The development of a critical thinking conceptual model to enhance critical thinking skills in middle-eastern nurses: a middle-eastern experience

AUTHORS

Elaine Simpson
PhD, RN
Manager, Regis, Corinya Aged Care Facility,
Queensland, Australia.
Elaine_phd@yahoo.com

Mary Courtney
PhD, RN
Professor of Nursing and Assistant Dean (Research),
Queensland University of Technology, Queensland,
Australia.

KEY WORDS

ABSTRACT

Objective
This paper aims to describe the development of a critical thinking conceptual model which was constructed to guide the teaching and evaluation of critical thinking skills to Middle-Eastern nurses.

Setting
A large tertiary hospital situated in the Middle-East, which adopted North American standards of healthcare.

Subjects
Twenty Middle-Eastern female nurses who graduated from a nursing college in the Middle-East, wherein basic nursing subjects were taught, but critical thinking was not included in the curriculum of the nursing content.

Primary Argument
Critical thinking is an essential element for nurses who function in today's complex healthcare domain. Nursing organisations worldwide have recognised the need to develop and stimulate higher-order critical thinking by using innovative strategies to stimulate critical thinking abilities. This Middle-Eastern hospital sought to promote critical thinking skills in Middle-Eastern nurses, and a Professional Development Nursing Program was established. An education component to promote critical thinking was developed and integrated into the curriculum of this program.

Conclusion
Nurses and nurse educators favoured a model that supported critical thinking. Reasons given refer to improving professional standards of practice, stimulating inquiry and promoting sound reasoning in practice, as well as contributing to personal and professional development.

The model was effective for this nursing educational program and could be duplicated by other programs to create a learning environment for developing critical thinking, as well as promoting professionalism in nursing.

INTRODUCTION

A large tertiary Middle-Eastern hospital recognised the need to upgrade Middle-Eastern nurses' knowledge and skills to meet North American registered nurse standards, where the National League of Nursing (1987) mandated the necessity to measure critical thinking skills in nurses. To meet these standards, the hospital established a Professional Development Nursing Program to develop nurses to practice competently and demonstrate critical thinking skills. An education component to promote critical thinking abilities in Middle-Eastern nurses was introduced and integrated into the curriculum. The Professional Development

Nursing Program was of twelve months duration. Nurses had to score at least 120 on the Oxford English test to enter the program because English was the medium of instruction and documentation. The program consisted of twenty nurses, an administrator, a senior nurse educator and three nurse educators. One of the nurse educators was of Middle-Eastern origin who supported the nurses with translation issues as required.

An extensive review of the literature was undertaken and a conceptual framework was constructed. The conceptual framework is adapted from Arangie (1997); Colucciello (1997); Dexter et al (1997); Paul (1993; 1990); King (1995) and Whiteside

