

# Ubiquitous and Mobile Computing for Educational Communities

## Position Paper

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I would like to contribute my experiences of working with middle school students and college students to the conceptualization of educational communities. Through intensive participation in software prototyping and web design, I have been devoted to introducing new technologies to communities of learners. I would like to share my experiences of designing and evaluating technology-based learning environments. Recently, I further applied an ethnographical approach to study a community of learners in distance learning education. As an ongoing part of my research, I am looking for possible solutions, both technical and pedagogical, for promoting the sense of community in a distance learning class. I believe that the workshop will be a great chance for me to elucidate the relationship between communities and technologies with researchers around the world.

Some researchers who studied collaborative classroom activities or online communications developed their own definition to communities for explaining certain kinds of relationships and forms of practices. Many other researchers however, used the concept of community without further articulating the membership, commitment, shared values and practice, collective goods, duration, and social relationships informed by the term of community. Terms such as community of learners, interpretive community, online community and virtual community sometimes convey very vague ideas about learners and their interactions. The diverse use of *community* for describing Internet-based and web-based communication has signified a wide variety of concepts that has obfuscated meanings (Shumar & Renninger, 2002). Those kinds of research provided little help for researchers who want to facilitate a community or who want to create a learning setting for a community.

Exploring the needs and characteristics of a community can help design and facilitate the building of a community so that learners can benefit from their participation. I believe that the concept of community should serve multiple analytical functions in describing the learners, their interdependent relationships, their collaborative practices, and their shared and individual achievements. Adopting the theoretical framework of community for educational research should emphasize the following aspects of communication and social relationships: (1) the members in

a community, (2) characteristics that hold together the community, (3) the social significance of participating in the community, and (4) the function of a community for an individual's learning. The above characteristics are not merely internal to the community but rather modified by the learning environment, curriculum, and teaching methods. Recently, technologies have become one of the most important factors in the environment that further changed the dynamics and the social practices of the learning community.. Therefore, it is important to examine accordingly the impact of new media and new visual supports on the above characteristics of the community.

My research interests in the relationship between technologies and communities are twofold. I am interested in computer-based learning environments designed for the purposes of different communities of learners. I have been engaged in several projects at the University of Michigan that support science and medical education by providing computer-mediated, distributed learning opportunities. In the One Sky Many Voices project, I facilitated teachers and middle school students to communicate with scientists via an asynchronous message board. I observed the interactions between a science community and different local communities distributed in middle schools in the United States. As a researcher of the Visible Human Project, I am creating internet-based software to engage graduate and undergraduate students in learning anatomy. I have studied how computers changed the patterns of collaboration in the dissecting lab where new online instruction was available. The study involved analyzing the community requirements, developing the learning-style profiles, and observing the interactions of the community members to ultimately improve the design of the software.

Another research interest of mine is to apply the concept of community in a distance-learning program. New technologies provide ubiquitous access to geographically distributed learners, however, compared to face-to-face meeting, students feel isolated in the distance learning environments. Thus the building of a community in a distance class is particularly important for improving the social interactions among learners. In this study, I used an ethnographical approach and discourse analysis to study the dynamic, social, and interactive learning process among members of the community mediated by an asynchronous message board. The concept of community helps me to understand who the students are, what their unique needs are, how they go about to pursuit their goals by using the social resources and social support through the online discussions. My goal is to help strengthen the sense of community in

distance-learning classes, in terms of improving technologies and designing associated activities for the learners.

Rather than claiming one kind of medium is superior to another, I am continuing to study how different media can complement each other in supporting a community. I am interested in how to apply new technologies in learning settings to provide a balance between reflective thinking and social engagement. Also, I am interested in how we can best support communities of learners to implement and use new technology to explore new learning opportunities. I am looking forward to discussing the above questions with other researchers in the workshop.