

Connectivism as an Emerging Trend in Elearning in Large Organizations

Peyvand Ghofrani

Mary Catherine Hollister

DETT 621

Final Paper

November 23, 2011

Abstract

The vast amount of information available in the current digital age has changed the way that individuals interact, learn, and work. Emerging trends such as information literacy, knowledge management, virtual communities, and fluid information exchange improve learning and decision making as access to diverse experts and opinions expands. Connectivism is a theory that encompasses these skills and strategies and explains information management in a web based digital environment. Organizations can use connectivist principles to understand and grow emerging information management trends. Best practices based on connectivism and optimized elearning principles may be used in managing elearning programs.

Connectivism as an Emerging Trend in Elearning in Large Organizations

In most large organizations, whether academic, government, or corporate, the process of managing and distributing new information can be daunting. Electronic media has exponentially increased the amount and rate of new data available and that raw data must be incorporated into an existing system to be useful. Alternatively, new methods of information management may be more suitable for managing information to produce meaningful output. Training new and current employees is one specific area of information management that is becoming challenging for many large organizations. Time and budgetary constraints on large organizations are forcing managers to seek innovative strategies to provide timely training for employees. Often, elearning is a viable option to fulfill this need. However, like all information management, an elearning system must be skillfully designed and implemented to maximize its potential. Given the complexities of employee and organizational needs, connectivism is a good management strategy for an elearning program in large organizations.

Connectivism is a learning theory that can be applied to organizational elearning management. Networks, multiple sources of information, information sharing, critical decision making, and virtual learning communities are all central concepts to connectivism. In a connectivism context, an elearning program would encourage communities of practice, critical thinking and problem solving, and learning activities that support and manage large amounts of information.

Responding to the need to identify, analyze, and efficiently use large amounts of information, new terms and processes are appearing to describe emerging trends in information management. Workers must develop competency in information literacy to effectively access and use raw data. Knowledge management is a term used to describe work practices for the

systematic collection and organization of large amount of information. Web 2.0 technologies may increase the effectiveness of training programs by allowing participants to apply new skills to real life situations. Dialog between persons and groups develops within and between virtual learning and knowledge communities that are comprised of and link diverse opinions, expertise, and organizations. Connectivism is an emerging model that is successfully used to accommodate these new emerging trends in communication, learning, critical thinking, and problem solving. As a learning and management strategy, large organizations are using connectivism for training employees and creating communities of practice. The purpose of this paper is to review the emerging trends in information management within the context of connectivism and make recommendations for using connectivism to manage an elearning program in large organizations. The authors present this examination of connectivism in three sections: (a) a review of emerging trends in information management related to elearning in organizations, (b) an explanation and critique of connectivism as an emerging trend in elearning, and (c) recommendations for best practices that organizations may use to employ connectivist principles to manage elearning programs.

Elearning in Organizations

Many large organizations are moving to elearning to increase access to training and decrease costs. The benefits of elearning are obvious. Training needs exceed traditional training resources. Cost savings, less time away from work, just-in-time training, and individualized lessons are just a few of the advantages of elearning (Berge, 2000). But to many managers and trainers, traditional methods of face-to-face instruction are the only way to achieve the desired results. These attitudes may be well founded as elearning has not always lived up to expectations. Students may have difficulty mastering technology or elearning training methods,

content may be irrelevant or become quickly outdated, or the elearning materials that relied on flashy technology had more style than substance (Rosenberg, 2001).

As the need for increased, relevant training expands, most corporations recognize the need for a well planned, sustainable elearning program. There are many management models that may be applied to managing a training program. Many new trends in information management have emerged and are used in many ways in large organizations. Connectivism may be a useful tool for understanding these emerging trends and using them to manage an elearning program in large organizations. Because connectivism is a theory intended to address the unique characteristics of digital information, workers must have the ability to quickly access and use current and relevant data.

