materials perhaps supported by an audio/video tape or teleconference and interacting infrequently with their tutor. Educators have seized on new technologies as a means of increasing opportunities for student interaction and communication. Distributed multi media systems and computer mediated communication (cmc) in conjunction with the world wide web can be used to create learning environments for distance education students that provide greater opportunity for communication, interaction and collaboration. However, merely making use of these technologies does not guarantee interaction, nor do all uses encourage learner interaction or engagement. The technologies we choose and the ways in which we use them to support or enable teaching and learning play a significant role in the nature and extent of interaction that results. This paper will explore some of the issues that arise as we seek to create effective on-line learning environments and distance education learners.

## Changing Contexts and New Technologies

### Changing Contexts

In response to government pressures and perceived market demand Australian universities are offering courses in more flexible ways. While this may take the form of more flexible enrolment policies and more responsive timetabling it is increasingly taking the form of greater use of technologies in face to face and distance teaching. Universities are viewing the provision of flexible learning opportunities as the means by which they can capture new markets or gain the competitive edge. In Australia, traditional face to face to teaching universities are moving towards the provision of distance education using print and on-line technologies in the name of flexible learning. The number of distance education courses is growing, in Australia the number of students officially enrolled in distance education courses has risen from 61 175 in 1993 to 84 873 in 1997 (DETYA 1999). In the US the National Center for Education Statistics reports that during 1994-95 academic year 25,730 distance education courses were offered by higher education institutions (1997).

One factor contributing to the increase in the number of distance education enrolments is the increase in the number of students enrolling in graduate courses and the growth in continuing professionally oriented education. These students are attracted to distance education because of the flexibility and freedom that is a consequence of the lack of regular, scheduled face to face classes. For many students distance education is a life style study option allowing them to focus on their professional and personal lives while upgrading qualifications or retraining. In Australia there has been growth in the proportion of distance education enrolments by students living in metropolitan regions. While in 1993 approximately equal proportions of distance education enrolments in 1993 were from students living in

rural (non-metropolitan) and metropolitan areas (47%) in 1997 half of the students enrolled in distance education study in Australia lived in metropolitan areas (51%) with only 39% residing in non-metropolitan areas (in New South Wales twice as many metropolitan students are enrolled in distance education programs as students from non-metropolitan areas). The provision of distance education opportunities still addresses the very real issue of providing access to higher education for rural students, however, the distance education student body is changing. Survey data indicate that students choose to enrol by distance education because of the flexibility afforded, citing the freedom offered by not having to attend regular class sessions and the associated opportunity to manage their study around work and other life commitments. The freedom to study where and when suits them is the single strongest factor influencing their choice of mode.

**The Promise of New Technologies**

Loneliness and isolation have been cited as the biggest barriers to successful study and most significant problem faced by distance education learners (Besser and Donahue 1996; Brown, 1996; Twigg 1997). In the past this isolation has resulted from both geographical and physical factors limiting learners' interactions with peers and colleagues as well as the lack of opportunity to physically meet and share ideas. New technologies have been hailed as providing the means by which we can create virtual learning environments that allow students to interact with teachers and fellow students overcoming feelings of isolation (e.g., Bates 1994; Burge 1994; Jonassen, Davidson, Collins, Campbell, and Haag 1995).

New communications technologies have the potential to increase opportunities for distance education students to interact with each other and their teachers. It is argued that electronic tools such as computer mediated conferencing are well suited to providing the social arrangements that enable collaborative construction of knowledge (Blanton, Moorman, and Trathen 1998). Claims are made for the Web's value in supporting collaborative learning so that students engage in the construction of shared meaning (Sherman 1995; Eklund and Eklund 1997). Are the high expectations we have for the use of technologies in distance education being realised? Windschitl (1998) however questions whether communities of learners really develop when learners collaborate in web based learning projects. While web-based conferencing certainly has features that that allow principles of effective pedagogy to be implemented it is questionable just how well and frequently these features are utilised to support effective student learning. Recent studies have reported distance education learners' frustration as presenting a more critical factor than isolation. These frustrations are associated with technical problems created by the technologies used to support the learning experience and student dissatisfaction with inadequate or poorly timed feedback from their teachers (eg Burge 1994; Dede 1996; Kang 1998; Schuck and Foley 1998).

## Communication or Interaction?

The concept of interaction (including feedback) is considered fundamental to the effectiveness of distance education program as well as traditional ones (McIsaac and Gunawardena 1996). There is increasing recognition that the use of new technologies in education has been inadequately evaluated and there is little empirical evidence as to the success of new technologies in increasing interaction between learners. However, where teaching with technologies have been evaluated there is a growing suspicion that communications technologies have resulted in increased communication between learners and learners and their teachers (eg studies of the use of email demonstrate that it is effective in dealing with administrative queries and disseminating information to students) there is less evidence that communication is *interactive.* Analysis of transcripts of threaded discussions and forum discuss identify the proliferation of monologic communications.

I have focussed on computer mediated communications (cmc) as these are the most frequently and widely used in Australian distance education. CMC provides communication free from time and location constraints and has high interactivity capacity (Ahern, Peck and Laycock, 1992; Harasim 1993). It certainly has the potential to increase the access of distance education students to their teachers and fellow students, allowing convenient and timely dissemination and sharing of information. However, we should be looking at the ways in which new technologies can improve the learning experience for students not just increase their access to information. How can we use cmc to create better learning for students? It is the disadvantages of cmc that present us with the greatest challenges as we seek to use electronic communication to create learning opportunities: the number of messages posted can be overwhelming (Kang, 1998); and the absence of nonverbal communication cues can make it a lean communication medium limiting its capacity to convey sophisticated, complex or subtle ideas (Harasim 1987; McIsaac and Gunawardena, 1996). Farquhar, McGinty and Kotcho (1996) identify limitations on the ability of cmc to sustain dialogue through several rounds of response.

The email focus of cmc may be a poor model of communication if we are seeking to establish communities of learners or interactivity (Crook and Webster 1999). While the asynchronous nature of much web based communication is seen as its most valuable feature it may well be that this is what works against interaction. Communication via cmc is convenient and accessible but not necessarily informal or spontaneous. The value of being able to compose and review may make it possible for reluctant students to participate. However, this is accompanied by a signalling of intent and the public and permanent nature of such communications may also be inhibiting. Different types of communication result and we are still learning how to handle these effectively.

McWilliam (1997) raises concerns about the disembodying effect of virtual learning environments, suggesting that a sense of loss may be a consequence of what she sees as a less intense pedagogical encounter. However, it may be this more removed pedagogical encounter that is more attractive to some learners, who do not seek to establish personal relationships between themselves and fellow students. Not all learners see the learning environment in a social sense. In reality much of what happens in conventional classroom exhibits low levels of interaction among learners –

should we expect that just because the tools are available that teachers who may be unfamiliar or unwilling to consider ways of teaching and facilitating learning that encourage interaction should adopt new ways of doing and being.

**Effective Practices**

What is necessary to encourage interaction between learners? The types of interaction supported by cmc need to be more than just asking questions of teacher or peers. It has been suggested that be that the similarity between cmc and email sets up user expectations about information simply being sent to and from users in neat packets, with none of the 'messiness' of (interactive) conversations. Therefore we need to develop ways of extending interactions, and changing the nature of interactions so they are responsive rather than mere information seeking or receiving.

Emerging from the experiences of teachers are the following recommendations concerning effective organisation of interactive communication in on-line environments:

- Tasks must be well structured with clear expectations and protocols: eg on-line debates, requirements for extended discussion or argument;
- Tasks must require that learners respond to each other and interact;
- Interactions must be dependent on the input of others;
- There must be clearly stated expectations that interactions will be sustained and reflective;
- Adequate opportunity should be provided for learner contribution;
- Teacher feedback and response must be timely and balanced;
- Student review, feedback or informing about work of self and others can encourage interaction if extended comments are expected; The practice of linking interaction to assessment is problematic. While it encourages participation it confirms for learners that the only important work is that which is assessed. An alternative is to make assessed work contingent upon successful participation in electronic discussions.

**What do Distance Education Students Want and Think?**

Many current practices in the development and delivery of distance education courses are based on teacher perceptions of what distance education students want. As Crook and Webster (1999) claim, many teachers in higher education are committed to the idea that higher education is (or should be) grounded in experiences of discursive exchange- various kinds of conversation among students and tutors around shared disciplinary concerns. Current educational orthodoxy exhorts teachers to develop learning experiences according to social constructivist principles and new communications technologies are frequently cited as the means by which social constructivist learning environments may be created for distance education students. Indeed in many cases social constructivism is the justification for introducing new technologies.

If we are mindful of Bates' comment that it is a ... 'relatively untested assumption that advanced technologies are pedagogically more effective than older technologies" (1994 p 1577) we need to explore the students' experience of studying distance education using technology – how do they perceive the communication and interaction that is a consequence?

While cmc provides the tools that support the interactions necessary for the social construction of knowledge and understanding these capacities are frequently not exploited providing students with less than satisfactory experiences. In addition it may well be that the nature of interactions that are necessary in such learning environments are precisely what some students who have chosen to study by distance are seeking to avoid. I think it has become convenient to classify students who do not seek or who actively avoid involvement in learning activities that require them to share their thinking with peers as less "good" students, surface learners or lazy students who just want to be told the answer. I would argue that this is convenient and sloppy. Many of these students are actively engaged in learning, they engage with the ideas and frequently in discussion about the ideas. It is just that they wish to choose with whom they share their thinking and for many of them it is not those whom an accident of enrolment or timetabling force them into contact. Rather these students who are often mature age and employed wish to be able to choose to with whom and how they interact. Being required to interact in a virtual discussion with strangers is not an activity that all students view as equally desirable or valuable. While increasing recognition is given to the student as consumer or client their wants and needs seem to be given little credence when it comes to designing educational/learning experiences.

Interview and questionnaire data support a view of distance education students who are not seeking social contact or interaction through their studies. Rather we have an emerging picture of distance education students who wish to study in their own time and place to gain necessary credentials for workplace advancement or employment. These students are not looking to their studies to make links with new people- they have previously existing means for this. The increasing number of distance education students currently in the workforce provides additional pressure for flexibility and choice in the manner of engagement and involvement of students as learners. Increasing attention to credentialling has stimulated interest in graduate or formal study and the gaining of qualifications. For many distance education students the workplace is their primary learning environment and their demands and expectations for learning via distance education are frequently minimal and instrumental. However they do want flexible and responsive learning conditions and many current uses of cmc and the web are definitely neither flexible nor responsive.

**Changing Practice**

There would not seem to be any easy answer. It is true that new technologies provide us with tools which we can use to create interactive learning environments for distance education students. The critical point is just how we use these tools and what type of learning environments we shape. It is within the teacher's control just how interactive these experiences are. And it is here that we see the double edge of the sword- at this stage in order to ensure that interaction occurs between learners in the new electronic environments teachers are creating increasingly teacher-directed settings. The current thinking is that if we want student to participate in on-line discussions then these activities must be associated with assessment. Participation is effectively encouraged when there are clear guidelines for engagement, the minimum number of postings to a forum is specified or posting must occur within a stipulated time frame. Not only does this place much of the responsibility for learning on the

teacher but it diminishes the flexibility that attracted many students to distance education originally. What is critical is that the interaction that is required is both appropriate and necessary in terms of the requirements of the task, that it is not include simply because the technology makes it possible.

## Challenges

Our challenge is to develop learning experiences that are meaningful and valuable to students and that capitalise on the potential offered by new communications technologies. As Gaver reminds us "new technologies seldom simply support old working practices with additional efficiency or flexibility. Instead they tend to undermine existing practices and demand new ones." (1996). It is these new working practices in relation to the development of learning activities that support realistic and valuable interaction in electronic environments that we need to foster. To do this we need to look at the roles that organised and serendipitous discussions play in learning. We need to move from expecting to simulate real life interactions on the web to interactions to developing new, relevant interactions that learners see as valuable in real life and established personal practice. And we must accept that this will not happen without effort on our part and support for learners as they take on new roles. I would also argue that we must turn the rhetoric of valuing the experiences and work place learning of our students into reality and allow them a real choice in when and how they learn.

## References


Ahern, T. C., Peck, K., & Laycock, M. (1992) 'The effects of teacher discourse in computer -mediated discussion', *Journal of Educational Computing Research* 8 (3): 291 - 309.

Bates, A. W. (1994) 'Distance education, educational technology', in. In T. Husen and T. N. Postlethwaite (eds.), *The International Encyclopedia of Education.* (2nd ed.). Oxford: Elsevier Science, pp. 1573-1580.

Berge, Z. (1997) 'Characteristics of online teaching in post-secondary, formal education', *Educational Technology* 37 (3): 35-47.

Besser, H. & Donahue, S. (1996) 'Introduction and overview', *Journal of the American Society for Information Science* (47) 11: 801-804.

Blanton, W. E. Moorman, G. & Trathen, W. (1998) 'Telecommunications and teacher education: A social constructivist review', in P. D. Pearson and Iran-Nejad (eds) *Review of Research in Education,* Washington DC: American Association for Research in Education, pp. 235 – 275.

Brown, K. M. (1996) 'The role of internal and external factors in the discontinuation of off-campus students', *Distance Education* 17 (1): 44 – 71.

Burge, E. J. (1994) 'Learning in computer conferenced contexts: The learners' perspective', *Journal of Distance Education* 9 (1): 19-43.

Burge, E. J. (1996) 'Inside-out thinking about distance teaching: Making sense of reflective practice', *Journal of the American Society for Information Science* 47 (11): 843-848.

Crook, C and Webster, D, S. (1999) 'Designing for informal undergraduate computer mediated communication'

Dede, C. (1996) 'Emerging technologies in distance education for business', *Journal of Education for Business* 71 (4): 197-205.

Eklund, J. & Eklund, P (1997) 'Collaboration and networked technology: A case study in teaching educational computing', *Journal of Computing in Teacher Education* 13 (3): 14 – 19.
Farquhar, J., McGinty, B., & Kotcho, C (1996) *The Internet as a tool for social construction of knowledge*. Indianapolis, IN, Association for Educational Communications and technology (ERIC Document Reproduction Service No 397 793
Foley, G., & Schuck, S. (1998) 'Web-based conferencing: Pedagogical asset or constraint?', *Australian Journal of Educational Technology* 14 (2): 122 – 140.
Gaver, W. (1996) 'Situating action II: Affordances for interaction: The social is material for design', *Ecological Psychology* 8: 111-130.
Harasim, L. M. (1987) 'Teaching and learning on-line: issues in computer-mediated graduate courses', *Canadian Journal of Educational Communication*, 16 (2): 117-135.
Harasim, L. M. (1993) 'Networld: Networks as social space', in L. M. Harasim (ed.), *Global Networks: Computers and International Communication*, Cambridge, MA: MIT Press, pp. 15 - 34.
Jonassen, D., Davidson, M., Collins, M., Campbell, J., & Haag, B. B. (1995) 'Constructivism and computer-mediated communication in distance education', *The American Journal of Distance Education* 9 (2): 7-26.
Kang, I. (1998) 'The use of computer-mediated communication: Electronic collaboration and interactivity', in C. J. Bonk, & K. S. King (eds.), *Electronic Collaborators: Learner-Centered Technologies For Literacy, Apprenticeship, and Discourse*, Mahwah, NJ: Erlbaum.
McIsaac, M. S. & Gunawardena, C. N. (1996) 'Distance education', in D. Jonassen (ed.), *Handbook of Research For Educational Communications and Technology*, New York: Macmillan, pp.403-437.
McWilliam, E. (1997) 'Stuck in the missionary position? Pedagogy and the body in new times.' Keynote presentation at the *Pedagogy and the Body Conference*, QUT, Kelvin Grove, Queensland.
National Center for Education Statistics (1997, October) *'Statistical Analysis Report: Distance Education in Higher Education Institutions'*, [On-line]. Available: http://www.nces.ed.gov/pubs98/distance/
Sherman, L ( 1995) 'A postmodern, constructivist and cooperative pedagogy for teaching educational psychology, assisted by computer mediated communications', in Schnase, J., and Cunnius, E (eds) *Proceedings of CSCL 95, 94 – 98*. Bloomington, Indiana: Lawrence Erlbaum and Associates.Stahlman, M. (1996, December 09) 'Prisoners to technology?' *InformationWeek*, 126.
Twigg, C. A. (1997) 'Is technology a silver bullet?' *Educom Review*, March/April, 28 - 29.
Windschitl, M. (1998) 'The WWW and classroom research: What path should we take?' *Educational Researcher* 27, (1): 28-33.

# "Seeking balance"

**David Lippiatt**
**University of Lincolnshire and Humberside (ULH), UK.**

## Introduction

"We need to understand far better than we do the social roles of education, and how these can be met. I suspect that there will always need to be a balance between face-to-face contact at a local level, inter-personal contact through telecommunications, and interaction between an individual and a piece of technology, whether it be as 'primitive' as a book or as sophisticated as an intelligent talking computer. What we need to discover are the principles that determine this balance, and this means a lot more research into the social as well as the cognitive aspects of learning." *A.W.Bates, 1995,* p.244

In common with many other educational institutions in the UK and overseas, in recent years the University of Lincolnshire and Humberside (ULH) has been facing the problems and stresses of attempting to maintain and improve the quality of its higher education provision, for more students, against a background of resource constraints – summed up as the requirement to 'do more with less'. Although some have claimed that 'increased productivity' was not the driving force behind ULH exploring what new technologies have to offer in learning and teaching, and have presented sound criticisms of the effectiveness of traditional approaches and strong arguments for the development of independent lifelong learners, convincing people otherwise has been difficult. If managing change in a relatively stable environment is difficult, doing so against the background of regular upheavals in the external and internal environments of an institution is likely to produce fairly reactionary responses, and understandably so.

But these significant factors can mask other reasons for lack of success in introducing new technology into learning and teaching which might include under-estimating the scale and far-reaching nature of what is involved. In other words, even in such difficult times (and I wonder when they were ever easy) it might be possible to introduce change provided it is well-designed and properly managed so that there is seamless transition to a different kind of quality. In this paper I want to raise some of the issues which have accompanied the development and introduction of a computerised learning and teaching system in a 'new' university, and go on to explore reasons for the importance of seeking the kind of balance referred to in the opening quotation from Tony Bates' book, "Technology, Open Learning and Distance Education".

## The background

The institution which is presently known as the University of Lincolnshire and Humberside has undergone some considerable changes in the last ten years, from College of Higher Education to Polytechnic in 1990, becoming the University of Humberside in 1992, and then in 1996 the present University with two major campuses – one in Hull and the other in Lincoln. Student numbers have also changed, rising from 6800 students in 1989/90 to 14 000 in 1994/95. Over the last four years the distribution has changed in another way too, so that at present about 10 000 students attend on-campus and 5000 students off-campus, many through overseas centres.

In 1991 what was then the Polytechnic received a £1 million endowment from British Petroleum, providing an annual income of £50 000 which was more than matched by internal contributions to a five-year investment programme 'to harness modern media and technological developments to further the growth of mass and vocational higher education '. Within two years, and now in the newly formed University, this initiative was largely being managed by a newly formed 'Learning Development Unit' which began to focus annually funded projects around the following five features of the learning environment:

- the development of flexible academic structures – modularised courses defined in terms of learning outcomes, with greater flexibility in entrance and exit points
- materials for independent learning
- staff 'enabled' to manage the learning environment
- appropriate use of technology
- 'enabled' students – skilled in learning and for employability.

Within this general framework, most of the projects were designed and carried out by individual members of staff from University faculties – developing, for example, computer aided marking systems or open learning materials. But some of the major projects tended to be designed and managed centrally; they included imposed changes to the curriculum which required 20% of most courses to be 'skills and capabilities' units, and also included installation of a computer-based learning management system, referred to as the 'Learning System'.

There are probably as many ways of analysing and measuring the 'success' of these developments as there are individuals in the University and interested observers outside. At one extreme, a dyed-in-the-wool, conservatively-minded academic will dismiss it all as having been a waste of time, whilst at the other extreme some new members of staff will happily exploit the 'Learning System' without knowing how it ever came to be developed. There is perhaps slightly greater use of materials for learning independently on-campus, but their greatest use has been in supporting off-campus learning. Ironically, having been driven to produce complete sets of distance learning materials for learners off-campus, those materials are increasingly being taken up for use on-campus. I therefore want to emphasise that whilst I often refer in this paper to what has taken place over the last few years, it is not as though this is a post-mortem on projects which have come and gone: these developments are still taking place, albeit within different frameworks, and to that extent the paper is about 'work in progress'.

**The Learning System**

The best way to appreciate the nature of the Learning System is to navigate around it and seek to apply its facilities in the actual practice of learning and teaching, but briefly what it provides via a terminal connected to the WWW is a supported electronic learning environment on and off-campus. Students have access to the following facilities:

profiling tools for learning styles and study skills

- self-diagnostic tests for IT
- automated assessment for IT skills
- automated feedback
- tutor-student and student-student communication

- subject information
- on-line information sources
- an electronic diary
- electronic materials delivery.

Tutors have access to the same facilities, but can also:
- create and manage student groups
- search for students
- monitor how students are using the learning system
- publish their own bulletin boards
- use question design tools
- access the University's Programme Data System
- access the University's Student Management System.

There are various reasons why the Learning System has been and continues to be under-used on-campus. Perhaps the most fundamental of these lies in the general distrust of many of the projects that were addressing re-development of the learning environment. At a time when the institution was already changing staff:student ratios in the direction of fewer staff to more students, grudging credibility was accorded to a centrally funded Unit which claimed to be introducing learning and teaching technology for reasons other than supporting efficiency gains. Against that background, early attempts to encourage use of the Learning System before the reliability of the servers and networks on which it was based had been thoroughly tested inevitably presented its critics with easy ammunition.

However, the technological difficulties in introducing such a system would have been much less significant if much greater attention had been paid to designing use of the Learning System into delivery of the curriculum as part of a comprehensive learning and teaching strategy. It is not so much that the need for this was overlooked, but that first of all the depth and secondly the sheer amount of work involved was under-estimated. There was a tendency to assume that having created the tool, staff would willingly and easily develop strategies around it, but the consequence was that the Learning System has tended to remain very much a peripheral device. In this respect Tony Bates' comment is apposite, that:

"...the current approach of 'adding-on' technology to existing institutional structures not only fails to exploit fully the educational potential of technology, but actually increases the cost of education. In short, we need to examine very carefully the purpose and function of educational institutions in the twenty-first century, and use electronic technologies to build new institutional models to meet new educational needs." *Technology, Open Learning and Distance Education,* p. 243

In addressing design methodology, Part III of Diana Laurillard's book 'Rethinking University Teaching' includes a chapter on 'Setting up the learning context' which opens as follows:

"There is a folk wisdom in academic circles that educational technologies come and go, and all the expensive machines end up gathering dust in cupboards. The main reason for this, when it occurs, is neglect of the learning context, not, as is often supposed, the poor quality of teaching the machines provide. There is plenty of

traditional teaching on offer in universities that is poor in quality, sustained none the less by its fit with the learning context. Educational technologies, especially new ones, attract effort and ingenuity to the design and development of materials, but rarely to the embedding of those materials in their educational niche. This is one of the key reasons why they have made relatively little impact in higher education, despite their potential."

For a University that is split across two main sites, and in which one third of its student population is attached to centres distributed worldwide, the potential value of the electronic learning and teaching environment which the Learning System presents is considerable, to say the least. But its value does not just lie in overcoming the problems created by the geographical distance between physical sites. It presents the means whereby students can access learning materials and assessment at a time of their own choosing and in any place, whether they be 'on-campus' students attending in traditional mode or distance learning students, provided they have access to a terminal and a modem link. It also permits teachers a complementary kind of flexibility in making materials available, monitoring student progress, conducting asynchronous conferencing, putting up bulletin boards, and so on. But will they?

