Changing learning and teaching relationships in the educational technology landscape

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We adopt a technology of education approach to examine changing teaching and learning relationships in the educational technology landscape. A technology of education entails thinking about all dimensions of the design of teaching and learning environments. The teaching and learning process constitutes a complex interrelated system of people and resources interacting with people as students to achieve their desired learning outcomes. A technology of education approach to the effective use of Information and Communication Technologies (ICTs) in teaching and learning is based on a systems approach and focuses research on one of the key dimensions of educational technology. This key dimension consists of the theoretical considerations or ideas, assumptions and findings which inform the social conventions and practices of teaching and learning. The totality of social processes within an institution and society is included in the study of the use of ICTs in education within a systems approach. The systems approach allows for a critical study of the social and intangible aspects of the use of ICTs in teaching and learning. Specifically, this paper highlights the types of social change that result from the changes brought about by the use of ICTs in education in the identities and subjectivities of teacher and learner . In order to incorporate ICTs successfully in teaching and learning, this social dimension needs to be considered in the design of rich learning experiences.

Keywords: technology of education approach, teaching and learning, teaching and learning relationships, learning outcomes, systems approach, rich learning experiences

Introduction

We propose a 'technology of education' approach (Earl, McConnell, Middleton et al., 1997) in the study of ICTs in teaching and learning. We use the umbrella term ICT in the broadest sense to include technology used for broadcasting, communication and networking using the Internet. A technology of education approach involves adopting a holistic, systematic and critical approach to the study of the challenges arising from the effective use of ICTs in the teaching and learning processes. As Earl, et al (1997) point out, there are many important insights into the nature of the teaching and learning processes arising from current research in psychology, sociology, anthropology, education and neuroscience, for example, which can be used to inform the design of learning activities and resources. When educators and educational designers want to create engaging learning environments whether in traditional face-to-face, blended and virtual settings, it is worthwhile to reflect on the theoretical conceptions of teaching and learning and make them explicit (Boettcher, 2007; Holmes, Tangney, FitzGibbon, Savage, Mehan, 2001). Thinking systematically and logically about the essential learning experiences that facilitate achievement of learning objectives, the means for students to achieve them, and assessing learners' achievement, significantly affects the design of effective and engaging learning environments using ICTs (Godwin & Kaplan, 2008).

The context for much of the discussion in this concise paper arises from the authors' study of research by educators who have reflected on and re-assessed their teaching methodology resulting from the potential for ICTs to engage both students and teachers in the learning process in new and inventive ways. The authors also have considerable experience in teaching and educational design in the higher education context. The use of ICTs in teaching and learning is generating a rethink of the socially-constituted educational relationships between learner-teacher, learner-learner, and teacher-teacher (Holmes, et al, 2001; McConnell, 2005; Lowes, 2008). Furthermore, educators are researching the new synergies made

possible by advances in ICTs between the learning relationships and interactions made possible between learners and content, content and content as well as between learners and learners and learners and their teachers (Anderson, 2003).

A technology of education approach

A technology of education approach focuses on questions about what educational philosophies, theories, assumptions inform our current teaching and learning practices and what changes need to occur in order to design learning environments which use ICTs to engage teachers and learners. A technology of education approach re-envisions education by drawing on constructivist and social constructivist educational philosophies (Holmes, et al, 2000; Fowler & Mayes, 2000; Cormier, 2008). This approach also draws on systems thinking which emphasises the importance of interrelationships between persons participating in the teaching and learning processes and the kinds of interactions that need to be fostered in planning learning resources and assessments to generate engaging learning experiences. A technology of education focuses attention on the learner, learner's motivation, background and needs (Fowler & Mayes, 2000).

In addition, this systems approach recognises that while learning occurs within the individual, it takes place within a social context which makes social interaction central to the learning process (Anderson, 2003; Holmes, et al, 2001; Grabinger & Dunlap, 2000; Cormier, 2008). Assumptions about the role of social interaction arising from tacit learning relationships need to be made explicit when designing effective ICT enabled learning environments. The concept of learning relationships (Fowler & Mayes, 2000) drawing upon insights gained from psychology and anthropology about situated learning can provide an example of a theoretical framework which implements a technology of education approach in the design of learning environments which effectively incorporate ICTs. Fowler and Mayes (2000) define the concept of a learning relationship as inherently a social one in that we learn from and through others.

Changing conceptions of the nature of teaching and learning

Riordan (1993) points out that the dominant affordances of teaching in higher education continue to be restricted to i) lecturing and delivering or presenting information and to ii) teaching taking place predominantly within the classroom. According to Fowler & Mayes (2000) this 'representational' view of learning with its concomitant 'acquisition of knowledge' metaphor determines the design of many learning environments. This acquisition of knowledge metaphor is also dominant in learners' conceptions of learning as illustrated in memorisation or rote learning which occurs out of context. Over the past decade, the advent of the Internet has presented challenges to these practices of learning and teaching.

