

**Reducing the Loneliness of the Distance Learner  
Using Social Software**

**Keynote address to the 12th Cambridge International Conference on**

**Open and Distance Learning**

**September, 2007**

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In this paper, I overview the ways in which the new communication and collaboration affordances of the Net create opportunities for the emergence of new generations of distance education that maximizes learner freedom while still supporting multiple forms of learner interaction. These technologies allow learners, teachers and institutions to choose and negotiate the outcomes, the delivery technologies, the learning designs and the types of relationships that will define their learning activities. However, such empowerment comes at the cost of considerable disruptive change to current models of education and thus its adoption requires skillful planning, critical review and the tactful championing by educational leaders such as yourselves

But before I begin, I want to overview a few critical values that inspire my work and I assume yours. Without a clear sense of the values that drive our work, one can easily get distracted by institutional, technical, personal, academic or economical values that can counter and confuse our best designed and implemented plans and actions.

The first value is a compelling sense that education is a right that is very unequally distributed throughout the world, including in the most affluent countries. Deprivation of learning opportunity not only diminishes the lives of individuals and families; it impairs communities and societies from reaching their goals and sustaining themselves, their ecosystems and their cultures. Education opportunity only for elites may have been acceptable a millennium ago, but it is no longer tolerable in the 21<sup>st</sup> century permeated with lifelong learning opportunity and responsibility. Secondly, I believe that education, as an institution, has failed to innovate and evolve methods and tools to match the needs of a lifelong learning population. My talk this morning focuses on technological supports for distance learning but these are just one component of complex systems that have developed strong inertia and resistance to change. In many ways our tools and attitudes represent ways of learning and knowing developed in an age long before globalization and rapid and continuous technological change and innovation. In particular “as digital resources increasingly offer opportunities for networked, collaborative and distributed learning and interaction, we need to challenge the assumption that the easiest and most cost effective approach to organizing learning is within the walls of the school” (Rudd, Sutch, and Facer, 2006) or I might add within the structured packages of today’s distance education. Finally, I believe that the key to development of lifelong learning skills and attitudes is to put learners in control of the time, the space, the pace and the relationship to other learners and teachers. Informed

individual choice and control drives democracy, free economies and social decision making – it belongs at the centre of the education process as well.

Distance education has always been defined, designed and delivered by some sort of communications or information technology. As distance educators we often self-righteously claim to focus primarily on the pedagogy used in conjunction with these technologies, yet the impact of the technology itself is pervasive. Indeed it has been challenging for educators and researchers to differentiate the effect of the media from that of the message (Clark, 1994); (Kozma, 1994). In many ways the pedagogy or learning activities we use, exist in direct and mutually dependent relationships with one or more technologies that support their effective use. This capacity for technologies to support and allow certain activities while preventing others, has been referred to as the affordance of that technology (Gibson, 1977). It is not solely the property of the technology but rather the way the application is used in real contexts by both experts and novices that define its affordance. Social, political, personal economic and other factors constrain and define the ways in which the technology is actually used in everyday life. This “social construction” of knowledge has led theorists to construct theories of sociotechnical change (Bijker, 1999) in which they study the way that end users- including educators and learners, appropriate, contextualize and modify new technologies to support their daily activities.

In this talk I explore the application of social software and the so-called Web 2.0 technologies to support and enhance distance education. I argue that these technologies have near revolutionary capacity to support new hybrid forms of distance education that allow both independent study and cooperative /collaborative learning to co-exist and to mutually support each other within the same program or even course. I further differentiate three distinct modes of the net-based social interaction and show how each can be used by distance educators to support high quality and efficient learning of course and program outcomes, but as importantly, enhance life long learning practice, competency and efficacy.

