

Perspectives

SCENARIO TESTING IN UNDERGRADUATE NURSING EDUCATION: ASSESSMENT FOR LEARNING

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Abstract

This paper describes an assessment activity called scenario testing used in an undergraduate nursing education program at Laurentian University in Sudbury, ON. In addition to describing scenario testing, this paper reports on the participants' satisfaction with the experience and provides observations about the students' grades on the scenario test and their final standings in the course. Argument is made for the idea that scenario testing can enhance students' critical and integrative thinking as well as their personal confidence. The guiding theoretical principles for this activity were Brookfield's (1987) work on critical thinking and Stiggins' (2002) ideas about assessment for learning.

Résumé

Cet article décrit une activité d'évaluation nommée « essais fondés sur les scénarios », utilisée dans le cadre d'un programme de premier cycle en sciences infirmières à l'Université Laurentienne, à Sudbury (Ontario). En plus de décrire les essais fondés sur les scénarios, l'article rend compte de la satisfaction des personnes ayant participé à cette expérience et offre aussi des observations en ce qui concerne le rendement des étudiantes et étudiants à l'essai ainsi que leurs résultats finaux dans le cours. De plus, on invoque l'argument que les essais fondés sur les scénarios pourraient effectivement améliorer la pensée critique et intégrative des étudiantes et étudiants ainsi que leur confiance personnelle. Les principes théoriques qui ont dirigé cette activité sont l'œuvre de Brookfield (1987) sur la pensée critique et les idées de Stiggins (2002) au sujet de l'évaluation dans l'apprentissage.

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Introduction

One of the most significant goals for nurse educators is to develop assessment activities that enhance students' critical and integrative thinking as well as their personal confidence. In other words, nurse educators are challenged to conduct assessment for learning (Stiggins, 2002). Ideally, these activities will accommodate the diverse contexts of nursing practice. In this paper, it is argued that scenario testing can support these goals when it occurs in a safe setting where students experience support through teacher probing and receive constructive feedback. The scenario testing described here involves a verbal exchange between a third-year baccalaureate student and a teacher about a randomly selected clinical event.

In addition to describing the scenario testing, this paper reports on participants' satisfaction with the experience. Furthermore, observations are offered about the students' grades on the scenario test and their final standing in the course. The guiding theoretical principles for the project were Brookfield's (1987) work on critical thinking and Stiggins' (2002) ideas about assessment for learning.

Building on the literature about critical thinking, this project holds broad value since scenario testing can be used in a wide cross-section of nursing education settings because of its simplicity. Unlike simulation learning, scenario testing does not require specialized equipment; there is no "event or situation made to resemble clinical practice as closely as possible" (Rauen, 2004). Instead, scenario testing is a dialogic exchange between a student and a teacher with the teacher probing to enhance student learning.

Review of the Literature

Critical Thinking and Nursing Education

Critical thinking is regarded to be the foundation of the clinical reasoning process that nurses use every day. Also found in the nursing education literature are extensive discussions of relationships involving critical thinking and reflection. In some instances, reflection is identified as a strategy vital to the development of critical thinking among health care practitioners (Daroszewski, Kinser, & Lloyd, 2004; Kennison & Misselwitz, 2002; Kessler & Lund, 2004; Smith & Johnson, 2002); in others, reflection is a characteristic of the critical thinker (Brookfield, 1987; Mezirow, 1981, 1990; Watson & Glasner, 1980).

Just as the interest in critical thinking grew rapidly in the latter part of the 20th century, so too did the confusion regarding what critical thinking means. In nursing, however, the dominant understanding of critical thinking involves a twofold focus: focus on skills and what are called habits of mind. In seminal work by nurse theorists Scheffer and Rubenfeld (2000), the authors discuss discrete critical thinking skills such as analysis and synthesis, as well as 10 habits of mind: perseverance, flexibility, open-mindedness, intellectual integrity, confidence, contextual perspective, creativity, intuition, inquisitiveness, and reflection. Others have also discussed habits of mind in the context of critical thinking (Cranton, 2007; Mezirow, 1981, 1990); This bifold understanding of

critical thinking in nursing and nursing education is foundational to the assessment activity discussed in this paper.