Figure 1: A conceptual framework to guide teaching and evaluation of critical thinking skills
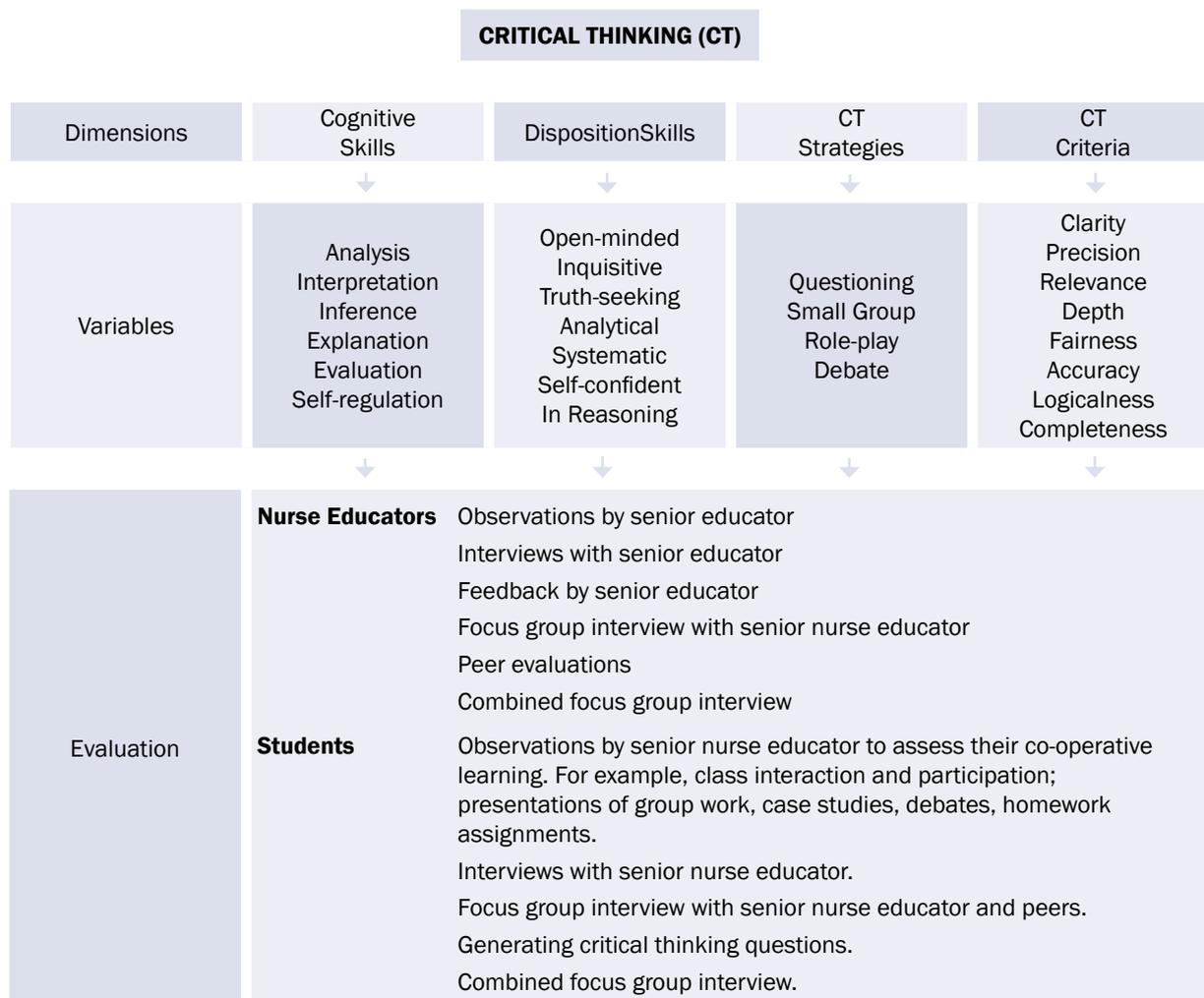
The conceptual model is adapted from Paul (1993, 1990); Facione et al (1998); King (1995); Arangie (1997); Colucciello (1997); Dexter et al (1997) and Whiteside (1997), and reflects the dimensions, variables and evaluation of critical thinking.

(1997) and comprises the dimensions, variables and evaluation of critical thinking, which forms the basis for this program. This conceptual framework appears as figure 1.

LITERATURE REVIEW

As a concept, critical thinking has been expressed in several ways. Critical thinking is an essential element for nurses who function in today's complex health environment, in which they are required to deal with issues such as advanced technology, greater acuity of clients in hospital settings, the ageing population and complex disease processes. Facione et al (1994) state that critical thinking is both a skill and a habit of mind and one must be disposed to think critically as well as have the skills to do so. At the core of critical thinking are the cognitive skills of analysis, interpretation, inference, evaluation, explanation and self-regulation. The dispositions toward critical thinking can be understood in terms of open-mindedness, inquisitiveness, cognitive maturity, truth-seeking, analyticity, systematicity and self confidence (Facione et al 1994) (the cognitive and disposition skills are explained later on). For the purpose of this article, critical thinking is identified as 'purposeful, self-regulatory judgement which results in interpretation, analysis, evaluation and inference as well as explanation of the evidential, conceptual, methodological, criteriological or contextual considerations upon which that judgements is based' (Facione 1990 p.4).

In nursing literature, various methods are discussed that could be employed to enhance critical thinking skills. The literature suggests the importance of using critical thinking strategies. For example, Miller and Malcolm (1990) advocated instructional strategies such as written assignments, problem solving and so forth to foster critical thinking that can be integrated into all levels of nursing curriculum. King (1995) recommends the use of questioning to stimulate higher order thinking processes. Stringfield (1995) suggests video presentations, while Whiteside (1997) advises the use of debate and case studies to enhance core critical thinking skills of analysis,

inference, judgement, explanation, interpretation and evaluation.

