Using the Case Method to Develop Clinical Reasoning Skills in Problem-Based Learning

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Clinical reasoning is increasingly recognized as a crucial component of the occupational therapy process. Different types of clinical reasoning used by occupational therapists have been identified, including scientific, procedural, interactive, narrative, conditional, and pragmatic reasoning. This article describes the use of the case method in the University of New Mexico undergraduate occupational therapy curriculum to facilitate development of occupational therapy students' problem-solving and reasoning abilities. The case method is a component of problem-based learning that emphasizes small group work to solve clinical problems that are presented as case studies. Students are presented with a variety of case formulas including paper or written cases, videotape cases, simulated client cases, and real client cases to promote the development of specific types of clinical reasoning. Problem-based learning may also hold promise as an educational strategy for fieldwork students and clinicians.

Problem-Based Learning and the Case Method of Teaching

Problem-based learning is a teaching method that emphasizes active, student-centered learning in a small group format. Information is organized and presented as integrated clinical problems or cases rather than separate content areas such as neuroanatomy and orthopedics (Walton & Matthews, 1989). Group participants usually meet for several hours at a time to work on a case, and study of a particular case may last for several group sessions. A tutor or facilitator works with each group.

Small groups are a central feature of problem-based learning. Typically, each group consists of five to eight students and one tutor or facilitator. Lucero, Jackson, and Galey (1985) suggested that the group should provide an environment that fosters open communication and support for members, intellectual curiosity and open discussion of issues, and problem-solving and clinical reasoning skills.

Case studies provide the structure for problem-based learning. Clinical problems are presented first in the learning sequence before any background preparation has occurred. Students are required to identify what information they consider to be central to the case, what they already know and can apply to the case, and what they need to learn to proceed with analysis of the case (Barrows & Tamblyn, 1980). In other words, students frame and identify problems and then continually identify and test hypotheses as they progress through the case (UNM, 1992).

During group tutorials, case-related questions arise that students are unable to answer. These questions form the basis for learning issues that students study independently between group sessions. Learning issues may revolve around basic science questions, clinical practice, health care system information, and so forth (UNM, 1992).

The quality of facilitation is critical to the success of problem-based learning. A skilled facilitator does not lead the group, but is responsible for questioning and probing...
the students' reasoning, supporting active student involvement, clarifying issues as needed, and promoting the application and integration of information needed to proceed with the case (UNM, 1992).

There is evidence to suggest that problem-based learning can enhance the integration of basic science concepts into clinical problems (Norman & Schmidt, 1992). In addition, Barrows and Tamblyn (1980) suggested that problem-based learning promotes the acquisition of problem-solving skills.

Problem-Based Learning at UNM

In the UNM Occupational Therapy Program, problem-based learning is combined with traditional educational methods. Small groups of six to eight students and one group facilitator meet for several hours a week each semester as part of the core program. During the problem-based learning component of a course, the students work together on cases that require application of knowledge introduced in a lecture or laboratory format in addition to application of new information.

The facilitator for each group is a UNM instructor or an occupational therapist from the community. Facilitators receive 2 days of training in problem-based learning at the UNM medical school. The first day includes lecture and discussion about the philosophy of problem-based learning, the role of the facilitator, techniques of questioning and probing, and managing group conflict. On the second day of training, participants gain experience facilitating groups of students under the supervision of an experienced facilitator.

Other Options for Using Problem-Based Learning

In a clinical setting, an experienced therapist might facilitate a group of entry-level therapists or students completing their clinical education (Fieldwork Level II). Another option is for therapists to take turns facilitating a group of colleagues. The case focus would depend upon the experience and needs of the group members.

Types of Clinical Reasoning

Clinical reasoning is increasingly recognized as central to the occupational therapy process (Mattingly & Fleming, 1994). Schell and Cervero (1993) identified 23 articles in the occupational therapy literature between 1982 and 1993 that discussed clinical reasoning in some form or another. They distinguished between types of clinical reasoning including scientific reasoning, narrative reasoning, and pragmatic reasoning. Fleming (1991) described different reasoning tracks that the therapist uses, including procedural, interactive, and conditional reasoning. I believe that all of these forms of clinical reasoning can be addressed through problem-based learning.

Scientific reasoning, as described by Rogers (1983), is the "thinking that guides practice" (p. 601). This type of reasoning is similar to what Fleming (1991) called procedural reasoning. It is systematic and rational, encompassing the concepts of hypothesis generation and testing. In problem-based learning, students or clinicians appear to use this form of clinical reasoning when they choose what information they need to know, and generate ideas or hypotheses about the specific performance component deficits that may explain the problems that a client is experiencing.