## 2. Distance Education technologies

Building on the work of Rumble (1999), Hulsmann (2004) describes two major types of technologies that define and contextualize distance education delivery. The first of these is *Type I* or information technologies that generally support delivery and engagement with content. This content is now increasingly available in a variety of media, packaged in units as large as full course and as small as discrete learning objects (McGreal, 2004) and capable of interacting with and engaging the learner in a wide variety of instructional activities. The *Type I* Interactive technologies and applications are all migrating to the Web. Furthermore simple Internet access is slowly being augmented by organization schema and meta-tag descriptions to allow access not only by humans but also by intelligent or autonomous agents. This capacity for machines or autonomous agents to search, analyze and make inferences based upon networked data is the essence of Tim Berners-Lee second phase of the web for which he termed the Semantic Web (Berners-Lee, Hendler, & Lassila, 2001) and which is slowly evolving to create new information ecologies (Spivack, 2007).

The second type of technologies referred to by Hulsmann is *Type C* for communication technologies. In distance education, these *Type C* technologies originally supported asynchronous text interaction such as postal correspondence and later email and computer conferencing. Today, asynchronous tools have been supplemented by Net based synchronous technologies such as text, audio and video conferencing, chats and immersive educational worlds.

Although Hulsmann noted the capacity of both Type I and Type C technologies to exist on a common platform (such as a Learning Management System or Virtual Learning Environment), we are seeing, in the intersection of these two types of technologies the emergence of a new genre of distance education software – Type S for Social software technologies. (Figure 1)

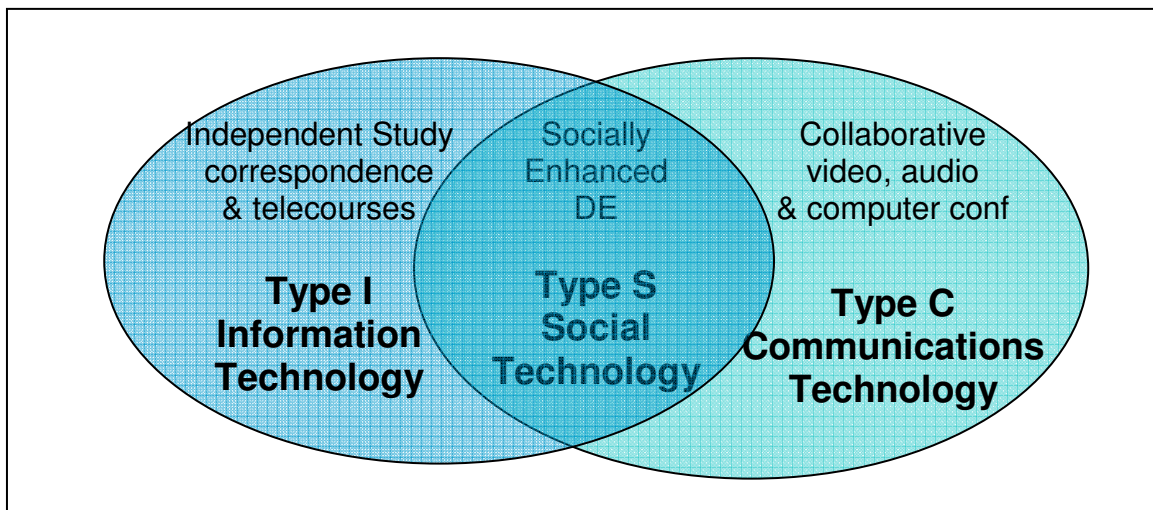


Figure 1. Distance Education Delivery Models and Technologies

Type S technology takes the information processing capacity of Type I technology to sort, sift and connect content, learners and teachers. Type S technologies use the communication and archiving capacity of Type C technologies to organize, support, record and repurpose communications among learners and teachers. Thus, Type S technologies afford individualized mass production of resources and connection in appropriate social groupings of individual and groups of learners. But before proceeding, perhaps an attempt to define the terms ‘social software’ and ‘web 2.0’ is in order.

#### **Definitions:**

New genres of tools often take some time to conceptualize as their application and functionality is refined through use by individuals and groups. Definitions of social software range from the overly generalized to very particular subsets of functions focused in particular domains. In one sense any software that supports any kind of human interaction (including the ubiquitous email) is social software. However a more specific definition is provided by Levin (2004) who notes the affordance of the social software to support new patterns of interconnection that “facilitate new social patterns: multi-scale social spaces, conversation discovery and group forming, personal and social decoration and collaborative folk art.”

