

The (Virtual) Classroom of Tomorrow

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Anyone watching the later movies in the Star Wars franchise may have noticed the virtual conferencing taking place in meetings of the Jedi Council. (For the unenlightened, Wikipedia has a nice entry detailing the Council here: http://en.wikipedia.org/wiki/Jedi_Council). When certain Jedi Knights were off on missions to other planets in the galaxy, and unable to attend in person, their holograms showed up for the meetings. This offered what researchers in the real world call a “telepresence.” In the movies, it looks pretty cool.

In one film, viewers see the Council from Yoda’s perspective; he sees and hears all activities taking place in the meeting chambers. His hologram shows those physically present at the meeting what he is doing at any given moment. When he speaks from his distant location, his hologram speaks. When he turns his head, his hologram turns its head, and so on. For all intents and purposes, Yoda is attending the meeting, even though he is physically light years away.

Back on earth, we don’t have holograms for teleconferences yet. We do, however, have some nifty software that, combined with an Internet connection, allows teachers, students and conference-goers opportunities to meet in three dimensional virtual environments. In many ways, the experience simulates the Hollywood idea of a holographic telepresence, such as those occurring in the Jedi Council meetings. University researchers are taking a closer look at three dimensional environments for educational purposes, and measuring benefits and perceptions among students and teachers. What they are discovering holds the potential for some remarkable changes in the way we approach distance education.

Created Realities Group

Greg Jones at University of North Texas has been conducting courses in virtual three dimensional classrooms for some time. Students install the software on their home computers, log into the system, and an avatar appears in the online classroom with their name hovering on top. “Avatar” is simply a term describing a virtual puppet. As the avatar moves around in the virtual environment, users see what their avatars see on screen. Most avatars in educational settings are human in appearance. When Dr. Jones’ classes are in session, several avatars pop into existence in a classroom that exists only in cyberspace.

When UNT students meet together for a session in Dr. Jones’ Created Reality Group (CRG) virtual classroom, they have three primary ways to communicate. First, they can speak through microphones attached to their computers. When one talks, others listen. In this way, students can share with one another and professors can give lectures. If multiple groups of people need to carry on conversations at the same time, they can go into different classrooms in the virtual school building for private conversations.

Second, a text chat window is also available. This is particularly useful for those students without a microphone. It also allows students to type in questions while someone is lecturing. The software keeps track of written activity, allowing the professor the opportunity to review it at a later date. The chat window can be moved and resized on students' screens.

Finally, presentation slides can be shown during lectures. Each student sees the same slides as the lectures progress. The teacher (or student) giving the presentation is in control of when the slides advance. This results in lectures similar to what we are used to hearing and seeing in real life, the difference lying in the remote location of the participants.

In short, teaching elements found in the typical classroom are replicated in the CRG virtual classroom. The question remains, how do students like it? In his research with UNT students using the software at a distance, Jones and his colleagues discovered new students displayed an almost universal urge to explore the environment their first time logging in (Jones, Morales, & Knezek, 2005). Other elements lent themselves to a need for familiarity with the new environment before settling down and using it as the teaching tool for which it was designed.

After getting used to the software, students have expressed enthusiasm with the idea of three dimensional virtual classrooms. Many students, both in high school and at the university level, are used to traditional distance learning software. Commercial titles include WebCT and Blackboard, which have now merged, and open source products including Moodle and Sakai. All these distributed learning environments offer a two dimensional replication of paper learning. Students read the assignments, submit papers, take online quizzes, and post to discussion forums. On occasion, a real time text chat may take place.

Software like Dr. Jones' CRG environment offer the next step in online learning: a three dimensional representation of a school building users can meet in and take live courses from the teacher at a distance. As Dr. Jones' research continues, he posts updates of papers on his site at UNT: <http://courseweb.unt.edu/gjones/>

Active Worlds

The idea of using three dimensional environments for educational purposes continues to grow in popularity. One such environment that has been around for several years is called Active Worlds. The company has extended the environment to universities wishing to hold online classes, offering the Active Worlds Educational Universe (AWEDU). According to the company Website, 80 universities around the world participate in AWEDU.