Interactive reasoning (Fleming, 1991) focuses on getting to know the client as a person, and seems to be closely related to Mattingly's description of narrative reasoning (1991), which emphasizes the phenomenological experience of the client. In problem-based learning, certain types of cases (e.g., the videotape, the simulated client, and the real client) are developed to emphasize the importance of the client's perspective. Students are encouraged to find out more about the individual client as they proceed with the case.

Conditional reasoning (Fleming, 1991) is a type of integrative reasoning that allows the therapist to envision how a client might be able to function in the future and how the therapist might be able to bring about that future. In problem-based learning, cases involving conditional reasoning might be developed to allow students to explore alternate client paths and options.

Schell and Cervero's pragmatic reasoning (1993) addressed the importance of contextual considerations, such as political and economic factors, that may affect the provision of therapy services. In problem-based learning, some cases involving pragmatic reasoning are developed to emphasize the effect of environmental factors on clinical decision making. For example, students may be asked to identify the kinds of community services available to a client with a traumatic brain injury who is returning home, or they may need to learn about reimbursement sources for persons with long-term mental illness.

Types of Case Formats

There are many ways to develop a case and bring it to life. In fact, different case formats may facilitate different types of clinical reasoning. I will describe the paper case, videotape case, simulated client case, and real client case, formats used with UNM occupational therapy students. I will also describe the types of clinical reasoning emphasized in each case.

The Paper Case

Written or paper cases are commonly used in the UNM curriculum (Waterman & Cooley, 1985). Scientific and procedural reasoning are often the dominant reasoning
modes required by paper cases, but narrative and pragmatic reasoning may also be important depending upon the particular content of the case.

A paper case is presented in small chunks, the way that a therapist might actually encounter the problem in clinical practice. Information presented incrementally engages the student (or clinician) in problem framing and setting (Schön, 1987), and the student must decide what information is needed to proceed with assessment or intervention. The following is an example of the beginning of a paper case:

M. C. is a 76-year-old Hispanic woman living with her 84-year-old husband who has Alzheimer's disease. She has lived her entire life in Albuquerque and has several children and grandchildren who also live in the community. Recently M. C. fell while walking to the bathroom and fractured her right hip. After surgery, M. C. was transferred to a rehabilitation center for therapy.

With this information, students are directed to address the following questions:

- What do you see as M. C.'s presenting strengths, problems, and concerns?
- What information will you need to develop an intervention plan?

After responding to these questions, students review a completed occupational therapy initial assessment for M. C. After comparing this information with the information they generated and after discussing and clarifying the findings, the student group is asked

- Is there additional information that you need as an occupational therapist?
- How will you proceed from here?
- What will you focus on in therapy? Why?

Unanswered questions form the basis for learning issues that students then study independently between group sessions. For example, students may choose to study different surgical procedures for hip fractures and how the use of different surgical procedures may affect the course of occupational therapy, or they may decide to learn more about why elderly persons tend to fall more frequently than young persons. They may become interested in the roles of Hispanic women in the family, or they may wish to learn how long clients stay in rehabilitation settings and how Medicare reimbursement works. These topics were not all addressed in the initial case presentation, but they may arise during group discussion of the case. The facilitator may help guide the students to identify learning issues that are pertinent to case comprehension and solution.

The incomplete case description provides a framework for students to learn to analyze information from a variety of disciplines, such as the physical and social sciences, in order to solve multidimensional problems similar to those that clinicians must solve in practice. In our experience, learning issues addressed have varied between student groups. This reflects the participant-directed nature of problem-based learning.

After independently studying learning issues between the first and second group sessions, the students and facilitator meet again after a few days or a week to share and discuss what they studied independently, to receive new information about M. C.'s changing hip precaution status, to learn about other team members' participation in treatment, and to receive information about M. C.'s progress during the first week in occupational therapy. Now students are asked the following questions:

- What information will assist you in providing relevant services at this point?
- What will you need to do to help M. C. successfully make the transition back to home?

The process of identifying and clarifying questions and answers continues for days or weeks until the case is completed and M. C is functioning well in her home.

In this manner the case develops incrementally, much the way a case actually progresses in the clinical setting. Students are required to continually assess and reassess what they need to know in order to make sound clinical decisions.