On the whole, questioning, small group activities, role-play and debate are well supported by many authors (such as: Jones and Sheridan 1999; Daly 1998; Sellappah et al 1998; Fowler 1998; Billings and Halstead 1998; Abegglen and O'Neill Conger and Mezza 1996; Morin 1997; Oermann 1997; Whiteside 1997; Lipman and Dietrick 1997; Lenburg 1997; Walsh 1997; Elliott 1996; Brookfield 1987; Malek 1986).

DISCUSSION

In the Professional Development Nursing Program, a senior nurse educator well versed in critical thinking provided guidance and support to nurse educators in this concept by providing them with literature on critical thinking and discussions on the subject. The classroom was arranged in a 'U' shape, to allow participants to have eye contact and the ability to question and interact with each other. It also permitted facilitators the opportunity to interact openly with the nurses. The senior nurse educator observed nurse educators in the classroom to support and guide them in using the dimensions and variables of the model effectively, to promote critical thinking skills in nurses. The observer listened, and noted nurses' behaviours. The critical thinking conceptual model is reflected in figure 1 and explained below.

The critical thinking conceptual model
A conceptual model/framework development was based on the relevant literature to guide the development of critical thinking skills in Middle-Eastern nurses. This model is divided into three components consisting of:

- dimensions
- variables
- evaluation

Dimensions and variables
The dimensions and variables of critical thinking will be explained simultaneously as they are closely inter-related. The term 'dimensions' relates to

cognitive and dispositions which are crucial to becoming an effective critical thinker (Colucciello 1997) and other interacting elements such as, critical thinking strategies and critical thinking criteria (also known as intellectual criteria), required to promote critical thinking skills (Paul 1993). The dimensions of critical thinking are explained as follows:

- Cognitive skills: analysis, interpretation, inference, explanation, evaluation and self-regulation (Facione et al 1998, 1994);

- Disposition skills: open-mindedness, inquisitive, truth-seeking, being analytical, systematic and self-confident in reasoning (Facione et al 1998, 1994);

- Critical thinking strategies: questioning, small group activity, role-play and debate; and

- Critical thinking criteria (intellectual criteria): clarity, precision, specificity, relevance, depth, fairness, accuracy, logicalness and completeness (Paul 1993, 1990).

The variables associated with each of the dimensions as used in this program will be described. The variables related to cognitive skills are as follows:

- Analysis: examining ideas/arguments in problems, objective and subjective data and possible courses of action;

- Interpretation: accurately interpreting problems as well as objective and subjective data from common information sources;

- Inference: querying claims, assessing arguments (recognising faulty reasoning) and reaching conclusions, which are appropriate;

- Explanation: clearly explaining and defending the reasoning by which an individual arrives at specific decisions in the context of the health care of the patient.

- Evaluation: evaluating information to ascertain its probable trustworthiness as well as its relevance; and

- Self-Regulation: constantly monitoring one's own thinking using critical thinking criteria and correcting oneself (Facione et al 1998).

Facione et al (1998) and Chenworth (1998) stress the importance of developing and changing dispositions or attitudes, such as being open-minded, inquisitive, truth seeking and so forth. These authors also advocate that while content knowledge and cognitive skills (for example, analysis and so forth) are necessary, they emphasise that without stimulation of dispositions, engagement of critical thinking will not occur. The variables associated with disposition skills are explained as follows.

Disposition Skills

- Open-mindedness: appreciating alternative perspectives and values of others who hold different opinions; understanding other cultural traditions in order to gain perspectives on self and others;

- Inquisitiveness: curious and enthusiastic in wanting to acquire knowledge and to know how things work, even when the applications are not immediately apparent;

- Truth seeking: courageous about asking critical thinking type questions to obtain the best knowledge;

- Analytical: thinking analytically and using verifiable information; demanding the application of reason and evidence;

- Systematic: focused and diligent in approaching complex problems; and

- Self-confidence: trusting one's own reasoning and using critical thinking skills in order to respond to problems and decisions based on scientific evidence and facts (Facione et al 1998).

Bittner and Tobin (1998) indicated that facilitators should be willing to expand their teaching repertoires to include instructional methods such as critical thinking strategies, to open nurses' minds, broaden and augment their ways of thinking to assist growth

and develop cognitive skills in order to make a change in dispositions. The following variables (questioning, small group activity, role-play and debate) used in this model relating to critical thinking strategies are now described.

