Using online graduate and doctoral programs to create global villages of interdisciplinary problem-solvers in public health, environmental science, and public policy

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Abstract

Collaboration and technological innovation are critical to global, multinational, and knowledge-driven economies. Traditional learning communities in graduate and doctoral programs tend to include local and regional students and to rely heavily upon face-to-face interaction; however, distance learning and computer technology have the ability to extend these communities across geographical boundaries. Online graduate and doctoral programs allow for the development of diverse global communities, which, as a result of student's diverse backgrounds and experiences, can develop fresh solutions to some of the world's most complex problems.

Keywords: Co-learning, on-line learning, communities of practice.

Introduction

Face-to-face graduate programs usually attract students from their local area. These students tend to look at course content and issues from local perspectives and thus typically approach these problems by seeking to find local solutions. On-line degree programs have the ability to develop a classroom from all over the world and can look at course content from a global lens based on the diversity of the participants in the class.
Consider public health and environmental catastrophes like the recent earthquakes in Haiti and Japan, the BP oil spill, and the N1H1 flu epidemic. These are complex global issues that require innovative and collaborative solutions. Using international perspectives offers the benefit of collective intelligence and ideas. Universities are developing new and innovative on-line programs to develop emerging leaders who can address the most complicated problems in public health, environmental science, and public policy.

Today's enterprise comprises people, knowledge, know-how, technical experience, and best practices, which are typically globally dispersed across business units. The key to success in bringing these talents together therefore and exploiting them effectively depends on getting beyond traditional geographical, cultural, and technological barriers. On-line degree programs and learning communities can be effective tools for collaboration, knowledge sharing, and problem solving.

Online educational programs continue to grow domestically and abroad. According to the Sloan Consortium, an online education advocacy group, online education has not peaked and is rapidly expanding. In fact, in 2007, more than 3.9 million students took at least one online course, this represents a 12 percent increase from the previous year (Choi, 2009).

According to Tapscott and Williams (2008), people’s ability to collaborate, innovate, and use technology to develop new processes and inventions is often a key driving force behind the kind of developments that keep citizens, businesses, and commerce from languishing. In the past, before the “world became flat” (Friedman, 2007), organizational and community stakeholders operated in closed, individualistic,
rigid, inbred, hierarchical systems where decisions or strategies were developed and implemented in a vacuum absent of peer benchmarking and review. Collaboration, learning, and technological innovation are critical to innovative, global, multinational, and knowledge driven economies (Friedman, 2007). Cognition and Knowledge can build more rapidly within shared and collaborative networks of community stakeholders that use technological innovation to communicate, distribute ideas, benchmark, and share lessons learned from both successes and failures (Brown & Duguid, 2000).

Technology is often the driving force behind knowledge transfer, knowledge creation, change, progress, and innovation (Lipnack & Stampts, 1997). Consider how the Internet and e-mail allows people with various backgrounds that are separated by geographical distances to collaborate, network, and even engage in higher learning (Junco & Mastrodicasa, 2007). These technological developments increase the opportunity of on-line educational possibilities and continue to be one of the primary forces behind the developing phenomenon.

**Knowledge and Co-learning**

Learning, knowledge development and cognition goes beyond the boundaries of a person to include environment, artifacts, social interactions, and culture (Greenberg & Dickelman, 1999). The traditional view has been that cognition and knowledge development takes place within an individual’s own head (Salomon, 1993), that cognition is a contained activity that is effectively described in terms of information processing at the level of the individual (Greenberg & Dickelman, 1999). A more viable view of learning and cognition development is the perspective of distributed cognition that implies that cognition is not an isolated event that takes place inside one’s head alone.
(Salomon, 1993). Knowledge development, learning, and cognition should be viewed as a distributed phenomenon (Greenberg & Dickelman, 1999; Salomon, 1993).

