Appalachian
STATE UNIVERSITY®
BOONE, NORTH CAROLINA

Presence Pedagogy:
Teaching and Learning in a 3D Virtual Immersive World

Authors:
Stephen Bronack, **Robert Sanders**, Amelia Cheney, Richard Riedl, John Tashner, and Nita Matzen

Abstract
As the use of 3D immersive virtual worlds in higher education expands, it is important to examine which pedagogical approaches are most likely to bring about success. AET Zone, a 3D immersive virtual world in use for more than seven years, is one embodiment of pedagogical innovation that capitalizes on what virtual worlds have to offer to social aspects of teaching and learning. The authors have characterized this approach as Presence Pedagogy (P2), a way of teaching and learning that is grounded in social constructivist theory. In it, the concepts of presence, building a true community of practice, and constructing an online environment which fosters collaboration for reflective learning are paramount. Unlike learning communities that might emerge from a particular course taught under more traditional circumstances, students engaged in a P2 learning environment become members of a broader community of practice in which everyone in the community is a potential instructor, peer, expert, and novice—all of whom learn with and from one another.

Presence Pedagogy:
Teaching and Learning in a 3D Virtual Immersive World

Stephen Bronack, Robert Sanders, Amelia Cheney, Richard Riedl, John Tashner, and Nita Matzen
Appalachian State University

As the use of 3D immersive virtual worlds in higher education expands, it is important to examine which pedagogical approaches are most likely to bring about success. AET Zone, a 3D immersive virtual world in use for more than seven years, is one embodiment of pedagogical innovation that capitalizes on what virtual worlds have to offer to social aspects of teaching and learning. The authors have characterized this approach as *Presence Pedagogy* (P2), a way of teaching and learning that is grounded in social constructivist theory. In it, the concepts of presence, building a true community of practice, and constructing an online environment which fosters collaboration for reflective learning are paramount. Unlike learning communities that might emerge from a particular course taught under more traditional circumstances, students engaged in a P2 learning environment become members of a broader community of practice in which everyone in the community is a potential instructor, peer, expert, and novice—all of whom learn with and from one another.

Students enrolled in ITC 5220, Computers in Educational Settings, are meeting in AET Zone to work on a group project. There, they find not only the communications tools to collaborate effectively but the content resources to assist in their endeavor. After a while, they run into a real stumbling block: a question that can only be answered by their instructor. Without this guidance, they really cannot move forward. They look around, but their instructor, Amy, is not online at the moment. Fortunately, they see DR – not their own teacher, but one they have met and spoken with in the past, one who has taught this same course many times. He joins their conference, and within minutes they are back on track and moving forward.

Meanwhile, a pair of students enrolled in LIB 5020, Information Sources and Services, is posted nearby at a virtual reference desk in front of a virtual library. An avatar of a student enrolled in the Higher Education program approaches the library science students and is greeted by one of them. The higher education student is looking for information about university accountability and subsequently is escorted by one of the reference librarian avatars into the virtual stacks to locate resources on this topic.

These are typical examples of the teaching and learning that takes place in AET Zone, a 3D immersive virtual world learning environment used by faculty members and students in the Department of Leadership and Educational Studies in the Reich College of Education at Appalachian State University. Students work and interact with others present in the world, often across the traditional boundaries of class, course, or program area. Students respond to feedback and advice offered by faculty and peers present in the world when they are. Students are not limited only to their own course instructors, but instead are free to interact with and learn from instructors and peers from other courses and across multiple program areas. Students utilize tools and resources ever present in the world in the context of authentic, hands-on activities, and projects. The multiple manifestations of presence enabled by this combination of content, context, and activity are the critical attributes for engagement among students in a social constructivist learning environment. Embedded within an immersive virtual world, they combine to create a new approach to teaching and learning that, in many ways, is significantly different from those on which educators traditionally rely and those which students typically expect.

Problems and Challenges

Postsecondary enrollments are rising, and, in response, most colleges and universities offer some form of distance education, which utilizes the Internet and uses asynchronous tools as the primary mode of instruction. However, the most widely available tools offer little support for the formation of web-based learning communities or different kinds of teaching and learning. Making sure we offer our distance-based students at Appalachian State an online environment that is analogous to the face-to-face environment of traditional students in ways consistent with our social constructivist philosophy is important to us and continues to guide our efforts to develop our online spaces the right way. Jonassen (2006) argues that technologies should be used to keep students active, constructive, collaborative, intentional, complex, contextual, conversational, and reflective. It is our goal to ensure that technologies are effectively utilized to create such learning experiences for our students.

Our typical student is a K-12 educator working full-time and attending graduate school part-time. Most live and teach within a 150 miles of the university.
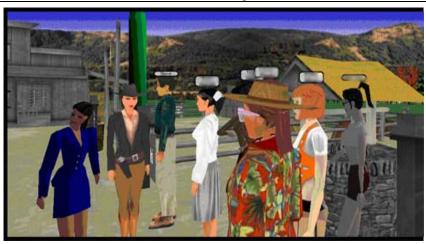
FIGURE 1
Students in ITC 5220 Have a Group Discussion in AET Zone

Most required courses are offered to cohorts of students who meet face-to-face in designated locations near their homes and/or their workplaces. Nearly all of our course content is online, and most interaction between students and faculty occurs online. We do hold regular face-to-face meetings; however, as cohorts gain confidence and experience online, face-to-face meetings become less frequent. A handful of courses are entirely online.