Integrative Thinking through Interactive Learning Activities

Since as far back as Dewey (1916, 1933), interaction with other learners has been regarded to be a key element in the decisions that educators make about incorporating technology into an educational experience. Some educators argue that such interaction not only supports but actually defines the educational experience (Anderson, 2003). While interaction is often considered in relation to other people, it can, in the learning setting, also refer to interaction with content and the learning environment, including technology (Bastable, 2008; Billings, 1999; Cragg, 1994a, 1994b; Cragg, Dunning, & Ellis, 2008). According to Ironside (2003), “ongoing and interactive understanding of both the context of care and patients’ experiences of wellness and illness” (p. 510) is an essential component of nursing education. It is suggested that scenario testing is an interactive activity that supports clinically focused learning and assessment.

In scenario testing, questioning by the teacher is an important form of interaction and the main means of guiding a student’s thinking process and increasing the level of thinking (Brunt, 2005; Gaberson & Oermann, 2007; Ironside, 2003; Riddell, 2007; Twibell, Ryan, & Hermiz, 2005). Gaberson and Oermann suggest different types of questions that a teacher can ask to encourage thinking: questions that clarify, probe assumptions and reasons, seek differing perspectives, and explore consequences. The overarching intention is to foster thinking beyond the simple answer and move to the more complex level. Thus, during scenario testing, the teacher asks questions to help the student figure things out, to see the whole picture, and to consider the complexity of the situation.

Indicators of Critical Thinking

Since critical thinking is a holistic and an iterative process, it is important not to think about critical thinking as hierarchical whereby a person progresses from one level to the next. To do so would be at odds with the essence of critical or reflective thinking. At the same time, Brookfield (1987) speaks of four dimensions of the process of critical thinking. These dimensions are generally recognized as indicators that critical thinking is occurring and are, therefore, helpful in the educational setting.

The first of these dimensions is identifying and challenging assumptions. Specifically, this refers to questioning of ideas, values, and assumptions that underlie a statement, a point of view, a position, an activity, and so forth. The second dimension includes awareness of the various factors and layers that affect any activity; in a learning context, the teacher may look for evidence that the student is considering the viewpoints of others and that he or she reflects on ideas such as origins and consequences.

The third and fourth dimensions are exploring and imagining alternatives and reflecting with scepticism. While the former is about one’s ability to think in new ways, the latter is about refusal to accept ideas at face value. Instead, the person uses a considered and critical approach when presented with new ideas.

While Brookfield (1987) may not have intended for the aforementioned dimensions to become central to the assessment of critical thinking in learning contexts, in many instances, they have. Moreover, some assessment experts recommend incorporation of Brookfield's ideas into what they call dynamic assessment (Fenwick & Parsons, 2009) as well as assessment for learning (Stiggins, 2002). "Talk through" activities such as scenario testing have been described as assessment for learning as well as dynamic assessment activities (Fenwick & Parsons).

Assessment for Learning

In assessment for learning, assessment is an interactive guide to learning; that is, it is using assessment to raise a learner's achievement (Stiggins, 2002). As learner achievement progresses, Stiggins argues that learners develop more confidence and are motivated to work harder to achieve additional success. Stiggins also asserts that assessment for learning is dynamic and can facilitate a more positive learner-teacher relationship. Central to such learning is a safe space where the learning dialogue is considerate, specific, descriptive, and timely.

In addition, assessment for learning requires explicit involvement of learners and teachers in critical reflection, with opportunities for encouragement and advice that ultimately form the foundation for assessment. The teacher asks questions to assist learners to find their own answers. In doing this, learners develop self-assessment skills, learn how to ask themselves these types of questions, and learn how to find answers (Qualifications and Curriculum Development Agency, n.d.).

Stiggins (2002) proposes a model for assessment for learning that includes four main ideas. The first of these ideas is that teachers should learn and practise assessment for learning. The second idea indicates that teachers should understand which kind(s) of assessment yields the results they are seeking. Stiggins' third idea suggests that learner involvement improves motivation and learning. Idea four, learning is a team activity, shares similarities with Brookfield's (1987) dimensions of the critical thinking process. It involves working together to think about assessment, to consider new ideas, to transform knowledge into practice, to try new approaches with a critical view, and to develop conclusions through the synthesis process.

