Comparison of meaningful learning characteristics in simulated nursing practice after traditional versus computer-based simulation method: A qualitative videography study

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SUMMARY

Background: Nursing educators must ensure that nursing students acquire the necessary competencies; finding the most purposeful teaching methods and encouraging learning through meaningful learning opportunities is necessary to meet this goal. We investigated student learning in a simulated nursing practice using videography.
Objectives: The purpose of this paper is to examine how two different teaching methods presented students' meaningful learning in a simulated nursing experience.
Design: The 6-hour study was divided into three parts: part I, general information; part II, training; and part III, simulated nursing practice. Part II was delivered by two different methods: a computer-based simulation and a lecture.
Settings: The study was carried out in the simulated nursing practice in two universities of applied sciences, in Northern Finland.
Participants: The participants in parts II and I were 40 first year nursing students; 12 student volunteers continued to part III.
Methods: Qualitative analysis method was used. The data were collected using video recordings and analyzed by videography.
Results: The students who used a computer-based simulation program were more likely to report meaningful learning themes than those who were first exposed to lecture method.
Conclusion: Educators should be encouraged to use computer-based simulation teaching in conjunction with other teaching methods to ensure that nursing students are able to receive the greatest educational benefits.

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Introduction

In recent years, healthcare educators have been searching for and developing new teaching methods, including simulation, to find cost-effective ways to achieve better student outcomes. There is lack of places to organize practical training in hospitals, and there are not enough staff members to supervise students. New teaching methods offer practical training in alternative ways. Students may carry out their practical training as a part of the simulated nursing practice. Simulation has been suggested as one alternative and an appropriate teaching strategy (Swanson et al., 2011).

Simulations can be classified as computer-based, screen-based, or human-based. In computer-based simulations, the entire learning process can take place alone or online with other learners. A computer can direct screen-based simulation, with the simulation learning process projected onto a large screen. Finally, human-based simulation includes the use of a mannequin simulator that is directed by a computer (Banks, 2011; Eldabi et al., 1999; Lampotang, 2008).

As McAllister et al. (2013) stated, there is an absence of basic pedagogical studies in the field of simulation. To fill this gap, this pilot study was conducted to provide insight into and an understanding of how meaningful learning characteristics appear during a simulated nursing practice after an introduction by two different teaching methods. Simulation learning should receive further evaluations using a variety of research methods. This study will give a new pedagogical basis for investigating not only nursing education outcomes, which are extremely important, but also explore how meaningful learning is evidenced and perceived by nursing students using the videography method.

Theoretical Background

Keskitalo et al. (2010) developed a simulation-based learning model of facilitating, training, and learning (the FTL model, Fig. 1). The model

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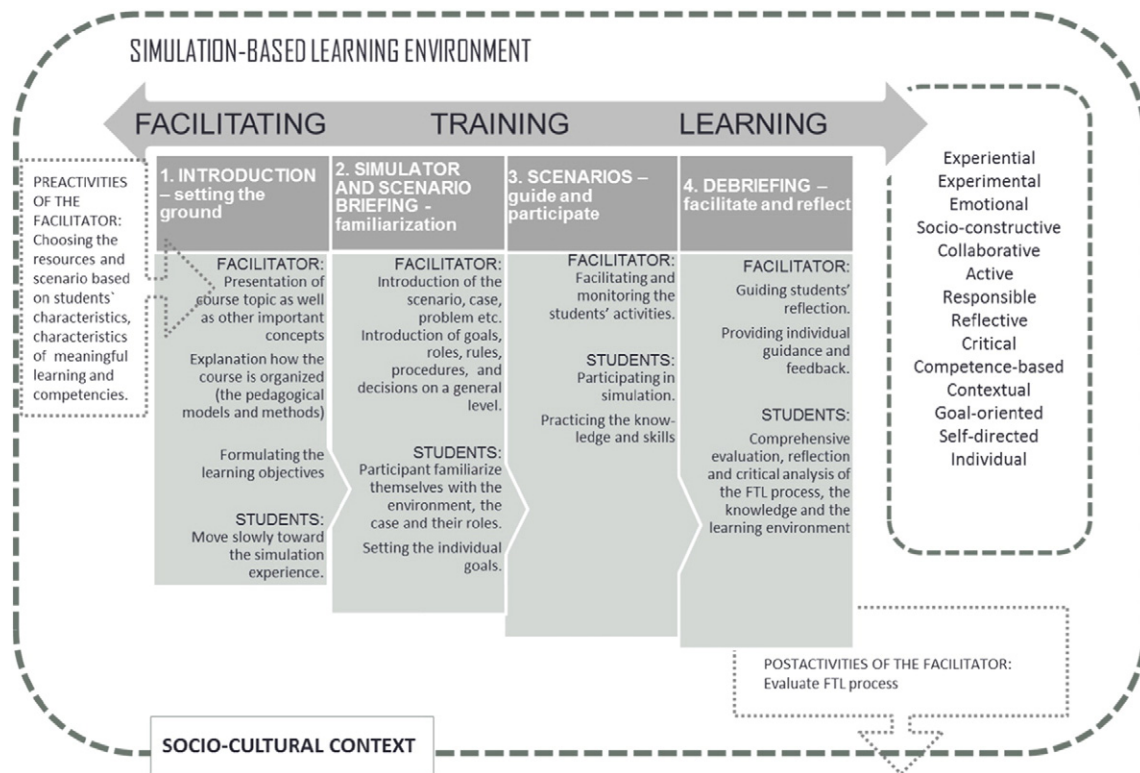*E-mail address:* paula.poikela@ulapland.fi (P. Poikela).