As we developed our online courses, we were challenged to look past the tools, models, and methods of today and to consider what our program could become. Traditional tools for distance education make it difficult to support the social side of learning. They do not account well for social presence, serendipitous interaction, and informal learning as well as virtual worlds (Sanders et al., 2007). Guided by these principles of social constructivism, we developed AET Zone—our 3-D virtual world for learning. Descriptions of a 3D web-based learning environment (Appalachian Educational Technology Zone or AETZone) have been noted in other research (Bronack, Riedl, & Tashner, 2006; Riedl, Bronack, & Tashner, 2006; Tashner, Bronack, & Riedl, 2005).

A Social Context for Learning

The faculty within Appalachian State University's Reich College of Education have developed a Conceptual Framework (Reich College of Education [RCOE], 2005) based upon social constructivism (Vygotsky, 1978) that guides teaching and learning within AET Zone. The following concepts serve as the foundation for this framework:

- Learning occurs through participation in a Community of Practice;
- Knowledge is socially constructed and learning is social in nature in a Community of Practice;
- Learners proceed through stages of development from Novice to Expert under the guidance of more experienced and knowledgeable mentors and among like-minded peers in the Community of Practice;
- An identifiable knowledge base that is both general in nature and also specific to specialties emerges from focused activity within the Community of Practice;
- All professional educators develop a set of Dispositions reflecting attitudes, beliefs, and values common to the Community of Practice.

The design and development of AET Zone is guided by these principles. As a result, the virtual environment serves as a powerful space through which effective learning communities may be formed and nurtured. Gilman et al. (2008) describe the literature as divided on the actual meaning of learning communities. Others use the term "community of practice" which seems to indicate communities of similar practitioners who are currently exploring various aspects of their practice together. Wenger (1998) states that communities of practice are joint enterprises that are understood and continually renegotiated by its members, where mutual engagement binds members together into a social entity and the shared repertoire of communal resources (routines, sensibilities, artifacts,

vocabulary, styles, etc.) that members have developed over time. Wenger (2006) also states that communities of practice develop around things that matter to people and that, as a result, their practices reflect the members' own understanding of what is important. Tools are offered in support of the kind of problem solving that happens when information occurs in activity. Prompts and activities offer all learners the ability to participate in projects, discussions, and other activities at different levels of complexity as they develop and gain more experience. Finally, learners have multiple opportunities throughout AET Zone to turn interactions into artifacts and ways of knowing into expertise (Sanders et al., 2007).

Recently emerging research and the emergence of 3D web-based environments for teaching and learning is suggesting the importance of the sense of presence and co-presence in the development and evolution of online communities (Schroeder et al., 2001). Students are aware of the presence of their instructors and colleagues when logged into the world; indeed, through the use of avatars, each can "see" the other. Students can approach other students and, using both audio and text, may talk to one another not only about course assignments but also about life, work, or the latest news. These planned and serendipitous interactions are key as students move from novice to expert, not only in their own content domains but in terms of being able to work collaboratively with other professionals. Their beliefs about teaching and learning are challenged, refined, and shaped by the process of learning together in an authentic social world of dialogue and discovery (Sanders & McKeown, 2007).

When considering learning as a social act, one must understand "social" in the broadest sense. From an etymological standpoint, social shares its root with words that mean "united," "allied," and "to follow." Social learning is about more than just having other people around; at its heart, social learning is about associated or allied intent to make oneself more in union with an "other" of which one is aware. Social constructivism, then, connotes the process through which we participate in a communion of associated intent toward a shared sense of understanding, a shared framework, or shared construct. An integral component of our emerging pedagogical model is the provision of a persistent social space to facilitate and to encourage serendipitous interactions between and among students, faculty, and others as they engage in collaborative, purposeful activity.

Presence Pedagogy

During the past seven years, the number of faculty members teaching in AET Zone has increased from one to six. As these numbers have grown, a dialogue has emerged about the design of the virtual space and what teaching and learning looks like in this space. Over time, this conversation has assisted us in recognizing patterns, strategies, and techniques we all tend to use in our teaching that differ from what we did in our face-to-face classrooms or in other web-mediated environments. We call this new model *Presence Pedagogy* or the *P2 Model*. Students and faculty share in the expectation that, at any given time, others will be present in the virtual world. The perpetual presence of others is a critical attribute of P2 learning environments. While these others may not be enrolled formally within the same courses—or even the same program areas—there is an expectation and understanding among all participants that all faculty instructors are my instructors and that all students in the world are my peers. Unlike the learning communities that often emerge via more traditional pedagogies, students engaged in a P2 learning environment are not limited to those within a particular section, class, course, or program. Rather, each becomes a member of a broader community of practice in which everyone in the P2 virtual community is a potential instructor, peer, expert, or novice who learns with and from one another.