I have attempted to define the subset of social software designed for educational use as *networked tools that support and encourage individuals to learn together while retaining individual control over their time, space, presence, activity, identity and relationship.* (Anderson, 2005b) Note in this definition that much learning is considered to be a social activity, though this does not exclude individual learning or learning that extends beyond cohort and especially face-to-face groups. Rather, the definition focuses on the lifelong learning needs of users to have control (in many dimensions) of their learning while not denying them the opportunity to meet with, share and develop knowledge and understanding in many types of social context. This control extends to cross the traditional bounds of time and space to encompass learner negotiation of the media of learning, the content of study and especially the relationships that are utilized as components of learning activity.

Social software is designed to effectively leverage the tacit knowledge contained in the minds of others in ways that easily adapt to individual and collective needs. As Bryant (2003) notes “the value of Social Software is its embedded economies of scope. The ability for an asset to adapt to new uses (its environment) without large transaction costs.”

Although often associated more with promotional hype than meaningful definition, the term Web 2.0 was coined (and trademarked) by O’Reilly (2005), to refer to a next generation web that is designed to support and celebrate individuals’ contributions to the public network. O’Reilly argues that Net 2.0 applications harness network effects and provide value in proportion to their use - thus “harnessing collective intelligence”. This ‘read/write network’ allows individual teachers and learners to publish their own content - in effect owning their own publishing and distribution networks, their own television and radio stations and to share and co-create common spaces on the Net. Web 2.0 moves learners from consumers alone to both producers and consumers of Net context and content. While most of the affordances of Net 2.0 were available in earlier web based applications “the difference in scale, standardization, simplicity, and social incentives provided by web access turn a difference in degree to a difference in kind.” (Allen, 2004).

From definitions we now turn to ways in which social software and web 2.0 applications add value to distance education systems.

### **Social Software affordances**

Social software is used for a variety of community building, knowledge generation and commercial applications.

**Acquaintance and connection:** Many have noted the ‘loneliness of the distance learner’ especially in those models of distance learning that support continuous enrollment and self pacing. In many countries privacy laws make it impossible for institutions to release personal information that users could use to connect with each other and create study buddy or study group relationships, thus restricting the freedom of learners to create supportive learning relationships. Social software addresses this deficiency by allowing learners to create profiles in which they selectively release personal information allowing connections to be made through a variety of type C communications technologies. The power of these profiles is nicely illustrated by Kerlins (1997) who quotes a learner “*I learned more about Clive by reading his introduction*

*tonight online than I did in our entire course together last summer”* and more empirically by (Caspi & Gorsky, 2006) who showed that distance education students are more than 5 times as likely to ask for help from fellow students than from a tutor – assuming student’s have capacity (email or telephone numbers) to make such connections.

**Reflection:** Opportunities and support for personal and group reflection has been shown to positively influence learning outcomes, process and perceptions in mediated contexts (Lee, 2005). Sharing these reflections with teacher, fellow students and as widely as the open Net allows for social validation of knowledge, recognition and self disclosure that facilitates creation and support of interpersonal relationships (Wheless, 1978) as well as developing self-regulated learning (Baggetun & Wasson, 2006). Students have always had the option of creating reflective journals, however now these productions can very easily be edited and distributed, enhanced through audio or video and accessed globally at low cost. Through the reading of reflections of other students, distance learners are able to develop the sense of community, common bond and support that is often critical when undertaking challenging learning tasks (Lee, 2005)

**Discussion in public space:** Social software opens distance educational discourse beyond the closed world of student-tutor dialogue. Discourse in the ‘public space’ of the Net allows learners to “make sense of the social norms that regulate society, to learn to express themselves, to learn from the reactions of others, and reify acts and expressions by having witnesses acknowledge them”. Arendt 1998 referenced in (Boyd, 2007) All of this aligns with social constructivist notions of learning in which all knowledge must be both created and validated in social contexts.

