

Developing critical reflection for professional practice through problem-based learning

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Aims. To explore the influence of current learning traditions in nursing on the development of reflection and critical reflection as professional practice skills and to offer suggestions for nursing education that will specifically facilitate the development of critical reflection.

Organizational constructs. Mezirow's transformative learning theory, Barrows conceptualization of problem-based learning (PBL).

Methods. Integrative literature review of published literature related to nursing, health science education and professional education from 1983–2000.

Findings. Professional education scholars concur that specialized knowledge is clearly essential for professional practice, however, they also suggest that self-consciousness (reflection) and continual self-critique (critical reflection) are crucial to continued competence. While strategies to facilitate reflection have been outlined in the literature, specific strategies to facilitate the development of critical reflection and implications for nursing education are much less clear. Advocates of reflective and critically reflective practice suggest that the development of these abilities should be inextricably linked to professional development and can be developed through active repeated guided practice. In health care, PBL based on constructivism, has been identified as one way to facilitate the development of these skills.

Conclusions. Nursing learners exposed to PBL develop the ability to be reflective and critically reflective in their learning and acquire the knowledge and skill within the discipline of nursing by encountering key professional practice situations as the stimulus and focus of their classroom learning. The learners' ability to be both reflective and critically reflective in their learning is developed by critical questioning of the faculty tutor during situational analysis, learning need determination, application of knowledge, critique of resources and personal problem-solving processes, and summarization of what was learned.

Keywords: reflection, critical reflection, transformative learning, problem-based learning

Introduction

Professional education shares the common goal of preparing competent graduates who will successfully make the transition to professional practice. Descriptions of professional

practice have historically focused on the technical and specialized bodies of theoretical and applied knowledge associated with practice. The most current epistemology characterizes professional practice as judgement and wise action in situations characterized by complexity, uniqueness,

uncertainty and often conflicting values (Harris 1993, McGuire 1993, Schon 1995). Scholars concur that specialized knowledge is clearly essential for practice. However, they also suggest that self consciousness (reflection) and continual self critique (critical reflection) are crucial to competence (Harris 1993, Schon 1995).

Given the current climate of rapid technological, cultural and economic change, the idea of reflective and critically reflective practice suggests expectations for their development as professional practice skills. While strategies to facilitate reflection have been outlined in the literature, specific strategies to facilitate the development of critical reflection as a professional skill and the implications for programmes of professional education are much less clear.

In health care, problem-based learning (PBL), based on constructivism, has been identified as one way to facilitate the development of reflection and critical reflection (Barrows 1983, Creedy & Hand 1994, Alavi 1995). Advocates of reflective and critically reflective practice suggest that the development of these abilities should be inextricably linked to professional development. It has been further suggested that the development of the abilities to be reflective and critically reflective in practice can be perfected through active, repeated, guided practise (Boud *et al.* 1985, Schon 1995). Before further discussion of the relationship between PBL as an instructional methodology and the development of critical reflection, it is essential to distinguish between reflection and critical reflection.

Transformative learning

Transformative learning as proposed by Mezirow (1990) elaborates on the work of Habermas and is based on constructivist assumptions. According to Mezirow (1990/1998) people interpret their experiences in their own way and the way they understand the world is as a result of their perceptions of their experiences. Individuals have a frame of reference for interpreting their experiences based on what happens to them and what they see hear and read. This frame of reference originates in how one is raised, the culture in which one lives, and what one has previously learned. The person's experience is filtered through meaning perspectives and for most people, these perspectives are uncritically assimilated ways of knowing, believing and feeling (Cranton 1994, Mezirow 1990/1998). Therefore, meaning perspectives may include a lack of knowledge and attention to context, distortions, prejudices and stereotypes. Individuals find it safe to remain within a meaning perspective because, although awareness may be decreased, anxiety and loss of self confidence are usually avoided. Learning in general only occurs as we challenge meaning

perspectives, reconcile new ideas with the presuppositions of prior learning and then act on these insights.

