Building Community in an Assistive Technology Course:

the Transaction of Technology and Pedagogy

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Abstract: Though technology has played an increasingly significant role in all types of classroom, the actual use of technologies has not caught up with the increased availability of hardware and software .Building community in an assistive course, can make full use of advanced technologies and create a student-centred learning environment to meet each individual student's styles and needs
Key words: assistive technology course   community   collaborative activities

1. Introduction

In schools throughout the United States, technology has played an increasingly significant role in all types of classrooms. Access to computer technology in K-12 schools continues to improve. In 2002, the National Center for Educational Statistics (NCES) surveyed American schools and found 99 percent of public schools in the U.S. had access to the Internet, a 60% increase over 1994 (Kleiner & Lewis, 2002). However, the actual use of technologies has not caught up with the increased availability of hardware and software. The same survey suggests that although half of public school teachers reported using computers and the Internet for instruction, only one third felt well prepared. Other surveys and studies found that most pre-service and in-service teachers did not feel prepared to use technology in their classrooms, and that many teachers often did not have enough role models who teach using computer technology (Stetson & Bagwell, 1999).

The National Educational Technology Standards (NETS) of the United States suggests that faculty across the university and in K-12 schools provide opportunities to help teacher candidates meet these standards. Many colleges and universities across the nation have responded to this call by recognizing the importance of integrating technology in course delivery and by providing workshops requiring the use of technology, or using online elements in the management and delivery of various courses in the candidates' programs. Of particular importance to the present paper are two of the NETS standards that concern building learning communities and planning for instruction with technology: "Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning..." (Standard III) and "...use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning" (standard V). These standards set high expectations for teachers to develop appreciation for and skills in realizing the full potentials of advanced technologies in creating student-centered learning environments. In this paper, the authors will discuss how they modeled pedagogical practices mediated by technological tools in support of learning by students who have diverse needs and contributions.

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2. The Context

The course being examined offers a unique angle to discuss the integration of technology. Titled *Assistive Technology*, this course consists of masters-degree students in the Special Education program at National-Louis University in Chicago, IL. Students vary greatly in age and background with some being career changers and others having had some experience working in elementary and secondary school settings. To what extent university courses prepare future teachers in implementing technologies is particularly relevant to these teacher candidates who need to be equipped with knowledge of pedagogy, instructional adaptations, and different technological tools to help them meet the educational needs of students with disabilities. Research has shown that appropriate use of assistive technologies offers great potential to create academic success and inclusive learning opportunities for students with disabilities (Michaels & McDermott, 2003). Both instructors believe that it is essential that this course not be taught simply as a technology application class, but as one that engages the students to explore ways of using technology in relation to learning characteristics and needs of children with disabilities, the instructional environment, and required tasks (Male, 2002). Therefore, the course is designed to help students feel more prepared to shift from traditional ways of teaching to more student-centered learning-community-based pedagogical practices reinforced by advanced technologies.

3. Defining Community

First, a community is social, situated, and emerging. Jonassen, Davidson, Collins, Campbell& Haag (1995) claim that, under constructivist approaches, "learning is a social and dialogical process in which communities of practitioners socially negotiate the meaning of phenomenon" (p. 9). Learning occurs when there is abundant social interaction and peer support. In the process, participants are apprenticed into ways of learning and behaving through various situated activities. Brown, Collins & Duguid (1989) stated that cognitive apprenticeship helps students to acquire, develop and use cognitive tools in authentic activities. This perspective also promotes learning through collaborative social construction of knowledge. Being a member of a learning community involves changing of roles of participants who start out as novices and gradually emerge as more expert-like as they become more skillful in using mediating tools.

Second, a learning community is built on activities. Sociocultural activity theorists point out that interrelationships between different parts of an activity have important implications for learners both at the individual and at the community level. The mutual relationship between activity goals, artifacts and tools, and the participants may influence how individuals learn through mediated means. The interrelationships between rules governing activities, tools, and roles as well responsibilities of participants affect how knowledge is advanced at the collective community level (Engestrom, 2001; Nardi, 1997). Technology can be the facilitator to help achieve a certain goal or a set of goals embedded in particular activity settings. The focus of learning communities, according to this perspective, may incorporate use of technological tools that are aligned with activity goals.

