

# 7 things you should know about...

## Virtual Worlds

### Scenario

As part of her coursework as a first-year medical student, Marie participates in a virtual clinic several times during the semester. The clinic is an online, animated world populated by avatars representing doctors, nurses, and patients controlled by medical students and volunteers. Marie assumes the role of a doctor in the virtual world, and for each session, the clinic is a different kind of office: an emergency room, a clinic that serves primarily needy patients without insurance, and others. For the first session, the clinic is a family practice, and through the animated computer interface, Marie controls her avatar's movements and conversations in the virtual world.

The world is set up to closely mimic a real doctor's office. Marie walks her avatar into an examination room, where she finds the patient waiting. By typing dialogue, Marie speaks to the patient, introducing herself, and the patient stands up and introduces himself. An important element of becoming a doctor is learning how to interact well with patients, and the virtual clinic gives Marie an opportunity to do that. Marie's avatar and the patient—who is the avatar of another medical student—talk about what's bothering the man, which turns out to be a flare-up of gout. Marie and the other participants see the action of the virtual world through 3D animations from their computers. Marie asks questions, reads the patient's chart, and conducts a clinical examination.

Faculty monitor the sessions in the virtual world and can interrupt them to offer suggestions to student doctors about better ways to ask certain questions and to earn the patient's confidence. Because the virtual world has both real and simulated components, Marie finds that it requires her to be extremely conscious of her actions and the words she uses when interacting with patients, a skill she will need to apply when in a real office with a real patient.

### What is it?

A virtual world is an online environment whose "residents" are avatars representing individuals participating online. Users of virtual worlds design their environments and often their avatars as well, from gender to clothing and hairstyle, and control how those avatars communicate, move, create things, and interact. The functioning of a virtual world can mirror that of the real world, or it can allow residents to do such things as fly, wander around underwater, or teleport themselves to other locations. Today's virtual worlds are immersive, animated, 3D environments that operate over the Internet, giving access to anyone in the world. Although many online games take place in such environments, the concept of a virtual world does not require the elements of a game, such as rules or an explicit objective. Residents of a virtual world have the freedom to do and be nearly anything they want, limited only by the design of the environment.

### Who's doing it?

Many colleges and universities are experimenting with virtual worlds for educational purposes. Dartmouth College has begun creating a virtual world to train community emergency response teams. In this world, volunteers learn how to cope with a range of emergencies by experiencing simulated, 3D disaster areas while engaging with others—virtually—to deal with unfolding events. Harvard University created *River City*, a virtual world that presents users with an outbreak of disease, allowing them to move through the environment, make inquiries, and examine data to try to discover the source of the illness. Using a game engine, the University of British Columbia developed a virtual world based on real archaeological sites in which students use contemporary materials and techniques to create replicas of structures of the time.

### How does it work?

A virtual world requires choosing or building a platform. Several vendors currently offer a selection of environments, with some providing considerable latitude to develop and customize a particular space within the virtual world. Although many worlds are developed for games, the benefit often lies in the lack of a game structure. Depending on the desired educational outcome, an instructor might use a game format, but virtual worlds hold significant potential for a learner-led—rather than an outcome-based—model of exploration and knowledge development.

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Once an environment has been identified and the parameters defined, users register and create avatars. An instructor might assign times during which students are expected to log in and inhabit the virtual world, or participation might be left up to students, who can reside in the world when they choose. Participants move and communicate and create items in the virtual world based on available resources and the educational goal, which might be very loosely defined. With this kind of learning, known as constructivist learning, learners can freely make decisions and interact with others, initiating and directing their own learning. The low stakes of an online environment encourage participants to experiment—to learn by trial and error—in a way not feasible in the real world.

## Why is it significant?

Using virtual worlds for education has significant potential to foster constructivist learning, putting students in contact with others in an immersive environment that challenges them to figure things out for themselves, without explicit learning objectives and assessment. Students are increasingly comfortable with this kind of learning, not to mention with electronic communications and interactions, and for many, avatar-to-avatar activity is as real as face-to-face contact. Indeed, behind every avatar is a real person controlling the avatar's actions and words. If students consider avatars legitimate representations of themselves and of others, opportunities flourish for meaningful interactions among a broad range of students and other users, regardless of their physical location.

The line between virtual and real starts to blur as activities in the virtual world seep into the real world and vice versa. For example, the developers of *Second Life*, a popular virtual environment, decided that users own the places and things they create. A market has emerged for residents of virtual worlds to buy and sell virtual assets, but with real money. In one case, a user created a game in a virtual world that he then sold to a real company, which will market it for cell phones. Users can create a business and see how avatars respond to it. Residents could be employed by a virtual company, performing tasks and having interactions that would happen in the real world. In this way, users can develop skills, including effective communication, that could be applied later in the real world, all within the comparative safety of a virtual environment.

## What are the downsides?

Many educational courses and programs have defined learning goals, and for some, the effort required to design a virtual world is not justified in terms of specific learning objectives. Unguided exploration is an effective learning style for certain students in certain subjects, but virtual worlds present a risk of students' simply goofing off, not participating at all, or engaging in inappropriate or offensive behavior. Other students, despite good intentions, sim-

ply don't perform well without clear-cut tasks and goals. Moreover, some students might find a virtual world so engaging that it distracts them from work in other courses.

On a practical level, the smooth operation of virtual worlds requires robust hardware and fast Internet connections. Some virtual worlds reside on corporate servers, and course activities that use those worlds depend on the availability of the application, which can be spotty. With steep technology requirements also comes a greater burden on support staff to ensure the infrastructure can handle user demands. Finally, while students in technology-focused programs will likely be comfortable with the technical side of virtual worlds, such as using scripting, students in other disciplines might find this aspect especially challenging.

## Where is it going?

Virtual worlds have a long history of use in games, but efforts to use the technology for educational pursuits are at an early stage. Growing numbers of educators and organizations are experimenting with and creating educational programs using virtual worlds, broadening the scope of activities available to students. As the line between the virtual and the real continues to blur, so too does the line between formal and informal learning. Increasing comfort among educators using virtual worlds also has considerable potential to develop worlds and activities that promote interdisciplinary learning. Early adopters from different disciplines are forming nascent educator communities and sharing best practices for effective integration of these tools into education.

## What are the implications for teaching and learning?

As is often the case with a new technology, adapting existing practices to a new medium encourages reflection on desired goals and effective implementation. Virtual worlds allow different and new types of interactions that provide better educational experiences for some students. Computer gaming is an increasingly common activity among younger students, and exploring the educational potential for virtual worlds gives institutions an opportunity to incorporate a medium that students enjoy into learning. Through a virtual environment, students can interact in ways they find comfortable, seeking out others who share their interests and inclinations. Virtual worlds facilitate "unintentional" learning, where students discover and create knowledge not for its own sake but in order to accomplish something they want to do, resulting in stronger comprehension and deeper knowledge.