As in assessment for learning, scenario testing requires the teacher to take a dynamic role in the learner-teacher interaction. This is done by posing questions that encourage learners to achieve greater depth of thinking instead of just seeking the "right" answer.

In this project, scenario testing blends critical thinking, integrative thinking, the indicators of critical thinking, and the concept of assessment for learning. To understand more about scenario testing relative to these areas and relative to the practice of assigning grades as required in most university courses, this project explored two questions:

- Are students and teachers satisfied with scenario testing as an assessment for learning experience?

- Do student grades on scenario testing generally align with their overall grades in the course?

Project Design and Method

Design

A descriptive comparative approach was used in the project. The satisfaction of students and teachers with the scenario testing experience was documented through feedback forms tailored for their roles. Two other sources of data included students' scores as determined through a rubric designed to assess for critical thinking, and the students' final grades in the course. The data collection tools are described in the next few paragraphs.

The satisfaction feedback forms used open-ended, semi-structured questions that asked the students and teachers to reflect on their experiences one week after testing. The students were asked to respond to the questions below:

1. What did you learn about yourself during this experience?
2. Do you think this experience strengthens your critical thinking skills and habits of mind?
3. a) What recommendations do you have for improving this experience?
b) What would you keep the same?

The teachers responded to the following questions:

1. Describe your approach to asking probing-type questions.
2. Do you think this experience strengthens students' critical thinking skills and habits of mind?
3. a) What recommendations do you have for improving this experience?
b) What would you keep the same?

As Table 1 indicates, the rubric used in the scenario testing included three main areas: critical analysis, clinical judgment, and critical thinking descriptors. The term *critical analysis* refers to the four dimensions of critical thinking according to Brookfield (1987). The critical thinking descriptors include cognitive skills and habits of mind as previously discussed in the literature review section of this paper. The level of prompting required by the student influenced the student's score in each of these areas.

Table 1

Scenario Testing Marking Scheme

Criteria	Well done	Satisfactory	Insufficient
Critical thinking critical analysis Mark: / 5	Comprehensive response to scenario questions reflecting critical analysis Range: 4.25–5.0	General response to scenario questions but missing some relevant information related to critical analysis Range: 3.25–4.0	Unclear response to scenario questions, lack of logical sequence, or missing relevant information related to critical analysis Range: 0–3
Critical thinking clinical judgment Mark: / 5	Synthesis of nursing, clinical judgment, and clinical decision-making as supported by the evidence/theory	Integration of nursing, clinical judgment, and clinical decision-making with some limited reference to the evidence/theory	Lack of integration of nursing, clinical judgment, and clinical decision-making with no reference to the evidence/theory
	Range: 4.2 –5.0	Range: 3.25–4.0	Range: 0–3
Critical thinking descriptors Mark: / 5	Comprehensive demonstration of critical thinking descriptors (12–14 descriptors)	General demonstration of critical thinking descriptors (9–11 descriptors)	Limited demonstration of critical thinking descriptors (less than 9 descriptors)
	Range: 4.2 –5.0	Range: 3.25–4.0	Range: 0–3
Total / 15			

Overall comments:

Descriptors

Habits of mind: Confidence; contextual perspective; creativity; flexibility; inquisitiveness; intellectual integrity; intuition; open-mindedness; perseverance; reflection

Cognitive skills: Analyzing; applying standards; discriminating; information-seeking; logical reasoning; predicting; transforming knowledge

Intervention

Students were advised at the beginning of the course that scenario testing would occur during week 10 of the 13-week term. Although performance in scenario testing can influence a student's final grade, the scenario testing was worth only 15% of the final standing in the course.

On the testing day, four teachers worked with the students in four different locations in the same classroom. The testing involved a 15-minute window of time for each student. At an assigned time, the student met with the teacher and randomly selected a scenario from among four possible scenarios designed by the facilitating teachers.

