Chapter XII

Commuting the 'Distance' of Distance Learning: The Pepperdine Story

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INTRODUCTION

A primary determinant of the success of an online distance learning program is its ability to develop a sense of community among its online participants. As a participant in the Pepperdine University Educational Technology Doctoral Program, we have first hand knowledge and experience of the impact deliberate creation of community has on learning outcomes. A vehicle for the cultivation of this community can be found in principles of knowledge management.

PEPPERDINE UNIVERSITY

This is the fourth cadre of students since Pepperdine University began offering a fully accredited doctoral program in educational technology in July 1995 (http://moon.pepperdine.edu/gsep/programs/ET/). The program features 60 percent face-to-face and 40 percent online instruction, although participants are the first to inform you that the 40 percent online in actuality translates to 80 percent when considering the number of hours actually logged on. Online instruction includes the use of Multi User Dimensions, online conferencing, newsgroups, and e-mail. Doctoral students in groups of no more than 25 participate in this lock step program on the Culver City, CA campus. They meet for one week and two weekends each trimester for two years of coursework. This is followed by competency exams, after which the dissertation process is formally begun.

One intention of the Pepperdine Program is to develop a sense of community in our cadre. Joel and Michelle Levey in *From Chaos to Community at Work* describes

the development of communities in three stages: De-facto Community, Intentional Community, and Generative Learning Community (1995). The de-facto community was achieved upon our acceptance into the EdTech program; we had not met and did not know each other, yet we still constituted an, albeit unconscious, community. The intentional community began to develop during our first experience with the program, Pepperdine University's "TechCamp." During TechCamp, an intentional effort was made by members of the previous three cadres to make our membership in the community explicit through initiation. Now and ever increasingly, we, as a cadre, are becoming a generative learning community; where we transform the EdTech program as much as it transforms us through the integration of new media and the creation and transfer of artifacts.

COMMUNITIY OF PRACTICE

The deliberate attempt to cultivate a community of practice is grounded in the belief that knowledge generation can become self-perpetuating and that members of the community can have legitimate access to this knowledge. Communities of practice are characterized by people engaged in common activity, dynamic roles of learner and leader, and legitimate peripheral participation; a constant movement from the periphery of the workgroup to active participation and subsequent emergent status as a knowledge member. The use of artifacts, such as knowledge and technology, and an understanding of how they significantly interact as a single learning process facilitate this movement. Our instructors apprentice us into the technological practice. The technological practice functions not as an end, but as a means toward economic, educational, and civic ends. This makes the shared goal of our EdTech community technological use, which is then interpreted and applied individually by students in the broad fields of practice of their current employment.

Knowledge management facilitates the emergence of communities of practice by providing communities of learners, and members of these learning communities, legitimate access to one another. This access to social interaction is an intrinsic condition for the generation and transfer of knowledge.

KNOWLEDGE MANAGEMENT

One of the difficulties of a distance education program is that of generating, maintaining, and transferring knowledge among the members of the community. Because of the absence of physical presence, the challenges of imparting and sharing knowledge among a class of students are greater in the distance education environment. This means that distance education programs will have to begin looking at the principles of knowledge management in order to truly create and maintain successful programs.

Knowledge management, like education, is devoted to information: how to capture it, how to access it, how to transform it into knowledge, how to embed it, and how to transfer it. While business clearly understands the technical end of managing knowledge, education should prove an invaluable resource for understanding the human side of generating the knowledge to manage. Knowledge transfer has always been a goal of education. As corporations redefine themselves

as learning organizations, the goal is becoming shared. Yogesh Malhotra (1998), founder of @Brint.com, describes knowledge management as "organizational processes that seek synergy between the data and information processing capabilities of technology, and the creative and innovative ability of human beings" (p. 58). Davenport & Prusak (1998), in their book *Working Knowledge*, categorize the knowledge work comprising the knowledge management process into four sequential activities: accessing, generating, embedding, and transferring.

Access: Legitimacy and Transparency

While the Pepperdine EdTech Program is unique in that it provides approximately 60% face-to-face interaction among it's participants, it still encounters the challenge of maintaining and transferring knowledge when the members of the community retreat to their respective home locations. The technological tools act as media of access in this situation. In distance learning environments where participants are sequestered by differences in time and space, these media of interactions have added significance. As in any educational program, the generation of cognitive artifacts is present, but these tools also shape the interactions and learning processes of the participants. More importantly, these technological artifacts help facilitate the cognitive artifact generative process by providing access to other community members.

