Preceptor Questioning and Student Critical Thinking

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Questioning is fundamental to student learning. Not only does it enable students to elevate their level of thinking, but in the process it also affords them the opportunity to deal with their world intelligently. The practice setting is an environment rich in opportunity for enabling critical thinking through the use of questioning. In the preceptorship experience, preceptors are in a prime position to use questioning behaviors that can challenge the way preceptees think, encourage them to justify or clarify their assertions, promote the generation of original ideas, explanations, or solutions to patient problems, provide mental and emotional tools to help resolve dilemmas, promote discussion, and evaluate learning. This article discusses the importance of preceptor questioning for the development and promotion of student critical thinking. Contextually, the authors draw on the findings of a recent study in which preceptor questioning of the knowledge base, decision making, and actions of the preceptee were found to directly bring about or trigger their critical thinking. This article allows for some further reflection on that process and its contribution to the enhancement of the preceptorship experience. (Index words: Preceptor; Preceptee; Questioning; Critical thinking) ***J Prof Nurs 18:176-181, 2002.***

ACCORDING TO Hunkins (1974), "the question is central to learning" (p. 1). Since the Greek philosopher Socrates used a method of questioning to derive a definition, the question has been an integral component of the teaching-learning process and has come to be recognized as a powerful device to promote thinking (Hunkins, 1989). Questioning is fundamental to student learning. It not only enables students to elevate their level of thinking, but in the process it also enables them to deal intelligently with their world (Hunkins, 1974). The most widely renowned exemplar of teacher questioning is the dialogue of Socrates in "The Meno," in which he elicits the Pythagorean theorem from an untutored slave boy; the implication of this dialogue being that perceptive teachers who use skilful questioning techniques can promote high levels of thinking in their students (Scholdra & Quiring, 1973).

Questions can be used to direct the thinking process, provoke interest, stimulate and challenge the student, influence the social and emotional milieu of the teaching/learning environment, form the basis of research, promote discussion, and evaluate learning (House, Chassie, & Spohn, 1990; Schell, 1998; Thompson, 1999). Although the focus of this article is on the questioning behaviors of preceptors and preceptees, it needs to be recognized that data were considered through the framework of critical thinking. Numerous investigators have critiqued critical thinking theory and have acknowledged the role of questioning in that literature (Boychuk, 1999; Coluciello, 1997; Conger & Mezza, 1996; May, Butell, Doughty, & Langford, 1999; O'Neill & Dluhy, 1997; Rossignol, 1997).

The practice setting is an environment rich in opportunity for enabling critical thinking through the use of questions. Indeed, preceptors are in a prime position to challenge the way preceptees think, encourage them to justify or clarify their assertions, promote the generation of original ideas, explanations, or solutions to patient problems, provide mental and emotional tools to help resolve dilemmas, and provide a more personal environment with the one-to-one relationship (Conger & Mezza, 1996).

Recently, a study was completed in which key insights were gleaned into the process used in the preceptorship experience to develop and promote the critical thinking ability of basic baccalaureate nursing students (Myrick, 1998). One of these insights related specifically to enabling students to think critically by the process of preceptor questioning. The original study was conducted with fourth-year basic baccalaureate nursing students and their staff nurse preceptors in a tertiary care setting. The grounded theory approach was adhered to for data collection and constant comparative analysis, with saturation of the data determining the eventual sample size. A total of 33 interviews

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were completed with six nursing students and six preceptors and observations were performed in the practice setting as they worked together in performing their nursing care.

This article does not discuss the study per se, but rather draws specifically on a particular aspect of its findings as a rich backdrop and reflection regarding the reality of the preceptorship experience pertaining to the process of promoting student critical thinking. Indeed, this study has brought to light the process inherent in the preceptorship experience that contributes to the critical thinking ability of baccalaureate nursing students in the practice setting. Of major significance is the finding that preceptors do openly question the preceptees' knowledge base, decision making, and actions, and in doing so they directly bring about or trigger the preceptees' critical thinking. This article allows for some further reflection on that particular process and its contribution to enhance the preceptorship experience.

Review of the Questioning Literature

Although the act of questioning is significant, the level of the question asked is also essential to enable critical thinking. For example, it is essential that questioning include not only low-level or factual questions, but that clarifying and higher-level questions be used also (Oermann, 1997). Factual or low-level questions require that the preceptee recall specific information and facts. Higher-level questions, on the other hand, cannot be answered by memory alone. They require evaluation or judgment of the clinical situation, and may require comparisons across patients or clinical situations (deTornyay & Thompson, 1987; Oermann, 1997).

