Assessing Learning Styles of Graduate Entry Nursing Students as a Classroom Research Activity: A quantitative research study

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1. Introduction

In recent years, nursing programs have revised curricula and teaching/learning strategies to reflect the incorporation of personal learning styles (Tenhunen and Fitzgerald, 2014). An argument can be made for incorporating assessments of students’ learning styles into graduate entry prelicensure nursing programs as well. In addition, evidence regarding personal learning styles is now appearing in acute care setting professional in-service training programs (McCrow et al., 2014), with the goal of specifically targeting the learning needs and preferences of practicing nurses. Nursing educators should consider incorporating these assessments into graduate entry prelicensure education to promote balanced content and learning activities.

The incorporation of learning styles into the curriculum is a successful and innovative strategy for graduate student nurse recruitment. The demand for nurses with graduate degrees has increased in recent years as a result of the joint initiative of the Institute of Medicine (IOM) and Robert Wood Johnson Foundation (IOM, 2011), designed to evaluate the nursing profession. This initiative resulted in a report entitled “The Future of Nursing: Leading Change, Advancing Health.” Among other recommendations, the report advocated doubling the number of nurses with doctoral degrees by the year 2020. Clearly nursing education must use innovative learning strategies to attract potential candidates. The

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**Abstract**

**Background:** A number of studies across different disciplines have investigated students’ learning styles. Differences are known to exist between graduate and baccalaureate nursing students. However, few studies have investigated the learning styles of students in graduate entry nursing programs. Therefore, this study aimed to determine the learning styles of graduate entry nursing students.

**Objectives:**

- **Design/Setting/Participants/Methods:** A descriptive design was used for this study. The Index of Learning Styles (ILS) was administered to 202 graduate entry nursing student volunteers at a southwestern university. Descriptive statistics, tests of association, reliability, and validity were performed. Graduate nursing students and faculty participated in data collection, analysis, and dissemination of the results.

- **Results:** Predominant learning styles were: sensing – 82.7%, visual – 78%, sequential – 65.8%, and active - 59.9%. The predominant learning styles described students as being concrete thinkers oriented toward facts (sensing), preferring pictures, diagrams, flow charts, and demonstrations; (visual); being linear thinkers (sequential); and enjoying working in groups and trying things out (active). The predominant learning styles suggest educators teach concepts through simulation, discussion, and application of knowledge. Multiple studies, including this one, provided similar psychometric results. Similar reliability and validity results for the ILS have been noted in previous studies and therefore provide sufficient evidence to use the ILS with graduate entry nursing students.

- **Conclusions:** This study provided faculty with numerous opportunities for actively engaging students in data collection, analysis, and dissemination of results.
graduate student population is very diverse: differing in ages, experiences, culture, level of preparedness, and learning styles (Meehan-Andrews, 2009). This diversity provides a challenge to academics in motivating and promoting student learning. Incorporating teaching strategies that target differences in student learning styles can be a successful approach. Nursing education has addressed learning styles to some degree with the use of simulation labs, standardized patient actors, and small group projects. However, it may be beneficial for graduate student nurses to have options for completing coursework that appeals to their personal learning styles.

There are over 70 learning style instruments in the literature that have been used to assess graduate students (Hall and Moseley, 2005). While there are many theories of learning styles, relatively few address the learning styles of students in the sciences—health (Cox et al., 2013; Zoghi et al., 2010), medicine (Bhagat et al., 2015; Engels and de Gara, 2010; Nuzhat et al., 2013), and baccalaureate nursing (Andreou et al., 2014; Brown et al., 2014; D’Amore et al., 2012; Fleming et al., 2011; Meehan-Andrews, 2009). Fewer studies investigated learning styles of graduate entry nursing students (Fernandez et al., 2012).

The research question for this study was “What are the predominant learning styles of graduate entry nursing students?” The purpose of this article is to describe a five-year investigation of the learning styles of graduate entry nursing students’ enrolled in a southwestern university. In addition, the article describes the evaluation of the factor structure and internal consistency of nursing student responses to the Index of Learning Styles (ILS) to determine the appropriateness of the ILS in further investigation and use in graduate entry nursing education.

2. Background/Literature

A learning style is a particular set of behaviors related to how learners perceive, interact with, and respond to the learning environment. Behaviors have four dimensions:

• Active vs. reflective. Active learners prefer exploring or testing information. Reflective learners are more introspective.
• Sensing vs. intuitive. Sensing learners prefer facts, data, and experimentation. Intuitive learners prefer theories, principles, and innovation.
• Visual vs. verbal. Visual learners perceive information most effectively through pictures and graphs. Verbal learners prefer written or spoken words.
• Sequential vs. global. Sequential learners progress toward learning via linear, ordered steps. Global learners often learn holistically, in large steps (R. M. Felder and Solomon, 2004).

