

## CASE-BASED TEACHING AND LEARNING EXPERIENCES

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*Case-based teaching and learning strategies can be utilized to assist advanced practice psychiatric nursing students in both obtaining requisite knowledge and enhancing clinical reasoning skills. We discuss the benefits of case-based learning in terms of how it (1) contributes to students' appropriate organization of information to be recalled later for use in clinical reasoning situations; (2) generates experiences that students would not otherwise have; (3) increases the visibility of students' clinical reasoning processes; and (4) enhances students' confidence. This article also explores three examples of case-based teaching and learning: use of written cases in a seminar; use of standardized patients in an assessment course; and utilization of web-based cases for learning assessment and intervention skills. Finally, we compare and contrast each of these methods in terms of their relative effectiveness in achieving each of the benefits.*

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The complexity of the competencies expected of advanced practice nurses serving psychiatric clients is continually increasing. Knowledge is central in building these competencies, but knowledge alone is not enough. Knowledge must be organized and utilized in systematic ways and applied to actual clinical situations. Mastery of clinical reasoning skills is vital. Case-based teaching and learning strategies can be utilized to assist advanced practice psychiatric nursing students both in obtaining requisite knowledge and in enhancing clinical reasoning skills. Learning in nursing as well as in other health care fields has always involved clinical experiences that require applying knowledge to specific patient situations. In addition, teaching through cases has been utilized in professional schools to facilitate discussion around issues that students face after graduation. Case-based learning is a powerful tool, and there are a variety of ways to implement this useful strategy.

We discuss the benefits of case-based learning in terms of how it (1) contributes to students' appropriate organization of information to be recalled later for use in clinical reasoning; (2) generates experiences that students would not otherwise have; (3) increases the visibility of students' clinical reasoning processes; and (4) enhances students' confidence. This article also explores three examples of case-based teaching and learning: use of written cases in a seminar; use of standardized patients in an assessment course; and utilization of web-based cases for learning assessment and intervention skills. Finally, we compare and contrast each of these methods in terms of their relative effectiveness in achieving each of the benefits.

## **BENEFITS OF CASE-BASED TEACHING AND LEARNING**

### **Enhances Organization of Information in a Way that Can be Recalled for Use in Clinical Reasoning**

Clinical reasoning is enhanced by appropriate organization of knowledge. In the past, efforts were made to increase problem solving ability with the assumption that such ability could be applied across clinical problems. However, studies of expert reasoning show that there is not a generic problem solving process. Instead of a process that is applicable across all situations, expert reasoning is specific and highly tailored to a presenting situation (Mandin, Jones, Woloschuk, & Harasym, 1997). Expertise is context dependent. So nurses, even though experienced in one kind of clinical situation, are still novices in unfamiliar situations (Benner, 1984). Narayan and Corcoran-Perry (1997) have

proposed an alternative representation of decision making, which they term “line of reasoning,” and argue that domain knowledge (e.g., textbook knowledge) is embedded within cognitive structures. In other words, nurses’ clinical reasoning incorporates both knowledge and cognitive processes.

Organization of knowledge is crucial because, even though we are able to hold only a limited number of units or chunks of information in immediate memory, the amount of information can be increased through incorporating information into larger chunks (Miller, 1956). The complexities of clinical reasoning require considering many pieces of information that are organized for efficient recall and utilization.

Because expertise in clinical reasoning is context and situation specific and requires organization of knowledge, we need to consider the ways students can best learn and develop expertise (Carnevali & Thomas, 1993). In particular, development of expertise can be enhanced if students are assisted in learning information in a way that parallels the way in which that information will be used when retrieved. That has the advantage of “combining the creation of a knowledge structure and a search-and-retrieval strategy into a single operation” (Mandin et al., 1997, p. 175). As illustrated in case examples below, case-based learning provides for structuring of knowledge in a context-specific way.

