

FACILITATING CRITICAL THINKING WITHIN THE NURSING PROCESS FRAMEWORK: A LITERATURE REVIEW

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Keywords: critical thinking; nursing process; facilitation; clinical nursing education

ABSTRACT

This article intends to describe how critical thinking of learners can be facilitated or infused in clinical nursing education using the identified core cognitive critical thinking skills, their related sub-skills and the affective dispositions. The desire of the researcher to apply these critical thinking skills in clinical nursing education was in response to the recommendations made by experts in critical thinking who conducted the Delphi research project about the concept analysis of critical thinking (Facione, 1990:6, 13). The recommendations made urge educators to develop programmes and teaching and assessment instruments to facilitate or measure critical thinking using the identified core cognitive thinking skills. Nurses should be critical thinkers because they deal with the lives of patients. They are faced with challenges in their daily practice which require the ability to make rational and critical clinical decisions and also make astute clinical judgment that are logical to solve health related problems. Critical thinking is understood to be purposeful, self-regulatory judgments which result in interpretation, analysis, evaluation and inference, as well as explanation of the evidential, conceptual, methodological, criteriological or contextual considerations upon which that judgment is based (Facione, 1990:2). The core cognitive thinking skills are supported and driven by the identified affective dispositions such as inquisitiveness, analytical thinking, open- and fair-mindedness, flexibility, self-confidence, being systematic, truth-seeking and a mature attitude. An exploratory and descriptive approach was used to describe how critical thinking of learners can be facilitated in clinical nursing education. Since critical thinking can not be facilitated in a vacuum, the author used the theoretical framework of critical thinking identified by critical thinking experts in a Delphi study (Facione, 1990:6, 13) within the nursing process framework (Wilkinson, 1992:29) and other relevant literature to demonstrate how critical thinking can be facilitated were used. Content validity of the study is ensured based on the two theoretical frameworks. Recommendations to apply the identified critical thinking skills and the dispositions are made.

OPSOMMING

Hierdie artikel het ten doel om te beskryf hoe kritiese denke by leerders in kliniese verpleegonderwys gefasiliteer kan word deur die geïdentifiseerde kern-kognitiewe kritiese denkvaardighede, hul verwante sub-vaardighede asook affektiewe disposisies te gebruik. Die navorser het in reaksie op aanbevelings wat gemaak is deur kundiges op die gebied van kritiese denke wat die Delphi-navorsingsprojek oor die konsepanalise van kritiese denke geloods het (Facione, 1990:13) die behoefte ervaar om hierdie kritiese denkvaardighede in kliniese verpleegonderwys toe te pas. Die aanbevelings moedig opvoeders aan om programme en assesseringsinstrumente te ontwikkel wat kritiese denke kan meet deur van die geïdentifiseerde kern-kognitiewe denkvaardighede gebruik te maak. Verpleegkundiges behoort kritiese denkers te wees aangesien hulle met die lewens van pasiënte werk. In hul daaglikse praktyk staan hulle uitdagings in die gesig wat 'n bevoegdheid vereis om rasonale en kritiese kliniese besluite te neem asook om intelligente, kliniese oordele te maak wat logies is vir die oplossing van gesondheidsverwante probleme. Kritiese denke word verstaan as 'n doelgerigte, self-regulerende beoordeling wat kulmineer in interpretasie, analise, evaluering en inferensie, sowel as die verantwoording van die bewysgronde, konseptuele, metodologiese, kriteriologiese of kontekstuele oorwegings waarop die beoordeling geskoei is (Facione, 1990:2). Die kern-kognitiewe denkvaardighede word ondersteun en aangedryf deur die geïdentifiseerde affektiewe disposisies, soos weetgierigheid, analitiese

denke, openheid en regverdigheid van denke, buigbaarheid, selfvertroue, 'n sistematiese ingesteldheid, 'n soeke na die waarheid en 'n volwasse houding. 'n Verkennende, beskrywende benadering is gebruik om te beskryf hoe kritiese denke van leerders in kliniese verpleegonderwys gefasiliteer kan word. Aangesien kritiese denke nie in 'n lugleegte gefasiliteer kan word nie, het die navorser gebruik gemaak van die teoretiese raamwerk van kritiese denke soos deur die kundiges in die Delphi-studie geïdentifiseer (Facione, 1990:6, 13), asook ander relevante literatuur om te demonstreer hoe kritiese denke binne die verpleegprosesraamwerk gefasiliteer kan word (Wilkinson, 1992:29). Inhoudsgeldigheid van die studie is verseker deur en gebaseer op die twee teoretiese raamwerke. Aanbevelings om die geïdentifiseerde kritiese denkvaaardighede en disposisies toe te pas, word gemaak.

INTRODUCTION

The infusion of critical thinking skills in nursing education has been a worldwide quest of nurse educators to ensure quality improvement and quality assurance in practice. There is a great need for facilitation of critical thinking in the preparation and assessment of nurse learners to care for patients with complex culturally diverse health care needs and their families. To make rational clinical decisions about unique individual care requires nurses to stretch their thinking beyond the book knowledge. Learners have to reach out to meaningful understanding, to stretch into areas beyond comfortable concepts and be able to guide themselves by internal mental processes (Vygotsky in Mellish, Brink & Paton, 1998:32).

Nurses deal with the lives of people holistically and therefore critical analysis of health related issues becomes mandatory to improve practice. Nurses who do not demonstrate a critical spirit, will not demonstrate a probing inquisitiveness, a keenness of mind, a zealous dedication to reason, a hunger or eagerness for reliable information (Facione, 1998:9; Edwards, 2003:1142). Nursing cannot afford nurses who are using strategies such as guessing, acting on inferences made from incomplete information, who are not willing to consider other people's opinions, who are displaying disorganised thoughts, applying unreasonable criteria, using illogical reasoning for making rational, clinical judgments and who are not interested in facts, dialogue and arguments. Nurses who instead of engaging in the patients' health problems, jump to conclusions, make closure without absolute certainty or hold their own reasoning abilities in low esteem will not be helpful in practice. An unfair, close-minded nurse who is inflexible, insensitive and ready to give up in complex situations poses a hazard to patients.

The days of "just carry out the doctor's prescription without understanding the effects and side effects of the treatment" and conformity based on fear, are over. The nursing profession does not need nurses who will just carry out daily routines without question, rely on routine activities and protocols to meet the divergent health needs of patients and nurses who are counter-productive. Nurses subjecting themselves to be handmaidens of other health professions, especially when rational clinical decisions are to be made, should be history. The traditional methods of teaching and assessment that do not foster critical thinking of learners should be abandoned and approaches that encourage interactive dialogue, cooperation and collaboration among learners to stimulate their critical thinking should be used. The nursing profession needs critical thinkers to maintain the credibility of the profession through the provision of quality nursing care. The question that emerges is: which critical thinking skills do the nursing profession need to render excellent care to patients?

The nursing profession needs members of the team who are not in competition with each other but are collaborating closely for the purpose of solving health related problems. The profession needs nurses who are willing to collect comprehensive and reliable information from the patient and who will identify and analyse the intended and actual inferential relationships among statements, questions, concepts, descriptions or other forms of representation intended to express belief, judgment, experiences, reason, information or opinions. Nurses should examine ideas, detect, identify and analyse underlying assumptions and arguments. The nurse may paraphrase the information to give it meaningful interpretation. Nurses should decode and justify the significance of the problem, categorise the information meaningfully and summarise complex ideas. They should be encouraged to access their own knowl-

edge-base and experience to address a clinical problem and work out a solution to the problem. The nurse should offer various hypothesised physical, social or psychological meanings and significance, interspersed with queries to gain a better holistic understanding of the patient. Nurses should devise sensible alternatives to explore issues and should not become defensive if those alternatives do not work. Nurses should formulate categories and create frameworks within which to render quality patient care. They should be able to evaluate the significance of the evidence and explain exactly how a particular conclusion was reached or why certain criteria apply and not others. Nurses should be able to monitor and correct their actions if they were not successful. The nurse should demonstrate orderliness, diligence, patience, reasonableness, persistence, willingness, flexibility and precision when dealing with health care issues (Facione & Facione, 1996:134; Facione, 1998:9; King & Kitchener, 1997: 77).

Critical thinking cannot be facilitated or assessed in a vacuum for it is used to apply basic core knowledge and skills to each situation (Wilkinson, 1992:21). It requires a sound domain-specific knowledge base, integrated with interdisciplinary knowledge for processing and analysing information, weighing alternatives and deciding on actions to take in diverse clinical situations (Alfaro-LeFevre, 1999:10). Clinical nursing education is the context in this article where critical thinking skills of nurse learners are to be infused within the broad nursing process framework. Clinical nursing education is a dynamic, constantly changing, real-life environment in which theoretical knowledge is integrated with practice. The facilitator is responsible for creating an environment that is conducive to the development of critical thinking, while learners take the responsibility for constructing their own knowledge and skills through active interaction to promote critical thinking skills (Chabeli, 2001:348). Clinical nursing education forms an integral part of nursing education where the learner is able to marry the theoretical component with practice using the nursing process approach.

