

## Teaching in 3D: Developing learning communities in a multi-user virtual environment

Stephen C. Bronack  
Department of Leadership and Educational Studies  
Appalachian State University  
USA  
[bronacksc@appstate.edu](mailto:bronacksc@appstate.edu)

Richard Riedl  
Department of Leadership and Educational Studies  
Appalachian State University  
USA  
[riedlre@appstate.edu](mailto:riedlre@appstate.edu)

John Tashner  
Department of Leadership and Educational Studies  
Appalachian State University  
USA  
[tashnerjh@appstate.edu](mailto:tashnerjh@appstate.edu)

**Abstract:** The Instructional Technology program at Appalachian State University has moved significant components of the program into a three-dimensional multi-user virtual environment, named AppEdTech. Our use of virtual worlds is an attempt to develop learning communities within our program that reflect the basic assumptions and precepts described within our college's social constructivist conceptual framework. AppEdTech provides an online medium for supporting the emerging community of practice among our distance-based students, faculty, graduates, and support staff. In this paper, we discuss the pedagogical characteristics of an effective learning community, and describe how environments such as AppEdTech can support them.

### **Introduction**

Integrating learning technologies into teacher preparation experiences is challenging, and clear barriers exist to engaging students actively in their own learning within formal educational environments. The successful integration of learning technologies is about more than simply using computers in class. It is also about transforming what we do and preparing our students to teach in technologically sophisticated learning environments.

A typical student in our program is a K-12 classroom teacher who wants to integrate technology into his or her curriculum or who wants to become an instructional technology specialist or Chief Technology Officer at the district level. Most of our students are teaching within a 100-mile radius of our university. However, most do not come to campus for any classes. Rather, they take courses in off-campus locations near their home and/or their workplace. While we depend on the use of virtual worlds for each course in our program, we continue to meet face-to-face regularly at the beginning of the program with reduced numbers and frequency of meetings as the members of a cohort gain understanding of what is expected and how to proceed.

As in most states, online learning is increasing in North Carolina universities. Currently, there are over 1,000 distance education courses offered across the system (Kosak et al, 2004). Emerging technologies offer new opportunities for teachers to connect learners with content and expertise in deeply engaging ways, and for students to develop skills essential to self-reliant, efficacious learning both in and out of school. Yet, there are few interesting online education endeavors that are not bound by pre-existing assumptions about what it means to learn, the relationship between learning and teaching, and what roles educators and schools can and should play in supporting learners.

### **AppEdTech**

AppEdTech is a multi-user virtual environment (MUVE) through which our program has developed a distributed community of practice that supports our students and others involved with our program. Multi-user virtual environments combine elements of space, perspective, movement and physical presence, with conversational tools and others more commonly associated with online environments. Through AppEdTech, participants can interact and communicate in real-time with the avatars (human-like graphical representations) of other community members who are online. Each may communicate with one another using text- or voice-based chat. Avatars allow participants to be aware of each other's presence online. Students may move freely throughout the world and interact with other avatars, objects, and agents. Objects may be linked to web pages, conversation tools or other resources. Text-based chat is available for avatars to communicate on a large group as well as an individual basis, and additional Voice-over-IP chat rooms are provided for multiple small group discussions.

### **Conceptual Framework**

Our use of virtual worlds is an attempt to develop learning communities within our program that reflect the basic assumptions and precepts described within our college's conceptual framework. The College of Education at Appalachian State University has developed a Conceptual Framework that guides instruction within the college. The Conceptual Framework describes the social constructivist philosophy of teaching and learning that serves as our pedagogical foundation. In short, we believe each learner should be actively engaged in constructing his/her meaning and that this is done in a social context; among a community of practice in which there are novices, apprentices, and experts working together. In such an ever-changing and collaborative community the more expert learn as they guide the less expert – while all parties gain understanding by solving problems (see McMahon 1997; Prawat and Floden, 1994; Lave and Wenger, 1991).

### **Communities of Practice**

A community of practice exists to facilitate the process of sharing experiences, information, perspectives, and expertise among those involved in a self-defined group (see Lave and Wenger, 1991; Westheimer and Kahne, 1993; Stewart, 1997; Dede and Ketelhut, 2003). Communities of practice distinguish themselves from other groups in the following ways:

*They have history.* They are defined, in part, by their learning-over-time. An explicit role of communities of practice is to disseminate what a group does and how it does it.

*They have enterprise.* They are driven not necessarily by an explicit agenda, but more by a need to do something. For example, our emerging community of practice is challenged to think seriously about what roles technologies can and should play when learners learn and teachers teach.

*They have unique customs.* Communities of practice have proprietary norms, mores, and ways of dealing with the world around them that help bind members through ways of speaking, ways of being, and other explicit and implicit social cues.

*They are self-owning.* They exist to support and to report to only themselves. Communities of practice that are "micromanaged" and that do not operate with the freedom to be self-sustaining rarely succeed (Stewart, 1997).