The following sections describe the attributes of Presence Pedagogy and detail differences between Presence Pedagogy and pedagogies traditionally used in either face-to-face or web-mediated environments (i.e., WebCT, Moodle).

Core Principles of Presence Pedagogy

Pedagogy, historically defined, is the process by which one "leads a child." Some consider pedagogy to be the methods by which teachers manage an instructional environment (Banilower, Boyd, Pasley, & Weiss, 2006). We maintain a broader sense of pedagogy and consider it to be the set of skills, abilities, and dispositions one employs when helping others learn. This skill set often manifests itself as a collection of strategies, techniques, and styles for doing so.

How one puts to practice the defining principles of one's pedagogy is guided by beliefs about how educators and learners

- ask questions and correct misperceptions;
- stimulate background knowledge and expertise;
- capitalize on the presence of others;
- facilitate interactions and encourage community;
- support distributed cognition;
- share tools and resources;
- encourage exploration and discovery;
- delineate context and goals to act upon;

- foster reflective practice; and
- utilize technology to achieve and disseminate results.

Below, we will describe in detail how our implementation of Presence Pedagogy within a virtual world environment informs our decisions regarding each of these factors.

Asking Questions and Correcting Misperceptions

In traditional approaches to higher education, questions often are limited to clarification and frequently are reserved for times and places outside of formal instruction (i.e., after lectures). In many ways, however, questions are the key to implementing effectively a Presence Pedagogy approach. Indeed, the types of questions both students and instructors ask directly influences the levels and types of answers each receives, regardless of whether those questions are student- or instructor-initiated (Meyer, 2004). Garrison, Anderson, and Archer (2001) suggest that the effective understanding and use of questioning strategies (e.g., triggering, exploring, etc.) not only relate to the types of responses but also lead to improved support for "cognitive presence": the process by which meaning is created and confirmed through discourse across a community of learners.

Employing the P2 Model within an immersive virtual environment encourages instructors and students to employ an iterative process of cueing and questioning—rather than telling and commanding—to drive student learning. By asking questions, instructors guide and facilitate rather than limit and direct. Shifting from telling to asking not only empowers learners, but it also enhances instructors' abilities to evince, clarify, interpret, and challenge students' ever-changing base of knowledge (Toledo, 2006).

Virtual worlds provide opportunities to create spaces that support cognitive presence through the use of visuals and persistent spaces. These spaces provide a platform for both peers and experts to serve as catalysts for explicit, intentional learning. For example, one space popular among AET Zone participants is the So What? Saloon. A sign by the door notes the space's purpose: serving inquiring spirits. The So What? Saloon is modeled after an Old West watering hole: wooden chairs and tables are scattered about, a player piano is nestled by the door, and mugs and bottles sit atop a bar flanked by spittoons. As visitors mouse over each bottle, an important question in teaching with computers is revealed. Why should we have computers in educational settings? Should computers be the objects of study in K-12 schools? How do we know if our use of computers is enhancing student learning? Clicking on any of the bottles reveals a form through which students are encouraged to submit their own thoughts on each question. The player piano links to a database where ruminations from current and former participants are linked to each question. The visual of the saloon suggests that the space is a place for questioning, pondering, and conversation. The interactive database allows students to contextualize their own answers and to reflect on the thoughts and questions of their colleagues and peers.

Stimulating Background Knowledge and Expertise

For many, formal learning means suspending life lessons in favor of theory-laden, codified knowledge offered by an expert other, often resulting in an experience that is divorced from the real world in which the learner operates. Experience suggests that many learners struggle to integrate expert knowledge into their own ways of thinking, and few within formal learning environments perceive value in, or opportunities for, sharing their own knowledge in productive, useful ways. What often results is an environment that is disconnected from the real-world settings in which many learners already function, yet, for which, they are being challenged to prepare.

There is no single source of knowledge that is de facto better than others. Bruner (1997) suggests that what individuals know is surpassed by the knowledge that is gained via discussions within groups, and even this is eclipsed by the knowledge stored within the culture that exists among active communities. A core pedagogical premise within the P2 Model is the importance of fostering intentional learning behaviors (Scardamalia & Bereiter, 1996) by making the knowledge available within the learning environment germane to the real lives of learners. To do this, it is important to provide spaces and activities that allow all participants to share personal and professional experiences and to encourage that each recognize the background knowledge and expertise that results as meaningful, useful, and important.

Engaging all participants in knowledge-sharing, regardless of course, cohort, program, or department, is a key element of the Presence Pedagogy approach. Doing so surrounds learners with a rich base of knowledge from which to draw. One value of this base is the diverse and varied nature of the sources. Another is the validity attributed by learners to personal and professional knowledge vetted through a formal environment. Finally, allowing learners to share what they already know – and encouraging them to do so in a public, yet safe, way – helps instructors and others identify the cognitive hooks on which to hang new, formalized knowledge.