The nursing process approach requires the nurse to systematically collect data from the patient or family during the assessment phase, making a nursing diagnosis, formulating the desired plans to solve them, initiating the plan or assigning others to implement it, and evaluating the extent to which the plan was effective

in resolving the identified problems. At every phase of the nursing process, the nurse works closely with the patient to individualise care and build a relationship of mutual trust and respect (Kozier, Erb, Berman & Snyder, 2004:243).

The teaching and learning activities for critical thinking, if carefully planned, will form an integral part of the teaching and learning experience for learners rather than be taken as something that distracts learners from the business of learning. The type and quality of instruction or assessment can influence whether learners will adopt a merely reproductive style or rather deep-holistic strategies of understanding (Quinn, 2000:200).

Unfortunately, educators are not usually prepared by their training for such dynamic flux, unpredictability and complexity. Paul (1993:97) is of the opinion that educators are in *the firing line* when instructing or assessing critical thinking of learners in practice. Educators should be willing to bring rigour to their own disciplined critical thinking in order to help learners to attain this ideal. Educators must be willing to role model their critical thinking abilities so that learners can internalise these skills and become confident in their instruction and assessment activities. These are, according to Paul (1993:97), profound challenges to the profession since critical thinking is at the heart of well-conceived educational reform and restructuring because it is at the heart of the educational changes of the 21st century. It is hoped that the core cognitive critical thinking attributes will assist nurse educators to facilitate critical thinking of nurse learners during instruction or assessment.

THE PROBLEM OR POINT AT ISSUE

Much is being said about how critical thinking should be facilitated, but exactly how critical thinking should be facilitated or assessed to identify the empirical indicators to demonstrate that critical thinking has taken place, are under-researched in clinical nursing education (Kamin, O'Sullivan, Younger & Deterding, 2001:27-35; Beckie, Lowry & Barnett, 2001:18-26; Carolee & Marilyn, 2003:1-9; Miller, 1992:1401-1407; Angela, Duffey & Belyea, 2000:219-228).

The results of these studies do not indicate the evidential reasoning of the critical thinking process and the outcomes that are to be assessed, that is, the pres-

ence of critical thinking (Carolee & Marilyn, 2003:3). Bowden (1988:24-25) notes that typical instruction and assessment methods normally enhance passive, re-productive forms of learning, whilst at the same time hide the inadequate understanding caused by such forms of learning and assessment. Therefore, though learners may successfully negotiate the assessment system by being successful in their examinations, they end their educational experiences as uncritical thinkers with little or no understanding of what they have learnt. They are unable to use the acquired information to manage their affairs, improve practice and deal with the real world. Thus educators' theoretical intentions are not mirrored in the learners' practice.

Critical thinking is one of the core cognitive competencies required for learners to become metalearners with the aim of being self-directed lifelong learners. Metalearning refers to the ability of the learners to plan, execute, monitor and evaluate their own learning and develop an awareness of their mental or cognitive abilities (Slabbert, 1991:88). The nursing process is regarded as a vehicle to facilitate critical thinking. The development of the learner's critical thinking skills is mandatory since nursing is a challenging, complex and culturally diverse hands-on profession that requires astute power of clinical judgment, decision-making and problem-solving skills in nursing practice.

In spite of the benefits of the nursing process in facilitating critical thinking, nurse educators seem unable to implement and manage the approach. The nursing process and its administrative implementation are heavily criticised as time-consuming for nurses. It is argued that the role of nurses is to provide care and not to be heavily engaged with the lengthy administrative records involved with the nursing process (Field, *in* Varcoe 1996:123). Varcoe's argument is that there is confusion between the theoretical critique of the nursing process and the critique of the administrative implementation such as documentation. Critical thinking cannot be facilitated when the nursing process is used in a robotic and dogmatic way, where nurses are mechanically efficient as evidenced by focusing on routine, mass production, assembly-line, task-orientated methods to provide efficient patient care (Karola, 1995:36). It is for this reason that this paper seeks to describe the core cognitive critical thinking skills and the judicious use of these skills within the framework

of the nursing process for the benefit of the patient. The emerging research question to guide this paper is: how can critical thinking of nurse learners be facilitated using the nursing process framework?

Purpose and objectives

The purpose of the paper is to describe how critical thinking of nurse learners can be facilitated using the framework of the nursing process. This purpose is realised by the description of the critical thinking core cognitive thinking skills, their related sub-skills and the affective disposition within the phases of the nursing process. Recommendations will be made.

The assumptions of the researcher

The researcher believes that nursing is concerned with a unique and culturally diverse whole person, well or ill. It is the very nature of the profession that demands nurses who are critical thinkers to save lives and to promote good health.

LITERATURE REVIEW

Varied perspectives on critical thinking exist in different contexts. Critical thinking is a complex behaviour which is much needed in practice of any discipline and for personal survival, yet to date there is no single, simple definition for it (Wilkinson, 1992:24). Brief conceptual definitions of critical thinking will be provided.

Conceptual definitions of critical thinking

The concept 'critical thinking' is derived from its roots in ancient Greek. According to Paul, Elder and Bartell (1995:1), the word 'critical' derives etymologically from two Greek roots: 'kriticos', meaning discerning judgment, and 'kriterion', meaning standards. Etymologically, the word implies the development of discerning judgment based on standards.

The definition of critical thinking has been a concern to most authors. Its clarification has been under scrutiny for many years. Oermann (1998:322), a renowned nurse author in critical thinking, stated that clinical nursing education occurs in a dynamic, complex and challenging situation where nurses are expected to use critical thinking as a fundamental principle to guide their ratio-

nal decision-making process and clinical judgment logically in a systematic manner. Nurse authors adopted a definition of critical thinking, adapted from the American Philosophical Association's Delphi study conducted in 1990, describing critical thinking as the process of purposeful, self-regulatory judgment that includes the cognitive skills of interpretation, analysis, evaluation, inference, explanation, self-regulation and the related dispositions (Oermann, 1998:322; Edwards, 2003:1144; Spelic, Parsons, Hercinger, Beckie *et al.* 2001:18; Facione & Facione, 1996:130). This definition characterises the daily functioning of a professional nurse responsible and accountable for own actions, omissions and commissions.

The American Philosophical Association's definition of critical thinking links with almost all the definitions of critical thinking as defined by other authors indicated below. The underlying common characteristic of the definition of critical thinking is the use of core cognitive thinking skills and justification based on evidence. These cognitive thinking skills are guided by the affective critical thinking dispositions such as willingness, inquisitiveness, open-mindedness, being systematic, flexible, truth seeking and developing cognitive maturity demonstrated by perseverance, tolerance, honesty and fair-mindedness for the purpose of making rational decisions and solving problems in practice or in real life situations. If one has to break down a cognitive thinking skill like analysis, one will realise that many thinking techniques are involved during the process of analysis such as, first having to identify concepts, assumptions, claims, thoughts and feelings, then examine, categorise each cluster of information and re-examine for better understanding or clarity. It is therefore important that further clarification of the core cognitive thinking skills be made later in this paper.

According to Bandman and Bandman (1988:5, 6) critical thinking is the rational examination of ideas, inferences, assumptions, principles, arguments, conclusions, issues, statements, beliefs and actions. This examination covers scientific reasoning (inductive and deductive), including the nursing process where decision-making and problem solving of controversial issues are addressed. To elaborate on this definition, Bandman and Bandman note that critical thinking is reasoning in which nurses analyse the use of language, formulate problems, clarify and explicate assumptions, weigh

evidence, evaluate conclusions, discriminate between good and bad arguments, check inferences for plausibility and seek to justify those claims, beliefs, decisions, facts and values that result in credible beliefs and actions. The researcher agrees with the authors since nurses seek reasons for their thoughts, actions and feelings. Nurses develop criteria and principles that effectively justify their value judgments by asking relevant and challenging questions, questioning assumptions, assessing, investigating, inquiring and solving complex health care problems of culturally diverse patients.

Critical thinking is also defined as a goal-oriented, purposeful mental activity involving a number of intellectual skills such as analysing, making inferences, clarifying ideas and evaluating the credibility of sources to make accurate clinical nursing judgments. It is both an attitude and a reasoning process (Wilkinson, 1992:9).

According to Wilkinson (1992:25), the following characteristics will help to determine when critical thinking is taking place: when critical thinking is rational and reasonable, and where the thinking is based on reasons using facts and observations to draw conclusions rather than prejudice, preferences, self-interest or fears. Critical thinking is reflective in that one does not jump to conclusions or make hurried decisions but takes the time to collect evidential information, think the matter through in a disciplined manner, weigh facts, make conclusions and consider alternatives. Critical thinking includes creative thinking where original ideas are created by establishing relationships among thoughts and concepts. It involves the ability to break up and transfer a concept or idea to new settings or uses. Critical thinking involves conceptualisation, which is the intellectual process of forming concepts. Critical thinking is an attitude of inquiry. A critical thinker examines existing claims and statements to see if they are true or valid rather than blindly accepting them; critical thinkers are sceptical in a constructive manner.