The opportunity to *learn* may be found in all activities, and communities of practice offer rich environments for learners. Learners may be defined in any of a number of roles - often simultaneously. The learner may be the subordinate, the practitioner or the sole responsible agent for a minor role. Each role carries with it its own set of expectations and responsibilities. The role in which the learner finds himself is completely dependent upon how the learner is interacting within the specific community at the specified time. As these interactions play into one another, interacting in various ways, the learner evolves. In such communities, it can be said that learning is *situated*.

### **Situated Learning**

Lave and Wenger (1991) refer to the way newcomers to a particular community interact with old-timers and, as a result, are engaged in the processes and practices of that community as *legitimate peripheral participation*. Legitimate peripheral participation provides the theoretical foundation for the more practicable construct of situated learning, and is based on the assumption that learning and social practice are inextricably intertwined. Situated learning suggests that meaning is a negotiated construct and that active learning is an engaged, dilemma-driven dynamic for those who participate. Situation should not be construed as a static event, but rather as an opportunity for changing perceptions, identities, and ways in which one relates within a given community at a given time. Lave and Wenger make an important, fundamental distinction between *learning* and *intentional instruction*. Often what is taught and what is learned may very well be taking place within the same environs, but are the direct result of varied, independent interactions.

### **Computers in Educational Settings: A description**

Computers in Educational Settings is the first course in our program. We also provide the course as an elective to graduate programs in reading, middle-grades education, and school administration. Components include course materials, interactions, support media, and ancillary reading materials. Instructors typically meet face-to-face with each of the classes but AppEdTech allows us to bring these disparate groups together by

providing a common interface in which participants can see that participants in other cohorts, whether from their own program or from other programs, are engaged in similar and/or complimentary tasks within the same environment. Students and instructors from any class interact with those who are online at the same time they are, and synchronous tools allow students to interact even when not online at the same time.

The goal of the course instructors is to provide a rich environment with many opportunities to interact with information, questions, and the experience of others who come to this course setting (including faculty, alumni of the program, guests, and other students). There is a schedule for each section of the course and a set of expectations and assignments but our challenge is to use the schedule as a guide rather than establishing a sequence. Instructors are online very often to serve as guides and facilitators, asking questions and making suggestions but, again, allowing the students to make their own choices about where they go and what questions or knowledge they tackle; and allowing students to experience synchronous and asynchronous interactions with others, whether planned or unplanned.

### **Conclusion**

Teaching in AppEdTech requires us to think differently about the role of teaching, learning, content and interaction. Environments may be built to represent real or imagined learning spaces that may differ greatly from the traditional four-walled school classroom, or mimic them exactly. No longer bound by bricks and mortar, nor time and place, members of the community have more agency in connecting and communicating -- creating a new paradigm for instruction, for guiding and learning, and for sharing and communicating content and experiences among students who possess all levels of expertise. As instructors, we must think about ways students move through a three-dimensional space and interact with various artifacts, tools, content and other students, and plan our own actions accordingly. By viewing our students as members of a vibrant learning community, and using the concepts of legitimate peripheral participation and situated learning, AppEdTech is helping us provide our teachers with meaningful, engaging opportunities to develop themselves with and among other students, whether in their own cohort or another, as well as with expertise otherwise unavailable.

### **References**

Dede, C., & Ketelhut, D. (2003). Motivation, usability, and learning outcomes in a prototype museum-based multi-user virtual environment. Presented at the American Educational Research Annual Conference April, 2003.

Kosak, L., Manning, D., Dobson, E., Rogerson, L., Cotnam, S., Colaric, S., & McFadden, C. (2004). Prepared to teach online? Perspectives of faculty in the university of north Carolina system. *Online Journal of Distance Learning Administration*, 7(3), Fall 2004. Retrieved December 2, 2004, from <http://www.westga.edu/~distance/ojdl/fall73/fall73.html>

Lave, J. & Wenger, E. (1991). [Situated Learning: Legitimate Peripheral Participation](#). Cambridge University Press.

McMahon, M. (1997). Social constructivism and the world wide web – A paradigm for learning. Paper presented at the fourteenth annual meeting of the Australian Society for Computers in Learning in Tertiary Education, Perth, Australia, December.  
<http://www.ascilite.org.au/conferences/perth97/papers/Mcmahon/Mcmahon.html>

Middleton, M. J. (2002). Do the effects of classroom demands depend on student motivation? The interaction of academic press and achievement goals, [Internet]. Available:  
<http://edtech.connect.msu.edu/searchaera2002/viewproposaltext.asp?propID=3564>  
December 14, 2004].

Prawat, R.S. & Floden, R. E. (1994). Philosophical perspectives on constructivist views of learning. *Educational Psychologist*, 29 (1): 37-48.

Stewart, T. (1997). *Intellectual capital: The new wealth of organizations*. Doubleday.

Westheimer, J., & Kahne, J. (1993). Building School Communities: An Experience-Based Model. *Phi Delta Kappan*, 75(4), 324-328