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Helping Faculty Build Learning Communities Through Cooperative Groups

Barbara J. Millis

University of Maryland University College

“Cooperative learning has galvanized my classes,” exclaims an art history teacher at a nationally renowned art institution. “With a PhD from the University of Michigan, I came from a traditional hide-bound academic background where we learned that good teachers are well-organized, entertaining lecturers. But I always knew something was missing: my goal in life was to ‘claw my way down the ladder of success’ and become not a good lecturer, but a great teacher. Cooperative learning methodology and strategies gave me the means to realize this goal.”

“Now that the semester is over, I am receiving a lot of positive informal feedback from my students about the cooperative learning groups,” reports an accounting professor who attended a cooperative learning workshop at the 1989 POD Conference. “At the risk of bragging, I am happy to report that they [student evaluations] were by far the highest I have ever received— a 3.7 and a 3.8 on a 4.0 scale. Moreover, the written comments I received were laudatory and most particularly expressed affirmation of the cooperative learning groups.... As for myself, as I reflect, I realize that this has been the most enjoyable semester I have ever had as a teacher.... Enhanced performance on exams, outstanding student evaluations, and a personal renewal for enjoyment of teaching— what more could one ask of a new pedagogy?”

“As a speech communication lecturer, I am familiar with group dynamics, but the cooperative learning workshop gave me new ideas and activities,” a lecturer at the University of Maryland University College states.

“My students particularly like using ‘Think-Pair-Share’ because the process gives them an opportunity to internalize material and then clarify it through a non-threatening discussion with a fellow classmate before communicating in front of a group. Because cooperative learning provides more structure than traditional models of group learning—some of them are really theoretical—it is particularly valuable for faculty, including those with large classes, in fields where students are less open to these approaches.”

Such testimonials are remarkably common from faculty who have begun using cooperative learning techniques. Unfortunately, however, relatively few teachers at the university level are familiar with them. This situation will change as more and more faculty become aware of the efficacy of structured learning groups. In fact, the Winter 1990 issue of *College Teaching* contains two articles on small group work (Borresen; Glidden & Kurfiss) with citations on cooperative learning research, a refreshing development after a 1988 ASHE-ERIC Higher Education Report on peer teaching (Whitman) inexplicably failed to include even a single reference to cooperative learning.

Faculty developers can speed the dissemination process by helping faculty understand (a) the nature of cooperative learning; (b) its documented, well-researched impact on student achievement, self-esteem, social skills, and interracial harmony; and (c) its liberating effects on college-level teaching and learning.

Calls for “cooperation” and “community” are pervasive in the academy. Ernest Boyer, for example, notes:

If democracy is to be served, cooperation is essential, too. And the goal of community...is essentially related to the academic program, and most especially, to procedures in the classroom. We urge, therefore, that students be asked to participate in collaborative projects, that they work together occasionally on group assignments, that special effort be made, through small seminar units within large lecture sections, to create conditions that underscore the point that cooperation is as essential as competition in the classroom. (1987, p. 151)

Similarly, one of the “Seven Principles for Good Practice in Undergraduate Education” identified by a 13-member team of education researchers from various institutions calls for “Cooperation Among Students.” Chickering and Gamson (1987) elaborate on this principle:

Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in

learning. Sharing one's ideas and responding to others' reactions improves thinking and deepens understanding. (p. 1)

Many faculty are familiar with the term "collaborative learning," but because advocates such as Kenneth Bruffee (1982) tend toward theoretical explanations and because, as William Whipple (1987) admits, collaborative learning embraces an "extraordinarily wide range of programs, projects, pedagogical techniques and classroom strategies" (p. 3), most faculty find "the concept ambiguous and too abstract for direct application" (Sheridan, Byrne, & Quina, 1989, p. 49).

Cooperative learning, as a more structured form of collaborative learning, provides a practical framework for implementing mutual goals such as promoting active learning; bridging the gulf between teachers and students; creating a sense of community; ensuring that knowledge is created, not transferred; making the boundaries between teaching and research less distinct; and locating knowledge in the community rather than in the individual (Whipple, 1987). James Cooper (1990) states that cooperative learning differs from collaborative learning by focusing on "structures designed to ensure student-student interdependence" and by emphasizing "individual accountability," through "individually completed tests and papers, rather than undifferentiated group grades for team work" (p. 1).