Meaning perspectives

Mezirow (1990/1998) describes adults as having meaning perspectives comprised of sets of habitual expectations which he calls meaning schemes. Meaning schemes are the specific knowledge, beliefs, value judgements, feelings and assumptions that one holds (Mezirow 1990/1998). A meaning perspective is a frame of reference or set of expectations based on past experience that is used to interpret the meaning of a current experience. Three types of meaning perspectives have been identified (Cranton 1994, Mezirow 1990/1998). Epistemic are related to knowledge and the way to use knowledge. Sociolinguistic are based on social norms, cultural expectations, socialization and language. Psychological meaning perspectives refer to self concept, needs, inhibitions, anxieties and personality based preferences. Most individuals have not examined their meaning perspectives critically and as a result, meaning perspectives and subsequently meaning schemes can be distorted.

Distortions in meaning perspectives

A distortion is an unquestioned, unexamined, maybe even unconscious assumption that limits the learner's openness to change, growth, personal and professional development (Cranton 1994). Mezirow (1990/1998) relates distorted assumptions in epistemic meaning perspectives to stages in the development of reflective judgement. According to Kitchener and King (1990), reflective thinking or questioning of assumptions simply does not occur in earlier stages of cognitive development. An individual may accept information as true because it was printed in a book or because someone in authority confirmed it. However, once reflective judgement is developed, the individual perceives knowledge to be the product of inquiry and reflection.

Mezirow (1990/1998) describes the factors that lead to distorted assumptions in sociolinguistic meaning as all the ways by which society and language influence perception and understanding. These include the social and cultural norms that determine power and privilege. Distorted psychological assumptions produce ways of feeling and acting that cause discomfort because they are inconsistent with a healthy self concept and how individuals think they should be as adults. Often the results of earlier experience, such distortions may become dysfunctional in adulthood (Cranton 1994, Mezirow 1990/1998). Learning, if transformative, usually results in the transformation of a meaning perspective and subsequent action.

Learning domains

Mezirow (1990/1998) describes three learning domains. Instrumental learning involves forming hypotheses about observable events, making predictions based on these hypotheses, and evaluating the outcomes. Communicative learning includes learning to make oneself understood and to understand what others mean. Mezirow (1990/1998) suggests that this domain encompasses most of the learning in adulthood and includes understanding, describing and explaining social, political or educational concepts; intentions and reasons; values, ideals and feelings; and moral questions. Emancipatory learning occurs through critical reflection and includes reflection on instrumental and communicative learning and self knowledge. Mezirow (1990/1998) indicates that critical reflection constitutes an integral component of the process involved in validating instrumental and communicative learning. Emancipatory learning can occur in each of the meaning perspectives whereas communicative learning seems to occur primarily within the sociolinguistic perspective. Instrumental learning occurs primarily in relation to the epistemic meaning perspective, but is only one component of knowledge and the use of knowledge (Cranton 1994, Mezirow 1990/1998). Learning is clearly multidimensional and can influence meaning perspectives in a variety of ways.

Reflection and critical reflection

The concept of reflection is a key component of transformative learning theory (Cranton 1994, Mezirow 1990/1998) and can be traced to Dewey (1933, p. 9) who described reflection as 'active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends'. More recently Boyd and Fales (1983, p. 100) define reflection as 'the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self and results in changed conceptual perspective'. Boud *et al.* (1985, p. 3) identify reflection as 'a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations'. Mezirow (1990, p. 104) suggests that 'reflection is the process of critically assessing the content process or premises of our efforts to interpret and give meaning to our experience'. Mezirow (1990) subsequently distinguishes three types of reflection.

Types of reflection

Content reflection is an examination of the content or description of an issue or problem. For example, if a practising nurse is confronted with new equipment that allows patients to administer their own analgesic, the nurse might ask what the differences are between this new machine and the previous. Content reflection is often asking 'What?'.

Process reflection involves checking on the problem solving strategies that are being used. For example, while trying to set up the equipment, an alarm sounds unexpectedly. The nurse asks if something was missed when reading the instructions. Process reflection is usually an examination of 'How?' Content and process reflection tend to be associated more with instrumental and communicative learning and of the two, content reflection is the least complex process (Cranton 1994).

Premise reflection or critical reflection occurs when the problem itself is questioned. For example, the nurse might question why it is important for patients to control their own analgesic administration. Premise reflection usually involves asking 'Why?' Being critical means judging and not taking things for granted (Garrison 1992). It follows then, that criticism is essential to reason and, to avoid arbitrariness, there must be some degree of general agreement or confirmation. To achieve agreement or confirmation there must be iteration between private and shared worlds (Garrison 1992, Mezirow 1998, Hancock 1999) and this iteration is best achieved through dialogue or discourse. Premise reflection, associated with reflective discourse and emancipatory learning, is clearly the most complex.

