

Cooperative Learning as an Approach to Pedagogy

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Lecture-based pedagogical approaches cannot adequately prepare students in professional and technical occupational therapy programs. Faculty members in other disciplines are turning to a well-known and well-researched teaching approach called cooperative learning, which is more carefully structured and defined than most other forms of small group learning. Cooperative learning includes several key principles: positive interdependence, individual responsibility, appropriate grouping, group maintenance, cooperative skills, and promotive (interaction) time. This article provides ideas for managing the classroom with cooperative learning activities and describes eight of them: Three-Step Interview, Roundtable, Think-Pair-Share, Structured Problem Solving, Send/Pass-a-Problem, Generic Question Stems, Double Entry Journal, and Dyadic Essay Confrontation. Each activity is applied to content embedded in professional and technical occupational therapy curricula. A cooperative learning approach to evaluating learning is also presented.

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An increasing number of faculty members and administrators in various disciplines are recognizing the need for radical reforms in teaching approaches. Issues of quality and accountability have fueled a general movement toward educational reform (Boyer, 1990). Changing expectations of effective undergraduate and graduate education are reinforced by broader societal needs, including increased technology and the short half-life of knowledge in most discipline areas.

Similarly, the diverse student populations that enter the workforce also call for innovations in the classroom. Non-traditional students outnumber traditional students—18-year-old, nonworking students who graduate in 4 years. Given these diverse, nontraditional student populations, Nelson (1996) spoke convincingly of the need to alter teaching and learning philosophies and practices and specifically identified two fundamental changes: measuring effective pedagogy not by what is taught, but by what is learned, and viewing faculty members not as weeders of the unfit and the unworthy, but as coaches and facilitators who seek the success of all students. He advocated switching to non-lecture-based pedagogies, such as structured group work, and alternative paradigms of teaching and learning.

Paradigms frame the way individuals and societies perceive and understand the universe. There is considerable evidence that a paradigm shift is occurring in teaching (Boehm, 1992; Johnson, Johnson, & Smith, 1991) toward a new emphasis on delivery and the role of the teacher, making teaching the “second content of every course” (Boehm, 1992, p. 37).

This paradigm shift received renewed vigor with Barr and Tagg’s (1995) comparison of the Instructional Paradigm, which focuses on the “means” (teaching) and is based on ineffective teaching practices, to the Learning Paradigm, where student learning and success are the “ends.” In the Learning Paradigm, “a college’s purpose is not to transfer knowledge, but to create environments and experiences that bring students to discover and construct knowledge for themselves, to make students members of communities of learners that make discoveries and solve problems” (Barr & Tagg, 1995, p. 15). Not surprisingly, many disciplines are rethinking not only curriculum, but also the learning outcomes graduates will need. For example, the Accounting Education Change Commission (1990) alerted faculty to the need for new approaches to teaching and learning. The commission endorses active learning, complex problem solving, experiential approaches, group work, and innovative uses of technology.

Faculty members in occupational therapy academic programs need to examine their curricula, rethink their pedagogical approaches, and define learning outcomes. Desired learning outcomes include the attributes of an occupational therapy practitioner, such as a strong com-

mitment to teamwork, effective communication skills, problem-solving and critical-thinking skills when working alone or in groups, and the ability to teach and engage others in a process. The ability to impart knowledge to others is crucially important in all fields, perhaps even more so in occupational therapy where practitioners must both inform and motivate. Pedagogical reform is also important in health care fields because team approaches to patient care are common, and rapid breakthroughs in medicine and technology preclude any one person from total mastery. For example, occupational therapy practitioners work more closely than ever before with other health care professionals in interdisciplinary teams that emphasize not the separateness of each discipline but, rather, what each discipline can contribute to the whole. Occupational therapy practitioners also work in multidisciplinary teams in which disciplinary idiosyncrasies are preserved as the team members look at broad, general issues.

Lecture-based pedagogical approaches cannot prepare students for these workplace demands, as faculty members in the science, mathematics, engineering, and technology disciplines are recognizing. "The use of peer learning techniques in lecture courses is beginning to spread as faculty become convinced of the effectiveness of this approach measured in student learning" (Advisory Committee to the National Science Foundation Directorate for Education and Human Resources, 1996, p. 23). Cooperative learning is a teaching approach that is particularly effective in occupational therapy curricula, which must prepare practitioners to deal with different persons with issues such as loss, quality of life, meaningful activity, and the interaction among the environment, people, and performance. Competencies needed for such a complex occupation cannot come solely from textbooks. Rather, occupational therapy students must be actively engaged in the requisite content, issues, and skills. Therefore, faculty members interested in rethinking and redesigning their courses may find the principles and practices related to cooperative learning useful. The cooperative activities explored in this article are viable for virtually all content whether it is at the technical, undergraduate, or graduate levels of occupational therapy curricula.

What Is Cooperative Learning?