Limited research exists from the United States on learning styles in graduate entry nursing education. Researchers who performed studies with Australian students (n = 259) and (n = 81) used a Motivated Strategies for Learning Questionnaire (Duncan and McKeachie, 2005) with scales related to: extrinsic goal motivation, help seeking, peer learning, and critical thinking. The highest mean score was for extrinsic goal motivation while the lowest was for peer learning (Everett et al., 2013; Fernandez et al., 2012). Researchers in a study of Australian graduate entry students (n = 61) use the VARK (Fleming and Mills, 1992) learning preferences questionnaire that addresses visual, aural/auditory, read/write, and kinesthetic learning modalities). The highest mean scores were for the read/write and aural modalities (Koch et al., 2011). To date, there are no reported studies on the ILS and graduate entry nursing students.

There is more research on the learning styles of students in baccalaureate nursing education, although results demonstrate considerable variation in the predominance of specific learning styles. In bachelor of science in nursing (BSN) students, a review of six studies from 1994 to 2012 using the Kolb Learning Style Inventory (Kolb and Kolb, 2005) revealed diversity of learning styles (Andreou et al., 2014). The Kolb tool differentiates divergent and convergent learning styles. Divergent learners demonstrate a preference for concrete experience over abstract conceptualization and reflective observation over active experimentation. Conversely, convergent learners prefer active experimentation over reflective observation and abstract conceptualization over concrete experience. Predominantly divergent learning styles were reported in Saudi Arabia (Suliman, 2010) and in Korea (Gyeong and Myung, 2008) among samples of 98 and 724 students, respectively. Predominantly convergent learning styles were reported among 281 U.S. students (Fogg et al., 2013). Using the ILS, predominant learning styles in 100 Chinese nursing students were reflective over active, sensing over intuitive, visual over verbal, and global over sequential styles (Zhang and Lambert, 2008).

Some researchers reported learning style differences between baccalaureate students and the graduate entry student population (Everett et al., 2013). Graduate entry students were more likely to identify peer learning, help seeking, and critical thinking as strategies for learning than baccalaureate students. Graduate students were predominantly of a convergent learning style; baccalaureate students were predominantly of a divergent learning style (Suliman, 2006). Fifty percent of both BSN and graduate entry students reported a multimodal (visual, auditory, reading/writing and kinesthetic) preference for learning (Pettigrew et al., 2011).

3. Methods

Protection of participant’s rights/research design/data collection/procedures.

This study was approved by the university’s institutional review board (IRB). The classroom research activity used the ILS as a teaching strategy to increase engagement and research dissemination among faculty and students. The course comprised several sections of students with respective faculty and student teachers. At one designated weekly session, section faculty offered students from all sections the opportunity to participate in the research. While all students complete the ILS and identified their personal learning style preferences, those interested in research participation scored a duplicate answer sheet and completed consent and demographic forms. Research materials were placed in a closed box in the classroom. Section faculty joined the project as coinvestigators. After all nine faculty/PhD student teachers and those 48 students volunteering to assist in the project completed the research ethics certification and were approved by the IRB, faculty announced the project by reading the script, and students coordinated materials and numbered, distributed, and collected the instruments, answer sheets, and demographic and consent forms. Anonymity of participation, security of data and storage was maintained. After collection of relevant forms, students separated the consents from the completed ILS tools and carried consents to a faculty member unconnected with the course for safe storage. Students and faculty met outside of class for a brief two-hour session working on research dissemination: input and analysis of data, writing abstracts, designing graphics and eight posters, summarizing the literature, and authoring sections of the manuscript.

The ILS (Litzinger et al., 2007) was administered to six cohorts of graduate entry nursing students in a southwestern university from 2011 to 2015. After study explanation and consent, 202 of 285 students voluntarily consented to participate in the study.

3.1. Sample size

To generalize results to the graduate entry nursing cohort population of 285 students from the classes of 2012–2017, a sample size of 164 would have been needed to obtain 95% confidence with ± 5% margin of error. The obtained sample size of 202 resulted in a 3.73% margin of error. Computation of sample size and margin of error was performed using the online calculator at http://www.surveystem.com/sscalc.htm.
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