Each type of reflection can occur in each of the learning domains and in relation to each of the meaning perspectives. When individuals engage in content and process reflection, their meaning schemes may be questioned. When they engage in premise reflection their meaning perspectives may be transformed. As soon as a learner asks 'Why', reflection begins to take place on the level of a meaning perspective rather than a meaning scheme. Asking these questions acknowledges the larger context within which an assumption exists and begins questioning underlying premises.

Process of reflection

In discussing the reflective process, most authors identify stages or levels (Boyd & Fales 1983, Brookfield 1987, Schon 1995, Mezirow 1990/1998). From an initial review of the literature, it may seem that accounts of the reflective process vary. For example, Mezirow (1990/1998) identifies seven levels of reflectivity, Brookfield (1987) identifies five phases

and Schon (1995) suggests three stages. Analysis of the work of these authors reveals that the differences between their perspectives on the processes of reflection are related primarily to differences in terminology and the extent to which the phases are considered hierarchical. I infer from the authors that there are three key stages in the reflective process.

The first stage is generally stimulated by an event or situation which creates an awareness of some sort of emotional response such as puzzlement, surprise or discomfort. Analysis of a situation in the second stage involves examination of current knowledge, perceptions and assumptions. The outcome of the analysis in the third stage may include revision of assumptions (meaning schemes) or meaning perspectives, reintegration of meaning schemes and reorientation of meaning perspectives to create a sense of balance (Atkins & Murphy 1993, Cranton 1994). Reflective learning involves assessment and reassessment of assumptions and critical reflection occurs whenever underlying premises are being questioned.

Reflection in nursing practice

Mezirow (1990) argues that a professional practice comprised largely of routine and habitual action is nonreflective. Routine practice is guided by impulse, tradition or authority. The routine practitioner accepts the realities of daily practice and concentrates on discovering the most effective and efficient way of solving problems, often missing opportunities for reflection (Dewey 1933, Schon 1995, Ferry & Gordon 1998). In another type of nonreflective practice, prior learning is reviewed but not necessarily appraised (Mezirow 1990, Jarvis 1992).

Reflection is necessary to make sense of professional experience including the everyday events of practice (Clarke *et al.* 1996). It enables professionals to access the vast array of knowledge that each possesses (James & Clark 1994). Reflection involves making inferences, associating and discriminating among relationships. Critical reflection results in transformation of meaning and action.

The situations professional nurses find themselves in usually are so complex that the notion of routine practice should be precluded. To engage in competent nursing practice, nurses need to consider the contextual variables in each interaction, mindful that each interpersonal encounter is to some extent unique and that there is usually more than one desired outcome. Nurses must review their experience and knowledge before they can even suggest appropriate actions. They might need to question the routine, explore alternatives and transform previous ways of understanding.

Domains of reflection in nursing

Reflection can occur in several domains of nursing (Clarke *et al.* 1996, Heath 1998, Wilkinson 1999). Nurses reflect on the technical aspects of practice: for example, 'I wonder if this reaction is a side-effect of any of Mr Allister's medications?' The results of this reflection may be more efficient and effective practice. Nurses also reflect on the practical aspects of practice including consideration of complex routines, expectations, roles and norms that are inherent in daily practice. Reflection of this sort is concerned with appropriate action. Nurses may also reflect on the social, political and economic context of practice; for example, a nurse may reflect on the influence of financial constraints on practice. The outcome of this reflection might be transformative; convincing the professional that perpetuating the inadequacies of the current system does not constitute competent practice (Osterman 1990). Finally, nurses can reflect on their self perception. This reflection usually focuses on personal qualities, experiences and attributes; for example, a nurse might consider how the past is affecting current interactions with a terminally ill patient. The outcome of this reflection may again be transformative; critical reflection in this domain may reveal the specific premises and assumptions underlying the experienced nurses' intuitive practice. (English 1993, Wilkinson 1999). The actual dialogic process associated with critical reflection requires nurses to reformulate and make accessible knowledge which they may not have held previously in a communicative form (Clarke *et al.* 1996). These categories are helpful in identifying possible parameters of reflection in nursing but because a professional nurses' practice is complex and interconnected, it will require all types of reflection.

