Technology, Distance Education, and Lifelong Learning: A Discourse

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Introduction

Both *distance education* and *lifelong learning* are the relatively newer developments in the transformative processes and modes of learning – the former is now well established, and the latter though broader is still being experimented. Distance education today necessarily requires technology, and the tremendous technological developments are influencing lifelong learning considerably. It needs to analyse their relationship and to analyse if at all technology is essential to lifelong learning in spite of the hype built around it. In other words, this paper is a brief discourse on what technology (which is there and will continue to be there) can do for lifelong learning in this ever evolving knowledge/ learning society.

Technology Developments

Since the print was invented as a revolutionary technological development, significant innovations have led to constant changes in technologies – each time the older technologies making space for the new, though all the earlier technologies remain in peaceful tandem with newer developments. Developments in media and technology have well times greatly influenced education all times. Beginning with the audio-visual movement, instructional technology developments have come a long way through one-way broadcasting/telecast to the current forms of interactive and collaborative technologies. The traditional distributed models of TV/radio, print, and ODL have passed through the transitional models of CD-ROM, Internet and flexible delivery to reach the current converged models of networked learning environments thereby facilitating lifelong learning as well as interacting knowledge communities (Flew, 2002). The three independent technological developments – *broadcasting*, *telecommunications*, and *computing* – are converging together through the developments of web technology and the current Web 2.0; technological artefacts like, for instance, digital broadcasting, mobile phones, and personal computers are converging to provided a one window solution to all technology services (Panda, 2009).
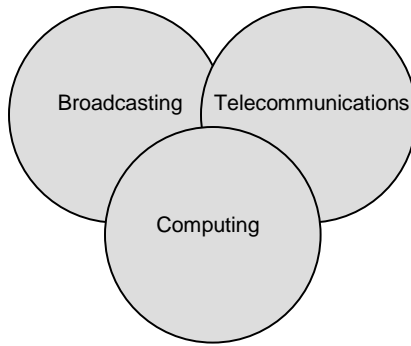
The latest developments are taking place in the Internet and web-based technology which provide for immense opportunities to communities and communities of practice for seamless access to information, collaboration, and knowledge construction and negotiation. The World Wide Web (or the 'web'), created by Sir Tim Berners-Lee and Robert Caillaiau in 1989, has come a long way to the current 'Semantic Web' which extends the traditional use of natural languages in the web to the current use of software agents which can locate, furnish and integrate information. The web can, without the help of human beings, analyse any kind of data including contents, links, communications, etc. The Web 2.0 is an advancement over the traditional Web 1.0 in many aspects (O'Reilly, 2005):

Web 1.0	Web 2.0
• Publishing (Britannica Online)	• Participation (Wikipedia)
• Personal websites	• Blogging
• Content management	• Wikis
• Directories (taxonomy)	• Tagging (folksonomy)
• Stickiness	• Syndication (RSS)
• Downloading	• Uploading
• Consumer	• Prosumer (consumer + producer)

Both the technological developments and social networking provide immense possibilities of interaction and networked collaboration.

Social Networking	Technologies
Distributed, participatory, collaborative, open, student-centred, constructivist, social learning	Blogs, moblogs, wikis, podcasts, vodcasts, RSS feeds, search engines, mobile learning, intelligent publishing, etc.
Social software, open software, open education resource, social networking	Communication over Internet Protocol (CIP)

Text + Voice + Video
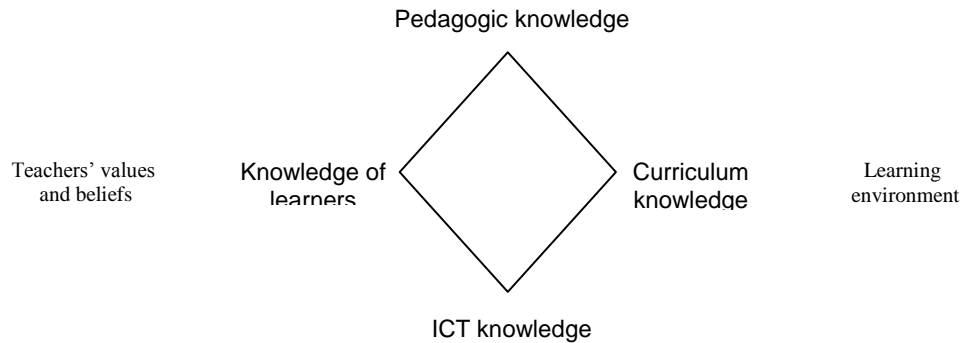Internet

Cellphone   PDAs   Computers

Definitions and examples of some of the finer emerging technologies given by Delich, Kelly and McIntosh (2008) should also be a good reference point to ponder:

