



Review

Learning styles and critical thinking relationship in baccalaureate nursing education: A systematic review



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SUMMARY

Background: Critical thinking is a desirable competency for contemporary nurses although there are growing concerns supporting a disturbing paucity in its achievement. Learning styles reflect habitual behaviors which determine distinct preferences within learning situations. Evidence suggests that critical thinking could evolve through learning processes. Variances in critical thinking achievement by nursing students might therefore be influenced by individual learning preferences. The concepts “learning styles” and “critical thinking” have been independently examined in the nursing literature. No reviews were found however exploring their association in nursing education.

Objectives: To identify the potential relationships between learning styles and critical thinking in baccalaureate nursing students.

Design: Systematic review.

Data Sources: Eleven electronic databases were utilized without geographical and time publishing filters. Hand-searching journals and scanning references from retrieved studies were also performed.

Methods: Databases were searched for descriptive correlational studies which considered the relationship between learning styles and critical thinking in baccalaureate nursing students. The authors independently progressed three stage screening. Retrieved articles were reviewed at title, abstract and full text levels according to predetermined criteria. All included studies were quality appraised using a rating tool for descriptive studies. **Results:** Six studies were finally included. Findings were grouped under four key themes: predominant learning styles, critical thinking scoring, critical thinking evolution across academic progress and learning styles–critical thinking correlations. Learning styles’ diversities, weak critical thinking and inconsistent evolution through academic progress were revealed across studies. Critical thinking differed significantly between learning styles.

Conclusions: Commonly accepted models in nursing education were lacking in both learning styles and critical thinking. Within studies identical learning styles were found to be positively or negatively related to critical thinking. However comparative findings across studies revealed that all learning styles might be positive determinants toward critical thinking evolution, suggesting that there is a relationship between learning styles and critical thinking. Certain links between learning styles and critical thinking were supported in given settings and given nursing student populations. Further field exploration is required.

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Introduction

Critical thinking was traced in educational reforms in several academic disciplines in the late 1980s and was gradually introduced as an integral outcome within undergraduate nursing curriculums and a core competency in proficiency standards for registered nurses (ANMC, 2006; NMC, 2008; WHO, 2009; NLN, 2011; OECD, 2012; NCLEX-RN, 2013). Critical thinking enhances the capacity for contemporary nurses to manifest high-order meta-cognitive thinking competencies in clinical reasoning and judgment, decision-making and problem solving (Simpson and Courtney, 2002; Mann, 2012). These

competencies have been significantly related with positive impacts on patient outcomes (Fesler-Birch, 2005), quality of care (Chabelli, 2007), patient safety (Fero et al., 2009), evidence-based practice, (NCLEX-RN, 2013), cultural competence (Andrews and Boyle, 2002), theory-practice bridging (Flanagan and McCausland, 2007) and nursing knowledge advancements (Hicks, 2001).

There is considerable evidence suggesting that critical thinking could be achieved in experimental teaching conditions (Straib, 2003; Forneris and McAlpine, 2007). However, there are growing concerns about a paucity of critical thinking in nursing students with little or inadequate evaluation of its achievement (Giro, 1995; Stewart and Dempsey, 2005; Giddens and Gloeckner, 2005; Romeo, 2010; Raymond-Seniuk and Profetto-McGrath, 2011). Consequently, newly qualified nurses lack the capacity to think critically in practice (Shell, 2001; Bueno, 2005; Worrell and Profetto-McGrath, 2007; Castledine, 2011; Morrall and

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Goodman, 2012). Barriers to critical thinking development were identified for students, educators and curricula which included nursing and critical thinking complexities (Edwards, 2007), lack of mutual understanding about critical thinking (Raymond and Profetto-McGrath, 2005; Seldomridge and Walsh, 2006; Sullivan, 2012), inadequate critical thinking socialization (Mangena and Chabelli, 2005) and students' reluctance (Shell, 2001; Cornell and Riordan, 2011). Interest has recently shifted from faculty and educators to students' individual learning attributes. As learning is a cognitive process, critical thinking development among nursing students should be based on that process (Fesler-Birch, 2005; Raymond-Seniuk and Profetto-McGrath, 2011; Iranfar et al., 2012) and on student learning styles (Armstrong, 2005; Trapp, 2005; Zimmerman and Pilcher, 2008; Sullivan, 2012).

Background

Learning styles are core constructs in educational psychology within any discipline, representing habitual cognitive and affective behaviors which determine how each individual interacts in learning situations or environments (DeBello, 1990; Cassidy, 2004; Armstrong et al., 2012). A variety of theoretical models have presented learning styles and their psychometric aspects. While an all-inclusive examination of the concepts of learning styles and critical thinking is outside the scope of the present review, briefing the most cited theoretical approaches in the nursing literature could be beneficial in interpreting the review findings.