Fig. 1. Facilitating, training, and learning (FTL) model.

was built on the process of teaching, studying, and learning (TSL) (Kansanen et al., 2000), the characteristics of meaningful learning (Ausubel, 1968; Hakkarainen, 2007; Ruokamo and Pohjolainen, 2000), and the process of learning through simulation (Joyce et al., 2002). Based on theoretical examination and empirical research, the following 14 characteristics of meaningful learning were selected for the focus in this model: experiential, experimental, emotional, socio-constructive, collaborative, active, responsible, reflective, critical, competence-based, contextual, goal-oriented, self-directive, and individual (Fig. 1). Dreifuerst (2012) has studied that using meaningful learning (DML) in debriefing, clarify students' support students' learning and development teaching practice.

In an earlier paper, we presented a computer-based simulation program analysis based on the FTL model. We developed an extension of the FTL, namely, the introduction, the simulation, scenario, and debriefing (ISSD) model (Poikela et al., 2013; Fig. 2). The ISSD model follows the same phases as the FTL model. In our previous paper (Poikela et al., 2014), we validated this model by examining first-year nursing students' statements to identify which meaningful learning characteristics appeared in the model and to what degree: not at all, weakly, or strongly. In our earlier studies (Poikela et al., 2013, 2014), students' descriptions pointed to experimental and contextual as the most important characteristics of learning for their level of nursing education. Individual and competence-based characteristics are missing from the model because first-year students do not have enough basic knowledge of nursing practices.

Many comparative studies of different teaching methods have been conducted. These studies have compared traditional teaching and simulation-based teaching, methods used in classroom teaching, blended learning methods, and comparisons between low-, moderate-, and high simulation. Moreover, there are many studies of web-based versus traditional teaching methods (Arnold et al., 2013; Campbell et al., 2008; Reime et al., 2008; Swanson et al., 2011; Tosterud et al., 2013). Previous research was primarily been carried out using quantitative methods; significant differences between teaching methods have not been found. However,

it has been reported that nursing students are more confident and satisfied after simulation-based teaching. In addition, studies have compared computer-based, web-based, and online learning to face-to-face, traditional, and classroom approaches (Campbell et al., 2008; Golchai et al., 2012; Siegel, 2005). Most of the results show that combining e-learning technology with traditional teaching and blended learning enhances, for example, students' motivation and efficiency.

Knowledge constructed through experience and experimental learning is still the base of nursing education (Kolb, 1964). Experimental learning can be defined as the foundation for further developing teaching and learning strategies. Very simply, Kolb's learning cycle involves
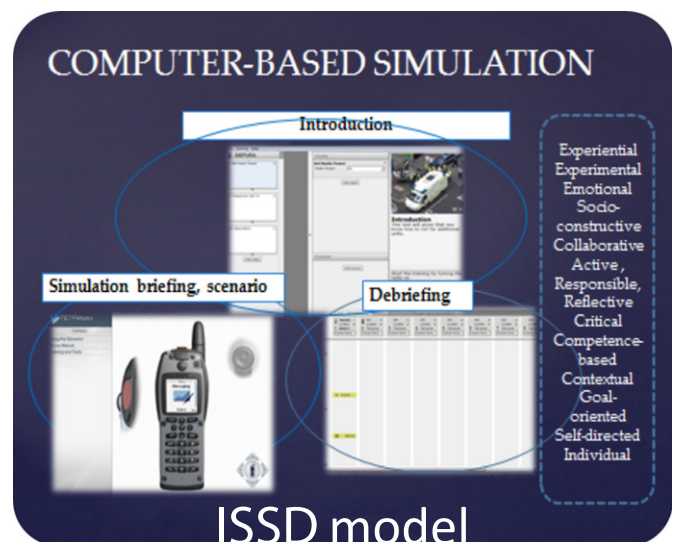

Fig. 2. The ISSD model.