Well, not without some help, so as an 'interface' between academic staff, students, and the resources of the University's learning environment, especially electronic resources, in the last two years there have been appointed 'learning advisors', attached to different Faculty departments, whose role it is to work both with staff in the development of teaching and assessment materials for use on the Learning System, and to enable students to use it. By this very practical means the University has acknowledged the importance of installing facilities whereby staff used to a traditional mode of delivery might convert to use of the Learning System. 'Has it worked?', 'Is it working?', 'Is it likely to work?' ... it's too early to say, but staff are in place and persisting with finding answers to questions.

If we refer back to the five features of the learning environment, there no doubt remains much to be done with regard to the development of 'flexible academic structures', although most courses are now 'modularised' and defined in terms of learning outcomes, and APL and APEL schemes permit greater flexibility in entrance and exit points. Progress has been made in developing a portfolio of learning materials, but we are still in the process of deploying facilities, and enabling staff to exploit them. It can also be fairly argued that we have made considerable progress in 'appropriate use of technology' insofar as we have the Learning System, the use of which in itself carries great potential for development of the disciplines and skills required for on-line learning, but which also enables students to learn IT applications.

But with regard to the two remaining points – staff 'enabled' to manage the learning environment, and 'enabled' students – despite the appointment of learning advisors and their very able work within ULH, what appears to me to be lacking still is an adequate setting up of the learning and teaching context.

This involves understanding "far better than we do the social roles of education, and how these can be met", and it appears to me to me to require clear insight into the need for balance "between face-to-face contact at a local level, inter-personal contact through telecommunications, and interaction between an individual and a piece of

technology, whether it be as 'primitive' as a book or as sophisticated as an intelligent talking computer."

I do not think that the kinds of problems associated with the introduction of new technology into learning and teaching described in this paper are peculiar to any one institution. 'Ethos' is defined as 'the characteristic spirit or attitudes of a community, people, or system'. It would be mistaken to talk about *the* ethos of higher education because it is made up of many quite different communities, different within institutions and between institutions, different within countries and between countries, but it does appear to me that the 'characteristic spirit' of many of them is a very conservative one, partly concerned with preserving the status quo, but understandably reserved about introducing the 'new' unless the design and management is full and adequate to ensure smooth transition. There are also the prophets, pointing to the fearful consequences of not adopting new technology. What most institutions, learners and teachers, are likely to need is the design and management of a balanced approach.

In assessing development of the use of new technology for learning and teaching within this institution, it is easy to point to the fact that it had an endowment which helped with the funding. That was of considerable material and psychological worth, driving forward developments which otherwise might not have taken place. But the full value of the implementation of these remains to be seen and is only likely to be realised when further specific projects set about the business of designing and managing the learning context in such a way as to make balanced use of the Learning System, materials, and tutor contact integral to course delivery.

This is an institution which has many bits in place, in which it is not so much the technology itself that is the problem as the willingness to conceive of the ways in which it can be incorporated into learning and teaching.

Bibliography

Bates, A.W. (1995) Technology, Open Learning and Distance Education, Routledge
Burt, G. (1997) *Face To Face with Distance Education*, Open and Distance Education Statistics, 28 Severn Drive, Newport Pagnell, Milton Keynes, MK16 9DQ, UK
Daniel, J.S. (1996) Mega-Universities and Knowledge Media, Kogan Page
Elton, L. (1994) Management of Teaching and Learning: Towards change in universities, CVCP and SRHE, London
Foster, D. (1997) Unity out of Diversity: The Origins and Development of the University of Humberside, Athlone Press
Hazemi, R., Hailes, S. and Wilbur, S. (eds) (1998) *The Digital University*, Springer
Laurillard, D. (1993) Rethinking University Teaching: A Framework for the effective use of educational technology, Routledge
Lockwood, F. (ed) (1995) *Open and Distance Learning Today*, Routledge
Mason, R. and Kaye, A. (1989) Mindweave: Communication, Computers and Distance Education, Pergamon Press

Teare, D. Davies, D., and Sandelands, E. (1998) The Virtual University: An Action Paradigm and Process for Workplace Learning, Cassell
Zorkoczy, P. and Heap, N. (1995) *Information Technology: An Introduction*, Pitman Publishing

Journals
*Active Learning,* CTISS Publications, University of Oxford, 13 Banbury Road, Oxford OX2 6NN, UK

*Open Learning*, Pearson Education Limited, 128 Long Acre, London WC2E 9AN, UK

Acknowledgements
I am indebted to Professor Roger Lewis who held the Chair of Learning Development at the University from 1992 to 1998, and to Bob Hunter, who undertook so much pioneering work on the Learning System, and Dr Terrence Karran, both in the Centre for Access and Lifelong Learning at ULH.

# Teaching with the new technologies: New Approaches, New Skills for Tutors

**Kay Mac Keogh**
Academic Co-ordinator – Humanities Programme, National Distance Education Centre, Dublin City University

## Introduction

For over a century, open distance learning methods have provided flexible access to all levels of education for those who for a range of reasons related to location, income, domestic, occupational, health or other circumstances were not in a position to attend conventional, face-to-face education. Approaches to delivery of course content have varied between different countries and institutions, and over time. Nevertheless, generally, distance learning has been characterised by a separation in time or space between the teacher and the learner, with the delivery of course content involving the use of some form of medium. However, regardless of the medium used, it has always been the concern of quality systems to ensure that there is a balance between the independence of the student from the providing institution, and the need for interaction and discourse which characterises true education. In most distance learning systems, there is provision for interaction with a tutor. While the role of tutors may vary greatly, generally the tutor mediates course content, clarifies concepts, directs discussion, assists the student in developing study skills, and provides feedback, either formative or summative, or both. The information and communication technologies present a new dimension for the role of the tutor, requiring the acquisition of new skills and approaches. This paper will address the changing role of tutors in the context of the new technologies.

## Forms of tutor support

It has been argued that students should be independent learners, capable of learning from well designed materials without the aid of a tutor, and it is possible to succeed in acquiring knowledge and skills through reading books and self-instructional manuals. However, there are different levels of learning and certainly the development of higher order skills – for example, critical thinking or problem solving require more than the passive absorption of course content. The development of these higher order thinking skills is best achieved through active engagement with the material through discussion, interaction, and exchanges of ideas. Yet it is difficult to achieve this outside a face-to-face situation. In distance learning, the tutor is a vital resource for assisting the student in developing these skills. In addition, in the real world, students require support and reassurance, someone to ask questions of, someone to act as an intermediary between the institution, the course material and the student. Thus the tutor is a vital part of any student support system.

Such support can be provided through a number of media: face-to-face individual meetings, or the more common face-to-face group meetings in study centres; tutorial support can also be offered at a distance by mail, telephone, either individual calls, or teleconferences; or more recently through computer mediated communication, either email, or computer conferencing. Each form of tutor support offers advantages and disadvantages which are summarised in Table 1 below. Depending on the student's need for flexibility with regard to time and location some approaches are more advantageous than others. For some students, the fixed time and location of face-to-face tutorials presents insuperable barriers, whereas the asynchronous and place independent nature of some approaches can offer advantages in the form of time for reflection and considered responses, or alternatively delays in response and consequent disruption to the study process.

Traditional face-to-face group tuition offers students many advantages – they can interact with their peers and their tutors and receive immediate feedback. However, not all students can attend such sessions – for example, annual unpublished surveys of students on a humanities degree programme offered by the National Distance Education Centre in Ireland show that 5% of students never attend any sessions, and on average, most students manage to attend only 60% of available sessions for a range of reasons. They may live too far away from the study centre, or their time schedule will not allow them to attend. Other methods of providing tuition also have disadvantages for remote students, or those who are time 'poor'. Media which extend access to remote students on the 'distributed class-room model', such as video-conferencing do not solve these problems as they require students to attend at fixed locations at fixed times. However, computer mediated communication (CMC) has the potential to remove the barriers which prevent students from attending face-to-face tutorials while providing contact with their tutors and fellow students and also helping to develop students' higher order learning through discussion.

Table 1: Forms of tutor support

| | Time/Location | Advantages | Disadvantages |
|---|---|---|---|
| Face to face individual | Synchronous/ Location fixed Time fixed | Individual support<br>Fixed cost<br>Immediate response | Lack of social support from students |
| Face to face group | Synchronous/ Location fixed Time fixed | Opportunity for group work<br>Collaborative learning<br>Discussion<br>Problem solving<br>Fixed cost<br>Immediate response | Time and location dependent |
| Post | Asynchronous/ Place independent | Time for considered response<br>Relatively inexpensive | Delays in response<br>Postal problems in some areas<br>Not interactive<br>No verbal cues |
| Telephone | Synchronous/ Place independent | Flexible with regard to place/time (potentially)<br>Individual support<br>Immediate response | May be inconvenient for tutor<br>Cost<br>Lack of group context |
| Telephone conference | Synchronous/ Place fixed | Group discussion<br>Immediate response | Time dependent<br>No verbal cues<br>Need technology<br>Cost |
| Email (one-to-one) | Asynchronous/ Place independent | Flexible with regard to time/place<br>Individual support | Need to have technology/skills<br>Cost<br>Lack of non-verbal cues<br>Lack of group context<br>Delay in response |
| Video conference (one-to-many) | Synchronous/ Place fixed | Simulates classroom<br>Group discussion<br>Immediate response | Time/place dependent<br>Need for technological support<br>Cost |
| Computer conference | Asynchronous/ Place independent | Generates group discussion<br>Facilitates collaborative work<br>Time/place independent | Need for technological infrastructure<br>Need for technological support<br>Time consuming for tutor/moderator<br>Lack of non-verbal cues<br>Cost |

Computer mediated communication (CMC) refers to a wide range of asynchronous, text-based computer conferencing systems. Computer conferencing offers a combination of email, bulletin board, and an online communication system. Participants in a conference can send messages to individual members of the group, their tutor, or to the group as whole. A number of topics can be discussed simultaneously, unlike in a face to face format where topics are discussed sequentially. In addition, participants can 'speak' whenever they wish to, responding to existing comments, establishing new lines of discussion, without waiting for others to finish. Instead of students having to wait their turn, and limited time to make their contribution, now students can have unlimited opportunity to make their contribution, time to reflect on their responses, and can maintain contact with a number of topics at the same time.

Computer conferences can mirror the types of interaction which takes place at tutorials and can be seen as 'virtual seminars' encompassing a number of learning possibilities of real world teaching in an asynchronous and dislocated manner' (Schwan and Hesse, 1996: 504). But there are important differences. Computer conferencing is asynchronous, spatially separated, and text based. Because of the asynchronous nature of computer conferencing, several discussions can take place simultaneously, messages may address multiple topics and because contributions are recorded, students can browse messages, and process information in different ways to those of the conventional classroom. (Schwan and Hesse, 1996: 510). Moore (1993) regards this increased dialogue between students as working to develop higher order, critical thinking and that this is perhaps the greatest contribution of telecommunications to distance education. He concludes that such technologies if used by progressive teachers can both reduce distance and increase learner independence.

Nevertheless, in a 1992 study of the causes for lack of wider acceptance of computer conferencing, McNeill noted these included the negative attitudes of faculty to computing, unsupportive institutional structures, inadequate training, misguided marketing strategies and high costs (McNeil, 1992). While the costs have certainly decreased, access to computing facilities is by no means universal. Many academic staff are still sceptical about technology. These negative attitudes stem from lack of familiarity with the technology, with fears of further intrusions on their time, doubts about the pedagogical effectiveness of these technologies or indeed suspicions about the motivations of institutions promoting their use. Despite this, there are benefits and advantages to computer conferencing. At the very least, for students who are remote from study centres, or who have little time flexibility, computer conferencing is their only chance of participating in a discussion forum. Similarly, from an institutional point of view, where group sizes are small and students widely scattered, perhaps on a transnational basis, computer conferencing provides the most cost-effective medium of student interaction.

## Tutoring in an electronic environment

As we have said above, the virtual classroom metaphor is often used to describe computer conferencing. But there are important differences in the role of tutors and students, requiring the development of new skills. There is now a considerable amount of material on the skills required for tutoring in an electronic environment. A list of useful sources available on the world wide web is given at the end of this paper. All writers on this topic note that the role of the tutor changes when they leave the face to face environment, to participate in a virtual learning environment. Collins and Berge (1996) summarise the changing roles of tutors, these include: changing from the omniscient presence as lecturer, to consultant, guide, resource provider; becoming an expert questioner, rather than a provider of answers; a designer of student learning experiences rather than provider of content; providing the initial structure for student work, encouraging increasing self-direction; presenting multiple perspectives on topics, emphasising salient points; moving from being a solitary teacher to a member of a learning team; moving from total autonomy to being part of a group; from total control of the teaching environment to sharing with the student as a fellow learner; acknowledging different student learning styles; accepting an erosion in the teacher/learner power structure.

Zane Berge, who has written widely on the role of the tutor in computer conferencing, identifies four categories of roles which the tutor must play: pedagogical, social, managerial and technical (Berge and Collins, 1995). The tutor must set the pedagogical goals of the discussion, promote and summarise discussion, present conflicting opinions, suggest additional material. He or she must also pay attention to maintaining the social cohesion of the group, through using effective introductions, facilitating interaction, preventing abusive contributions. The tutor must manage the conference through selecting topics, providing leadership, ending discussion when appropriate. Finally, the tutor must be familiar with the technology, and capable of solving problems which arise. Another role which a tutor may be called on to play in a computer conference is that of the moderator. According to Mason (1989), the moderator can delete/control messages; on an educational level he or she can guide discussion, stimulate participation, offer intellectual leadership. The moderator combines elements of the teacher, chairperson, host, facilitator and community organiser. Mason also categorises the tutor's role as organisational, social and intellectual. As part of the organisational role, the tutor sets the agenda and the objectives of discussion, timetable, procedural rules, decision making norms. In terms of social role, the tutor aims to create a friendly social environment for learning (for example by sending welcome messages at the beginning, encouraging participation, providing feedback, using a friendly, personal tone). Finally, on an intellectual level, the tutor focuses discussion on crucial points, asks questions and probes responses to encourage students to expand, they synthesise points, build upon themes, link them to literature and the topic. This last skill is sometimes called 'weaving' and is seen as crucial in making what can sometimes become a chaotic exchange of unstructured opinion a meaningful learning experience for participants. The roles of moderator and tutor overlap to a certain extent, and their roles are

complementary, however, generally, the moderator is responsible for threading, summing up, ending the discussion, whereas the tutor functions more in terms of content of discussion, asking questions, challenging ideas or definitions, directing students to sources. However, where there is a small group and only one tutor, the two roles merge. Because of the known complexity of roles it is essential that tutors should receive appropriate training before taking on the task of moderating or leading a computer conference. As an example the next section describes a training programme designed for tutors on a transnational electronic forum linking students in European Studies in six universities throughout Europe.

**Creating an Electronic Forum in European Studies (CEFES)**

CEFES – Creating a European Forum for European Studies is a computer conference (funded by the ODL action of the EU Socrates programme) to discuss European issues with students in other European countries in a virtual seminar organised by six European higher education institutions: DIFF, Danish Association of Open Universities; OU UK; Universidade Aberta, Portugal; Universidad Nacional de Educacion a Distancia, Spain, University of Surrey UK. The forum uses FirstClass conferencing software and takes the form of three 'sequences' each lasting four weeks during which topics such as globalisation, or identity are the focus of discussion. Students are provided with a reading list, including web resources, prior to the start of the programme, and are expected to base the subsequent discussion on their reading of these sources. Each national group is supported by a local tutor, and the entire conference is moderated by an individual tutor[1]. Eight tutors were involved in the forum in Spring 1999, and almost 200 students took part.

Prior to the start of the forum, a training programme was designed to familiarise the tutors with the roles and responsibilities of tutors in a computer conferencing environment. Because the trainer was located in Scotland and the participants were based in six different countries, a face to face programme was not an option, nor perhaps appropriate. This training programme took place over one week and was delivered entirely through computer conferencing supported by a set of web resources on moderating and tutoring electronic learning environments, which participants were advised to read before the start of the programme. This proved a very effective form of experiential 'hands-on' learning for participants.

The programmes was structured into five themes for discussion over the five days of the conference. The five themes were: writing introductions; starting discussions; replying and 'weaving'; the role of the moderator; and use of online resources. Over the course of the conference, 69 messages were sent, of which 20 were from the moderator (this fits in with a general rule of thumb that some 20-50% of inputs are from the moderator (Berge and Collins, 1995)). Table 2 shows the pattern of messages on a daily basis:

[1] I am grateful to Ms Sarah Tolley for making available the material on which this part of the discussion is based.

Table 2: Messages to Tutor Training Conference

| Day | Theme | N of messages |
|---|---|---|
| Before day 1 | | 2 |
| Day 1 | Introductions | 4 |
| Day 2 | Starting | 11 |
| Day 3 | Replying | 17 |
| Day 4 | Role of moderator | 19 |
| Day 5 | Use of online resources | 12 |
| After conference | | 4 |
| Total | | 69 |

However, not all messages on a particular day related to the topic of the day, instead, as happens with computer conferences, fifteen topics or 'threads' emerged, some more popular than others. Table 3 illustrates the way in which a discussion even within such a short time scale can take up such a wide range of themes.

Table 3: Threads in the Computer Conference

| Thread | Messages | Thread | Messages | Thread | Messages |
|---|---|---|---|---|---|
| Introductions | 10 | Moderators and tutors | 8 | First message | 5 |
| Replying | 9 | Globalisation | 7 | Closing off techniques | 4 |
| Identities in Europe | 8 | Surfing the net | 6 | Other (7 different topics) | 12 |

With regard to the social dimension of the programme, there was evidence of cultural differences between participants and the use of humour to overcome these differences. For example, one participant in discussing the way in which introductions should be made stressed his dislike of excessive informality, writing 'I do not want to know what the writer had for dinner or what colour their dog is'. However, another student writes 'I'm living with my husband, a dog (I don't tell what colour it has) and a cat....

The presence of the 'lurker' in computer conferences is widely acknowledged. This is the individual who reads all contributions, but makes no direct personal input. In this conference, all participants contributed, although there were differences in number of contributions, ranging from two messages from one participant to ten from another. While the numbers are not significant, it may be of interest to note that the male tutors sent an average of 7.67 messages compared with an average of 5.2 for females.

As mentioned above, the moderator sent almost 30% of messages. These messages illustrate the main function of the moderator in providing direction, summarising, and

encouraging discussion, and opening and closing the session and dealing with technical difficulties. The construction of 'weaving comments' is regarded as an important role of the moderator to ensure that discussion is structured and meaningful. This technique involves summarising the discussion, and selecting comments from various messages, to compare approaches, and to highlight significant points. For example, in summarising the discussion on introductions, the moderator weaves together comments made by three of the participants as follows: 'It's interesting that X asks whether 'institutional cultures are so deeply riven that we only speak in the manner in which we have been inculcated'. Y tackles this question when he indicates that he would 'choose a rather formal way to communicate' . Z compares the search for the right tone to the situation faced by classroom teachers, and he refers to the needs of the students....'

This example of a relatively brief computer conference has illustrated some of the complexities involved in supporting such conferences. Within five days the moderator was required to process almost fifty messages from participants, compose suitable 'weaving comments' and direct the discussion from beginning to end. The level of involvement required on the part of the moderator/tutor differs significantly from that required in a face to face tutorial which has a well signalled beginning and end in terms of time commitment.

**Conclusion**

The motivations for introducing computer based on-line systems in course programmes vary considerably. In some cases, as in the case of small groups dispersed over a wide geographical area, there is no other cost-effective alternative. Also, the flexibility of access to the medium, being independent of time and place is very attractive to adult students carrying the burden of busy occupational and domestic schedules. Yet computer conferencing is also being promoted for students on campus who are not subject to these disadvantages. For example, Newman et al (1996) describe how computer conferencing was introduced in 1992 as an alternative to face-to-face supported seminars when lecturers at Queens University Belfast became concerned at increasing class sizes leading to groups of 30 and more, which led to reduced participation in discussion. It was hoped that CMC would support discussion among students without increasing the lecturer's time. However, it is now generally agreed that participation in computer conferencing takes up more of a tutor's time than the equivalent in face to face tuition (Berge and Collins, 1995). The question is who pays for this increase in time? The evidence to date is that institutions rarely reimburse academics for the extra time involved in preparation and support, expecting this work to be absorbed within the normal workload. In this case, either the academic must carry the extra burden by working longer hours, or must divert from other tasks. However, for distance learning systems which employ tutors on a part-time hourly basis, the cost implications are potentially greater, unless some method is found to curtail the time spent.

The implications for students are also significant. Participation in computer conferencing requires access to hardware and software on a specific platform. Institutions may provide such facilities to their on campus students, however,

disadvantaged students outside the campus are presented with another barrier to participation. Even where facilities are provided in local centres, technical difficulties can cause problems, as in a UK based pilot programme in local history using FirstClass. 'One student commented that it would be easier to pick up the phone at home and call the tutor, rather than come into the centre to send a message, although they were prepared to try it for the purposes of the pilot' (Funnell et al, 1999). The managers of this project cited problems related to unreliability of technology; student reluctance to use the technology, and staff inexperience with telematics and concluded that the amount of staff time is extensive, time spent giving technical support to students is costly and while more telematics training could be given to students, but this is an additional cost in itself.

In summary, as with any approach, whether based on traditional methods, or on the new technologies, the key components for successful application are widely agreed to include the match between the medium, the teaching style, student characteristics and course content; overall course design; and most crucially, the presence of a skilled tutor or facilitator (Eastman, 1992). Computer conferencing is a very valuable tool, but like all tools must be fit for the purpose. In selecting this tool, consideration must be given to the full range of options available, and to take into consideration the implications for staff, students, and institutions alike.

**Acknowledgement**
The author would like to thank Ms Sarah Tolley, and Ms Margaret Winck, DIFF, for access to data on the CEFES tutor training programme.

**References**

Berge, Z and Collins, M.P (eds) 1995 *Computer mediated communication and the on-line classroom in distance education* Cresskill, NJ: Hampton Press

Collins, Mauri and Zane Berge *1996 Facilitating interaction in computer mediated online courses:* Background paper for presentation at the FSU/AECT Distance Education Conference, Tallahasee, Florida, June 1996

Eastman, Daniel V. 1992 Effective facilitation of computer conferencing *Continuing Higher Education Review* 56, no 1-2 pp23-34

Funnell, Peter, Goddard, Sharon and Mackay, Marianne 1999 Case study of the delivery of a telematics-supported local history undergraduate module through a local learning centre in Lack, Kelvin, Ellie Chamber and Carol Rowland (eds) *humanITies: Information technology in the arts and humanities: present applications and future perspectives* Milton Keynes: Humanities and Arts Higher Education Network

Mason, Robin 1989 Moderating educational computer conferencing in Mason, Robin and Anthony Kaye (eds) *Mindweave: Communication, computers and distance education* Oxford: Pergamon Press

McNeil, Donald P 1992 *Computer conferencing: the causes for delay. In Empowering networks: computer conferencing in education* In: Michael D Waggoner (Ed)Englewood Cliffs N.J.: Educational Technology Publications pp195-213

Moore, Michael 1993 *Theory of transactional distance* In: Keegan, Desmond (ed) Theoretical principles of distance education New York: Routledge pp 22-38

Newman,D.R, Chris Johnson, Clive Cochrane and Brian Webb 1996 An experiment in group learning technology: evaluating critical thinking in face-to-face and computer supported seminars *Interpersonal Computing and Technology: An Electronic Journal for the 21st Century* Vol 4 No 1 pp57-74
Schwan, Stephan and Hessse, Friedrich 1996 Communicating and Learning in 'virtual seminars': the uses of spatial metaphors in interface design Journal of Universal Computer Science, 2, pp503-513

**Useful Web Addresses for On-Line Moderating and Tutoring**

Davie, Lynn 1989 Facilitation techniques for the on-line tutor in Mason, Robin and Anthony Kaye (eds) 1989 Mindweave: communication, computers and distance Oxford http://www-icdl.open.ac.uk/mindweave/mindweave.html Chapter 6
Mason, Robin and Anthony Kaye (eds) 1989 Mindweave: communication, computers and distance Oxford http://www-icdl.open.ac.uk/mindweave/mindweave.html
The moderator's Home Page (Mauri Collins and Zane Berge) http://star.ucc.nau.edu/~mauri/moderators.html
Moderating educational computer conferences – Deosnews 1(19) (Robin Mason) http://star.ucc.nau.edu/~mauri/papers/mason.html
The role of the online instructor/facilitator; The role of the moderator in a scholarly discussion group (SDG) (Zane Berge) 1996 http://star.ucc.nau.edu/~mauri/moderate/teachonline.html
Paulsen,Morten Flate: Moderating educational computer conferences, http://www.nettskolen.com/fagart/20/moderating.html
American Center for the Study of Distance Education. Best practices of Computer Conferencing in distance education http://www.cde.psu.edu/ACSDE/BPExecSum.html
Paulsen, Morten Flate. The Online Teaching System. DEOSNEWS Vol 8 Nov 7 1998 http://www.cde.psu.edu/ACDSE/
Barrera, Aida Distance Education: The challenge for a multicultural society http://www.ncbe.gwu.edu/...incbepubs/focus/focus8.html
Holt,M.E, Rees, F, Swenson, J.D. Kleiber, P.B. Evolution of evaluations for critical, reflective and deliberative discourse: National Issues Forums On-Line http://www.coe.uga.edu/adulted/faculty/mhold/paper1.html
Catherine Edwards and Michael Hammon: The JITOL project http://www.shef.ac.uk/uni/projects/jitol
University of Maryland. Faculty strategies for engaging online learners, http://www.umuc.edu/ide/strategies/index.html

# A 'sense of belonging' in distance learning: how far can a quality experience be achieved through the new technologies?

