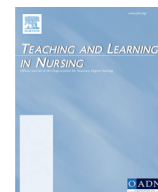




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The Effect of Instruction on Learning: Case Based Versus Lecture Based

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ABSTRACT

There is scarcity of evidence demonstrating the impact of the instructional approach on curriculum outcomes of knowledge retention and clinical judgment in nursing education. The study aimed at determining the influence of 2 instructional formats, namely, case-based and lecture-based learning, on knowledge retention and judgment skills offered to 2 cohorts of nursing students in a junior nursing course. The scores of both cohorts were compared using a 65-selected-response test, 8 months after the offering of the course. A stratified comparison was completed using an independent samples *t* test. The *t* test was also used to compare the scores on judgment skills such as noticing, interpreting, deciding, and reflecting. Findings did not reveal significant difference in the mean test scores of both cohorts regarding knowledge retention ($p = .178$), yet a significant difference was noted on the judgment skill of reflecting among the case-based cohort ($t = 2.202$; $p = .033$). This study adds evidence regarding the effectiveness of a case-based instruction on developing the skill of reflecting, thus supporting calls for contextualizing learning. Further probing into the instructional strategies that equip nursing students with knowledge remains an ongoing challenge for the discipline.

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Introduction

Knowledge is expected to be compatible with the demands of the social environment, and it reflects one's thinking practice. Professional competence is contingent on the amount and complexity of knowledge acquired from a program of study. Because knowledge retention and clinical judgment constitute the core curriculum outcomes and the basis for safe and resourceful nursing practice, educators are prompted to stay abreast of the discipline's instructional strategies.

Background

The advent of the experiential curriculum and the calls for educational transformation have aimed at shifting paradigms and, more specifically, at adopting new pedagogies that ascend students' thinking level to a higher one. Knowledge acquisition is the outcome of an intricate process comprising multiple internal processes, such as processing, retrieving, and transferring information (Gredler, 2008). It is strongly believed that knowledge acquisition is best achieved through context and applicability to the real practice setting (Benner, 2017).

Contextual learning in nursing has been addressed in quite a number of recent studies, yet the most imperative elaborations are

in the work of Benner, Sutphen, Leonard, and Day (2010). The emphasis on context-based pedagogy emerges from the belief that decontextualized knowledge of the traditional curriculum lacks the practice crux (Benner et al., 2010; Kantar, 2016) and that major chunks of this knowledge could be forgotten (Forsgren, Christensen, & Hedemalm, 2013). For that, educators ought to employ instructional approaches that both improve knowledge retention (Malau-Aduli et al., 2013) and develop judgment skills (Tanner, 2006). In medical education, few studies have demonstrated the effectiveness of an instructional approach, yet the majority lack convincing evidence (Thistlethwaite et al., 2012). Such studies are even scarce in nursing, mostly described as small studies reflecting limited exposure to the instructional approach (Benner et al., 2010; Tanner, 2009).

The two extensively used curricula in the nursing discipline are the traditional and the experiential (Benner, Tanner, & Chesla, 2009). The educator of the traditional curriculum instructs through lectures, thus forming the basis of the lecture-based learning (LBL). As for the experiential curriculum, instruction is usually based on clinical situations, thus providing context to the teaching and learning process.

The traditional lecture-based instruction, usually presented in a decontextualized manner, continues to be the subject of criticism in the nursing discipline. In part, this criticism reflects the content-laden nature of the traditional curriculum (Delpier, 2006) and its contribution to widening the gap between content and practice (Benner et al., 2010). More importantly, traditional instruction emphasizes know-what and know-about attributes of knowledge acquisition

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(Benner, 2017). Such knowledge is usually stored in the form of isolated, disjoint concepts (Roberts, 2013). Retrieving these concepts or transferring them to practice is usually faced with great difficulty (Schmidt & Rikers, 2007).

To ensure the unswerving learning from experience, the context-based learning is envisioned as imperative for practice preparation (Benner, 2017). Knowledge of the experiential perspective is constructed by students based on experiences in their immediate environment. As experiences transform into practical knowledge, future exposure to similar experiences prompt students to reflect, infer, and anticipate (Thiel et al., 2013).

Whether using the experiential or traditional curricula in nursing, enabling deep understanding and developing reasoning skills remain the discipline's ultimate outcome, yet a farfetched one. There is a strong belief that instruction impacts not only knowledge acquisition but also clinical reasoning skills (Thistlethwaite et al., 2012). Accordingly, this study aims at relating the instructional approach with knowledge retention and development of clinical judgment skills.

The medical education literature has revealed an improvement in the structure and organization of knowledge among medical students through instruction using clinical situations (Blissett, Cavalcanti, & Sibbald, 2012). In nursing, context-based learning is perceived as a core to engaging students in processes of knowledge making and information processing (Kantar, 2013; Roberts, 2013; Smith, 2014), but there is no evidence to support this perception.