Information Literacy

As more and more information becomes available, the skills to locate, manage, and compare that information is essential (Drexler, 2010). Because knowledge in modern society has vastly increased in volume while becoming increasingly complex, significant portions of it can't be categorized or assessed for validity by designated experts (Siemens, 2008). In complex organizations with vast amount of information learning becomes less about understanding a particular topic and more about learning how to learn and to think critically in a highly competitive and increasingly educated global workforce.

As information availability expands exponentially, workers must review large amounts of information from multiple sources, and then determine which information is relevant and useful to the current situation (Strong & Hutchins, 2009). As early as 1989, the Association of Colleges and Research Libraries (ACRL) realized that managing large amounts of information would be essential for economic independence and quality of life. That organization coined the term,

“information literacy”, which is defined as “a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (ACRL, 2011).

Breivik (2005) defines modern information literacy skills as “(a) identify and appropriately represent information needs; (b) know about and knowing how to collect or retrieve information; (c) organize information; interpret, summarize, compare and contrast information; (d) reflect about the quality and relevance of information; (e) generate new information and knowledge; and (f) convey information and knowledge to various groups or individuals” (p. 25). The extent to which the connections develop and flourish may depend on the ease of digital communication both internal and external to the organization, and the work practices designed to achieve the organization’s objectives.

Knowledge Management

The availability of information from multiple sources is useful but challenging to manage. The discipline of knowledge management emerged in the early 1990’s as a strategy to allow organizations to effectively use large amount of raw data to effectively meet the organization’s mission and vision (Young, 2003). At that time the idea of managing information was not a new concept. However, knowledge management allowed organizations to develop means to systematically manage information to achieve the organization’s goals. Under knowledge management principles, organizations developed tools and processes to use information more productively.

A paradox of the digital age is that more information can result in less productivity. Workers that are not skilled in data systems or analytical tools may find a flood of information more distracting than useful. Using knowledge management, organizations developed structured

systems and processes for specific tasks. Within the structured contexts, workers still have free access to information, data sharing, and creativity. Structured tools allowed organizations to use global systems to synchronize communications both internally and externally. However, too much structure may stifle productive interaction and growth. In a highly structured approach, it is often computer systems, and not people, who sort and retrieve information. To balance the needs of structure and productive interactions, organizations continuously develop work processes that allow individuals to work within the structures but communicate freely to create and share knowledge. In some cases, organizations limit free access and only allow employees to work in structured applications. This type of work process increases productivity by allowing creativity but focusing that creativity within defined parameters. The goal of these knowledge management policies is for workers to gain skills in using the structured systems but still freely interact, create, and share relevant knowledge (Davenport, 2011).

Web 2.0

In developing appropriate internal structures and adequate channels of communications, organizations are embracing the emerging concept of Web 2.0. This term refers to various web application strategies, rather than a particular platform or technology. The definitions of Web 2.0 vary, but enhanced social connection ability is a common feature (Pan, Lau & Lai, 2010).

Web 2.0 applications are often interactive and thus dynamically connect users with content and other users. Some well known Web 2.0 applications are blogs, wikis that allow free access to update information, Facebook, Second Life, and YouTube. By using the interactive features in many Web 2.0 applications diverse users can gather around a central idea or project, create and share knowledge, collaborate, and contribute to the entire web (Hansen, 2008; Pan, Lau & Lai, 2010). Virtual worlds offer simulations, role playing, and personal interaction across

great distances. Individuals using Web 2.0 tools have demonstrated competency in learning new skills, collaboration, and conflict resolution (Hansen, 2008). According to connectivism theory, learning is a process of connecting diverse information sources and nurturing those connections (Seimens, 2005). Web 2.0 is one emerging concept that may support and foster connectivism within organizations.

Connectivism

In 2004 George Siemens proposed the theory of connectivism as a response to many of the emerging trends previously discussed. Prior to the introduction of connectivism, constructivism was the prevailing learning theory. Constructivism assumes that individuals interpret information relative to needs and experiences. Constructivist educators facilitate learning by creating situations and tasks that require learners to gather information and apply new knowledge and skills to relevant problems (Jonassen, Davidson, Collins, Campbell, & Haag, 1995).