Cooperative learning is based on several assumptions about how people learn. First, learning is an active process. In addition to linking new information to past experiences, students must create something new with the information they learn. Second, learning is influenced by the context and activity in which it occurs. Third, students have diverse learning styles and needs that cannot be met by one teaching style. Finally, cooperative learning is social and encourages mutual exploration and discovery.

Several researchers trace the philosophical basis of cooperative learning to John Dewey's emphasis on experi-

ential learning and the role of schools in preparing students for life in a cooperative, democratic society (Davidson, 1990; Schmuck, 1985). Others find its roots "in the work on synergy by Ruth Benedict and Margaret Mead and in the psychological models developed by Abraham Maslow and Carl Rogers" (Hassard, 1990, p. viii). Still others see it evolving from Kurt Lewin's impact on the group dynamics movement of the early 1940s, influenced by Lewin's student Morton Deutsch and his interest in "applied" social psychology (Sherman, 1990). Several different research traditions have influenced the cooperative learning movement, including Piagetian and Vygotskian theories in developmental psychology (Brown & Palincsar, 1989).

Cooperative learning tends to be more carefully structured and delineated than most other forms of small group learning. It has been described as a "structured, systematic instructional strategy in which small groups work together to produce a common product" (Cooper, 1990, p. 2). Most experts agree that cooperative learning has several components that distinguish it from other small group learning procedures, including collaborative learning. These components are positive interdependence, individual responsibility, appropriate grouping, group maintenance, cooperative skills, and promotive (interaction) time.

Positive interdependence occurs, according to Kagan (1993), when there is a positive correlation between the gains of individuals and the gains of teams. The Johnson brothers used the expression "sink or swim together" in numerous publications (e.g., Johnson, Johnson, & Holubec, 1993). Basically, all members of a learning team contribute to each other's learning under "win-win" conditions. Through careful planning, positive interdependence can be established by (a) mutual goals, such as reaching a consensus on a problem's solution; (b) mutual rewards, such as basing team grades on a composite of each member's improvement or on the random selection of one team member's paper or quiz to represent the team score; (c) structured tasks, such as a report with sections contributed by each team member; and (d) interdependent roles, such as group members serving as discussion leaders, organizers, recorders, and spokespersons.

Individual responsibility tends to eliminate "free riders" and "workhorses" or "dominators." Grades reflect individual effort, not undifferentiated group effort. Because the grading system is noncompetitive, students have a vested interest in helping teammates.

Appropriate grouping is also essential. Researchers such as Kagan (1993) and Johnson et al. (1991) have recommended heterogeneous teams, reflecting varied learning abilities, ethnic and linguistic diversity, and a mixture of the genders. In a semester-length academic course, most cooperative learning practitioners recommend teacher-selected learning teams of four whose composition is changed every 6 weeks. In briefer situations, short-term teams focusing on specific learning goals are appropriate. Because most

employers value cooperation and teamwork, heterogeneous teams provide opportunities to reinforce practices needed in the "real world," including the health care professions.

Group maintenance builds team skills, allows students to reflect on the learning process and outcomes, and provides course directors with continuous feedback. Teachers and students monitor group and individual progress. After an assignment or activity, for instance, participants could respond to questions such as: "How did members of the group contribute?" "What could be done next time to improve cooperation of the group?" "What were the three most important things learned today?"

Cooperative skills are important in cooperative learning because although these skills do not need to be taught to adults as often as to younger learners, some orientation to cooperative skills is needed to help students recognize the importance of cooperative interaction and mutual respect. Such skills are workplace oriented in that they help students learn to give or accept constructive feedback, to resolve conflicts rapidly and harmoniously, and to ask and answer probing questions.

Promotive (interaction) time is another key component of cooperative learning (Supinski, 1997). If students are given too much time for tasks, they will not attend to the subject matter. If they do not have enough time to complete their cooperative effort, then frustration will set in, and the positive effects of cooperative learning will be lost.

Redesigning for Cooperative Learning

The Traditional Course

Courses in professional or technical occupational therapy curricula may address broad or narrow segments of the population. They may focus on the occupational therapy practitioner as educator, researcher, practitioner, or manager. Traditionally, courses are taught entirely by one faculty member or are coordinated by someone who schedules guest speakers to present specified content. Students take notes, pose questions, and discuss the content. Teaching methods usually consist of straight lecture or a mixture of lecture, discussion, and case studies. Too often, students are given neither encouragement nor time to share the rich experiences gained during fieldwork. Course requirements may include supplemental readings, a paper discussing an assigned medical condition and appropriate intervention, and a comprehensive exam.

A Cooperative Learning Approach

Redesigning a course in therapeutic interventions from the traditional to the cooperative learning approach requires a radical transformation of course philosophy and pedagogy but not of the curriculum or course requirements. As in a traditional learning approach, the course director takes a proactive role in (a) identifying course goals and learning objectives, (b) preparing the syllabus, (c) constructing as-

essments to determine student learning outcomes, and (d) placing readings and videos on reserve. These steps ensure the structure required for an efficient and effective cooperative learning environment.