Kolb's and Felder & Silverman's learning models reflect the most popular frameworks in nursing literature. According to Kolb and Kolb (2005), the effective learner relies on interactions within four learning modes: concrete-experience (CE-feeling), abstract-conceptualization (AC-thinking), reflective-observation (RO-watching) and active-experimentation (AE-doing). Learning styles are defined through combinations of these modes as accommodating preference for doing and feeling, assimilating for watching and thinking, diverging for watching and feeling, and converging for thinking and doing. These learning styles could be measured by the Kolb's Learning Style Inventory (LSI), a 12-item, forced-choice, self-descriptive instrument. Each item ends in four statements which reflect the learning preferences (CE, AC, RO, AE). Felder and Silverman (1988) described four dichotomies of learning preferences on given information: input (visual/verbal), processing (active/reflective), perception (sensing/intuitive) and understanding (sequential/global). The Index of Learning Style (ILS) consists of 44 forced-choice items. Each dichotomy assesses the participants' learning preferences. Scores for each dimension reveal by summing the number of items answered in each of the two responses. Scores ranking 1–3 indicate that participant has a fair preference to that scale, 5–7 moderate and 9–11 a strong learning preference to that dimension.

Critical thinking on the other hand, is considered a complex concept and it usually means whatever its users stipulate it to mean (Beyer, 1987). That argument is also evidenced in the utilizations of critical thinking in nursing. Videbeck (1997) surveyed fifty-five baccalaureate nursing curriculums in order to describe the prevailing practice of critical thinking and found fifty different definitions and measures (Videbeck, 1997). Critical thinking has been interchangeably paralleled with terms which have different meanings such as problem solving, decision making and creative thinking (Simpson and Courtney, 2002). In Brunt's (2005) integrated review was documented that there is no a commonly accepted framework by which to describe and evaluate critical thinking in Nursing. In Turner's (2005) concept analysis forty eight surrogate terms of critical thinking were reported. The most cited theoretical approaches in nursing literature defined critical thinking as rational reflection (Ennis, 1993), which involves inquiry attitudes and applying skills toward valid inferences (Watson and Claser, 2008). In addition to that, the American Philosophical Association's (APA) Delphi report maintained that critical thinking is self-regulatory judgment resulting in interpretation, evaluation, analysis and explanation of considerations upon that judgment (APA, 1990). Aspects of critical

thinking on thought perfection, self-correction, bias liberation and problem-solving abilities have also been addressed (Paul and Elder, 2008). Scheffer and Rubenfeld's (2000) consensus statement linked nursing to critical thinking and pointed out that critical thinkers in nursing should exhibit specific habits of mind and cognitive skills. However such affective tendencies and cognitive abilities have not been mutually inclusive in all the aforementioned approaches. Some incorporated both capacities (APA, 1990; Ennis, 1993; Scheffer and Rubenfeld, 2000), while some others were primarily cognitive (Paul and Elder, 2008; Watson and Claser, 2008).

The Watson and Claser's (2008) Critical Thinking Appraisal Test (WGCTA) focuses on the cognitive abilities toward critical thinking. It consists of 80 items in 5 subscales (Table 1) and the maximum score on correct responses is 80. The APA's (1990) seems the most representative measurement approach for both capacities (Table 1). The California Critical Thinking Disposition Inventory (CCTDI) measures the affective tendencies known as dispositions toward critical thinking and the California Critical Thinking Skills Test (CCTST) is used to measure the cognitive abilities known as skills. The CCTDI consists of 75-items which create seven sub-dispositions (Table 1) with a six-point Likert-style agree-disagree prompts for each scale. The recommended cut-off point for each sub-disposition is 40 and the target score is 50. The cut-off point for the overall critical thinking dispositions is 280 and the target is 350. A score <280 indicates deficiency in total dispositions, 280–350 moderate dispositions and >350 suggests strong overall critical thinking disposition. The CCTST is a 34-item multiple-choice instrument, providing six sub-scales (Table 1). Scores obtain on correct answers ranking 0–34 (Facione, 1990; Profetto-McGrath, 2003). A comparative overview of critical thinking and learning style components is illustrated in Table 1, demonstrating that relating those variables might not be a straightforward task.

The Relationship Spot

Thinking and learning are interrelated; one must think to gain knowledge. Indeed, knowledge should be properly achieved as an outcome from its comprehension and its justification through critical thought (Paul, 1992). Within such philosophical abstraction, it could be argued that learning accomplishments might be influenced by one's critical thinking status and vice versa; critical thinking evolution might be affected by one's preferred learning modes. The development of critical thinking therefore among nursing students might be varied and influenced according to their learning styles. Learning styles are ingrained, relatively permanent and internally processed in individuals (Cassidy, 2004; Salehi, 2007), but critical thinking is evolved through learning process (Brunt, 2005; Kuiper et al., 2010; Raymond-Seniuk and Profetto-McGrath, 2011; Morrall and Goodman, 2012). Both concepts have been individually explored in the nursing literature and many researchers have been focused on their causes and effects. However, no studies were found reviewing the relationship between learning styles and critical thinking in nursing education. The present review addresses a knowledge gap regarding such a relationship. It also acknowledges the need for empirical evidence on any potential variances in critical thinking achievements among nursing students as these might be related from their distinct set of learning preferences.

The aim of the review was to explore the relationship between learning styles and critical thinking in nursing students as those perceived individuals entered into four-year baccalaureate nursing programs after completion of secondary education. In this scope, the review questions addressed were:

1. Is there a relationship between learning styles and critical thinking?
2. If any, what is the nature of such a relationship?
3. Is learning style a determinant in critical thinking development?

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