Constructivism is well suited for adult learning because the constructivism philosophy allows individuals to work at a comfortable pace, and also presents real-world tasks and situations (Beldarrian, 2006). Siemens (2005) acknowledged that constructivism had many beneficial aspects, but it did not fully capture the potential of the digital learning age. Connectivism acknowledges that learning takes place across the digital community, which includes diversity in opinions, expertise, and types of data. Dialog in the larger community creates and nurtures connections, leading to shared and created knowledge, that take into account differing insights. The ability to identify meaningful information, create networks, think critically, and create new knowledge to share with others are key skills that may be enhanced in a connectivist environment. Some connectivist principles such as the importance of diversity,

continuous learning, critical thinking and decision making, the importance of current knowledge, and mentoring are critical to connectivism, but these are elements are common to other learning theories as well. Principles that are unique to connectivism are:

- Learning occurs around topics areas, known as “nodes” or other centralized information sources;
- These information nodes may exist in human or non-human appliances;
- Growing, nurturing, and maintaining connections is critical to facilitation of continual learning;
- Ability to see and understand connections between fields, ideas, and concepts is a core learning skill; and
- Capacity to know more in more critical than current knowledge.

(Seimens, 2005; Siemens, 2008)

Concepts of fluid interaction within a virtual community, experts joining to address critical issues, multiple sources of information, continuous learning and problem solving, and adapting appropriate practices based on local needs are all central tenets of connectivism (Seimens, 2005). Organizations that successfully use connectivism provide learner support and information technology support that is critical to maintaining dialog within virtual communities.

Community

Community, defined as a general sense of connection, belonging, and comfort is important to the success of learners. Community provides a sense of comfort and an atmosphere of trust and respect that promotes intellectual exchange. Learners may come to see community as a form of support outside a formal learning experience and may utilize underlying community structure to help sustain learning (Conrad, 2005). Connectivism develops communities through

blogs, discussion forums, social bookmarking, tagging, RSS feeds, and ability to follow activities of learners and experts or be followed by them, as a means of exchange and communal knowledge construction. Connections are built within communities but more importantly, across communities. Learners reach out across individual community boundaries to understand and learn from diverse stakeholders (Conole, Galley, & Culver, 2011). In the constructivist setting, individuals create meaningful learning based on experience, but connectivist learners interact and learn from other communities with differing insights and perspectives (Siemens, 2008). Connectivism does not necessarily make constructivist-scale communities obsolete, but it may lead to a larger meta-community.

Learners that actively participate in developing such a meta-community evaluate the importance of network elements. Diverse responses allow learners to share useful thoughts and reflections with others within and between virtual learning communities (Kop & Hill, 2008; Mackey & Evans, 2011).

Current networked technologies enable this distributed cognition to contribute to the entire community's knowledge, while the learner has the option of maintaining a learner-centered perspective (Mackey & Evans, 2011). In other words, community serves a purpose for the learner and does not simply exist as a means of virtual interface. The connectivist perspective of community for learning parallels globalization, in which traditional nation-based communities are increasingly supplemented by global communities, and the changes and opportunities that become possible as a result of these expanded perspectives. The patterns by which research in academia or work in government or corporations is increasingly inter-disciplinary in nature, cross-disciplinary, and cross-institutional in practice also mirror connectivist communities (Mackey & Evans, 2011). Effective use of connectivist principles in nurturing personal outreach

and existing connections, and quality and currency of shared and produced content will determine relevance, potential, and growth of learning communities.

Learner Support

Connectivist learners adapt and change their interactive behavior with knowledge and learning tools. Over time, as learners gain confidence and proficiency, they begin to integrate the tools with their learning and utilization can replace previous patterns of learning. Utilizing learning resources that reside in the machine, peer critiquing, personalizing and adapting information, generating and sharing content all becomes possible by using modern the Web 2.0 technologies previously discussed. These technologies' open structure allows a level of scalability that the previous distance education models did not allow (Conole, Gelley, & Culver, 2011). Here connectivism provides an advantage over other learning models such as constructivism. Constructivism has low scalability but connectivism affords medium scalability (Anderson & Dron, 2011). This indicates an altered trajectory of growth for elearning that enables connections and networking to become central to the learning enterprise.