**Elizabeth Manning, The Open University.**

## The decision to apply to university

Students of school leaving age in the UK feel under pressure to apply to university. They are told they are more likely to get good jobs with a degree, they have a greater chance of facing unemployment without one, and in the past few years it has become easier to enter university - particularly a newer university - with less than average entry qualifications. Many, however, drop out because they have drifted onto a particular course without really knowing much about it and soon find they are not interested in it. It is early for many to have to make such specific choices and they enter university for want of anything else to do at that stage of their lives. Mature students, on the other hand, have made a definite decision to apply to a particular university for a particular course, and that decision may have taken a long time to make. Experience in the Open University (UK) suggests that a substantial number of students request an application form on several occasions before finally registering on a course. What makes them finally come to a decision at that particular point? If it is the result of a life-changing event such as retirement, divorce or onset of ill health, which is often the case, they may bring baggage with them that will sooner or later threaten their studies. To register for a course is often a courageous decision, especially for people who have had a previous bad learning experience or who have few educational qualifications. In making that decision they are making a firm commitment.

## Becoming a 'member'

Once they have registered for their course and paid the fee, students become a member of that particular institution (in the case of a distance learning institution, it may be the method which suits them as much as its reputation or status): in other words, they belong to it. The commitment then becomes two-sided: both the student and the university have responsibilities to each other. At a very basic level, the student undertakes to abide by the regulations, submit work as required and sit any examinations. The university provides the services to help that student succeed in his or her studies. It is significant that institutions of higher education in the UK currently issue Student Charters which set out these responsibilities. These are subject to increasing rigour as a result of pressure from government via the primary funding agencies.

Belonging to a university, however, is more than belonging to a particular bank or book club. It is in the interests of both the institution and the student for the latter to have a positive, rich experience. The university prides itself on its reputation for providing that quality experience, which in itself becomes a marketing tool. Its academic and advisory staff also gain pleasure and satisfaction from helping their students develop and grow, knowing that their contribution has had a part in this development and growth. This is certainly the case in distance learning where students are so highly motivated risking more and succeeding against the odds of time and family and work commitments. The dedication of adult students explain why so many tutors with the Open University have remained with the University for so many years, despite relatively low financial reward and opportunities for career progression.

Thus 'belonging' means more than just a basic commitment. In the words of one student, asked if she felt she belonged to the Open University, 'Yes, because I felt cared for'. This fits in neatly with Maslow's hierarchy of needs theory (Maslow, 1970), where 'belonging' involves the individual feeling part of and accepted by the institution, with the result that he or she feels valued and cared for. But being valued on a one-to-one basis, as opposed to just a number, is only part of the picture of belonging. Being part of a learning and a social community is the other.

**Barriers to a sense of belonging in distance learning**

In the industrial model of distance learning (Peters, 1983), a number of barriers would appear to militate against a student's sense of belonging, compared with the experience in a conventional university. The following points illustrate why such barriers can exist: What are students belonging to? A former Regional Director of the Open University has referred to the institution as being The University of the Thin Air. There is no visible presence (the 'campus' with its library are at the centre: Milton Keynes, Hagen or Heerlen, for example) and where meetings take place for the Open University they are usually in another institution's premises, which are often lacking in the much sought-after 'ambience' appropriate for small group discussion.

Students spend most of their time studying on their own in their own time. Each one is a lone individual among thousands of others. It would be easy for them to feel just a number. For instance, in any contact with the institution, Open University students are asked to supply their personal identifier number, a necessary administrative requirement to access not only their history with the institution but any record of previous advice and guidance. Care is therefore necessary to ensure that the enquirer given a personal service.

Significant cohorts of students live remotely, either in the middle of an underpopulated rural area or because they are part of an overseas scheme where there are still relatively few students. Not only are they unlikely to see other students, they are also unlikely to meet with their tutor: 'In 1996 50 miles became 500, I have yet to meet either my second- or my third-year tutor, and I am living in a part of Germany in which (so far as I am aware) there are no other OU students within a radius of 30 miles' (Bennett, 1998, p 52).

They are one step removed from the authors of their course materials, whom they are unlikely to meet, except at perhaps a residential school. This is a point raised in a discussion document by the Danish Ministry of Education investigating in 1992 the opportunities offered by the new technologies in education: in 'the clear desire ... to combine flexibility in time and place with a sense of belonging to a group stemming from a shared subject-related frame of reference', it is suggested that 'this sense of belonging is not the case abroad [because] the student... works alone with the subject-matter but with regular opportunities for teacher contact - usually someone who was neither involved in the development of course materials nor was responsible for the organisation of the course' (Danish Ministry of Education, 1992, pp84-5).

In the case of the Open University, those from different cultural backgrounds have to cope with the British educational system as well as a certain amount of anglo-centricity in course content, ' which inadvertently assumes familiarity with UK social institutions, climate and vegetation, cultural heritage, etc.' (Manning and Mayor, 1999).

Those students who are in full-time employment and/or who have family responsibilities find the extra demands of study increasingly untenable. If they are to make progress - recent research in the Open University shows that time constraints and workload (Ashby, 1998) are the main reason for drop-out - time spent with their tutors and other students may not be their top priority if they are to keep on top of the reading and preparation of assignments.

**Opportunities for support**

So what student support systems are in place in the distance learning situation; how might they fulfil a student's feeling of belonging, and how is this achieved?

First, there is the one-to-one relationship between the student and the tutor or counsellor. The following example illustrates both good and not so good practice: a student telephoned her counsellor to ask whether it might be possible for her to change her course tutor because she felt the latter was not explaining sufficiently through the correspondence tuition where she was going wrong and where she might improve. When she telephoned her tutor- at a time designated by the tutor as appropriate - to ask for advice, she felt she was treated brusquely and came away none the wiser. The counsellor received a card from the student shortly afterwards, saying 'Thank you for yesterday. You were there (just as you always are) just when I 'really' needed to hear a friendly voice down the end of the telephone! I really do appreciate it.' The counsellor had made her feel that she mattered and that she was worth spending time on. This is the kind of service which the Open University's regional advisory services also aim to provide, despite the fact that they are unlikely personally to know those who contact them.

Other support elements involve group activity and may or may not include tutorials or day schools , induction meetings, special sessions to support specific learning skills development, residential schools, self help groups, even open days. All of these involve the student in being part of the learning and social community referred to earlier. It is interesting that one of the biggest occasions in the Open University year occurs at the very end of a student's career with the University. This is the Degree Ceremony, which, with all its paraphernalia of the most traditional kind, is the most positive confirmation of the student's belonging to the institution. The advantages of such belonging have been described by Moller (1998, p.116) as providing social reinforcement as well as information exchange. In the former context, 'social presence is significant in affecting satisfaction and achievement'. A similar point is made by Tait (1996, pp.59-60), in his article on Conversation and Community in relation to student support. He refers to 'fundamental human needs for interaction'.

*...conversation and community ... represent the notions of interaction both in process and values, as well as acknowledging the social dimension of relationships which exist through whatever medium, including the learner- learner as well as learner-tutor relationships.*

Above all, interaction leads to greater enjoyment and hence higher motivation and chance of success. The risk described earlier has been worth taking.

However, the above opportunities for social interaction, with the exception of residential schools, are optional, so students can choose whether or not to avail themselves of them. Often, for example, with increasingly severe time constraints, the student has to set priorities and decide whether it is better to spend an evening travelling to a tutorial or catching up on reading the course materials. This explains a fall in attendance at tutorials in the Open University: 'unless a task is compulsory, some will ignore it no matter how important it is for effective study' (McDowell et.al, 1999, p.2). If the occasion is optional but 'official', there is more likelihood of participation than if it is 'unofficial' which explains why take-up at Students' Association events is poor despite the enthusiasm of the organisers. It may be a more complex decision than this.

Students who are confident in their ability, who may have previous qualifications and who are studying to update their career, may have less need for the stimulation or reassurance of social interaction. After all, they are likely to get plenty of stimulation at work. 'Second chance' students, on the other hand, with few, if any previous qualifications, are likely to have less confidence in their abilities. The amount and quality of the support are crucial, covering not only their learning but their own personal development, increasing their self-esteem.. These are also students, unlike the above cohort, who have never experienced life as a conventional student and who need to make the most of any social opportunity on offer. They may thus have different priorities and look to the Open University for different things. This package of support services is available not only in response to students' learning needs but also to their varying need to feel part of the university social community. Most, if not all, students in some way want to feel that they belong to their university, but the extent of that feeling

depends on a range of factors, including their educational and social backgrounds, personal circumstances and expectations.

Tensions can arise when the need is there, but the need cannot be satisfied, as the following matrix illustrates:

| | |
|---|---|
| Want to/can participate<br>No problem | Do not want to/can participate<br>No problem |
| Want to/cannot participate<br>Problem | Do not want to/cannot participate<br>No problem |

Where there is no problem, the sense of belonging is not compromised. Where there is a problem, students can experience a 'feeling of disengagement' (Bennett, 1998, p.59) or even alienation. While not denying such feelings of frustration, they can arise because of students' perceptions. Students studying in the Open University's European scheme, for example, can feel as though they are 'missing out', imagining that home students enjoy a different status with the institution. Expatriate students may have moved to continental Europe from the UK and be used to regular face-to-face tutorials which are just not possible to arrange in their new location because of the wide scatter of students; others learn about tutorial programmes when they travel to residential schools. Publicity material continues to give an unrealistic picture of face-to-face tutorial provision. Sometimes student expectations are wildly optimistic: 'Is a big problem for me [sic] when I am unable to communicate with my tutor daily or at least weekly...' (Spendiff, 1998, p.16). Their perception of the importance of such meetings means that they sometimes travel huge distances to attend. It is not unknown for a student to leave home at 2.a.m. to arrive at a tutorial the other end of the country at 10.00 a.m.. But they need no longer feel that they are on the sidelines of the Open University community because of the expanding opportunities offered by the new technologies.

**Opportunities offered by the new technologies**

Sir John Daniel, Vice-Chancellor of the Open University, has differentiated, in an internal policy document, between the 'classic' OU, with its postal delivery of material and tutorial programme, and a new 'OU on-line' where course delivery and support would be accomplished solely through IT. A small number of purely on-line courses is already being introduced. Such a development is particularly appropriate for the Open University's expansion into new global markets. There is a danger here, however, that student support could suffer. There is a half-way house between these two poles. It is not a matter of 'either/or'. Just as students have a choice which support 'packages' to make use of, their choices being determined by their circumstances, so do they have an increasing choice about the medium of that support. Each medium has its advantages

and disadvantages, and students are being given increasing opportunity to use a combination of whatever seems appropriate.

For individual advice and guidance when students' personal circumstances are affecting their studies, email can be too impersonal and not sufficiently immediate. A telephone call or face-to-face meeting, where non-verbal cues can be taken into account, is both more prompt and reassuring. 'email is better than post, i.e. more instant, but no substitute for eyeball contact' (Hurley, 1999 p.4). If students are struggling with a specific aspect of a course, they can explore the issues on a one-to-one basis with the tutor or another student or with a group of students, with or without the tutor. Although possible through email, the sense of audience is more diffuse and the awareness that others may be 'lurking' may be threatening for an unconfident student.

The relaxed atmosphere of a face-to-face tutorial, where students feel comfortable with one antoher, is generally considered the ideal: 'Nothing can replace face-to-face. Tone of voice, dynamic and facial expressions, e.g. eye contact, serve to enhance communication' (Hurley, 1999, p.4) The importance of this interaction is heavily emphasised by conventional universities, who cite the opportunities for immediate personal contact as a quality issue.

In a distance learning environment such opportunities may be few and far between and inevitably involve time in travel. A computer-mediated conference, such as FirstClass, on the other hand, has the advantage of being available all the time. 'No matter what time I log on, there is always someone on line that can help me if I'm stuck or if I'm feeling down.' In this latter instance, like the tutorial, it is fulfilling a social as well as a learning function. 'Empathy is a key ingredient in many support groups..' in online communities (Preece, 1998, p.33). The student who made the above comment takes advantage of both computer-conferencing in its synchronous mode and face-to-face tutorials and admitted that, with access to FirstClass, she now feels much more as though she belongs to the institution. The asynchronicity afforded by this medium allows for more time for reflection and convenience of input. The purely social aspect of computer conferencing, with its cafés and chat lines, is clearly important for some students who want more than purely academic discussion. The range of topics, from current political events to the latest developments in UK soap operas, parallel the common room or late-night discussions which students in conventional universities engage in and which bond them to their institution.

**Case study: methods of induction**

A brief case study will bring these various strands together. The regional centres of the Open University have long provided new students with an introduction or induction to the University just before the start of their course, usually in the form of informal meetings in a friendly environment. The OU in the North (which also operates the OU's European scheme), has offered a preparatory day, which includes a formal welcome, a 'getting to know each other' session, followed by a number of skills workshops. There is also chance for relaxation with refreshments and a chance to reinforce the personal

contacts made during the course of the day. The primary aim, however, is to confirm to them that after several months of waiting they are joining an institution that is pleased to welcome them and that they are joining something worthwhile. 'That was when I really felt I was part of something big. All these people doing the same as you', was the comment of one student. Feedback has constantly shown that the most valued aspect of the occasion has been the opportunity to 'meet other students and staff'. There is evidence that some travel huge distances to attend (for example, travelling overnight from Marseilles for a meeting in Paris). Not all students want to attend, and there is no pressure on them to do so. Others, according to the above matrix, want to but cannot. Paper versions of the workshops are sent to those who request them, but to compensate those who miss out on the social aspect, the Region has developed a 'virtual preparatory day' on the web, enabling them, for instance, to share their expectations and apprehensions in much the same way as those attending the sessions for real. Feedback from this project has been positive, and it has the additional advantage of reaching students throughout the whole University (and beyond).

**Conclusion**

If one accepts that enabling students in distance learning situations to feel a sense of belonging is an important factor in their motivation, enjoyment and retention, face-to-face support is no longer the only important way of achieving this. It will continue to be the most desired way for many students, but others are gaining confidence in and recognising the efficacy of the increasing multi-media resources which incorporate 'highly interactive communications technology along with the ideal of both personalised and collaborative learning' (Garrison, 1997, p.3). The variety of support is still available; it is up to the individual student to choose whichever medium is most appropriate for his or her needs.

**Bibliography**

Ashby, A. (1998), 'Withdrawal Questionnaire Analysis – June 1998 report', SRC, IET, Open University internal document.

Bennett, P.G. (1998), 'The heart of distance learning: a student's perspective' in *International Journal of Lifelong Education,* vol.17.no1. January-February 1998, pp.51-60.

Garrison, D.R.(1997), 'Computer-conferencing: the post-industrial case of distance education' in *Open Learning,* vol.12, no.2, June 1997, pp.3-11.

Hurley, M.S.(1999), 'Tutors and Students on-line', internal Open University research project, unpublished.

Manning, E. and Mayor, B.M. (1999), 'Open and distance learning in a cross-cultural context', paper delivered to the ICDE Conference, Vienna, 1999.

Manning, E. and Ward. B. (1998), 'Distance learning and student preparation: using the internet as partner', in *Journal of Access and Credit Studies,* vol.1.no.1, Winter 1998, pp.78-82.

Maslow, A.H. (1970) *Motivation and Personality*, New York, Harper and Row.

Moller, L. (1998), 'Designing communities of learners for asynchronous distance education' in *Education Technology Research and Development,* vol.46.no.4, pp.115-122.
Olgren, C.H. (1998) 'Improving learning outcomes: the effects of learning strategies and motivation' in C C.Gibson., *Distance Learners in Higher Education*, Madison, Wisconsin, Atwood Publishing, pp.77-95.
Peters, O. (1983) Distance teaching and industrial production. A comparative interpreation in outline. In Sewart, D., Keegan, D. & Holmberg, B. (Eds.) *Theoretical principles of distance education* (London, Routledge), pp.98-110.
Preece, J. (1998) 'Empathic Communities: reaching out across the web' *Interactions,* March-April 1998, pp.32-43.
Sewart, D.(1993) 'Student support systems in distance education' in *Open Learning,* Vol.8, no.3, November 1993 pp.3-12.
Tait, A. (1996), 'Conversation and community : student support in open and distance learning' in R.Mills and A. Tait (eds.) *Supporting the Learner in Open and Distance Learning* (London, Pitman), pp.59-72.
*Technology-supported learning (Distance Learning) Report, No.1353, Danish Ministry of Education (1992).*

# NEW TECHNOLOGY IN DISTANCE AND OPEN LEARNING IN NAMIBIA: IDEALS AND REALITY.

**Delvaline Lucia Möwes,**
**Centre for External Studies, University of Namibia**

## Introduction:

One of the most obvious and important facts of distance education is that it is dependent upon technology to exist as a means to educate. Since education takes place at a distance, some medium of communication must be employed to bridge that distance. However, the media employed in distance education are extremely varied and not necessarily complex or sophisticated. Learning can take place via any medium and the choice is determined by its appropriateness to the material, the cost of delivery, the availability of facilities to both the delivery institutions and its students, and the number of students who will take the course. In many applications, print, postal, telephones and broadcasting provide a reasonable means for communication to take place and no measurable enhancement of learning is gained by utilizing more sophisticated or expensive media. Despite the emphasis that is being placed on emerging electronic technologies, the method is not confined to expensive programming and delivery systems, nor is it accurately represented by them (www.outreach.psu.edu/de/de_tf.html).

However, the emerging advocacy for distance education both nationally and internationally is due, in large measure, to the increased potential of the methods that are being created by new technology and the enhanced capacity for efficient and wide-spread use of distance education through advanced electronic delivery systems. The technologies of communication, which lie at the core of distance education, are advancing at a rate unimagined in even the recent past. Although distance education is but one small part of technological revolution that is reshaping human communication, it is a central focus of that revolution and does offer enormous potential and opportunity for higher education (www.outreach.psu.edu/de/de_tf.html) . According to a recent task force on distance education in Pennsylvania State University, of particular benefit to higher education is the enormous potential that exists in multi-media, interactive programming, and digital-based delivery systems that are rapidly becoming available, at least in industrialized countries, for wide-spread use and application. Multi-media capabilities in instruction are expected to significantly enhance and expand learning opportunities for students. The interactive capabilities of both program and delivery systems allow for feedback, dialogue, and on-going assessment that are impossible in all but the most localized and direct applications of resident instruction. Emerging delivery systems offer the potential to extend the reach of education beyond all constraints of time and place and carry it into the work place, the learning center, and the home. In

short, the quality, management, access, availability, and efficiency of education can advance significantly through the use and application of technologies, particularly those of distance education, in service to learning.

The University of Namibia's Centre for External Studies regards it as a challenge to use the technologies of communication in specific ways to advance its own unique mission to make education accessible to all members of the community with a view to uplift their education and technical know-how through the provision of distance education programmes. The Centre has acknowledged and realized its obligation to and the advantages of the use of modern educational information and communication technologies (ICT) in the delivery and tuition of its distance education programmes. According to Alvarez (1996), technology can open doors for students that they did not even know existed. Institutions that do not expose their students to the proper use of technology are cheating them, and their students leave ill equipped for the society of continual learning into which they move (Alvarez,1996). However, it must be noted that at present most distance education students in Namibia do not have access to such technology.

The use of modern educational ICT has changed the way in which teaching and learning will be done in the future. This is true for both the developing and developed worlds - although the rate of deployment of new technologies is lower in developing countries. There are, however, some fundamental differences in the way in which educational change towards technology is approached and implemented between the more advanced countries and the developing countries. For developing countries, the primary emphasis at present must be upon acquiring infrastructure, such as telecommunication infrastructure, hardware, software, and networks. Only then can attention be given to their application to educational and training needs.

Institutions that make use of modern ICT in their teaching and training can be said to engage in "virtual teaching activities" and can be classified as "virtual institutions" (Naidoo and Schutte, 1999). However, all such virtual activities in the Centre for External Studies are limited to the experimentation level or in the initial stages of implementation because of infrastructure problems, which, in turn, are caused by lack of funds. This paper focuses on the uses to which ICT has been applied in the Centre for External Studies to date and plans to apply it in the near future.

**Background:**

The Centre for External Studies, with its administrative seat in Windhoek was established in 1993, when the new University of Namibia (UNAM) was set up after independence. The University's first five-year development plan committed the University and the Centre to a vigorous expansion of education away from the campus and one of UNAM's key goals and responsibilities is to reach out to the previously marginalised and disadvantaged people, and to assist them to continue their education

through the University's Centre for External Studies. The key mission for the Centre is "to cater for the needs of persons who, for various reasons, cannot come to study at UNAM's campus in Windhoek".

In the light of this policy the Centre was established to set up a general university outreach network and system, whereby the resources of the national university could be made more directly available and relevant to the needs of society as a whole than is achieved through full-time formal qualifications, and to develop a range of external degrees and other non-formal outreach activities to meet human resource development needs of the newly independent Namibia (Dodds, 1999). The Centre operates through nine regional university centres throughout the country, one of which is in Oshakati where the University has opened a new northern campus. The new campus will facilitate the University's extension of educational facilities and opportunities to the majority of the Namibian population who live in that region and who were the most disadvantaged under the apartheid regime.

The Centre now offers three external degrees, the Bachelor of Nursing Science, the Bachelor of Education, the Bachelor of Business Administration and an Education Diploma in African Languages. A new Access programme has been established initially through the Northern Campus in Oshakati to help a larger proportion of the population of these regions to get access to tertiary education. It is aimed particularly at students in rural areas. The two national Ministries of Education are currently negotiating with UNAM to commission the Centre to take over the management and distance education delivery of the in-service Basic Education Teachers Diploma, the main national primary school teacher upgrading system.

The Centre has about 1300 students, mainly within the borders of Namibia. They range from those living in the poor, rural, and non-electrified areas, to the capital city and towns with good infrastructures and telecommunications. The Centre has about 35 full-time administrative and academic staff, whith 150 part-time staff, contracted annually. The Centre has an extensive modern computing system, networks, and other electronic equipment to handle all parts of its operation. All staff members who need a PC have one and all are connected to the Internet, accept some of the staff in the regional centres.