**Cooperative work space and tools:** Social software becomes useful when it is used to support meaningful and authentic learning tasks or activities (Kearsley, 1998). Traditionally distance education has focused on individual learning activities. Now we are challenged to add to our quiver of activities, tasks that allow learners to collaboratively and cooperatively engage in learning activities and create accessible learning artifacts. This affordance brings distance education in line with much of the recent development theory and activities associated with collaborative and constructivist learning. Web 2.0 tools in fact provide tools for scheduling, coordinating, collaboratively creating and editing, storing and augmenting with multiple forms of media that exceed those available in non-networked, classroom learning contexts.

**Sharing and archiving:** Learning artifacts including discussion, results of investigations, literature reviews, experimental results and student created study guides, are easily archived, sorted, selected on the Net. Thus, the products of past learners become available for current learners. This creates challenges for educators who rely on learning objectives and activities for their students that are identical to those of learners in past years. Activities must be created (and shared) that force students to construct their own knowledge and not coast on the learning of students from past instances of the course.

These affordances are operationalized in a somewhat dizzying wealth of new social software and web 2.0 applications. The Go2Web20 (<http://www.go2web20.net/>) site lists over 1,500 web 2.0 applications, most of which though not designed for educational use, can be utilized by learners and educators to add social value to distance education programming.

In an attempt to make sense of this often bewildering host of applications and to provide guidance for development and selection of appropriate learning activities, Jon Dron and I have been developing a simple taxonomy of social software.

**Social granularity of the Many:**

**Groups:** For many years educators have been using computer networks to support group activities. Group learning has a long tradition in campus based learning and many activities and tools developed there can be deployed amongst groups of distance learners. Groups meet for particular periods of time (often a semester), have clear leadership roles (usually the teacher), and membership in the group is clearly defined (often by formal registration). Group members have expectations of each other and often share cognitive and cultural characteristics – sometimes enforced by pre-requisites. Groups have expectations of security and protection of their privacy, such that they do not expect that their contributions will be distributed to non members without their permission.

The software most often associated with educational groups is the suite of tools commonly known as Learning Management Systems (LMS) or in the UK as Virtual Learning Environments (VLEs). These secure systems support communication among group members, often use profiles and home pages for learners to share personal backgrounds and can be segmented to create cooperative workspaces and protected display areas for groups and individuals.

Group social software provides a familiar and comfortable context within which many of the cultural norms and behaviours developed in campus classrooms can be exercised online. Over twenty years of research on online educational communities (see for example (Harasim, Hiltz, Teles, and Turoff,1995; Hiltz & Turoff,1993; Anderson & Elloumni,2004) has shown ways to develop and to measure social, cognitive and teaching presence (Garrison & Anderson,2003) and other outcomes associated with learning (Mason, 2002) in these online group learning contexts. A stable set of relatively effective learning activities (for example group discussions, demonstrations, cooperative problem solving, debates etc) has been developed in classroom based contexts and most are easily applied within online education groups.

Group learning contexts however suffer from a variety of access and control constraints. First, most educational groups are hierarchically organized with both leadership and interpersonal control exercised by the teacher. This control, justified with children as operating in 'loco parentus', can be counter productive in educational programs designed for adults (Knowles,1980). Life long learning requires that learners assume control of their own learning and relinquish that control only when it is clear that doing so does not dull individual initiative, nor constrain learning preferences or development of individual or collaborative skills. Groups are also usually bound in time often requiring members to learn on a schedule and proceeding at a pace established by others. Access to the group is also constrained and often requires permission of an institutional gatekeeper (the registrar). Thus, the group become a safe place for exploration, but one that does not benefit from public scrutiny and validation. The technologies employed by the group can also exclude potential members due to costs, constraints on available time, communications infrastructure requirements, personal handicaps or media preferences. Group based education also has scalability problems and though pushed to numbers in the 100's in some campus based lecture theatres, seems to

be limited to 25-30 students in online learning contexts. Finally, the selection of the curriculum to be studied is usually made, not by the learner but by the teacher – this is often done by the teacher acting in their perceived best interests of the learners, but rarely do these selections account for individual contexts and needs of each learner within the group. Paulsen, (1993) articulated these constraints in a theory of cooperative freedom. I have added to the six constraints that contain group learning a seventh, which is the freedom for group members to choose the type of relationship (or lack of any relationship) that they engage in with other group members.