Pea (1993) believes that knowledge, cognition, and intelligence is not only a quality of the mind, but also a product of the relationship between mental structures and the tools of the intellect provided by a person’s cultural and socializing influences. Pea (1993) views the result of intelligence as being accomplished through interactions and learning experiences rather than being individually possessed. Humans use the physical world and one another as sources of learning, knowledge, and information development (Greenberg & Dickelman, 2000). If one believes that cognition is basically distributed, then one would agree that individuals, tools, artifacts, values, rules, social, and communicative interactions are important in learning and work environments (Pea, 1993). Using Pea’s framework, it is understandable how on-line classroom learning that fosters dialog, collaboration, and knowledge building can be excellent environments for distributed cognition development.

A performance environment is a place where groups are able to collaboratively perform and where expertise becomes distributed in ways that provide the impetus for mutual appropriations (Brown et al., 1993). Computer technology holds much promise for the application of distributed cognition theory to instruction. Knowledge building occurs through dynamic interaction between learners and the knowledge base they construct together (Pea, 1993). When one considers items that help individuals to perform, distributed cognition is a common sense notion. Thus, computer interfaces that represent the optimal environments aid cognition (Greenberg & Dickelman, 2000). The distributed cognitive approach is a viable framework and methodology for examining
interactions between individuals and artifacts, and therefore, has profound implications for how people perform, and collaborate as teams and learning communities (Brown, et al, 1993; Hewitt & Scardmalia, 1998) and ultimately forming knowledge sharing and problem solving communities of practice. On-line classroom learning communities are excellent platforms for the development of creative thinking and collective problem solving development skills.

**Communities of Practice**

According to Wenger (1998) CoPs or a Community of Interest (CoI) has the following characteristics:

1. Members have common interest, affinity, or goals.
2. Members of the community are often self-grouping.
3. Members seek to share information.
4. Members seek to further their understanding of the practice or area of interest.
5. Membership must be relatively large to be self-sustaining (new content is always needed).
6. Large communities are often moderated, facilitated, or edited.
7. All members are encouraged to both participate and absorb the participation contribution of others.
8. Rules of engagement or appropriate behaviors for the community are often well defined (Wenger, 1998).
Ziegler (2011) outlines how on-line classmates bring their experiences, knowledge, and ideas from their current and present employment organizations and educational experiences into the classroom and share this knowledge through classroom interactions in discussion boards and group assignments. The more geographically and culturally diverse the classroom, the greater the potential is for more rich and diverse knowledge sharing. Figure 1 helps to highlight how the model contributes to increased learning, using the feedback of the individual and fellow classmates to cultivate a vibrant cognitive experience.

According to Wenger (1998) CoPs or a Community of Interest (CoI) also have three structural aspects:

1. Domain of interest: Commitment to domain or the course topic along with shared
competence in that they bring their experiences and knowledge to the learning community.

2. Community: Members engage in joint activities as they collaborate to solve problems. Members share information and engage in the pooling of their collective knowledge. Members build relationships and learn from each other through developing comprehensive strategies as groups that typically are more effective at developing students’ capabilities and skill-sets.

3. Shared Practice: Community of participants that develop a shared repertoire of resources and utilize sustained interaction, while engaging in consistent communication.

    Traditional learning communities that typically did not allow full time working professionals to participate relied heavily upon face-to-face interaction; however, distance learning and computer technology has extended these communities across geographical boundaries that play a critical role in sharing knowledge (Hildreth, 2004).

Some of the most innovative on-line programs include:

1. The University of Debry in the UK, which has an on-line graduate program in Environmental Health.

2. Marylhurst University in the US, which has an on-line MBA in Sustainability Development with focuses in Natural Resources Management and Governmental Environmental Policy.

3. Michigan State University in the US, which has an on-line graduate program in Food Safety.

4. A.T. Still University which has on-line graduate and doctoral programs in Public Health, Health Administration, Health Sciences, and Health Education.
5. The University of Maryland University College in the US, which has an on-line program in Environmental Sciences.