### **Generates Experiences that Students Would not Otherwise Have**

Clinicians construct explanatory models of what clients are experiencing based on the expectations, experience, and knowledge they bring to the encounter. We can view the process of clinical reasoning as a process of constructing reality in a health care encounter. Previous experiences influence what is regarded as significant and what are regarded as symptoms of illness or signifiers of health. The explanatory model determines how the flow of communication is punctuated (Watzlawick, Beavin, & Jackson, 1967). If nurses have primarily cared for clients with psychiatric disorders, they may expect psychiatric rather than physical problems. If they have primarily taken care of clients of the majority culture, they may not recognize distress that is expressed in another way. If they have not experienced interactions with clients where a sensitive topic such as racism, same-sex relationships, or substance use has been discussed, they are less likely to see that as appropriate to future interactions.

We, of course, plan clinical practica to provide students with a range of experience. However, we cannot be sure that certain opportunities for

learning occur for all students. Gaps are of concern because of the importance of exemplars for clinical reasoning. Benner (1984) found that proficient and expert nurses had clusters of exemplar cases that they used in making judgments about particular clinical problems. These exemplars stood out for the nurses because their perceptions had been changed by them. Benner termed these exemplars “paradigm cases” and noted how clinicians used them in comparing current whole situations with previously experienced whole situations. Similarly, Fowler (1997), in a study of home health care nurses, noted “prototypical case reasoning” in which the nurses used past cases as examples of a category of illness or as case references.

Schmidt, Norman, and Boshuizen (1990) studied medical expertise and observed that a great deal of expertise seems to be dependent on matching the problem one is currently facing with similar ones seen before. These authors referred to the cognitive structures as “illness scripts” and noted that the scripts contained a wealth of clinically relevant information about the disease, its consequences, and the context in which illness develops. Cases may be used to supplement clinical practicum experiences and to function as paradigm or prototypical cases or illness scripts.

### **Increases Visibility of Students’ Clinical Reasoning**

The discourse or flow of communication in relation to cases reflects a student’s clinical reasoning processes. We know from discourse analysts that language is social action and can produce and constrain meaning (e.g., Gillies & Willig, 1997). We are interested in how students’ communications can produce or constrain meaning in cases. Students may focus on a part of a case and ignore other issues. Particularly when cases involve interaction between a student and a standardized patient, the impact of the student’s position in the discourse is more apparent since we know how a case is structured and the standardized content that is available. It becomes more evident how the communications of the student allow or impede the expression of patients’ stories and how this influences the accomplishment of clinical goals (Clark & Mishler, 1992; Mishler, 1995). This facilitates student and faculty assessment of students’ learning needs.

As part of teaching clinical reasoning, recognition of cognitive errors is crucial (Kassirer & Kopelman, 1989). Students, in discussing cases and applying theoretical content, manifest the extent and depth of their knowledge as well as their clinical reasoning skills, including any errors. Focusing on cases allows clarification of misunderstandings and

misinterpretations in a way that parallels the clinical precepting conversations analyzed by Pomerantz, Ende, and Erickson (1995). Through questioning and guidance, learners are led through a reasoning process in which they collaborate in a continuing analysis of the case, thereby gaining a sense of mastery.

## **Enhances Students' Confidence**

Radwin (1998), in her research on attributes of experience in nursing, observes an increase in confidence that grows with experience. We believe that case-based learning provides experience that can contribute to student confidence. Students can gain a sense of mastery from case-based learning even, as mentioned above, when it involves guidance in clarifying misinterpretations. This is significant since mastery experiences represent the most effective way of instilling a strong sense of personal efficacy (Bandura, 1998). Whether by analyzing a case in seminar, interviewing a standardized patient, or working through a web-based case, a student can potentially learn a resilient sense of efficacy from the mastery of having successfully overcome obstacles. On the other hand, efficacy can be undermined by a failure that occurs before a sense of efficacy is established. According to Bandura's (1998) theory of efficacy, it is important that learning be structured to support student success, to allow students to receive modeling of success by others, and to have the experience be pleasant.