Critical thinkers will neither accept nor reject a belief they do not understand. They will analyse and examine beliefs, accepting them for rational reasons or rejecting those they have been holding for the wrong reasons. They are not easily manipulated. Critical thinking is fair thinking. The critical thinking learner attempts to remove bias and one-sidedness from their own think-

ing and to recognise it in others. This requires learners to examine the reasons for their choices and decisions, to evaluate arguments and conclusions, create new ideas or alternatives for action, decide upon a course of action, produce reliable observations, draw sound conclusions and solve problems. It also requires an awareness of the learner's own values and feelings and a willingness to examine the basis for them. Critical thinkers will explore the thinking that underlies their emotions and feelings, suspend judgments when they lack sufficient evidence, develop criteria for evaluation and apply them fairly and accurately, and evaluate the credibility of sources used to justify beliefs. Critical thinkers make interdisciplinary connections and use insights from one subject to illuminate and correct other subjects, distinguish facts from ideals, examine assumptions that underlie thoughts and behaviour, distinguish the relevant from the irrelevant and the important from the trivial, make plausible inferences, distinguish conclusions from the reasoning that supports them, seek out evidence and give evidence when questioned (Bandman & Bandman, 1988:6; King & Kitchener, 1997:77).

The idea behind critical thinking is to find new ways of thinking and doing things so as to allow creativity and growth, personally as well as in practice. Developing critical thinking is not an easy task. It requires one to realise that these skills are important in a particular context and deciding to commit and motivate oneself to their development (Rossouw, 2003:10).

Nurses deal with the lives of the patients on a daily basis where crucial clinical judgments have to be made and therefore committing themselves in the development of critical thinking is mandatory. Through deductive analysis, the author defines critical thinking as a purposeful, systematic, goal-orientated mental activity that involves the core cognitive thinking skills supported by the affective critical thinking dispositions. Critical thinking is also described by the author as a reflective, creative and a constructive reasoning process that use evidential information to guide accurate, informed and rational clinical decisions and solve problems in practice.

Nurses are expected to be purposeful in their actions and consciously use intellectual standards of thought processes such as precision, relevance, accuracy,

persistence, depth and breadth (Paul, 1993:54). Nurses have to be precise and accurate in procedures. The relevance, appropriateness, depth and breadth of both the subjective and objective data gathered play an integral part in order to render comprehensive nursing care to diverse patients. These nursing thoughts and actions require the use of critical thinking.

The author is of the opinion that nurses who are critical thinkers will constantly ask questions during a comprehensive assessment of the patient, such as how accurate and relevant is the information collected, and to what extent is the information related to the previous history of the same problem. In some situations, nurses have to paraphrase what the patient has said to determine the accuracy and relevancy of the information. Such critical questions will generate in-depth information to enable the nurse to justify own decisions and actions.

In this age of information explosion, and a complex, challenging and culturally diverse health care delivery system where the rights of the patients takes priority, nurse learners are expected to be inquisitive, well-informed, trustful of reason, open and fair-minded. Nurses are expected to be flexible, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in dealing with complex matters, diligent in seeking relevant information, reasonable in the selection of evaluative criteria, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Nursing combines critical thinking skills with those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society (Facione, 1990:2, 13). This ideal is supported by Rossouw (2003:10) who asserts that for an effective democratic society or for success in almost any career in many other fields, critical thinking skills are important.

For decades, nursing and nurses have been working toward the ideal of providing the best practice to individual patients using the nursing process as a scientific process, but to date, nurses have failed to develop critical thinking skills through the use of the nursing process (Botes, 2000:28). The researcher will make use of the identified core cognitive thinking skills and the related affective critical thinking dispositions to guide

the teaching and learning of nurse learners in clinical nursing education, however, nurse educators should realise that a relaxed learning atmosphere with humour will facilitate critical thinking and help offset the fear especially during the assessment and evaluation situation.

CRITICAL THINKING AND THE NURSING PROCESS IN CLINICAL NURSING EDUCATION

Since critical thinking cannot be facilitated or assessed in isolation, the contextual consideration within which critical thinking is to be facilitated or assessed in this study becomes the hallmark of the activity (Facione, 1990:2; Wilkinson, 1992:21; Rolfe, Freshwaters & Jasper, 2001:72, 73; Rossouw, 2003:10; Simpson & Courtney, 2002:91). Because of the nature of work in the nursing profession, nurses must be educated and assessed to promote critical thinking. A truly educated nurse is able to use critical thinking to *do* something creatively with the information acquired. Through critical thinking, one is able to form rational clinical judgment about what to believe or what actions to take in a particular situation in practice (Ennis, 1985:45).

The nursing process, used effectively for the intended purpose, is a powerful scientific vehicle to facilitate critical thinking. The nursing process is a special way of thinking and acting that nurses use. It is also what nurses do when giving patient care. It is a systematic, problem-solving approach used to identify, prevent and treat actual or potential health problems and promote wellness. The nursing process provides the framework in which nurses use their knowledge, skills, attitudes and values to express human caring. The nursing process is a cognitive process that involves the use of critical and creative thinking skills in problem-solving and decision-making activities. Nurses use critical thinking to apply their nursing knowledge systematically and logically to collect patient data. Critical thinking enables the nurse to determine the meaning of the data and to plan appropriate nursing care (Wilkinson, 1992:1, 2).

Varcoe (1996:865) is of the opinion that the nursing process is a systematic way of thinking, while Field (*in* Varcoe 1996:123) argues that the nursing process is an analytical thinking process used to guide system-

atic and rational decision-making in nursing practice. However, the nursing process and its administrative implementation have been criticised as time-consuming for nurses. The role of the nurse is to provide care and not to be heavily engaged with the lengthy administrative records involved with the nursing process documentation. Varcoe's argument is that there is confusion between the theoretical critique of the nursing process and the critique of the administrative implementation such as documentation. The widespread influence of the nursing process on the nature of nursing practice has been debated for the past decade, yet the centrality of the concept has grown in the past thirty years within the educational, professional and economic arena of nursing (Hiraki, 1997:866).

Critical thinking cannot be facilitated when the nursing process is used in a robotic and dogmatic way, where nurses are mechanically efficient (Karola, 1995:36). While lack of clarity regarding the definition of the nursing process poses a problem in its use, and multiple interpretations of it exist, it is argued that, with critical and judicious use, the current benefits of the nursing process could be preserved in the service of clinical nursing education to improve practice (Varcoe, 1996:124). Nurse educators have the responsibility to facilitate clinical nursing education within a broad framework of nursing process to stimulate critical thinking of learners.

Nursing is concerned with the whole person, well or ill. What makes the clinical nursing education and assessment process complex and difficult for nurse learners is that human beings are unique and their clinical presentations are unique and diverse. These presentations may not reflect what Oermann (1998:322) refers to as "textbook characteristics" which were taught in the classroom. This situation leaves the nurse unsure as to what nursing intervention to use in a real-life, authentic situation where unstructured problems should be addressed. Oermann (1998:324, 327) suggests that one way to curb this problem is to apply cognitive critical thinking skills within the broad framework of the nursing process. The educator can ask thought-provoking questions that are unique to the patient's problems. The relationship between the core cognitive thinking skills, their related sub-skills and the nursing process will be described (Wilkinson, 1992:29; Facione & Facione, 1996:133 Facione, 1990:6, 13).

Description of the core cognitive critical thinking skills and their related sub-skills within the nursing process framework

The core cognitive thinking skills and their related sub-skills were identified by experts in critical thinking in

the Delphi study on the status of critical thinking directed by doctor PA Facione from 1987 to 1990. The results also included the formulation of the consensus conceptual definition of critical thinking and the characteristics of a critical thinker as already described in this text (Facione, 1990:2). The nursing process's theo-

Table 1: Core cognitive thinking skills, their related sub-skills, affective dispositions and the nursing process (Facione, 1990:6, 13; Proferto-McGrath, 2003:571; Wilkinson, 1992:29)

NURSING PROCESS (Wilkinson, 1992:29)	CORE COGNITIVE CRITICAL THINKING SKILLS AND SUB-SKILLS (Facione, 1990:6)	AFFECTIVE DISPOSITIONS OF CRITICAL THINKING (Facione, 1990:13; Proferto-McGrath, 2003:571)
Assessment	Analysis Examining ideas, identifying arguments, analysing arguments Interpretation Categorisation, decoding significance, clarifying meaning	Analycity Inquisitiveness
Diagnosing	Inference making; Synthesis; Hypothesise Querying evidence, conjecturing alternatives, drawing conclusions	Open-mindedness
Planning	Inference making; Generalising; hypothesising	Systematicity
Implementation	Explanation – applying the plan and testing the hypothesis Stating results, justifying procedures, presenting arguments	Self-confidence Truth-seeking
Evaluation	Evaluation Assessing claims and arguments Self-regulation (assessing; making criterion-based evaluations Self-examination and self-correction	Cognitive maturity

retical framework and its phases through which critical thinking of learners should be facilitated in clinical nursing education is in accordance with Wilkinson (1992:29) indicated in Table 1 below. The core cognitive critical thinking skills are bolded in the table.