Group learning has evolved as the predominate and most familiar mode of both online and campus based education. It has many advantages over independent and mass educational models, but as noted, it is constrained by access, control and scalability constraints. A second learning organizational model, the network is evolving to address some of these concerns, while adding constraints of its own.

**Networks** An educational network is a loosely knit community of learners, teachers, professionals and practitioners who are simultaneously engaged in learning while helping each other to further collaborative understandings and achievements. Membership in educational networks is fluid and morphs in intensity, size, and influence as individuals join, contribute and leave networks with minimal disruption to either individual or the network. Participation in networks varies as individual members lives are constrained by other commitments and conversely their learning needs are accelerated by individual demands. The shape of the Network is emergent, not designed and fluid in response to internal and external pressures. Notable Networks used in education include the groupings that emerge in syndicated blogs of the blogosphere, the archived mailing list networks focused on educational or learning content or issues, and the more public social networking groups that emerge in software systems such as MySpace, LinkedIn, Elgg and Facebook.

Individuals are members of many networks, some of which are enhanced by face-to-face gatherings, but increasingly supported only through various forms of online interaction. Increasingly older face-to-face networks are moving many of their activities online to increase access to members and to take advantage of the recording and archiving afforded by digital networks. Networks usually operate over extended periods of time and are not constrained to time lines arbitrarily set by educational institutions. Thus, they support learning beyond the class and are useful to support both formal and informal learning at the program level and even extending to alumni learning networks. Networks also operate across organizations supporting communities of practice (Wenger, 2000) and providing windows of opportunity for learners to engage in communities that are immersed in the realities of actual practice. Thus, learning is effectively situated in the context of real problems and opportunities. (Brown, Collins, & Duguid, 1989)

Networks, unlike Groups, are defined by a mixture of loose and strong ties between members (Granovetter, 1973). Connections amongst Network members are usually of relatively low density (the ratio of personal connections between individuals Network members and all possible connections) (Granovetter, 2004)). Thus, members have expectations of using the Network to gain information, viewpoints, contacts and suggestions from those outside of their more familiar Group connections. This capacity to build and sustain new connections allows Networks to exploit emergent connections to

the outside world, with potential gains in knowledge, influence, social capital and perspective.

The tools that support educational Networks are currently evolving very rapidly with many new social software tools being introduced on a regular basis (for example over 1500 freely accessible web 2.0 network tools are listed at [www.go2web20.net](http://www.go2web20.net)) The familiar email list (often with web archiving) and more recently syndicated blogs are the most popular educational network tool. Because of sporadic and bursty nature of network communication, tools with capacity to alert network members or push interactions to places where they will be noticed are important for effective network tools. Syndication and “pushed” alerts summarizing activities from many networks as supported by current RSS aggregators are becoming increasingly useful for online networks.

A critical number of active participants is necessary in order for a network to be sustained. The absence of formal control and orchestration in networks often means that activity spikes in response to current issues or to particularly evocative postings. Network activity may occasionally reach excessive levels such that members feel overwhelmed and some may choose to end their membership in the network. Even more likely is that the network losses active posters such that activity ceases and members eventually drop or ignore postings and the network fails.

Members post to networks in response to particular needs - with hope and expectation that other members of the network will be able to provide advice or assistance. Members respond to these queries out of a sense of altruism and a ‘share and share alike’ ethos that promises answer to their own future queries. Members also respond as a means of bolstering their reputation within the network and thus increasing their social capital.