Tools of practice and access include, but are not limited to:

- E-mail
- Newsgroups
- MOO's and MuD's (TappedIn, VROOM, ICQ) and their logs
- On-line conference: CU-SeeMe, NetMeeting
- Web pages:
  Information pages for cadre members (calendar, annotations, skills bank, etc.)
  Completed projects
  Cadre member's information
- Intraspect (online repository of group memory)

Each of these tools aids in the generation of cognitive artifacts and provides subsequent access to them. They can then be used by the community to grow not only in each individual member's knowledge but also in the continual growth of the whole community's knowledge. Access is the first knowledge activity in the process of transforming information into knowledge. It is what situates the information in the human mind. Where it resides until application transfers it to the realm of knowledge. "If information is to become knowledge, humans must do virtually all the work" (Davenport & Prusak, 1998, p. 6).

Generation: Communities of Interest

The following might be typical uses of the above technology tools following a weekend face-to-face session. An individual class will have several readings, projects, and papers to be completed before the next face-to-face monthly meeting. Assigned readings are typically discussed either in newsgroups, affording asyn-

chronous communication, or in synchronous environment in groups of 8 to 10 members. Specific questions are often posted ahead of time in newsgroups for members to discuss over the coming weeks. This allows members to reflect on comments being made and to contribute quality responses that are not rushed by time constraints.

Typically, each class will have at least one synchronous meeting among members to discuss reading selections along with the discussion in newsgroups. This provides a much more personal feel to the communication among community members. While the quality of discourse is often questionable in the fast-paced synchronous meetings, it does create a more personal environment for the discussion. These sessions are typically held in TappedIn (http://www.tappedin.org) or VROOM, which are text-based virtual environments. Some cadre members have been experimenting with audio and video capable collaborative environments such as CU-SeeMe (http://www.wpine.com) and NetMeeting (http://www.microsoft.com/netmeeting/). While there are considerable bandwidth limitations on video transfer over a modem, audio quality is generally high and provides an even more personal touch and clarity to the synchronous sessions. The online sessions are typically logged and either e-mailed to the other cadre members or put into the group memory via Intraspect (http://www.intraspect.com), to peruse at their own leisure. Because each group will generate different content in these sessions, it is often useful to read other members' online sessions to gain insight to their discoveries. This ensures that each community member has access to the knowledge being generated and discussed.

Each member will contribute information and findings via e-mail to the other members of the group. As due dates for projects approach, more synchronous communications begin to occur. These communications typically take place in TappedIn or more recently in CU-SeeMe because it allows for real-time audio transmission over the Web. This usually provides quicker clarification of issues and when time is really pressed or a very important issue is at stake, members will pick up the phone for immediate feedback. While connectivity is improving, Web-based audio communication will occur more to save on long distance charges among group members.

Many of the completed projects are shared with the professors and other group members via the World Wide Web. This is generally the quickest medium for members to share their results and completed works. Projects are also beginning to be stored in the cadre group memory via Intraspect, which is searchable. This allows for even more thorough knowledge generation as topics are revisited and explored in more depth. In a traditional classroom, other class members typically do not have access to other members' projects for future knowledge sharing and growth.

All of these media of communication and knowledge sharing provide the context for distributed cognition in a distance education environment. In *Things That Make Us Smart*, Norman (1993) discusses the idea of a disembodied intellect, which is a barrier in any distance education program. "People operate as a type of distributed intelligence, where much of our intelligent behavior results from the interaction of mental processes with the objects and constraints of the world and

where much behavior takes place through a cooperative process with others" (Norman, 1993, p.146). Students are learning in isolation in most programs and are not afforded the opportunity of learning in context with other participating learners. The above technologies provide the foundation for peer learning and teaching among an online community.

During a recent online session discussing current readings, one member stated, "I have a difficult time reading without you guys". This embodies distributed cognition via the online environment to its fullest. This community member was gaining so much insight and understanding from the newsgroup postings and synchronous discussions of the readings that she expressed the notion that she would be missing out on so much if the texts were being read in isolation, which is an interesting paradox. While each of us is actually reading in physical isolation, we are reading as a collective unconscious because we are so connected technologically. This conceitedness among an online community of learners provides the means for which tacit knowledge can be transferred.

