Flatworld
Learning in a Setting Where Real Objects Mix With Computer-Projected Images

Los Angeles, CA (Institute of Creative Technologies) -- Flatworld technology, a mixed-reality immersive environment, is a combination of virtual reality and real-world props. It is being used to train soldiers, giving them an immersive experience before they are deployed in actual situations. The system has sensors that monitor the user's position. That and other responses are conveyed to virtual characters that interact with the user. Eventually people may be able to use this technology in schools, homes, or other settings for education or entertainment.

"We're limited, really, only by our imaginations in terms of what we can depict in the system, what kind of experiences we can deliver." **Diane Piepol, project director**

Framework	Standards
Middle School	STL - 3.D ➤ Technological systems often interact with each other. STL - 6.F ➤ Social priorities are reflected in technology. STL - 10.G ➤ Invention and innovation play a role. STL - 17.H ➤ Communication systems transfer information between humans and machines.

Content Illustrated

➤ Flatworld environments help the user learn.

Content

Life Science
➤ When you feel like you are immersed in an environment, it is easier to learn from that experience. You can also remember things more easily.

Technology
➤ Flats are moveable walls used on movie sets.
➤ An immersive environment is created by combining digital flats (2-D screens), rear-screen projection of real-time events, physical props, and other physical "4-D" effects (lighting, temperature, smells–information for all the senses).
➤ It's like virtual reality with head-mounted displays, but instead the headsets are removed and you can actually move through a space. Because your whole body gets involved, you feel like you're physically in the place.
➤ Characters on screen interact with you in real time. They can "see" you.
➤ Real people interacting in the Flatworld environment are "painted" in infrared light. Cameras and computers pick up and convert the reflected infrared light, and then communicate how the virtual characters are moving.

Engineering
➤ Flatworld projectors are now being made at the size of a cell phone. They potentially could be used in homes or schools as they become more available and affordable.
➤ Flatworld environments could be created for learning about many subjects, from history to chemistry.
➤ Cameras are designed to watch the user and allow virtual characters to interact realistically.

Guiding Questions

➤ Why do humans learn better in an immersive environment?

➤ What are some differences between Flatworld, a movie, a video game, and a theme park?

Keywords

flatworld
immersive
 environments
infrared camera
mixed reality
rear-projection screen
virtual reality

List of Suggested Activities

To think about as you watch:

➤ Sketch out a Flatworld space. Identify the flat walls and the real world props for a place of your interest.

➤ *Flatworld* can be found online at www.ndep.us/Flatworld. Visit www. ndep.us/LabTV for a list of process skills modeled in webisodes.