Learner support is critical to connectivism. Williams, Karousou, and Mackness (2011) posit that because connectivism is tailored upon emergent learning and adaptation, teachers should consider boundaries and strategies to lessen negative emergence while at the same time amplify positive emergence to support the learner in achieving balance between top-down control and freedom to explore and generate novel directions. Learners often know what they need to become more effective and have a keen sense of their own priorities and interests. This is essential, as without this awareness, learners would become aimless. However, learner support should not be too directive or hand-holding, but learners should be encouraged to seek support

when needed. Learner support should clarify the rules of engagement, and provide diverse resources and strategies to maintain connections (Williams et al., 2011).

In the absence of adequate learner support, individuals with low self confidence are not likely to be successful learners in a connectivist environment. Higher levels of presence by others in the networked learning environment may be distracting. Teachers must provide better scaffolding upon which the learner can build. Learners must take responsibility in synthesizing content in order to put out a beacon to attract and engage others in the network (Kop, 2011). In this context, learner support becomes dynamic and multi-nodal, just as learning and career progress in large organizations may be. It is likely that learners are adaptable to the more open and realistic environments of connectivist learning, but only if organizations support learning activities as well as the technology needed to create a dynamic connectivist environment.

Information Technology (IT) Dimensions

O'Reilly (2007) explains Web 2.0 software will cease to perform unless it is maintained continuously, and not according to preset software release cycles. Software design benefits from this timeline of IT tools production, and consequently learners do also. Software designers are able to quickly assess user interest for particular features or options based on user metrics. Connectivism is learning that has gone viral and is open in structure; it exists in a culture that has been enabled by emerging Web 2.0 technology. Conole et al. (2011) make the case for the maturity and demonstrated utility of connectivist IT tools and structures. They describe several ways by which well-made, sophisticated network environments are used to enable learning: (a) large-scale interaction and content sharing before, during, and after conferences, workshops, and seminars; (b) discussion spaces for scholarly debate; (c) converging to openly discuss research literature reviews; (d) automated aggregation of resources around particular topics; (e) support

for student activities in courses; (f) fostering debate of design practices as well as learning and teaching issues between stakeholders; and (g) space to elicit expert views, validate and discuss research output, and work with consultants. Although beyond the scopes of this paper to describe in detail, virtual reality represents an important dimension of learning residing in machines. Virtual reality systems are being developed and used for treatment of addiction by enabling patients to learn practical coping skills in order to avoid relapse (Bordnick, Carter, & Traylor, 2011), learning better food shopping habits by practicing in a practical environment that mimics grocery store marketing practices (Ruppert, 2011), and enabling changes in body self-image in order to treat obesity and eating disorders (Riva, 2011). Although much research remains, utilization of IT and Web 2.0 resources for connectivist learning is a current reality and a future, if not the future, of elearning.

Dialog

Dialog has been a major component and method of learning, and though it may have been reduced in earlier forms of distance education, it has certainly been prominent in modern elearning. Conversation, interaction, sharing, and creating new knowledge are all prominent in connectivism. Active dialog is a major component of connectivism and is the primary mechanism for maintaining networks and developing knowledge (Ravenscroft, 2011). This dialog may begin as an external process, but inevitably it influences internal thinking as well. More importantly, dialog may challenge assumptions as knowledge travels among a larger system of diverse opinions and areas of expertise. Within the larger system, dialog participants can discover contradictions and facilitate continued learning (Ravenscroft, 2011; Seimens, 2005).

Prioritizing information and learning is greatly enhanced through dialog, whether that dialog is with experts in various nodes, or internalized as the learner utilizes digital resources. Egalitarian dialog presents the opportunity to assess the contributions of others in the network in terms of validity of arguments presented rather than whether they come from persons in positions of power. Connectivism is a process of give and take; the learner takes but also contributes by producing content and sharing knowledge that has been made possible by the network. Those that do not engage in dialog, and hence only take and do not give back, will inevitably be shunned by others, or left behind without having made any lasting meaningful connections. Connectivism as a learning theory, and the role of dialog within it, parallel these practical considerations of the workplace and academia. Organizations can build on the basic tenets of connectivism and recommended best practices to implement and assess specific best practices in their etraining programs.

