3D Multi-user Virtual Worlds for Education: Knowledge Building in the Vlearn3D.org Community

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ABSTRACT

This Interactive Event features a selection of projects of members of the Vlearn3D Community, a group that is focused on early development and research surrounding the use of multi-user virtual worlds for education. Participants will meet developers and users of the wide variety of worlds in the Activeworlds Educational Universe (AWEDU) and will become acquainted with projects under development in such environments as Adobe Atmosphere. The Activeworlds platform is a modular 3D environment in which all content is developed online in realtime. This facilitates distributed group collaboration across geographical distances. Projects will demonstrate various ways that bridges are being built between age groups, languages and cultures in educational virtual worlds. All projects will show how the collaborative construction of social artifacts, peer-to-peer activities and knowledge building define the learning experience. We will tour art, science, language learning, and information science worlds and meet some of their inhabitants (embodied and visible to each other as "avatars"). The program will combine a projected presentation, an overview of the technology and introduction to the projects, with the opportunity to interact with the worlds and their developers on their own through a bank of desktops.

Keywords
Constructivism, desktop 3D, avatars, Virtual worlds, collaborative virtual environments, knowledge building, knowledge networks, knowledge space

EVENT DESCRIPTION

This event will begin with an introduction to the people and projects that will be featured through a series of web pages with screenshots and photographs of distributed participants. A short hands-on tour through the navigation interface of 3D virtual worlds will follow. Tours and demonstrations will include an interactive science fair exhibit created by teens with support from online mentors, an immersive 3D interactive painting, a garden that grows in response to use of a digital library, and a visit with a group of college bound high school students in their mentoring/counseling worlds.

The defining feature of a modular 3D environment is its combination of social space scaled to the user, geospatial referents for navigation and multiple media that can create and foster a social setting that has both permanence and flexibility. All objects can be linked to web pages or media or have a sequence of actions or interactivity added to them through automated scripts. When a world is constructed, it can continually grow through a large base of users/builders. Since it is built in realtime, building activities are, by nature, collaborative.

Specific CSCL theories are being implemented and explored in a variety of ways using the synchronous collaboration and visualization tools available in virtual worlds or in conjunction with asynchronous communication tools such as the Web Knowledge Forum [Bereiter]. A virtual world provides a social environment in cyberspace where groups can grow together for a common purpose in an educational setting. Some worlds such as the *Virtual High School* look like realistic classrooms displaying examples of peer-to-peer, constructivist exercises such as a student-built chemistry "webquest" or a theme-based gallery. [VHS Scenarios] The *City Theme* project [Svensson] supports language learning by allowing students to represent linguistic concepts through the collaborative building of "cultural artifacts" in 3D. These student-built "cities" interrelate to and embody the conceptual frameworks presented in their 2D web pages and are excellent examples of collaborative knowledge building. [Stahl] Likewise, the *Tomato Islands* in Cornell Theory Center's SciFair world represent the collaborative learning experience of building teams.

Other projects such as *Euroland* demonstrate how the shared building of an environment can provide opportunities for "active knowledge building" and visualization by allowing students to design, implement, perform and evaluate their environment collaboratively [Ligorio]. Informal science learning worlds such as Cornell Theory Center's *SciCenter* demonstrate how the scale and interactivity of 3D objects used to teach basic concepts in genetics can increase students' understanding of abstract concepts and offer opportunities for group problem-solving [Corbit, M., DeVarco, B; Maher,

Corbit]. Other worlds such as Borderlink's *LinkWorld* and UC Santa Cruz's *EcollegE* provide opportunities for peer to peer support that allows college bound students to receive tutoring, counseling and orientation activities with each other and with university students in virtual high school and university settings. With geographic, architectural and cultural verisimilitude, these orientation worlds become social environments that support the zone of proximal development where collaborations with participants who are more skilled are needed and make opportunities for this mentoring available beyond geographic boundaries. [Cole, M., Wertsch J.]

Finally, because a cluster of virtual worlds can reside in an interconnected educational "universe," information sharing and knowledge networking [Dede] can occur through a growing global "community of practice." [Schlager, et.al.] This network participates in regular roundtables and events as well as an annual online conference in cyberspace [DeVarco, Corbit]. These activities take place in the same medium as the projects themselves. Through this workshop we hope to provide CSCL participants with a wide-ranging introduction to virtual 3D environments and the varied ways in which they are currently being used for distributed collaborative learning.

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