A description of the core critical thinking skills, their related sub-skills and the affective dispositions will be made within the framework of the nursing process for the purpose of formulating attributes that will assist nurse educators to facilitate the critical thinking of nurse learners in clinical nursing education. The generic nature of the attributes could be used widely within a given clinical nursing context, since critical thinking is a necessary outcome of all educational programs (Staib, 2003:489; South African Qualifications Authority Act, Act no 58 of 1996; South African Nursing Council 1999: Document A; Van der Horst & McDonald, 1997:6, 217).

The skills reflected in Table 1 do not necessarily suggest a linear form of reasoning. The skills are employed

interactively and interchangeably in the reflective-reasoning process of making judgments about what to believe or do. Simpson and Courtney (2002:93) purport that, in thinking critically, a person not only tries to determine judiciously what to do or what to believe, but is also able to apply the core critical thinking skills to the problem at hand. In other words, one may analyse one's own inferences, explain one's own interpretation or evaluate one's own analysis. In practice, nurses confronted with a patient with a severed femoral artery find themselves having to implement their knowledge and skills immediately using all the cognitive and affective dispositions simultaneously to save the life of the patient. An experienced critical thinking nurse will intuitively use all the steps of the nursing process simultaneously to provide specific emergency care to the patient in any clinical situation.

Even though the steps of the nursing process are discussed separately for ease in understanding them, they are actually inter-related and overlapping as indicated

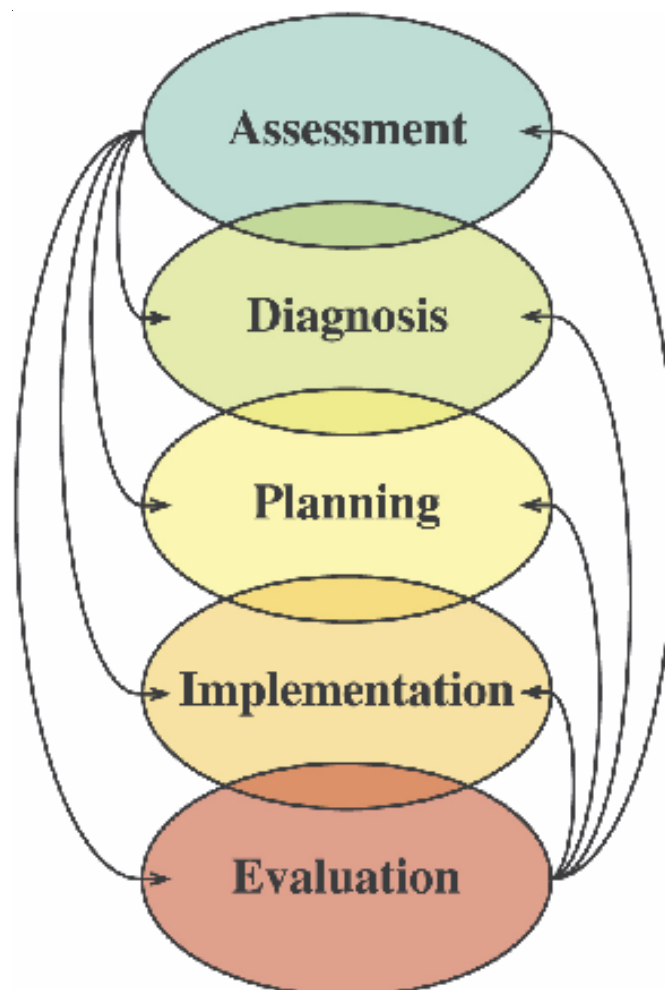


Figure 1: Interdependent nature of the phases of the nursing process (Wilkinson, 1992:1)

in Figure 1. Assessment and evaluation occur throughout all the phases as indicated by arrows and the overlapping of the circles when more justification based on evidence is called for and to determine when the process of providing adequate nursing care is achieved.

Complete, accurate data provide the foundation for the other steps – for example, the usefulness and validity of the nursing diagnosis depend greatly upon the quality of the data collected in the assessment phase (Wilkinson, 1992:41). The nurse has to be flexible in considering the first line of intervention in order of priority, while considering other alternatives and opinions in resolving the problem. The nurse has to consider orderliness and being systematic as well as persistence and precision in working with a complex situation to avoid further complications (Facione, 1998:8).

The assessment phase

Assessment is the first crucial step of the nursing process. It is the phase where the nurse systematically gathers comprehensive, relevant, valid, reliable and complete patient information from the patient and other credible sources in order to identify health problems, make a diagnosis, and then plan, implement and evaluate the nursing care given. The use of critical thinking during the assessment phase is demonstrated in Figure 2. The nurse uses critical thinking to identify the chief complaint and other health problems, collect information, analyse ideas and arguments, examine and interpret data, categorise and decode the significant data from the insignificant data and clarify the meaning for better understanding. The nurse has to verify the data with credible sources where there is doubt. Throughout the assessment phase cognitive thinking skills are supported by the affective critical thinking dispositions as indicated in the figure. The nurse has to be inquisitive and analytic and ask probing questions to collect a comprehensive health history from the patient. The nurse has to be open-minded, systematic when collecting data, seek for the truth, and demonstrate self-confidence and *cognitive maturity* to the patient and relatives so as to build a good rapport and develop a respecting and a trusting relationship with the patient.

The core cognitive critical thinking skills and the sub-skills required during the assessment phase as identi-

fied in Table 1 are:

Analysis (examining ideas, identifying and analysing arguments)

The first part of the assessment is to identify the main or chief health problem from the patient or knowledgeable others. The nurse finds out what actually motivated the patient to seek health care. The chief complaint should be recorded in the patient's own words whenever possible. It should describe the problem and its duration. The chief complaint gives direction to the interview that follows. Thereafter the nurse should collect the demographic data, which consists of identifying data such as the patient's name, date, age, marital status, number of children, religion, occupation and economic status. The nurse then systematically collects comprehensive, accurate, relevant, valid and reliable subjective and objective information from the patient through observation and an interview. The subjective data consist of the present and past health history, and the family health history. The objective data are collected by observation, physical examination and examining and interpreting other measurements such as diagnostic results. Review of the body systems is made by making use of inspection, auscultation, percussion and palpation. Throughout the data collection the nurse considers the patient's input (Lewis & Collier, 1992:30, 31).

The cognitive skills of identification and analysis play an important role in this phase. Analysing entails taking apart, disassembling and deconstructing in order to perceive or establish a pattern or relationship/s (Beyer, 1988:319). It is the process of breaking up a whole into its parts to examine these in detail so as to determine the nature of a phenomenon (Paul, 1993:458). During the assessment phase the nurse learner is expected to explore, examine and analyse the information in detail in order to be able to identify the main ideas, thoughts, key concepts, clues or patterns and thereby have an understanding of the patient's health problem. The nurse inquisitively asks logical questions to look for hidden, unstated and challenging assumptions that are taken for granted. The nurse demonstrates critical thinking competencies of analysis by identifying and analysing arguments, by identifying the purpose of data collection, by scanning the data to identify clues or patterns of significance, by examining the data or ideas to find "something germane that is, worth-

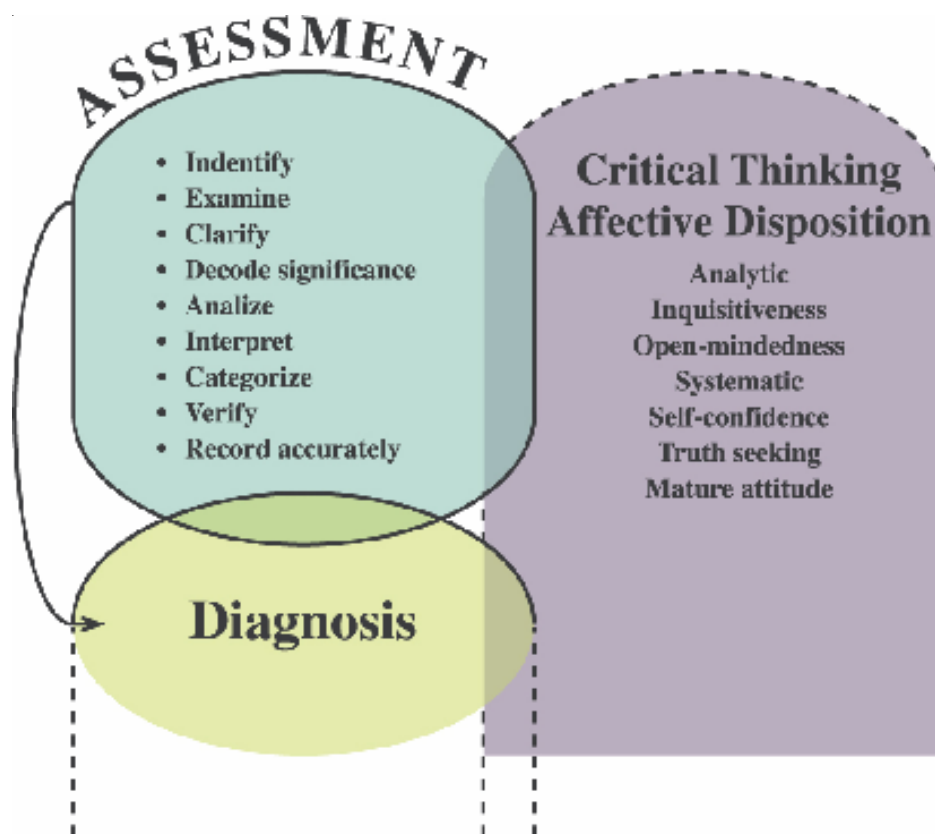


Figure 2: Critical thinking during the assessment phase

while” to the purpose of assessment, by re-examining the data to find additional supporting evidence or evidence contradicting the original inference, and by comparing and contrasting ideas and statements made by the patient to confirm the evidence found in order to establish patterns, conceptual links or other interconnections (Beyer, 1988:319).