Although there are numerous classification systems with regard to questions, nurse educators are most familiar with Bloom's "Taxonomy of Educational Objectives" (Bloom, 1956). This taxonomy delineates cognitive function in six areas: knowledge, comprehension, application, analysis, synthesis, and evaluation. Categories are hierarchical because each level subsumes the use of the thinking processes of all lower levels. Moreover, the various levels of the taxonomy serve as building blocks (Hunkins, 1974). Because the top four categories require higher-order thinking skills, the hierarchy is usually divided into high (application, analysis, synthesis, and evaluation) and low (knowledge and comprehension) cognitive levels (Wink, 1993). Regardless of the level of questioning, however, the questioner needs to establish an appropriate learning climate, use wait time, probe after a question is asked, and ask questions at a pertinent level (Sachdeva 1996).

Questions can also be classified as convergent or divergent (Wink, 1993). Convergent questions require low-level thinking. Responses are predictable and typically specific, succinct, and factual (House, Chassie, & Spohn, 1990). Convergent questions require the learner to answer yes or no, compare, contrast, define, specify, name, or indicate relationships (House, Chassie, & Spohn). Divergent questions, on the other hand, are more thought provoking than convergent questions and necessitate a higher level of thinking. Answers to divergent questions are unpredictable and require the learner to "defend, hypothesize, infer, judge, justify choice, predict, reconstruct, and value" (p. 196). As with Bloom's (1956) taxonomy, the difference between convergent and divergent questioning also addresses the category of questions according to a hierarchy of levels. For example, the more complex the question, the higher the thinking level required. The context and framing of the question signifies the level of thought processing required for appropriate student response (House, Chassie, & Spohn).

Questions can also be derived from the perspective of a three-tier hierarchy, each level requiring incrementally higher levels and complexity in thinking (House, Chassie, & Spohn, 1990). The three levels of questioning are described by Bowling (1979) as knowledge questioning, application questioning, and problem-solving questioning. Knowledge questioning, the first level, requires memory or recall and is designed to obtain specific information or concrete responses that have right or wrong answers. Application questioning is the second level and requires students to use the information recalled at the knowledge level within a specific context. Problem-solving questioning is the third level of questioning and is designed to promote thinking at the highest mental capacity. All three levels of questioning can be appropriate with all students regardless of the learning setting (House, Chassie, & Spohn).

Use of Questioning in the Preceptorship Experience

In the preceptorship experience, skilful questioning has many positive implications. For example, preceptees questioned by their preceptors must show what they know regarding their knowledge base, discuss

their individual perspectives, and reflect on critical issues or personal values that they may not have examined previously. When questioned, they also must apply theoretical knowledge to patient situations and provide the rationale underlying their comprehension of circumstances inherent in the particular situations (Wink, 1993). As well, questioning provides the opportunity for preceptees to correct any misconceptions shown by the question itself or by their own response to the question (Wink, 1993).

The ability to ask stimulating, challenging questions is perhaps the most important skill that a clinical nursing instructor or preceptor can display (Craig & Page, 1981). At best, effective questioning can trigger preceptees to think critically and thus enhance their problem-solving and clinical decision-making abilities by stimulating the highest level of thought processing (House, Chassie, & Spohn, 1990). When we think critically, we judge the correctness of statements and the soundness of the reasoning that leads to conclusions. Critical thinking assists preceptees to interpret complex ideas, assess, and analyze information that is provided about individual patient situations, and distinguish between that which is reasonable and that which is unreasonable. Indeed, preceptees' problem-solving and clinical decision-making skills hinge directly on their ability to think critically (Ruggiero, 1990). Integral to the critical thinking process is a theoretical knowledge base or a fundamental grasp of the substantive knowledge of the discipline.

THEORETICAL KNOWLEDGE

Theoretical knowledge is the medium that renders practice more efficient and more effective (Meleis, 1991). Being able to practice by scientific principles through a sound knowledge base permits preceptees the opportunity to be able to accurately determine the consequences of their nursing care and the potential range of patient responses. Theoretical knowledge provides them with a perspective with which to consider patient situations, and a way to organize, analyze, and interpret the information that they encounter (Raudonis, 1997). A theoretical knowledge base permits the preceptees to plan and implement care purposefully and proactively. When they practice purposefully and systematically, they are more efficient, have better control over the outcomes of their actions, and are better able to communicate to others (Raudonis). A sound knowledge base serves to guide the preceptees' clinical decision making and their actions and, ultimately, ensures a foundation for safe and competent nursing care. Once they understand why a particular situation occurs, it becomes possible to identify what effect a specific action will have on the situation or, conversely, what actions will prevent the situation from arising in the first place (Dale, 1994). Moreover, an understanding of the theory underlying a given situation results in preceptees being able to make informed decisions that result in purposeful actions.