Such planning, however, cannot subvert the student-centered philosophy prompting the course changes. Thus, the course director has to design the course carefully so that the classroom climate enables students to learn once the course begins. Well-sequenced course activities built on an integrated knowledge base should lead to active learning where peers assist rather than compete with one another. This means that the roles of both the teacher and the student must change. The course director ceases to be the expert and becomes a facilitator or conduit. Students, in turn, cease to be reservoirs and become active learners, critical thinkers, and problemsolvers immersed and engaged in the cooperative learning process. In this model, neither the teacher nor the text is the sole authority in the classroom. These shifting roles can materialize only when cooperative learning and teaching approaches are matched with elements of effective classroom management.

Classroom Management

If the curriculum is not based on principles of cooperative learning or if this approach is used infrequently, the course director should familiarize students with cooperative learning during the first class period. During this time, the expectations, roles, and responsibilities of both faculty members and students are defined.

To build in positive interdependence, the course director usually divides the students into work teams typically composed of four members each. These teams may remain intact for the duration of the course. To build in heterogeneity (i.e., by race, work experience, age), teams are assembled on the basis of information found in student data sheets. Such information might include name, address, gender, race, previous colleges or educational experiences, fieldwork experience, work or volunteer experience, and preferred learning style. Such data sheets should be course specific. Students must be convinced of the value of sharing any sensitive information, such as data related to race or marital status, and should be assured of confidentiality.

Each team is assigned a team folder into which the course director places all materials needed for a given class session. The course director brings the folders to each session where they are retrieved and maintained by the team member with the role of folder monitor. Students place all homework assignments and the results of in-class written activities in their team folders. The in-class assignments are not graded because their intent is to foster learning and cooperation. Individual homework assignments are collected in the folder and receive written feedback and grades (i.e., points for completed, quality work). Using team folders reinforces team identities (e.g., often teams spontane-

ously decorate folders with a team name) and eases the logistics of returning and collecting necessary paperwork.

To further support positive interdependence, each team assigns rotating roles to members weekly. Thus, all students have the opportunity to assume responsibility for leading the group through the in-class processing activities, making certain that the contributions of all members are valued. Students also serve as group recorders, mediators, and spokespersons. They all handle the responsibility of being the folder monitor, making certain that the paper flow between students and instructors remains fluid.

During each class session, the course director and any other involved faculty members walk around, observing and listening to team discussions. They may advise, redirect, or assist students in the analysis and synthesis of the content under discussion. They also actively monitor the ongoing group dynamics and the level of cooperative skills, two essential components of successful cooperative learning.

Group maintenance and the acquisition and use of appropriate social skills can be furthered by other approaches, such as quality circles (Angelo & Cross, 1993). The quality circle is a classroom evaluation technique originally adapted from industrial quality control circles where production line employers work closely with managers to identify and solve production problems. To establish the quality circle, the course director asks students to vote for two or three class representatives from a group of volunteers. Throughout the term, students then take course-related suggestions, complaints, or compliments to their representatives. To encourage timely feedback, the course director meets every other week throughout the term with the quality circle. These representatives provide valuable feedback about student perceptions, both positive and negative, and about the value of the cooperative learning structures.

Also discussed during these meetings are those rare instances when a team becomes dysfunctional (e.g., personality conflicts, student apathy, conflicting demands on team members' time). This information allows the course director to adjust teaching and learning activities to ensure a positive learning environment and maximum content assimilation. In the case of negative feedback about teams, resolution is sought within the quality circle. It is far better for the elected students to intervene in class-related problems (either team or whole class) than for the course director to take unilateral draconian measures. Students are more likely to respect and respond positively to changes suggested by their peers, particularly if they are aware of the serious deliberations behind them.

To encourage students' individual accountability, many course directors have students keep a classroom notebook into which they record housekeeping details such as acquired points, completed assignments, and absences. Some course directors even ask students to add up points and calculate their own grades at both midterm and end of

term. Should there be a discrepancy between the records of the course director and those of the student, the student is responsible for proving the accuracy of his or her records. Not only does this strategy minimize housekeeping details for the course director, but it also places the responsibility for learning squarely on the students' shoulders.

To facilitate the rhythm of information exchange, course directors must sequence assignments and activities with independent work followed by cooperative work and teacher feedback. First, students engage in structured out-of-class assignments. They typically work alone, depending on the content and the desired learning outcomes. Later, peer feedback occurs during class time when students "process" these out-of-class assignments through specific cooperative activities. These cooperative activities can be carried out through random pairing or through work accomplished within an established learning team. After an in-class cooperative processing activity, the individual out-of-class assignments and in-class written work are placed into team folders to be reviewed by the course director, who provides written feedback and assigns points. Thus, students engage in many different types of carefully designed and sequenced activities grounded jointly in discipline-specific content and the tenets of effective cooperative learning.