- Digital story telling
- Online meetings
- Communities of practice
- Personal broadcasting
- Wikis
- Educational gaming
- Extended learning
- Intelligent searching
- Cellphone (webcam and video)
- Mashups
- Social computing
- Mobile learning

Technology and Learning/Pedagogy of Technology

Technological developments, though independent of and outside the developments within education, have also greatly influenced such developments. The pedagogic journey from the early *behaviourism* to the current *constructivism* also underpins the way technology should be used to address the (constructivist) ideas of individual construction of knowledge and collaborative negotiation of meaning. There are only few critical works on the pedagogy of technology or the relationship between technology and human learning. The complexity of the web as globally interconnected hypertext and exemplifying hyper-reality is a case in question. In case of the web, Newman and Johnson (1999) underline: "… the disciplines of software engineering, telecommunications and user-interface design have been used to create an environment which delivers 'information' in attractively packaged format almost instantaneously worldwide, while concealing from the user, the complexity which the technological infrastructure embodies, and which the expert therefore needs to master" (p. 81). The invisible pedagogy of the web has been highlighted in which knowledge, instead of being sacred, is profane. Based on the work of Bernstein (1990), Newman and Johnson (1999) argue that: "The superficial features of WWW-based knowledge conform to the rhetoric of invisible pedagogy but the WWW lacks the resources whereby tacit competences were developed in traditional sites of professional formation. The competences, necessary for the creation and synthesis of knowledge, are formed through a long and rigorous process of apprenticeship …" (p.84). The visibility of pedagogy through the web and students as customers of the education system (through the web) in a market economy sound contradictory to each other.

In the context of (lifelong) learning, technology and pedagogy need a 'base' to relate to each other. Based on Shulman's model of pedagogic reasoning, Web and Cox (2004) describe a framework of relationship between pedagogic knowledge, curriculum knowledge, knowledge of learners, and ICT knowledge.

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                              Pedagogic knowledge


Teachers' values          Knowledge of            Curriculum          Learning
and beliefs                 learners               knowledge          environment


                                ICT knowledge
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Teachers need to have knowledge about the rectangle, as also the learning resources and the learning environment. ICT affordances influence the learning environment in the sense that ICT presence and learner ability to use considerably influence learning itself.

Mayes (2000) talked about a learning cycle comprising: conceptualisation, construction, and dialogue, corresponding to ICT requirements of primary courseware (i.e. subject matter, may be web-based), secondary courseware (i.e. environment and set of tools), and tertiary courseware (learner produced materials, including those in computer conferencing). He further notes, "In discussions about future ICT the term '*convergence*' is usually employed to describe the coming together of digital broadcasting and web technologies. We might usefully generalise the term here to describe the integration of information and communication" (2002, p.8).

Information and *communication* are mediated by knowledge, beliefs and values of teachers and students, and which constantly change over time. Therefore, the learning process (i.e. teaching, learning environment including that of ICT, learning activities, assessment and feedback) is not the same at two different points of time because of the above changes. Further though teacher 'reflection' may change pedagogic practices, this is not automatic. Similarly, ICT may also influence pedagogy and practices, but this is not full proof. *Convergence*, as referred to above, as also *integrated pedagogy* in the context of ICT use are of crucial importance. Web and Cox (2004) suggest that though ICT influences teachers'/students' beliefs and values as also the learning environment (or affordances), this is not the case with all teachers and with all learning contexts. Open and distance learning which heavily deploys technology for mediation and transaction needs to seriously consider this dimension.

Open and Distance Learning

The developments within distance education have been tremendous during the last part of the past century and the first decade of the current century. The

progression from the early correspondence education to the current IT-enabled collaborative learning and social network-based learning is still unfolding with promising possibilities in store. The explanation of developments in DE based on five generations of technology provided by Taylor (2001) still holds good even today:

Generation 1:   The correspondence model
Generation 2:   The multi-media model
Generation 3:   The telelearning model
Generation 4:   The flexible learning model
Generation 5:   The intelligent flexible learning model

The typology of generations of distance education given by Nipper (1989) and Taylor (2001) has recently been expanded and enriched by Anderson (2008) by adding social software technologies into the framework (see the reworked figure below).
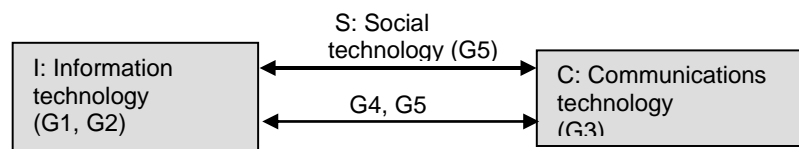
Information technology (I) addresses independent study, correspondence study and telecourses, while conferencing (C) (audio, video, computer) is included in the communications technology. Generations 4 and 5 of Taylor (2001) combine I and C to address enhanced processing and interaction. Alongside the provision of tremendous independent and collaborative learning capabilities provided by the social software and social networking technologies, Mayes' (2000) contention still holds good: that IT is dominated by delivery of information and C by dialogue and conversation; that the former is more cost-effective than the latter; and that in terms of pedagogic effectiveness, IT falls far behind C.

