

# A Virtual World Initiative: Assumptions about Teaching and Learning

Richard Riedl ([riedlre@appstate.edu](mailto:riedlre@appstate.edu))

John Tashner ([tashnerjh@appstate.edu](mailto:tashnerjh@appstate.edu))

Stephen Bronack ([bronacksc@appstate.edu](mailto:bronacksc@appstate.edu))

Appalachian State University

Boone, North Carolina, 28608, USA

**KEYWORDS:** Distance Education, 3D Virtual World

*The Instructional Technology Program at Appalachian State University is moving significant components of the program, including course experiences, into a 3D virtual world. The process of developing this world and interacting with students through this medium raises some fundamental questions about teaching and learning, particularly as it is related to distance education. This paper describes the effort and begins to explore some of these questions.*

Recently, after experimenting on free space provided by ActiveWorlds (<http://www.activeworlds.com/edu>) the Instructional Technology Program at Appalachian State University acquired its own virtual worlds server on which to build the principal program interface for faculty, students, and alumni. This server provides a three dimensional multi-user domain in which participants can see and chat with the avatars (human-like graphical representations) of other participants who are online, move around to different buildings which provide services or support of students and alumni, and take part in class activities through interactions with objects and web pages.

The process of building the classes and services for this environment and interactions with students as they first explore it has lead the faculty working in this area to raise key questions about the development of virtual environments, including the interactions of participants and the very nature of the learning activities we are attempting to foster.

Building a class in a 3D virtual environment leads to a very different type of thinking about class structure, representation, and processes that may be informative to anyone attempting to develop distance education experiences.

For instance, the three dimensional character of the environment, with the ability of participants to move about space as opposed to being restricted to the choices presented on a web page, causes the course developer to realize that learning activities may not necessarily be linear and prescribed by the course designer. And one can also begin thinking of learning activities that depend on participants "meeting" and interacting about the content or the processes in which they are engaged. But this environment does not lend itself well to formal large group meetings so planning for student interaction and participation takes on a different character from either face-to-face classes or web-based classes.

It is the purpose of this paper to describe the work done by the faculty to develop the environment, some reactions of students to the preliminary work, and to raise questions that have emerged from these activities that will have impact of future efforts in this type of environment and, possibly, for development in all online environments.

## THE VIRTUAL WORLD

AppEdTech is the name of the virtual world that is running on an ActiveWorlds Galaxy Server at Appalachian State University. The Galaxy Server is running on a modest hardware setup (450 MHz Pentium with a 10 GB hard drive and a 100 Mb network interface card). The Galaxy Server comes with a customized ActiveWorlds browser that connects directly to AppEdTech.

The browser presents the user with four distinct areas:

1. A central 3D view of the world, either in first person view or a third person view from behind the user's avatar.
2. A chat space below the 3D view that allows users to interact with other users.
3. A web space to the right of the 3D view and chat space that presents the user with web pages that are connected to the interactions of the user with the objects of the world.
4. A utilities space to the left of the 3D view and chat space that provides the user with access to help files, telegrams sent by other users, teleports (similar to bookmarks on a web browser that allow the user to go directly to a place in the 3D environment), contacts (a listing of people the user wishes to interact with that provides information on the contact, such as whether the contact is online, and contact resources such as the ability to send telegrams or join others where they are in the 3D world).

Users can choose the view they would like to use (first person or third person), what avatar they would like to use to represent them in the 3D world, and how they would like to control their movements (mouse or keyboard).

Web pages can be brought up in the space to the right of the 3D view by clicking on objects that are associated with web pages or by entering areas that trigger a web page (somewhat like passing through sensors that open automatic doors in a department store). Web pages can also be opened in a new, full screen window if the page does not display well in the limited space provided by the AppEdTech browser.

Chatting is as simple as typing in the space provided below the 3D view and pressing the enter key. Chat entries go to all users located within a certain distance of the person initiating the comment. There is a whisper option for communicating with one other person rather than a group. All users within a certain distance are listed in the whisper part of the chat space. The user wishing to communicate with a single person simply selects that person's name and types the message into the whisper area.

AppEdTech is far from complete. Currently there is an entry plaza that has three buildings around it. To the left of the user, upon entry, is a student services building. This building houses space for general information (such as information on how to forward Appalachian State email to personal email accounts and on the listserves that are available for students in the Instructional Technology program) and offices for the Graduate School, Registrar, Distance Education and Extension Studies, Licensure, and Leadership and Educational Studies Department (the home department of the Instructional Technology program). These offices will hold information and resources important to students in the program.