Virtual worlds provide unique opportunities for designing spaces and activities conducive to activating

background knowledge and expertise in useful ways. In AET Zone, students are encouraged to share what they know throughout the world. In the Case Study Conference Center, for example, participants are immersed in case studies drawn from real life and are offered a five-component process to guide their analysis. The process utilizes guiding questions and other prompts to engage students in identifying issues, viewing diverse perspectives, recalling various types of knowledge, proposing reasonable courses of action, and contemplating the positive and negative consequences one might expect to occur (Bronack & McNergney, 1999). Case analyses developed by the students are embedded within the virtual world and provide points for discussion and guidance for others as each develops his or her own analysis.

Capitalizing on the Presence of Others

Presence Pedagogy advances a peer-based approach to teaching and learning. The model promotes a flattened approach toward instruction that removes the preset hierarchy of expertise that is common across most educational models and replaces it with one in which all members of a learning community share in the responsibility for encouraging, challenging, and supporting one another. This is not to say that the P2 Model is completely egalitarian. There is an awareness and acceptance that the hierarchy and structure that expertise brings does exist within the community and that this expertise should be recognized and shared. Often, instructors possess this expertise. Many times, students possess unique knowledge as well. The P2 Model is an attempt to guide the structure of a learning environment in which all can benefit from the expertise regardless of who offers it. Presence Pedagogy encourages the support of a hierarchy of influence that is dependent upon knowledge available at any given time rather than one based on an a priori construct of power or prestige.

The P2 Model promotes a similar approach to supporting students. In virtual worlds, the presence of expertise available at the time is known immediately to all who are online and engaged. In AET Zone, we have adopted a naming convention that helps participants quickly recognize who are instructors and who are peers. Embedded avatars, called "greeter bots," announce the name and cohort of each participant the moment he or she enters the world. In this way, students immediately are made aware of the presence of those with expert knowledge and of more- and less-experienced peers. Each AET Zone instructor shares the responsibility of supporting students of all courses and all programs, not just those students enrolled in his or her respective courses. All students know this and are encouraged to interact with and ask questions of any instructor or expert in the virtual world, not just those to whom they have been assigned by the traditional university system. Recent survey results from Instructional Technology students suggest that participants respond well to this approach and, indeed, see themselves as part of a learning community rather than of a traditional hierarchical educational system. This survey included 121 current and former students in the instructional technology program and was administered in spring of 2007.

These results make evident the strong sense of community felt by a great majority of students participating in AET Zone. One student wrote, "I can confidently say that I feel I am a part of an effective and supportive learning community BECAUSE of the IT program. The conversations and collaboration between me and others in the program has grown, even after I graduated."

Serendipitous interactions are a core asset of effective Presence Pedagogy environments. However, it is best for instructors and designers not to leave such interactions entirely to chance. Creating an environment that effectively capitalizes on the presence of others requires careful planning and thought and is fostered by well-designed spaces. For example, in AET Zone, all students – regardless of course, program, department, or year – always begin each session in the Commons. The Commons is a portion of the AET Zone virtual world that houses the Information Gardens (ASU's virtual library), the Training Shoppe, the Discussion Depot, and other academic and not-so- academic spaces (e.g., the Break Game House and the Chit Chats Coffee

Table 1
As a Student in the Instructional Technology Program, I feel that I am Part of an
Effective and Supportive Learning Community

	Percentage
Strongly Agree	71.9%
Agree	21.5%
Disagree	2.5%
Strongly Disagree	4.1%

Table 2
The Instructional Technology Program Promotes Continuous, Collaborative and Active Learning

	Percentage
Strongly Agree	81.8%
Agree	11.6%
Disagree	.8%
Strongly Disagree	5%

House). Designing a virtual world that places all participants in shared spaces fosters a social churn that, in turn, encourages serendipitous interactions among all participants.

Facilitating Interactions and Encouraging Community

Learning is not a singular event. Learning does not occur in isolation. Instead, learning happens in concert with others through mediated interaction. AET Zone is designed to encourage interaction and collaboration among students and faculty from multiple disciplines, across numerous courses, and at various points of development. Learning in this community is both reciprocal and recursive in nature. Novices prompt growth in so-called experts and vice versa. Likewise, the shared knowledge base that emerges from this process is not unilateral. Rather, what is already known shapes what is accepted as knowable, and the process by which learners apply new knowledge to existing questions supports and facilitates further knowing and learning.

Multiple spaces and tools embedded in these spaces offer support for interaction and community formation. The Chit Chats coffee house, the Discussion Depot, the Break Time Game House, Wiki World, and other similarly named spaces in AET Zone's Commons provide such spaces and tools to foster interactions between and among students and faculty members.

Communication and collaboration tools, while necessary, are not sufficient to encourage and promote community among learners. Presence Pedagogy requires that these mediated interactions be ongoing and intentional to build into the world an expectation that students will interact when logged into the world and that these interactions, whether planned or serendipitous, are an integral part of the students' coursework. Liu, Magjuka, Bonk, and Lee (2007) showed positive relationships between feelings of belonging to the community and social presence in the online courses. Sense of belonging to a social community was also positively linked to instructor presence and facilitation. Another study of online course work by Lee, Carter-Wells, Glaeser, Ivers, and Street (2006) shows that students cite community-centered approaches to learning and establishment of a constructivist learning environment as essential for building community during the course experience.

