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Incorporation of constructivist assumptions into problem-based instruction: A literature review

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ABSTRACT

Objectives: The purpose of this literature review was to explore the use of distinct assumptions of constructivism when studying the impact of problem-based learning (PBL) on learners in undergraduate nursing programs.
Design: Content analysis research technique.
Data sources: The literature review included information retrieved from sources selected via electronic databases, such as EBSCOhost, ProQuest, Sage Publications, SLACK Incorporation, Springhouse Corporation, and Digital Dissertations.
Review methods: The literature review was conducted utilizing key terms and phrases associated with problem-based learning in undergraduate nursing education. Out of the 100 reviewed abstracts, only 15 studies met the inclusion criteria for the review. Four constructivist assumptions based the review process allowing for analysis and evaluation of the findings, followed by identification of issues and recommendations for the discipline and its research practice in the field of PBL.
Results: This literature review provided evidence that the nursing discipline is employing PBL in its programs, yet with limited data supporting conceptions of the constructivist perspective underlying this pedagogical approach. Three major issues were assessed and formed the basis for subsequent recommendations: (a) limited use of a theoretical framework and absence of constructivism in most of the studies, (b) incompatibility between research measures and research outcomes, and (c) brief exposure to PBL during which the change was measured.
Conclusion: Educators have made the right choice in employing PBL as a pedagogical practice, yet the need to base implementation on constructivism is mandatory if the aim is a better preparation of graduates for practice. Undeniably there is limited convincing evidence regarding integration of constructivism in nursing education. Research that assesses the impact of PBL on learners' problem-solving and communication skills, self-direction, and motivation is paramount.

Introduction

Most of the available literature in nursing education commences with an acknowledgement of the rapidly changing health care systems, on-going surge of technological advances, influx of information in the discipline, and mounting calls from constituencies; all informing about the need for a more prepared nursing workforce. The focus of the preparation is directed towards an increasing amount of knowledge-concerted work, accountability, and team activities (Beers, 2005). As a consequence, today's nursing industry and community expect that graduates not only to have a core body of knowledge but also to be able to transfer this knowledge to solve problems in practice. Literature has revealed that problem-solving attributes and transfer skills could be developed in learners, yet contingent on the instructional and assessment approaches during their educational preparation (Illeris, 2009; Tanner, 2009).

Higher education has been criticized for not developing professional practice skills (Silva, 2009). At present, the major challenge for nursing education is curriculum transformation (Benner et al., 2010), with teaching practices as the means for enhancing transfer and application of knowledge (Benner et al., 2009). For this purpose, the constructivist assumptions may act as the framework for any transformation (Brandon and All, 2010). An innovative instructional approach that emanates from constructivism is Problem-Based Learning; its assumptions prompt the active involvement of learners in the teaching learning process (Boghossian, 2006; Loyens et al., 2007).

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The present body of research in higher education validates the crucial role of PBL in developing learners' constructive assumptions (Boghossian, 2006). In this regard, research work in nursing has contributed to the extensive data on learning through PBL with favorable results (Child et al., 2001; Zubaidah, 2005). Instructional innovation is a mandate in higher education, specifically health professions education such as nursing. Given the myriad instructional approaches used in the discipline, it is deemed essential to evaluate the employment of constructivism in the curriculum (Brandon and All, 2010).

The implementation of PBL in undergraduate nursing programs has raised queries in terms of effectiveness (Zubaidah, 2005), and appropriateness of the theoretical framework supporting its use in the preparation of nurses for practice (Chikotas, 2008). This literature review aims at exploring the use of constructivist assumptions as a theoretical framework in existing PBL research in undergraduate nursing education. Secondary aims of the review include comparing the selected work in terms of design, sampling, data sources, and findings.

Constructivism

Knowledge acquisition evolves from constant involvement of learners in educational activities to establish conceptual consistency (Zietsman, 1996). Constructivists believe that knowledge making primarily depends on the efforts of learners to make meaningful ideas accepted as knowledge (Gruender, 1996). Construction begins with engaging learners in the meaning-making process and ends with enabling them to handle problems of the real world. In light of this, constructivism becomes a learner-centered educational paradigm that liberates learners' autonomy and freedom using collaborative and cooperative approaches (Keating, 2004).