Recommendations for Best Practices

The term “best practice” refers to action that is superior to all others in achieving a goal and has been validated by benchmarking (Robbins, 2009). The authors make the following recommendations based on current research of emerging trends of learning and communications related to etraining programs. These recommendations related to connectivism may come to be recognized as best practices in managing etraining programs.

- **Information Literacy:** Organizations should assess and grow information literacy among all levels of employees or other system users.
- **Information Technology:** Organizations should support the use of emerging Web 2.0 technologies with updated hardware, software, training, and policies for optimized production or use of content.

- **Community:** Learners should be enabled to meaningfully connect and interact with communities other than their own immediate group, in order to mutually enrich multiple environments and drive learning.
- **Dialog:** Learning must include frequent dialog with experts, practitioners in different areas, and other learners as central to a complete learning process that is reflective of real world diversity and points of view.
- **Learner support:** Teachers should consider boundaries and strategies to prepare environments best suited for connectivist learning; learners should aim to become more independent while knowing where to seek support when needed, and be supportive of other learners as well.

Conclusion

Connectivism is an emerging trend used by large organizations to manage and optimize complex training programs. The need for connectivism was dictated by other emerging trends in information literacy, knowledge management, and new technologies. As an training model, connectivism may be more useful than constructivism, which is becoming inadequate to accommodate the evolving practices among members of large organizations.

Today's workers are flooded with vast amounts of information daily. Workers must determine the importance and relevance of that information, and efficiently organize it for future use. Organizations quickly discovered the importance of developing the skill of information literacy to locate, evaluate, store, and retrieve relevant data. Knowledge management was a trend that emerged in the 1980's that was designed to organize information in a systematic manner. Organizations implemented work practices and structured procedures to increase the efficiency

of using stored data. New technologies known as Web 2.0 increased the collaboration and interaction abilities.

These seemingly diverse trends are captured in connectivist theory and the enhanced connectivist model that has been described. Connectivism provides a mechanism for developing virtual communities and dialog across diverse professions and levels of expertise. A potential weakness of connectivism is the absolute requirement of appropriate learner support and adequate IT. Without these elements, organizations may not realize the benefits of connectivism. By skillfully using connectivism principles and providing the essential elements for its success, organizations should find that this emerging trend is well suited for optimally managing an elearning program in the digital age.

References

- Anderson, T., & Dron, J. (2011). Three generations of distance education pedagogy. *International Review of Research in Open and Distance Learning*, 12(3), 80-97. Retrieved from EBSCOhost.
- Association of Colleges & Research Libraries. (2011). Presidential committee on information literacy: Final report. Retrieved from <http://www.ala.org/ala/mgrps/divs/acrl/publications/whitepapers/presidential.cfm>
- Beldarrian, Y. (2006). Distance education trends: Integrating new technologies to foster student interaction and collaboration. *Distance Education*, 27(2), 139-153. doi: 10.1080/01587910600789498
- Berge, Z. L. (Ed.) (2000). *Sustaining distance learning: Integrating learning technologies into the fabric of the enterprise*. San Francisco: Jossey-Bass.
- Bordnick, P. S., Carter, B. L., & Traylor, A. C. (2011). What virtual reality research in addictions can tell us about the future of obesity assessment and treatment. *Journal of Diabetes Science and Technology*, 5(2), 265-271.
- Breivik, P. (2005). 21st century learning and information literacy. (cover story). *Change*, 37(2), 20-27. Retrieved from EBSCOhost.
- Conole, G., Galley, R., & Culver, J. (2011). Frameworks for understanding the nature of interactions, networking, and community in a social networking site for academic practice. *International Review of Research in Open & Distance Learning*, 12(3), 119-138. Retrieved from EBSCOhost.
- Conrad, D. (2005). Building and maintaining community in cohort-based online learning. *Journal of Distance Education*, 20(1), 1-20. Retrieved from EBSCOhost.