Determining the significance or insignificance of data, interpreting meaning and detecting possible inferential relationships reflect the competencies of critical thinking skills (Proferto-McGrath, 2003:571). Critical thinking abilities are demonstrated when the learner is able to determine and analyse relevant and irrelevant information. To determine reliable and unreliable information or sources and seeing similarities and differences in the data collected characterise critical thinking abilities. Critical thinking is also demonstrated when learners are able to summarise information, are able to see the structure of an argument and identify conclusions. The ability to identify critical areas, predict consequences, observe cues and behavioural patterns that add value to the collected data as well as being able to assess and evaluate sources and make decisions

based on the available information demonstrate critical thinking (Beyer, 1988:185). Analysis is a process of weighing evidence and deciding if generalisations or connections based on the given data are warranted. It is imperative for nurse learners to verify data collected when there are discrepancies in the information source with the patient, significant others or any other relevant credible source.

Interpretation (categorisation, decoding significance, clarifying meaning)

Interpretation of data will be made when the information has been identified and critically analysed. According to Paul (1993:473), to interpret is to give one’s own conception of, to place in the context of one’s own experience, perspective, point of view, or philosophy. It is important in nursing that interpretation should be distinguished from the facts, the evidence and the situation. For example, a nurse may interpret the patient’s silence as an expression of hostility. Such interpretation may or may not be correct. More facts, evidence and justification are needed. The best interpretations take the most evidence into account.

During the assessment phase, it is not enough for the nurse to state that the patient appears to be in pain. More evidence is needed to confirm the claim such as the patient adopting a curling position, facial grimace or the patient verbalising the pain. When facilitating critical thinking one should consider alternative interpretations and reconsider these interpretations in the light of new evidence. Learning involves personal interpretation, since whatever a person learns must be integrated into one's own thinking and action (Paul, 1993:473). What a person learns must be meaningful to other people. Interpretation involves examining the phenomenon and forming conclusions, considering the implications, exploring the significance of the conclusions, generalising the findings and suggesting further studies (Burns & Grove, 2001:771). Interpretation includes weighing evidence and deciding if generalisations or conclusions based on the given data are warranted (Watson & Glaser, 1980:2). Making interdisciplinary connections by using other related subjects like anatomy, physiology, micro-biology, pharmacology, psychology, sociology, chemistry and physics will enhance the process of interpretation of data. Interpretation involves categorisation, decoding significance and clarifying meaning (Facione, 1990:6, 7).

Categorisation of the collected data involves the learner's ability to describe situations, events and experiences so that they take on comprehensible meanings in terms of appropriate categorisation, distinctions or frameworks, for example, to categorise according to the existing frameworks such as Maslow's hierarchy of needs (Quinn, 2000:19), Orem's self-care model or Roy's adaptation model (George, 1985:124-136, 300-318). Decoding significance means to detect, to attend to, and describe the information content for better understanding. Clarifying meaning ensures that the argument is expressed as clearly as possible so that it is easy to tell whether the premises are true, whether the logic is good and whether the argument is relevant to the assessment of the patients' health problems. The premises of a logical argument must strongly support the conclusion – that is, one must believe in the conclusion.

Clarifying requires one to outline the argument in standard format and paraphrase the argument for greater clarity (Brookfield, 1987:68). During the assessment phase of the nursing process the nurse learner should

demonstrate the ability to clarify and give meaning to the data collected. If there is doubt the nurse can paraphrase the sentence (Simpson & Courtney, 2002:92). Paraphrasing or restating the patient's ideas and subjective information in the nurse's own words or clarifying the symptoms based on the information collected indicates the occurrence of critical thinking. The assessment information must be recorded accurately in appropriate documents.

Diagnosis phase

Nursing diagnosing is the second phase of the nursing process which usually entails making a statement of a health problem as perceived by the nurse (Wilkinson, 1992:76, 78). Diagnosis is an intellectual activity where nurses use the diagnostic reasoning process to draw conclusions about the patient's health status and decide whether nursing intervention is needed. Diagnosis provides the basis for giving individual care. The format of stating a nursing diagnosis is highlighted; the nursing diagnosis is presented first and includes the problem and etiological statement – for example, pain related to surgical incision. Next, the defining characteristics that cue the nurse to this specific diagnosis are listed – for example, complaints of pain, curled body posturing, groaning sounds indicating pain, unwillingness to move in bed or to ambulate. Nursing diagnoses must be listed in order of their priority. Figure 3 demonstrates the use of critical thinking skills during the diagnosis phase.

During the diagnosis phase, nurses use critical thinking skills such as inference-making, where synthesising and hypothesis-making play an integral part. The nurse learner is expected to query evidence as it comes, conjecture alternatives and draw conclusions (Facione, 1990:9).

Inference-making (querying evidence, conjecturing alternatives, drawing conclusions, synthesising and hypothesising)

Inference is defined as the movement of thoughts that proceeds from something given, a cue or data, to a conclusion as to what that data mean or signify (Bandman & Bandman, 1988:120). For example, a twenty-five-year-old patient in an intensive care unit, certified as being brain dead by a senior neurosurgeon, has a cardiac arrest. Nurse X infers that as the patient

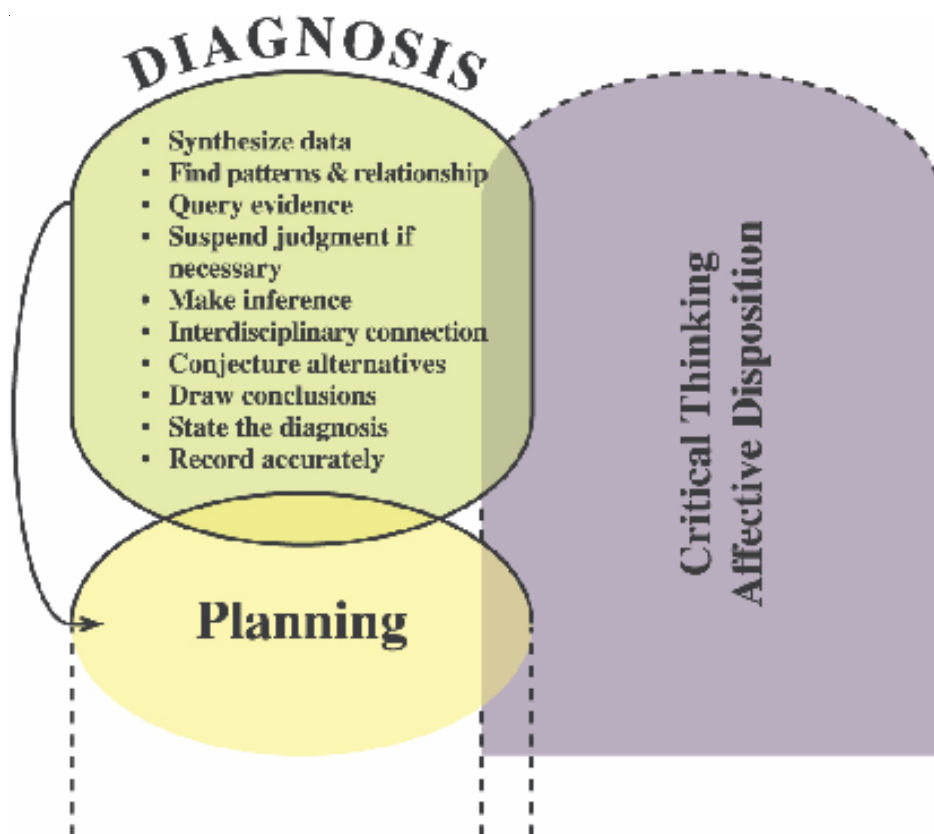


Figure 3: Critical thinking and the diagnosis phase

cannot recover, given that the patient is brain dead, resuscitation is futile and therefore Nurse X does not call for help. Nurse Y is committed to the oath that human life is so precious as to warrant all available efforts by a nurse to save it. She infers that the young patient's life can be saved by resuscitation and continuous administration of oxygen to the brain cells. Therefore, Nurse Y calls for cardio-pulmonary resuscitation. Bandman and Bandman (1988:113) further state that making an inference is like leaping from the known to the unknown, a hunch, a preliminary hypothesis, or an inference that is either confirmed or disconfirmed by further data until a diagnosis is reached.

