Communities of Practice in E-Learning

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Abstract

Today many universities and colleges are using learning communities, or communities of practice, to enhance the learning of students, increasing knowledge retention, and increasing learner achievement. Early computer based learning focused on individual learning opportunities. Learners are offered learning opportunities that allow the learner to work at the learner’s desired times and speed without the need for any synchronous or collaborative activities with other learners. There are many increased learning opportunities when computer based learning is adapted to include communities of practice.

This paper describes the theory, history and major contributors to communities of practice, as well as significant historical events in computer based learning that demonstrate a progression in adapting to increased synchronous learning opportunities. The paper discusses the effectiveness of communities of practice in E-learning as well as potential changes in educational environments of the future to adapt to increased computer based learning, or E-learning opportunities for students, and increased student achievement using computer based learning communities.
Communities of Practice

The formation of ‘Communities of Practice’ is not a new phenomenon within the modern world or of modern educational theory, but is rather a defined observation of communities of practice throughout time.

“Communities of practice were common as far back as ancient times. In classical Greece, for instance, "corporations" of metalworkers, potters, masons, and other craftsmen had both a social purpose (members worshiped the same deities and celebrated holidays together) and a business function (members trained apprentices and spread innovations). In the Middle Ages, guilds played similar roles for artisans throughout Europe”. COMMUNITIES OF PRACTICE The Organizational Frontier

In the paper “Communities of Practice: The Organizational Frontier” Etienne Wenger and William Snyder apply the theory of Communities of Practice to that of business organization, defining Communities of Practice as “a group of people informally bound together by shared expertise and passion for a joint enterprise (****).” Wenger adds, “Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor: a tribe learning to survive, a band of artists seeking new forms of expression, a group of engineers working on similar problems, a clique of pupils defining their identity in the school, a network of surgeons exploring novel techniques, a gathering of first-time managers helping each other cope. In a nutshell: Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly”. (Wenger, 2007)

Wenger has identified three elements that are present in a community of practice, and
these elements distinguish a community of practice from other groups of individuals.

*The domain.* A community of practice should not all be considered as a casual group of acquaintances, but much more than that. The community formed out of a shared interest or “domain”. Belonging to the community is demonstrated in the member’s high level of engagement in the shared interest. The community grows in knowledge as each member participates in sharing and receiving knowledge on the domain. (Wenger)

*The community.* As each member share and receive knowledge they participate in discussions that provide assistance to each other as they each pursue to gain more knowledge on the domain. Through this interaction relationships between members are gained. (Wenger)

*The practice.* Over time and with continued relationship development the community begins to share: experience, stories, tools, and resources—becoming a shared practice. (Wenger)

Major Contributors to Learning Communities

**Situated Learning Theory (Lave)**

Jean Lave, a social anthropologist, with in-depth study in social theory, has focused much of her academic work on the ‘re-conceiving’ of learning, learners, and educational institutions in terms of social practice. Lave theorized that learning is situated, in that it is unintentional as well as embedded in within the learning activity, as well as context, and the learner’s culture. (Smith) Lave and Wenger co-authored, their path-breaking analysis, in “Situated Learning: Legitimate peripheral participation”.

**Community of Practice (Etienne)**

Etienne Wenger, a former teacher, who joined the Institute for Research on Learning in Palo Alto, California. Wenger gained a Ph.D. in artificial intelligence from the University of California at Irvine. While studying apprenticeship as a learning model, with Lave, A more
complex set of social relationships was discovered. People usually think of apprenticeship as a relationship between a student and a master, however, it was noticed that learning takes place mostly with journeymen and more advanced apprentices. “The term community of practice was coined to refer to the community that acts as a living curriculum for the apprentice. Once the concept was articulated, we started to see these communities everywhere, even when no formal apprenticeship system existed. And of course, learning in a community of practice is not limited to novices. The practice of a community is dynamic and involves learning on the part of everyone” (Wenger).

**History of Computer Based Instruction**

The University of Illinois pioneered a program in 1960 that created a classroom system based on linked computer terminals where the learner would access educational resources on a particular course. The learner had few resources available for gaining knowledge, specifically listening to the lectures that were recorded via television or audio device.

Computer based instruction is a type of education in which the learner gains knowledge through executing special training programs on a computer. Computer based instruction is most effective when instruction is integrated to computer based applications, because the applications can be practiced while learning. An example of traditional computer based instruction is ‘Tutorial Learning’, such as computer based instruction tools that accompany new software applications.

Computer based instructions tends to follow a more traditional classroom learning model, replicating autocratic teaching styles whereby learning is gained through the transferring of knowledge. Early computer based instruction focused on more rudimentary philosophies of learning. “The dominant use […] for computer-based instruction characterized by the use of
behavioral-based branching software that relied heavily on drill-and-practice to teach segmented content and/or skills” (valdez).

Historically, computer based instruction had been hampered by the enormous amount of resources required to conduct learning. Computer software and hardware was expensive, and not very efficient, resources for writing and compiling programs for instruction were scarce and could be cryptic to the novice computer user. However, the increase in hardware technology, computing power, reduced cost, and strong library of educational computer applications is making computer based instruction a more viable option for education.