What is Cooperative Learning?

Several researchers, such as Schmuck (1985) and Davidson (1990), trace the philosophical basis of cooperative learning to John Dewey's emphasis on experiential learning and the role of the schools in preparing students for life in a cooperative, democratic society. Hassard (1990) finds 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" (p. viii). Cooperative learning tends to be more carefully structured and delineated than most other forms of small group learning. Grounded in theory, research, and practice, it is a well-documented philosophy of classroom instruction encompassing many different strategies. Cooper and Mueck (1989) describe it as "a structured, systematic instructional strategy in which small groups work together toward a common goal" (p. 1). Davidson and O'Leary (1990) mention that the terms "strategies," "methods," "models," "structures," or "procedures" can be used interchangeably and identify three key ideas behind cooperative learning:

1. The class is divided into small groups (typically with two to five members each), who work together cooperatively to discuss and complete an academic task.
2. Tasks can be given at various levels of intellectual complexity: facts, skills, concepts, principles, problem solving, and creative thinking. A teacher presentation may or may not precede the group activities.
3. The teacher states guidelines to foster cooperation and mutual interdependence within each group, circulating from group to group and noting progress and problems for later processing. (p. 31)

Most experts agree that several components distinguish cooperative learning from other small group procedures, including collaborative learning.

Positive interdependence occurs, according to Kagan (1989), “when gains of individuals or teams are positively correlated” (p. 4:3). Basically, all members of a learning team contribute to each other’s learning. 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 team grades based on a composite of each member’s improvement or on a 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.

A second component, **individual accountability**, tends to eliminate “free riders/coasters/sandbaggers” and “workhorses” or “dominators.” Because of carefully structured activities and assignments, students have a vested interest in helping teammates, but most of their course grades reflect individual learning, not undifferentiated group grades. Thus, traditional evaluation methods such as individual examinations, papers, or projects can still be used as long as students do not penalize others by their own achievements, as happens, for instance, when grades are curved. Grading structures should reward students for providing assistance to other group members. To encourage cooperation, teachers can add points for participation in group activities just as many teachers now factor “participation” into a final grade. Some cooperative learning instruction formats base final grades on a combination of individual performance, group performance, and peer evaluation (Michaelson, 1983; Michaelson

& Obenshain, 1983; Michaelson, Watson, Cragin, & Fink, 1982; Michaelson, Watson, & Shrader, 1984-85). Most postsecondary students are mature enough to recognize the intrinsic value of cooperating in learning teams to review and master material, for example, that all will face on a midterm or final examination. Researchers such as Kagan (1989) and Johnson and Johnson (1984) recommend **heterogenous teams**, reflecting varied learning abilities, ethnic and linguistic diversity, and a mixture of the sexes. Cooperative learning can also be effective in homogenous or self-selected groups, but other objectives such as building cross-cultural acceptance and trust may inadvertently be sacrificed. Most practitioners recommend teacher-selected learning teams of four or five whose composition can be changed every six weeks or so.

A fourth component, **group processing**, helps build team skills, allows students to reflect on the learning process, and provides teachers with continuous feedback. Teachers and students monitor group and individual progress. After an assignment or activity, for instance, students could respond to questions such as: "Did all members of the group contribute?" and "What could be done next time to make the group function better?"

Social skills are also important in cooperative learning, but may not need to be taught directly on the college level as they often are on the primary and secondary levels. Some orientation is needed, however, to help students recognize the importance of cooperative interaction and mutual respect.

Cooperative learning techniques rarely replace, *in toto*, traditional classroom techniques such as the lecture or teacher-directed discussion. Faculty do, however, tend to modify their approaches, giving, for instance, more 30 to 40 minute "minilectures" with interim time for group interaction. As Slavin (1989-1990a) cautions, "Successful [cooperative learning] models always include plain old good instruction; the cooperative activities *supplement* but do not replace direct instruction..." (p. 3). Faculty can use cooperative learning strategies as teaching tools without following, as Kagan notes in an interview, "detailed prescriptions of what and how to teach. [Faculty] concentrate on choosing the appropriate set of structures for a given academic or social goal" (Brandt, 1989-1990, p. 10).

