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Exploring the relationships between teaching, approaches to learning and critical thinking in a problem-based learning foundation nursing course

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SUMMARY

Undergraduate nursing programmes are responsible for providing teaching and learning that develops students' knowledge, skills and attitudes in alignment with contemporary nursing standards and healthcare demands. Problem-based learning (PBL) as a pedagogy uses authentic artefacts reflecting real-world situations for students to practice problem-solving skills through collaboration with their peers. PBL was introduced in a foundation nursing course delivered in a regional university in Queensland, Australia. This paper presents the findings of a study exploring the relationships between nursing students' individual characteristics and perceptions of learning environments, teaching in PBL mode, approaches to learning, and critical thinking skill readiness. The study was guided by an ecological perspective designed to examine nursing students' ecological environments and the influences of those environments on their approaches to learning, and on critical thinking skill readiness. The results, through hierarchical linear modelling, revealed that aspects of the PBL approach to teaching influenced the approaches to learning students adopt, and thus their critical thinking skill readiness. Implications for teaching in undergraduate nursing programmes are discussed.

Introduction

Enabling nursing students with essential 21st century skills such as critical thinking and self-directed learning is important in preparing them to meet the future challenges in healthcare they need to be creative problem solvers (Le Storti and Cullen, 1999, p. 62). These essential nursing skills (Australian Nursing and Midwifery Council and Council, 2006) were identified as important outcomes for teaching and learning as early as 1985 in a higher education curriculum for registered nurses education in regional Queensland, Australia (Toowoomba Nurse Education Working Group, 1985).

Contemporary professional standards, such as the Australian Nursing and Midwifery Council (ANMC) competencies for Registered Nurses (2006), guide teachers of undergraduate nursing programmes to deliver graduates that contribute to quality nursing care through lifelong learning and professional development of themselves and others, and who demonstrate professional practice aligned with the health needs of the population (Australian Nursing and Midwifery Council and Council, 2006). The ANMC competency standards are constructed within a framework of four domains, and the critical thinking and analysis domain "relates to self-appraisal, professional development and the value of evidence and research for practice" (Australian Nursing and Midwifery Council and Council, 2006, p.3). Nurses are expected to be self-directed learners, be able to reflect on their practice and the consequences of that practice for individuals (Australian Nursing and Midwifery Council and Council, 2006, p.3). Critical thinking is clearly part of an important skill set in the education of nursing students to prepare them for contemporary practice (Kek and Huijser, 2011a).

Problem-based learning (PBL) as a teaching strategy has the potential to develop critical thinking skills (Kek and Huijser, 2011a). PBL is used extensively in nursing education to facilitate critical thinking in nursing students attending generic and post-registration undergraduate programmes (Worrell and Profetto-McGrath, 2007), and as a self-directed learning pedagogy to engender learner characteristics such as critical appraisal, information processing, communication and teamwork (Kassab and Abu-Hijleh, 2005, p. 524), which are essential components of critical thinking. However, the development of critical thinking and life-long learning skills as a specific outcome of PBL for nursing students has received little attention in the literature. This paper discusses the outcomes of a PBL teaching strategy that was adopted by teachers of a foundation nursing course of a pre-registration programme.

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Critical Thinking Readiness for Evidence-Based Nursing Practice

Critical thinking is a meta-cognitive skill, which involves thinking about one's own thinking, and is required as a two-level decision making process if the nurse is to plan and judge the validity of nursing care activities (Seta et al., 2007). Safe practice includes gathering patient data through observation, measurement and assessment and critically thinking about that data to inform clinical decision making through clinical reasoning (Levett-Jones et al., 2010). There is an increasing focus on evidence-based practice suggesting a need to engage nursing students in research processes and activities that emphasise the relationship between evidence-based practice and clinical outcomes (McCurry and Martins, 2010). Critical thinking is argued to be crucial in evidence-based nursing (Profetto-McGrath, 2005), while evidence-based nursing is vital to patient-centred care (Martin et al., 2010).

There is consensus in the literature that patient-centred care is based on nurses' readiness to understanding the problems experienced by patients and the ability to implement individual and specific strategies to reduce or eliminate those problems in a way that demonstrates respect and care for that person (Dempsey, 2009). Understanding comes from engagement with the problem, reflection on one's learning needs and a preparedness to undertake research to resolve any knowledge deficits, resulting in production of new knowledge and enhanced patient care (Loth et al., 2007). This is an individualised process and Wells et al. (2009, p. 194) identify the issue of variance in student readiness to engage in the PBL process, different outcomes that PBL tutorials might deliver because of their learner-centeredness, and the unpredictability of tutors who might modify the programme structure (Wells et al., 2009). They conclude that the use of PBL can bridge the theory–practice gap in nursing through the collaborative nature of the tutor–student relationship while respecting the student as "more than an empty vessel needing informational cargo" (Wells et al., 2009, p. 199) and preparing them to 'hit the ground running'.