## **EXAMPLES OF CASE-BASED TEACHING AND LEARNING**

Case-based teaching and learning can occur in a variety of ways. We now describe three examples of how we have used cases.

### **Using Written Cases in a Seminar**

Written cases can range from a short sketch used to illustrate a theoretical point to elaborate cases, presented in sections, with questions to help students develop clinical thinking patterns and integrate theoretical content. They are particularly useful in helping students achieve high-level learning involving analysis and synthesis of knowledge. Two examples of their use are presented here.

In a psychiatric nursing graduate theory course, case-based learning is used to assist students in gaining depth of understanding of the

theoretical literature, the experience of a psychiatric disorder for individuals and families, and considerations involved in treatment planning. The readings for each class session include one or more cases drawn from the psychiatric literature. For example, in preparation for discussion of borderline personality disorder, students read "Personal account: A 'classic' case of borderline personality disorder," in which Williams (1998) describes her experience of the illness. The emphasis in study questions, written assignments, and class discussion is on how the theoretical readings apply to this specific clinical example. For example, how does Zanarini and Frankenburg's (1997) tripartite model of development of borderline personality disorder apply to Williams' description of her experience? How does Linehan's (1993) description of behavioral patterns apply? What does this understanding suggest regarding treatment? Students are encouraged to struggle with ways concepts apply—or do not apply—in a particular case, which helps them learn material and organize concepts for application. Simultaneously, the cases expand students' experiences by helping them see mental illness from the perspective of a sufferer. Their writings and class discussions applying the theoretical material to the cases make evident their thought processes and any misinterpretations, allowing for clarification as necessary.

As another example, in a psychiatric nursing graduate clinical seminar, written clinical cases drawn from practice situations are used to help students develop a systematic approach to clinical decision making for a variety of clinical problems. For example, students are presented with the case of a 31-year-old secretary complaining of tiredness, increased thirst, and urinary frequency over the last six months. She also has been gaining weight and has several significant stressors in her life. After being given more historical data, students are asked to answer several questions including: "What in-depth information is sought in evaluating a patient with fatigue?" "What additional history is needed to thoroughly evaluate this case?" and "What is the appropriate differential diagnosis for this patient?" Answering these questions helps students integrate the information they have started to assimilate from lecture and readings. Further sections of the case cover diagnostic reasoning, laboratory testing, pathology of the diagnosed disorder, treatment planning, and follow-up. During seminar, discussion of each question helps learners understand what points of information are crucial to the evaluation, diagnosis, and management of fatigue, helping to build a pattern of inquiry for this problem. Participation in the case discussion during seminar makes clinical reasoning apparent to the faculty seminar leader, allowing for amendment where necessary. When responses to the case are

written, clinical reasoning processes become even more visible. Having dealt with a complex case on paper, students are helped to organize their information from readings and lectures and make it more accessible for application in clinical situations. They have an exemplar or prototypical case from which they can work. This allows them to move with more confidence through actual clinical encounters.

## **Using Standardized Patient Cases**

Another method of case-based teaching and learning is with standardized patient (SP) cases. SPs are lay persons trained to portray a particular patient role in a faculty-designed case scenario for a series of students (O'Connor, Albert, & Thomas, 1999; Stroud, Smith, Edlund, & Erkel, 1999). SPs were developed in the 1960s by Howard Barrows who coached a woman to play the part of a paraplegic, blind patient as a way of teaching medical students (Barrows, 1993). Since then, SPs have been used in medicine and, to a lesser extent, in nursing as a means of providing learning experiences. There are many advantages to using SPs in clinical education. First, scenarios are designed by faculty to fit specific objectives and content, so emphasis and complexity can be controlled. Second, SPs provide a common learning experience for all students that can be a basis for class discussion. Third, SP cases afford a unique opportunity for evaluating clinical skills. Fourth, the experience is generally appreciated by students (O'Connor et al., 1999).