Types of reflection in nursing

Content and process reflection allow professional nurses to practice thoughtfully, intelligently and carefully. They involve synthesizing, predicting and evaluating while considering context and accessing professional knowledge and experience. Such reflection can occur before (anticipatory reflection), during (reflection in action) and after (reflection on action) practice (Saylor 1990, Van Manen 1991, Schon 1995).

Professionals identify epistemologies through premise reflection. They consider all aspects of practice, including content and process reflection, to ask fundamental questions about the underpinnings of practice. Processes at this level of reflection focus on the questions 'Why?', 'What makes me?' and 'What will happen if - ?' Premise reflection is often too

challenging and disruptive for the professional to undertake during active practice and often difficult for them to achieve on their own (Cranton 1994, Teekman 2000). A collaborating colleague may be the best source of challenge and support in premise reflection. Premise reflection may focus on both satisfying and dissatisfying aspects of practice, and may help the professional to determine why aspects are characterized thus. Premise reflection can be learned and facilitated using a range of different strategies and approaches. The challenge for professional nursing education is to prepare competent practitioners who have the ability to engage in content, process and premise reflection (James & Clarke 1994, Baker 1996, Durgahee 1998, Mallick 1998, Pierson 1998).

Reflection and critical reflection in nursing education

Prerequisites to reflection and critical reflection in nursing education include motivation to become the best one can, open-mindedness to new ways of thinking and believing, imagination and a sense of self confidence (Dewey 1933, Boud *et al.* 1985, Cranton 1994). The process of questioning assumptions can be disconcerting so an individual's self concept must be well developed if critical questioning of beliefs and values is to occur. Support from nurse educators and colleagues will make this process easier for learners.

Strategies to stimulate reflection and critical reflection

Critical reflection is stimulated by perceived discrepancies between a learner's beliefs, values, or assumptions and new information, knowledge, understanding, or insight (Teekman 2000). Such discrepancies may occur spontaneously in the learning context. However, nurse educators who wish to stimulate critical reflection can use strategies designed specifically to reveal or highlight discrepancies (Cranton 1994, Creedy & Hand 1994).

A dialogue journal which describes the learner's self analysis and the educator's or fellow learner's responses is one strategy for stimulating critical reflection (Kottkamp 1990, Mezirow 1990, Cranton 1994, Wong *et al.* 1995, Fonteyn & Cahill 1998, Mallick 1998, Hancock 1999). Responses to the journal should be challenging, provocative and nonjudgemental. Comments should question the origins of the self perceptions and the consequences of holding them. For example, questions such as, 'How did you decide on this view?' or 'What actions would this lead you to?' will usually provoke deeper self reflection. The time required to write and reflect and the time required to respond are often seen as barriers to use of this strategy. Quick turn around time for

the submission and return of journals may reinforce primarily content and process reflection (Richardson & Maltby 1995, Pierson 1998). Learners can also be encouraged to write poems, tell stories, or draw pictures as a way of reflecting on the meaning of their experiences (Baker 1996).

The critical incident provides a unique and effective means of leading learners from the specific to the general in understanding their underlying assumptions and beliefs (Kottkamp 1990, Minghella & Benson 1995, Smith 1998, Kim 1999). Learners are asked to describe an especially positive or negative experience related to a particular topic or theme. A set of guiding questions is usually provided. Analysis of the critical incident is perhaps even more important than the incident itself. Group discussion or learner-educator discussion creates depth of critical self reflection.

Experiential approaches have long been the cornerstone of facilitating learner reflection (Kottkamp 1990, Cranton 1994). Nonetheless experience itself does not automatically prompt reflection (Coutts-Jarman 1993, Wilkinson 1999). Educators must make time for critical discourse related to the experience, facilitate shared learner experience and encourage dialogue through critical questioning.

Critical questioning is an essential component of every strategy and can stimulate content, process and premise reflection. Critical questions can prompt explicit assumptions and encourage learners to question the validity of the premises underlying the assumptions. In this way critical reflection is encouraged. In all cases discussion is as important as the reflection.