Third, a community is an intentional and distributive knowledge-building community that promotes decentralization, student-centered inquiry, learning through social interaction, and use of both novices and experts to push the advancement of knowledge (Scardamalia & Bereiter, 1996). Technologies can play a central role to engage students in this kind of classroom discourse by allowing them to develop a community database characterized by continually evolving knowledge and ideas. Everyone's contributions are closely tied to their

intentions that are valued in the learning process. In this sense, students become legitimate partners of knowledge building. Technology may also enable them to be an active participant when it is used to enable distributed knowledge among learners. This intentional community is conducive for transformative communication (Pea, 1994).

4. Technology and Pedagogy Transaction: Examples of Community-Building Activities

Based on the above discussion on learning community, the planning of this assistive technology course takes careful consideration of participant needs and styles so that each student, regardless of their area of expertise, may find ways to contribute actively in the process of advancing the class knowledge base. Technologies are used as facilitators, and so are the instructors, in order to enhance distributed learning within the community. Technology is also used to support student-centered learning in collaborative activity contexts and to foster reciprocity of information. As a result of this conceptualization of technology learning and use, Internet-based technologies such as course management tools (e.g. WebCT or Nicenet) are integrated in each of the instructors' classes. Other technologies including assistive technologies are also used as scaffolds and objects for hands-on learning activities. The following text illustrates some of the ways the instructors model the interrelationship or transaction between a learning-community-oriented pedagogy and technology through their own uses of technological tools in this course.

To start with, the instructors create a sense of safe environment with the help of technology. From the beginning of the class, it is conveyed to students that they all possess different forms of technological knowledge along with other expertise they bring to the class, such as social communicative abilities, experience with children who have disabilities and content expertise in teaching. Every member is an equal participant and contributor of a distributive learning community. The use of technology plays an interesting role in helping students feel that they can participate in a safe environment and their contributions are valued. In the first week, students interact with several communication tools on the Internet-based course site to begin the apprenticeship process of using technologies for learning. They are asked to send a greeting message to everyone through the mail function and respond to the instructor's previously sent email. This activity enables members sitting close together to engage in conversations with one another about how to carry out these tasks. Students feel that this kind of activity is very conducive to a risk-free learning environment.

One way to make a learning community meaningful is through students' choices. Students can go to an area of WebCT/Nicenet where they are guided to collaborate within small groups to make joint decisions about how they want to fulfill the goal of a particular explorative and problem-solving activity. Students share responsibilities by taking on specific roles within these in-class cooperative activities. For example, students are asked to form 4-person teams, and assign each member of each group different roles such as summarizer, keyboarder/navigator and taskmaster. These roles change according to the needs of the class demands. Technology serves the function of being the central work station for each team, while each member depends on each other's role to function successfully within the time framework. Student questionnaire revealed that they enjoyed this type of collaboration to deepen their knowledge. After they accomplish the goal, they can post their socially constructed knowledge to a central online space consisting of all groups' ideas.

To further achieve a distributive community, instructors charge the students with the responsibility of generating journal topics and posting them to the online course space for the entire class for each week. This

activity allows students to exchange views, brainstorm, critique readings, and then make an important decision as to what topic will be most thought-provoking for the class in small teams. One student expressed positive views of this activity in the beginning of his team's journal topic by saying: "As SPE 545, Assistive Technology draws toward an end, we'd like to thank each of you for taking the time to participate in this most interesting 'high tech' manner of interacting. I think each of us have found responding to the weekly questions an interesting exercise not only in its content but also in the simple interactive manner of the WebCT process." (*Excerpt message no. 328, March 14, 2005*). Another student showed his appreciation for one of the journal topics given by another group by saying: "First, I'd like to thank Kim, Sally, and Liz for this excellent formulation for the question of the week." (Tim, Message no. 41, Jan. 25, 2005). Technologies have enabled participants to become equal partners of learning in the class.

5. Concluding Thoughts

The two instructors' experience with teaching a graduate-level course suggests that faculties' integration of technologies in these courses may prepare future teachers more effectively by modeling and grounding technology use in the pedagogical considerations. The pedagogical principle underlying this course emphasizes building a social, situated, activity-based, intentional, evolving and knowledge-building community. The instructors carefully plan the use of such Internet-based technologies to enable a safe learning environment that allows students to use anchors for learning such as case studies and various structured websites embedded in the course technology to maximize authentic and meaningful learning. Technologies also provide a common space for students to create an intentional student-driven knowledge archive by sharing group and individual ideas. Web-based technologies provide students with alternative ways of collaborating with each other outside of the class and ways of being in charge of their learning. Student questionnaires show that the students developed positive attitudes towards the use and learning of technologies through inquiries in the collaborative activities. In the future, the instructors will continue to reinforce the positive effect of this pedagogical model, while paying special attention to ways to accommodating each individual student's styles and needs.

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