Networks have to date been little used in formal education, however their utility as continuing lifelong learning resources coupled with their immediate use as conduits to thoughts and ideas in the world of practice, merits their inclusion in formal university and especially professional education. Researchers have shown relationships between positive attitudes towards lifelong learning and various forms of connectiveness with others (West-Burnham & Otero,2006). This connectivity is sometimes referred to as ‘social capital’. Although the term itself and ways to measure it are contentious, social capital generally refers to the capacity of an individual or a group to utilize external individual and collaborative resources to solve problems. In education terms, this refers to the ability to call upon others to help acquire, test, confirm and generate knowledge. The building blocks of social capital include trust, engagement, connection, collaborative action, shared identity and shared values and aspirations (West-Burnham & Otero,2006) How can these capacities be developed if connectivity is limited to the small subset of learners engaged simultaneously in closed and time bound groups? Obviously, groups can lead to development of social capital but networks with their longer reach, heterogeneous populations, timelessness and ease of entry are much better suited to develop these building blocks of social capital.

The most popular social software tool among North American university age students in FaceBook with a reported 35 million users, and 150,000 new users daily since January, 2007. In an interesting study Ellison, Steinfield and Lampe (2007) examined the relationship between the intensity of FaceBook of use by undergraduate students and the development of “bridging social capital” or the capacity to make and extend the number



of friends and supportive acquaintances. They found that students reporting low satisfaction and low self-esteem showed more gains in social capital through Facebook use than did those with higher ratings. This may be especially relevant to distance students who not only have lower access to opportunity to develop bridging forms of social capital but who also report lower levels of satisfaction as compared to their f2f counterparts (Bernard et al., 2004)

Network learning activities should be developed, assigned and evaluated on their capacity to find, monitor, summarize, synthesize and apply network interactions to existing and emergent learning outcomes. The network activity thus becomes an introduction to lifelong learning skills and to the individuals participating in the networks. Skills that will be exercised throughout the learners' professional lives. It may be appropriate for students to post to active networks however this should be done with caution and with tact. Busy professionals are likely to resent a sniffing request for network members to share knowledge about a topic arbitrarily assigned as the student's own research. However, if the student shows through their posting that they have done considerable research, have a particular question or concern and can share their developing knowledge on the topic with the network, they may be rewarded and contribute to the Network with useful responses from network members. However, building network use into formal curriculum entails a certain amount of chance and risk, since network activity may fluctuate widely during any academic term.

From the personal community of the professional network, I next move to discuss the final and largest aggregation of the many – the Collective.

**Collectives:** Collectives are the newest and most unfamiliar of the aggregations of the Many. Collectives are a kind of cyber-organism, formed from people linked algorithmically using networked software. Through use of the Net, we create trails, and archived data, engage in discussion and transactions and make both tacit and conscious decisions that, when aggregated with those of many others, create a new learning resource and context – which we refer to as collectives. The most familiar example of collective activity is the way in which Google prioritizes the responses to keyword searches based upon the selections of earlier users. By correlating individual action and interest with recommendations, practices and suggestions of large numbers of users' suggestions and opportunities for actions, product selection, resource acquisition and friendships, are enabled.

Collectives exist by members being able to use sophisticated data mining tools and aggregation tools to understand the activities of others. These data mining tools (often acting as autonomous agents) extract and generate information based upon two types of activities. First, are information obtained by aggregating information originally designed to aide a single individual. For example social tagging and sharing of photos (Flickr), articles (CiteUlike), books ([Librarything](#)) Internet resources (Del.icio.us), queries (Yahoo Answers) and other personal selections are done primarily for individual resource management, when shared with the Collective however, they allow others to search, sort, aggregate and select from these archives, with no additional cost to the initial tagger. This capacity to generate information at very low input costs differentiates collectives from groups or networks. The second source information is the aggregated activity of others referred to as stigmergy (Dron, 2004). Stigmergic activities result when

one individual alters the environment through creating a sign that is followed by another - thus creating a self organizing and emergent system. Although first discovered in biological systems (ants and bees) stigmergic activities are extensive on the web. For example, users action of viewing a video on UTube, buying a book on Amazon, or positively rating a story on Digg result in that products popularity increasing, resulting in greater exposure and subsequently even more selection by Net users. Thus, through individual tagging and mere use of the net, collective information is generated. Sophisticated Net 2.0 and social software tools then are used to extract, harvest, aggregate and distribute this knowledge.