**The Challenge:**
The diverse nature of the student body presents a dilemma for the Centre: it would like to teach through the modern educational ICT, but many of its students do not even share in advantages of telecommunication infrastructure. It cannot proceed out of a feeling of fairness to all its students, and it cannot stagnate or it will experience erosion. As

McClure (1996) stated:

*"any institution that decided to 'opt out' of support for information technology*

*would be educating people to live in a world that no longer exists".*

Moreover, the 1995 World Bank Report: "Increasing Internet Connectivity in Sub-Saharan Africa: Issues, Options, and World Bank Group Role" has this to say about the Internet and Africa (www.worldbank.org/aftdr/connect/incrint.htm):

*" Africa needs to seize this opportunity, quickly. If African countries cannot take advantage of the information revolution and surf this great wave of technological change, they may be crushed by it. In that case, they are likely to be even more marginalised and economically stagnant in the future that they are today. Catching this wave will require visionary leadership in Africa".*

These citations highlight points about the importance of ICT for education, training, and the social and economic uplifting and empowering in Africa. However, this will have to be measured against the harsh realities found on the African continent.
The University and the Centre itself have modern computing, telecommunication, and other infrastructure at its campuses in Windhoek and Oshakati, needed to make this transition to technology-enhanced distance education. However, it is almost hobbled by indecision about its role in the world of modern telecommunication and computing, since it knows that most of its students are not yet equipped to take advantage of or make the transition. However, it is paving the way with its virtual arm, which still does not form a part of its main operations, but does make it ready for its task. At the same time, this virtual arm benefits only those students with access to the required technology, such as Internet connectivity. It is highly likely that in the near future such access will be institutionalized access in regional centres, local study centres or the work place.

The University and the Centre have opted to move towards virtual education by a series of steps that are designed to test the use of technology and to encourage the staff to participate. There are three areas in which the University and the Centre are making progress:

- Audio- and Visual aids
- Tele- and Video conferencing
- Internet and e-mail information services in the library and regional centres.

**Audio- and Visual aids:**
The Centre produces audio cassettes for various courses to enhance the printed study material. In addition, a small number of courses are augmented by video cassettes.
Tele-and Video conferencing:

The University is part of the African Virtual University project, whereby a group of higher educational institutions share the delivery of lectures via satellite by knowledgeable world-class lecturers, supported by good ground staff. Currently, only

residential students benefit from this project and plans still need to be implemented to let distance education students benefit as well. According to Naidoo and Schutte (1999), findings from this project are that it is possible to:

- Set up a virtual university in Africa, using very advanced communication technology.
- Obtain collaboration on state level and on university level between different African countries.
- Synchronise the same courses in the timetables of the different universities in the different countries.
- Use well-qualified lecturers in more advanced countries to deliver the courses.
- Train local staff in assisting these lecturers at local sites.
- Use the most advanced technology without losing the students who are not used to the technology.
- Use a common language (English) to deliver the lectures without any real communication problems.
- Prove that the operation can be financially viable, even in such esoteric subjects as mathematics because of the economy-of-scale affect, summed over the various download sites.
- Prove that the technology is stable and that its equipment can be used over long periods in non-industrialised areas of Africa.
- Prove that it is one of the ways in which to accelerate the production of graduates in subjects that are difficult to teach at the level of single states because of the lack of suitable qualified staff.
- Prove that this technology and methodology can be extended to other subjects and fields of study, for instance, the medical direction, since Africa urgently needs more qualified doctors, nurses, and health officials.
- Prove that Africa can leapfrog the paper age into the information technology age without showing any signs of stress and strain. Naidoo and Schutte regard these findings as remarkable indeed.

In an attempt to support and strengthen correspondence education, the Centre embarked upon telephone-based educational technologies, since even in the remote areas of the country, 60% of students do have potential access to a telephone, often at a school in the area (Dodds, 1999). Dodds (1999) further stated that "two-way contact, with tutors or with other students, increases the control that students have over their learning, offers a way of overcoming study difficulties, and raises educational effectiveness. In addition, telephone-tutoring is made possible and can be implemented effectively, since the administrative system of the Centre provide individually assigned tutor-markers.

**Possible forms of telephone tutoring can be described by means of three dimensions:**

One-to-one student-tutor calls: students are invited to telephone their tutors after an announcement on the hours when tutors would be available to accept calls, and the number at which the calls would be taken. If circumstances merit it, the Centre is prepared to pay tutors for their personal time spent telephoning their students, otherwise the stipend which tutors are being paid includes telephone contact with students;

Regional Centre-Based conference calls, linking a group of students at a centre with a tutor;

Home/Work-Based conference calls linking up students at several places with a tutor which still needs to be put in place.

**Internet and e-mail services:**

The main problem that students experience is lack of access to the Internet, since only Windhoek- and Oshakati-based students have access via their respective libraries. However, plans are underway to connect all regional centres which will enable wider access. Despite this wider access, many students will still not benefit, since CES students are very wide spread and some live approximately 100km from their regional centre and from each other. More and more schools are also being connected to the Internet and it is assumed that they will realise this could generate income for the school if their connectivity is used commercially after hours.

In addition, the Centre is increasing its collaboration, especially in the provision of tutorial and student support services, with open and distance learning institutions at regional level. Surely, this will lead to cost-effectiveness, since more technology will be available to permit growth in many different ways.

**Conclusion:**
No one seems to doubt that the development and deployment of information and communication technologies will have a profound impact on access, institutional functioning, and the teaching and learning process. Furthermore, in the conventional distance education environment, the technologies being adopted to improve the learning process through interactive and collaborative learning, reduce the learners' sense of isolation. However, tutors and administrators have many questions and concerns about how to use it. Also, evidence suggests that most CES students do not have access or might not have access in the immediate future.

The emergence of virtual education is directly linked to the development of, and access to, information and communication technology infrastructure. However, major socio-economic and geographical disparities exist in such access. This disparity is perhaps the most critical issue of virtual education, because those without access are likely to be increasingly disadvantaged in acquiring skills and knowledge.

Namibia has come through a period of repression and separation into the 'haves' and 'have nots'. Technology, however, has the ability to introduce a new kind of diverging separation into society: those who can afford it and become ICT literate, and those who cannot. The Centre is therefore caught in a dilemma. If the Centre introduces courses that are heavily reliant on ICT for the mode of delivery, many students with no access to such technology are and will remain at a distinct disadvantage.

In addition, the cost of implementing high quality virtual models constitutes a major constraint, even if it is believed that ultimate savings are possible through standardisation, resource sharing and increased productivity. The cost of initial hardware, operating software, and instructional material development typically require capitalisation funds that far exceed the resources of the Centre.

At present, the most common applications of ICT are found in administration purposes such as enrolment, student records, student administration, and fee payments; materials development and distribution; and where possible, student tuition in the form of student-student and student-tutor interaction.

It is thus clear that the development of the use of the most advanced ICT to facilitate student access and to support students in their studies in the University of Namibia and in the Centre for External Studies in particular, is still experimental, rather unfocused, and not necessarily matched to clientele learning needs.

References

ALVAREZ, L.R. 1996 . Technology, Electricity and Running Water, *Educom Review,* Vol. 31, No.3, p2.

DODDS, T. 1999. Proposal to National Lottery Charities Board to equip ten centres with telephone-based equipment and train staff in its use and in ways of supporting students at a distance.

McCLURE, P.A. 1996. Technology Plans and Measurable Outcomes, *Educom Review,* Vol. 31, No.3, p4.

NAIDOO, V. and SCHUTTE, C. 1999. *Virtual Institutions on the African Continent.* Available from http://www.col.org/virtualed.

# Still 'Getting the Mixture Right': Increasing Interaction on the Internet

**David Murphy**
**Monash University, Australia**

## Abstract
This paper revisits the notion of 'getting the mixture right', addressing the challenges that we currently face with the introduction of new and emerging information and communication technologies. In part, the paper will examine how the Internet seems to be used by distance educators and others in attempting to achieve a balance between independence and interaction. The claim is made that thus far most courses have failed to truly integrate the interactive and independent aspects of online study. An example is offered of a course at Monash University that offers new possibilities in the integration of interaction into an online teaching and learning environment. The course makes use of a software tool, *InterLearn*, which allows students to read each other's work and collaborate in forming a shared understanding of ideas and concepts. The notion of a constructivist approach to learning thus underpins the development. The software has been applied to the first subject of Monash University's Graduate Certificate in Higher Education during the first semester of 1999, and participant feedback is positive.

## Background
In one of those interesting articles with quirky titles in *Teaching at a Distance* back in the 1970s, Daniel and Marquis[1] played with the phrase 'getting the mixture right', referring to the mix between independent and interactive learning activities. The principal aim of the article was to address 'the difficult synthesis which distance learning systems have to effect between those activities in which the student works alone and those which bring him [sic] into contact with other people'.[2] Recognition was paid not only to the broad educational issues, but also to resourcing factors, with the claim that 'independent activities have greater possibilities of economies of scale' and 'the costs of interactive activities tend to increase in direct proportion to the numbers of students'.[3]

It was a timely discussion, alerting us to the challenges we faced in structuring and designing distance education courses. The challenges are of course still with us, with new components being emerging information and communication technologies on the media side, and the increasing efforts to create constructivist learning environments for our students on the pedagogical side. Distance education is of course not alone in facing the challenges, especially with the recent blurring of distinctions between it and other forms of teaching. In particular, the Internet is proving to be the common ground where teachers and students work to find better ways to achieve desired learning outcomes.

The aim of well-designed on-line courses is increasingly perceived as ensuring that they are student-centred, emphasising 'learners as constructors of knowledge, the importance of context in understanding, and the essential nature of experience in learning'.[4]

One of the most prolific writers about the role of constructivism in learning is David Jonassen, who, in discussing Constructivist Learning Environments (CLEs) states that:

*Contemporary conceptions of technology-supported learning environments assume the use of a variety of computer-mediated communications to support collaboration among communities of learners. ... Learning most naturally occurs not in isolation but by teams of people working together to solve problems. CLEs should provide access to shared information and shared knowledge-building tools to help learners to collaboratively construct socially shared knowledge.*[5]

The notion of interaction is clearly implicit in such claims, especially that within groups of learners, and is at least as important as the interaction between teacher and learner. Concerning Internet based learning, Tait[6] uses the words 'information' and 'support' instead of independence and interaction, but the meanings are essentially the same. The need for interaction is also the theme of collaborative distance learning for desktop multimedia environments, as discussed by Collis and Smith.[7]

**Interactivity in On-line Courses**

In a particularly engaging contribution that appeared in *Distance Education*, Roger Boshier and his colleagues at the University of British Columbia reported their analysis of 127 on-line courses.[8] The three variables of accessibility, interaction and attractiveness were used to distinguish the 'best' from the 'worst' web courses, and have provided a fruitful model for others such as myself to use in workshops dealing with on-line course design and development. They also provided an unfortunate academic with the ignominy of winning the 'Drab and Nameless Award for the Worst Dressed Course'.

What is instructive with respect to the work is to go to the URLs they discuss and try to ascertain whether the course comes from an institution with a background or association with distance education. In doing this (and by examining on-line courses in general) it seems that there are some apparent differences that arise as a consequence of links or otherwise with distance and open learning. First, it is noted that the winner of the 'Madonna Award for Best-Dressed Course' comes from the University of Wisconsin, an institution with a strong distance education history. The on-line materials show clear evidence of sound and careful educational and graphic design, and are well integrated with the other components of the course (broadcast/video and print resources). It reflects a considerable amount of preparation and writing, and although linked to other resources, provides the bulk of the learning material 'internally'. But even with all the accolade, the one key component noted by Boshier et al. that it lacked was interactivity between course participants.

There were examples of courses that rated well that were from institutions with more traditional backgrounds, and these often exhibited key differences. For example, a geology course from the University of Texas was warmly commended for its engaging activities, such as the requirement to visit linked sites (such as the US Geological Survey) to locate an earthquake that has occurred within the last 24 hours. Its readily apparent weaknesses, such as difficulties with navigation and poor graphic design are outweighed by its creative use of outside links, and innovative

assignments. Essentially, as argued by Boshier et al., this and other similar courses made up for their deficiencies by their commitment to 'constructed modes of learning', often involving 'high levels of interaction'. These are contrasted with 'transmittal' courses, 'based on the notion that learners are empty vessels to be filled-up'.[9]

There are thus on-line courses with high quality learning materials that suffer from a lack of interaction by providing a model of teaching of the information transmission type. Not all (and we would hope not many!) on-line distance education courses are of this type, of course. Many include opportunity for interaction through the use of email, bulletin boards, chat rooms and other means of electronic communication. Such facilities are not always well-integrated with the course, however, sometimes being something of an 'add-on' to an existing study package. The problem may also be exacerbated by the traditional (but thankfully fast-disappearing) split between computer-based learning (CBL) and computer-mediated communication (CMC). The challenge is to find ways of increasing student interaction within the learning materials themselves.

**Increasing Interactivity: an Example**

During the first semester of 1999, the Centre for Higher Education Development has offered its Graduate Certificate in Higher Education to academic staff at Monash University for the first time. The course provided us with the opportunity to put into practice many of the ideas concerning flexible learning that we have been espousing to our Monash colleagues. We worked as a team (five academics contributed to the materials) over a period of about seven months to develop the first subject, with the support of a graphic artist, a programmer and an administrative resources person. As the course was to be undertaken by typically busy academics with little opportunity to attend scheduled classes, it was decided that the bulk of study time, at least for the subject I was co-ordinating, would be on-line. This environment would be supported by a few days of intensive face-to-face workshops, a couple of non-compulsory tutorials and printed study materials (a short Study Guide and a book of readings).

Our greatest challenge was that we were determined to emulate some of the workshop activities that we would use in typical face-to-face workshop sessions, some of which were of the type described by Daniel and Marquis. As they outlined, 'a typical starting point would be for students to make notes on the same text, swap and criticize them in pairs, bring their conclusions on note-taking together in a group of four and so on'.[10] We were thus keen for participants to share their experience and understanding of key concepts within a framework of 'student-centred flexible learning', a phrase commonly used in recent Monash plans and strategic documents. As stated in the Monash Strategic Innovations Fund Guidelines, 'student-centred flexible learning places particular emphasis on interaction between learner and teacher and between learner and learner as a means of facilitating a shared, social construction of knowledge and understanding'.[11]

Investigation of available software to support on-line learning revealed, however, that none fulfilled our aims concerning interaction. So as we designed and developed the course, we also set out to create our own software tool, now called *InterLearn* (from interactive learning on the Internet). The development of the software thus arose from

an educational problem, and in fact currently *InterLearn* is still embedded within the materials for HED5001 *Designing for Learning*, the first subject of the Graduate Certificate.

*InterLearn* is built on a database structure, which allows student's individual activities to be stored and viewed on demand by whomever is given access to the material. Each student logs on to an individualised 'worksite', where they complete set activities and enter responses in dialogue boxes. The activities are labelled as either 'shared', meaning they are available for viewing by all course participants, or 'individual', meaning only the participant and the teaching team can access them. The way this operates in *Designing for Learning* can be illustrated by describing the first three on-line activities.

In Activity 2.1, participants are asked to interview someone about their learning experiences, and enter their findings in a dialogue box that automatically stores their response for later viewing or modification. This is shown in Fig. 1.

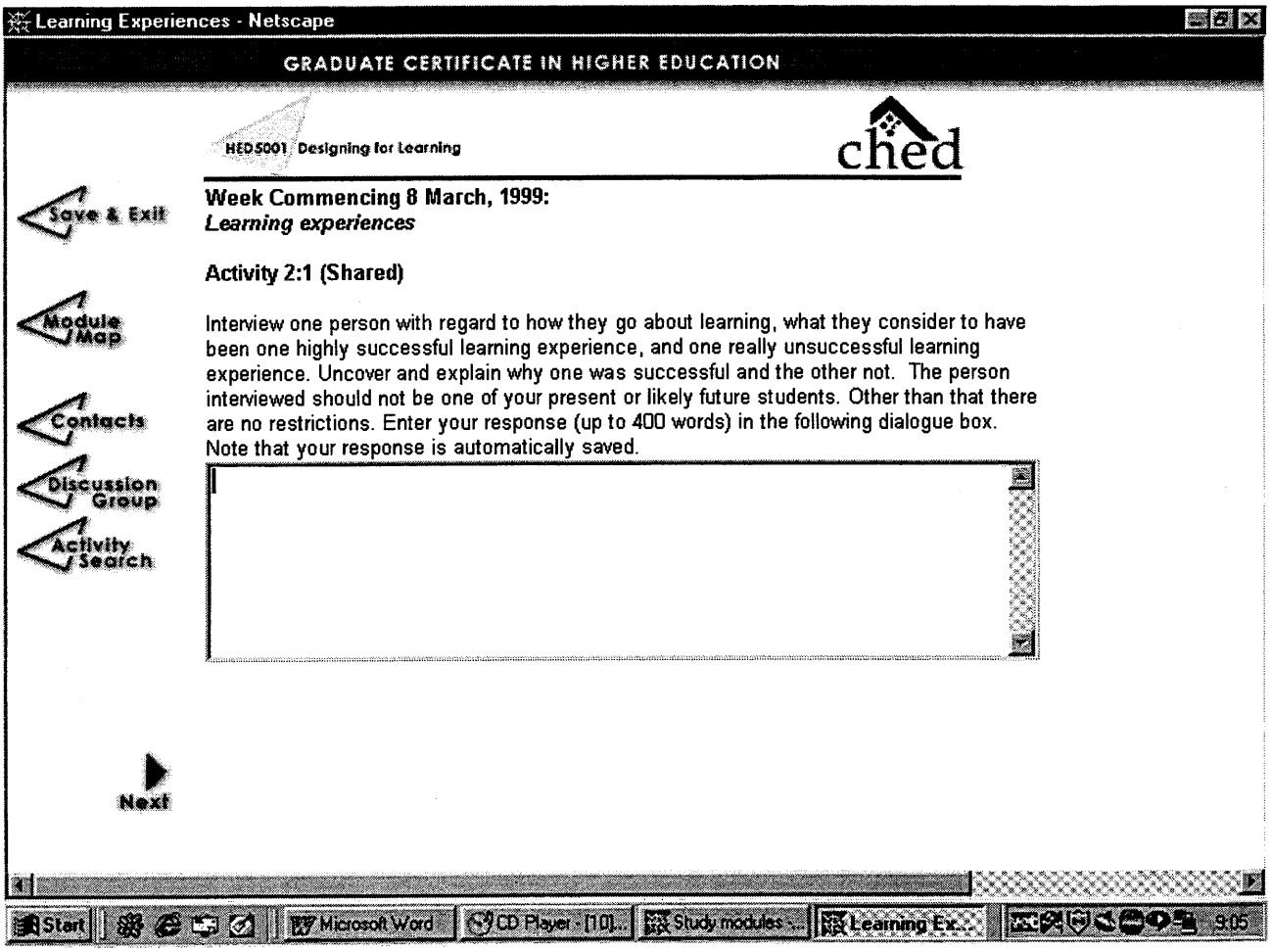



Figure 1: The first on-line activity

Similarly, Activity 2.2 asks participants to describe their own learning, and provide examples of 'good' and 'bad' learning experiences. The interactivity occurs in Activity 2.3, which asks participants to use the 'Activity Search' button (see Fig. 2), which allows searching of responses by student and Activity.

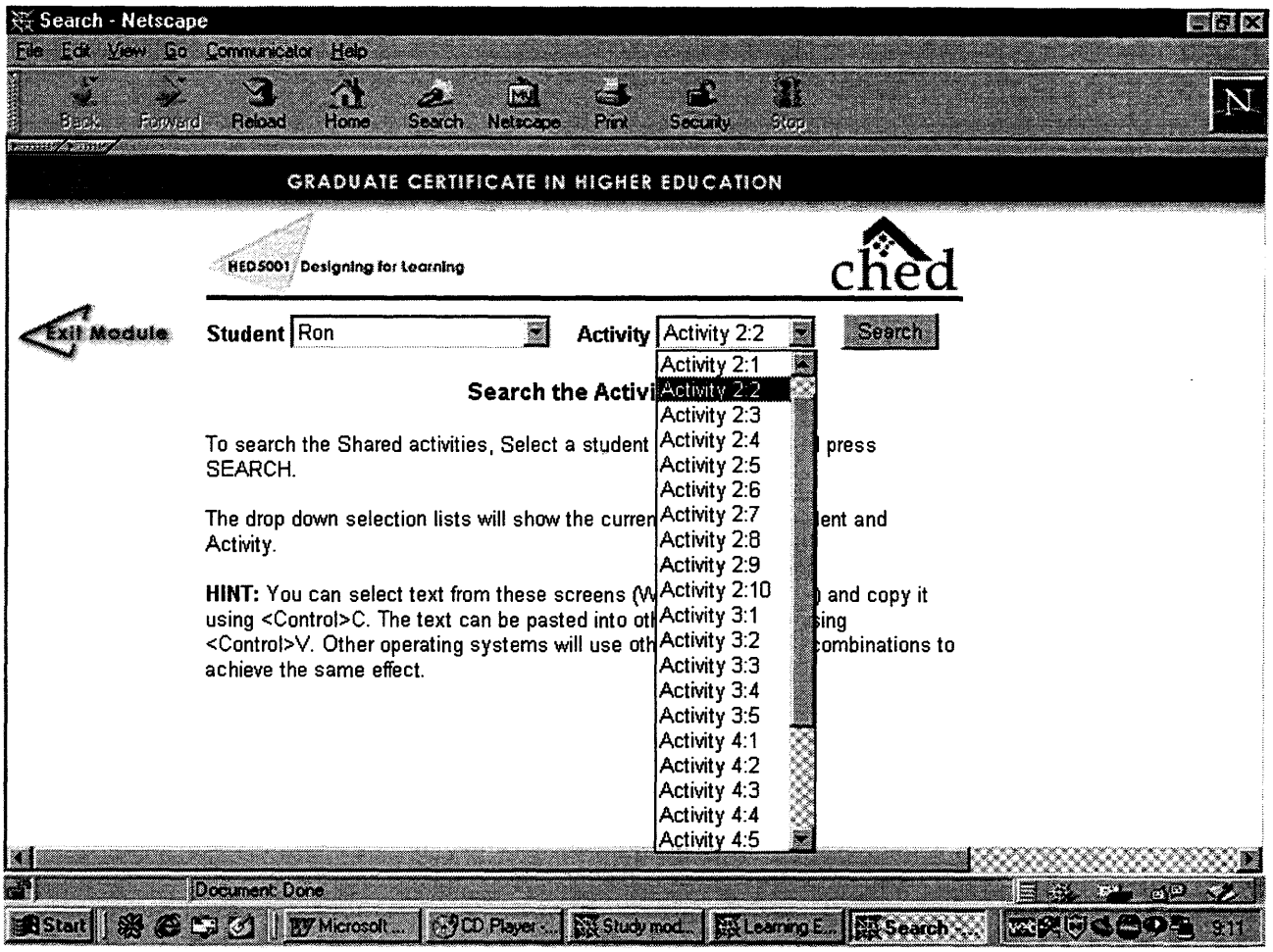



Figure 2: Using the 'Activity Search' function

Activity 2.3 requires participants to view the responses of other students to the first two activities, form an opinion of the essential elements of effective learning, and post their comments in a dialogue box (Fig. 3).

