International Review of Research in Open and Distributed Learning

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Aller au sommaire du numéro

Découvrir la revue

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September – 2009

Technical Evaluation Report

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Abstract

The global rise of Internet-based education is discussed in relation to models drawn from social studies and epidemiology. Experiential and data density models are highlighted, also the capacity for technological change, and phenomena observed in the spread of disease. The lesson of these illustrations is that even apparently permanent phenomena can be transient and that current online practices may rapidly be superseded by other technologies regardless of their apparent success. It is hoped that these illustrations will help to prepare distance educators for the technological, social, and economic changes that could naturally affect their future work, particularly at times of economic crisis.

Introduction

Traditionally, teaching-learning theory and practice have been developed and interpreted in the 'hot houses' of higher education. Homogeneous solutions are based on defined constructs that determine the need for change and that contain predictive capabilities. In the new century, the accepted teaching-learning methodologies have exploded into a globalised panorama of constantly changing requirements when teachers and learners wish to update their knowledge, learning, and teaching practices. Constructivist approaches represent teachers and learners as peers, rather than according to the traditional hierarchical model by which knowledge was transmitted from teacher to learner. In current online education, knowledge and personal experience tend to be shared and analysed through discussion, democratic in the sense that everyone is expected to take the time to listen, inquire, reflect, and respond to each other's suggestions. Individual learning paths are designed, implemented, and encouraged by the group members; and enthusiastic attempts are currently being made to apply these methods globally.

Globalisation, however, requires cooperation and a unified effort to reinforce economic, cultural, technological, social, and environmental constructs. The current economic recession, for example, needs concerted action by all nations, regardless of their political stances, and plans for new opportunities to increase each member's potential. The process involves maintaining

individual identities and working in harmony, so the concerted result will be greater than the sum of the individual contributions. Global collaborations combatting threats of disease, from HIV-AIDS to the recent swine flu, illustrate this process.

The Spreads of Knowledge and Disease

In dealing with a new disease, a prime strategy is to isolate the population that exhibits signs of the disease in order to protect the larger population from its effects. Experts determine if the disease is contained in isolated subgroups and argue that their main priority is to protect the larger population rather than to promote research into longer-term solutions. This strategy tends not to lead to curative measures, however. Since the 1980s, such an approach has been argued to have contributed to, rather than resolved, the AIDS epidemic (UNAIDS, 2008a), and an estimated 33 million adults and children now live with HIV globally (UNAIDS, 2008b). A comparable situation can be observed in relation to the spread of the Internet-based educational techniques of the last decade. In developing countries particularly, the dissemination of these online techniques has not always been in the general public interest.

The analogy between the emergence of the educational Internet and the treatment of a disease outbreak begins with the isolation of teaching-learning communities. These are encouraged by dissatisfaction in the existing teaching-learning models and by motivation to develop new pedagogical models involving analysis, innovation, collaboration, and teamwork. In the excitement of the development process, the assumption is made that global connectivity has effectively redefined educational boundaries in terms of Internet access rather than physical presence. With ubiquitous access, a non-homogeneous distributed network is envisaged in which teachers and learners join a learning community to construct knowledge and to develop their understanding of diversity through interaction. In building educational consensus, new opportunities for teacher-learner and learner-learner interaction are encouraged (Lavin, Beaufait, & Tomei, 2008), and the assumption is made that cooperation and collaboration enhance academic performance in a wide range of multicultural environments. Communal learning assumes the inherent potential of linguistic capital and background knowledge in the teaching-learning context (Pountney, Parr, & Wittaker, 2002).

However, ubiquitous Internet accessibility has not yet been realised in any country, least of all in the developing world, owing to varying population densities, disabilities, literacy, and limited resources; and online learning continues to maintain its reputation in the general public as a poor substitute for classroom learning (Crichton & Childs, 2008). It will be argued that when attempts are made to implement an online approach via cooperation, collaboration, and communally shared constructs, the multifaceted, globalised tapestry of educational choices and consequences can rapidly unravel. The online effort to share knowledge itself may be threatened, especially in a situation of economic crisis.