Aggregated collective knowledge allows for the creation of the “wisdom of the masses” in which the aggregated or averaged behaviour of many intelligent agents can (in some circumstances) be more accurate, complete or appropriate than that of any one individual (Surowiecki,2004). Conversely, collectives can generate fleeting and faddy information, inspire irrational runs on markets, support the election of ineffective leaders and in other ways generate the “folly of crowds”. Surowiecki suggests that four qualities of collectives are necessary to support the emergence rather than the suppression of wisdom. These are diversity of opinion, independence, decentralization and aggregation. The Net affords each of these by allowing for individual and independent expression of ideas, the selection of activities and resources, which provide access to very large and decentralized masses of users and providing very powerful digital context for aggregating, selecting, and disaggregating data – thus creating useful information.

This capacity for the Collective to generate both wisdom and folly underlines the need for learners to develop high levels of fluency, literacy and efficacy if they are to benefit from these tools. Many of the so-called Net generation come by these skills naturally and easily however, digital use divide relegates many learners (including many educators) with very little understanding of ways in which they can both contribute and draw from collective activities, to the sidelines of knowledge extraction and production.

This overview of the affordances of this taxonomy of the networked Many hopefully helps to analyze and organize the new tools and opportunities afforded by the Net. In figure 2 I illustrate a sample of popular web 2.0 and social software applications, illustrating how they overlap to create opportunities for socially enhanced distance learning.

In the final section of this paper, I overview implications for distance educators’, instructional designers’ and administrators’ learning and teaching practices.

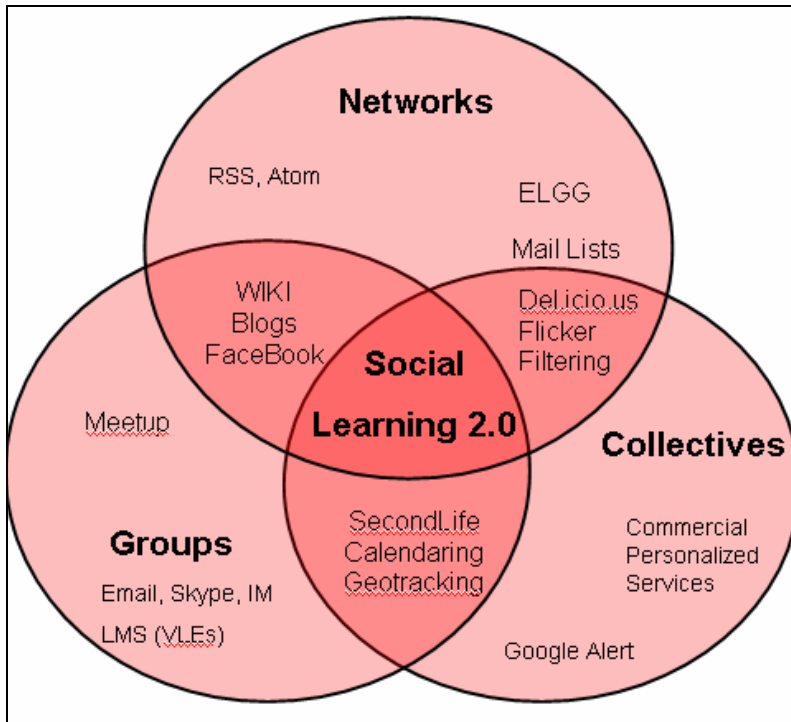


Figure 2. Popular social software applications

### Implications for Practice

The most important implication of social software and Net 2.0 affordances is for distance educators to appreciate and utilize the power that the Net offers in support of almost any educational objective or outcome. We have rapidly progressed from a notion of the web as a huge library of resources, through to a platform to support group collaboration, to a set of tools and spaces where social and intellectual support are harnessed, to an multi-faceted environment in which collective knowledge is generated and extracted for learning and knowledge production.