Offering basic science and humanities courses separate from and prior to clinical learning experiences, leaves learners with little time to move beyond content and process reflection. One might assume that clinical learning experiences focus on premise reflection but Sellappah *et al.* (1998) found that clinical faculty asked primarily low level questions aimed mainly at content reflection.

Faculty who value reflection and critical reflection as professional practice skills have modified their teaching methods significantly. They have replaced or reduced the lecture with methods that require the learner to reflect and critically reflect on real nursing practice. These endeavours include the institution of PBL curriculums featuring small group learning and self directed study (Creedy & Hand 1994, Glen 1994, Heliker 1994, Andrews & Jones 1996).

Problem-based learning

Learners exposed to PBL as an instructional methodology acquire knowledge and skill in nursing by encountering real practice situations as the initial stimulus for their learning

rather than as a culminating activity (Barrows 1983, Boud & Flett 1991). Learners grapple with the complexities of the situations, search for connections across disciplines, and use existing and newly acquired knowledge to generate outcomes. When they have identified possible outcomes they present, justify and debate each possibility, searching for the best possible outcome. Learners collaborate with classmates to refine and enhance their knowledge and skills. They build substantial knowledge and skill bases within the discipline of nursing and across other disciplines through reflection and critical reflection.

Problem-based learning process

In phase 1 of the PBL process, a small group of six to nine nursing learners and a faculty tutor discuss an authentic nursing practice situation that has been generated by practicing nurses. The situation may be presented as a video, an audio tape or a scenario complete with photos. Nursing learners begin by reasoning aloud through discussion of the nursing situation, identifying what they do know based on their previous knowledge, what they do not know, and what they need to know in order to interact in the situation. Learners formulate explanations, clarify understanding through negotiation, critique classmates' comments, establish learning goals and create an action plan to meet those goals. With tutor coaching and by using their own thinking processes, learners develop self-monitoring skills they need to identify learning goals. Developing self-monitoring skills is an important part of metacognition (Barrows 1983). These skills contribute to the learners' ability to be critically reflective learners. For example, learners might be presented with the following situation:

Angie, a 20-year-old aboriginal woman visits the inner city health clinic where you work as an RN. She has been to the clinic previously and the last time was diagnosed with vaginitis. This time she presents with a very swollen nose and left eye. There is blood on her face and she says she had an argument with her boyfriend.

Learners might identify the following examples of areas for further learning: developmental tasks of young adulthood, aboriginal culture and health, inner city demographics, health clinic nursing, abuse, vaginitis and examination of the nose and eyes. Tutors can challenge learners to critically analyse the situation, identify gaps in their knowledge and pose questions on areas they may lack understanding. For example: 'What do you think is going on here?' (content reflection), 'What makes you think that Angie may be a prostitute?' (premise reflection, epistemic meaning perspective), 'What do you know about prostitution?' (content

reflection, epistemic meaning perspective), 'What are some of the risks associated with being a prostitute?' (content reflection, epistemic and sociolinguistic meaning perspectives), 'How do you feel about interacting with Angie?' (process reflection, psychological meaning perspective) and 'What are some of the other possible outcomes of being hit in the head?' (content reflection, epistemic meaning perspective).

In the second phase of PBL, learners activate their plans by engaging in self directed study. Learners determine how they will learn the knowledge and skills they have identified and what resources they will use to assist them. This process helps learners develop the reflective skills and self directed learning skills critical to professional learning. While engaged in self directed learning activities (reading, consulting resource people), learners may identify discrepancies in their beliefs, values or assumptions. Learners may begin to ask 'Why?', 'What makes me - ?' or 'What will happen if - ?' questions.

During phase 3, learners apply information acquired during self study to discussion of the nursing situation and accept, modify or reject previous explanations. During this phase the tutor might ask the following questions: 'Why do you think Angie might have become a prostitute?' (premise reflection, epistemic meaning perspective); 'How do you think prostitution is connected to self esteem?' (premise reflection, epistemic meaning perspective); 'Why do you think Angie might stay in an abusive relationship?' (premise reflection, sociolinguistic perspective); 'How has media portrayal of abuse of women influenced your view of Angie?' (process reflection, sociolinguistic meaning perspective); 'As nurses, how can we facilitate Angie's empowerment?' (process reflection, psychological meaning perspective); and 'What are the similarities between activity limitations with a situation of increased intraocular pressure and one of increased intracranial pressure?' (content reflection, epistemic meaning perspective). Over a period of time learners will begin to challenge themselves and each other with 'What?', 'How?', 'Why?', 'What makes me/you - ?', and 'What do you think would happen if - ?' types of questions. When this happens learners exhibit increasing autonomy in critical reflection.