PBL as a Powerful Pedagogical Approach to Teach Critical Thinking

Profetto-McGrath et al. (2009) note that the role of teachers of research skills is increasingly recognised as critical in stimulating the use of research evidence in clinical practice. The challenge for nursing education is how best to integrate research skills in an already busy discipline and content laden curriculum, rather than treating it like an added extra (Huijser, Kimmins and Galligan, 2008). Kek and Huijser (2011a) propose that PBL is a particularly powerful pedagogy as well as a teaching and learning system that, when used simultaneously to acquire domain-specific content knowledge, can promote the development of transferable critical thinking skills amongst higher education students, including nursing students.

Traditionally, undergraduate nursing programmes have engaged students through teacher-focused sessions (Lekalakala-Mokgele, 2010), which do not encourage students to identify their individual learning needs or develop skills in synthesising information (Creedy et al., 1992). Traditional frameworks force educators to generalise teaching methods and content to meet the variations in students' entry level knowledge and skills. By contrast, the student-centred and dialectical nature of PBL urges students to frequently undertake self-directed activities towards solving the 'problem' (Creedy et al., 1992, p.728). "PBL has been identified as one approach to nursing education that supports contextualisation of knowledge essential to nursing practice" (Applin et al., 2011, p. 2). Aligning knowledge to practice works towards closing the theory-practice gap that is a recurrent concept in nursing education and literature (Andrews and Jones, 1996; Higginson, 2004). PBL encourages deep approaches to learning through engaging students in self-directed research to address real world problems, including analysis of contextualised data applied to authentic discipline specific artefacts. Thus, PBL is a highly structured and learner-centred approach that makes the learning directly relevant to practice (Lin et al., 2010).

The literature suggests that tutor skills in facilitating student learning processes are a critical success factor in PBL. For example, Barrows (2002) insisted that the skill of the tutors is a crucial element in PBL, to the extent that the effectiveness of a course or programme is dependent on skilled and trained tutors. Kek and Huijser (2011a) suggest that PBL is a powerful pedagogical approach to developing critical thinking skills, and they identify that the deliberate design of the PBL instructional process and the student-centred learning environment, closely mirroring a social constructivist paradigm, are keys to its effectiveness. Their framework has been adapted for this study, as it provides a way to analyse and focus on different factors impacting on the outcome of critical thinking skills for nursing students, through an exploration of the relationships between teaching, approaches to learning and critical thinking in a PBL context.

Method

A Conceptual Framework for Analysis

As noted above, this study has adapted Kek and Huijser's (2011b) framework, which in turn was originally adapted from Bronfenbrenner's theory of human development (1979), Bronfenbrenner and Ceci's (1994) bio-ecological model of human development, and Biggs's (2003) 3P model of learning. This framework has been used to explore the influences of individual characteristics, learning environments, and a PBL teaching approach on student approaches to learning and critical thinking in a foundation nursing course.

Bronfenbrenner (1979, p. 16) asserted that "human development is a product of interaction between the growing human organism and its environment", which is directly applicable to learning. Bronfenbrenner's (1979, pp. 209–217) model of the 'ecological environmental system', describes four distinctly separate systems that are nevertheless inextricably linked, and these can be broadly applied to a higher education context in the following manner:

1. *Micro system* — students, classroom, and teachers/tutors
2. *Meso system* — study groups, family, laboratory, collegial support
3. *Exo system* — wider university structures and practices, teacher's workplace and culture
4. *Macro system* — culture, social interchange, belief systems.

Kek and Huijser's (2011b) framework, adapted for this study, draws on Bronfenbrenner's four systems and combines these with Biggs' (2003) 3P – Presage, Process, Product – Model, because Biggs' model concentrates on higher education students, and the systems approach of his model is consistent with Bronfenbrenner's (1979) 'nested ecological environments'. Kek and Huijser's (2011b) framework can be applied to establish the interrelationships between students' individual characteristics (*presage*), distal and proximal contextual factors (*presage*), approaches to learning (*process*) and outcomes (*products*). The advantage of this model is that it allows us to focus on the outcomes of a learning situation, for example on whether critical thinking has been achieved as a measurable outcome. Bronfenbrenner's (1979) systems allow for more depth in terms of potential factors of influence in this process.

Kek and Huijser's (2011b) framework, when applied to this study, leads to the three-fold process depicted in Fig. 1:

1. *Presage*
2. *Learning Experience*
3. *Outcome*

The *distal* elements in the *Presage* part of this framework include students' personal characteristics such as age, race, Aboriginal and Torres Strait Island descent, persons with disability, international status and previous experience of PBL. The *proximal* elements in this case are the classroom learning environment and the PBL teaching approach, or in