

# A virtual toothache helps student dentists

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Masha is a dental patient. Her oral health problems continue to change as she meets new Case Western Reserve University student dentists in Second Life's virtual dental office.

The middle-aged avatar is an integral part of a new research project of the Case Western Reserve University School of Dental Medicine and the College of Arts and Sciences department of communication sciences to teach and give students practice time to communicate with mock patients.

Not only do findings from the study have potential to revolutionize dental education but also to change the way national testing is done for patient-side communication skills.

Kristin Z. Victoroff from the dental medicine's department of community dentistry will direct the three-year Innovative Dental Assessment Research and Development (IDEA) Grant project from the American Dental Association's Joint Commission on National Dental Examinations. She will develop patient communication scenarios for simulated education and test their effectiveness in preclinical training for students.

"More dental schools are experimenting with simulation as a way to teach," said Victoroff. She is joined in the research project by Roma Jasinevicius and Catherine Demko from the dental school faculty in testing and implementing simulations in dental education at the university.

Since 2001, the Case Western Reserve dental school has been on the forefront in using simulations in teaching the physical dexterity skills by using a technology called DentSim (<http://www.denx.com/>). DentSim is a simulated and computerized training system that uses a simulated dental patient. The school's use of the technology in dental education was spearheaded by Jasinevicius.

From that technology, the attention turned to developing what Victoroff's describes simulated experiences for the "softer" skills of dental medicine—communicating with patients.

Victoroff enlisted virtual reality experts and Art and Sciences' communication disorder scientists Stacy Williams, who directs the Virtual Immersion Center for Simulation Research (VICSR), and Kyra Rothenberg, director of the health communications minor.

They will take three approaches to simulated communications training—live actors, the immersion theater where students interact with a virtual patient in a 180-degree surround theater and with avatars, like Masha, in Second Life.

Of the three simulation methods, Victoroff is interested in using the immersion theater and Second Life. She noted that paper-based, live actors and real patients present limitations from ethical issues to logistical challenges. Meanwhile, the interactive theater and Second Life have capabilities to assess competencies in a convenient, standardized and cost-effective situation.

According to Victoroff, if successful, the virtual scenarios in an immersion theater setting or the online Second Life community might provide a potentially better way of assessing a student's abilities to communicate with patients than the current multiple-choice questions on the national examinations required for practicing professionally.

During spring semester, 70 students in the third-year dental class participated in a pilot study to develop their communication skills with live actors and virtual patients during communication skills training at the Mt. Sinai Skills and Simulation Center at the Veterans Administration Hospital.

The research project focuses on developing scenarios that aid and test students in taking patient histories, providing oral health education like tobacco cessation counseling for smokers, explaining procedures, talking about healthcare options and obtaining informed consent, and working through situations that present ethical dilemmas. These are among the competencies outlined by the American Dental Education Association.

Along with communication sciences students, the use of the virtual reality theater by dental students will advance the researchers understanding in how this technology can be applied to teaching and assessing students in different disciplines. The dental students will use a portable 50-inch LCD panel instead of the larger fixed 180-degree theater. In real time, the students interact and communicate with Masha.

"Ideally it is not that we are out to prove that virtual worlds or the VICSR system is better than standard instruction, but that they are of equal value," said Williams, adding that students should be able to walk away learning the same types of knowledge they can learn from working with live patients.

Students are very accepting of the VICR environment and put a lot of reflection in their voices when they are talking to the animated characters, said Williams.

Rothenberg will piece together students' motivations and perceptions when using this technology for their education.

According to Rothenberg who works in health communications, VICSR is already showing positive results from communication science students and patients using the virtual theater for their education and speech therapy.

"Virtual patients have much to offer in training healthcare providers, and it is equally important to explore how interactive virtual reality technology can enhance assessment of competency," said Victoroff.

Source: Case Western Reserve University

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