Beyer (1988:112) believes that to infer is to draw conclusions, make predictions, pose hypotheses, test and explain hypotheses. Paul (1993:115), on the other hand, is of the opinion that inference is reasoning that proceeds by steps. To make an inference, according to Paul, is to think as follows: because this is so, that also is so or probably so. From the researcher's perspective, another example of inference maybe: "I am not sure I should have this surgery. It might not even help, and it is so dangerous. I am scared". This might

be inferred as: the patient is frightened of surgery. Any defect in the inference one makes while one reasons is a possible problem in one's reasoning. Information and situations do not determine what one will deduce from them; one creates inferences through the concepts and assumptions which one brings to situations. Inferences bring together all the various elements needed to query evidence collected, to draw reasonable conclusions and to form conjectures and hypotheses (Proferto-McGrath, 2003:571; Facione, 1990:6).

Querying evidence in practice can be seen when the nurse is not content with the evidence given. The nurse recognises the information that requires support and formulates strategies to seek and gather information which might supply that support. The nurse critically examines the depth and breadth of all the collected data, states the actual and potential health problems and prioritises them. Conjecturing alternatives requires nurses to develop a set of options or alternatives for resolving a given problem. They need to synthesise and classify data into meaningful patterns and find patterns and relationships to assist in deriving accurate diagnosis. The nurse will draw out prepositions and project

the range of possible consequences of decisions. Drawing conclusions entails bringing together all the various elements needed to state a reasonable diagnosis (Proferto-McGrath, 2003:571).

However, the nurse may suspend judgment where there is lack of sufficient evidence because evidence is required to convince one of an argument. The nurse must demonstrate the affective critical thinking dispositions such as willingness, openness and fair-mindedness to accept new evidence from credible information sources. The nurse must also show tolerance, flexibility and genuine understanding of the patient's opinion or point of view. Diagnostic inference calls for more knowledge, experience and insight to classify data into various themes and patterns that will assist in the planning phase (Facione, 1990:6). Interdisciplinary connection plays an integral part during the diagnostic phase to determine whether the diagnosis is physiological, social or psychological. Accurate recording of the diagnosis in a manner that facilitates the determination of the expected outcomes using the appropriate format of writing nursing diagnosis is important.

Planning

Use of inferences, generalising, hypothesising

Both nursing diagnosis and planning make use of the inference cognitive thinking skill. In this phase the nurse takes professional responsibility to work with the patient, significant others or use other credible sources to develop individualised plans to prevent, eliminate or reduce the health problems through goals and nursing orders (Wilkinson, 1992:163). The nurse determines problems that need individually developed plans and those that can be addressed by routine interventions contained in standards of care, model care plans, protocols and other forms of preplanned, routine care. This requires critical thinking skills and creativity, as does every phase of the nursing process as indicated in Figure 4.

Effective planning, like all other phases of the nursing process, depends on the accuracy of other previous steps and the ability to make interdisciplinary connections and use the insights from the behavioural and

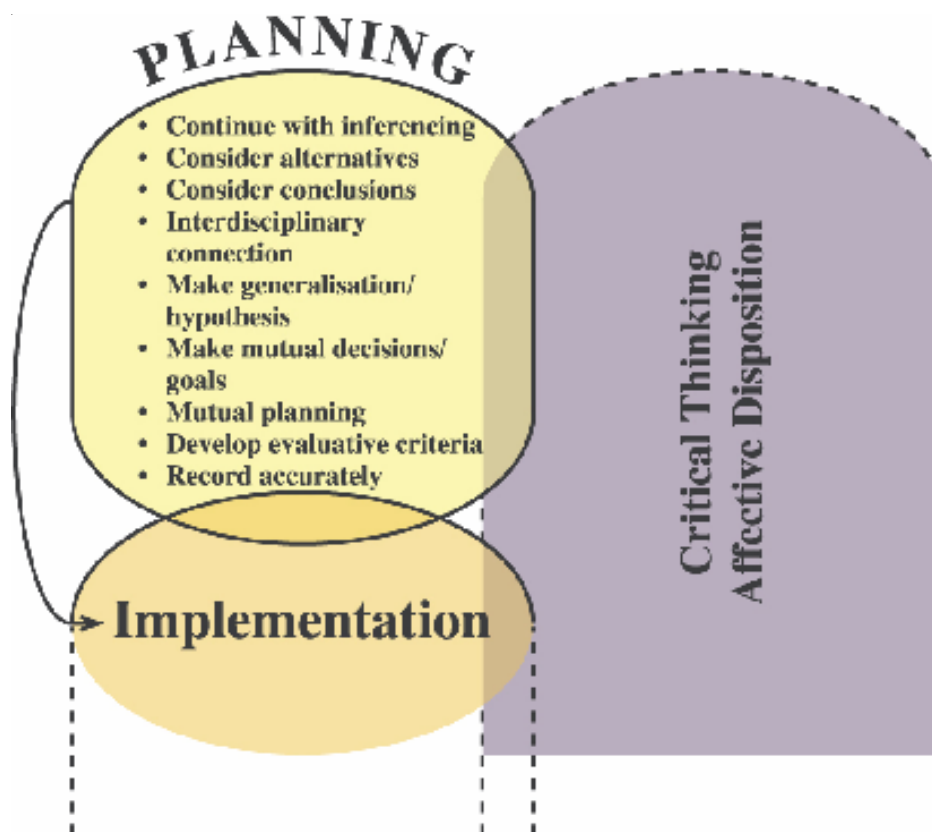


Figure 4: Critical thinking during the planning phase

physical sciences. Sound knowledge, good judgment and decision-making abilities are required to effectively plan and choose the methods the nurse will use to intervene. In addition, the nurse must use ingenuity, creativity and past experience, and must also consider the patient's cultural health care needs and practices when tailoring a plan to meet the desired health goals, for example, adopting a squatting position during childbirth is a characteristic of some black cultures. The plan should be tailored to take note of particular nursing orders such as how, when, how long, how often, by whom and with what to provide direction in the care of the patient (Lewis & Collier, 1992:25).

The assessment data have to be comprehensive, complete, accurate, valid and reliable. The data have to be verified with reliable and credible sources. The diagnostic statements should be correct for the goals and nursing orders to flow logically for an individual, unique plan for the identified health problems. The goals and nursing orders serve to guide the nurse's actions during the implementation phase and also serve later as criteria for evaluating patient progress. Planning is ongoing depending on the new information as the nurse gets to know the patient better and as the patient responds to the care given. During planning, the nurse uses more inferences, generalisation and hypothesising cognitive thinking skills to make rational mutual clinical decisions with the patient. The nurse and the patient derive goals from the diagnostic statements and identify nursing measures to achieve those goals. When generating nursing interventions, nurses use the cognitive skills of generalising, explaining and predicting. Generating nursing interventions is similar to generating hypotheses in the scientific method in that the nurse predicts the interventions most likely to achieve the patient's health goals (Wilkinson, 1992:29-32).

It is important to note that planning of interventions should be mutual, research-based, realistic, simple and attainable, and must have measurable expected outcomes and time frames open to modifications based on new evidence (Wilkinson, 1992:166). The nurse should always create new ideas or alternative courses of action regarding events or develop a variety of different courses of action to achieve the set goals if needed. The development of the evaluation criteria that should be applied fairly and accurately to evaluate the effectiveness of the plan is necessary. The nurse should

plan for the consultation of other health professionals for the intervention not directly related to nursing. The plan should be within the legal and professional boundaries such as: the Constitution, Batho-Pele principles, Scope of practice, patient's charter, regulations, protocols and policies. The affective critical thinking dispositions are taken into consideration during the planning phase such as flexibility, willingness, being analytical and inquisitiveness. The plan, interventions and expected outcomes should be recorded accurately in the appropriate documents.

Implementation

Implementation is the fourth phase of the nursing process in which the nurse applies the plan and puts the hypothesis to test. The nurse carries out a specific, individualised plan. Specific nursing interventions that address the nursing diagnosis are then specified such as the example made above of a patient suffering from pain. The nurse has to assess the pain half hourly, give pain medication every three to four hours as prescribed, splint incision with pillows during coughing, deep breathing and moving exercises, and position the patient comfortably according to his or her needs. Finally, one or more evaluation criteria are described that aid the nurse in determining if the goals of the treatment have been met. These include verbalisation of a satisfactory level of pain control and turning in bed without making gestures that indicate pain (Lewis & Collier, 1992:1084).