The acquisition metaphor of learning, with its connotations of passive learning, is now being substituted by a 'participation' metaphor which emphasises the active involvement of students in the learning process. Current designs of learning environments incorporating ICTs include student cohorts and teacher(s) who bring in different tacit assumptions about the nature of teaching and learning. Such a social context for teaching and learning with varying assumptions and expectations could be problematic for all actors involved. A technology of education approach therefore advocates that university teachers as educators think deeply and carefully about what and how they want their students to learn (Ramsden, 2003), placing emphasis on active participation and the social aspects of learning yet guided by the discipline they teach in serving as the framework for the design of learning experiences which will "… ensure that students develop the understanding and abilities they need in order to respond to and shape the world in which they live" (Riordan, p.2).

Student learning as the focus

Both Laurillard (2002) and Ramsden (2003) argue that the main role of university teachers is to make student learning possible. Learning is a social as well as a cognitive process, and human knowledge comprises an ever-changing accumulation of social practices (Wenger, 1998). Concepts such as learning relationships and Lave's and Wenger's (1991) communities of practice elucidate the key principles and skills required for university teachers to incorporate ICTs effectively in the teaching and learning process. Boettcher's (2007) core principles of instructional design and Anderson's (2003) discussion of interaction in the learning process emphasise that learner participation is the key to building rich learning environments which incorporate the use of ICTs.

In recent years, Web 2.0 technologies or 'social software' such as blogs, wikis, social bookmarking and social networking services such as Facebook and MySpace, have been causing the next wave of

change in the landscape of ICT facilitated learning. These new technologies enable unprecedented sharing and collaboration between users, the formation of new learner identities or subjectivities and communities of learning, driving the social aspects of learning to new levels. The student learning experience can be culturally, intellectually, socially and practically enhanced (Laurillard, 2005) if the learning environment is planned and designed to utilise these powerful tools appropriately.

Building the social aspects into Web 2.0 requires a re-think and a reorganising of one's teaching as learning designs must foster collaboration between learners in order to learn in a networked community with the goal being co-participation and co-production of a 'product' or learning outcome. This is learning taking place through connecting, negotiating and collaborating within a community. Dron (2007, p.233) notes that 'one of the most distinctive features of social software is that control and structure can arise through a process of communication, not as a result of design, but as an emergent feature of group interaction.' Control of the learning environment is in the hands of learners, compared to teacher control in the learning management system. This type of situated learning presents significant challenges to university teachers about how best to support learning, specifically how to build the appropriate learning relationships for this changing educational technology landscape.

Teaching and learning effectively with ICTs

As Laurillard points out, most e-learning which incorporates some form of ICTs in higher education continues to promote the traditional forms of university teaching such as delivery of lectures and digital resources promoting the acquisition of knowledge metaphor and passive learning. However, recent research on teaching and learning successfully with ICTs emphasises the importance of building engaging learning environments which enable students to have personally meaningful learning experiences from various forms of learning relationships which generate interaction between the learners and content, learners and learners, and learners and teacher (Anderson 2003; Godwin & Kaplan, 2008; McConnell, 2005). According to Coomey and Stephenson's (2001) comprehensive study of successful online learning and teaching, students' active participation in the learning process results from *intentionally structuring* learning activities and designing learning materials "… to promote dialogue, secure active involvement of the learner, provide personal or other support and feedback and enable the learner to exercise the degree of control expected" (p.38) from the kinds of learning relationships which can be fostered using ICTs.

The use of ICTs to foster new forms of learning through enabling new learning relationships is indeed a challenge for many teachers who are comfortable using conventional e-learning and teaching approaches within the learning management system platform. In such learning environments content continues to be decided by the teachers and control is therefore still largely in their hands. In adopting the more recent Web 2.0 technologies, decisions related to content and control are largely in the hands of the learners blurring the boundaries between expert or teacher and learner.

A new set of challenges arises for teachers adopting Web 2.0 technologies since these ICTs are entirely collaborative and depend on users to read-write-edit-publish through an iterative process. To engage learners in 'networked collaborative e-learning' which focuses on 'learners working as a learning community, sharing resources, knowledge, experience and responsibility through reciprocal collaborative learning' (McConnell, 2006, p. 11) requires re-engineering of one's teaching approaches. Collaborative learning involves dialogue and interaction between learners and teacher(s). Such learning designs will be successful only if learners are positively disposed towards sharing knowledge with one another and collaborative team work. The learning design and the underpinning pedagogy must ensure that conceptual understandings are stretched by requiring learners to interact and work closely with their peers (McConnell, 2006). In addition, the formation of a community of learners must be the key goal and intention of designing engaging learning environments.

Conclusion

The focus of this short presentation has been on the importance of building appropriate teaching and learning relationships first before ICTs such as Web 2.0 technologies can be employed effectively to create rich learning environments. We have proposed adopting a technology of education approach based on systems thinking to leverage new ideas in the social sciences and education to do research on how the rise of social media such as Web 2.0 technologies are requiring new types of teaching and learning relationships to emerge which entail collaborating with others to form learning communities to achieved shared learning goals.

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Please cite as: O'Sullivan, M.L. & Samarawickrema, G. (2008). Changing learning and teaching relationships in the educational technology landscape. In *Hello! Where are you in the landscape of educational technology? Proceedings ascilite Melbourne 2008*.
http://www.ascilite.org.au/conferences/melbourne08/procs/osullivan-poster.pdf