In a recent work, Haughey, Evans and Murphy (2008) provide a historical but critical analysis of the journey from correspondence education to virtual learning environments. Various theories and models of distance education during the past three decades have been reviewed, including:

- Guided didactic conversation (Borje Holmberg)
- Transactional distance (Michael Moore)
- Industrialisation model (Otto Peters)
- Two-way educational transaction (D. Randy Garrison)
- Conversational framework (Diana Laurillard)
- Conceptual framework of Vrasidas and Glass
- Community of enquiry (Garrison, Anderson, Archer)
- Equivalency interaction theorem (Terry Anderson)

- Virtual learning environments.

The authors underline that as we progress through the trajectories of lifelong learning, we need to provide for greater learner autonomy over learner cooperation/ collaboration, and for facilitation of learning as shared experience. Open and distance learning supports lifelong learning which is a broader concept – facilitating people to solve their own problems in-context. Learning becomes much wider; and the technology supported learning, including the web, widens this thrust. Peters, in a recent work (2009), underlines lifelong learning and distance education to be different – with different origin and with different purpose – though both have great similarities. The former is a post-industrial and post-modern phenomenon, while distance education expresses industrialisation itself. He concluded: "Compared to all traditional formats of teaching and learning, distance education lends itself most easily and effectively to fulfilling new tasks in lifelong learning. It could even be maintained that it has already performed significant functions of lifelong learning in its long history. In a way it can even be considered a forerunner of lifelong learning" (2009, p. 235).

From institutional and social points of view, and based on the Habermas's theory of communicative action, Summer (2000) distinguishes between 'serving the system' and 'sustaining the lifeworld'. He cautions: "In this information age, distance education will diverge along these two pathways: the one retaining the system-serving approach to education that values high volume delivery over interactive learning processes, the other exploring the possibilities for building and sustaining the lifeworld that values social learning over corporate profits for private stakeholders" (2000, p.281).Technology may not and should not promote serving the system over sustaining the lifeworld. This is more applicable to lifelong learning in the context of networked society.
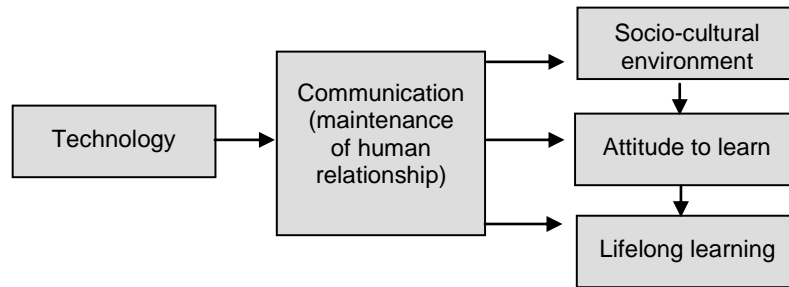
Lifelong Learning

Lifelong learning has assumed considerable social and political importance since the individual and community need to appreciate learning in-action as also innovation and change in-context. This post industrial critical perception has considerably focused on learning in-context as also the boundaries and process of learning (which is eventually 'lifelong'). Context, therefore, is very important to learning and lifelong learning. The traditional interpretation of learning, like schools, colleges, classroom etc. as bounded container for learning (i.e. former learning away from actual practice in-context) (Edwards, 2006) has undergone considerable changes to consider learning as 'situated' and therefore the relationship between individual and variously defined others. In social learning, learning is a change in understanding in practice, in social context—in a learning society, all social practices are contexts for learning. Context cannot be simply a pre-existing bounded containers for practice; rather when learning needs to be contextualised, what it means is the context emerges through a set of practices in-

action, and that there is a need for poly-contextualisation of practice and/learning.

Technology and Lifelong Learning

To provide a basis for what (and in what way) technology can do for lifelong learning and address contextualisation it is pertinent to go back to what Mayes (2000) said about technology and learning. For him lifelong learning is largely a connotation towards 'attitude to learning' which is rooted in socio-cultural environment. And, if technology is to address this through communication (i.e. maintenance of human relationships), it needs to address the basis of lifelong learning.

Building learning communities is crucial to the success of networked lifelong learning. Technology needs to address this aspect of effective relationships within learning communities. Writes Mayes (2000): "Universities, for example, are loose structures for binding together a large number of identifiable learning communities, each of which is itself a complex, overlapping and constantly changing set of relationships. The way in which individual learners identify with particular communities will determine most of how they think and feel about learning" (2000, p.9).