Cooperative Learning Activities

Cooperative learning activities are basically empty frameworks into which faculty members pour content. Most cooperative learning activities share the following characteristics: A small group of students (between two and five) complete clearly defined, collective tasks within a specified time; team members assume roles to support the overall process and product; and students learn to respect the synergy of the group and the diversity of individual viewpoints.

When used appropriately, cooperative learning activities occur in a developmental sequence, linking with and building upon each other. Used together, they become a powerful strategy for teaching and learning. Used separately, they become a series of disconnected small group exercises or, worse, mere gimmicks.

The following eight activities may be used in any course: Three-Step Interview, Roundtable, Think-Pair-Share, Structured Problem Solving, Send/Pass-a-Problem, Generic Question Stems, Double Entry Journal, and Dyadic Essay Confrontation. The first three activities can be used spontaneously without assigned groups or learning teams; they work equally well when such teams are in place. Structured Problem Solving, Send/Pass-a-Problem, and Generic Question Stems work most efficiently and effectively with permanent teams. Double Entry Journal and Dyadic Essay Confrontation involve pairs work through random pairing or pairing within a team. The first five activities can be used in class to reinforce and amplify

outside readings or assignments. The final three include in their structure an out-of-class component and an in-class "processing" component. Thus, all activities can be used effectively to sequence learning. An explanation of each activity is provided and applied to occupational therapy content.

Three-Step Interview. The Three-Step Interview is an effective team building exercise that reinforces information learned during listening to lectures or reading texts. Faculty members generate open-ended questions for which answers clarify, integrate, or highlight important concepts. In Step 1, a student conducts a timed interview of another student, using the specified questions. In Step 2, the roles are reversed within the pair and the interviewed student questions his or her interviewer, using the same open-ended questions. Pairs working more quickly than others should turn to extra questions, or "extensions," so that they remain active and engaged. (Use of such extensions is a good general rule with *all* cooperative activities to avoid off-task behavior.) In Step 3, two pairs combine to discuss information and insights. Students carefully share their partners' ideas instead of their own. The structure of a Three-Step Interview encourages turn taking, respectful listening, probing questions, and positive reinforcement of ideas. Pairs interviewing one another within already-formed learning teams can use this activity. More often, it is used with randomly formed pairs and quads to allow more whole-class team building and the exchange of more ideas. Furthermore, newly formed quads can perform as a temporary team.

The Three-Step Interview is effective for reinforcing virtually any topic. Typically, all students respond to the same questions, which can be both factual and affective: "What interventions create positive interactions between a mother and a newborn who is tactually defensive?" "What are your key concerns about fieldwork in mental health?" "What strategies for intervention do you recommend for client X?" And, as a follow-up question, "What motivational strategies would you include in this treatment plan?" The questions can even involve some nonverbal elements, such as asking a partner to select an evaluation and correctly demonstrate one component (e.g., measuring range of wrist flexion, observing behavior during a task). Concepts are reinforced and internalized in a new way during these discussions, and students have an opportunity to apply information from printed sources to case scenarios while drawing from fieldwork experiences. Furthermore, students and course directors ascertain the depth of students' understanding of the topic at hand. By listening to interview discussions at all levels, the course director can often clarify misunderstandings or fill in missing knowledge.

Roundtable. The Roundtable activity is useful in developing individual accountability in a nonthreatening manner because it requires each team member to contribute

written ideas. It is an excellent activity to use when exploring various aspects of a topic. Seated in teams, either permanent ones or ones formed spontaneously, students circulate one pad of paper, each adding another issue, idea, or fact to the growing list. The tablet circulates until time is called. To speed the process and allow for a greater range of ideas, students say out loud the issues, ideas, or facts they are contributing.

The Roundtable activity is a useful way to explore the psychology of disability or illness. Each team generates a list of issues persons face when they have an acute or chronic illness or disability. Such issues may include decreased strength, poor judgment, decreased attention span and concentration, flat affect, loss of income or home, poor interpersonal skills, and dependence in activities of daily living. Other relevant Roundtable topics may include symptoms of attention deficient disorder, obstacles to client management, dimensions of occupational therapy in geriatric practice, or components of the heart.

Because the Roundtable lists are typically taken up in team folders and reviewed by the course director, there is no need for an elaborate report-out. If a report seems in order, a team's scribe puts its list on the board. Sometimes a rapid oral presentation suffices. Using a quick rotation, a spokesperson from each team stands and shares one idea, one spokesperson after another, until each team has contributed. The oral presentation reinforces the synergy of multiple contributions from each team yet does not take a great deal of class time.