The very high speed of development and emerging functionality of the Net has created barriers that can exclude both educators and students, overwhelmed by the challenges of keeping current, understanding and utilizing the latest tools. To combat this information overload educators need to use the very group, network and collective resources available to filter, recommend, trouble shoot and support each other. Thus, perhaps the most important implication is the need for educators to explore and use these new tools in their own professional and personal lives so that they can become critical proponents, guides and teachers of others. I highly recommend that each of you make a commitment to try at least one new knowledge tool every time that you teach a new class, design or revise a new course. Only through personal empowerment and skill development will we be able to act as leaders, agents of change and lifelong learners – challenges that confront each of us, each day as professional educators.

The second broad implication is the need to enhance student freedoms such that they are able and encouraged to develop their individual group, network and collective competencies. This means creating learning activities that require learners to take personal initiatives, explore, and practice their Net skills. The competencies thus

developed will insure that learners are able to continue their learning beyond the short term engagement in formal education.

The Net also provides new opportunities for engagement in unscrupulous activities, plagiarism and myriad forms of “social loafing” in which learners benefit from the work and learning of others (Piezon & Ferree, 2007). To combat these social ills students need to be familiar with the policies, social codes, and tools designed to curb anti-social and other forms of behaviour that impair learning accomplishments. As students learn that they are in a lifelong learning partnership with educators and other learners, they will become empowered and incited to take responsibility for their own learning.

Educators use either tacit or explicit instructional designs to create the learning sequences that engage learners. As noted, the instructional designs for group activities are relatively well known and highly adapted – even for online education. However, harnessing of network and collective contexts in formal education requires much work and development of effective practice and consequent theory. Dron (2007) has developed guidelines for the practice of software designers creating the necessary learning environments, but related and validated guidelines for activity and practice are still to be developed and tested for multiple forms of online and blended contexts.

Finally, I would be remiss in not noting that use of these tools in formal education systems can be very disruptive and threatening. Christensen (Christensen, 1997) describes disruptive technologies as those that start out as not being good enough for the established market, have scalability and mass production advantages over existing tools, appeal to non traditional consumers and are not understood by mainstream organizations. Obviously, social software in formal and distance education contexts meets each of these criteria. Though never easy, Geoffrey Moore (1995) describes a number of strategies for introducing disruptive technologies into established organizations. One of his important recommendations is to develop segmented units within organizations where innovate ideas and practices are supported and can be developed and tested. This requires the combined skills of many - including educators, instructional designers, researchers, technicians and administrators. But this innovation will not flourish or be scaleable to the larger organization unless a rigorous evaluation and research program accompanies the innovative experimentation and development. I would recommend design-based research (Anderson, 2005a) as the best educational research methodology to guide this critical development and evaluation process.

## **Conclusion**

In this talk, I have tried to overview and provide a taxonomy of net contexts and identified related tools. It is hoped that this organization schema will help educators understand and differentiate the learning opportunities afforded by groups, network and collectives. Each aggregation of the Many provides new tools and contexts by which distance educators can build the social connectivity of learners, thereby empowering increasing their chances of success in the education process and equipping them with skills, attitudes and knowledge to thrive in today’s Net infused society. These technologies are having disruptive effects on all forms of formal education including distance education. However, the inherent information and communication rich context of distance education, coupled with our position as smaller and innovative components in

many larger institutions and educational systems, positions us to make major contributions to education systems and more importantly to the lifelong learning of all global citizens.

As my colleague Jon Dron recently blogged:

“We need to learn to celebrate and harness the winds of change, to learn to sail in vast seas of information and knowledge while reaching towards the wealth of wonders that hurtle by us on our journey. Like those that sail the seas, we need to learn to respect the destructive power of unfettered winds, to avoid the towering waves of distraction and the threatening rocks of ignorance. Educational technology is no longer about automation and control: it is about boat building, the rules of the sea and the art of good seamanship.” Jon Dron, 2007

**Acknowledgements.** I am grateful for the insights and many useful discussions provided by my colleague Jon Dron in the preparation of this talk and highly recommend his new book Dron, J. (2007). *Control and Constraint in E-Learning: Choosing When to Choose*. Hershey, PA: Information Science Pub.

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