Critical Thinking Strategies

*   Questioning: Case (1994) and King (1995) considered that the hallmark of a critical thinker is an inquiring mind. These authors assert that good thinkers are good questioners in that they question whatever they see, read, hear or experience. Good thinkers also frame questions in a manner such as 'what is the nature of this?'; 'what does this mean?'; 'why is it happening?'; 'what if?' (King 1995). Walsh (1997) commented that in nursing, 'rounds' are frequently used as a technique of observation, inquiry and close scrutiny of decisions for nursing diagnosis or treatment. During these rounds nurses are expected to problem solve their patients' conditions and plan their daily care. Therefore, thinking and framing critical thinking questions can assist participants to predict outcomes and create alternatives to deal with problems confronting them.

*   Small group activity: Small group activity encourages participant interaction and enables them to share their ideas and examine individual assumptions. Small groups are less threatening and promote comfort to formulate questions for which participants may not have the answers. This technique promotes collaboration with peers. Students have the opportunity to compare points of view and interpretations and to "contrast their critical thinking styles with their peers" (Neill et al 1997 p.31).

*   Debate: The process of debate entails analysing, critiquing and constructing arguments, all of which are vital elements of critical thinking and "higher level skills" required to participate in this activity (Bell 1991 p.6). Doyle (1996) supported Bell and indicated that debate is an effective teaching method that develops the skill of argumentation. Its environment of open inquiry and debate provides opportunities for students to investigate their own feelings, notions and opinions. This results in the student becoming more involved with the topic, challenging ideas, as well as refuting them, and enhancing listening and communication skills. Questioning, wondering, thinking aloud and taking intellectual risks are encountered in a debate. Garrett et al (1996) further stated that educational debate has been recognised in the educational literature as a useful instructional strategy for promoting critical thinking and verbal communication abilities. Debate provides a comprehensive and innovative learning mode when integrated as an essential aspect of the curriculum.

*   Role-play: Chubinski (1996) stated that through the power of role-play, people can be put into circumstances that conflict with their 'normal' life style and choices, hence providing perfect opportunity to appreciate alternative views and opinions on a first hand basis in a non threatening environment. Fuszard (1989) described role-play as an effective means for developing decision-making and problem-solving abilities. The problem-solving process can be analysed within the context of role-play. The post-play discussion gives teachers an opportunity to provide analysis and formation

Table 1: Guided/stem questions adapted from King (1995 p.14)

Generic questions	Specific thinking skills induced
What would happen if?	Prediction/hypothesis
What are the strengths and weaknesses of…?	Analysis/inferencing
What is the difference between… and…?	Comparison/contrast

of new ideas and strategies in patients' care. Tools or devices were used to support critical thinking strategies such as guided/stem questions, videotapes, pre-reading homework, presentations as teaching aids to increase effectiveness of techniques (Robinson 1994). Guided questions act as a device to stimulate students to formulate their own questions based on their reading material and clinical experience (King 1995), and are illustrated in table 1. Robinson distinguishes between techniques and devices and explains that techniques are the ways in which a facilitator establishes relationships between the learner and the learning task, and they may be designed to assist the learner obtain information, acquire a skill, apply knowledge, develop creativity or achieve a change in attitude.

By contrast, devices are the instructional materials or teaching aids that increase effectiveness of techniques or strategies, "but which cannot themselves instruct" (Robinson 1994, p.101). They range from books to simulations, from films to working models, from chalk-boards to video tapes. The variables associated with critical thinking criteria are explained.

Critical Thinking Criteria

In reviewing Paul's (1993, 1990) work on critical thinking criteria, no explanations are provided by the author to describe each of the criteria. Appropriate explanations were extrapolated from the literature to 'fit' each of Paul's criteria from authors such as Fuszard (1989); King (1995); Arangie (1997) and Whiteside (1997) and described as follows:

- Clarity: communication - clear, not muffled; gets to the point; using a tone of voice to suggest openness;

- Precision: thorough with explanations; uses critical thinking-type questions;

- Relevance: asks pertinent questions on the content;

- Depth: encourages participants to generate critical thinking questions;

- Fairness: ensures no participant(s) dominates; gives positive feedback and praise; randomly selects participants to respond;

- Accuracy: thorough; particular in following teaching plan;

- Logicalness: information is presented in a logical and sequential format;

- Completeness: before closing, asks if participants have further questions; allocates time for students to generate critical thinking questions; allows for further discussions to occur.