Behind the user, upon entry, is the library building. This building will hold connections to the Appalachian State library but will also house collections of information relevant to students in the Instructional Technology program, organized by topic and by course. And on the right side of the entry plaza is the Alumni Center building. This building will house links to Appalachian State Alumni resources but will also have resources designed specifically for graduates of the Instructional Technology program.

In front of the newly entered user is a park. On the other side of the park is the Tele Port. The Tele Port provides access to courses that are located in AppEdTech. Each course has a gate (much like at an airport) through which the user walks. The user is then teleported (flown) to the site of the course.

There are currently three classes that have been constructed in AppEdTech. Each is unique in appearance and operation according to the nature of the content and the form of interaction that is desired in order to meet class goals.

A course on hypermedia is modernistic in appearance. It presents students with "hypermazes" that allow them to choose to their own path through information and resources and a discussion area that links to a threaded discussion web page where specific questions are presented based on the students' experiences in the maze.

A course of telecommunications is organized around four distinct areas that are represented by four modern buildings located around a plaza:

1. One that focuses on a book the class is reading and a providing a format for interactions connected to the book
2. Another focuses on an opportunity to walk through a network, either from the Internet to the computer or vice versa, providing the student information about the components of the network.
3. An area that focuses on various telecommunications tools that can be and are used in educational settings and connections to the class discussion board to share thought, ideas, and questions about these tools.
4. And an area that explores the uses of telecommunications tools to enhance a classroom or as distance education media.

The organization of these areas allows students to move to them and between them in a non-linear fashion according to their needs and interests with timelines for projects, sharing (discussion, brainstorming entries, etc.) establishing the flow of the class.

A course on web design is organized in a futuristic environment that provides levels up which the students proceed. Each level represents a set of skills encompassed by the course. Each set of skills is dependant on the skills of the previous level.

Students can enter AppEdTech from any Windows computer connected to the Internet through the AppEdTech Browser. All students in the Instructional Technology program are provided with access to the browser and a username and password combination. Because the ActiveWorlds Galaxy Server does not place high demands on the connecting computers or their

connections to the Internet, students can readily access and participate in AppEdTech with a modem.

Students who are in different courses can see and interact with each other as they can with graduates of the program and the instructors of the various courses. Students can be provided with opportunities to build their own areas in AppEdTech or they can simply use AppEdTech as their interface with the courses they are taking and as a way to meet with others taking the same courses.

Student reactions have been diverse. Initially there is a significant positive affect that may be simple novelty. But some students have difficulty moving about and begin to express frustration. They feel handicapped. Some students also have difficulty adjusting to course elements that depend on the choices on where they go rather than a strictly sequential presentation. There are socialization pressures (How do you interact with someone you don't know?) that some students have more difficulty with than others.

But there are also very positive reactions as students learn to move about, learn to explore their options and understand that they have the freedom to do so: and learn some of the shortcuts that make moving about the 3D environment more efficient. Some students who have been introduced to AppEdTech but who have not yet had a course there have even chosen to meet in AppEdTech to conduct work they were expected to complete together. Others have been outspoken in their appreciation of being able to interact with a course, their peers, and the instructor on their own schedule from the comforts of a workspace of their choice.

There is still much for us to learn about how the students perceive this environment and how they will use it as part of their degree program. There is even more for us to learn about how to use this environment for courses or parts of courses and other program related activities. Below is a discussion of some of the key conceptualizations that we have begun discussing as a result of moving to a 3D setting for our program.

## **THE LESSONS AND THE QUESTIONS**

The Instructional Technology program at Appalachian State University has been taught as a traditional campus-based program and through cohorts of students at locations within driving distance of the university campus. In addition to face-to-face classes offered on schedules that fit those of students who are working full time, courses have been offered by video conference, the web, or combinations of face-to-face, video conference, and the web. The program has been very successful, with students often citing the face-to-face opportunities afforded in the program, even if limited, as something they highly value.

Building in a virtual world for this program and using it as an interface for courses raises many questions and offers many lessons. One lesson that is presented by building in a 3D environment is that it is, as a result, easier to think about the experience the student is offered in multiple dimensions. Many times course organization is determined by a schedule that sequences all activities. Building in a 3D world seems to free us and to challenge us to break out of that straight line thinking. Some courses, by the nature of the content such as in the web design

course briefly described above, demand a sequential set of experiences. But other courses, once one begins to explore them from the perspective of a 3D environment, don't need the same type of sequencing. The courses can become more exploratory with activities and assignments constructed to encourage exploration and communication tools established to allow students and instructors to share and learn from the results of the exploration.