The process used during the testing was threefold: the student read the card with the selected scenario, asked questions to clarify anything that may have been unclear, and responded to specific questions related to the scenario described on the scenario card. As the student "thought out loud," the teacher asked other questions to elicit depth and breadth of response. For example, the teacher might ask, "What would you do next?" or "What do you anticipate may happen?" The more questioning and support required by the student, the lower his or her score was.

Each scenario required the student to analyze effects of specific factors, determine the interconnectedness of these factors, and draw a conclusion based on the available evidence and rationale. These factors were anatomy and physiology; pathophysiology, including signs and symptoms as well as diagnostic and laboratory values; determinants of health; developmental stage; risk factors; and therapeutic interventions, including pharmacologic and non-pharmacologic interventions. The following is a patient description from one of the four possible scenarios:

Rose Martin, 65 years old, lives in a group home, and was diagnosed with Parkinson's Disease two years ago. She is currently being treated with Sinemet (Dopaminergic) and Cogentin (Anticholinergic). Rose has had increased tremors in her arms the past few weeks which has group home staff concerned that her disease is progressing. Rose has been increasingly unsteady on her feet. Rose is assessed by the visiting nurse at the group home. The nurse tells Rose her Sinemet and Cogentin may need to be adjusted. Rose replies to the nurse: "Oh those, how do they help me anyways? What do they do?"

In response to Rose's situation, students were expected to make connections between and among medications, pathophysiology, relevant determinants of health, and risk factors. These connections facilitated identification of priority issues and therapeutic interventions. In all instances, it was important for the student to demonstrate ability to make connections.

Analysis

Data were analyzed in two ways. Based on a content analysis approach, the qualitative data derived from the feedback forms were coded and grouped into themes by two researchers. The themes were then re-read and reduced to main themes. Quantitative data, including the

students' scores on the scenario testing and final standings in the course, were compared for similarities and differences in student performance. Because of the limited size of the sample, no statistical tests were run for purposes of inference.

Findings

Participants

The participants included 33 students and 4 teachers. The student group was composed of full-time, female, first-degree students in the third year of an undergraduate nursing program. One of these students was a registered practical nurse. There were no post-RNs in the group. This was the students' first experience with this kind of scenario testing. All teachers were experienced educators with involvement in the third year of this program.

Satisfaction

While all students were invited to provide feedback, only 18 students volunteered to do so. As noted earlier, time was provided between the testing and the feedback activity so participants would have an opportunity to reflect on their experiences over time. Although this time period was important to the reflection process, it may have been an influence on the rate of participation. Each of the teachers provided written feedback.

Analysis of the three questions posed to the students generated a number of messages. When the students described what they learned about themselves during this experience, they commented on their ability to make connections. From a clinical judgment perspective, solid knowledge of pathophysiology was identified as extremely helpful in the experience. In some instances, students seemed pleasantly surprised by their success. In other cases, despite their success, students spoke about nervousness.

Students indicated that the scenario testing had strengthened their critical thinking skills and habits of mind. One student commented that "it gets you thinking about how everything is pieced together, how the factors are all connected and affect each other." Comments about nervousness and confidence were also offered.

When asked about recommendations for improving this experience, students consistently reported a desire for more time. There were some logistical suggestions related to the testing process, such as having fewer scenario locations in one room. Overall, students felt the scenarios were fair; as one student remarked, "I think it was great the way it was." Another student commented, "I like the idea that it is a sit down 'conversation' type of test like a discussion."

The teachers described their approaches to asking probing questions as requiring rephrasing, redirecting, restating, prompting, and soliciting of additional information. One teacher commented, "I would try to restate questions in a different way if students seemed unsure of what was being asked." The teachers further indicated that this experience facilitated the students' critical thinking skills and habits of mind by encouraging them to make connections, consider different perspectives, and apply knowledge in different contexts. The teachers felt comfortable with the process, recommending that the overall

approach be kept the same. They did, however, suggest revisions to the physical layout of the rubric to allow for additional comments by the teacher. These revisions could make the tool more user-friendly.