Evaluation

Evaluation for nurse educators consisted of the senior nurse educator observing nurse educators to ascertain if they were using the dimensions and variables effectively to promote critical thinking skills. For example, were the appropriate critical thinking strategies and devices selected to enhance core critical thinking skills of analysis, interpretation, inference and so forth, to open nurses' minds and augment their way of thinking? Did they use overhead materials to demonstrate and engage in thought-provoking questions? Were the educators adhering to critical thinking criteria such as being clear, precise relevant and the like; were the stem/guided questions used to facilitate nurses in generating critical thinking questions; did nurses interact and participate?

The nurse educators were provided timely constructive feedback, advice and guided as necessary. As they became confident, peer evaluations were conducted and mutual feedback was encouraged. They were also invited to participate in a focus group interview with their peers approximately four weeks following implementation, to voice their feelings toward the use of critical thinking strategies and observations from the senior nurse educator and peers. A combined focus group (senior nurse educator, nurse educators and nurses) was conducted a further four weeks later.

Evaluations for nurses entailed observations by the senior nurse educator to assess their co-operative learning (for example, class interaction, participation

and so forth); the ability to generate critical thinking questions, initially using King's (1995) stem/guided questions, interviews and feedback. Likewise, they attended a focus group interview with their peers, followed by a combined focus group interview (senior nurse educator and nurses).

The outcome from these evaluations was positive. For example, anecdotal comments from nurses were as follows: "We like this type of teaching style"; "It's enjoyable, makes us think, argue constructively and interact with our peers"; "Also, our hands are not tired from taking notes"; "We like the stem questions as a tool to help us construct critical thinking questions, to improve our critical thinking skills." Nurse educators had similar feelings. They commented that: "Critical thinking strategies provided variety and creativity in the teaching and learning environment - the nurses' interaction and participation was stimulating and rewarding, given their tradition on rote learning".

CONCLUSIONS

Faculty members of the education program were acutely aware that for the program to have maximum success, it was essential to "consider individual differences in learners, including differences in learning styles" (Case 1994 p.106). Four critical thinking strategies were selected, namely: questioning, small group activities, debate and role-play, to promote active participation for learning to occur. Nurses and nurse educators favoured a model that supported critical thinking. Reasons given refer to improving professional standards of practice, stimulating inquiry and promoting sound reasoning in practice, as well as contributing to personal and professional development.

This program has the potential to make a significant contribution to nursing education for the following reasons. First, didactic instruction is replaced with an interactive approach. Second, working with a conceptual model makes it easier to manage complex multifaceted concepts such as critical thinking. The model maintains the focus on dialogue and experiential learning, which aids the integration of theory and practice. This model was effective for the program and could be duplicated by other programs to create a learning environment and facilitate the development of critical thinking, as well as enhancing professionalism in nursing.

If curriculums are going to become more educative and teach students to think and interact, then instructional methods must be designed to achieve this outcome. The conceptual model provides a framework for nurse educators to develop curriculum that used critical thinking. This mandates a change in the classroom environment that can only be achieved by a change in nurse educators' behaviors and attitudes.

RECOMMENDATIONS

1. Use a framework/model to provide structure and guidance.

2. Integrate critical thinking strategies into the curriculum to support the development of critical thinking skills.

3. Select appropriate critical thinking strategies and devices to promote critical thinking abilities.

REFERENCES

Abegglen, J. and O'Neill Conger, C. 1997. Critical thinking in nursing: classroom tactics that work. *Journal of Nursing Education*, 36(10):452-458.

Arangie, P.A.R. 1997. Critical thinking: the path to the future. *Tennessee Nurse*, 60(3):15-16.

Bell, E.A. 1991. Debate: a strategy for teaching critical thinking. *Nurse Educator*, 16(2):6-7.

Billings, D.M. and Halstead, J.A. 1998. *Teaching in nursing: a faculty guide*. W.B. Saunders: Philadelphia.

Bittner, N.P. and Tobin, D. 1998. Critical thinking: strategies of clinical practice. *Journal for Nurses in Staff Development*, 14(6):267-272.

Brookfield, S.D. 1987. *Developing critical thinkers*. Open University Press: Milton Keynes.

Case, B. 1994. Walking around the elephant: a critical thinking strategy for decision making. *The Journal of Continuing Education in Nursing*, 25(3):101-109.

Chenworth, L. 1998. Facilitating the process of critical thinking for nursing. *Nurse Education Today*, 18(4):281-292.

Chubinski, S. 1996. Creative critical thinking strategies. *Nurse Educator,* 21(6):23-27.

Colucciello, M. 1997. Critical thinking skills and dispositions of baccalaureate nursing students: a conceptual model for evaluation. *Journal of Professional Nursing*, 13(4):236-245.