6. Bellevue University in the US, which has an on-line program in Homeland Security and Public Safety.

7. The University of Illinois in the US, which has an on-line Doctor of Public Health.

8. Capella University in the US, which has on-line doctorates in Public Administration, Social Work, and Public Health.

These programs use on-line learning and technology to allow students from all over the world to be in the same program. But these programs can only be diverse if the universities use resources and focus on making sure that they recruit and market programs globally to diverse populations of students. The programs are designed to allow working professionals to maintain their full time jobs while furthering their education. The benefit is the development of a rich classroom community of practice that allows professionals the opportunity to pursue improved leadership and research skills that can instantly be applied within their workplaces. These students may have limited options for graduate study due to geography, traffic, transportation issues, stringent work schedules, and family responsibilities; all of these dilemmas can easily hinder students from attending a face-to-face classroom program.

Diverse global communities have the ability to play an important role in providing access to a pool of expertise required by professionals that often work in environments with limited resources and limited access to a broad range of subject matter experts.
Another role that diverse global communities can play is to develop leadership and expertise capacity (Rao, 2003). Research reviews that exemplary communities entice members to continue participating by discussing the most cutting edge innovations and ideas in the participants’ areas of collective expertise and interest (Wenger, 1998).

Figure 2. Corigan’s Communities of Learning and Practice Model.

Corigan (2012) outlines how communities of practice have the ability to engage in a co-learning processes through collective collaboration, knowledge sharing, and problem solving. Sandrock (2004) researched a number of CoPs and their efforts reveal that communities added value in several distinct ways by bridging the knowledge capacity gaps of members, preventing the “reinvention of the wheel” through knowledge sharing, lessons learned, and strategic planning. This collaboration of intellectual capital to generate innovative ideas and build new problem solving knowledge contributes to improved learning and retention (Sandrock, 2004). Beyond individual learning, collective
learning or co-learning is the fastest way to breakthroughs for adult learners. Knowledge building refers to engaging in collaborative work while advancing and elaborating on knowledge artifacts (Paavola et al., 2002). Knowledge artifacts are defined as products or objects of thinking and reasoning that can be collectively argued (Bereiter, 2002). This knowledge building approach and process is aimed at facilitating collaborative work for sharing and advancing knowledge artifacts (Scardamalia and Bereiter, 1994). In on-line classes this building can occur during discussion board dialogs, live chats, and team projects, which take place when distance-learning students form learning communities of practice.

Figure 3. Pennington’s Knowledge Sharing and Communities of Practice Model

Pennington (2011) outlines the power and nature of diverse global communities
of practice and how their interaction can be a powerful tool for collaborative learning and problem solving. As the model depicts, the engagement, debating, and knowledge sharing that takes place within the CoP fosters an interactive learning environment. By embracing these methods and utilizing technology to include students from across the globe, institutions and professional practitioners can benefit from the innovating learning and discoveries that result.

**Conclusions**

According to Wenger (1998) CoPs or a Community of Interest (CoI) can spur and encourage co-learning by:

1. Sharing promising problem solving ideas in the group.
2. By using the experiences and perspectives of all participants to tap into new ideas and new ways of looking at problems and solutions.
3. By creating new knowledge across geographical boundaries
4. By recognizing the value of all contributions of team members and the value of the collective social capital of the group.
5. Learning how to move from ideas to action.

Diverse global CoPs provide value to participants and their affiliated organizations by reducing the time it takes to solve complex problems (Jones, Hershel, & Moesel, 2003). The benefit of diverse groups of problem solvers is that individuals from different backgrounds will ultimately bring innovative perspectives, transfer knowledge, and discover new methods for addressing global concerns (Saint-Onge & Wallace, 2003). The definition of learning transfer is that a student learns behaviors, skills, and knowledge in one context and applies them in another (Detterman, 1993). In many
respects, the concept of learning transfer is vital to educational philosophy because it
denotes the degree to which behavior can be repeated in a new situation (Detterman, 1993). One of the best approaches to making global communities more diverse is for universities to leverage resources to recruit and retain diverse students into distance-learning programs. As pointed out in this paper, the activity of connecting diverse individuals can contribute to improved sharing knowledge. By embracing the concept highlighted in this paper, online graduate and doctoral programs will have the ability to create global villages of interdisciplinary problem-solvers in public health, environmental science, and public policy.

References


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