During PBL tutorials, learners critique resources and research methods utilized during self study. Through critiquing methods and resources for value and effectiveness, learners consider alterations in their choices. Continuous evaluation of research methods and resources is critical to the process of reflective learning.

In the final phase of learning, nursing learners summarize what they have learned and discuss how their knowledge and skills might be used in future nursing practice situations.

Ultimately, learners should feel confident interacting in this or a similar situation. A final check could include the following comment: 'You are the nurse and you walk into the examining room where Angie is waiting. Let's role play your initial interaction and health history interview'. If the process has been successful, learners consciously recall and reflect on learning that occurred, elaborate on the learning and integrate it into their existing cognitive structures (Barrows 1983).

Another critical component of PBL is reflection on group process. Each learner has an opportunity to assume the leadership role of the group for some designated period of time. On a regular basis it is expected that learners (including the faculty tutor) provide constructive criticism to each other about individual contributions to learning and to the group process. Throughout, learners learn to develop and critically reflect on their communicative, collaborative and leadership abilities.

The learners' ability to be both reflective and critically reflective in their learning is developed through critical questioning of the faculty tutor during situational analysis, learning need determination, application of knowledge, critiquing of resources and personal problem solving processes and summarization of what was learned. The PBL process engages learners in activities that: reveal their thinking processes so that they can monitor the effectiveness of their ability to analyse, reason and acquire knowledge; facilitate the development of interpersonal collaborative skills – particularly listening, questioning and summarizing; and enable them to assume increasing autonomy, responsibility and control for their own reflective learning.

Conclusions

The epistemology of professional practice is changing. The literature clearly supports the idea that competent professional nurses should engage in reflective and critically reflective practice. It is also clear that nurse education must assume a key role in helping learners develop the skills of reflection and critical reflection. Problem-based learning as an instructional methodology and curricular organizer in undergraduate nursing has been identified as one way to facilitate the development of these professional practice skills.

References

- Alavi C. (1995) *Problem Based Learning in a Health Sciences Curriculum*. Routledge, London.
- Andrews M. & Jones P. (1996) Problem based learning in an undergraduate nursing program: a case study. *Journal of Advanced Nursing* 23, 357–365.
- Atkins S. & Murphy K. (1993) Reflection: a review of the literature. *Journal of Advanced Nursing* 18, 1188–1192.
- Baker C. (1996) Reflective learning: a teaching strategy for critical thinking. *Journal of Nursing Education* 35, 19–22.
- Barrows H. (1983) Problem based, self directed learning. *Journal of the American Medical Association* 250, 3077–3080.
- Boud D., Keogh R. & Walker D. (1985) *Reflection: Turning Experience into Learning*. Kegan Page, London.
- Boud E. & Feletti G. (eds) (1991) Introduction. In *The Challenge of Problem Based Learning*. Kogan Press, London, pp. 159–176.
- Boyd E. & Fales A. (1983) Reflective learning: key to learning from experience. *Journal of Humanistic Psychology* 23, 99–117.
- Brookfield S. (1987) *Developing Critical Thinkers: Challenging Adults to Explore Alternate Ways of Thinking and Acting*. Jossey-Bass, San Francisco, USA.
- Clarke B., James C. & Kelly J. (1996) Reflective practice: reviewing the issues and refocusing the debate. *International Journal of Nursing Studies* 33, 171–180.
- Coutts-Jarman J. (1993) Using reflection and experience in nurse education. *British Journal of Nursing* 2, 77–80.
- Cranton P. (1994) *Understanding and Promoting Transformative Learning*. Jossey-Bass, San Francisco, USA.
- Creedy D. & Hand B. (1994) The implementation of problem based learning: Changing pedagogy in nurse education. *Journal of Advanced Nursing* 20, 696–702.
- Dewey J. (1933) *How We Think*. Heath, New York.
- Durgahee T. (1998) Facilitating reflection: from a sage on stage to a guide on the side. *Nurse Education Today* 18, 158–164.
- English I. (1993) Intuition as a function of the expert nurse: a critique of Benner's novice to expert model. *Journal of Advanced Nursing* 18, 387–393.
- Ferry N. & Ross-Gordon J. (1998) An inquiry into Schon's epistemology or practice: exploring the links between experience and reflective practice. *Adult Education Quarterly* 48, 98–112.
- Fonteyn M. & Cahill M. (1998) The use of clinical logs to improve nursing students' metacognition: a pilot study. *Journal of Advanced Nursing* 28, 149–154.
- Garrison R. (1992) Critical thinking and self directed learning in adult education: an analysis of responsibility and control issues. *Adult Education Quarterly* 42, 136–148.
- Glen S. (1994) Towards a new model of nursing education. *Nurse Education Today* 15, 90–95.
- Hancock P. (1999) Reflective practice: using a learning journal. *Nursing Standard* 13, 37–40.
- Harris I. (1993) New expectations for professional competence. In *Educating Professionals* (Curry L., Wergin J. et al. eds), Jossey-Bass, San Francisco, USA, pp. 17–54.
- Heath H. (1998) Reflection and patterns of knowing in nursing. *Journal of Advanced Nursing* 27, 1054–1059.
- Heliker D. (1994) Meeting the challenge of the curriculum revolution: problem based learning in nurse education. *Journal of Nursing Education* 33, 45–47.
- James C. & Clark B. (1994) Reflective practice in nursing: issues and implications for nurse education. *Nurse Education Today* 14, 82–90.