Learning in the context of especially the web is largely informal, which needs to be further related to the context and the formal courses (Calvani, Bonaiuti and Fini, 2008).
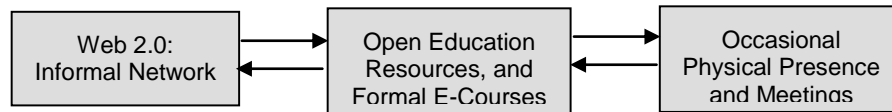
Even if the semantic web is considered as the basic fabric, this needs to be structurally related to formal courses/learning objects etc. as also to open education resources; and, for contextualising learning and for continuity in learning, occasional physical presence/contact is necessary. In the context of the need for face-to-face meeting and the LN4LD (learning network for learning

design) project, Klamma (2007) suggests that: "… interlacing virtual activities with additional face-to-face meetings on the same topics yielded substantial increases in both activity level and amount of users registering" (p.6). The author suggests for 'collaborative and adaptive learning platforms' (CALP) to combine business-oriented learning management with social software. The ingredients of such platforms/approaches include: personalisation, collaborative work (i.e. connecting people to people, and people to knowledge) and collaborative knowledge creation, and community building. In the context of 'effective, efficient, attractive, flexible and accessible lifelong learning in distributed networks', Koper and Tattersall (2004) suggest that: "True support for lifelong learners revolves around distributed, evolving networks of learners and learning events. The support must embrace effective learning design and offer advice and guidance to lifelong learners over long periods of time, and across different phases in individuals' lives" (p.698).

Distinguishing between 'lifelong e-learning' (i.e. engaging in e-learning opportunities for employability) and 'e-lifelong learning' (i.e. enhancing lifelong e-learning opportunities to enhance productivity), Sandelands and Mathew (1996) point to individual and organisational needs respectively. Linking personal with organisational development is critical to the success of this organised lifelong learning.

The foregoing discussions suggest that organised constructivism, social software, open education resources, reusable learning objects and repositories, social networking technologies, among others, promise and promote immense possibilities and opportunities to lifelong learners for individual and community development throughout the lifespan. However, some of the *myths* and *concerns* need to be addressed seriously for successful and productive technology intervention and design for effective lifelong learning.

Myth/ Concern 1: 'It is technology which effectively leads human learning'. However, learning depends more on people and their relationships and interactions. It is up to the individual and the community to choose if at all technology is needed to facilitate learning; and they are free to choose what, when, where and how to learn.

Myth/ Concern 2: 'Broadband will change the movement of learning objects and learning resources'. However, the question is how broad is broadband, and 'broad' in relation to what?

Myth/ Concern 3: 'Open source/open education resource will democratise learning needs and learning resources'. The question is how scholarly and open the OERs are? And, IPR and copyright, in spite of Creative Commons (CC), is the major issue/challenge. Quality is gradually growing as a major concern. In spite of open source, peer review, intelligent search through search engines, etc.

will still dominate at the backdrop of quantitative expansion of learning resources.

Myth/ Concern 4: 'Adoption and deployment of technology will transform learning'. The fact is it is the actual use of technology and (*how* to use technology) which is crucial -- and which is often overlooked.

Myth/ Concern 5: 'Technologies with digital repositories and RLOs shall solve all problems of learning; and LMSs can better manage all learning activities in the context of lifelong learning'. The fact is learning depends on individual reflection, interaction and collaboration, and community negotiation in-context. Therefore, technology-enabled learning if at all needs to represent the virtual surrogate of the community of practice (Panda and Juwah, 2006). In respect of L/CMS, McGee and Green (2008), in a recent research on five most used L/CMS in K-20 education based on post-Fordist framework, concluded that current L/CMS "are largely lacking in effective instructional functions" (p.146). These included both proprietary and open sources LMS: Angel^{TM}, Blackboard^{TM}, Educator^{TM}, Moodle^{TM}, and WebCT^{TM}. The author concluded: "Institutions must invest in understanding, supporting, and accounting for the quality and rigor of learning that should not be sacrificed for a one-stop course in a box solution" (2008, p.154).

Myth/ Concern 6: 'Technologies will replace traditional ways/modes/processes of learning'. The fact is the structure, context, and research-based knowledge will still be crucial foundations to learning.

Myth/ Concern 7: 'Open source and social software shall enhance freedom of speech/expression in a democracy'. The question is: Is technology and technology-based content value free? What about surveillance, hacking, privacy, security, …?

Concern 8: Collaborative learning requires serious groups as also intelligent collaboration. Further, constructivism may lead to unguided, misinformed groupthink and group learning, leading at times to anarchy.

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