Think-Pair-Share. Think-Pair-Share (Lyman, 1981) is an in-class activity that allows students to "process" new information gleaned from lectures or to reinforce or amplify material learned through out-of-class assignments. When using Think-Pair-Share, the course director poses a question and asks each student to *think* of a response. Ideally, the question should demand analysis, evaluation, or synthesis. This wait time allows students to gather their thoughts (retrieving ideas from long-term memory), resulting, as Rowe's (1974, 1978) research indicated, in responses of greater length and higher quality. An instructor may prefer that this "think" period be used to allow students to write their responses, a practice ensuring that most students are on task. This practice also strengthens the feedback loop because the individual responses can be collected at the conclusion of the class, reviewed, and returned. In the second phase, students *pair up* to talk about their various responses. This pairing enhances confidence and oral communication skills. All students have an opportunity to share their thinking with at least one other person, thereby increasing their sense of involvement. Thus, simultaneous learning transpires in a busy, animated classroom. In the third segment, students *share* responses within their teams or with the entire class. After rehearsing in pairs, students are more capable of volunteering well-thought-out re-

sponses because they have had an opportunity for both rehearsal and feedback.

A Think–Pair–Share activity to sequence and reinforce learning may be used after an out-of-class reading or writing assignment yet before a class lecture, enabling course directors to determine how well students understand particular information or issues. For example, the course director may pose the question: “How do race and culture affect the way in which one consumes (or provides) health care?” In this multicultural example, students develop an appreciation for points of view different from their own and broaden their perspective and understanding of other cultures. A factual question may be: “What techniques would you choose to educate an 80-year-old African-American woman about the nature and treatment of carpal tunnel syndrome?” Students may be asked through a Think–Pair–Share activity to discuss the effects of fetal cocaine exposure, clarifying and amplifying this complex topic at each level. To sequence learning, the “think” portion of the activity could be assigned as homework (e.g., as when students are asked to prepare a specific intervention plan). Then they could be randomly paired in class to compare their approaches before participating in a whole-class discussion. Depending on the content, timing, or placement of the Think–Pair–Share activity, participation reinforces content from previous readings or lectures because it promotes discussion, analysis, integration, and problem solving.

Structured Problem Solving. Structured Problem Solving (called Numbered Heads Together by Kagan [1993]) prompts equitable participation and peer coaching. It is an activity that can be used repeatedly. Before the activity, team members count from one through four (or five) so that each team member has a unique identifying number. When permanent teams are in place, these identifying numbers (or playing card suits, colors, etc.) remain constant for the duration of the team’s existence. The course director then identifies the task each team will complete, specifying a time limit. Teams can work on the same problem, which could be projected on an overhead, or the course director could give each team a flashcard describing different problems or questions. Positive interdependence is fostered when teams find in their folders a single work sheet, such as a set of questions to match or diagrams to draw or label. Teams proceed to understand the question, discuss and resolve the problem, or complete the work sheet. After time is called, the course director picks a number and those with that number become the teams’ spokespersons. Because of time constraints or unnecessary repetition, all teams may not report to the class, but written work from each team is collected in the team folders.

Part of this activity’s effectiveness derives from the fact that no one knows who will be asked to be the team spokesperson. This uncertainty usually promotes peer-coaching behaviors within each team. Because of team pride, if not altruism, team members become vested in helping their

peers learn by making certain that each team member can articulate solutions to the assigned task. Structured Problem Solving is also a desirable activity because at least 25% of the class is actively engaged at any given time, a feature Kagan (1993) identified as the principle of simultaneity.

Structured Problem Solving is a versatile activity, lending itself to a range of challenges from the simple to the complex. For example, each team could be given a list of insurance acronyms and work to supply the definitions. A fairly complex Structured Problem Solving activity could involve ethical dilemmas from occupational therapy practice, research, management, or education. Vignettes could incorporate the ethical elements of fidelity, nonmaleficence and beneficence, veracity, and justice (Purtillo, 1993). Students could draw from their fieldwork and life experiences for creative ways in which to approach their team’s dilemma. Vignettes can address issues such as quality of life, confidentiality, and professional competence. Each team could discuss a different dilemma, or two teams could discuss the same one to demonstrate the value of multiple viewpoints.

Reports after a Structured Problem Solving activity will vary. If all teams worked on the same problem with a fairly “closed” solution, then having only one team spokesperson respond, using an overhead projector, can suffice. If the problems were open-ended, then several teams might respond. If teams worked on different problems, then each team might have to make a brief report. Multiple whole-class reports can be a “time sink.” An alternative that capitalizes on the principle of simultaneity would be to have each team’s designated spokesperson rotate to another team to deliver the results. Thus, 10 within-team reports occur simultaneously, taking a total of 10 min of class time, rather than 10 whole-class reports occurring sequentially, taking 100 min of class time.