CLINICAL DECISION MAKING

Clinical decision making and the ability to make a clinical judgment requires relevant knowledge for application to the clinical situation, skill in data collection, and knowledge of appropriate strategies for effective problem solving with patients (Reilly & Oermann, 1992; Whiteside, 1997). Clinical decision making requires the ability to think critically. When preceptors question their preceptees, they directly bring about their critical thinking. For example, when confronted with questions concerning patient situations, if preceptees are to make effective clinical decisions, they must be able to recall relevant knowledge and in turn translate and interpret that knowledge in light of particular situations (Wink, 1993; Oermann, 1998). Clinical decision making requires an adequate knowledge base for analyzing patient situations, generating possible alternatives, and making judgments as to which are the best alternatives to select (Reilly & Oermann; Whiteside). The following excerpt reflects a preceptor questioning a preceptee's knowledge base regarding a particular patient situation:

> If we have a cardiac patient, okay, what are the three main arteries, what is the problem, what can you anticipate? I want you to come back tomorrow and tell me what medications will work for this or not. If we have a trauma, okay, what are your ABC's? Tell me about the airway, the lungs, what do you see? So she tells me and I see how far her knowledge has come and then I try and expand on it or we research it together (Myrick, 1998, p. 102).

One preceptor stated, "I go through the Kardex with her and we talk about the diagnosis and I ask her what that entails and try to determine her knowledge of the situation" (Myrick, p. 102). Questions that are well framed, timed, and formulated not only stimulate critical thinking, but also enhance the breadth and depth of the answers and help preceptees to draw on and apply acquired knowledge in new and unique situations for the purpose of problem solving and making clinical decisions. Questions also trigger the preceptees' ability to critically evaluate their own knowl-

edge base, level of comprehension, ability to apply theoretical principles, accuracy of their assessments, and analysis of the data (Haffer & Raingruber, 1998; Wink, 1993).

In the quest for effective clinical decision making, preceptors' use of questioning assists their preceptees to ignore unnecessary and irrelevant information and to focus on cues that elucidate significant patterns in the overall situation (Wink, 1993). One preceptee recounted:

> She [preceptor] cues me and things that I don't know she'll give me little points and if I can't answer she'll wait for me to put it together and if I can't she'll give me a little something else. She gives me little bits and pieces and allows me to put it together (Myrick, 1998, p. 103).

One preceptor, referring to a particular patient situation, described how she questioned her preceptee:

> Okay, when is it [patient's condition] acutely urgent? And she [preceptee] stopped and thought. Okay, now you're assuming you see a man arriving with back pain and you see that he's got renal colic. Well, we walked through the process, for example when it's urgent it could be an aneurysm. You can't assume. You've seen this man, you've seen five patients with renal colic. You take his vital signs, his blood pressure is low. If he's got pain it usually increases. Stop and think about it. Don't assume that this patient has renal colic. He's grey, he's sweaty and he's got a low blood pressure. Change your opinion. Now tell me what else could we be working with here (Myrick, 1998, p. 103)?

When preceptors assist their preceptees to identify which cues lead them to draw a conclusion, the preceptees become more aware of their own thinking processes. This awareness in turn affords the preceptees the opportunity to be able to examine their approach to patient situations and thus become enabled and confident to make the necessary changes that are in the best interests of the patient. Preceptees thus become enabled to make clinical judgments based on effective decision making and sound critical thinking. "To listen and question at just the right place and degree delimits the truly brilliant instructor from the average . . . Clearly, the questions a teacher asks can make the difference between an antiquated wasteland and an exciting learning experience" (Cairn, 1975, p. 2).

Preceptees must continually make decisions regarding nursing diagnoses and the course of action to be taken for their nursing care (Reilly & Oermann, 1992). As preceptees interpret situations, they simultaneously analyze the data available to them for the purpose of developing nursing diagnoses and plans for action. By questioning their clinical decision making, preceptors assist their preceptees to decide on the data that need to be collected about the patient, to make appropriate interpretations of the data, and to identify the necessary nursing actions that need to be taken in the situation (Reilly & Oermann). One preceptor described it thus:

> I've been doing that [questioning] with her [preceptee] all along. That's how I determine whether she knows the diagnosis and what that entails and what kind of nursing care that she's going to do for that type of patient. You have to have some idea of the diagnosis before you can determine what kind of nursing care they need. What does this mean? What do I have to do for this patient (Myrick, 1998, p. 105)?

When preceptors question their preceptees' decision making, they assist them in eliciting aspects of the situation that are significant in identifying the problem, whether patient or setting oriented (Reilly & Oermann, 1992). Because of their limited practical knowledge and relative inexperience in the practice setting, preceptees require this kind of assistance in identifying and delimiting patient problems. As one preceptor explained:

> I will point out certain things like now look at A, B and C and tell me what you find or tell me what you think. And I like her [preceptee] to think things out. Like, why do you think we're looking at this? And she's pretty right on her answers. And if she's not, then by the time I've explained why, she can understand the rationale (Myrick, 1998, p. 105).