- Davenport, T.H. (2011). Rethinking knowledge work: A strategic approach *Quarterly*. (1), 89-99. Retrieved from EBSCOhost.
- Drexler, W. (2010). The networked student model for construction of personal learning environments: Balancing teacher control and student autonomy. *Australasian Journal of Educational Technology*, 26(3), 369-385. Retrieved from EBSCOhost.
- Hamilton, B. J. (2009). Transforming information literacy for nowgen students. *Knowledge Quest*, 37(5), 48-53. Retrieved from Education Research Complete database.
- Hanson, M.M. (2008). Versatile, immersive, creative and dynamic virtual 3-D healthcare learning environments: A review of the literature. *Journal of Medical Internet Research*, 1(3), e36. doi:10.2196/jmir.1051
- Jonassen, D., Davidson, M. Collins, M., Campbell, J., & Haag, B.B. (1995). Constructivism and computer-mediated communication in distance education. *American Journal of Distance Education*, 9(2), 7-26. Retrieved from EBSCOhost.
- Kop, R. (2011). The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course. *International Review of Research in Open and Distance Learning*, 12(3), 19-38. Retrieved from EBSCOhost.
- Kop, R., & Hill, A. (2008). Connectivism: Learning theory of the future or vestige of the past? *The International Review of Research in Open and Distance Learning*, 9, July 2008. Retrieved from EBSCOhost.
- Mackey, J., & Evans, T. (2011). Interconnecting networks of practice for professional learning. *International Review of Research in Open and Distance Learning*, 12(3), 1-18. Retrieved from EBSCOhost.

- O'Reilly, T. (2007). What is web 2.0: Design patterns and business models for the next generation of software. *Communications & Strategies*, 65, 17-37. Retrieved from EBSCOhost.
- Pan, N., Lau, H., & Lai, W. (2010). Sharing e-learning innovations across disciplines: An encounter between engineering and teacher education. *Electronic Journal of 3-Learning*, 8(1), 31-40. Retrieved from EBSCOhost.
- Ravenscroft, A. (2011). Dialog and connectivism: A new approach to understanding and promoting dialog-rich networked learning. *International Review of Research in Open and Distance Learning*, 12(3), 139-160. Retrieved from EBSCOhost.
- Riva, G. (2011). The key to unlocking the virtual body: Virtual reality in the treatment of obesity and eating disorders. *Journal of Diabetes Science and Technology*, 5(2), 283-292.
- Robbins, I.P. (2009) Best practices on "best practices": Legal education and beyond. *Clinical Law Review*, 16(1), 269-305. Retrieved from EBSCOhost.
- Rosenberg, M. (2001). *E-learning: Strategies for developing knowledge in the digital age*. New York: McGraw Hill.
- Ruppert, B. (2011). New directions in the use of virtual reality for food shopping: Marketing and education perspectives. *Journal of Diabetes Science and Technology*, 5(2), 315-318. Retrieved from EBSCOhost.
- Siemens, G. (2005). Connectivism: A learning theory for the digital age. Retrieved from <http://elearnspace.org/Articles/connectivism>
- Siemens, G. (2008). New structures and spaces of learning: The systemic impact of connective knowledge, connectivism, and networked learning. Retrieved from http://elearnspace.org/Articles/systemic_impact.htm

Strong, K.E., & Hutchins, H.M. (2009). Connectivism: a theory for learning in a world of growing complexity. *Impact: Journal of Applied Research in Workplace E-learning*, 1(1), 53–67. doi:10.5043/impact.18

Williams, R., Karousou, R., & Mackness, J. (2011). Emergent learning and learning ecologies in Web 2.0. *International Review of Research in Open & Distance Learning*, 12(3), 39-59. Retrieved from EBSCOhost.

Young, R. (2003). Knowledge management-back to principles. *Knowledge Management Online*. Retrieved from <http://www.knowledge-management-online.com/knowledge-management-back-to-basic-principles.html>