The nurse may perform or designate to other capable members the interventions that were developed in the planning phase necessary for achieving the patient's health goals. When choosing an intervention, it is important to ask the following questions: will the intervention facilitate the patient's progress toward a desired outcome? Has the intervention been proven through research, or is it based on experience or intuition, that is, based on immediate insight of the nurse? The feasibility of successfully implementing the intervention must be considered, as must the acceptability of the intervention to the patient and the capability of the nurse to execute the intervention safely with competence. Thereafter, the nurse ends up by recording the interventions performed and the resulting patient's responses (Lewis & Collier, 1992:25; Wilkinson, 1992:214). Throughout the implementation phase the nurse must evaluate the effectiveness of the method chosen to implement the

plan. Referrals to other professionals should also be made when the nurse anticipates that expertise in specialised areas would help the patient. Figure 5 demonstrates the use of critical thinking during the implementation phase.

Patient participation in the implementation phase plays an integral part. However, it is important to note that the degree of participation in this phase depends on the patient's health status and the available resources as well as the type of action being considered. For example, interventions in relation to a child, a quadriplegic or an unconscious patient would be very different and will require the participation of family members. The effectiveness of the implementation phase depends largely on the nurse's ability to create good communication and building of good rapport with the patient (Kozier *et al.* 2004:316). Critical thinking skills are crucial in making a quick, on-the-spot rational decision in determining whether the interventions should be dependent, interdependent/collaborative or independent/autonomous in nature (Lewis & Collier, 1992:18). The nurse has to think rapidly of alternative courses of

actions when the planned strategies do not work as anticipated. Explanation plays an integral part in the implementation phases, as it is within the patients' rights to receive an explanation of the actions to be performed on them.

Explanation (stating results, justifying procedures, presenting arguments)

Explanation means to state the results of one's reasoning, to justify that reasoning in terms of the evidential, conceptual, methodological, criteriological and contextual considerations upon which one's results were based and to present one's reasoning in the form of cogent arguments (Facione, 1990:10). When one states the results, one produces accurate statements, descriptions or representations of the results of one's reasoning activities so as to analyse, evaluate, infer from, or monitor those results. One justifies and presents arguments based on one's interpretations, analyses, evaluations or inferences, so that one can accurately record, evaluate, describe or justify those processes to oneself or to others, or so that one can remedy perceived deficiencies in the general way one ex-

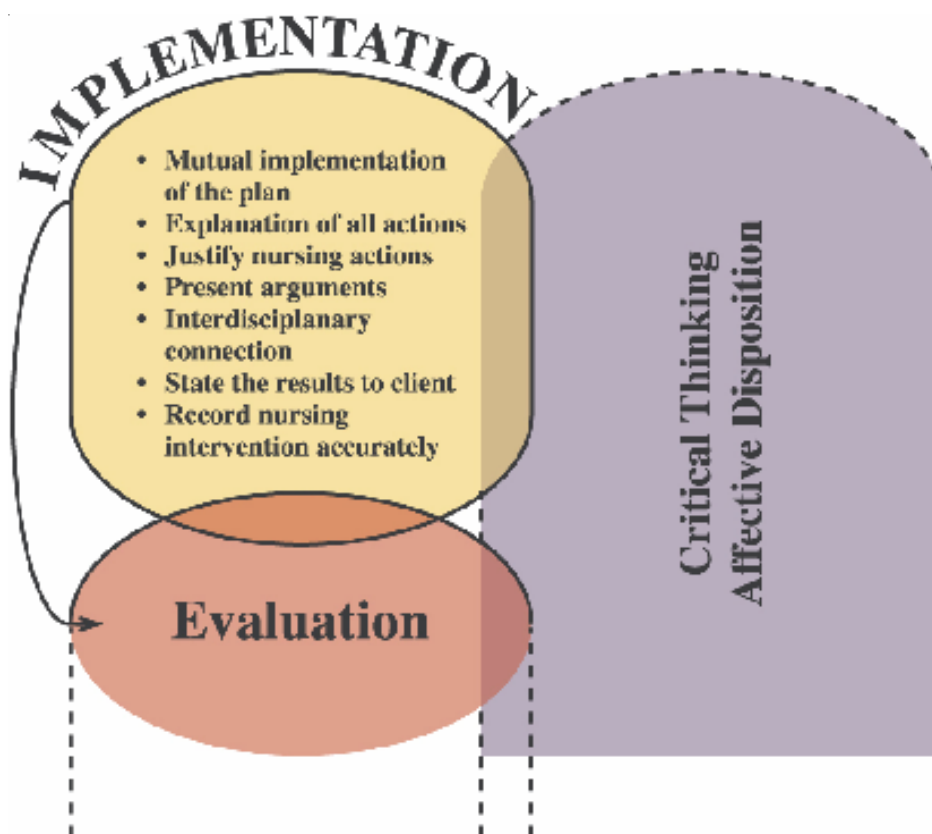


Figure 5: Critical thinking during the implementation phase

ecutes those processes. When one is presenting arguments, one is expected to give reasons for accepting some claim, to meet objections to the method, conceptualisations, evidence, criteria or contextual appropriateness of inferential, analytical or evaluative judgments.

Copi (1986:482) suggests the following aspects when one asks the question "What is it that is wanted when an explanation for something is required?"

An account: is a group of statements from which the thing to be explained can logically be inferred and whose acceptance removes or diminishes its problematic or puzzling character. Explanation and inference appear to be closely related because, given certain premises, any conclusion/s that can logically be inferred from them can be regarded as being explained by them. Given a fact to be explained, we say that we have found an explanation for it when we have found a *set of premises from which it can logically be inferred* (Copi, 1986:483). The chief criterion for evaluating explanations is *relevance*. Any proposed explanation is regarded as a mere hypothesis, more or less probable on the basis of the available facts or relevant evidence, and also considering the attitude taken toward the explanation in question (Copi, 1986:484). There is a *continual search for more evidence* to decide that question. The term 'evidence' refers ultimately to experience: sense experience is the test of truth for all its pronouncements. There are other criteria for deciding the worth or acceptability of proposed explanations, such as the truth, for example, having an eye witness in an accident or where it is applicable, or the *verifiability* of the explanation by providing additional premises (Copi, 1986:486; Woolfolk, 1990:292).

Brown and Atkins (*in* Quinn, 2000:184) classify explanations as interpretive (that is they answer the question 'What?'), descriptive (they answer the question 'How?') and reason-giving (that is they answer the question 'Why?'). Brown (*in* Quinn, 2000:185) is of the opinion that when one is planning an explanation, one should decide precisely what is to be explained in the form of a question, identify any hidden variables, analyse the topic into its main parts or key points and then establish any links between these, including any rules that might be involved. Nurses care for a variety of patients and therefore better explanations have more keys and

a greater variety of cognitive levels of keys. Better explanations also involve the use of examples, elaborations, qualifying statements, visual aids and rhetorical questions and are more appropriately structured. Stimulating key points are also expressed in a simple statement. Writing a summary of the key points to be used at the end of the explanation is important.

The implementation process uses cognitive thinking skills such as justifying the decisions made and solving problems in clinical practice. The use of critical thinking, creative and reflective thinking skills with the related affective dispositions are crucial to the provision of safe and intelligent nursing care. A comprehensive implementation process must be specific enough and recorded accurately and legibly in appropriate documents so that everyone taking care of the patient will be able to agree on whether the set goals have been achieved and also to avoid repetition of interventions (Lewis & Collier, 1992:25). It must be explicit to enable evaluation of the effective or ineffective intervention and to decide whether referral to other health professionals is necessary.

Evaluation phase

Evaluation (assessing claims and arguments)

Evaluation, as the fifth phase of the nursing process, is a planned, ongoing, deliberate activity in which the patient's progress toward goal achievement and the effectiveness of the nursing care plan are determined (Wilkinson, 1992:261). Evaluation is ongoing throughout the various phases of the nursing process. The nurse evaluates whether sufficient assessment data have been obtained to allow a nursing diagnosis to be made. The diagnosis is in turn evaluated for accuracy and appropriateness to the patient's health problem. The nurse evaluates whether the expected outcome and interventions are realistic and achievable. If not, an alternative plan should be formulated. Consideration must be given to whether the plan should be maintained, modified or totally revised in the light of the patient's health status. The effectiveness of each intervention and its contribution to progress towards the goal are also evaluated. The patient's progress should be documented in a systematic way according to the policy of the institution. Figure 6 demonstrates the use of critical thinking during the evaluation phase.

Critical thinking is an integral part of the evaluation phase. It is used to assess the credibility of statements or other representations made by the patient. To assess claims, the contextual relevance of the information gathered should be considered. A distinction also has to be made between reasonable and fallacious inferences and the extent to which possible additional information might strengthen or weaken an argument has to be determined (Facione, 1990:8). Relevant facts have to be identified, data analysed, and hypotheses tested. When developing the criteria for evaluation, critical thinking is used to apply knowledge of other related disciplines to the specific patient's situation in order to know what outcomes can reasonably be expected. When collecting evaluation data, one will use critical thinking to determine the significant data for the goal being evaluated, to judge the congruence between predicted and actual outcomes. For example, if one hypothesised during the planning phase that a particular nursing intervention would produce a desired patients' outcome, in the evaluation phase one tests that hypothesis (Wilkinson, 1992:262). Without evaluation, nurses will not know whether the care they give actually meets the patient's needs. Evaluation enables the nurses to improve care and to promote efficiency by

eliminating unsuccessful interventions and focusing on actions that are more effective.