One preceptee reflected:

> If I get a patient, I go do the history and I'll come back to her [preceptor] and she goes, 'okay well what do you think you know is going on with that person? What do you think you need to do?' And then I'll mention the things and she goes 'okay what's your first priority with that person?' With her asking me well what do you think, what do you think is priority, it gets me thinking not just sitting there. And you learn by thinking and problem-solving it on your own (Myrick, 1998, p. 105).

In affording preceptees the opportunity with which to discuss their clinical decision making, preceptors again provide a means for them to assess the thought processes that they use to arrive at their decisions and to improve their understanding of the alternatives that

they might have considered (Daly, 1998; Haffer & Raingruber, 1998; Reilly & Oermann, 1992). As one preceptor recounted:

> I try to debrief any critical situations that occur and have them [preceptee] think through what they would have done had they been in charge of the situation. I always ask them what's the worst possible thing that could have happened in the situation because they're always terrified that they've done something wrong (Myrick, 1998, p. 106).

One preceptee stated:

> We talk about the things you can do and it's not a this is what you do, these are the steps, but it's an interaction. It's a what would you do and why would you do it? It's almost like a puzzle. You fit it all together and you can have a holistic picture of what's going on. And that happens when she [preceptor] and I are interacting (Myrick, 1998, p. 106).

ACTIONS

Ultimately, preceptees' knowledge base and decision making are directed toward actions designed to provide competent nursing care. Creative problem solving, sound decision making, adeptness in coping with the unanticipated, and mastery of daily routine are fundamental components of that nursing care (May, 1980). Inherently, preceptees' actions demand not only skill in performance, but also the ability to be able to continuously evaluate their own actions as they occur (Reilly & Oermann, 1992). It requires critiquing their actions within the context of the goals they wish to achieve. As one preceptor indicated:

> Every hour or so I'm saying have you done this, have you done that? Where are you with the care? That way I can determine her [preceptee] prioritizing. If something happens, I'll say to her so what would you do, or what do you want to do about that (Myrick, 1998, p. 107)?

Another stated, "I try to step back and ask her to tell me about your [preceptee] patient. What should you be doing for the day. And if she's wrong well I'll just say well why would you do that (Myrick, 1998, p. 107)?" Careful questioning and the one-to-one discussion with preceptees about their patient care are important factors in enabling critical thinking (Oermann, 1997). Preceptors question their preceptees about their actions and the rationale underlying each action, alternatives contemplated, and different perspectives to ponder about their care. By questioning the preceptees' actions, preceptors not only spark intellectual curiosity, but promote recognition of inconsistencies in nursing care, and foster awareness of irregularities and differences between patient situations. Preceptees thus become enabled to deal confidently and competently with the day-to-day complexities of nursing care.

Implications

Fundamentally, there is a theoretical basis for asking questions. Sellappah, Hussey, Blackmore, and McMurray (1998) studied 1,085 questions generated by 26 clinical teachers and found that more than 90 percent asked low-level questions. In this study (Myrick, 1998), clearly the preceptors recognized the importance of asking questions to determine theoretical knowledge, decisions, and actions. In light of such findings, the authors would suggest that faculty and preceptors work together on an ongoing basis to explore various ways in which to enhance the preceptorship experience through the process of effective questioning. Bailin, Case, Coombs, and Daniels (1999) argue that questioning should be part of an environment that fosters a spirit of inquiry. To move toward such an environment, nurse educators also need to assess the questions that they themselves use when interacting with preceptors.

Students also must be taught how to ask questions (Tanenbaum, Tilson, Cross, & Rodgers, 1997). Sedlack and O'Bryan Doheny (1998) used student-led nursing rounds taught by themselves and by other nursing students to learn how to engage in critical thinking and to ask high-level questions. Of interest was the observation that to ask a question one had to engage in active listening. In preparation for the preceptorship experience then it would seem appropriate for faculty to consider providing student preparation that would include the art of questioning and active listening.

Summary

The importance of the use of questions and how they form the basis of knowledge, decision making, and actions is integral to the promotion of critical thinking. (Myrick, 1998). Also important is an understanding of how the level of questions can serve to support and enable preceptors to better structure their questions from low to high, by using factual questions to ascertain their preceptees' knowledge base and from there progress toward questions that require explana-

tions, descriptions, evaluations, and judgments about patient situations (Oermann, 1997). Essential to that process as well is the invaluable role that nurse educators need to assume in teaching both preceptors and preceptees the theory and skills underlying effective questioning techniques that ultimately contribute to the enabling of student critical thinking in the practice setting.

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