Supporting Distributed Cognition

Distributed learning has three major attributes: (a) learning communities containing people with varying backgrounds and levels of expertise, (b) technology which supports communication and productivity within the community, and (c) engagement in authentic activity (Winn, 2002). Virtual environments like AET Zone lend themselves readily to the facilitation of distributed cognition utilizing these three factors. If the act is distributed, then the process must be as well. The answer to "where does learning occur" cannot be simply stated as "in your head." Learning is a shared act - and both the process (cognition) and the artifact (knowledge) of that act must reside in more than one place, as well. Like a conversation - or a dance - learning is something we do concurrently with an "other." Sometimes that other is a physical, tangible, measurable one. Often it is simply a mediated one, whether mediated in our own head using the tools of language or perhaps mediated in bits, bytes, signs, symbols, or other media. This is where the concept of distributed cognition shows itself most clearly. In Vygotskian terms, distributed cognition is most evident in the Zone of Proximal Development (ZPD): that place where we can think and know beyond ourselves, via mediated interactions with others using tools, techniques, and technologies that are both familiar to us and also invisible.

One could argue that occasionally we can learn "by ourselves," assuming we think of the absence of a present other as being "alone." However, as soon as we as learners became aware of language, signs, symbols, and gestures, we became forever embedded in communion with the artifacts and intents of others. Even if when alone, one uses social speech inside his/her own head and interacts with artifacts of others' experiences with the intent of using the residue of those experiences as a way of shaping their own. The learner then shares their own experience back onto those cues, which, in turn, either solidify or reshape them.

Virtual environments such as AET Zone help educators create situations in which learners' performance is an outcome of emergent collaborative learning social networks (Cho, Gay, Davidson, & Ingraffea, 2007). The 3D context builds on learners' real-world knowledge by providing a visual metaphor, or visual narrative, of the course content. This provides a place for learning which is both familiar and engaging (Dickey, 2005). AET Zone by itself is nothing more than a virtual space. However, as a space it serves as a forum for students to form networks and communities through which learning occurs. Tools for communication and collaboration are dispersed throughout the virtual world. Cafés and coffee shops exist to provide text and audio conferencing tools for small and large groups of students; discussion boards, blogs, and wikis are posted allowing asynchronous access to conversations around issues related to course topics; and, virtual newsstands exist to provide up-to-date access to relevant RSS feeds, blogs, wikis, online journals, and other resources that might be relevant to students in all program areas.

Sharing Tools and Resources

Presence Pedagogy seeks to exploit the power of continuous, collaborative, and active learning that occurs when participants are made aware of each other and encouraged to share in the communal process of growth and development that results. An overview from a recent conference on building learning communities states that such communities:

> foster peer-to-peer collaboration, communication, interaction, resource sharing, negotiation and social construction of meaning, and expressions of support of encouragement among students. A blended or online learning community must have its own meeting or gathering space, as well as a defined set of members' roles and norms for resolving disputes. (Academic Impressions, 2006)

Simply situating more- and less-expert peers in a shared space does not, in and of itself, prompt sharing and learning. Only through mediated activity does this dynamic occur. Our virtual world is a generative environment that is modified continually, changing based on what both instructors and learners construct and contribute within it. Participants constantly add new reports, multimedia, and communication technologies to the 3D environment to create a living curriculum for student use. As new tools and resources are contributed, the interactions between those who are immersed in the world and the socially-constructed artifacts that result feed back into a common knowledge base. This base is the core of a shared understanding that, in part, defines the community of practice.

Participants in the Community of Practice that emerges not only are diverse in interests and professional assignments, but also fall along multiple points of the novice-to-expert continuum. Together, participants move forward in increasing their own knowledge and understanding, utilizing tools for communication and collaboration inherent in the 3D virtual environment such as voice- and audio-chats, common work areas, malleable artifacts, and persistent social spaces. Instructors engage students with relevant experiences through assignments and projects that encourage work that will be useful immediately in students' professional lives. The conversations and products that result involve real-world experience, and sharing them among and across participants provides a cognitive base for activity throughout each program and each cohort of students.

Providing and Delineating Context and Goals to Act Upon

Context comes from the metaphors, from the assignments, from the embedded assumptions that are both explicit and implicit within an environment. It also comes from the personal experiences and ways of knowing that individual students bring with them into an environment and that shape each student's interpretations of the prompts, signs, and gestures experienced within. The same occurs with academic goals. Both students and instructors enter each learning interaction with preset goals for learning. Each may draw from similar sources—for example, professional standards, observed and inferred needs, or explicit and implicit expectations—but drawing from similar sources does not guarantee a shared understanding of which are important to act upon. The Community of Practice provides the forum for this negotiation of goals to occur.