In the ODL community, this pessimistic scenario gains relatively little attention, although it emerges in isolated papers and case studies. Garber (2004), for example, described the natural process of development and decay of virtual communities; and Cleal (2009) reports the

frustrations of students required to use a graphic-based virtual environment (Second Life) for activities they regard as mere play. Meanwhile, online educational methodology is actively being encouraged in developing countries with little or no apparent concern for the lack of infrastructure and for problems of cultural and technological diversity (Baggaley & Ng, 2005). In these situations, the use of Internet methods may prove to be short-lived, and the uncritical transfer of Internet-based educational practices from developed to developing countries is likely to create a pandemic of problems, requiring urgent paradigm change.

Educational Paradigm Shifts

For knowledge paradigms to change and adjust successfully, critical thinking tools are required: evaluation, classification, and hypothesis development. Choices based on criteria become more important than the mere sourcing of facts in the evolution of global communities (Brookfield, 1995; Ornstein, 2003). The educational and economic challenges of the early 21st century include the urgency of meeting immediate needs, predicting future events in the global market, addressing multicultural and intergenerational diversity, and sustaining technological and knowledge paradigm shifts. Added to this complexity are three interacting factors that delineate the lasting impact of any transition, changing the "form of social organisation, the character of the economic system, and the capacity for communication" (Raskin et al., 2008). The three factors are *experiential density*, *data density*, and *constant technology change*, each underlying the educational paradigm shifts related to Internet usage.

Experiential Density

Virtual communication develops reciprocity and cooperation through multimedia and virtual worlds. Collaborators respect diverse talents and thought processes while exercising personal control of what, where, and how web content is constructed, without the necessity of privilege, payment, or role hierarchy (Prensky, 2001). The effectiveness of this virtual space is driven by the end-users rather than by governments or institutions (Addison, 2006). Such teaching-learning communities are grounded in social constructivist theory, supporting communities of practice in which the identity and agency (presence) of each participant is recognised, and in a community created by the grouping of the participants (co-presence). Learners, teachers, and leaders engage in this broader community of practice, and each participant potentially experiences a variety of roles while learning from each other (Anderson, 2003, 2008).

The virtual community process is analogous to that of physical population settlement. In the 21st century, traditional settlement, with strong binding collectives and common cultural standards, has been replaced by urban housing projects, generating a pluralist society and new forms of individualisation. These multicultural projects tend to be loosely organised, and mobile family units can move through the communities at unsettling rates (Hirst & Thompson, 1999). The process involves a level of experiential density relating to the density level of the members' experience in physical and recreational environments. Andereck & Becker (1995) described this phenomenon in the context of cruise ships – an apt metaphor for the Internet experience of the modern online traveler. New technologies create new experiential densities for users in a

collaborative web community of shared browser applications, resources, and skills. For digital immigrants, navigation through virtual settlements requires an adjustment of thought and actions analogous to the experiences of newly arrived immigrants in traditional settlements (Prensky, 2001). Web-based social networks move users from real time to Internet time and can create loosely organised global connections with a mouse click (Gozzi, Jr., 2002). In these dynamic environments, opportunities exist to learn, gather information, and chat with colleagues (Rovai, 2007); but the milieus can be chaotic, with physical cues lost in a virtual world that requires its members to depend on unreliable prompts for a sense of scale, direction, or location (Krug, 2006).