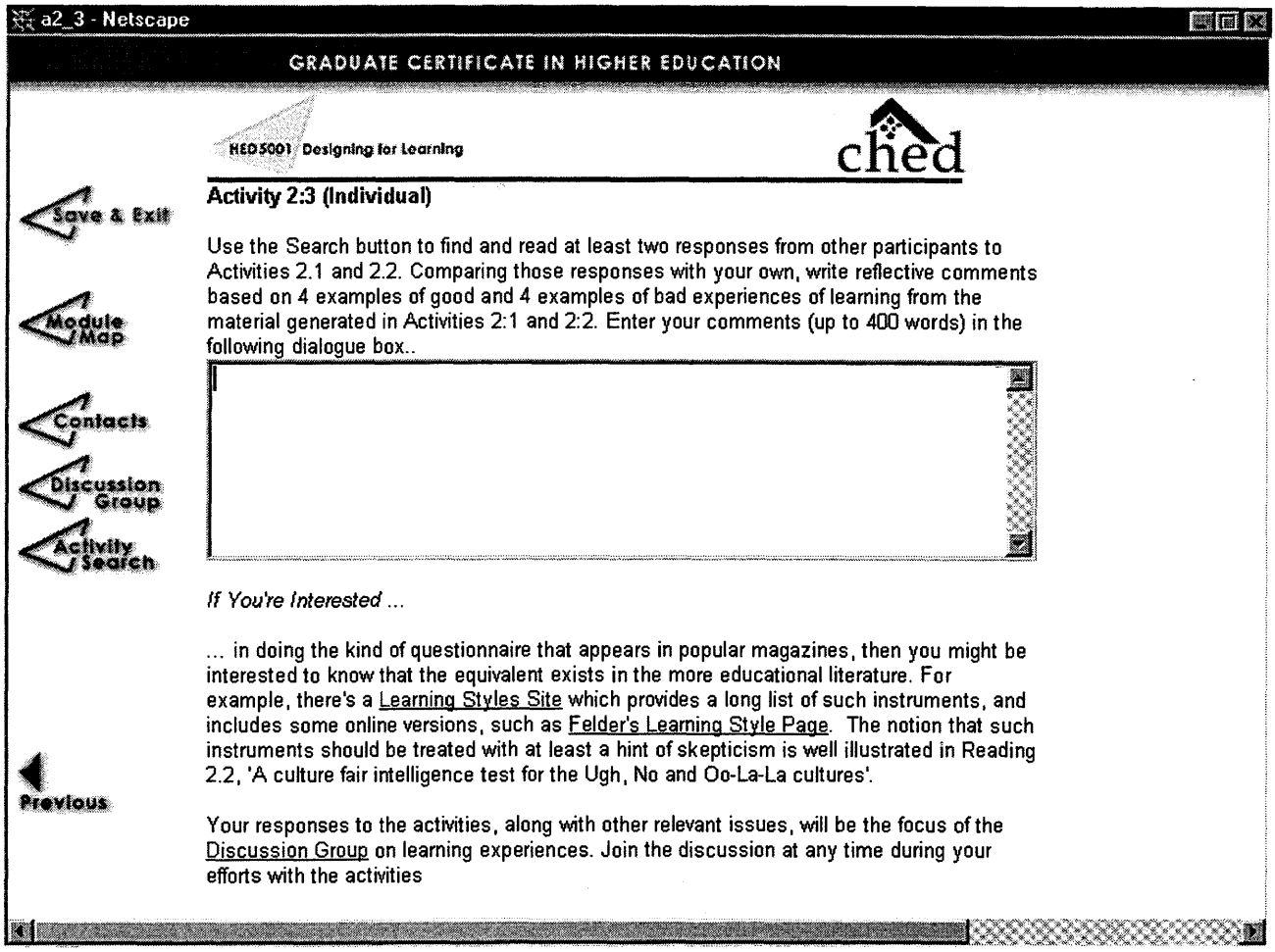



Figure 3: An 'individual' activity calling for use of 'Activity Search'

Further interaction between participant is available in an on-line discussion group, in this case using a Netscape Collabra Discussion Group, the standard adopted by Monash. It was our plan that the worksite interaction would stimulate participants to use the discussion group to extend their ideas and further share their understanding of the topics under study.

**But how did it go?**

As teachers of a new subject being offered in an experimental on-line environment, we were understandably a little nervous about how the materials would be received and applied by the participants. We had spent time during the initial face-to-face sessions preparing them for the learning materials, and I had started a series of weekly global emails, but we still wondered how they would respond to the activities and whether the discussion group would 'take off'.

As it turned out, the outcomes exceeded our expectations - the quality of responses to the activities was high, and the discussion group started even before the first welcoming message from the teachers was posted. As the semester progressed, it became decreasingly necessary for any of us on the teaching team to post on the discussion group, as the participants engaged in a series of fascinating threaded interchanges. For the most part the discussion group had a life of its own, with a heartening emphasis on teaching and learning issues.

A variety of approaches was used during the semester to obtain evaluative feedback from the participants. These have included tutorial discussion, qualitative and quantitative questionnaire items, focus groups and the scanning of comments in activities, the discussion group and reflective assessment pieces. Where possible, adjustments were made to the study programme as the semester progressed, while other issues will wait until the next offering of *Designing for Learning* in 2000. During the mid-semester tutorial, a short qualitative questionnaire was distributed. The first of the three questions dealt with the aspects that participants had found useful. The following comments were made:-

*I am particularly happy with the activity system adopted in the course under different modules. The activity system allows me to build my knowledge gradually in a very flexible way. It is also allow me to share other's experience and gain from their experience and knowledge. Another good reason is that I can practice what I learned from others in my own class and add that experience to activities.*

*Reading the various responses of other people is a great way of getting a better picture of what the class think as a whole.*

*The opportunity to reflect about my teaching practices. This is facilitated by a good choice of on-line and text resources which are readily available. The flexibility of the subject delivery. It would be very difficult to attend classes on a regular basis while having to undertake all my other academic activities. I can access the subject material from any of my offices (I operate on two campuses) and from home, and because I can choose the time to undertake the activities – away from telephones and interruptions of all sorts – the reflection time is more effective.*

*The course had stimulated reflection on my own teaching practice and I can see some changes in my teaching style in response to this. It has also encouraged a small group of us to share all experiences and fostered the creation of a small "teaching" community.*

Concerning ways that the subject might be improved, a number of suggestions were made. Some were concerned with process, more than one respondent commenting that 'Activity Search' could be a less tedious process by enabling a search by multiple students and/or activities (currently the functionality is limited to one search at a time). Other comments were more concerned with content.

*I find that some aspects of the content are difficult to relate to teaching and learning in science. This is not necessarily a bad thing, as it encourages me to think of other ways in which science can be taught. I do believe, however, that there is a certain amount of 'bucket-filling' that needs to go on in undergraduate science courses, and I sometimes feel as though this approach is frowned upon a little much! (It does have a place).*

*I found it a little frustrating that often when I was ready to talk about something, many people were either way behind or sometimes way ahead. I'm not sure if there is a way around this problem given that everyone is probably under a heavy workload, and has to fit the GCHE stuff around their other work.*

The third question simply asked for other comments, and we were pleased with the number of participants who expressed their enjoyment with the course.

*I am enjoying this very much from three points of view. As a practitioner, every day I look at how my lectures or tutorials went, and reflect upon them in the light of what we were reading or discussing so far; it is real practice following the theory. As a student, I can experience the other side, what does it feel to be a student in general, and an on-line student in particular. As an academic, I analyse and evaluate the way this subject is structured and ran.*

The questionnaire at the end of the semester contained 23 quantitative items, with five-point Likert scales with responses ranging from 'Rarely' through to 'Almost all the time' for the amount of time the time statement was applicable. Concerning items that particularly relate to the on-line materials and their interactivity, the results in Table 1 were obtained from 34 respondents (of a total class of 45).

| **Questionnaire Item** | **Rarely** | **Some** | **About half** | **Most** | **Almost all** |
|---|---|---|---|---|---|
| 5 The teachers were enthusiastic about teaching the subject. | 0 | 0 | 0 | 8 | 26 |
| 6 The subject had the right balance of approaches: face-to-face session, print and on-line materials. | 1 | 1 | 9 | 13 | 10 |
| 7 The on-line learning materials stimulated my interest in the subject. | 2 | 1 | 5 | 14 | 12 |
| 8 The on-line materials covered the important aspects of the subject. | 0 | 0 | 1 | 19 | 12 |
| 15 The way this subject is taught is appropriate for the material. | 1 | 0 | 4 | 13 | 16 |
| 17 The flexible nature of the course allowed me to study more conveniently than if it had been a conventional course. | 1 | 1 | 2 | 6 | 24 |
| 18 The interactivity of the on-line materials fostered a sense of a 'learning community'. | 1 | 3 | 8 | 11 | 10 |
| 21 Using 'Activity Search' to look at others' responses contributed to my understanding of the subject. | 0 | 1 | 7 | 16 | 10 |
| 22 We had regular opportunity to give feedback on the subject's teaching. | 0 | 3 | 6 | 15 | 10 |
| 23 The teachers explained how they use our feedback to make changes to the subject's teaching. | 0 | 6 | 3 | 16 | 9 |

* Where totals are less than 34, not all respondents completed the item.

Table 1: Selected items from questionnaire

As with the mid-semester questionnaire, participants were asked about the particular facets of the subject that they found useful.

*The online nature of the subject was very helpful because it provided me with experience of being a student in this environment. Also the use of the Internet gave a sense of being involved in a subject which academics around the world are engaged in.*

*The ability to see other work and particularly peoples' feelings and experiences written to the group.*

*On line, flexible learning environment made it possible to take this course. Many of the readings (but not all) were accessible, stimulating and thought provoking - and provided just what I needed - a theoretical framework on which to hang my experience - to further develop my skills and understanding.*

*It is all very well for participating academics to enjoy some study, but did they find it helped in their teaching role? Responses to evaluation questionnaires, as well as the comments made in activities and on the discussion group clearly indicate that the participants used what they were learning in their classes.*

*I have made considerable changes to my teaching. Particularly with respect to content. It has also made me think "Why am I teaching this?" and "Do the students need to know this?/Do they want to learn this?"*

*We are undergoing course development and course re-development of our existing course. Material learned here will be applied as those materials are developed. Very timely.*

Nearing completion of this paper, I was also in the throes of marking part of the assessment for the subject (a reflective piece), and was struck by the following comments, which the writer has given me permission to reproduce.

*... I find I have learnt skills and developed knowledge that I did not think was possible using a distance and flexible learning package. I have learnt that this can be attributed to weekly tasks that require myself, as a learner, to actively implement knowledge gained from reading relevant material, to build on learning from previous weeks and to incorporate prior experiences and reflection into current learning.*

Our teaching team is thus much relieved at the positive response we've received from participants. There are a number of adjustments that will be made for the next offering of *Designing for Learning*, including elements of the functionality of the software, and the lessons learned from this subject are being handed on to those developing the rest of the course.

## Conclusion

As a result of the outcomes of *Designing for Learning*, we as a teaching team would claim that we have gone a good way towards 'getting the mixture right' for this group of students. Naturally this has to be viewed within the context within which the subject took place. For example, we were able to make clear assumptions concerning access to computers and the Internet, a luxury not enjoyed by all course designers. Another key factor was that the participants were not only postgraduate, but all holding academic posts. Other courses and students require different mixtures, and we are working with Monash staff to develop and apply *InterLearn* in alternative situations. We thus don't offer our course as a model, for as Daniel and Marquis rightly explain, *'a recipe is impossible, simply because a system can only be conceived in relation to the country and context in which it is set'* (Daniel and Marquis 1979, p. 41).

What we do claim, though, is that there is considerable room for improvement in terms of interaction in on-line courses, and that this can be achieved with simple software applications. We have also demonstrated that interactivity between students in on-line courses can be stimulated without necessarily adding substantially to the overall teaching load.

Finally, we must not forget that 'it helps if the course is fun. The somewhat technocratic approach to course design used in distance education should not mean that the product is laundered of that zest for life and learning so necessary to the human spirit'.[12] The final word can thus go to one of our students whose simple statement on *Designing for Learning* was 'Practical and fun!'

## References


1 Daniel, J.S. and Marquis, C. (1979) 'Independence and interaction: getting the mixture right', *Teaching at a Distance*, 14, pp. 29-44.

2 *Ibid.*, p. 29

3 *Ibid.*, p. 32

4 Hannafin, M.J. and Land, S.M. (1997) 'The foundations and assumptions of technology-enhanced student-centred learning environments', *Instructional Science*, 25, pp. 167-202.

5 Jonassen, D. (1998) 'Designing constructivist learning environments', in C.M. Reigeluth (ed.) *Instructional Theories and Models*, 2nd Ed., Mahwah, NJ, Lawrence Erlbaum.

6 Tait, B. (1997) 'Constructive Internet based learning', *Active Learning*, 7, pp. 3-8.

7 Collis, B. & Smith, C. (1997) 'Desktop multimedia environments to support collaborative distance learning', *Instructional Science*, 25, 433-462.

8 Boshier, R., Mohapi, M., Moulton, G., Qayyum, A., Sadownik, L. & Wilson, M. (1997) 'Best and worst dressed web courses: Strutting into the 21st century in comfort and style', *Distance Education*, 18 (2), pp. 327-348.

9 *Ibid.*, p. 343

10 Daniel and Marquis, *op. cit.*, p. 37

11 Monash University (1999) Monash Strategic Innovations Fund Guidelines.

12 Daniel and Marquis, *op. cit.*, p.42

# From Course in a Box to Course on a Stick: Adventures in open and distance learning

**Jennifer O'Rourke, Hands on Management Services, Canada.**

This piece could be subtitled, "Confessions of a Slow Learner", since it has taken me fifteen years in open and distance learning to realize that it's not the course that does the trick; to finally recognise that despite intensive and expensive efforts to produce "perfect" self instructional materials, no materials or technology can of themselves produce learning. Because it's taken me so long to come to this realisation, perhaps I should be more tolerant of others who cherish the belief that good technology has more to offer an open and distance learner than good teaching. Perhaps I should be more patient with those whose excitement about new technologies, like Archimedes' thrill of discovery, has displaced a great deal of common sense about the human dynamics of teaching and learning.

The experiences that led me to this realisation are probably quite typical for those who work in the field. Coming into ODL with a background in writing, print production and education, I brought a belief in the power of words and images to move people and to stimulate learning. From there, it was a few short steps to the conviction that a well designed course could virtually teach itself. It might have been a bit off-putting when instructional design principles were expressed in production terms, "good little piggies in, good bacon out", but the basic concept that well structured learning materials led to good learning seemed to make sense. However, the practical application of this principle became much more complicated when applied in an organizational context, where the need to balance staffing and financial resources often meant that extensive investment in course development was justified on the basis of reduced investment in teaching and learner support. As instructional design principles were infused with an industrial systems approach, successful prototypes became templates for larger scale production, leaving less room for alternatives such as customised course development or learner services.

The Open University model of large scale course development and an extensive learner support network set the stage for changes in open and distance learning across the globe. In Canada, institutions that had offered correspondence teaching for some time reconsidered their practice in light of the Open University's successful innovations. In many cases, the results were a typical Canadian compromise: conventional institutions reviewed their course development process and although few invested in academic course teams, many added provisions for instructional design and media specialists. But for the most part, learner support remained unchanged from arrangements whereby distance learners could call or write their instructor or tutor. Most programs were too small to justify extensive learner support. (As well, Canadian politics and geography make it difficult for any one institution to establish a national learner support network: education falls under provincial jurisdiction and the country's size makes national coordination a logistical challenge.) This was the context in the mid 1980's when I joined the staff of a western Canadian university as a course developer in its growing distance education program.

In this role, I was generally one half of a two person course team, working with a course author who was, more often than not, destined to teach the course when it was offered. Most authors were passionately committed to their discipline and willing to invest in the time consuming process of developing a distance course because they believed, in keeping with the university's tradition of outreach to a largely rural province, that they shared responsibility for making learning accessible. (Financial incentives for course authors probably amounted to less than minimum wage on a per hour basis.)

I learned a great deal from these authors: not only did I get a free education in their discipline, but I also discovered how they regarded the process of learning. Many of them saw the course materials they produced as the beginning of a conversation with learners; a conversation that they would continue when they taught the course. (I'm consciously using the word "teach" to describe the instructor/learner interaction, despite years of conditioning to call it something else; tutoring, marking, facilitating, delivery: these words tend to shortchange the extent, depth and value of this interaction, and are sometimes used to justify compensating instructors less for teaching distance courses than conventional courses.) When they taught their course, authors had direct feedback about how well the course materials worked for learners, and would often come in to discuss how the course was going and how it could be improved for the next time it was offered.

This low key approach to distance education provided much more of a continuum between course development and teaching, and between conventional and distance teaching, than the model in which there was little or no contact between course development teams and course tutors. But it also presented some challenges. An important rationale for the course team approach is ensuring the learning materials are academically balanced, in fairness to learners who may not have access to alternative perspectives or the resources to challenge the "givenness" of content presented in well-designed materials. A single author, even if making a concerted effort to present a range of views on a topic, is more likely to convey a preference for one perspective, and can subtly influence how learners decide which approach is acceptable. Course developers can suggest how to achieve balance, but it is ultimately the author's choice to take up these suggestions.

If there was one situation that challenged my acceptance of prevailing beliefs about the value of a "neutral" course, it was the process of working with a course author who incorporated both feminist materials and practice into a course on women in education. The author taught the course on campus by providing a guide to academic and non academic resources, giving learners responsibility for developing presentations and for leading discussions, and setting a climate that valued reflection on life experience as part of learning. She wanted to include as much of this learner-centred process in the distance course as possible, as well as presenting in the course materials a feminist perspective on the role of education in socializing women as students and as teachers. Neither the process nor the content matched the accepted principles of balanced content and predictable, highly structured process. Learners were invited to form groups, if they chose to, using mail (postal, not e-mail) and telephone to establish contact and work on common projects. This process was directly opposed to standard procedures that were based on concerns about distance

learners cheating and "not doing their own work", although none had the daily proximity of on-campus students.

The author's own voice came through clearly in the course materials. At one point, about a third of the way through the course, she directly addressed the learners, in words to this effect, "Perhaps by now, you're fed up with all this feminist jargon... perhaps you're really annoyed with the way I've presented things. That's fine. If you are, write me a letter and tell me why you disagree. I promise I'll consider your response seriously and will reply to it." In the first offering, several learners took up the challenge, and were very satisfied with her response to their critique: many other learners indicated in their course evaluations that this message gave them permission to disagree and acted as a counterweight to what was clearly a strong perspective. The course was a remarkable success. Learners developed group projects at a distance; comments in individual learning journals demonstrated the extent to which they had taken the course to heart and incorporated broader dimensions of reflection and exploration into their learning. Many wrote to the course author afterwards to thank her for the best experience they'd ever had in distance learning. It was clear that the course was far more than the materials; it was the creativity and commitment of the instructor, whose innovative style and process broke all the rules. [i]

Despite this experience, I continued to believe that a well designed course was the essential element in distance learning, and so moved on to a larger institution whose distance education program offered more courses than any other in the country. But at the institutional home of the "course in a box", there was less emphasis on instructional design and much more on the production logistics of offering over 300 courses a year to about 20,000 enrollees. As well, more than half the distance courses were not taught by the course author, but by graduate students and part time lecturers. This factor, as well as the size and diversity of the distance education program made it more challenging to maintain continuity between course development and teaching.

In this situation with greater risks of losing personal connection with learners, several examples demonstrated that good teaching entailed far more than the course materials.

One small academic department, in a discipline considered irrelevant to employability, attracted and sustained distance learners on the strength of consistent, personalised learner support; departmental commitment to distance learning and peer support for course authors... a remarkable achievement for a classical studies department in a technological university in the late 1980's. Classics course materials were not highly structured or elaborately produced, in fact several were handwritten, but all of the authors taught their courses personally, and a departmental distance learning advisor (Professor Sally Haag) was available for learners to discuss problems and future plans. Classics learners were not an exclusive group, but a representative cross section of distance learners, including working people, full time parents and, occasionally, prison inmates.

Sally Haag's perspective on the importance of supportive contact with learners has been documented elsewhere (Burge, 1992, O'Rourke, 1995), but it can be summarised in these words: "It seems to me the absolute basis for human beings is interaction. I don't like the thought of people being perfectly happy learning whatever it is they want to learn off the computer or out of books. A lot of the valuable lessons go on a

level of one human being to another...the most valuable ones. So it's really bad news if people are given packages of information or material and they really glom on to them and get further and further away from other people."

Another situation that highlighted the importance of the teacher's response to learners was a sociology course on death and dying. The author designed the course to enable learners to consider their personal experiences (which had often prompted them to take the course) in light of theoretical perspectives about how society treats death, in order to develop a more wholistic picture of the issue. Many students welcomed the opportunity to make sense of their own experience and were very open in their assignments. The author also taught the course: the materials conveyed her voice and prompted a sense of trust before learners contacted her. When they did contact her, there was a sense of continuity between the course materials and their personal interaction with her. Some distance learners felt they could communicate more freely because of the safety provided by distance, as well as the supportive context offered by the instructor (Leiper, 1993).

A most telling case provided a strong hint that learners' perceptions of the course experience is far more influenced by their interaction with a tutor than by the quality of course materials. A large enrolment course was handled by approximately ten tutors, mostly graduate students. On first glance, students' evaluations of the course showed a striking inconsistency in ratings of the course materials, despite the fact that all received identical materials. On second glance, a pattern emerged: learners' ratings of course materials were directly correlated with their ratings of their experience with course tutors. Learners generally agreed in their ratings of individual tutors, but learners who felt their tutor was supportive and helpful also rated the course materials as quite good; learners who felt the tutor was uncommunicative, dismissive or unhelpful also rated the course materials as incomplete and poorly organized. Whether learners had done well or poorly in the course, their view of the course materials directly reflected their sense of the quality of tutoring. Subsequent reviews of learner evaluations of other large enrollment distance courses at several institutions showed patterns indicating that a good instructional experience can overcome poorly designed materials, but well designed materials cannot compensate for poor instruction. Quite recently, my own experience teaching a distance course reinforced this message. Although the course was written by another author and the materials were past their prime, with a bit of encouragement and a lot of interaction (by phone and e-mail), learners were able to use them as a starting point to create a meaningful learning experience.

One of the most frequently repeated lessons, in a broad range of contexts, was that of the course on a string; externally funded pilot projects to develop a course using the latest technology (satellite, computer training, compressed video, online programs). Typically, a great deal of time and money was invested in developing a showpiece course, but much less in teaching and learner support. Frustrated learners, stranded by inoperable technology, were often rescued by staff whose additional support role had not been anticipated or funded. Sometimes these highly touted courses quietly disappeared after one or two offerings; in other situations, they were maintained with significantly greater investment in learner support than courses using proven technologies.

Experiences outside Canada reinforced the lesson that successful open and distance learning requires that learner support has at least as much attention and resources as course development. While Canadian distance education had largely focused on serving the solitary learner, educators in the Caribbean, Africa and Asia emphasised that open and distance education had to address the social aspect of learning, and provide support for interaction among learners as well as instructor/learner contact. Reflecting on their own experiences as isolated correspondence learners, many educators felt strongly that course materials, however well designed, were not enough to sustain a program that was adequate to the challenge of providing access to a successful learning experience for a great many people. Learners needed a point of contact at local study centres, and a context in which to discuss, reflect on and apply their learning. Learner centres were an essential element of successful distance education, whether they were an official component of the distance education system, or were supported by communities or employers, such as schools and clinics. Even if the communications infrastructure allowed affordable contact between learners and a remote instructor, educators felt that excluding the social aspect of learner-to-learner interaction was unfair to learners because they received a truncated learning experience.

In more privileged countries, the use of new computer based technologies has dramatically increased interest in open and distance learning, and at the same time, has once more directed far greater attention to product rather than process. As well, a combination of factors, including shifting employment patterns and increased job insecurity, have expanded the potential numbers of participants in lifelong learning (or as skeptics put it, continuous job retraining). As new providers jump into ODL, the early assumptions of distance education are making a comeback in different clothing. Some of these assumptions are:

- a good course package (web design, CD ROM) is sufficient to generate good learning;
- learner interaction with an instructor and other learners is an optional extra;
- it requires less instructional input to teach a distance (online, computer based, multimedia) course than a classroom based course.

In Yogi Berra's words, "it's deja vue all over again." And that's why I'm offering this brief retrospective, as a reflection on lessons from reality that challenged prevailing views (which I shared) that if we put a lot of effort into getting the product right, the process would take care of itself.

Of course, nothing that comes around for the second time is exactly as it was before: even bell bottoms and platform shoes have been slightly re-engineered. In the case of open and distance learning, changed economic and social circumstances mean that there is a much broader cross section of prospective learners, including many who need more preparation and encouragement in order to be successful. And all along, while some of us were quietly fretting about getting the courses right, others were paying attention to the needs of learners *in situ.* Reminders about the essential element of learner support came from people with direct contact with learners, such as Open University course tutors and regional coordinators (Lentell, Tait, Mills), Canadian educators such as Jane Brindley, and those working in local learning centres emerging in Australia and Canada.

During the past decade, while new technologies emphasised educational products, a variety of agencies began to pay more attention to local learner support. Whether established by government, educational institutions or community organizations, local learning centres provide a venue and a voice for learners, allowing their needs to be clearly articulated and addressed. A review of research on the impact of local learning centres provides persuasive evidence that local support, including advising, preparation, help in dealing with educational providers, and access to technology makes a significant difference in helping open and distance learners achieve success. (O'Rourke, Schachter and Zuckernick, 1999).