Send/Pass-a-Problem. The Send/Pass-a-Problem activity is a creative in-class exercise that promotes problem solving and higher-level cognitive skills. The exact source of this structure is unclear, but a version of it was generated by the state of Maryland’s Howard County Staff Development Center in 1989, inspired by Kagan’s (1989) high-consensus-oriented Send-a-Problem structure that uses rotating flashcards for content review.

Students begin with a list of problems or issues generated during a Roundtable or any other cooperative learning activity. Each team selects a problem and writes that problem on the front of a folder or envelope. If class size allows, it is beneficial to assign the same problem to two teams because this expands the list of potential solutions. Teams brainstorm solutions or ways to approach that problem, write them down, and put them in the folder before passing it to another team. The second team notes the problem written on the folder and, like the first team, proceeds to brainstorm solutions to the same problem. The second team does not look at the list generated by the initial team.

The second team simply adds its list to the folder and passes it to a third team. Unlike the first two teams, the third team opens the folder and reviews the proposed solutions before adding its own ideas. The third team decides on the best possible solutions or approaches to the problem by either identifying one or more of the earlier solutions, by proposing their own, or by synthesizing the best ideas from all three teams.

Send/Pass-a-Problem can be summarized in several ways at the discretion of the course director. Each team can report to the whole class the best solutions to each problem, or representatives from each team who worked on the same problem can meet to share solutions and approaches.

Send/Pass-a-Problem is an ideal activity for generating therapeutic activities to address problem or deficit areas of a particular condition or disorder previously identified with a Roundtable activity. For example, during a Roundtable activity, the class compiles lists of problems faced by a person with left hemiplegia. All teams review the following problem list: stage four flexion synergy of the left upper limb, poor judgment, impaired sensation of the entire left side, depression, poor attention span, expressive aphasia, and dependence in all activities of daily living. During the Send/Pass-a-Problem activity, the goal is to generate potential therapeutic activities for a person with left hemiplegia. Throughout this exercise, students should be encouraged to share solutions or interventions they observed while on fieldwork. To begin the activity, each team selects a different problem and writes that problem (e.g., depression) on the front of its folder. Then, until time is called, team members brainstorm possible ways to address the problem of depression and write a list of approaches or solutions. When the course director calls time (some teachers, to add interest, play music to stop the activity), teams slip their list of solutions inside the folder and pass the problem to another team. The activity proceeds as previously described. At the conclusion, the course director collects all the folders to compile the information to share with all students, or each team could spark spirited discussions (rather than require passive listening) when giving a verbal report to the class about planning treatment, selecting activities, setting priorities, and monitoring client progress.

Send/Pass-a-Problem can also be used with mini-case studies or vignettes. One vignette might describe symptoms of a 27-year-old man with full-blown AIDS. Yet another vignette might detail the strengths and limitations of an 8-year-old girl with autism. Vignettes would include a summary of the social history, medical history, and goals of each client. After reading its assigned vignette, each team could identify and justify the types of evaluations that could be used for identified problem areas before passing its folder to the next team.

As an extension activity, the course director could give teams working faster than others additional information on their clients. This information might include data collect-

ed during observation of behavior or during formal evaluation. The extension material would be discussed and completed as a separate challenge and not placed in the folder because the next team might not move as quickly.

Generic Question Stems. The use of Generic Question Stems prompts thoughtful questions and encourages critical thinking skills. Using question stems that result in different levels of thinking (see Table 1), students prepare questions about assigned readings, a lecture, or any other course content. The purpose of the questions is to stimulate discussion, so students do not need to be able to answer the questions they generate. This uncertainty also makes the questions more authentic, so students do not automatically generate questions with canned answers.

After students are seated with their teams, the leader asks another student to present one of the questions he or she has written. Other team members respond, and a lively timed discussion ensues. Students take turns asking their own questions, ideally using a different stem each time. In this way, they progress through Bloom's taxonomy of educational objectives because the stems are based on categories of the cognitive domain, including knowledge, comprehension, application, analysis, synthesis, and evaluation (Grønlund & Linn, 1990).

Generic Question Stems can be used during a class session on roles of the registered occupational therapist and the certified occupational therapy assistant. Perhaps the course director could invite a panel of occupational therapy practitioners from different settings to talk about their roles and responsibilities. Later, breaking into their teams, students might discuss their questions, such as: "What is the difference between the academic preparation and fieldwork experience of a registered occupational therapist and a certified occupational therapy assistant?" "Do you agree or disagree with the following statement: The ratio of registered occupational therapists to certified occupational therapy assistants should be one to eight in any practice setting. What evidence supports your answer?"

Another application for Generic Question Stems relates to disorders, diagnoses, or medical conditions: "Explain why spasticity occurs in an upper motor neuron lesion." "What are some differences between dementia and depression?" "What is the counterargument for the presumption that all children with attention deficit disorder should be on Thorazine?"