Participation and contribution within a community of practice both powers and shapes the learning among all members, not just novices. As such, experts are not the only—or even, perhaps, the most significant—catalysts within the learning environment. Instructors certainly are value-added members and have a core identity that affords them a "heavier push" when each wants to guide students in a particular direction. However, the Community of Practice exists beyond us, and, if we run counter to it too much, then even we become marginalized. Therefore, we acknowledge the expertise that all

members bring to the community and together identify those goals that satisfy both groups.

Encouraging Exploration and Discovery

Notions of exploration and discovery are key elements of constructivist teaching and learning; members of a Community of Practice explore, process, and build knowledge together. The design of AET Zone is such that spaces and tasks are not linear: students approach elements in the environment in ways which make sense to them.

Presence Pedagogy assumes that the environment in which presence is sustained is one that is rich with resources available to learners. These resources are both perpetual and evolving in that any resources added remain available in AET Zone for as long as it is useful and that the environment facilitates students' ability to contribute new resources to the world. Such an environment becomes one that not only supports exploration and discovery—in that there are resources embedded throughout the virtual world for students to actually explore and discover — but also in terms of encouraging exploration and discovery—in that students want to take time to explore and discover what is available. Visual cues in the world such as store fronts, staircases, gardens, and pathways facilitate the organization of and accessibility to tools and resources available to learners in the world. These cues serve as visual metaphors, which provide systems of navigation and structure to the location and organization of in-world tools and resources.

This notion of exploration and discovery goes beyond the simple storage and retrieval of resources available in the world. Rather, a more substantive value in exploration and discovery in the world involves students' engagement in activities that promote exploration and utilization of shared in-world tools, resources, and knowledge base.

Encouraging Reflective Practice

In the most effective learning environments, students move from simply gathering facts to explicitly learning when each is engaged actively in a community of practice that has a pedagogical overlay and that requires students to not only perform but also to reflect upon the meaning of results and the validity of processes. The difference between acquisition and learning is related to the level of attention, intention, and agency put forth by both the novice(s) and the expert(s) involved. Perhaps the key differentiator is the level of agency promoted or allowed by the learner. In more natural settings, the agency lies primarily with the learner: the novice must figure out what he or she is supposed to do to participate fully

and to contribute. In more formal ones, those rules of engagement are codified and imposed upon the novice.

Utilizing Technology to Achieve and Disseminate Results

The technology used for AET Zone at the present time consists of an ActiveWorlds server (www.activeworlds.com), a course management system developed in-house called LESOnline, a threaded discussion board, blogs, a Voice over IP utility called Talking Communities (www.talkingcommunities.com), and a wiki hosted by the University. These pieces have come together over time as programmatic needs for improved communication have become evident.

An important note when considering these types of technology tools versus more traditional online course delivery systems (i.e., WebCT), is that the design of AET Zone is such that communication and collaboration, rather than content delivery, are the key goals. Lock (2002) identifies the four cornerstones of a learning community as collaboration, communication, interaction, and participation. The avatars, the synchronous and asynchronous communications devices, the presence of instructors and other students each work together to facilitate the creation of a true Community of Practice.

Conclusion

The P2 Model serves as the catalyst for social constructivist learning in a virtual world. While some learning can take place in and through a viable community of practice, our experience suggests the P2 pedagogy prompts a churn that encourages purposeful interactions, goal oriented projects, and collaborative processes, which result in an intentional learning environment.

There is, of course, the ability to sense of presence of others, and of one's co-presence among them, in a face-to-face classroom setting. However, this ability generally is limited to the dates and times during which a particular class is scheduled to meet. Presence and co-presence may exist during the days and times when class is in session but rarely are explicit in the hours and days between. While there may be a chance that students pass one another in the hallway or on campus, or that a group may choose to meet at the student union to discuss a class project, these meetings are not incorporated into the formal structure of the course. More specifically, neither students nor faculty randomly wander into a physical classroom during the week between classes, in the early morning hours, or in the middle of the night with