Active Worlds is a free three dimensional environment. Anyone can download the software, install it, and go exploring. The site earns money from participating universities and members wishing to purchase their own virtual real estate. Unlike some online gaming environments, Active Worlds allows, even encourages, members to use the included graphical tools to design their own three dimensional home pages. Members have recreated images of Wild West towns, futuristic metropolises, and so forth. Other members can drop by to visit or explore the virtual real estate. Users meet online using their avatars, and chat, shop, and play games together.

Active Worlds seems to be especially popular for university courses dealing with graphics and graphic design. Visitors to AWEDU can peek into class space for biochemistry, building designs, and other hands-on areas.

Active Worlds is commercially supported, and quite large in scope and size. While strolling through a building I happened upon a virtual Dr. Pepper machine, and wondered if the company paid to have it placed there or if it was merely the work of a die-hard soda fan. Active Worlds allows tourists to visit for free, but to customize avatars, lock-in screen names, and get the right to own property and build on it, users must pay to become “citizens.” Likewise, universities wishing to use Active Worlds for classroom purposes pay a fee, ranging in price according to how much “space” is needed for the classroom.

One nice outcome from all the universities using AWEDU is the research it has generated. Margaret Corbit (2000) from Cornell has detailed efforts in building a virtual science museum through the Active Worlds system. Her findings indicated new users had a need for help in orienting themselves to the environment, something uncovered by Dr. Jones’ research as well. Three dimensional online environments are so much richer than the static Web pages most people are used to, it takes a while to become accustomed to them. However, once they do, their experiences tend to be richer than traditional online learning.

The Active Worlds Website is at <http://www.activeworlds.com>. The portion for educators is hosted at <http://www.activeworlds.com/edu/awedu.asp>.

Second Life

Perhaps more robust than Active Worlds, Second Life also offers educators opportunities to use a three dimensional environment for learning purposes. Second Life is owned by a company called Linden Lab. It is different from Active Worlds primarily through its economic links with the real world. Users creating things in Second Life, such as games, artwork, and graphic designs, retain ownership rights. Users transfer real dollars into online dollars, and vice versa, at an exchange rate through Linden Lab. Thus, some folks have actually earned money through selling items they have created, or services they have provided, in the online world.

Second Life has not been around as long as Active Worlds, but has already created quite a stir. A programmer created a game called Tringo (a cross between Tetris and Bingo) in Second Life, and sold the rights to it in the real world. Economic disparities, scams, and “flipping” real estate properties for obscene profits have also been troublesome for some users, if online accounts are accurate. Some of the problems are eerily similar to real life issues. On the other hand, the possibilities of online exploration, creation, and learning have fascinated a large audience, who have shown they are willing to pay monthly membership fees to continue their online lives at the site. A separate area, Teen Second Life, is devoted to younger users.

New courses offered on designing robust three dimensional spaces have used the graphics tool-rich environment of Second Life. Instead of using the “worlds” motif, Second Life uses “islands.” Educators can set up private islands exclusive to their students, or let the islands be public and available to the online community at large.

Now entering its third year of operation, Second Life has garnered some high powered academic attention, but little in the way of educational research on its use has been published to date. Linden Labs published a paper indicating some interesting details on the development process (Ondrejka, 2004). *Wired* ran an article recently describing how some folks are earning a living through the environment (Craig, 2006). Second Life's rich graphics and other user-controllable tools, along with an economic system that can be translated into real world cash, should provide plenty of fodder for academic research in the years ahead.

Second Life is located here: <http://secondlife.com>.

Conclusion

Imagine an online classroom where students meet virtual representations of one another. They hear you and one another, as discussions take place over the content of your lessons. They present slide shows for their reports, and work in small groups within different virtual rooms. This is the vision offered by three dimensional virtual classrooms, and it is one quickly increasing in popularity. Students in far flung rural areas can use a school computer to login to a language classroom offered by a distant teacher. Lectures and other real-time materials can be delivered by teachers and professors. Students can attend class and engage in hands-on learning through their avatars, from a distance. Online virtual reality has opened up whole new worlds teachers can use for educational purposes.

Dr. Jones' CRG system at UNT, Active Worlds and the Second Life environment, are all letting teachers and students experience telepresence with one another, and empowering them to engage in real time learning at a distance. It's not quite the Jedi Council, but for the time being an avatar in a virtual school room is as close to a hologram as we can get.

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