We have developed two case scenarios, both designed for learning and formative evaluations of the students as part of their assessment practicum. Each case involves complex health statuses, cultural factors that impact health, and family and broader system issues. For each scenario, SPs have been trained in the content of the case and in how to play a role consistently across students. Students are expected to exercise skills in assessment and differential diagnosis in cases with real-world complexity. The students carry out a videotaped interview, receive SP feedback concerning the experience, document their diagnoses in writing, and then have the opportunity to view their videotape and discuss it in seminar. Faculty review the videotapes and provide feedback to students.

The adult standardized case scenario depicts a Jewish woman in her 30s with depression and a gastrointestinal disorder, increasing alcohol consumption, and physical complaints that could be related to the depression or could be indicative of other problems. Based on our consultation with a rabbi who often counsels Jewish families, we incorporated

cultural aspects including some family strains as well as issues of workplace discrimination.

The other case portrays an African-American family consisting of a mother, father, son, daughter, and paternal grandmother. The SPs in the case were the son and the father. The son, a 12-year-old youth, was referred to the psychiatric mental health nurse practitioner because of possible attention deficit and hyperactivity disorder (ADHD). Using guided readings and didactic discussions, students are asked to confirm the diagnosis, assess the strengths of the family, determine how the strengths could be used to minimize deficits, and evaluate how the child and family interfaced with the school system. This case allows students to learn how to tailor a clinical protocol to an actual mental health case by closely attending to the physical, psychosocial, educational, and sociocultural development of the youth in the context of his school and family environments. Use of a clinical manual (Magyary, Brandt, & Kovalesky, 1996) provides a systematic format for areas to assess and document. The manual includes a diagnostic decision tree that students can follow in order to determine a diagnosis and define treatment options.

The adult and child SP cases each help students to develop their clinical competencies. Students practice assessing psychosocial and physical symptoms in the context of the SP's sociocultural milieu. In each case, there are explicit issues of discrimination and culture influencing the symptom picture. Given the increasingly multicultural society in which nurse practitioners work, acknowledging and responding to multicultural presentations of self and mental illness are critical for delivering culturally responsive care (Carnevale, 1999).

Because SPs provide an opportunity for students to have face-to-face interactions with clients, students gain experience with clinical reasoning. Although confidence may be gained or lost during the case interview, the overall SP experience seems to make students more comfortable using their skills in subsequent clinical experiences. For example, some students who were disappointed in their proficiency during the interview found the review of the videotape reassuring because it reflected a higher level of competence than they felt at the time. Videotaping the encounters also allows faculty and students to observe the SP-student interactions. Analyzing which questions students asked, how they asked questions, and when they asked questions makes visible students' clinical reasoning process during the interview. The students' written documentation also allows for evaluation of the students' clinical competencies. All these benefits illustrate the way that standardized cases



can effectively allow evaluators to assess students' skills and knowledge (Stroud et al., 1999).

## **Using Web Cases**

Internet technology provides the opportunity to deliver computer-aided instruction of clinical cases. We developed two web-based clinical case modules using software design elements such as HTML language and standard browser viewing. The design process considered those students with minimal technology skills in order to enhance their success in the interactivity required by this learning experience. These modules can be accessed from a computer at any time and allow individual student pacing.

Two case modules were developed to simulate actual clinical situations pertinent to the advanced practice psychiatric mental health nursing role in a community setting. The modules are oriented to developing assessment, decision making, and intervention skills. Although students can read ahead in these modules they are guided continuously by the technology of the web to assure that they maintain a steady course and track each stage of the patient and family through the module.

One of the web-based modules involves a young man with schizophrenia who lives in a rural community in a two-parent family and whose father is a minister. The other module involves an adolescent girl with an eating disorder who is part of a bicultural, supportive family. The modules were designed to provide students with experiences commonly associated with the trajectory of the health patterns often found with each clinical disorder.