Some parts, of course, demand face-to-face interaction. It may be impractical or even impossible to help students achieve a goal without the opportunity to sit in the same room with each other and communicate directly in real time. Other parts of courses move along nicely without the need for face-to-face interactions.

In working with AppEdTech we have begun to raise questions not only about distance education strategies but also about the strategies that are assumed to work in the traditional educational setting. We have realized that there are many assumptions about both that have not been challenged. Perhaps they should be better understood before we move too quickly to establish one domain (distance education) based on another (traditional).

Perhaps there is a lesson to be learned by looking at the development of other technologies that we now take for granted. For instance, movies and plays are an accepted part of our culture. But that was not always true.

When we go to a movie we are aware that we are participating in an art form that is distinctly different from a play. Yet most of us aren't aware that the moving picture camera was in existence for some fifty years before the movie, as a unique art form, was invented. Before then the moving picture camera was used to capture a variety of vignettes and presentations that more resembled a recorded play than what we would call a movie. There were many reasons for this including, but certainly not limited to, the limitations of the moving picture camera and the other equipment associated with capturing and replaying motion. Perhaps the greatest reason of all was that those who first possessed moving picture cameras were still very busy trying to solve problems that existed before the ability to capture and record motion was invented.

Before the moving picture camera was invented people were aware of events only through the words and still pictures presented in newspapers or other forms of publication. Often these sketches were done by artists who had not witnessed the event first-hand. As a result, readers' understanding was primarily constructed by a single snapshot view presented through one interpretation and perspective. A person could read about a daredevil walking a tightrope across Niagara Falls and perhaps see a still image of a man captured in the process of taking a step on a narrow wire, but could not see that person walking and balancing over the roaring and foaming waters. If a person wanted to see a play as performed by the great actors of the day that person had to go to the place of the play and attend a performance. When the moving picture camera was invented it was first used to solve these kinds of problems.

But watching a play as recorded by a moving picture camera is not the same as watching (and hearing, of course, since the moving picture camera had not yet learned to record and synchronize sound) a play performed live in the theatre. As long as the moving picture camera was used in a fixed location (as if the viewer were sitting in the center of the 5<sup>th</sup> row) to record an event as it occurred from beginning to end it would continue to be a poor substitute for the real experience.

Nearly fifty years after the moving picture camera was invented, Cecil B. De Mille and others began to experiment. He moved the camera to give different views of the scene. He interspersed close-up shots among the longer shots of the scene. He introduced cuts to different locations to show action that was taking place simultaneously and used flashbacks to show action that had happened previously. Through his experiments with cinematic staples we take for granted in today's movie theaters, De Mille began the process of inventing the movie. As he did, the old problems cinematographers were trying to solve with the new technology disappeared -- and new problems emerged.

We find ourselves now in a similar situation in education. We have powerful new computing and networking technologies that provide new ways to teach and to "do learning." But in the process we more often recreate what is familiar to us using these technologies, than creating anything truly different. Most of our distance education settings look like traditional face-to-face classes transferred to the web, or to video, or to whichever medium is employed. But they are not the same; just as watching a play recorded with a moving picture camera clearly is not the same as attending a play.

As educators we want to reach out to populations who need and desire an education and we see these new tools as a means for doing so. Unfortunately, we often find that using distance education to reach these populations just seems to make learning more distant. Instead, educators should look for opportunities to use new technologies to make learning meaningful, not simply more available.

Transferring educational practices done in one setting to another is a trivial effort likely to continue disappointing those organizations that support and engage in it. Educators should spend less time employing new technologies toward solving existing problems. Instead, educators should focus upon educational goals and their underlying assumptions about teaching and learning as they develop distance-learning environments. We should extend more effort toward solving the problems that come from the interface between the goals that reflect our current and emerging missions -- and the emerging technologies we have to help us get there. We need to struggle to understand the relationship between our assumptions about teaching and learning and the technologies we are employing to deliver education at a distance.

Both a movie and a play are about the same thing -- both exist to tell a story. However, the difference between the two lies in the processes of creating the story-telling environment, and in the underlying goals and objectives each producer brings to the process. In the same light, distance education should not be treated as a new solution to an old problem. It is a solution for contemporary times that brings about problems of its own, and at the same time makes old problems irrelevant.

There are attributes of learning such as motivation, engagement, interactivity, feedback, time, guidance, structure, and expectations that likely are stable across media. However, the manner by which each is addressed in traditional teaching environments is very different from those most appropriate for distance education environments. Continued experience with AppEdTech and long discussions among the faculty of the Instructional Technology program may help us discover those differences.