It is tempting to characterise these parallel developments as reflecting a gap between educational developers, whose focus is on a visible product that demonstrates their technological expertise, and learner advocates, who want to ensure that learners have all the human support they need to become successful learners. But the lines are not so easily drawn. On the course development side, it seems that the most creative elements of instructional design roles, those of interlocutor and amanuensis are being eliminated: if job postings in the UK and Canada are any indication, the professional role of instructional designer is being reduced (in standing and salary) to that of a technically competent recent graduate who can transfer materials to the web. And, on the learner support side, there is no doubt that one catalyst for establishing local centres is the promise of access to new technologies.

The past fifteen years in distance education have seen the course in a box, the course on a string, and now the course on a stick. Let me offer an explanation of the term "course on a stick". Just as ice cream on a stick may be somewhat easier to handle, new media can make a course more manageable for delivery to the learner. And just as the stick adds no flavour, texture, or nutritional value to the ice cream, a course in which media offers nothing more than a better handle, that does not significantly improve the nature of the teaching/learning process, nor the degree of involvement or enjoyment by the learner, could fairly be called a course on a stick. An example might be an online course in which pages of print are reproduced on screen only to save the cost of printing and mailing it to the learner. (And when elaborate technologies are used to show off the producers' cleverness, the result might be a course on a schtick.)

Whatever we call it, new technologies are drawing significant time and resources to course development, at the same time as expanding contingents of learners include more people who need contact and support; for example, those with rusty learning skills pushed into retraining by economic necessity or those whose preference for social learning made conventional distance education an unlikely option.

Open and distance learning has always had two sides that could be aptly described by my father's Liverpool expression, "Queen Anne front, Mary Ann back": the high profile, sometimes glamorous course development side, and the behind-the-scenes, day to day activity of keeping in touch with learners. Over the next few years, the challenge will be to maintain a balance between both sides, and in the face of increasing investment and attention to technology, to recognize, uphold and expand the essential elements of teaching and learner support.

Note: A bibliography on the impact of local learner support in open and distance learning is available on request from the author.

**References:**

Author, A Piece of the Jigsaw; Student Advising in Distance Learning, Collected Conference Papers, Sixth Cambridge International Conference on Open and Distance Learning, 1995.

Brindley, J., Learners and Learner Services: The Key to the Future in Open and Distance Learning, in Roberts, J. and Keough, E., Why the Information Highway,Trifolium, Toronto, 1995.

Brindley, J., Study of First Time Learners at Laurentian University, Sudbury, Laurentian University, 1998.

Burge, E., Speaking Personally With Sally Haag, American Journal of Distance Education, Vol. 6, # 3, 1992.

Haag, S. and M. Kelly, Teaching at a Distance: Ideas for Instructors, University of Waterloo, 1985

Haag, S., The dual mode professor: the subject specialist as tutor, in Tait, A., Papers for the Second Cambridge Conference on Counselling in Distance education, Cambridge, 1987.

Haag, S., Teaching at a Distance: Techniques for Tutors, University of Waterloo, 1990.

Hallman, D, and Ward, J., The Improbable Courtship of Distance Education and Feminist Pedagogy, Proceedings, 1998 conference of Canadian Association for Distance Education.

Knapper, C., The Course-in-a-Box: Distance Education at the University of Waterloo, in Mugridge, I., ed., Perspectives on Distance Education: Distance Education in Single and Dual Mode Universities, Commonwealth of Learning, Vancouver, 1992.

Leiper, J. M., Women, Death and Dying: Distance Education as a Way of Linking Personal Experience with Sociocultural Understanding, Journal of Distance Education, Vol. VIII, (2) 1994.

Lentell, H., Why is it so hard to hear the tutor in distance education?, Open Learning, Nov. 1994.

Mills, R., and A. Tait, Supporting the Learner in Open and Distance Learning, Routledge, 1996.

O'Rourke, J., L. Schachter and A. Zuckernick, Interim Report on Pilot Project on Distributed Learning in Community Skills Centres, 1999.

Poelzer, I. Educational Foundations 482, Women and Education, University of Saskatchewan, 1986.

# Multimedia Advice, Guidance and Counselling on the Web: a prototype learner's guide.

**Marion Phillips and Peter Scott**
**The Open University.**

## Abstract

The importance of providing a service which offers educational advice, guidance and counselling is widely acknowledged as a key to students' academic success and personal development. The UK's Open University (UKOU) aims to provide a support service which puts the needs of students at the centre and traditionally a variety of media have been deployed in this provision. Whilst the new technologies are having a considerable impact on course production and delivery in open and distance education, the suggestion that these media can also be used effectively to provide learners with a support service to meet their needs is one which is still in its infancy. In this paper we discuss our use of web-based streaming multimedia as an appropriate and effective medium for a student support service. We will illustrate our discussion through the demonstration of an interactive guidance program, which is currently in production as an experimental prototype.

**THE SYSTEM IS UP FOR EVALUATION AT:**
**HTTP://KMI.OPEN.AC.UK/PROJECTS/STUDENTADVISOR/**

## Introduction

In this paper we aim to show some snapshots from our on-going work in web-based multimedia for student support. The prototype under discussion, the *'Learner's Guide to the Open University'*, is a demonstrator produced to show what is possible with streaming multimedia technology for student support services. In developing a support service that can be accessed by students using the web, our intention has not been to replace the service currently in existence. Rather we are aiming to provide an *additional* service, which exploits the new media and offers on-line advice, guidance and counselling opportunities for those growing numbers of students and enquirers who use the Internet. The *'Learner's Guide to the Open University'* offers a service using a new medium but the underpinning philosophy and approach of the student support provision remains the same as that for the existing support service for UKOU students.

## Advice and Guidance in Open and Distance Learning

The UK Open University (UKOU) offers open access (at undergraduate level), open and distance higher education. Students can choose to study single courses or can group their course credits together for specific qualifications such as undergraduate or postgraduate certificates, diplomas and degrees. With such an open and diverse programme of learning opportunities available, it is crucial to provide a service that will support the large numbers of potentially disparate learners and meet their needs.

UKOU students are supported by a system known as 'supported open learning'. Guidance and educational counselling are key aspects of this service. Advice, guidance and support for students are available at every stage of a student's career: at entry, during study, between course and at the end of the study programme.

The support service comprises:

- enquiries and admission guidance for students prior to enrolment,
- guidance about course choices and study planning,
- careers guidance to enable students to link study plans to their career interests,
- support for students with special requirements,
- advice about and opportunities for study preparation and the development of learning skills
- monitoring and support of student progress.

(Bailey, Brown and Kelly, 1996)

The ultimate aim of the *'Learner's Guide to the Open University'*, is to offer a service which covers all aspects of support as outlined above. In line with the rest of the support service, the prototype program also adopts a student-focused approach, which puts the needs of the students at the heart of the guidance service. Using interactive multimedia, it provides a base for informed decision making through pathways that enable users to ask and answer questions of themselves and access appropriate information.

Technically, the Learners Guide uses streaming multimedia – in which audio, video, and support imagery, including some interactive exercises are sent over the internet to the remote user's web browser. The user of this prototype requires a multimedia personal computer with a reasonable connection (at least 28Kbps) to the internet. The software arrives at the student's machine (either PC or Macintosh) in their web browser (either Navigator or Explorer) on demand, as it is required. The animations, interactions, audio and video used in the prototype are supported with browser plug-ins such as Apple's Quicktime™ and Macromedia's Shockwave™.

**The pros and cons of using web-based interactive multimedia for student support**

The Web has already proved to be a key medium for reservations and access to information about the UKOU. Within the first few months of the OU website going live, over 300,000 hits were recorded on the courses and awards pages and users are accessing the web in ever increasing numbers to request brochures and to reserve courses. It seems essential within this medium to provide not only adequate information but also access to advice and guidance to help enquirers make informed course choices. Enquirers may need to consider issues such as what studying with the UKOU involves, how supported open learning works, study time requirements, the significance of academic levels, preparation options, credit transfer, residential schools, careers, special needs and what is the role of the tutor. They should also be enabled to gain access to further sources of advice including links to advisors in UKOU regional offices.

In addition to the support needed for enquirers and new students to the University, more of our continuing students are expecting on-line facilities for all features of their academic life. The UKOU was founded on a multi-media teaching, learning and support system which has developed as new technologies have become available. A variety of media including print, television and video cassettes, radio and audio cassettes, face to face telephone and correspondence tuition and guidance have been

exploited to teach and support student learning. In the past few years, the new technologies such as computer-mediated communication, electronic mail, the Internet and CDROM are becoming widely used to produce and present courses. It is inevitable that students, many of whom are already 'on line' in order to study their course, will wish to use these electronic media to access information and support services from the University.

The new technologies are being used increasingly by a variety of providers to offer guidance and counselling (Offer, 1993; Hunt, 1994; King, Engi and Poulis, 1998; Murphy and Mitchell, 1998). Some concerns have been expressed that human relations will be mechanised through the use of computer-mediated information and communication technologies, however, there is evidence that the new technologies can be used in such a way as to enhance human interaction (Tait, 1999).

There are also other issues concerning the use of the new technologies for advice, guidance and counselling that should be considered. Of major importance for some is that of access. To use this sort of medium requires a modern multimedia personal computer and not all of our current or prospective students will have this access. This certainly is an important issue - but not a reason to do nothing. The ideal would be to provide a flagship solution alongside a robust accessible service to all. Our intention in producing this service alongside but not instead of the existing services should mean that those students who are unable to access the new technologies will not be disadvantaged.

We aim to use the new technologies to engage in dialogue and interact more effectively with enquirers, students, corporate clients and Associate Lecturers. This sort of technology can be used as stand-alone or integrative, in that it can provide a platform for organizing information provision; form-filling; procedure following; informed course choice; registration; making regional and local contacts; and communicating with advisors. This doesn't obviate the need for printed materials: the *'Learner's Guide to The Open University'* is intended as an addition to the range of tools available. However there are clearly some things that are very difficult to convey using conventional means and the use of this new medium provides us with new opportunities. It opens up the range of interactive distance work that we can engage in, to enable us to do things that we have previously only been able to do face-to-face. For example, we have always found it difficult to convey the time/workload involved in UKOU study and one third of our students who withdraw from courses cite time as a problem. Our approach offers opportunities for interactivity for time-management exercises which can be quite difficult to achieve 'at a distance' using more conventional media.

The focus of our work is on guidance and student support in which technology is used appropriately - not as a gimmick. The program should help the user to:

- Consider appropriate issues at appropriate times
- Follow pathways according to needs
- Access relevant information to make informed choices
- Understand decision making process
- Increase ability to become an independent learner

## A Multimedia Interface

The obvious and most accessible interface to information is a book. In the advice context, paper can be used very effectively to present a set of readable textual notes that can help the reader to think carefully about key issues. However, in a televisual world a range of other media can also appropriately assist textual notes. Accessing information on the internet often involves mixing the medium with the message – if we are to be successful in helping the student to think carefully about these issues (rather than simply skip over text to get it out of the way quickly) then we need to engage them with an a medium that holds there attention and interest whilst they get the point!

The Learner's Guide to the OU prototype aims to be attractive and user-friendly, holding the user's attention and encouraging exploration through good use of colour and design as well as interesting content, including the use of case studies and illustrative examples of student experience to help users gain an appreciation of their task. After a considerable early prototyping phase including the use of focus groups to examine the interface issues (Fage et al, 1997; Scott et al 1997) our chosen interface currently consists of a range of photoreal contexts, inlcuding a University office to which interesting and useful items and people can be added. The navigation bar at the bottom of the screen enables the user to move around the program with ease and to see where they are within the program at a glance. A note-pad is provided with the system and is intended to be used by the user at any time to take notes. It also contains a number of activities that the user can work through. The portfolio so produced can be printed off as a 'take away' product of the users interaction with the system. The system can also insert elements into the users note-pad during the interaction – to help the user keep a record of where they have been.

## What does the prototype cover?

A Learner's Guide to the OU is a web-based interactive multimedia program which uses streaming media including audio and video. Users can follow pathways in a linear fashion or move from one area to another through links within the program. It is also possible to join the program at different entry points. A sample of the prototype is presented here using illustrative screenshots.

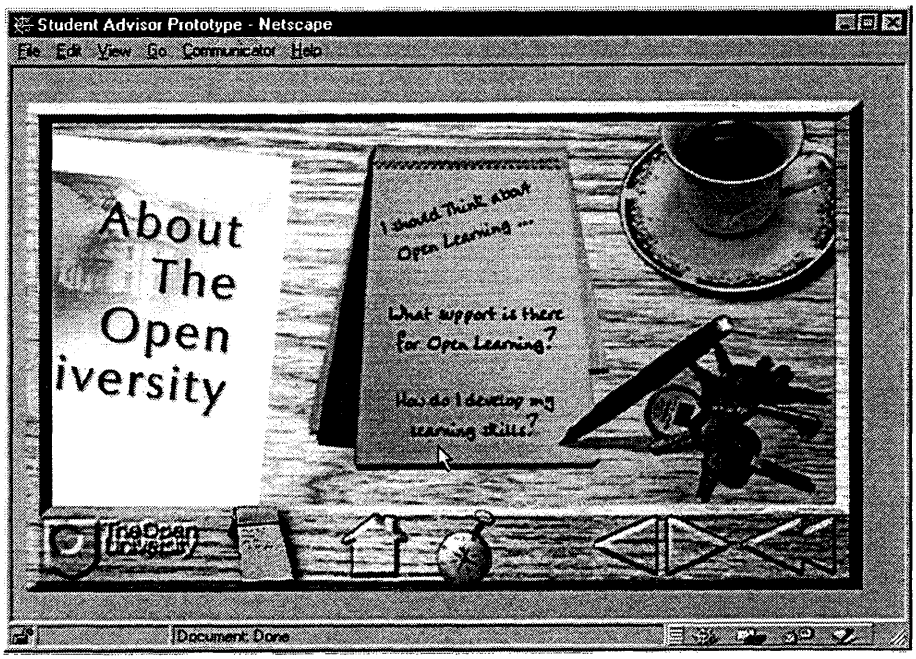



Figure 1. The user's desktop view

The user is encouraged to initially organise their thoughts via the desk shown in figure 1. The coffee cup visible is intended to be communicative – in that it offers them the chance to chat to someone about their interests. In due course we propose connecting this with a live chat session involving tutors and students. In the current prototype it simply lets the student compose an email message to be sent to the advisory team. The brochure lets the student hear about some of the stories of other students and their experience of the Open University (see figures 2 and 3). The notepad lets the user select an issue to enter a discussion with a virtual advisor (see figure 4). On the bar at the bottom (and available through the system) are: links to the Open University web pages; links to the students own note-taking; a link back to a central location; access to a map which will show the student where they are within the scope of the system; an a range of navigational options to let them skip forward and back in the system.

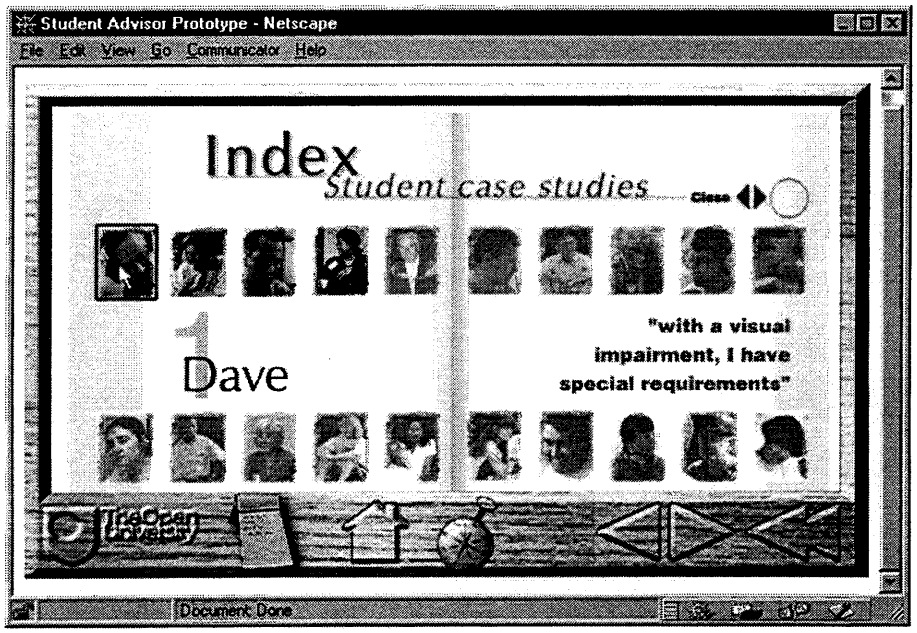



Figure 2. The Index Page of the Brochure

In the brochure the user can see a range of student stories presented that raise a number of the key issues that they may be concerned with. In figure 2 the student has rolled the mouse over the first student to see that "Dave" has overcome some physical difficulties in order to study. In figure 3 the user is mid-way through a story from "Vincent" (having clicked the link picture two along from Dave in figure 2). Here the story concerns Vincent's interest in gaining promotion in his current teaching job by studying an MA in Education. As throughout the prototype, the user hears the story as audio with streamed interactive animations. The student stories are all artificial (culled from a range of real student experiences) and designed to raise a wide range of issues that the user will be able to identify with. This student perspective is a natural complement to the advisors perspective presented in the office environment (see figure 4) which is accessed from the desk notepad (in figure 1).

In figure 4 we see a scene within the advisory office. The advisor is represented as an animated figure to the left. Clicking on the advisor will always reprise the last section of audio and animation. The central whiteboard carries most of the animation – usually simple cartoon illustrations which hold the users attention whilst the advisor is speaking, or, as in this case which present a range of further issues that the user may like to consider. The right hand segment of the office scene is where supplementary material is presented – this is usually a video or a related story from a students perspective. In figure 5 the advisor is discussing the use of visual and audio notes in open learning – so the user has clicked upon the TV which has rolled in through the door to offer a segment of relevant video. In this particular screenshot we see the video having paused the advisor and taken over the exploration of this particular issue.

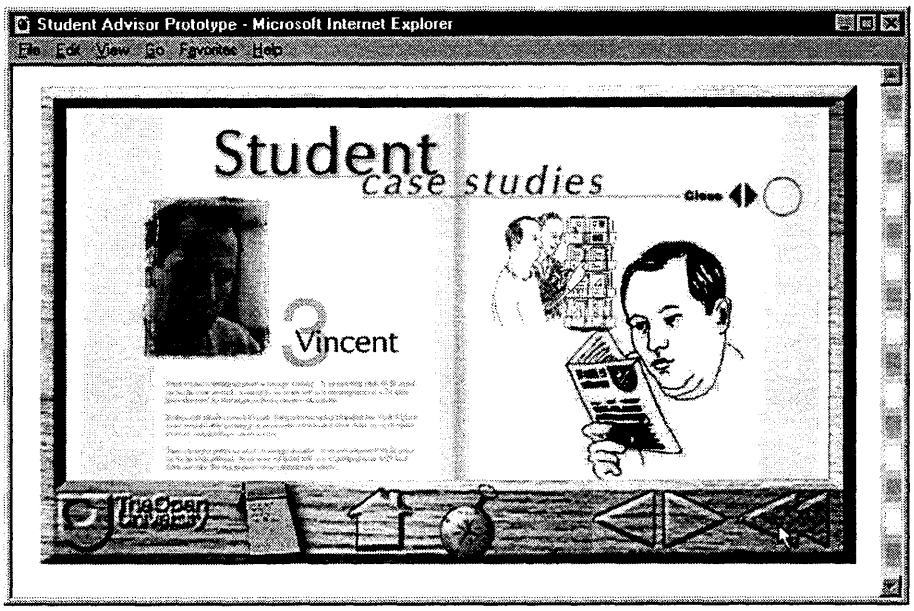



Figure 3. Vincent's Brochure Story

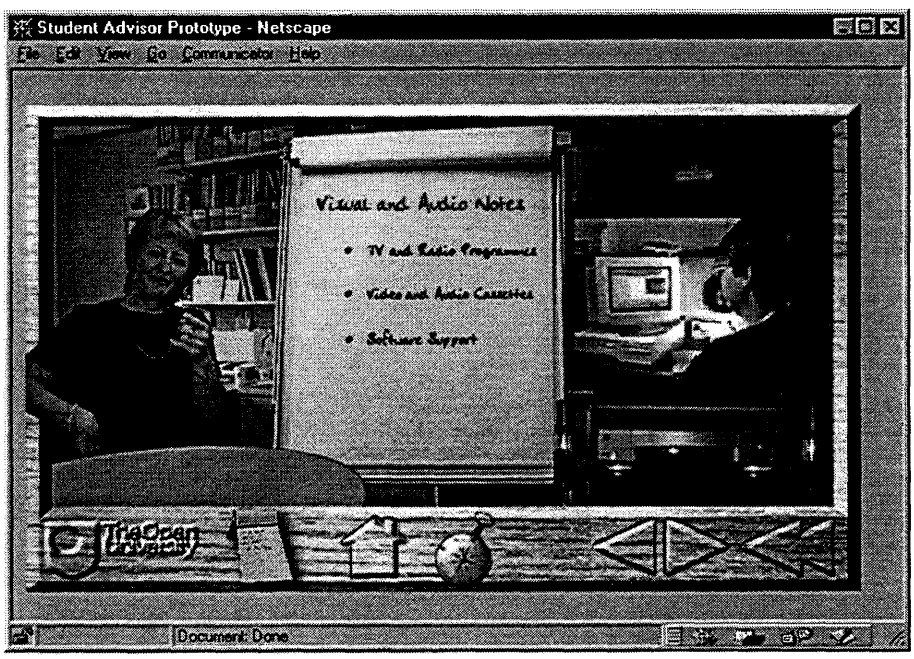



Figure 4. In the Advisors Office

Whilst the brochure stories are intended to raise issues that the user may find echo their own needs, the advisor interaction is designed to be much more conversational. It is intended that the user should feel that they are having more of an interchange with the advisor – in that they can choose a question or issue for the advisor to address. The system encourages the user to think through making choices, seeking information, and exploring the issues, however it is certainly the case that for most of the time the user is relatively passive. The model used has much more potential for interaction. One good example of such an interaction is our use of portfolio exercises. In figure 5 we see a sample exercise that has been launched into a separate window from a choice point discussed by the advisor during a section on time management.

Whilst we can tell the user about appropriate time management issues, the most effective way of getting them to think through the issues is to have them work through some examples. In figure 5 the advisor has asked the user to drag the bottom icons onto the blank time cells which represent their available study time in an average week. In this case the user has (wisely, according to the advisor!) chosen to use the little time they have available on Wednesday to organise their notes in preparation for a large chunk of study time that they tend to have on Thursday. In this example, the user has yet to decide quite what to do on that day!