Each web-based module is organized into phases of care (diagnostic, treatment, follow-up) to assure that a student clusters the actions needed for each particular phase. Various providers and systems are involved in each phase of care, as are family members, thus illustrating collaboration. In addition, the learner is challenged to define client-oriented outcomes and time frames for the therapeutic action plan.

The design and navigation procedures of the modules engage students and ease them through the scenarios. The information in the modules is of two types: literature-based and case-based. The latter supplies information about the client's health and environment. Initially and, to a lesser extent, throughout the module, students are directed to resources, including electronic professional and consumer-oriented materials. These

resources are instrumental to student progress through the clinical case. The learner is expected to apply the theoretical information to the client and his or her health and environmental situation, make an interpretation, and determine a therapeutic action.

The web cases incorporate menu bars, electronic feedback, faculty and student group meetings, and electronic mail among students. The menu bar provides access to the various data sources needed for clinical reasoning and decision-making. For example, school information, previous health reports, and lab results are formatted to model clinical documents and are available whenever a student wishes to consult them.

Electronic feedback occurs in response to student choices. There are virtual discussions among students through electronic mail, and students are able to view peer responses in select situations and provide feedback to one another. This experience also includes two student and faculty meetings.

Web-based cases contribute to learning in two important ways: (1) the design encourages the organization and synthesis of information and thus, the clinical reasoning needed to individualize data to a particular client in a specific context; and (2) the experiences broaden learners' clinical competencies in ways that actual clinical situations may not.

Web-based modules are structured to enable students to organize and communicate learning in a standardized format. Assessment and treatment planning forms are included in the form of grids in each module. The domains of knowledge or priority topics are listed in the first column. Students then sift through collected information and record relevant data in the adjacent column. In the final column, students are cued to indicate what further information is needed. After these grids are completed, students and faculty meet in person. Through discussion, clinical reasoning is made explicit providing an opportunity to build on student competencies.

The web-based cases also contribute to learning by providing virtual versions of experiences that are often not readily available in actual clinical situations. For web modules, students have the responsibility to plan comprehensive care over time rather than carry out segmented or narrowly defined functions at one or two time points. In addition, web cases require that students integrate psychosocial, physical, and cultural information; data from multiple providers of care; from family and school systems; and referral summaries. A follow-up phase is included in each web situation to challenge the student to reassess the client and context and the treatment provided, then determine the

reasons for acute symptom exacerbation and ways to revise approaches to care.

Both cases require students to recognize cultural influences. For the young man with schizophrenia, the cultural context involves a rural setting, two-parent family, and the centrality of religion in the family's way of life and father's profession. For the girl with an eating disorder, the context involves bicultural expression of ethnicity and a Westernized sociocultural emphasis on women's bodies and slimness. Both cases give students experiences with health care when the clinical disorder is at an early stage and exemplify the value of continued inclusion of the various professional and other individuals relevant to the client and the health situation. These learning experiences encourage students to look at the evidence for clinical decisions—standardized clinical guidelines for schizophrenia and theoretical challenges to the myths associated with eating disorders.

## **RELATIVE EFFECTIVENESS OF VARIOUS METHODS OF CASE-BASED TEACHING AND LEARNING**

We have described three examples of case-based teaching and learning: use of written cases in a seminar; use of standardized patients in an assessment course; and utilization of web-based cases for learning assessment and intervention skills. Other methods are possible. Irby (1994), for example, describes ways of using cases in medical teaching rounds.

Each method we have described contributes to student learning, but we have found that some benefits of case-based teaching and learning are better achieved by one or another of the methods. Table 1 summarizes our experiences in using each of the methods in relation to the benefits we have seen in student learning. Our evaluation of the relative strength of specific methods in achieving particular benefits for student learning is indicated by the use of Very high, Moderate, and Variable in Table 1. Although the expected benefits for learners are partly determined by the particular choice of method, some of the variability in benefits from one method to another may have been based on the specific ways we designed the cases. To a greater or lesser extent, each way of using case-based teaching and learning contributes to students' appropriate organization of information to be recalled later for use in clinical reasoning; generates experience that students would not otherwise have; increases the visibility of students' clinical reasoning processes; and increases students' confidence.