Data Density

As educational institutions shift from teacher-centred transmission models to learner-centred constructivist models, the inquiry-based focus of knowledge gathering creates a collaborative collective of teacher and learners (Colburn, 2000). Wesch (2008) regards this practice as "anti-teaching," in which learners' needs become as significant as pre-planned curricular outcomes and faculty members' teaching perspectives. This position argues that one should not dismiss the importance of the teaching practice in the new paradigm. In the teaching-learning environment, for instance, learners may understand Google procedures, but if they are dependent on their own assessment skills alone, they may find the information they generate too densely packed to comprehend and the answers they locate difficult to understand. In this situation of data density, the learner requires the expertise and support of a classroom teacher, subject specialist, or librarian to sort and synthesise the data from an artificially generated dump to a credible intellectual artifact capable of furthering research and scholarship.

Past success does not predict future solvency in a global economy, therefore. The challenge of creating educational policies in a transnational economic market is to succeed in educating the public regardless of power relations, ethnicity diversity, and generational differences. Adapting the deficit model or deprivation model to a virtual situation, the migrants to an online community can become viewed as a drain on resources and as rivals in a competitive 'glocal' (*sic*) market, rather than as active contributors to the community (Rumbaut, 1997; Sarroub, 2008). The general attitude becomes negative, disempowering, and divisive (Steyn, 2008) as these reflexive cultural reactions diminish any community's success.

Capacity for Communication and Technology Change

Internet-based virtual classes have undoubtedly improved many aspects of educational communications and have been cost-effective in reaching many segments of the global learning and teaching audience (Rumble, 2001). Traditional universities are developing useful hybrid methods and dual modes based on Internet ubiquity (Shale, 2002); and organised sources of knowledge are being adopted that go far beyond the walls of traditional libraries and print-based journals to include virtual resources containing a wide range of new contextual, cultural, and experiential information.

Many components of the online experience diminish these successes, however, including poor course design and delivery techniques and inappropriate institutional modes, knowledge sources, and management systems (Moore & Kearsley, 2005). As argued above, new educational technologies have affected both the form of social organisation and the character of economic systems in terms of experiential and data density. As Internet technology becomes increasingly pervasive and as new educational approaches involving social networking become increasingly popular, the previous 'gold standard' of excellence, computer literacy, may become impossible to define. Attempting to remain current, users may come to associate the constant need to update their computer hardware and skills with emotional upheaval (Kay, 2008). In an environment of rapid change, technology continually dictates deadlines, obligations, and costs; and solutions are not always as flexible, fast, and fluid as previously. Educators and policy-makers face the increasing costs of infrastructure with dwindling resources. A situation is created in which data are simply 'pushed' into communication channels, while communication itself is not necessarily improved. In large populations particularly, the technology is maximised while human contact is minimised, and isolation and psychological distance are amplified.

Conclusions

A holistic view of knowledge and skill acquisition is developing in the 21st century, with the goal of allowing improved remediation and lifelong learning. To make this possible, an integrated, aligned, and shared infrastructure is required between teachers, learners, and employers. These alignment functions include personalised learning and negotiated outcomes with shared services and costs. In theory, the system can provide efficient supply and demand, with enriched styles of research and scholarship responding effectively to the individual's situation. Although current shifts in the teaching-learning paradigm seem to support economic initiatives, the increasing vocationalism of education may create a closed accreditation system that impedes the utilitarian concept of global education (Grubb & Lazerson, 2006). Governing bodies overseeing certification within national and provincial boundaries can further ensure this elitist attitude. Examples of higher education faculties currently supporting such practices include education, nursing, and social work.

The Internet can prolong and strengthen relationships, which in turn can affect other aspects of the system for better and for worse. Critics resistant to online education in society are weakening the viability of Internet-based methodology as surely as online enthusiasts are arguing its merits. Ultimately such resistance, whether defined by low connectivity, reliability, or learner retention, will be a key factor in determining the online system's success and survival; and when the political moment arrives at which the Internet is no longer regarded as an educational panacea, the good works of its advocates will carry little weight. While successful educational initiatives in one country or region can certainly be replicated in others, failures to replicate are equally probable. Just as a medical cure may become more injurious than helpful for particular classes of patient, so the global potential of the Internet may diminish as global communities, developed and developing, become increasingly isolated by it.

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