Valdez has differentiated the historical account of computer based instruction into three phases:

Phase I: Print Automation – Early personal computers were stand-alone, desk-top machines with an average of 16,000 bytes of memory.

Phase II: Expansion of Learning Opportunities – Computers became tools for the learner-centered practices rather than content delivery systems.

Phase III: Data-Driven Virtual Learning – Leading-edge technology users have begun to use the vast resources found in the internet (virtual learning) and the multimedia presentation capabilities of very powerful computers to address data-driven issues and opportunities.

**Contributions of Computer Based Instruction to Education**

In the paper, ‘Computer-Based technology and Learning: Evolving Uses and Expections’, authors point out, “It is worth noting that the research on technology’s effectiveness and educational uses is sparse and, in some cases, disappointing in quality.” Computer based technology has changed rapidly and is constantly changing and evolving, attempt to measure the effectiveness of this technology is difficult, as one resources is evaluated it changes or becomes
obsolete.

The authors of the paper, ‘Information, Knowledge and Learning: Some Issues Facing Epistemology and Education in a Digital Age’, emphasis this constant changing educational medium and that is not only difficult to measure but that it is also having a dramatic effect on tools that we have used to measure and understand learning:

“The digital age is throwing manu of our education practices and emphasis and their underlyng epistemological assumptions, beliefs, concepts, and substantive theories into doubt” (Lankshear).

Early results of computer assisted software in improving the learning of students considered as ‘at risk of failure’, showed dramatic improvements in student achievement after the software was introduced into the curriculum (Valdez). Valdez also notes:

“Research does suggest that some applications of home and school computers, e-mail, and multi-media projects lead to success in advance courses as well as gains in the higher-order skils f thinking critically, solving complex problems such as multistep word problems, understanding the scientific medthod, and synthesizing different points of view” (Valdez).

When looking at the research provided across the four decades that has brought technology into the classroom, and the measurement of the effectiveness of that technology in K-12 education, there are six results:

- Computers make learning more interactive
- Computers enhance the enjoyment of learning
- Computers individualize and customize the curriculum to match the learner’s developmental needs as well as personal interests
FOSTERING LEARNING COMMUNITIES IN E-LEARNING

- Computers capture and store data for informing data-driven decision making.
- Computers enhance avenues of collaboration among family members and the school community
- Computers improve methods of accountability and reporting (Valdez)

On-line learning communities

As McDermott (in Murphy 1999:17) puts it: Learning traditionally gets measured on the assumption that it is a possession of individuals that can be found inside their heads… [Here] learning is in the relationships between people. Learning is in the conditions that bring people together and organize a point of contact that allows for particular pieces of information to take on a relevance; without the points of contact, without the system of relevancies, there is not learning, and there is little memory. Learning does not belong to individual persons, but to the various conversations of which they are a part.

As the value of learning through communities of practice has been recognized, as well as the value of adding computer based learning to the curriculum of the classroom, could we then conclude that the addition of communities of practice into e-learning will provide even greater results in learner achievement in course curriculum? In the paper, “Technology-Enhanced Learning in Industry and Higher Education: ‘Preliminary Report on a “Gap” Analysis’, Joe Bocchi writes: “Using technology-mediated communication among learners and organizational communities help build learning environments in which knowledge is developed collaboratively” (Bocchi). The article points out in preparing learners for industry, computer based instruction must be more than just “add-ons” to traditional instructor-led training, instruction must include “technology-mediated communication” and “collaborative learning communities” (Bocchi).

Challenges to implementing on-line learning communities
Because principles of constructivism are in contrast with objectivism, adopting the new philosophy necessitates a radical change in mindset (Tam, 2000) and has brought about challenges as designers try to "translate" constructivist ideologies into practice (Karagiorgi & Symeou, 2005).

**Solutions to implementation of on-line communities**

As stated, implementing constructivism presents a challenge to translate philosophical assumptions about how learners learn into teaching methods that can be applied to the development of instruction. Proposed solutions to this challenge focus on designers’ views of constructivism, employing specific strategies and tools to aid in collaborative and inquiry-based learning, and using various theories as frameworks to design constructivist learning environments.
Conclusion

In 1973, Alan B. Salisbury wrote in the journal, ‘The Computer and Education’:

“Computers have well established themselves as not only useful but in many cases indispensable tools for the educator”. “Although the computer in the classroom is not yet common, it is hardly exceptional either. Today [1973] the uses of the computer in support of education are many and the field is rapidly expanding.”
References:


Textbook--Theoretical Foundations of Learning Environments

Chapter 1: Student-Centered Learning Environments: *Foundations, Assumptions and Design* (Land, Hannafin & Oliver)

Chapter 2: From Practice Fields to Communities of Practice (Barab & Duffy)


Angehrn, Albert A.; Gibbert, Michael (2008). "Learning Networks - Introduction, Background, Shift from bureaucracies to networks, Shift from training and development to learning, Shift from competitive to collaborative thinking, The three key challenges in learning networks"


Engaging the online learner

Collaborating online