



ELSEVIER



CrossMark

Featured Article

# Virtual Gaming Simulation for Nursing Education: An Experiment

Margaret Verkuyl, NP:PHC, MN, AGD:ANP<sup>a,\*</sup>, Daria Romaniuk, RN, PhD<sup>b</sup>,  
Lynda Atack, RN, PhD<sup>a</sup>, Paula Mastrilli, RN, PhD<sup>c</sup>

<sup>a</sup>Nursing Professor, School of Community and Health Studies, Centennial College, Toronto, Ontario M1K 5E9, Canada

<sup>b</sup>Associate Professor, Daphne Cockwell School of Nursing, Ryerson University, Toronto, Ontario M5B 2K3, Canada

<sup>c</sup>Chair of the Collaborative BScN, RPN-Bridge to BScN and Post Graduate programs in Critical Care, Perioperative and Perinatal Programs, Sally Horsfall Eaton School of Nursing, George Brown College, Toronto, Ontario M5T 2T9, Canada

## KEYWORDS

pediatric;  
undergraduate nursing  
students;  
virtual simulation;  
gaming;  
student outcomes;  
clinical simulation

## Abstract

**Background:** Increasingly, simulation is replacing some clinical hours as nursing schools struggle to find quality clinical placements for students.

**Methods:** An experimental study was conducted to compare a virtual gaming simulation with a laboratory simulation regarding three outcomes: students' pediatric knowledge, self-efficacy, and satisfaction.

**Results:** Both groups made modest knowledge gains. They made significant gains in self-efficacy scores with the gaming group making greater gains. Satisfaction survey scores were high for both groups.

**Conclusions:** Virtual gaming simulation combined with hands-on simulation could become part of the suite of best teaching and learning practices we offer students.

## Cite this article:

Verkuyl, M., Romaniuk, D., Atack, L., & Mastrilli, P. (2017, May). Virtual gaming simulation for nursing education: An experiment. *Clinical Simulation in Nursing*, 13(5), 238-244. <http://dx.doi.org/10.1016/j.ecns.2017.02.004>.

© 2017 International Nursing Association for Clinical Simulation and Learning. Published by Elsevier Inc. All rights reserved.

One of the challenges faced in large urban nursing schools is the availability of good clinical experiences for students, particularly in specialty areas like pediatrics.

**Funding:** This research was supported by the Applied Research and Innovation Fund at Centennial College. The team wishes to acknowledge and thank the Office of Research and Innovation and the G. Raymond Chang School of Continuing Education for funding and developing the game.

\* Corresponding author: [mverkuyl@centennialcollege.ca](mailto:mverkuyl@centennialcollege.ca) (M. Verkuyl).

Increasingly, simulation is being used to replace some clinical hours in nursing education (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014). In simulation, faculty work with a small group of students to play out a clinical situation, assuming roles, and making decisions as they might do in the clinical area. The laboratory simulation, although an excellent approach to learning, poses both cost and resource challenges. The cost to create and operate medium- to high-fidelity simulation laboratories can be prohibitive (Gates, Parr, & Hughen, 2012). With

large numbers of students, the limited availability of laboratory space and faculty to run the scenarios can limit students' opportunities for participating in simulation. Furthermore, the laboratories are not accessible to distance students who are enrolled in online courses.

### Key Points

- Nursing students are increasingly faced with limited opportunities for specialty clinical practice.
- Virtual gaming simulations provide an interesting, engaging learning experience that helps students learn and practice pediatric nursing skills.
- Results of an experimental study suggest that similar outcomes in relation to knowledge, self-efficacy and satisfaction may be achieved with virtual gaming simulations in comparison with traditional laboratory simulations.

Virtual serious games, where the purpose is education or training rather than entertainment, are accessed by computer (Waters, Bassendowski, & Petruka, 2008). Petit dit Dariel, Raby, Ravaut, and Rotan-Tondeur (2013) described serious games as having three integral components: simulation, learning, and gaming. A virtual world allows students to practice a clinical scenario anywhere, independently, on any computer and may provide a cost-effective and accessible alternative or adjunct to laboratory simulation. To augment nursing students' clinical skills in pediatric nursing, a virtual gaming simulation (VGS) structured around a child's postoperative experience was developed. The VGS was compared with laboratory

simulation in an experimental study examining students' knowledge, self-efficacy, and satisfaction.

## Background/Literature Review

### Laboratory Simulation

There is considerable evidence to support the use of simulation in education as a strategy to increase students' competence in clinical practice. Cant and Cooper (2009) completed a systematic review on simulations using medium- to high-fidelity manikins in nursing education. All 12 studies identified simulation as a valid teaching strategy that, for some topics, may have an advantage over other instructional methods (Cant & Cooper, 2009). Fisher and King's (2013) literature review examining the use of simulation to prepare nursing students to manage a deteriorating patient found that 8 of the 18 articles reviewed reported that simulation could enhance critical thinking, judgement, and knowledge. A review on simulations in undergraduate nurse education found simulation promoted students' self-efficacy,

knowledge, skills, satisfaction, and interdisciplinary learning (Foronda, Liu, & Bauman, 2013). The National Council of State Boards of Nursing National Simulation Study supported the use of simulation to replace up to 50% of clinical hours (Hayden et al., 2014). Cumulatively, these reviews provide considerable evidence supporting increased integration of simulation in nursing education.

Simulation requires a laboratory with varied fidelity manikins as well as trained faculty and technicians. Simulation laboratories may cost at minimum \$100,000 USD to set up (Hanberg, Brown, Hoadley, Smith, & Courtney, 2007). Researchers in Australia conducted a cost analysis of setting up and operating a simulation center and reported that the set-up cost was \$876,485 USD, fixed costs per year were \$361,425 USD, and hourly variable costs were \$311 USD (McIntosh, Macario, Flanagan, & Gaba, 2005). In comparison, the VGS and the online modules costs about \$29,000 USD to produce, with some time provided in kind and minimal ongoing costs. For simulation centers, in addition to start up and running costs, scheduling can be problematic for programs that have 100 or more students because the simulation groups traditionally are composed of about eight students. Furthermore, pediatric situations are very difficult to simulate in the laboratory, because the students work with high-fidelity manikins, not humans, making communication artificial and reducing emotional connection between the nurse and the simulated patient (Gates et al., 2012).

### Virtual Serious Games

Since the 1980s, games have been used as a teaching strategy in nursing with favourable student outcomes; however, the body of literature that provides quantitative evidence to support the value of using games in nursing education is slim (Blakely, Skirton, Cooper, Allum, & Nelmes, 2009; Royse & Newton, 2007). The evidence that is available indicates that games can be very effective in promoting learning. According to Lynch-Sauer et al. (2011), "serious games can do more than entertain; they can provide deep, epistemic learning that traditional educational techniques may lack" (p. 513). Serious games, where the primary goal is learning, have the potential to increase students' engagement, allow students to act out difficult situations, try new responses, or work through creative solutions. Royse and Newton (2007) outlined several benefits of serious games in nursing education. They can make learning exciting and motivating for students as well as increase knowledge retention and critical thinking through active learning.

A virtual world can be an effective way to educate students and nurses and provide them with a safe environment for practice (Pittiglio, Harris, & Mill, 2011; Schmidt & Stewart, 2009; Wood & McPhee, 2011). Positive results from the few studies conducted on nursing students' experiences with virtual learning have been reported. Students reported their experience was fun, motivating, and

Download English Version:

<https://daneshyari.com/en/article/5567566>

Download Persian Version:

<https://daneshyari.com/article/5567566>

[Daneshyari.com](https://daneshyari.com)