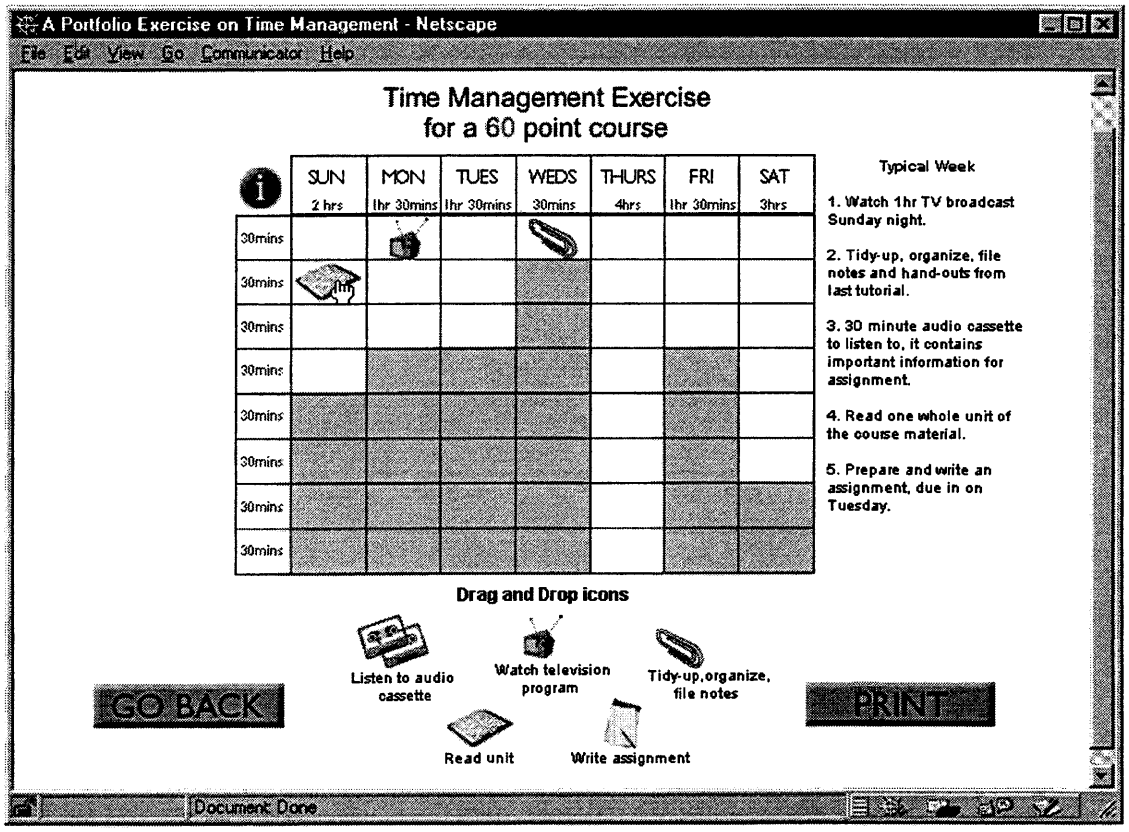



Figure 5. A portfolio exercise on time management

The key point to make here is that a written note about the effective use of time (along with other helpful advisory jewels) can all too easily be considered banal and cheerfully skipped by a busy user. However, the effective use of appropriate media (here motivating audio with animations, and ideally some simple interactions), can really help the user to engage with the advice!

**Evaluation**

Evaluation has been an on-going feature of the project. Initially a range of alternative interfaces were prototyped and piloted with focus groups, including at an international open and distance learning conference (Fage et al, 1997). The scripts used in the multimedia sections have also been quality control reviewed by a range of regional advisory staff. Now that the prototype is fairly stable and demonstrable we are well into the user testing phase. We are collecting feedback directly from the web prototype, and are in addition conducting a range of semi-structured interviews around the use of the prototype with enquirers, students, associate lecturers and regional centre staff.

This approach does not, obviously suit all users:

> "I tend to find with the internet that having pictures of, for instance, a classroom or a blackboard, etc. can be a bit condescending and often to do with the programmer having fun. Why not give the information in a straightforward way?"

However, the majority of feedback collected so far has been very strongly positive overall, with existing students appearing to be just and enthusiastic as inquirers.

> *"It is very user friendly."*

> *"The idea of an interactive timetable is brilliant."*

> "The use of voices rather than long chunks of writing on a computer screen is good."

> *"Excellent. Esp. as interactive and able to answer specific questions in a non-threatening way."*

Even when asked to focus on the worst bits of the system users were still surprisingly positive and tended to criticise the system for being, if anything, too compelling.

> *"Our phone bills could be high!"*

**Future**

The current prototype phase will be completed during summer 1999. Further work is required to explore how such a multimedia prototype could be effectively integrated into the University support systems. Moving from a prototype such as this to a robust delivery system that will properly support a wide range of users via a wide range of systems and fully integrated into the wider range of existing media already deployed is, potentially, a major enterprise (Scott et al 1997). However, it is widely agreed that as the technical specifications of the internet improve and as users' home and work will become more integrated with personal computing. In this world systems such as this will become even more compelling! They will certainly become more accessible and improve in quality – and no service (at all!) can afford to ignore the potential of this medium. This experiment has just begun to explore this potential.

**References**

Bailey, D. Brown, J. and Kelly, P. (1996) Academic advice, personal counselling and on-programme guidance in the Open University, in Personal Tutoring and Academic Advice in Focus, UK: Higher Education Quality Council.

Fage, J., Jennison, K., Phillips, M., Scott, P., & Webb R. (1997) New Technology in Student Guidance and Support in the UKOU - A Student-Friendly Strategy, 18th International Council for Open and Distance Education World Conference, June 1997, Pennsylvania, USA.

Hunt, M (1994) The present and future use of information technology to support guidance. In NCET/CRAC/NICEC (Eds) The Future Use of Technology in Guidance (pp21-30). Coventry: National Council for Educational Technology

King, S. A., Engi, S. and Poulis, S. T. (1998) Using the internet to assist family therapy. British Journal of Guidance and Counselling, Vol 26, (1) 43-52

Murphy, L. J. and Mitchell, D. 1. (1998) When writing helps to heal: e-mail as therapy. British Journal of Guidance and Counselling, Vol 26, (1) 21-31.

Offer, M. (1993) The implications of using the computer as a tool in guidance. In A.G. Watts, E. Stern and N. Deen (Eds), Careers Guidance Towards the 21st Century (pp32-33) Cambridge: Careers Research and Advisory Centre.

Phillips, M., Scott, P., Fage, J. (1988) Towards a strategy for the use of new technology in student guidance & support. Open Learning, 13, 2, June.

Scott, P. J., Phillips, M, Fage, J., Jennison, K., Webb, R. (1997) Towards the integration of student support systems via the internet. Ed Media 97, AACE, Charlottesville:VA.

# The Internet and its impact on a „global social competence"

**Michael Ribold, Universität Lüneburg – Fernstudienzentrum –**
**Peter J. Weber, Universität Hamburg, Institute for international and Comparative Education**

*This paper deals with a survey on three case studies of various arrangements for intercultural learning via the Internet in Europe. On the one hand the empirical research is based on theoretical reflections about intercultural competence needed in a multicultural society, on the other hand it is grounded in the pedagogical discussion of media competence. The main goal of the research is to determine the sustainability of Internet-based learning arrangements for developing intercultural competence by learners of different anthropological backgrounds. It seems that arrangements based on a combination of training and education have the most success for developing a "global social competence".*

## Introduction

With the technical development of the World Wide Web in the early 1990's, the Internet was theoretically accessible for everyone, at least in the industrial nations. Without a doubt, the traditional electronic media could never have triggered such a development as has the fusion of computer, telecommunication and electronic media (Willke 1997). According to OECD statements, the volume of the 'electronic commerce' will increase from $26 million in 1996/97 to $1000 billion in 2003/05 (OECD 1999, 12). This can be largely traced back to the optimization and redesigning of communication processes which present a possibility for businesses to respond to the higher demands regarding costs, quality and flexibility in the international marketplace. According to OECD estimates, 30% of the volume in the areas of communication, finance and smaller trade and 20% in education, public health and government will be influenced by the electronic trade (OECD 1999, 9). Although few reliable estimates are available for other areas, a general increase of Internet users can be counted on worldwide. Virtual contact situations will be thus influenced especially by the giants of intercultural and media competence. An intercultural competence in virtual contact situations can contribute to both a globalized and regionalized society, permitting peaceful co-existence since they lead to a large degree to the dismantling of prejudices and stereotypes. Yet the interaction between intercultural and media key competencies is rarely considered, let alone the subject of social competence, which can be regarded as decisive in global as well as regional contact situations in the Internet. This contribution will deal next with the relationship between intercultural competence and the Internet, in order to enrich consciously the very technically oriented discussion with one further aspect. Based on the mutual influence between Internet and intercultural competence, the influence of a social competence through the Internet will be discussed through the demonstration of three case studies. Due to the paradigmatic character of the chosen case studies, this can be of definite importance for the development of a 'global social competence' in the Internet.

## Intercultural competence and Internet

Just how far the Internet poses a chance for intercultural learning depends very much on how far the Net lends itself to learning processes. The question is which new opportunities the Internet-based learning environments offer for the development of

intercultural competence for learners of different anthropological backgrounds. With that, two central problems are raised:

- How should the objective of an intercultural competence be designed in relationship to the development of a virtual world?
- Which Internet learning environments should be chosen from the existing multitude in order to arrive at lasting design criterion?

One possible objective lies in the connection of the effects of the new media with a differentiated understanding of society. Today, a meeting of cultures is let loose from a central nation state through the new media. This is due to the continually progressive supplementation of the national electronic and printed media through new international media, which obey other principles altogether (Schröder/Zimmer 1995). If media in the nation states is on the whole only planned for its linguistic region, global media of international communities orientates itself toward its multilingual users[1]. At the same time, technical development makes the integration and interactive design of various media possible. At this point the process of community creation becomes increasingly important since social actors can join forces with one another or with many others out of common interest. This process will be made easier in the international context through the Internet. And with it, a substantial importance of the new media could be in making possible the formation of transnational societies which themselves consist of many sub-societies. The new media therefore has the ultimate effect of being identity-founding. These transnational societies unite people of different cultures; for example, through trade, immigration and emigration or through common activities in the Internet. This doesn't mean that the state and the related concept of the international society becomes obsolete or that the artificial particularization of the society must increase (Kleger 1997). This transnational space is at the same time transcultural, requiring a corresponding competence from the social actors which can no longer be fixed to an intercultural understanding. It must concern itself with a transcultural competence which allows the social actors to deal with many cultures of the transnational society, since with the multitude of contact possibilities, not all specific cultural competencies can be conveyed. Objectives for a global social competence can therefore be culture-overlapping fundamental competences, to which a transcultural social competence belongs, consisting of sociability, communicative flexibility and sensitivity.

To the solution of the second initial problem – which Internet learning environments should be drawn upon for the analysis of intercultural learning in the Net – a categorization lends itself which has been obtained from the analysis of world-wide collaborative learning environments for presence universities. It is concerned with learning environments which work by sensitization through explanation and training (Type 1), through consensus creation (Type 2) and through knowledge construction (Type 3) (see Ribold/Weber, 1998). For Type 1, case study CCED has been chosen whereby it should be mentioned that since winter 1998, this training with online-communication has been expanded with accompanying video conferencing. At the

[1] In this contribution, we will address the tendency toward globalization through the Internet only, not that of regionalization, which exists as well. The analyses of the language usage of websites indicates that the 'globalization language' English does not play the dominant role as was supposed. Websites are mostly bilingual, in a national language plus English: this points out the further creation of regional and local virtual space, in which the intercultural and media competences remain indeed as equally important as in the global space (Databank Consulting 1997).

time of the interviews, this feature hadn't yet been predicted. DEMETER was chosen for Type 2 and HALÜBO for Type3. The three learning environments will be presented next by way of examples since the following study results refer to data which will be investigated within the framework of these three courses.

**Type 1 (trainings oriented): Cross-Cultural Explorations and Dialogue (CCED)**

CCED is a mainly mailing list based framework, set up by the active learning centre of Tartu University, which offers the opportunity to exchange experience of different national and ethnic identities (for further details see: Internet (6.5.98) http://www.ibs.ee/babel). It has been run several times so far, and there were between 10 and 20 student groups enrolled from all over the world. Over a period of about 9 to 12 weeks, the groups had to send in one assignment per week. These assignments were distributed by the mailing list. The first assignment was for individuals simply to subscribe to the mailing list and introduce themselves. The other assignments focussed on his/her own culture or image of the other cultures, whereas in the following assignments, the group had to speak with one voice. There was also a separate list for individual discussions. The proceedings were represented in the Web as well. As an additional feature, the students had the possibility of meeting at fixed times on an IRC channel in order to get acquainted with this 'online talk' facility since one of the later assignments was an online role play.

**Type 2 (problem oriented): Distance Education Methods in Teacher Education and Research (DEMETER)**

The DEMETER project is a framework for Distance Education Methods in Teacher Education and research. It was set up by the Organization of Internationalization and of Innovation in Teacher Education (ITE). It uses a metaphor of a(n) (European) parliament as a working environment which is mapped on to a very sophisticated, integrated WWW-based model. (For further information see: Internet (6.5.98) http://hugin.hsh.no/project/demeter/index/.htm).

The educational concept on which the project is built is that of problem-guided education. Looking at the design, DEMETER is both action and knowledge based. The students are confronted with a problem which is accompanied by indications. DEMETER uses the parliament metaphor as an indicator and the students become members of a virtual European parliament which has to develop and to vote on a bill concerning the given problem. The clarifying process is done via discussions in the regional groups as well as via speeches done in front of the parliament. Building parties, proposing a bill or parts of the bill are parts of the problem solving process.

**Type 3 (knowledge oriented): HALÜBO**

The course **Hamburg-Lüneburg-Bochum (HALÜBO)** was developed against the background of the other two learning environments as a pilot project for intercultural learning via the Internet at the Institute of International and Comparative Educational Science in Hamburg and had more of a training character to it (for further details see: Internet (6.5.98) . http://www.erzwiss.uni-hamburg.de/Inst02.virtsem.htm). This arose because the pilot project brought three courses at the universities Hamburg, Lüneburg and Bochum together, uniting the subject-complex European pedagogic dimension through the Internet. Along with competence in the European learning

arena, international competence in the tendency towards international knowledge should be acquired within this subject complex. The main objective of HALÜBO is to make intercultural learning possible through the activities with international content; for example, the European integration or special features of foreign educational systems. As with the continuing pilot studies, the Internet serves as an international place of information supply, expert consultation and the exchange with unknown participants. This international exchange over the Internet should encourage a positive attitude in the participants toward other cultures. This case study therefore represents the polar opposite in trainings environment to the course CCED, in which the primary concern is the representation of intercultural competence in the respective contact situation. The main components of HALÜBO are the homepages and technical communicative arrangements which are comparable to those of the other two case studies. One way of doing justice to the pedagogic character was to hold the local events like traditional courses. Another way was to put the gathering of information and the expert enquiry through the Net in the spotlight of the course. In total, 60 students from Hamburg, Lüneburg and Bochum took part on this course. The HALÜBO project stands between the other two projects as far as its technical equipage is concerned. It works with mailing lists and message boards without the complex structures within the World Wide Web, just as the DEMETER project does. In principle, it was also possible to follow the project without accessing its homepage, but this did involve some information deficits. This was the result of the fact that HALÜBO, similar to DEMETER, had an information module which was localized at the University of Hamburg in addition to the technical arrangements for communication. With it, not only was the retrieval of information in hypertext about the European pedagogic dimension possible, but contacts to experts could also be made. Since one learning objective of this project was the use of chat programs, a program called POW WOW was taken from the Net as a share-ware version for our own use. It served not only the communication of the individual courses with one another, but also that of the individual participants who had formed work groups through the local university.

The three case studies represent typical characteristics of international learning environments within the Internet; and although the range of possibilities for their technical design will change, they will always be oriented around these three basic sensitization possibilities.

**Analysis**

The data collection in winter 1997/98 for the three case studies works with a combination of qualitative and quantitative methods. In order to receive specific information about the environments within a university system, the data, which is analyzed here, has been taken from the data pool of the German universities about the three projects. There were three collection methods in total. A questionnaire was distributed before and after the courses so that distinctive personality characteristics of the learners of the environments could be identified. A qualitative analysis of the communication environments, such as message boards, ensued from a look at the intercultural or rather, transcultural learning process which included the comparison of the categorization according to the Software Typology of Baumgartner and Payr (1994). With regard to the enduring effects of the study results, interviews with experts were conducted in connection with a workshop.

The main objectives of the study are as follows: the study should indicate effects of the technical and pedagogic variations of Internet learning environments. It should also indicate the typical changes in distinctive personality characteristics in regard to the objective of a transcultural competence. The study should finally determine general construction criterion of Internet learning environments with regard to pedagogic constructivism.

**Results** [2]

The results of the exploratory study conducted before the start and at the end of the courses (with 173 students who had rather weak international and technical knowledge beforehand) can be divided into three areas: efficacy of the learning environment on the learner, typical distinctive personality characteristics and their changes after the courses and finally, the potential for innovation of the Internet learning environments of these three types. In the following, the results regarding the distinctive personality characteristics will be introduced by way of examples. These characteristics constitute the core of the study since it is through them that the question of which learning environment best supports the development of transcultural competence will be investigated. Transcultural competence was set within a sub-construction of the question which consists of 16 dimensions and 41 variables. The variables were adapted from the personality research for transcultural inquiry. The analysis pursued Latent class analyses (LCA), in order to procure typical answer patterns (Rost, 1990, 1996).

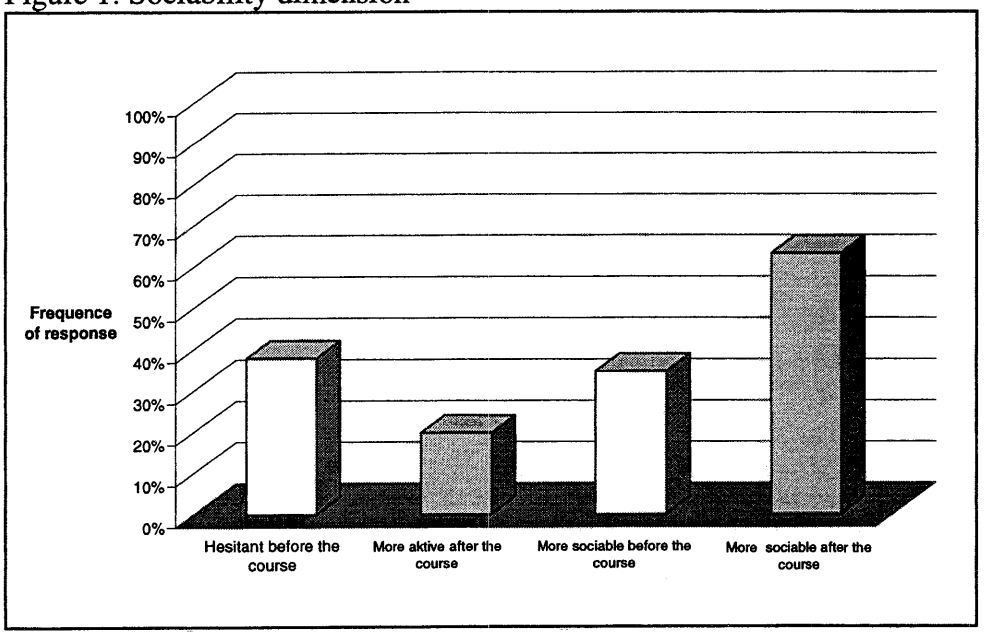
Figure 1 shows an example of 4 typical answer patterns in the dimension sociability, as appearing before and after the Internet courses. The largest group before the course is the "hesitant" type who, although having only minor anxiety towards other cultures, is quite hesitant in establishing and maintaining contact themselves. Less hesitant is the second type before the course (the "sociable" type), who also demonstrates strengths in establishing contact. The evidence for mistrust towards people from other cultures is rather ambivalent, existing only at the beginning. The "sociable" type reappears again after the course and in this case, comprised over 60% of the students. A learning effect had taken place as the sociable group is by far the biggest; even when the individual LCA types don't have to be composed of the same people.

The hesitant type no longer appears after the courses; rather a more active type with noticeably little anxiety regarding foreign cultures. A general finding is that the Internet courses led to increased sociability for most participants. This result is repeated for nearly all 16 dimensions of the measured distinctive personality characteristics. After the courses there was a general gravitation by all the types toward the categories of transcultural competences and at the same time towards a higher positive response niveau. One can therefore assume an overall positive influence of the Internet learning environments on transcultural learning success.

---

[2] Some preliminary results were published in: Pascal Marquet, Alain Jaillet, Stéphanie Mathey, Elke Nissen (eds.) (1999). *Actes d'IN-TELE 98*, Peter Lang, Berlin.

Figure 1: Sociability dimension




The point of departure for a look at the changes in the differentiations after the three Internet courses is the classes or types of the LCA analysis, as described above. According to these types and with the help of cross tables, it will be investigated in which typical response pattern differentiations occur after the course. Within the first dimension, hardly any differentiations in the strengths can be found in the discrete examinations of the courses for the categorization of the types 'Hesitant' and 'Sociable'. All three courses in this dimension more or less reach the objective of increasing sociability in the participants after the course. This can be explained by the design of the courses, in which all three included a phase of direct contact with the help of the medium of Internet (e-mail, chat, etc.). Two special features result through the technical construction stipulations of the Internet. Firstly, independent of the pedagogic design, it is apparent that the participants are more sociable in intercultural situations through the inclusion of electronic communication possibilities which they themselves specify. Secondly, it became obvious that limits to the technical implementation of problem oriented environments exist due to their enhanced complexity which can lead to undesirable learning results despite the allowance for communicative target categories.

**Discussion**

On the whole, all three learning environment types studied proved capable of initiating a learning process centered especially in the area of social competence, going beyond culture toward a sociable, open and considerate learner. Within the framework of the exploratory character of the study, it can be suggested that the Internet is well suited to the construction of transnational societies since, through the development of social competence, the process of community creation will be supported. People of very different nations and cultures band together out of common interest. This bond can also be understood in terms of the perceptions of one's own subjectivity which are parts of identity and culture developmental processes. In this way, culture can be understood as a complex bundle of subjectivities (experiences, values, norms, ideas, attitudes, dialects, etc.) and objectivities (activities, behavior, language, artifacts) which assist everyday orienteering and life mastery (Roth 1996,

260). With regard to Max Weber (1972), community creation can now be seen as the more subjective process, whereby individuals come to a group formation out of subjective reasons, in contrast to society creation in which the rather objective motivations play a role. For the future multicultural community, it is exactly the process of community creation which may possess the greatest creative potential. And with it one great importance of the new media for the world society could be that the new media actually has the effect of being identity-founding in a world of international and multicultural communities where it is possible to form international communities of various actors (organizations, individuals, businesses, etc.) consisting of many sub-communities. All these communities will cohere out of common interests and, from the start, need in no way, for example, follow the majority of any nation state.

It is also to be borne in mind that the best learning effect could be a result of a combination of the three types since a comprehensive transcultural competence cannot be provided by just one type of the Internet learning environments. This would be conceivable in serial modularity, although it would be problematic in the European university system which is neither institutionally nor organizationally very flexible. The teletutoring structure should therefore greatly influence the virtual and partially virtual universities of the future (Geyken/Mandl/Reiter 1998). At the same time, only few universities are likely to prevail as truly virtual institutions (single model) such as the University of Phoenix. They are rather likely to become more Add-on or More-Quality models (dual mode), which perform parts of their services virtually (Krempel, 1997).

**Conclusion**

In the future there will surely be more people who will have tertiary educational experience in a virtual space, even without being explicitly prepared for it by an educational institution. Therefore the existing concepts of multicultural education must automatically be questioned as to whether their concepts are adequate enough to prepare people for increasingly enmeshed cultures within corresponding learning processes. This doesn't mean that the area of tertiary experiences should obscure the other experience areas, but it should be prognostically assumed that it will play a larger role in hypermodern societies than in postmodern ones (Telepolis 1997).
Of much greater importance is that the ephemeral life-models of postmodernity - just as in hypermodernity – will retain their validity. It will be impossible for the individual to be prepared for the life-long challenges in the rapidly changing social roles, structures and duties. The decisive factor should be world-wide technical and trans-cultural competence since they make the individual citizen flexible in the specific creation of private and professional life-plans. As they are primarily coupled with the new media, they should also be striven for within its frameworks. The results of the studies, introduced here by way of example, advocate that virtual international Internet learning environments lead to a change in the learner's social competence with a view to a global social competence. Hence, it is to be in future even more intensively investigated how multicultural education concepts concerning the new media can be complemented.