Constructivism is based on the kind of interaction taking place over propitious, ill-structured situations posed by the teacher (Loyens et al., 2007), thus inducing "discovery learning" (Bruner, 1961). In this stance, the problem influences the learner's internal processing of information to impact classroom discussion. As a result, knowledge becomes viable when learners use their efforts to effect the connection between internal processing of information and external discussion.

Although constructivism has been viewed as a learning theory, it is effectively considered a mode to improve instruction (Clark, 2000). Educators play a vital role in assessing learners' self-regulation skills prior to the implementation of this paradigm. Capitalizing on the notion that engaging learners in the meaning making process is crucial for constructing viable knowledge, constructivist educators tend to base learning on prior knowledge that transforms into transferable, active, and solid knowledge (Young and Paterson, 2007). Teaching practices based on constructivism are indispensable in the preparation of nurses for the workplace.

Constructivist assumptions for learning

First and foremost, constructivism signifies learner's involvement in knowledge construction (Nikitina, 2010), with the latter being a natural tendency in the learning of individuals (Gruender, 1996). Accordingly, questions regarding the constructive perspective revolve around the educational implications of the learning situations and the effectiveness of prior knowledge. Since the construction of knowledge is under the influence of the individual's neural, hormonal, intellectual, and physiological factors, assessing how students develop constructs is not yet well developed (Gruender).

Cooperation forms a second assumption in constructivism as it is believed to empower students in generating their learning. Two principles dominate in cooperation: prior knowledge to guide learning, and social collaboration to enhance learning (Dzerviniks and Poplavskis, 2012). To expand this point further, the momentum for learning is primed by activities that build on prior knowledge and social learning to solve problems and develop schematic representations of the experience; thus enhancing acquisition and transfer.

Self-regulation, the third constructivist assumption, is believed to prompt learners to assume self-direction (Child et al., 2001), self-reinforcement, self-assessment, and self-monitoring (Loyens et al., 2007); all of which are believed to promote learning. The resultant involvement of learners leans on developing sense of responsibility for knowledge acquisition, autonomy for constructing alternative concepts, and empowerment through engagement in the meaning-making process (Hoover, 1996). Although self-regulation constitutes a major tier for advancing learning, learners' internal locus of control must be an overarching principle in the process (Loyens et al.; Schunk, 2004).

Learning is the conscious involvement of students in situations and experiences that aim at changing their attitudes and behavior. To attain conscious and voluntary involvement, learners must be engaged in the process that activates their interests, needs, and desires. Forming the fourth constructivist assumption, motivation is capable of liberating the learner's power (Dewey, 1897). Moreover, motivation can trigger learners' intuition, logic, and cognition; it can make them question assumptions, look for clues, and question previously formed constructs.

PBL assumptions for learning

Problem-Based Learning, underpinned by the constructivist assumptions, has its grassroots in Dewey's (1910) habits of mind, Bruner's (1961) discovery learning, and Piaget's intelligence. A major advantage of PBL is bridging the theory practice gap since learners are trained while still in the program on how to solve clinical problems (Biley and Smith, 1999). PBL challenges students to engage in learning through dialogue, use of prior knowledge, formulation of assumptions, identification of one's goals, and advancing the search to reach at solutions (Frost, 1996). Above all, a great deal of autonomy and responsibility are required, marked by self-regulation and social interaction (Loyens et al., 2007).

PBL principles, rooted in constructivism, include: (1) engagement in learning, (2) generation of interest in solving problems of the real world, (3) reflection on prior knowledge and making observations through self-inquiry, (5) construction of meaningful knowledge through self-teaching, and (6) self-evaluation (Montague et al., 2000; Posner, 2004). As a student-centered strategy, PBL does not only facilitate construction and transfer of knowledge, but aims to develop skills of communication, cooperation, problem-solving, and thinking; setting own goals; appreciation of others' input; and self-regulation (Dzerviniks and Poplavskis, 2012; Loyens et al., 2007).

Method

Amid the plethora of nursing work on PBL, it is important to examine what potential assumptions of constructivism have been studied and not yet studied. Once the large amount of research examining theoretical perspectives is in place, it is deemed essential to assess the state of this approach in the discipline (Schunk, 2008). The selected studies were reviewed to identify constructive aspects of the PBL approach through deciphering data related to research design and tools, duration of implementation in the