The integration of cooperative learning techniques into college-level classrooms does require a reevaluation of the faculty member's role. Basically, power is shifted from the authority figure of the instructor to the students themselves who then become actively involved in their own learning and in the learning processes of their peers. In informal terms,

the teacher becomes not the “sage on the stage,” but “the guide on the side.” As Finkel and Monk (1983) point out, this shift becomes more viable if teachers think in terms of teaching functions rather than in terms of fixed roles. Faculty actively involved with group learning now function as coaches and monitors, as well as experts. Hassard (1990) models the teacher’s role on Carl Rogers’s person-centered theory:

It requires a conscious shift of perspective on the part of the teacher, away from authoritarianism and toward coordination of cooperative actions and the facilitation of instruction. Teachers who have incorporated this philosophy into their classrooms orchestrate the students’ activities and are masters in securing and creating well-designed, team-oriented tasks (p. ix).

Johnson and Johnson (1989) state that the teacher’s role involves “clearly specifying the objectives for the lesson, placing students in learning groups and providing appropriate materials, clearly explaining the cooperative goal structure and the learning task, monitoring students as they work, and evaluating students’ performance” (p. 4:29).

Evaluation remains, as always, an area of crucial concern for both students and faculty. Because cooperative learning approaches must be integrated into course content and philosophy, they are sometimes linked with noncompetitive grading practices such as learning contracts or mastery learning. Evaluation can be done also through traditional methods such as in-class or take-home tests or quizzes, group projects, homework, self-evaluation, and peer evaluation, provided that the grades reflect individual accountability and that all groups have had an opportunity to master the assigned material. Practices such as grading “on the curve” can sabotage cooperative group efforts.

Cooperative Learning Strategies

Flexibility is a key virtue of cooperative learning. Although the work of Robert Slavin (1986) and his colleagues at Johns Hopkins University has focused on curriculum-and-domain-specific learning, most cooperative learning structures can be used at all grade levels (K through graduate school) in virtually all disciplines. They are also useful for interactive faculty workshops, academic committees, and any other activities involving group dynamics. Some of the structures best suited to postsecondary classrooms are:

Think-Pair-Share: Developed by Frank Lyman (1981), in this activity, the instructor poses a question, preferably one demanding analysis, evaluation, or synthesis, and gives students about a minute to think through an appropriate response. This “wait time” can be spent writing, also. Students then turn to their partners and share their responses. During the third step, student responses can be shared with a learning team, with a larger group, or with an entire class during a follow-up discussion. The caliber of discussion is enhanced by this technique, and all students have an opportunity to learn by reflection and by verbalization.

Three-Step Interview: Common as an ice-breaker or a team-building exercise, this structure can also be used to share ideas such as hypotheses or reactions to a film or article. Students interview one another in pairs, alternating roles. They then share in a four-member learning team, composed of two pairs, the information or insights gleaned from the paired interview.

Numbered Heads Together: Members of learning teams, usually composed of four individuals, count off: 1, 2, 3, and 4. The teacher poses a question, usually factual in nature, but requiring some higher order thinking skills. Students discuss the question, making certain that every group member knows the answer. The instructor calls a specific number, and the designated team members (1, 2, 3, or 4) respond as group spokespersons. Again, students benefit from the verbalization, and the peer coaching helps both the high and the low achievers. Class time is usually better spent because less time is wasted on inappropriate responses and because all students become actively involved with the material. Since no one knows which number the teacher will call, all team members have a vested interest in being able to articulate the appropriate response.

Roundtable: In this brainstorming technique, students in a learning team write in turn on a single pad of paper, stating their ideas aloud as they write. As the tablet circulates, more and more information is added until various aspects of a topic are explored.

Talking Chips: To encourage full and equal participation, each team member shares information and contributes to a discussion after placing a talking chip (e.g., a pen, checker, index card) in the center of the group. After all students have contributed in random order, they retrieve their chips to begin another round.