**TABLE 1.** Expected Benefits of Particular Methods

Organizes information as needed in actual use		Supplies experiences learners might not otherwise have		Makes visible learners' clinical reasoning processes		Instills confidence	
<i>High</i>		<i>Moderate</i>		<i>Moderate</i>		<i>Moderate</i>	
Written cases in seminar	Task is for learners to integrate didactic content with a particular case illustration—theory is used to enhance interpretation of phenomena. As learners move through the case, pertinent theoretical and factual knowledge is organized in a structured way.	Learners are induced to look beyond surface particularities of the case and to consider relevant aspects that might not be noted or learned in clinical encounters. Juxtaposition of theoretical and case material promotes complex analysis. Other learners' perspectives introduce additional or alternative views for consideration.	Learners' clinical reasoning becomes visible through class discussion or written analysis. As such, it is filtered through learners' readiness and skill in expressing thoughts clearly and fully in writing or discussion.	Level of learners' self-perceived skill (partly in comparison to peers) seems to determine resulting confidence. As case reviews and discussions are essentially cognitive exercises, learners' confidence in their intellectual capability may be affected more than their performance ability.			
<i>Moderate</i>		<i>Very high</i>		<i>Very high</i>		<i>Variable</i>	
Standardized patient experiences	Learners are required to assemble and integrate knowledge they have not previously integrated in order to carry out the activity.	SP experiences are planned to include complex learning about culture, family, and other systems; interaction of psychiatric and physical disorders; sensitive topics such as racism, same-sex relationships, and substance abuse. SPs typically provide	Videotapes of SP interviews clearly show how communications produce and constrain meaning in the interview. They also show how the telling of stories is facilitated or impeded, as for example, when the learner's clinical	Confidence level is closely related to learner's ultimate assessment of performance; this experience tests the learner's ability to actively structure and manage a face-to-face clinical encounter.			

<p>feedback. Learners participate in group debriefing sessions. Learning how others who had the same experience interpreted and managed the situation provides additional learning.</p>	<p>reasoning leads the interview in a particular direction. Asking learners to reflect on thought processes and to talk or write about them provides fuller understanding of their decision making during the activity.</p>	<p>Careful calibration of case complexity to learners' knowledge base and experience maximizes confidence.</p>
<i>High</i>	<i>Very high</i>	<i>Moderate</i>
<p>Web cases Clinical use and value of information are illustrated, and immediate application (e.g., in the answering of a question) enhances organization of information.</p>	<p>Web cases are planned for complex learning, and may include multiple clinical encounters over the course of illness allowing for various stages of illness and treatment to be depicted. As learners move through stages, various subsets of people—for example, client, family, multidisciplinary team, community resource organizations—are incorporated. Learners receive immediate feedback on the choice of action. This is in contrast to most clinical learning situations where direct feedback on statements, actions, and priorities is irregular.</p>	<p>Situations are prestructured and responses frequently constrained, so there is minimal test of independent action. Learners who repeatedly make choices endorsed as best may gain confidence, but web cases are low risk experiences that are usually designed to provide information rather than critique learner responses.</p>
<p>Reasoning processes and decisions are not necessarily visible. Answers to questions are often constrained, and many programs do not have the ability to record learners' choices. Learners also may look at answers they regard as incorrect so they can learn from the expert feedback that will be triggered by each selection. Posting to a class electronic bulletin board or meeting for discussion provides opportunities to understand how learners are construing situations and deciding on responses.</p>	<p>Feedback that will be triggered by each selection. Posting to a class electronic bulletin board or meeting for discussion provides opportunities to understand how learners are construing situations and deciding on responses.</p>	<p>Learners who repeatedly make choices endorsed as best may gain confidence, but web cases are low risk experiences that are usually designed to provide information rather than critique learner responses.</p>

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