Conger, M. and Mezza, I. 1996. Fostering critical thinking in nursing students in the clinical setting. *Nurse Educator*, 21(3):11-15.

Daly, W.M. 1998. Critical thinking as an outcome of nursing education: What is it? Why is it important to nursing practice? *Journal of Advanced Nursing*, 28(20):323-331.

Dexter, P., Applegate, M., Backer, J., Clayton, K., Keffer, J., Norton, B. and Ross, B.A. 1997. A proposed framework for teaching and evaluating critical thinking in nursing. *Journal of Professional Nursing*, 13(30):160-167.

Doyle, R.M. 1996. A strategy for understanding primary health care. *Journal of Nursing Education*, 35(8):379-381.

Elliott, D. 1996. Promoting critical thinking in the classroom. *Nurse Educator*, 21(2):49-52.

Facione, N.C., Facione, P.A., Blohm, S.W., Howard, K. and Giancarlo. C.A. 1998. *The California Critical Thinking Skills Test (CCTST): forms A and B and test manual (revised ed)*. Millbrae CA: California Academic Press.

Facione, N.C., Facione, P.A. and Sanchez. C.A. 1994. Critical thinking disposition as a measure of competent clinical judgement: the development of the California Thinking Disposition Inventory. *Journal of Nursing Education*, 33(8): 345-350.

*Facione, P.A. 1990. *Executive summary - critical thinking: a statement of expert consensus for purposes of educational assessment and instruction*. Millbrae CA: The California Academic Press.

*(The complete Delphi report, including appendices, is available from The California Academic Press as ERIC Doc.No: ED 315-423, P. Facione, Principal Investigator).

Fowler, L.P. 1998. Improving critical thinking in nursing practice. *Journal of Nurses Staff Development*, 14(4):183-187.

Fuszard, B. 1989. *Innovative teaching strategies in nursing*. Rockville, MD: Aspen Publication.

Garrett, M., Schoener, L. and Hood, L. 1996. Debate: a teaching strategy to improve verbal communication and critical thinking skills. *Nurse Educator*, 21(4):37-40.

Jones, D.C. and Sheridan, M. 1999. A case study approach: developing critical thinking skills in novice paediatric nurses. *The Journal of Continuing Education in Nursing*, 30(20):75-78.

King, A. 1995. Designing the instructional process to enhance critical thinking across the curriculum. *Teaching of Psychology*, 22(1):13-17.

Lenburg, C.B. 1997. Confusing facets of critical thinking. *Tennessee Nurse*, 60(5):11-13.

Lipman, T.H. and Deatrick, J.A. 1997. Preparing advanced practice nurses for clinical decision making in speciality practice. *Nurse Educator*, 22(2):47-50.

Malek, C. 1986. A model for teaching critical thinking. *Nurse Educator*, 11(6):20-23.

Miller, M. and Malcolm, N. 1990. Critical thinking in the nursing curriculum. *Nursing and Health Care*, 11(12):67-73.

Morin, K.H. 1997. Critical thinking: say what? Guest editorial. *Journal of Nursing Education*, 36(10):450-451.

National league for Nursing, 1987. *Curriculum revolution: mandate for change*. NLN Publication No. 15-2224: New York.

Neill, K., Lachat M. and Taylor-Panek, S. 1997. Enhancing critical thinking with case studies and nursing process. *Nurse Educator,* 22(2):30-32.

Oermann, M.H. 1997. Evaluating critical thinking in clinical practice. *Nurse Education*, 22(5):25-28.

Paul, R. 1990. *Critical thinking*. Rohnert Park, California: Sonoma State University.

Paul, R. 1993. *Critical thinking*. Santa Rosa, California: The Foundation for Critical Thinking.

Robinson, R.D. 1994. *Helping adults learn and change* (revised. ed). Wisconsin, USA: Omnibook Co.

Sellappah, S., Hussey, T., Blackmore, A.M. and McMurray, A. 1998. The use of questioning strategies by clinical teachers. *Journal of Advanced Nursing,* 18(1):142-148.

Stringfield, Y. 1995. Videos and film clips as a medium for enhancing critical thinking. *The ABNF Journal,* 6(6):158-161.

Walsh, K. 1997. Teaching tools: What if? What else? What then? A critical thinking game. *Nurse Educator*, 22(5):9-12.

Whiteside, C. 1997. A model for teaching critical thinking in the clinical setting. *Dimensions of Critical Care Nursing*, 16(3):152-162.