



Learning by playing: A cross-sectional descriptive study of nursing students' experiences of learning clinical reasoning



Jaana-Maija Koivisto ^{a,*}, Jari Multisilta ^b, Hannele Niemi ^a, Jouko Katajisto ^c, Elina Eriksson ^d

^a Faculty of Behavioural Sciences, University of Helsinki, P.O. Box 9, FI-00014 Helsinki, Finland

^b Tampere University of Technology, Pohjoisranta 11 A, FI-28100 Pori, Finland

^c Department of Mathematics and Statistics, University of Turku, 20014 Turku, Finland

^d Department of Nursing Science, University of Turku, 20014 Turku, Finland

ARTICLE INFO

Article history:

Received 16 March 2016

Received in revised form 14 April 2016

Accepted 13 June 2016

Available online xxxx

Keywords:

Playing
3D simulation game
Clinical reasoning
Learning
Game mechanics
Nursing students

ABSTRACT

Background: Clinical reasoning is viewed as a problem-solving activity; in games, players solve problems. To provide excellent patient care, nursing students must gain competence in clinical reasoning. Utilising gaming elements and virtual simulations may enhance learning of clinical reasoning.

Objectives: To investigate nursing students' experiences of learning clinical reasoning process by playing a 3D simulation game.

Design: Cross-sectional descriptive study.

Setting: Thirteen gaming sessions at two universities of applied sciences in Finland. The prototype of the simulation game used in this study was single-player in format. The game mechanics were built around the clinical reasoning process.

Participants: Nursing students from the surgical nursing course of autumn 2014 (N = 166).

Methods: Data were collected by means of an online questionnaire.

Results: In terms of the clinical reasoning process, students learned how to take action and collect information but were less successful in learning to establish goals for patient care or to evaluate the effectiveness of interventions. Learning of the different phases of clinical reasoning process was strongly positively correlated. The students described that they learned mainly to apply theoretical knowledge while playing. The results show that those who played digital games daily or occasionally felt that they learned clinical reasoning by playing the game more than those who did not play at all.

Conclusion: Nursing students' experiences of learning the clinical reasoning process by playing a 3D simulation game showed that such games can be used successfully for learning. To ensure that students follow a systematic approach, the game mechanics need to be built around the clinical reasoning process.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

Digital games are increasingly used in education because of their ability to engage and immerse learners in the game world. Most of these so-called 'serious games' are simulations (Connolly et al., 2012). In games, players must generally solve different problems and challenging conflicts (Schell, 2014), and clinical reasoning (CR) can be understood as a problem-solving activity (Tanner, 2006). CR competences are prerequisite for excellent patient care. According to Kajander-Unkuri et al. (2013), nursing students must be equipped with the skills and knowledge to observe and diagnose patient needs and to plan and

implement accurate nursing actions effectively and flexibly. They need to learn how to synthesise facts and to identify clinically at-risk patients, and how to prioritise.

In nursing education, learning is often experiential in nature, and experiential learning theory (Kolb, 1984) can explain how nursing students can learn by playing (Koivisto et al., 2015). By engaging students in clinical scenarios, experiential learning techniques can promote CR skills (Hart et al., 2014). CR necessarily involves this engaged, concerned stance in relation to a particular patient and situation (Tanner, 2006). Several virtual applications have been developed for learning nursing skills; these are mostly procedural skills (see Cant and Cooper, 2014), but also CR (Petit dit Dariel et al., 2013). As nursing students are generally well acquainted with visually realistic game environments, the required standard for such games is high, and virtual simulations in nursing education have not as yet fully exploited the potential of leisure games to engage and immerse learners (Koivisto et al., 2015).

* Corresponding author.

E-mail address: jaana-maija.koivisto@helsinki.fi (J.-M. Koivisto).

This study forms part of a design-based research project to design, implement, and redesign a 3D simulation game for nursing education. In the first phase of the project, nursing students' experiential learning processes during gaming were investigated (Koivisto et al., 2015). This paper reports the results from the second phase of the project, investigating nursing students' experiences of learning the CR process by playing a 3D simulation game. For present purposes, simulation games are defined as *virtual simulations delivered in web-based, mobile, or virtual reality learning environments that integrate gaming elements with learning objectives, in which learners simulate real-world situations and emulate the roles of healthcare professionals* (see Koivisto et al., 2015).

2. Background

Games are important for learning because they enable learners to participate in new worlds by thinking, acting, and inhabiting roles that would otherwise remain inaccessible (Shaffer et al., 2005). Games not only tell a story but allow people to actively live it (Rigby and Ryan, 2011). They offer designed experiences in which students learn through doing and being, based on the assumption that learners are active constructors of meaning, with their own goals and motivations (Squire, 2006); in game worlds, then, they develop new ways of thinking, knowing, being, and caring (Shaffer et al., 2005). For making decision and solving problems, learner should use theories (Kolb, 1984), and by experiencing concrete realities in game worlds, learners can understand complex concepts without losing sight of the connection between abstract ideas and the real problems they must solve (Shaffer et al., 2005).