- Jarvis P. (1992) Reflective practice in nursing. *Nurse Education Today* 12, 174–181.
- Kim H. (1999) Critical reflective inquiry for knowledge development in nursing. *Journal of Advanced Nursing* 29, 1205–1212.
- Kitchener K. & King P. (1990) The reflective judgement model: transforming assumptions about knowing. In *Fostering Critical Reflection in Adulthood* (Mezirow J. ed.), Jossey-Bass, San Francisco, USA, pp. 1–10.
- Kottkamp R. (1990) Means for facilitating reflection. *Education and Urban Society* 22, 182–203.
- Mallick M. (1998) The role of nurse educators in the development of reflective practitioners: a selective case study of the Australian and UK experience. *Nurse Education Today* 18, 52–63.
- McGuire C. (1993) Sociocultural changes affecting professions and professionals. In *Educating Professionals* (Curry L., Wergin J. et al. eds), Jossey-Bass, San Francisco, USA, pp. 3–17.
- Mezirow J. (1998) On critical reflection. *Adult Education Quarterly* 48, 185–198.
- Mezirow J. (1990) *Fostering Critical Reflection in Adulthood*. Jossey-Bass, San Francisco, USA.
- Minghella E. & Benson A. (1995) Developing reflective practice in mental health nursing through critical incident analysis. *Journal of Advanced Nursing* 21, 205–213.
- Osterman K. (1990) Reflective practice: a new agenda for education. *Education and Urban Society* 22, 133–152.
- Pierson W. (1998) Reflection and nursing education. *Advanced Journal of Nursing* 27, 165–170.
- Richardson G. & Maltby H. (1995) Reflection on practice: enhancing student learning. *Journal of Advanced Nursing* 22, 235–242.
- Saylor C. (1990) Reflection and professional education: art, science and competency. *Nurse Educator* 15, 8–11.
- Schon D. (1995) The new scholarship requires a new epistemology. *Change* 27, 26–34.
- Sellappah S., Blackmore A. & McMurray A. (1998) The use of questioning strategies by clinical teachers. *Journal of Advanced Nursing* 28, 142–148.
- Smith A. (1998) Learning about reflection. *Journal of Advanced Nursing* 28, 891–989.
- Teekman B. (2000) Exploring reflective thinking in nursing practice. *Journal of Advanced Nursing* 31, 1125–1135.
- Van Manen M. (1991) *The Tact of Teaching*. New York State University Press, New York.
- Wilkinson J. (1999) Implementing reflective practice. *Nursing Standard* 13, 36–40.
- Wong F., Kember D. & Yan L. (1995) Assessing the levels of student reflection from reflective journals. *Journal of Advanced Nursing* 22, 48–57.