Double Entry Journal. The Double Entry Journal activity is most effective when completed initially as a preclass assignment. It reinforces concepts and information from assigned readings, integrates material from other classes, and synthesizes observations from fieldwork and life experiences with academic concepts. Angelo and Cross (1993) credited this activity to Berthoff's "dialectical notebook" in *Forming, Thinking, and Writing*. Using a T-diagram (a vertical line down the center of a page forming two columns with a horizontal line across the top to underscore two-col-

Table 1
Generic Question Stems (King, 1995)

Generic Question Stem	Cognitive Domain Addressed
What does ____ mean? Describe ____ in your own words.	Comprehension
How could ____ be used to ____? How does ____ apply to occupational therapy?	Application
Explain why (how) ____. What do you think causes ____? Why?	Analysis
What is the solution to ____?	Synthesis
Do you agree or disagree with ____? Why?	Evaluation

umn headings), the student lists key points of an article or chapter in the left-hand column and personal responses opposite each point in the right-hand column. The personal responses can relate to lectures, readings, or actual experiences, both professional and personal. The length of the responses will vary, depending on the student's association with the author's point.

The course director can use Double Entry Journals with a cluster of assigned articles intended to accomplish specific goals. For example, in today's multicultural society, occupational therapy practitioners must be sensitive to issues of diversity, including beliefs about wellness, illness, and intervention. This sensitivity can be developed in many ways, including observation, interviews, interaction, and reading. The Double Entry Journal enables students to reflect on their readings in meaningful ways. For example, each student is assigned the same articles to read on multiculturalism and diversity. After reading each article, students individually construct a T-diagram that summarizes what they perceive to be the key points. Then, as in Table 2, the student uses the right-hand column to relate those key points directly to their readings or to experiences such as observations, interviews, or interactions.

The Double Entry Journal gives students an opportunity to anchor new or different information to their own knowledge and experiences. Retention is enhanced because of what is known in cognitive research as the self-reference effect: A person's ability to recall information nearly doubles when the new information is connected in personal ways to previously stored information. The Double Entry Journal also forces students to acknowledge and examine their own feelings and biases about issues that might otherwise go unrecognized.

Dyadic Essay Confrontation. Developed by Sherman (1991), the Dyadic Essay Confrontation combines both an out-of-class assignment and in-class processing. This activity assures the course director that each student will have worked alone before class on the assigned material. Used regularly, these student-generated essays allow students to assimilate and integrate many units of content throughout a course. Furthermore, by writing, discussing, and receiving feedback on these essays, students strengthen requisite writing skills essential to their professional development.

For the out-of-class assignment part of the Dyadic

Essay Confrontation, students formulate a broad essay question synthesizing the key concepts in their assigned reading material. They print the essay question at the top of a sheet of paper and write an in-depth response on that same paper. On a second sheet of paper, students print just the essay question. Students bring both papers to class. For the in-class portion, students pair up, exchange essay questions, and spend the next 15 to 20 min drafting a written response to their partner's question. Depending on the complexity of the material, students may or may not be allowed to use notes or reference materials. After they have written their in-class essays, students exchange and read each other's response to the in-class essay question followed by a reading and discussion of the responses each wrote before class. Most of the discussion focuses on comparing the differences in the responses written in class to the in-depth response written outside of class. The structure of this activity "promotes skills in critical thinking by requiring students to confront different ideas, offers writing-to-learn opportunities, and provides solid and immediate feedback to students about their intellectual responses to discipline-specific material" (Millis, 1995, pp. 139-140).

Like Double Entry Journals, Dyadic Essay Confrontations are most efficient and effective when they are repeated often enough to allow students to build their competencies. This activity could be used to encourage students to fully explore clients' symptoms or conditions. Questions could be based on material from assigned readings, previous discussions or activities, and common fieldwork experiences. Essay items might include the following: "List the similarities and differences between dementia and depression. How will intervention goals differ?" "List the principles of work simplification activities and apply them to two diagnoses of your choice."

The Dyadic Essay Confrontation can be used to integrate the client's disorder or condition with graded activities for therapeutic intervention. The Dyadic Essay Confrontation also is an effective way in which peers can provide feedback to each other on their plans for intervention. In either case, the following essay questions might be posed: "Describe how you would grade activities to increase strength of affected wrist extensors." "Describe the process used to improve the concentration and attention span in a person with paranoid schizophrenia."

Assessing Students in Cooperative Classrooms

As indicated earlier, feedback (assessment) is a cornerstone of sequenced learning. In cooperative classrooms, assessment involves grading student's academic efforts (summative assessment), but it also involves providing informal feedback on both academic and cooperative skills.