The Videotape Case

The videotape case presentation uses a videotape of a client performing tasks, discussing thoughts and feelings, or both. This type of case gives the students more lifelike details about a client, including personality, perspective regarding his or her illness or disability, and nuances of task performance and behavior. This format is particularly useful when the goal of the case is to help students explore the client perspective and develop narrative or conditional reasoning skills. It is much easier to develop a story concerning a client whom you have seen in action. For example, after watching a videotape of a client with schizophrenia performing some housekeeping tasks in a group home, interacting with her mother, and discussing how her illness has affected her life, the students are asked the following questions:

- How does this client describe herself?
- How do you think she sees her illness, abilities, and potential?
- How would you describe her strengths and weaknesses?
- Do you think that she could benefit from occupational therapy?
- What else would you as an occupational therapist need to know in order to work effectively with this client?

The students might also have questions (that could translate to discussion and independent study) about neurophysiology related to mental illness, the effects and side

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effects of psychotropic medications, how group homes function, and the community services available for persons with long-term mental illness. In addition to development of narrative and conditional reasoning, some questions may lend themselves to scientific and procedural thinking; others would reflect pragmatic reasoning.

The videotape case provides a starting point for further learning and discussion and offers a more complex picture of a client than does the paper case. However, it does not allow the development of interactive reasoning that is possible with the simulated client case.

The Simulated Client Case

In a simulated case, an actor learns a particular client role via a script complete with physical manifestations of disability, psychosocial history and persona, and instructions about how to respond to certain types of questions and interactions. The students are briefed about the client that they are about to meet and then they role play an occupational therapist evaluating or working with the simulated client. This approach gives the students the opportunity to proceed as they believe a therapist might in practice; they have to think flexibly and respond to the client’s (sometimes unexpected) response to the therapy process. For example, the students might be told, “You are about to meet a woman who has carpal tunnel syndrome and is also clinically depressed. Plan how you will introduce yourself, explain occupational therapy, and begin an initial assessment.” The students may identify a variety of interview questions and evaluation techniques that they believe are pertinent to this woman’s case. When they actually meet her and attempt to follow their plan, they may find that she makes little eye contact, responds in a monosyllabic manner to questions, and is reluctant to identify her own needs and goals. Now the students are forced to think on their feet and decide how to respond effectively.

The simulated client case is a wonderful way for students (or therapists) to try out different communication styles and to learn the skills of “reflection in practice” (Schön, 1984) that are critical to actual practice. Students may also receive immediate feedback from their peers, the group facilitator, and the simulated client concerning their performance. Students may also stop the role play when they get stuck, to discuss their confusion or concern about what to do next. Because the client is simulated, concern about doing the wrong thing or trying something new is minimized (Barrows, 1971), and the role play time-outs allow students additional time to think through the clinical reasoning process while actually applying it with a simulated client. In addition, after the role play is over, the actor playing the client can give feedback regarding interactions that occurred during the role play. Interactive reasoning is the dominant type of clinical reasoning developed with the simulated client case format. Simulated client cases may also facilitate development of narrative reasoning.

The Real Client

Persons from the community who have received occupational therapy in the past or who have a variety of disabilities have volunteered to meet with occupational therapy students in class. These persons are functioning in the community without receiving therapy, but they are able to reflect on their disabilities, the therapy that they have received, and their feelings about how they are doing. The experiences of these real clients and their interactions with the students again provide the seeds for learning issues and questions that the students must solve through study and discussion. For example, a 40-year-old woman with manic-depressive illness discussed her perceptions about her life successes and disasters, the types of therapy she had received in the past, and why the therapy had been useful or not. Later, the students were interested in exploring the theoretical underpinnings of the use of crafts in occupational therapy, why therapists were not working in local psychosocial rehabilitation settings, and how people cope with illnesses that may reappear and subside throughout one’s life. The students’ contact with a real client stimulated questions that required scientific and procedural reasoning as well as pragmatic reasoning faculties in order to solve unanswered questions and dilemmas. Learning about a client’s journey through illness and recovery may also facilitate development of narrative and conditional reasoning.

In addition to meeting with the students, real clients may agree to serve as the basis for paper cases. This may allow for a hybrid paper-real client case that includes useful aspects of both types of case formats.

Summary

The case method of learning used in the UNM Occupational Therapy Program has stimulated student excitement and active response. Instead of being told what is important to learn, the students are guided to identify important questions and learning issues on their own. The need to know is student driven instead of faculty driven. In our experience, problem-based learning has facilitated students’ thinking and problem-solving skills. Students move beyond being passive data collectors and begin, albeit slowly, to apply information and use a variety of reasoning skills critical to solving real clinical problems. Problem-based learning also could be a potent strategy for fieldwork students and entry-level therapists to expand their clinical reasoning skills. Indeed, the process of facilitating student tutorial groups has helped us as faculty members and therapists to more clearly identify and hone the clinical reasoning processes we use every day in educational and clinical settings.
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References


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