Table 3
Tenets of Presence Pedagogy

P2 Principle	P2 Practice	P2 Place
Ask questions and correct misconceptions	• Interactions with faculty and students • Both peers and "experts" serve as catalysts to promote explicit learning	• Glass Classroom • So What? Saloon • Discussion depot
Stimulate background knowledge and expertise	• Activities that require sharing of personal and professional experiences • Recognition of background knowledge and expertise • Acknowledgement of and engagement in a Community of Practice • Cross-course, cross-cohort, cross-program, and cross department interactions	• Information Gardens • Case Study Conference Center • Various interactive databases
Capitalize on the presence of others	• Activities that promote cross-cohort, -program, and –department interaction • Naming convention to identify student cohort, program, and nationality • Shared faculty responsibility of supporting students across programs	• The Commons • Individual Course spaces • Greeter bots throughout AET Zone • VoIP for small group chats • Blogs, wikis, discussion boards
Facilitate interactions and encourage community	• Team teaching • Naming convention to identify faculty and staff • Interdisciplinary lesson/unit planning • Activities to capitalize on notion of Distributed Cognition • Interdisciplinary Community of Practice • Text and voice tools for interaction	• Chit Chats • Break Time Game House • Discussion depot
Support distributed cognition	• Multiple manifestations of Presence • Creation of open space in which students and faculty of various backgrounds and levels of expertise can interact. • Expertise shared by students and faculty	• Café Cosi che Cosa • Discussion Depot • Spectacles • Blogs, wikis • Small group tasks and projects
Share tools and resources	• Students and faculty identification of relevant tools and resources • Availability of tools and resources in shared space open to all students	• General Store • Databases • Code Cove
Encourage exploration and discovery	• Engagement in authentic activity • Creation of open, resource rich environment • Activities that promote exploration of shared tools and knowledge base	• S-Mart • Hypermazes • Training Shoppe
Delineate context and goals	• Authentic, action-oriented projects and assignments that have personal meaning and relevance for the students • Visual cues to facilitate organization of and accessibility to tools and resources • Use of avatars and metaphors	• Seekers Corral • Student Services Center • Web Design Hypervator • Main Street AETZ
Foster reflective practice	• Periodic assignments requiring ongoing, guided reflection • The "So What?" question • Frequent public presentations	• Forest of Intentions • Discussion Depot • Blog Bar and Grill
Utilize technology to achieve and disseminate results	• Activities that require utilization of in-world tools and resources • Persistent presence of a living curriculum • Multiple presentations across programs, cohorts, courses, and sections	• LESOnline • Wikiworld • Showcase Showdown

the expectation that there is a chance one may encounter the other. As a result, instructors rarely rely on chance meetings as an integral part of one's pedagogical approach to the course.

Virtual worlds support a different approach, as chance meetings serve as the catalyst for learning by providing opportunities for just in time interactions between smaller groups of students and instructors. Rather than limiting the learner to a set time and to a set place, the typical restraints to learning are cast off to allow learning to take place at any time two or more are in the presence of one another and while present in any location in AET Zone.

Learning is then student powered, navigated by the instructor, just as a ship captain navigates a ship. Those who have sailed a ship know that this metaphor is more complex than it at first seems; for when navigating a ship, one must wonder who is steering whom? The ship reacts to the captain steering, but the captain is simultaneously reacting to the ship, the wind, the currents, etc. Neither the ship nor the captain is totally in control: a captain reacts to cues from the ship, the ship reacts to subtle adjustments made by the captain, and so on. It is a feedback loop that results in both getting from Point A to Point B, albeit via a negotiated route. This metaphor helps to explain how we view our model of Presence Pedagogy. In much the same way that a captain reacts to cues from the ship, and vice versa, we believe that teaching is an ongoing, ever-adjusting reaction to the students we serve. Through our interactions with these students, which are made possible through multiple manifestations of presence described above, deep learning can take place in both the individual student and in the community of which she or he is a member.

References

Academic Impressions Building Learning Communities: Strategies for Collaborative Learning On-line Conference Overview. Retrieved October 12, 2006 from https://www.academicimpressions.com/conferences/1006-collaborative-communities.php

Banilower, E. R., Boyd, S. E., Pasley, J. D., & Weiss, I. R. (2006). Lessons from a decade of mathematics and science reform: A capstone report for the local systemic change through teacher enhancement initiative. Chapel Hill, NC. Horizon Research, Inc.

Bruner, J. (1996). The culture of education. Cambridge, MA: Harvard University Press.

Bronack, S. C., & McNergney, R. F. (1999) Deriving Professional Knowledge from Cases, in R. F. McNergney & C. E. Keller (Eds.), *Images of mainstreaming* (pp. 21–28). New York: Garland Publishing.

Bronack, S., Riedl, R., & Tashner, J. (2006) Learning in the zone: A social constructivist framework for distance education in a 3D virtual world. *Interactive Learning Environments, 14*(3), 219-232.

Cho, H., Gay, G., Davidson, B., & Ingraffea, A. (2007). Social networks, communication styles, and learning performance in a CSCL community. *Computers & Education, 49*(1), 309-329.

Dickey, M. D. (2005). Three-dimensional virtual worlds and distance learning: Two case studies of Active Worlds as a medium for distance education. *British Journal of Educational Technology, 36*(3), 439-451.

Garrison, D., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, *15*(1), 7-23.

Gilman, R., Tashner, J. H., Riedl, R. E., Bronack, S. C., Cheney, A., Sanders, R. L., & Angel, R. (2008). Teaching IT through learning communities in a 3D immersive world: The evolution of online instruction. In S. Negash, M. Whitman, A. Woszczynski, K. Hoganson, & H. Mattford (Eds.), *Handbook of Distance Learning for Real-Time and Asynchronous* Information Technology Education (pp. 65-82). Hershey, PA: Idea Group.

Jonassen, D. (2006). *INSYS 527 Designing constructivist learning environments Spring 1997*. Retrieved October 12, 2006, from http://www.coe.missouri.edu/~jonassen/INSYS527.html

Lee, J., Carter-Wells, J, Glaeser, B., Ivers, K., & Street, C. (2006). Facilitating the development of a learning community in an online graduate program. *The Quarterly Review of Distance Education, 7*(1), 13-33.