"A key assumption driving the formation of virtual communities is that members will over time derive greater value from member-generated content than from more conventional forms of 'published' content" (Hagel & Armstrong, 1997, p.29).

Embedding: Cognitive Artifacts

Tacit knowledge, that which is experienced and internalized, is the most difficult to codify and pass on to others. While it is relatively simple to codify data and information and disseminate this via the Web, it is extremely difficult to do the same with tacit knowledge. "Tacit, complex knowledge, developed and internalized by the knower over a long period of time, is almost impossible to reproduce in a document or database" (Davenport & Prusak, 1998, p.70). This is the one of the most difficult aspects of a distance education program in terms of sharing and passing on knowledge to its participants. While it is extremely difficult to codify this tacit knowledge, its added value is worth the effort (Davenport & Prusak, 1998, p.81). The technologies utilized in the Pepperdine program in and of themselves do not provide this tacit knowledge. What they do, however, is to provide a knowledge map that provides pointers to those who hold the tacit knowledge needing to be shared. While these tools do not specifically provide individual's names to search criteria, through their use they inherently provide insight as to who knows what and provides the means with which to communicate with them.

The data-processing capability of technology provides one means for capturing cognitive artifacts from these situated learning environments. The success of which is dependent on the transparency of the technology, "the way in which using [technological] artifacts and understanding their significance to become one learning process" (Lave & Wenger, 1998, p.103). As they work in these environments, member's work can be captured and maintained as a group memory, making it available for knowledge sharing and reuse.

Artifacts lend a transparency to our community by encouraging engagement and practice. These artifacts influence our sense of community profoundly. Many of the benefits derived from this distance learning program reside not only in the

content of the coursework but in the creation of cadre artifacts from the products (logs, hard copies, URLs, etc.) of our technological tools. Knowledge can then be transferred through artifacts. The knowledge encoded in the artifacts is separate from the knowledge creators of it. This provides a stability or permanence to the knowledge, facilitating its renegotiation.

Transfer: Communities of Practice

Another unique aspect of our distance learning is the unique relationship created with professors. The static size and population of our lock-step cadre greatly influences the role of our professors in our learning environment. Professors tend to be assimilated into our cadre community and act as temporary brokers of information, providing the common focus around which the community gathers and discriminates from available information the resources most relevant to our focus.

Much of the peripheral learning in our cadre community of practice comes from the modeling of technology driven instructional methodologies by our professors (who are members of a separate, yet overlapping, community of practice), i.e., how they use newsgroup threads for cooperative learning tasks or Web sites for electronic portfolios, etc. As students, we are provided the freedom to participate in these tasks as apprentices (regardless of our previous technological skills), during which we simultaneously evaluate the process. Then we can transform the process for our separate, yet overlapping, communities (corporate, higher ed., development, etc.) where we implement the process as a practitioner. We then share our artifacts of application (Competency Exams, Dissertation, class projects, etc.) across our overlapping communities of practice, as a master in each.

Online programs allow for this synergy between academic studies and its immediate application by allowing the doctoral program to run concurrently with practical field experience. This exemplifies the proper use of technology in education. This also models true communities of practice by learning not taking place in a sequestered environment. As we are apprenticed through the program each cadre member is afforded the opportunity and challenged to begin implementation of strategies and concepts immediately in each of their work environments.

CONCLUSION

Each community member brings something different to the community's experience. In many traditional distance education programs, learners are isolated and not afforded the opportunity to learn from their peers. Through the use of technology and knowledge management principles, Pepperdine students are allowed access to each community member's ideas and knowledge. Not just information, but true tacit knowledge by being able to tap into those members' thoughts and experiences and then correspond with them via several modes of technological communication. "The most efficient way to transfer tacit knowledge throughout the organization is through the dialogue that takes place in communities of practice" (Koulopoulos, 1997, p.177). In this way, our face-to-face sessions are actually enhanced by the exchange of knowledge and information online. We come "armed" with questions and information for those we've been communicat-

ing with online.

While traditional doctoral programs are isolated experiences for most participants, an online experience can be even more so if not structured properly. These tools and knowledge management principles truly allow members of the Pepperdine EdTech community to learn collectively. As more and more distance education programs develop across the country to meet the growing needs of today's learners, a concerted effort to cultivate a community of practice through good knowledge management principles will be imperative for continued growth and success.

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