Virtual Clinical Rounds in a Multiuser Virtual Environment

The Carnegie Foundation for the Advancement of Teaching's study on nursing education by Benner, Sutphen, Leonard, and Day (2010) recommended the integration of course content with both skill building and professional role development in contextualized, situated learning activities. This goal is accomplished when students integrate pathophysiology concepts with real-time nursing psychosocial skills by using computerized avatars to participate in clinical rounds in a virtual hospital. An *avatar* is a graphic representation of each user (i.e., a digital human form personalized for each user). For example, a student avatar is a human body, dressed professionally, and wearing a laboratory coat. Students describe virtual rounds as interesting, energizing, and highly engaging. They often say "This is where I really learn."

Multiuser virtual environments (MUVE) are computerized three-dimensional learning environments where both students and faculty experience a wide range of learning activities while in their avatar "bodies."

Second Life® (SL) was one of the first MUVEs available to the general public. It was launched in 2003, and by 2011 it had over 1 million users worldwide. Second Life membership and software are free, the software is easy to use and requires little orientation. Similar to other virtual environments, SL offers the opportunity to enhance traditional learning, particularly in distance education. (Phillips, Shaw, Sullivan, & Johnson, 2010; Second Life, n.d.).

A professor at our school of nursing designed the virtual rounds to teach an advanced pathophysiology course. Participants can log on to the SL Web site from home, work, or school computers, and the three-dimensional SL world appears. Students and faculty, in their avatar form, meet at the virtual hospital. The avatar's name (e.g., Student David or Professor Smith) hovers over its head so that each participant is easy to identify. Participants move their avatar around the virtual environment using keyboard arrows that direct the avatar to walk through the three-dimensional world. Participants communicate with each other by typing in a chat box located at the corner of the computer screen. This chat dialogue is cumulative and can be reviewed at the end of the activity.

After meeting in SL, students and faculty enter the virtual hospital. Depending on the objectives for the learning activity, rounds may take place in a virtual emergency department, intensive care unit, endoscopy laboratory, or a variety of outpatient clinics. For the first 10 minutes of the 30-minute activity, participants meet in a private area of the virtual hospital, such as a hallway or conference room. Together, they review the specific disease selected for the activity. The rounds leader asks a series of questions that elicit basic core content; for example, "Our patient today was recently diagnosed with Type II diabetes. How does this disease change normal physiology? What challenges do you think this might create for this person?" During the activity, students share their knowledge and remind each other of pertinent information. The rounds leader fills in any knowledge gaps and ensures that the content review is complete.

Next, students enter the virtual clinical area and interact with the virtual patient for 10 minutes. This patient avatar is controlled by the rounds leader. As the participants ask questions of the patient avatar, the patient's answers showcase his or her disease and its effect on his or her life. In this way, students engage the patient as a whole, integrated person whose responsiveness gives depth and meaning beyond a simple case study. Live rapport and interaction make the content come alive. The patient avatar also asks questions of the students. In this way, the instructor is able to elicit specific information from the student group, thus exploring a variety of issues related to the application of course content.

For the last 10 minutes of rounds, participants return to the virtual hallway or conference area to discuss features of the patient's illness and his or her pattern of adaptation and coping. Emotional and social implications for the patient's life are often discussed. In this portion of the exercise, teamwork and collegial learning take place. Students share their ideas about approaches to problem solving, care planning, and prioritization of goals. When errors are made, participants discuss what could have been done differently. One student commented, "I got to make this mistake in a safe place."

Virtual rounds end as each student summarizes something they learned from the rounds' activity. Participants then log out of SL. The rounds leader reviews the chat box dialogue record to evaluate students' participation and learning outcomes.

Second Life offers dozens of environments where rounds, discussion groups, and other learning activities can occur. For online courses, MUVE learning activities provide an environment where students can interact with each other and the course instructors, thereby enriching their experience in a context of shared learning and collective teaching. This sense of group identity and presence are particularly important for distance learners. One distance learner said, "In SL, I had a support group." For students who, for reasons of habit, personality, or culture, have a quiet or passive approach to learning, the MUVE offers an element of disinhibition and a safe environment for experimentation and practice of new behavior. One student reported, "In SL, I am learning to come out of my shell."

Rounds and other clinical simulations in a MUVE also offer simulated clinical experience that can enhance nonclinical courses. In addition, activities, such as virtual rounds, offer many of the advantages of simulation laboratory learning to those schools that do not have a simulation laboratory. Last, learning activities in a MUVE also effectively engage Millennial and Generation X students who prefer technology-assisted learning activities.

Students describe virtual rounds as a place where concepts "come together." Instructors report superior integration and application of course content compared with traditional learning activities. Interpersonal and team dynamics and multi-

disciplinary skills are effectively practiced in virtual rounds. In these rounds, course content, professional practice, and skill building come together in "dense" learning that is multidimensional and integrated. Both students and instructors report that participating in rounds in SL results in some of the most effective learning in their courses. Students consistently ask for more!

References

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