Liu, X., Magjuka, R. J., Bonk, C., & Lee, S. (2007). Does sense of community matter? An examination of participants' perceptions of building learning communities in online courses. *The Quarterly Review of Distance Education, 8*(1), 9-24.

Lock, J. V. (2002). Laying the groundwork for the development of learning communities within online courses. *The Quarterly Review of Distance Education, 3*(4), 395-408.

Meyer, K. A. (2004). Evaluating online discussions: Four different frames of analysis. *Journal of Asynchronous Learning Networks*, *8*(2), 101-114.

Palloff, R. M., & Pratt, K. P. (2005). *Online learning communities revisited*. Paper presented at the 21st Annual Conference on Distance Teaching and Learning, Madison, WI.

Reich College of Education. (2005). *Conceptual Framework*. Retrieved November 6, 2006, from Appalachian State University, Reich College of

Education Web site: http://ced.appstate.edu/about/conceptualframework.aspx

Riedl, R., Bronack, S., & Tashner, J. (2005, January). *3D web-based worlds for instruction.*
Published in, Proceedings of the The Society for Information and Teacher Education, Phoenix, AZ.

Sanders, R. L., Bronack, S., Cheney, A., Tashner, J., Riedl, R., & Gilman, R. (2007). Education in the zone: Dynamic learning communities in a 3D virtual world. *Proceedings of the IADIS International Conference on Web Based Communities*, Salamanca, Spain, 293-302.

Sanders, R. L., & McKeown, L. (2007, January). *Promoting reflection through action learning in a 3D virtual world.* Paper presented at the Association of Library and Information Science Educators Annual Conference, Seattle, WA.

Scardamalia, M., & Bereiter, C. (1996). Engaging students in a knowledge society. *Educational Leadership*, *54*(3), 6-10.

Schroeder, R., Steed, A., Axelsson, A., Heldal, I., Abelin, A., Widestrom, J., et al. (2001). Collaborating in networked immersive spaces: As good as being there together? *Computers and Graphics,* 25, 781-788.

Tashner, J., Bronack, S., & Riedl, R. (2005, March). *Virtual worlds: Further development of web-based teaching.* Proceedings of the Hawaii International Conference on Education, Honolulu, HI, 4579-4588.

Toledo, C. (2006). "Does your dog bite?" Creating good questions for online discussions. *International Journal of Teaching and Learning in Higher Education*, *18*(2), 150-154.

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Wenger, E. (1998, June). *Communities of practice: Learning as a social system.* Retrieved October 16, 2006, from http://www.co-i-l.com/coil/knowledge-garden/cop/lss.shtml

Wenger, E. (2006). *Communities of practice: Learning as a social system*. Retrieved October 6, 2006, from http://www.co-i-l.com/coil/knowledge-garden/cop/lss.shtml

Winn, W. (2002). Current trends in educational technology research: The study of learning environments. *Educational Psychology Review,* 14(3), 331-351.

_____

STEPHEN BRONACK is an associate professor of Human Resource Development at Clemson University. He is co-creator of AET Zone and his research interests include social learning theory and systems design.

ROBERT SANDERS is an assistant professor in the Department of Leadership and Educational Studies at Appalachian State University, where he teaches in and serves as the director for the library science program. Prior to this position, Dr. Sanders worked professionally as a teacher, media specialist, administrator, and instructional technologist. He has also served as the president of several organizations, including the Ohio Distance Learning Association and the League of Worlds, the international virtual world collaborative. He is also a Fellow with the Carolinas Virtual World Consortium, a collaborative research and development effort between Appalachian State University and Clemson University focused on 3D immersive learning environments for teaching and learning. His current research is focused on the use of Action Learning pedagogy in these 3D virtual worlds and the symbiotic relationship that exists in the convergence of these two phenomena as it relates to our understanding of teaching and learning in these virtual environments.

AMELIA CHENEY is an assistant professor in the instructional technology program at Appalachian State University in the AET Zone. Prior to joining the faculty, she worked in K-12 for more than thirteen years in teaching and CTO capacities for two school districts in North Carolina. She holds B.A. and M.Ed. degrees from Wake Forest University, and an Ed.D. from Appalachian State.

RICHARD RIEDL is interim chair of the Department of Leadership and Educational Studies at Appalachian State. He teaches in the Instructional Technology program in the College of Education and was part of the faculty team who began working with a 3D virtual world in 2000.

JOHN TASHNER is a professor in the Department of Leadership and Educational Studies at Appalachian State University, and one of the original team members that designed and implemented the AETZone. He continues to explore learning environments that develop strong communities of practice and engage students in deep reflective thinking and learning.

NITA MATZEN is an assistant professor of Library Science in the Department of Leadership and Educational Studies at Appalachian State University. She uses AETZone, an Active Worlds 3D immersive virtual environment, as an instructional tool for her graduate courses. Dr. Matzen's scholarly interests include pedagogy and the development of learning communities in virtual worlds.