Evaluation is the process of judging or determining the worth or quality of a phenomenon. Evaluation has a logical component and should be carefully distinguished from mere subjective or imaginary performance. The elements of its logic may be put in the form of questions which may be asked whenever an evaluation is to be carried out (Paul, 1993:466), such as, do we have sufficient information about that which is to be evaluated, is the information relevant or irrelevant to the purpose of evaluation, given the purpose, what are the relevant criteria or standards for the evaluation, have we applied the criteria accurately and fairly to the facts as we know them? Blandshard (*in* Wilson, 1999:167) argues that the main aim of education is practical and reflective judgment, a mind trained to be critical everywhere in the use of evidence.

Self-regulation (self-examination, self-correction)

According to Facione (1990:10), self-regulation occurs when one self-consciously monitors one's cognitive activities, the elements used in those activities, and

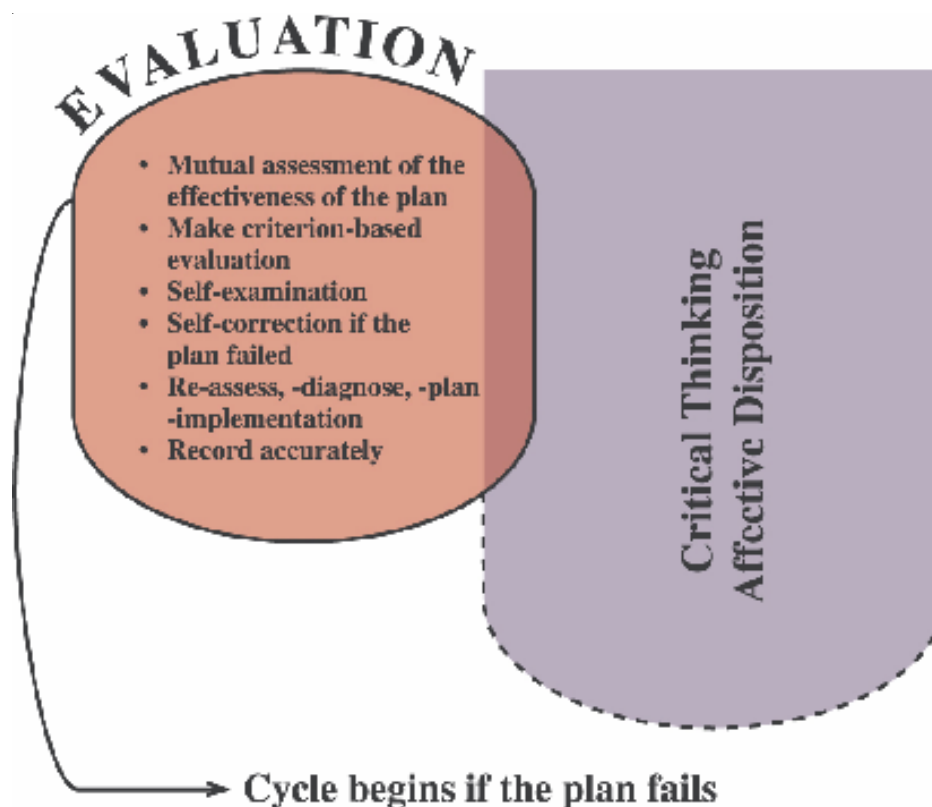


Figure 6: Critical thinking during the evaluation phase

the results deduced, particularly by applying skills in analysis and evaluation to one's own inferential judgment with a view to questioning, confirming, validating or correcting either one's reasoning or one's results.

Self-regulation involves self-examination and self-correcting. The purpose of self-examination is to reflect on one's reasoning and verify both the results produced and the correct application and execution of the cognitive skills involved. Self-correction, where self-examination reveals errors or deficiencies, is important. Learners should learn to design reasonable procedures to remedy or correct, if possible, those mistakes and their causes. Woolfolk (1990:215) states that self-regulation is a very important aspect to learners. Nurse learners must learn to regulate and manage their own lives, set their own goals, provide their own reinforcement, observe their own work, keep track of their own daily progress, keep records of it and assess their own performance by keeping reflective diaries, charts, checklists, and by recording their performance or behaviour in question. Knowles (in Mellish *et al.* 1998:36) states that learners with a positive self-concept have self-confidence, are self-regulatory and self-directed, taking responsibility for their own learning. They can diagnose their own learning needs, formulate their own learning outcomes, identify their own learning resources, find strategies for using these resources and assess their own progress. Critical thinkers monitor the set goals and reinforce high standards.

Self-regulation makes one realise one's potential need for examining and correcting oneself. One has the desire to excel and strive for excellence. A nurse learner who has reached a self-regulatory level works harder to strive for even greater knowledge and understanding. The nurse is motivated. This motivation is endlessly renewed (Woolfolk, 1990:314). The core cognitive thinking skills of critical thinking are continually supported by the affective dispositions. The evaluation process should also be accurately recorded. Should evaluation reveal failure to meet the set goals and expected outcomes, the nurse should re-assess, re-diagnose, re-plan, re-implement and re-evaluate the process, that is, the nursing process cycle begins.

Recording (accuracy, completeness, precision, clarity, legibility)

Although recording is generally not regarded as one of the phases of the nursing process, it plays an integral part in the process because it provides effective communication among health professionals necessary for the continuity of care and for the maintenance of quality of patient care. When staff members take over shifts, a report is handed over by the staff that was on duty to convey information about the patient for continued health care. Records are formal, legal documents usually admissible in court as evidence of the patient's care, and thus it is important that the nurse becomes accountable for recording on appropriate documents according to the standards and policies of the institution (Kozier *et al.* 2004:330). Whatever form of documentation is followed, the principles of recording remain the same as indicated in Figure 7.

Accuracy

Accuracy when recording is important. To be accurate demonstrates that one is a thinking person. The patients' particulars must be clearly written on the correct charts. Facts or observations rather than opinions should be clearly written, for example, the patient refused medication is a fact, whereas to write that the patient was uncooperative, is instead, an opinion or own interpretation. Patient dissatisfaction or worry about a diagnosis should be recorded verbatim and accurately, without the nurse's interpretation. When a recording mistake is made, a line should be drawn through it and the word "mistaken entry" should be written next to the original entry with the initials or name of the nurse. The original entry must remain clearly visible. Correct spelling is essential for accuracy in recording. Incorrect spelling gives a negative impression to the reader and decreases the nurse's credibility (Kozier *et al.* 2004:342).

Completeness/relevance

The information that needs to be recorded must be logically coherent, complete and helpful to the patient and to the health professionals. Detailed and systematic recording of the phases of the nursing process is mandatory. The patient's progress toward the pre-determined goals must be communicated to other health professionals through completeness of recording. Completeness in recording requires thinking on the part of the nurse. Only relevant information about the patient's health problem and nursing care should be recorded. Recording irrelevant information may be considered an invasion of the patient's privacy. Only information that



Figure 7: Critical thinking during recording

has a direct bearing on the patient's health problem should be recorded and therefore relevant recording is a thinking activity (Kozier *et al.* 2004:344).

Precision

Precision in recording is a critical thinking activity because recording needs to be brief as well as complete, yet be comprehensible (Kozier *et al.* 2004:344).

Legibility/Clarity

All entries should be legible and easy to read to prevent different interpretation errors. Signatures must also be legible with a clearly written initial and surname. The nurse should use only the acceptable and universal abbreviations, symbols and terms that are specified by the institution's policy. It is important that the nurses should regard recording also as needing critical thinking skills that demonstrate professional responsibility and accountability (Kozier *et al.* 2004:343).

RECOMMENDATIONS

Clinical nursing education is at the heart of the profession and the provision of quality nursing care must be upheld. Centre to quality nursing care is the use of critical thinking in making rational clinical decisions and solving problems. Nurse educators face challenges in facilitating or assessing critical thinking in nurse learners – especially given that they were not trained in this way. It is recommended that nurse educators be creative and innovative when using the described core cog-

nitive critical thinking skills, their related sub-skills and the affective dispositions to produce innovative pedagogic activities such as programme development, teaching strategies and assessment tools to promote critical thinking. Nurse educators should engage in disciplinary, multi-disciplinary, interdisciplinary and trans-disciplinary research to meet the broad challenges for change in education.

CONCLUSION

This article has attempted to demonstrate how critical thinking of nurse learners could be facilitated using the identified core cognitive critical thinking skills, their related sub-skills and the affective dispositions within the framework of the nursing process. Nurse educators and all those people involved in the education and training of nurse learners are invited to take on the recommendations and engage in further research around critical thinking within the context of the nursing profession in order to produce competent and excellent practitioners who are able to make rational clinical judgments and solve problems of culturally diverse patients based on critical thinking.

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