CR in nursing is a complex process that uses thinking, reflective thinking, and discipline-specific knowledge to gather and analyse patient information, evaluate its significance, and assess alternative actions (Simmons, 2010). CR includes the deliberate process of generating alternatives, weighing them against the evidence, and choosing the most appropriate option (Tanner, 2006). The phases and steps in the CR model can be adapted for use in simulated learning experiences employing virtual simulations. The present study adopts Lewett-Jones et al.'s (2010) definition of the CR as a logical and dynamic process. They described eight main phases in this CR cycle: consider the patient situation, collect cues/information, process information, identify problems/issues, establish goals, take action, evaluate outcomes, and reflect on process and new learning.

Petit dit Dariel et al. (2013) have embedded the CR model in a serious game scenario to provide students with a systematic approach. The advantage of a virtual simulation is that it can make the complex decision-making process visible to the students. It has reported that working with virtual patient cases is a good way to practice clinical problem solving (Cook et al., 2010; Forsberg et al., 2011). McCallum et al. (2011) found that the majority of decisions made by students in a 3D virtual environment (Second Life®) were responses to a situation or to a patient request. Students found that they made decisions based both on what they had learned in theory classes and on their experiences in clinical practice. Cook (2012) tested the prototype of a virtual pediatric primary care clinic in Second Life® with three students. The students identified its best features as the opportunity to spend time with cases, to use subjective and objective data before making final treatment decisions, and to work through the diagnosis.

Our previous study established that nursing students experienced a strong focus on the patient during gaming (Koivisto et al., 2015). Those results suggested that patient-related experiences in games are supported by authenticity of patient scenarios, visual authenticity, and interactivity. We would argue that, for a good learning experience and learning by playing, the game should offer students an opportunity to be active decision-makers who receive feedback on their decisions. Using game elements such as visual appearance, interactivity, immersion, feedback, and competition in virtual simulations can enhance learning of CR. Visual appearance refers to the game's authenticity in terms of

graphics, animation, and style. Squire (2006) noted that players need to learn to read the signs of the game system in order to act in the game world. In other words, graphics are more than pictures; they are signs that the player must learn to read. Interactivity refers to the interaction (action-reaction cycle) between the player and the game. By participating actively, students become engaged with the patient and the situation (Guise et al., 2012; Heinrich et al., 2012). Through interactions with the virtual patient and environment, the learner will begin to systematically apply the CR model (Petit dit Dariel et al., 2013). Immersion refers to the player's experience of being drawn into the game so that they have the feeling or perception of being part of the game environment. Interactivity supports immersion, which can be undermined by a lack of authenticity. If patients are not lifelike and learners cannot interact with them, they are likely to become frustrated and bored (Carlson-Sabelli et al., 2011). Feedback systems in games may be immediate, sustained, and cumulative (Rigby and Ryan, 2011). Nursing students favour immediate feedback after every action, as well as feedback at the end of the game, allowing them to consider issues of cause and effect (Koivisto et al., 2015). In these games, player can win or lose, which creates a competitive environment.

While playing, nursing students can learn by applying their nursing knowledge (Koivisto et al., 2015). In the present study, the application of nursing knowledge is defined in terms of students' opportunities to apply previously acquired theoretical and practical knowledge and experiences of patient care in resolving patient scenarios (see Koivisto et al., 2015; Blakely et al., 2009). In games, nursing students can encounter clinical situations they have not experienced before, teaching CR skills to be applied to new situations. Games provide opportunities to improve performance by exploring, which is defined as attempting, making mistakes and learning from them, and repeating during gameplay (see Koivisto et al., 2015; Heinrich et al., 2008). Exploring helps students to internalise and automate procedures, learning to prioritise by making their own decisions and seeing concrete consequences, so preparing students for real CR situations.

2.1. Research Questions

The purpose of the study was to investigate nursing students' experiences of learning clinical reasoning by playing a 3D simulation game. The research questions were as follows.

1. How do nursing students learn clinical reasoning by playing?
2. How are the different phases of the clinical reasoning process related to each other when learning by playing?
3. How do nursing students apply nursing knowledge and explore while playing?
4. What is the relationship between the application of nursing knowledge, exploration while playing and learning the clinical reasoning process?
5. What is the relationship between background variables and learning the clinical reasoning process by playing?

3. Methods

3.1. Data Collection

In this cross-sectional descriptive study, purposive sampling was used to enable selection of certain subjects or events for inclusion in the study (Burns and Grove, 2005.) Data were collected during 13 gaming sessions from nursing students who participated in the surgical nursing course in autumn 2014 at two of Finland's largest universities of applied sciences. The gaming session was one of the course's pedagogical solutions; in total, 166 undergraduate nursing students' participated in these sessions. Participants played a Finnish version of the game, involving two to five postoperative patient scenarios. While some participants played the scenarios only once, most repeated the scenarios

Download English Version:

<https://daneshyari.com/en/article/367791>

Download Persian Version:

<https://daneshyari.com/article/367791>

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