Co-op Cards: Useful for memorization and review, students coach each other using flashcards. Each student prepares a set of flashcards with a question on the front and the answer on the back. When a student answers a question correctly, the partner hands over the card; they

continue going through the set until all questions have been answered correctly. The pair then reverses roles, using the second set of questions and answers prepared by the other partner until both students have mastered both sets of questions.

Jigsaw: The faculty member divides an assignment or topic into four parts with one person from each “home” learning team volunteering to become an “expert” on one of the parts. Four expert teams with members from each home team then work together to master their fourth of the material and to discover the best way to help others learn it. All experts then reassemble in their home learning teams where they teach the other group members. This strategy was originally described by Aronson (1978).

Co-op, Co-op: This activity is a 10-step, small group method developed by Spencer Kagan (1985), which allows students to learn and share complex material as they produce a group product to share with the whole class.

Structured Controversy: Team members assume different positions on controversial issues, discussing, researching, and sharing their findings with the group. This technique allows students to explore topics in depth and promotes higher order thinking skills.

Group Investigation: Based on six successive stages, cooperative groups investigate topics of mutual interest, planning what they will study, how they will divide the research responsibilities, and how they will synthesize and summarize their findings for the class (Sharan & Sharan, 1976; 1989-1990).

Research on Cooperative Learning

Although researchers such as Robert Slavin, David Johnson and Roger Johnson, and Spencer Kagan offer different approaches to cooperative learning, as Robert Slavin (1989-1990b) points out, they all acknowledge the positive results. After nearly two decades of research and a number of studies, all experts agree that cooperative learning methods can positively affect student achievement, self-esteem, attitudes toward the academic discipline, time-on-task, and attendance.

A workbook entitled “Cooperative Learning and College Instruction: Effective Use of Student Learning Teams,” prepared by a team led by James Cooper of California State University, Dominguez Hills, explains the advantages of applying cooperative learning at the college level. The first chapter discusses cooperative learning’s efficacy in developing higher level thinking skills, promoting learning, increasing student retention,

enhancing student satisfaction, developing oral communication skills, developing students' social skills, promoting student self-esteem, and promoting positive race relations (Cooper, Prescott, Cook, Smith, Mueck, & Cuseo, 1990).

A number of research summaries or bibliographies have been compiled on cooperative learning (Cooper & Mueck, 1989; Johnson, Johnson, Holubec, & Roy, 1984, Chapter 2; Johnson & Johnson, 1989, Chapter 3; Kagan, 1989, Chapter 2; & Slavin, 1981, 1985, 1986, 1989-1990b). Although the majority of the research has been conducted at the K through 12 level, the relatively few studies on college-level cooperative learning have tended to replicate the K through 12 research.

Two university-level studies have strong implications for colleges and universities attempting to create a campus culture that values and nurtures minority students and encourages them to succeed. Frierson (1986) found that Black nursing students studying cooperatively achieved higher scores on state nursing exams than a control group studying independently. Treisman (1985) formed cooperatively taught enrichment workshops for incoming Black math and science majors at the University of California at Berkeley. Those in the workshops showed considerable gains over a control group of Black non-attendees: a mean grade point average of 2.6 in freshman calculus versus an average of 1.5; a 65% retention rate over a five-year period versus a 41% rate (66% is the overall campus average); and a 44% graduation rate in mathematics-based majors versus a 10% rate for the control group.

Other studies also show positive results. Davidson (1990) reported that he and Urion used experimental and control groups to compare six courses, ranging from general mathematics in junior high school through differential equations at the college level. Comparison between courses taught using a cooperative-learning based small-group discovery method and courses taught traditionally indicated no statistical difference in student achievement. The occasional statistical differences favored the cooperative learning methods. Davidson also reported that attitudinal surveys given to students studying mathematics in cooperative groups indicated positive responses to the teaching methods, including greater liking for mathematics than in teacher-centered classrooms. Research conducted at California State University, Dominguez Hills for over three years in a variety of courses across the curriculum (Cooper & Mueck, in press) indicates that "appropriate implementation of Cooperative Learning techniques can increase student involvement in learning, student

enjoyment of the learning process, and student mastery of course content” (unpaginated).