Grades

For the 33 students who participated in the scenario testing, the marks ranged from 7.25–14.5 out of a possible 15. Twenty students achieved between 12 and 15 (A range); six students achieved between 10.5 and 11.75 (B range); four students achieved between 9 and 10.25 (C range); and three students achieved under 9 (D or F range). An A score on this activity represents an excellent demonstration of critical thinking and critical judgment; a B represents a moderately successful demonstration of critical thinking and critical judgment; a C represents a below-expectation demonstration of critical thinking and critical judgment; and a D or F represent an inadequate demonstration of critical thinking and critical judgment. Because of the importance of critical thinking to nursing practice, while a C is a passing grade, it is not an appropriate performance for this activity. Students scoring in the C range would be considered weak critical thinkers with questionable clinical judgment.

The grades on the scenario testing were compared with the students' final standings in the course. Sixteen of the 33 students scored in the same range on their scenario testing and final standing in the course. The three students who achieved under 9 (C range) were part of this group. When the remaining grades on the scenario testing were compared with final standings, the following was found:

- One student scored one letter range higher (for example, on the scenario test, the student scored B while the student's final score in the course was an A);
- Twelve students scored one letter value lower (for example, from an A to a B); and
- Four students scored two letter values lower (for example, from an A to a C).

Discussion

The narrative comments offered by the participants, both teachers and students, suggest that scenario testing was a positive and effective assessment for learning experience. Based on the perceptions of the two groups, the learning activity was valuable in fostering critical thinking. By comparison, the comments offered about confidence and nervousness point to the activity's potential to cultivate confidence in some cases and to identify learners' varying levels of confidence in others.

Identifying and labelling this powerful emotion is a valuable personal gain for a student. Simply put, when one can label an emotion, learning has occurred. Thus, one might suggest that the scenario testing was assessment for learning of both an academic and personal nature. A student's ability to identify his or her emotional state is an important

step forward in becoming a secure learner who can link ideas, work with colleagues, and think critically.

The students' comments about the discussion-based component of the testing suggest the activity's potential for enhanced reasoning through dialogue. The probing-type questions by the teachers appear to have facilitated students' critical thinking.

The students' grades were, in large measure, aligned with their final standings in the course. The three students who scored less than 9 (D or F range) were the three weakest students in the class as per their final standings in the course. One anomaly was a student who scored very strongly on the scenario testing but achieved a final standing that was two letter grades lower. This student was a registered practical nurse before entering the baccalaureate program, and may have had extensive experience with the scenario she selected for the test. Hence, the student could have been advantaged in the scenario test by prior knowledge and experience. Pulling these ideas together, it is suggested that scenario testing is as valid an assessment tool from a numbers point of view as other forms of assessment used in the course.

Implications for Nursing Education

This activity has value in fostering students' ability to think critically by requiring students to integrate relevant factors based on a case study. From a nursing point of view, these factors include pathophysiology, determinants of health, risk factors, and therapeutic interventions, including pharmacology. Additionally, given the talk-through nature of the activity, the teacher has an opportunity to witness critical thinking as it may or may not include the four dimensions identified by Brookfield (1987).

This kind of scenario testing holds potential for other domains of nursing education. For instance, an ethically focused case would lend itself well to the probing questions and integrative thinking of this kind of scenario testing. Community health nursing is another specialty that might benefit from scenario testing, since it requires students to make connections and to think on their feet. These learning situations challenge students to integrate knowledge, theory, and practice in contexts involving complex decisions and actions.

Another implication pertains to the concepts of student nervousness and ability to perform in one-to-one performance-based situations. In the activity described in this paper, it appears that personal nervousness may have been a variable for some students. Other students talked about the verbal feedback as helping them with their confidence and thinking. These components need to be studied in further detail and in combination if the goal is to help students become competent thinkers in practice.

In closing, the scenario testing experience provided students with an occasion to practise a skill that appears to enhance personal confidence and professional competence. Ideally, scenario testing fosters development of students' abilities to think on their own, to integrate pertinent factors, and to make connections. It, therefore, reflects the diversity of interactions that practising nurses may encounter.

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