Knowledge retention depends on the learner's perceptions and capability to understand, connect, and integrate the learning (Roberts, 2013). While forming knowledge, the learner must assume five different roles: seeker, processor, constructor, manager, and user of knowledge (Kantar & Massouh, 2015). It is strongly believed that nursing knowledge is acquired through grouping patient's manifestations by relevant pathophysiology and concepts (Benner, 2012). Yet, little is known about the impact of the instructional format on knowledge retention.

The driving purpose of this study was to compare the impact of two instructional approaches on knowledge retention and judgment skills' development using a test for two cohorts of students 8 months after the completion of a nursing course. For one cohort, the case-based learning (CBL) approach was used as the course's instructional format, whereas the other cohort had the LBL format. Two research questions guided this study: (a) How does the score of the CBL students on a selected-response multiple-choice test compare with the LBL students, and (b) how does the performance of the CBL students on Tanner's (2006) clinical judgment dimensions of noticing, interpreting, responding, and reflecting compare with the LBL students?

Methodology

Design

This study aimed at identifying differences in nursing students' knowledge retention after being exposed to two instructional approaches, the CBL and LBL. The knowledge retention of both groups was compared using the scores of students on a selected-response multiple-choice test. Apart from comparing the test scores, responses of each group on the test items will be analyzed using Tanner's (2006) four clinical judgment dimensions, namely, assessing, interpreting, responding, and reflecting.

In this study, both instructional approaches were employed in the teaching of the Nursing Care of Adults course, a five-credit junior course in a 3-year baccalaureate nursing program. The course aims at developing scientific knowledge and application of the nursing process when caring for clients at risk for or experiencing acute or chronic medical or surgical problems.

CBL implementation was not based on any prior intention for conducting this study; rather, the decision of establishing two sections was based on the large enrollment size ($N = 47$). Although unified by the same course syllabus and content, each section was run by a different instructor. The instructor for one of the sections has the CBL expertise and opted to use the approach with the assigned section, whereas the instructor of the other section was comfortable with the lecture format. Accordingly, one section was taught using the CBL approach, whereas the other used the LBL approach.

The student cohort for each section was randomly created; both sections had their sophomore courses in the LBL format, and both were comparable demographically in terms of age, gender, and grade point average (GPA). However, the CBL cohort was introduced to the new approach through a seminar early in the course, to introduce them to the tenets of CBL: group dynamics, session preparation, discussion, and engagement (Kantar, 2016). Actually, the first case study was devoted to help the students walk through the CBL process in its entirety.

CBL is a learner-centered approach that uses real-life situations as the basis for classroom discussion. Students of this approach are prompted to demonstrate responsibility for one's own learning, autonomy, teamwork, and engagement through discussion. In case method teaching, students explore a problem by sorting out relevant facts, develop relevant conclusions, and present them to others (Nilson, 2010).

The Test

A total of 65 multiple-choice questions (MCQs) were created by a panel of educators who are versed with the content of the course and its learning outcomes and are experienced in writing MCQs and test construction. Course instructors did not participate in designing the test to avoid the potential for bias. The test is structured to examine knowledge retention in both the CBL and LBL cohorts 8 months after completing the nursing course. As mentioned previously, there was no prior intention for conducting the study; accordingly, the 8-month period stands for the time frame that separates the end of fall courses of 1 year and the course offerings of the proceeding fall.

Upon developing the test plan, consideration was given to the course content, its modules, learning outcomes, and number of sessions allotted for each module. The selected-response test or the multiple-choice items was used in this study, as this assessment format provides the means to assess factual knowledge, intellectual abilities, or attitudes (Popham, 2006). The items were developed using Popham's (2006) guidelines for writing MCQs. Each test item had one best answer and was given a weight of 1 point. The scores were expressed in percentage.

The test items were original, specifically developed for the study with reference to the learning outcomes and the taught systems in the course. The items were distributed in this manner: cardiovascular (15 items), respiratory (12 items), oncology (17 items), gastrointestinal (7 items), musculoskeletal (7 items), and fluid and electrolyte imbalances (7 items). New test items were developed to preclude any bias that could occur from re-using old test items.

Pathophysiology and pharmacology concepts were highlighted in the test and signaled out while analyzing the scores because these concepts are considered more reflective of knowledge retention versus clinical judgment. Content validity was checked by two content experts who have been teaching the medical-surgical nursing courses for more than 10 years. The test was paper based, and a serial number was assigned to each.

Clinical Judgment Dimensions

The 65 test items were categorized using Christine Tanner's (2006) clinical judgment dimensions of noticing, interpreting,

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