Assessing Academic Progress

Because of the element of individual accountability, grading practices can remain much as they are in a traditional classroom. Students receive individual grades for indepen-

Table 2
Double Entry Journal Activity About Multiculturalism (Lynch & Hanson, 1992; Wells, 1993)

Key Point	Response
Native Americans: Prefer natural, spiritual remedies; bowed head shows respect; indirect communication; tribal loyalty	Approach with respect; use technology sparingly; do not think someone is sad or disinterested if head is bowed
Anglo-Americans: Oriented to medical model and technology; direct verbal communication; individualistic	Approach directly; client probably expects to be treated with latest technology; seems to look out for self rather than for others
Asians: Blend folk medicine with modern; little or no eye contact with strangers; self-deprecating; family needs over individual's needs	A client may belittle his or her abilities; approach clients with activities blending eastern and western philosophies; client may take offense to casual touch during conversation
Latinos: Prefer natural or spiritual remedies; hesitant to disclose personal or family information; allow casual touching during talking; maintain eye contact; value family ties	Explain why information of a personal nature is needed; family will probably want to attend treatment sessions and be involved in client care

dently produced papers, reports, presentations, quizzes, and midterm and final exams. If group projects are factored in, then the course director must let students know how they will be awarded grades, often through peer reports and self-reports that reflect individual contributions. Grades are assigned according to preestablished criteria spelled out clearly in the syllabus.

In addition to this formal, summative assessment, as suggested by the examples of cooperative activities, formative assessment is ongoing in a cooperative classroom. The nature of the activities and the in-class "processing" of out-of-class work gives students and faculty members frequent, focused feedback on how well students are learning the material. By collecting students' work, such as Double Entry Journals and Dyadic Essay Confrontations, and by listening to group activities, such as Think-Pair-Share and the Three-Step Interview, course directors are highly attuned to their students' progress. As Cramer (1994) suggested:

Some of the material may not require direct feedback but instead may be checked off as a progress report. The value is in the process of the work itself. Other collected work may receive formative commentary, oral or written, before the project is completed for formal grading. (p. 70)

Assigning points on an all-or-nothing basis for quality out-of-class products rather than agonizing over a range of letter grades can save the course director valuable time and can place the emphasis on feedback rather than on grades. For example, a set of well-thought-out questions that is based on the Generic Question Stems might contribute 3 points toward each student's criteria-based final grade. Similarly, students could receive 10 points for a Dyadic Essay Confrontation written out of class and 5 points for one written in class. A course director would not assign points for any essays not meeting prescribed standards.

Any grade scheme in a cooperative classroom must be based on a criterion (X number of points for an A , X number of points for a B , etc.) rather than on a curve where students compete for a finite number of high grades. For example, if only the top 5% of a class will receive A s, then students have no reason to help one another achieve.

Informal classroom assessment techniques advocated by Angelo and Cross (1993) can also help faculty members

determine how well their students are learning. After a class session, each team member can quickly identify the "muddiest point" (what remains least clear at the conclusion of the class). With "the minute paper," students respond on an index card to two questions: "What was the most useful or meaningful thing you learned during this session?" "What question(s) remain uppermost in your mind as this session comes to a close?"

Assessing Cooperative Skills and Class Climate

In-class assessments give a quick overview of the class climate. Questions can be posted at the beginning of class or shown on an overhead during the last 2 min of class: "What grade would you give yourself for your preparation for class today?" "What grade would you give your team for cooperation and problem solving today?" "If you could give one sentence of advice to the instructor about what could have been done to improve today's class, what would it be?" (Cramer, 1994).

Some course directors use peer-assessment and self-assessment forms to determine the progress of groups as well as the nature and extent of individual efforts. Such a form might ask how many team members actively participated in the session most of the time; how many students were prepared; and what specific, practical change the team could make to improve its learning. It is also enlightening to ask students to provide a specific example of something they learned from their team that they probably would not have learned on their own. Conversely, students could identify something that the team members learned from them that they probably would not have learned working independently.

Conclusion

Designing a course is an enormous task, and redesigning or rethinking course design is an equally daunting task. When a cooperative, student-centered philosophy prompts such changes, the elements of the course must balance one another. The assignments and activities, the roles assumed by students and faculty members, and the assessment practices must foster active, responsible learning in a supportive environment. All elements of the course, particularly the as-

signments and activities, must produce a coherent learning sequence that enables all students to prosper.

Throughout the country, faculty members in various disciplines have embraced cooperative learning. Research and practice have repeatedly shown that carefully sequenced and structured cooperative learning approaches improve student academic achievement. But equally important, the cooperative learning approach teaches students the skills needed for success in the 21st century. As Ventimiglia (1994) suggested:

The two skills we will all need to be successful in the workforce 2000—neither of which is taught as the content of a course or from a textbook—are the ability to work together cooperatively and the ability to be a life-long learner. (p. 6)

Regurgitation of information will not suffice in a world where computers can perform that task most efficiently. Learners of any age and professionals, regardless of discipline, must learn to construct knowledge rather than merely reproduce it. Furthermore, as the world grows increasingly complex, effective teamwork will become an increasingly valued skill. These skills are ones that no occupational therapy practitioner in the 21st century can afford to be without. ▲

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