**References:**

Baumgartner, P./Payr, S., 1994, *Lernen mit Software*, Österreichischer Studienverlag.
Databank Consulting (1997): Evolution of the Internet and the WWW in Europe. In: Internet: http://www2.echo.lu/mlis/en/ document/ evolution.html, Abruf 05.05.1999.
Geyken, Alexander/Mandl, Heinz/Reiter/Wilfried (1998): „Selbstgesteuertes Lernen mit Tele-Tutoring". In: Schwarzer, Ralf (Hrsg.): MultiMedia und TeleLearning, Frankfurt/New York (Campus), 163-180.181-196.
Kleger, H., 1997, „Bausteine transnationaler Demokratie", Kleger, H. (Hrsg.): *Transnationale Bürgerschaft*, Campus, 1997, 287-335.
Krempel, Stefan (1997): *Das virtuelle College – die Zukunft für die Universit*äten. In. Internet: http://www.heise.de/bin/tp/issue/tp.htm?artikelnr=2612&mode=html, Abruf 04.02.1999.
OECD (1999): The Economic and Social Impact of Electronic Commerce, Paris (OECD).
Ribold/Weber 1998, "First Steps towards Structures in the Use of Internet Tools in Distance Learning Environments", *Internet as a vehicle for Teaching,* Cluj-Napoca,1998, 68-79.
Rost, J., 1990, *LACORD. Latent Class Analysis for Ordinal Variables*, 1990, Institut für die Pädagogik der Naturwissenschaften an der Universität Kiel.
Rost, J., 1990, Lehrbuch Testtheorie, Testkonstruktion, 1996, Huber.
Roth, Juliana (1996): "Interkulturelle Kommunikation als universitäres Lehrfach. Zu einem neuen Müncher Studiengang". In: Roth, Klaus (Hrsg.): *Mit der Differenz leben. Europäische Ethnologie und Interkulturelle Kommunikation*, Münster et al. (Waxmann), 253-269.
Schröder, H./Zimmer, D., 1995, "Begegnung der Kulturen im Netzwerk? Neue Medien und Transkulturalität", *Zeitschrift für Kulturaustausch* 1995/3, 356-364.
Telepolis (Die Zeitschrift der Netzkultur) (1997): *Die große Müdigkeit. Europa im Dornröschenschlaf*, Nr. 3 September 1997.
Weber, Max (1972): *Wirtschaft und Gesellschaft*, Tübingen.
Willke, Helmut (1997): „Informationstechnische Vernetzung als Infrastrukturaufgabe – Welche Rolle spielt die Politik?". In: Werle, R./Lang, C. (eds.): *Modell Internet?*, Frankfurt/Main/New York (Campus Verlag), 115-13

# Education Through Technological Support in 21st Century

**Dr. Jagdish Sharma, Asstt. Regional Director, IGNOU* Regional Centre Shimla (H.P.) INDIA**

The idea behind setting up of Open Universities around the globe itself underline the need of support mechanism which would help offer education to the "much larger body of the population which remains outside the university system". This thought was propagated about 30 years back but it still remains a pertinent issue, and the open education still hold that resolve to reach hitherto remained unreached. In a country like India where fastly growing Industrial and Agricultural Economy has largely contributed to urban migration and therefore the infrastructure in urban areas is adversely affected. Besides, large congregations are extremely difficult to accommodate in conventional educational set-ups. It is in this context that the technology has stepped in and is being considered as a useful and important tool with the educational planners.

In order to make education relevant to personal and socio-economic development and to meet the need and aspirations of increasing number of people, the learning activities should be constituting the use of Radio, Television, Print, Audio-Video animated material/teaching aids so as to suit the training and circumstances of new learning population (Atma Ram-Higher Education, 1990).

Today another major concern for the education developers is to meet the population of eligible young learners growing multi-fold year by year. This is because of growing awareness about education among the young and adult population. This population is expected to be manyfold in coming decade which would make it difficult to cope up with such a large group of education aspirants. Besides the population that has been left in small hamlets in the country side or the tribal population scattered through the hinterlands of rural Asian Countries cannot be reached uniformally through conventional educational means. As a result a netting technology, audio, video, computer aided education and education through satellite is the only viable solution.

According to Satyabhushan, Scientific and Technological developments of unprecedented nature in the recent past and reduction of gap between research findings with regard to conversion into technology and its utilisation in the productive process has resulted in enhancing the role of knowledge in the developmental process (Higher Education in India-1990, Mittal Publication ND).

The Jhabua project launched about 3 decades ago in central India is a glaring example of technological advantage and still it is very effective methodology in catering to the basic educational needs of sparsely populated Tribal population.

The technological advancement in education according to National Council of Educational Technology of United Kingdom, will continue to purport different things to different people in the development application and evaluation of the system. The appropriate use of technology will certainly aid the process of human learning (GAGNE-1968).

The converging of this century is the meeting point of various technologies as Educational Technologies have grown manifold. Thus Information age is already at the doorsteps. Clearly assessing the manpower cost and space and state finance it is evident that these can't be continued for long as such an alternate medium has to be developed and unless the exploits of computer aided education, multi-media utilities and space technologies are put to optimum use the success of Education planning in the information age will only prove a nightmare.

Some of the major educational areas which are found to be undergoing technological change today are:

~ Self Instructional Material (SIM) Development process
~ Instructional approach
~ SIM distribution (through CD ROM, Internet, A/V material)
~ Interaction (A/V conferencing-Teleconferencing and Radio Interaction)

The Technological learning today is also changing the learning environment.
It is cutting across the learning barriers which are:

- Time
- Space
- Reach
- and individual related.

While discussing the objective of educational technology S.B. Mohanty (ET-1986) has emphasised on these aspects which would be strengthened by the technological enrichment:

1. Helping teachers to improve the quality of their teaching to individual use.
2. Helping teaching administration to
   (i) Provide education to more students with less cost
   (ii) To meet multi farious needs of growing education
   (iii) To equalise education
   (iv) Improving learning skills

While we discuss the objectives of higher education, certain crisis and constraints of higher education or education in general have also got to be addressed to. John Daniel has identified some such issues as under:

- National Universities are even today not equipped to accommodate volume and variety of students.
- Education is still very costly but with very little improvement in the
- skill
- Teaching is too flexible
- Quality not assured
- Sense of universities as academy of education is fastly eroding

The use of education technology has also evolved new working environment in the corporate world. Today Distance Learning tendencies are rapidly growing due to overcoming of above barriers. John Mingle (1995) has even gone little further on highlighting the luminous aspects of use of advance technology in education. He has found that technology will eventually make

- learning unbounded, affordable, real life contextual, full of choice,
- learner centred and thereby making it a unified learning process in true
- civilising factor.

The Computer aided learning today is making virtual learning possible. It also promotes dialogue, sharing of information, interaction and database exploration; the use of space science has provided countrywide classrooms. The successful use of technologies by UGC and IGNOU in India has proved them to be very useful tools in Learning.

Therefore, as we step on the threshold of the 21st century we are also burdened with the cultural, ethical and economical problems arisen out of disproportionate growth of various sectors. We have to put to use the immense knowledge, skill and extraordinary experience fully backed by technological edge in enabling us to exploit the opportunities and face the mammoth challenge of the Information and space age.

During discussion on use of educational technology, Kevin Smith has said,

*"The availability of vastly improved technology has already enabled students learning at a distance with a need to transform public information into personal knowledge. The telematics i.e. radio, T.V., Cable, Multi-media, Computer mediated/aided, Hyper-Web, Worldwide-Web, E-mail, Internet, On-line etc. in education has also prompted to review learners their own learning. It is perhaps a real issue at a stake in terms of discovering the possibilities of technology rather than imitating the physical and social limitations of the traditional class-rooms."*

The emergence of mega university in distance education in form of Indira Gandhi National Open University is vividly indicating how technology is going to be an useful tool to deal with large students' population in mega universities. It has to face the daunting challenge of serving a student body of more than half a million currently enrolled with the university in India. The university has a purchase of more than 2000 tonnes of printing paper which shows that it would be appreciable if some other media is put to use to limit such external constraints. According to Dr. Kulandai Swami (1984),

"As long as a popular media such as Radio is not available for spread of distance education, it will suffer from a crippling handicap."

Fortunately, the educational developers have acted upon this noble suggestion and today more than 200 stations of All India Radio are offering educational broadcast slots. In Maharashtra, Kerala, Meghalaya and many other states the open universities are having exclusive time slots of 30 minutes on all academic days for use of Universities in the country.

More recently interactive Radio-Counselling has begun at ten capital stations of All India Radio. This interaction is not only creating awareness among the aspirants of education in remote and distant corners of country but live interaction through direct telephone lines and responses on simultaneous broadcast are benefiting the enrolled students. The data available at IGNOU Regional Centre, 11 (Shimla) shows that out of total telephone calls received during Interactive-Radio-Counselling, 60% calls were made from urban areas whereas only 40% callers were from rural side. This indicates the awareness ratio of 60:40 urban vs rural. But the advantage of telephone and radio broadcast is creating awareness among the masses and as a result towards the end of first series of 13 episodes of Interactive-Radio-Counselling the awareness ratio has increased to 53:47 (urban vs rural).

With the growing co-operation between educational planners and Indian Space Research Organisation (ISRO) new horizons have risen wherein IGNOU is conducting countrywide tele-conferencing classes with two way audio and one-way video interaction. This has really brought the magnum of experts to live contact to learners in more than 200 nodes. Besides, the video programmes are broadcast over national television Doordarshan five days a week for 30 minutes duration covering vast body of courses offered to conventional and non-conventional learners. This experiment is now evaluated as favourable and being implemented in a big way (Chaudhary and Sen Gupta-1995).

In another development of technological advantage area IGNOU and Indian Army have entered into an agreement whereby IGNOU will offer it's programmes to all Armymen throughout the country with sound support of Army and IGNOU technology i.e. Satellite link, Computer Network and Fast male systems. Yet another example of technological advancement in education which has brought various academic bodies more closer.

Another concern of the mega universities in 21$^{st}$ Century will be to cater to large number of students with variety of courses in uncommon circumstances. IGNOU is also planning to use new technology to focus its attention on how to make the current system work better in the given circumstances rather than looking for solutions in the emerging technological trends. According to Takwale (1995) IGNOU has been placing greater importance on the development of OPENET, an educational network that today links all 21 Regional Centres and 400 Study Centres in the entire network of university. OPENET is a wide area network for voice, data and images facilitating hyper flow of information within the network. In the management area the computerisation of all financial, administrative and admission records has also made the process of student support services much quicker and effective. Needless to say that teleconferencing facility for staff and students is being exploited with much satisfaction. IGNOU also successfully experimented with launching new courses through web-site, Internet and hot-mail.

Another example of technological advancement in education has brought various Academic bodies more closer. IGNOU in collaboration with Edexcel Foundation (UK) is offering BIT/BTECHND/ADIT honours through tele-learning centres across the country. This teaching will be having state of the art infrastructure to facilitate effective delivery of the programmes which will include live satellite based T/C

lectures, rendered video lectures, practical labs, CBTs and Int-based learning resources.

However, the successful use of highly advanced technology will demand dependable technology, trained course designer, trained instructor and effective local support services.

Therefore, as Bitter cited in Rossman 1992, the new technology will form an essential part of human existence in 21st century and they shape our lives as the educational network is going to be most favourite structure in the coming few years.

**References:**


Adult Learning and Education - Ed. by Malcom Tight
Kakatiya Journal of open learning: June-1996 University News: Vol-37
IGNOU, SIM: PGDDE, ES-94
Consensus data 1991, H.P. Shimla
IGNOU Annual Reports: 1998, 1999
Kevin Smith, Open Learning-June (1993)
Higher Education - Dr. Atma Ram, New Delhi (1990)
Satyabhushan-Higher Education in India, 1990, Mittal Publication, ND
John Daniel-Mega Universities and Knowledge Media, London (1996)
National Council of Educational Technology of U.K. (1968)
Educational Technology-S.B. Mohanty (1986)
Educational Technology-K.L. Kumar, New Age Publication
Hindustan Times-Daily, New Delhi
The American Journal of Distance Education; Vol. 8, 1992

# Reaching Far Corners with New Technologies
# An Innovative Mixed Media Approach to Teacher Education

**Russell Yates**
**School of Education, The University of Waikato, Hamilton, New Zealand.**

## Introduction:

By international standards, the history of New Zealand teacher education is considered brief. Traditionally New Zealand teacher education was provided by up to seven teachers' colleges, which provided pre-service programmes mainly for school leavers. The 1990 education reforms, which, in 1988 had dramatic effects which continue to influence provisions that are made by about 36 private and public providers.

Since 1989 the New Zealand government has increasingly allowed market forces to prevail in a number of areas of New Zealand life including education. One effect of the market driven approach is that there are now an increased number of providers in the field of teacher education, each competing with the others. While there have been mergers between institutions, there remains a significant number of providers.

There have also been changes in the way pre-service teacher education is made available to students. Whereas it was previously expected that students would study in face to face classes, students are now able to engage in teacher education in more flexible and open ways. The University of Waikato is one provider of open and flexible learning and teaching opportunities in teacher education. In three years its numbers have risen from 54 to 165 students in its Mixed Media Programme. This paper examines the way in which the use of new technology has enabled this innovative approach to teacher education. Information technology has been coupled with block face to face teaching in a programme that is available to students who live in more remote areas and who are unable to attend regular classes on the campus. The paper also examines the way in which the students are supported. The support mechanisms provided by the university are discussed, as are ways in which students developed support mechanisms of their own.

## Background:

In 1997 The University of Waikato, began teaching a programme of primary teacher education designed for students who live in more remote areas of the region served by the university. This was in response to a continuing shortage of teachers for a significant number of schools, in the mainly rural areas. Thus, the approach has been to recruit and select students, who, when qualified, will live and work in their home districts. It is expected that this will provide teachers with a strong commitment to their own communities. This assumption is based on previous experience of teaching other students in some of these districts in the early 1990's, many of whom have continued to teach in their home area.

Those former programmes relied on face to face contact on a regular basis. The demands on staff in terms of travel and time made this an unattractive option for a

new programme, especially in the light of reduced government funding. The decision was made to use information technology to reduce the need to travel. Computer communication would be the main means of interaction. In the initial stages telephone conferences were used, but the use of this diminished, mainly because of the high cost. Personal computers and the Internet have been the main means of interaction. Email is used for contact on an individual basis and for the submission of assignments. "TopClass", a web-based interface developed in Ireland, houses the coursework and also provides access to discussion forums and the library databases. This "low" technology approach to a teacher education programme has been successful to date and meets the needs of students in remote districts where with poorer quality telephone line transmission limits the use of more sophisticated online technology..

The programme developed is a "mixed media" approach, one not uncommon amongst a number of other open and flexible learning programmes. Rumble (1997, p.107) refers to the range of communication technologies used by teachers and students to interact with each other. From that list, the programme offered by the University of Waikato makes use of:

- Face to face interaction during on-campus periods,
- Individual telephone contact,
- Audio-conferences with small groups,
- Asynchronous computer conferencing; and
- Electronic mail (email) systems.

To participate in the programme students are required to attend three "block courses" on-campus each year; work approximately one day each week in a local primary school and use information technology to interact with course material, staff and colleagues.

This programme has shown many indicators of success so far. The initial group of students, which commenced in February 1997, comprised fifty-four students. Of these, fifty-two successfully completed the first year of the programme. The profile of this student group is:

- all except one are women ranging from ages 25 - 45,
- most have family responsibilities,
- seven have had previous experience of tertiary study with three being university graduates;
- most have limited study experience including secondary schooling; and
- Many of the students are active in their local school and wider communities.

Many students have achieved high grades and 48 have remained in the programme. They have readily adapted to using new technologies. The reason for their success appears to be a combination of factors. This includes:

- The relatively high level of motivation within the group selected for the programme;
- The ways in which the students have received support from their colleagues and those teaching in the programme;
- The ability to manage time effectively and efficiently; and,
- The ability to overcome barriers to the confident utilisation of technologies.

**Student Support:**

In any programme that involves a different approach, such as the utilisation of information technology, there is a need for student support. The support provided in this programme has been a significant factor in its current.

In the initial development of the mixed media programme, it was recognised that support would be necessary and would take different forms. Garrison and Baynton (1987) cited in Dillon, Gunawardena, and Parker (1992) contend that the need is to consider resources the learner can access in order to carry out the learning process and resources which relate to the mediation of the communication process. Reflecting these needs, the steps listed below were established. They recognised the need to support students in both the use of information technology and in a pastoral sense:

- On campus block courses;
- Appropriate choice of courses
- Computer support;
- Library support;
- An administrative person;
- Staff support;
- Local "study groups";
- Visits to local areas; and
- Support from base schools.

**On Campus Block Courses:**

The initial form of contact has been with the provision of on campus block courses. Although there is a significant financial commitment required in travelling and accommodation on campus, the face-to- face contact has been notable for the positive establishment of relationships with colleagues and with staff. The face-to-face contact has made it easier for both students and staff to respond to each other in times of need. This support is an essential element in the success of a distance education programme such as the mixed media programme.

**Appropriate Choice of Courses:**
When the programme commenced an initial decision was made to ensure that most students were enrolled in two specialist courses. One of these was a paper which assisted students to hone their writing skills while the other ensured that due attention was given to the development of information technology skills. The benefits of this decision are becoming very apparent as the programme continues.

**Computer Support:**
When the programme commenced the level of technology competency and confidence in the student cohort was low. Many students had no prior contact with technology and some had no idea where to even begin. Their computer access was from their local schools and prior to the on campus block course they had received no training or familiarisation. Very quickly they recognised the challenge ahead of them and responded by supporting each other as they began to become confident and competent with their computers. They readily accepted the support of their colleagues and from some sources provided by the university. This support was provided only in the first year and students are now expected to have at least a working knowledge of their own computer. A CD rom has been produced which has been supplied to each student as they become members of the programme and initial student reaction to this suggests that it is an effective tool for them to experience an online learning environment before they start and without incurring any costs.

**Library Support:**
One of the early obstacles that had to be overcome was the way in which library materials would be made available. In an institution where the focus had been on traditional face to face delivery of courses there was some consternation about providing library materials to students who were invisible and who did not come and make their own selections of materials.

As is the case with the initiation of most open and flexible learning programmes, it took the work of an enthusiast to devise and implement an approach that would work. With strong support from the leaders in the library a staff member was appointed as the contact person for the library and she meets with them when they are on-campus. This person has been the reference point for all students as they access their library materials. Requests are made via email and materials are sent and returned using "snail mail". Students compliment support from the library person as a significant factor in supporting their learning.

**Administrative Support:**
Early in the implementation of this programme, it became apparent that the need to provide support was an ongoing need. Administrative support assisted the coordination of the programme and a support person was appointed, initially on a part time basis but soon full time. This person has become pivotal in the coordination of the various aspects of the programme. She is able to provide administrative and pastoral support and is available when needed by both students and teaching staff. The need for pastoral support is constant and involves the areas of "births, deaths and marriages" and all that comes in between. The wisdom of the administration of the institution in ensuring that the funding of this position was possible cannot be under estimated and the appointment has been a significant feature in the success of the programme for both teaching staff and students.

**Staff Support:**
The students in the mixed media programme have frequently commented on the speed and nature of responses from many of the university teaching staff. The contacts made from meeting staff and colleagues on a face to face basis, has made it easier for this to occur. Students have responded positively to the ready responses provided by the teaching staff through email and the telephone.

*"The approachable manner of all the tutors. They let you ring them when there are problems, etc. I am right into the new technology of email etc, but I still like to hear a voice and connect sound with a face. So, I ring all my tutors when I have problems so I can still have that human contact. This support has been invaluable to me."*

Teaching staff has enjoyed this contact and believe they know their online students better than many on-campus students.

**Local Study Groups:**
A second type of support provided has been the establishment of "study groups set up by the students themselves. They meet with colleagues who live close to work or who are within a local calling telephone area. In many cases they were not acquainted prior to joining the programme but have become close colleagues and friends as participants in the programme. An important aspect of this approach has been the fact that the university was not involved in the establishment of the groups and has not sought to be involved at any stage with organisation. That is not to say there has not been moral and academic input, but it was felt at the outset of the programme that any attempt to "organise" students into groups would be difficult as compatibility was seen to be an essential element. That decision has proven to be well founded and the groups that were established through student initiatives have generally remained intact. The students have commented that without each other they may not have remained in the programme.

> *"We have a very supportive study group structure. We help each other and share problems and ways to tackle different papers. We share resources and readily help each other. Without this study group, I do not think that I would have been able to cope."*

The impetus of students to work in a cooperative environment has also been a significant support factor. It seems likely that the nature of the group has been significant in ensuring this cooperative approach. The students in the first group included some who had already completed a university degree; some who had completed some papers towards a range of qualifications and some who had participated in courses mainly associated with pre school education or computer courses. The effect of this experience appears to have been a significant factor in establishing a "climate of achievement and success" within the group. Being with students who had previous university level experience seems to have encouraged the remainder of the group to succeed. The other students who had not completed secondary schooling or tertiary study to a high level have indicated that once they had commenced study and received some feedback they were quickly able to define the level of achievement required. It was quite significant that some commented that once they realised "what the rules of the game were," they were able to set their own

achievement goals. The impact of role models and constructive feedback cannot be underestimated.

However, some of the staff involved in teaching in the programme became aware that the high expectations might have actually created difficulties. Increased pressure on family life including relationships and the attitude of the students towards attaining lesser grades were evident. Although there is no documented evidence at this time, it appears that some students who attend on-campus classes often take a more pragmatic approach, seeking to complete tasks satisfactorily but not being so concerned about achieving high grades. It appears that the opportunity to train as a teacher places high expectations on many students in the Mixed Media Programme.

**Regional Visits:**
A decision to make regular contact with each area within the programme was made in the planning process. Three staff made regular six monthly visits to their own assigned area. The students living in those areas have been able to use that person as a contact point when needed. The response to these visits has been mixed, with some students regularly meeting with their contact person and others not finding a need to do so. However, the presence of a contact person has been advantageous from a public relations perspective for schools and communities

**Support from "Base Schools":**
One of the elements required by the mixed media programme is for students to work in a "base school" on one day each week to complete specified tasks related to many of their courses. The choice of base school is influenced mainly by where the students live and in most cases there is an existing relationship between students and their base school. Frequently students are based in schools where the principal and staff are strong supporters of this mixed media programme. The schools see themselves as partners in the teacher education of members of their own community. The schools are well aware of the advantage of having people who will stay in positions once they graduate and not just see the school position as a stepping stone to placement elsewhere.

The school-university partnership created in this way has generally been beneficial to both parties, with schools regularly interacting with students on a much wider basis than just enabling them to complete their required tasks. Friendships, which were in place prior to the commencement of the student's programme, have become even stronger and others, which initially may have been tentative, have been enhanced. The schools see their support as an important investment for both the students and themselves. The two-way process also facilitates some professional development for teachers and principals as well as collegial support, advice and guidance for the student. The nature of support provided in this way has been significant to the extent that some schools have become so involved that they appear "protective" in their support of the students.

**Conclusions:**
The mixed media programme available from the University of Waikato has used new information technology to enhance teacher education. The current success of this programme, which has elements of traditional approaches combined with open and

flexible learning has been markedly influenced by the support structures which have been implemented and which continue to evolve.

The lessons we have learned from this programme have been varied. They include the need to establish key support structures that support the use of information technology and relate to pastoral care. We have found that our use of a single administrative support person has been a key element in ensuring that students remain in the programme. We have also found that local study groups established by the students themselves are more enduring than any arrangements which might be imposed. The way in which local schools are involved is a very satisfactory partnership arrangement for both schools and students.

Our intention will be to maintain the support structures already established and to continue to monitor the needs of students as they participate in this mixed media programme.

As the programme has progressed the use of information technology has become invisible. The emphasis on people as teachers and learners has become the focus of a supportive community and institution. Identifying the needs of both staff and students has enabled the Mixed Media Programme to grow in strength while maintaining a supportive environment for training teachers who will work in the rural areas of our community.

---

**References:**


Dillon, Connie L., Gunawardena, Charlotte N., and Parker, Robert (1992). Learner support in distance education: an evaluation of a state-wide telecommunications system. International Journal of Instructional Media, Volume 19 (4), 1992.

Carrier, Gilles and Schofield, Mark. (1991). Student support and computer mediated communication in distance education. Canadian Journal of Educational Communication, Vol. 20, No. 1 pp. 45 - 54.

Sewart, D. Student support systems in distance education. Open Learning, November, 1993.