Although Light (1990) admits that two pilot studies of small group work conducted as part of Harvard University’s assessment seminars involved small samples and imperfect designs, he nonetheless considers them promising. Of the two, Pilot Study #1: Mentored Clusters in a Large Popular Core Course more clearly reflects cooperative learning components such as “student-student interdependence” and “individual accountability.” Both studies produced similar results:

Dividing students into small groups of between four and six, as they work on substantive topics, has a clear payoff. The payoff comes in a *modest* way for student achievement, as measured by test scores. It comes in a *far bigger* way on measures of students’ involvement in courses, their enthusiasm, and their pursuit of topics to a more advanced level. And students overwhelmingly report one additional benefit of small group work. They point out that the *process of working in a group*, in a supervised setting, teaches them crucial skills. The skills they learn include how to move a group forward, how to disagree without being destructive or stifling new ideas, and how to include all members in a discussion. (pp. 70-71)

The Value of Cooperative Learning

In a review of the research literature on teaching and learning in the college classroom, McKeachie, Pintrich, Lin, and Smith (1986) conclude: “The best answer to the question, ‘What is the most effective method of teaching?’ is that it depends on the goal, the student, the content, and the teacher. But the next best answer is, ‘Students teaching other students’” (p. 63). Hassard (1990) summarizes some of the benefits of cooperative learning:

Educational practitioners such as David and Roger Johnson, Robert Slavin, and Spencer Kagan reported that cooperative learning resulted in high academic achievement; provided a vehicle for students to learn from one another; gave educators an alternative to the individual, competitive model; and was successful in improving relationships in multiethnic classrooms. (p. viii)

In short, cooperative learning can positively affect student learners, faculty, and the general campus climate.

By integrating small-group learning into the standard curriculum, teachers can reach students with different learning styles. Because

cooperative learning group work is highly structured, it can appeal even to “Type Two” learners (Kolb, 1983) who excel in traditional learning environments. As Redding (1990) notes, students with different learning styles, can, in cooperative learning groups, “teach each other from their special and particular perspectives” (p. 47). Hassard (1990) has developed a holistic teaching model based on cooperative learning that involves a whole-brain learning approach. It includes left and right modes of learning as well as the physical-sensory and affective modes.

Adult learners, too, can benefit from cooperative learning techniques, once they understand their purposes and structure and see their relationship to learning objectives. Since we now know that by the mid-1990s traditional college students – 18-year-olds enrolled full-time – will be a minority in our college classrooms, this potential impact of cooperative learning is significant. Patricia Cross’s (1981) *Characteristics of Adults as Learners (CAL)* model makes it relatively easy to see that cooperative learning methods can operate across all three of the continua (physical, sociocultural, and psychological) by creating a “warm, and accepting environment on the physiological dimension; a cooperative, adventuresome environment on the life-phase continuum; and a challenging environment for stimulating developmental growth on the developmental-stage continuum” (p. 240).

Given the demographic predictions concerning “one-third of a nation,” cooperative learning’s positive effects on minority retention and self-esteem may be especially important. Heterogenous grouping provides opportunities for positive interaction. Slavin (1989-1990b) concludes, “When students of different racial or ethnic backgrounds work together toward a common goal, they gain in liking and respect for one another” (p. 52). As Rendon (1989) argues, higher education must become a reality for at-risk students. The classroom is the primary point of connection for these students; the positive student-faculty, student-student interactions that occur in a cooperative setting can only promote more “involvement in learning.”

Once faculty understand the nature and value of cooperative learning and know how to structure assignments and activities using the various techniques, they generally find cooperative learning professionally stimulating and even “fun.” Many techniques are relatively easy to implement. After a simple explanation or demonstration, for instance, faculty can begin using Roundtable or Think-Pair-Share. Commitment to more elaborate methods of small group work can come through orientation programs or workshops. Because cooperative learning strategies have a

solid research base, they can be shared with research-oriented faculty suspicious of passing pedagogical fads. In fact, faculty could be encouraged to evaluate the effects of cooperative learning techniques using classroom assessment procedures such as those described by Cross and Angelo (1988) or to undertake more formal research projects using traditional control groups and statistical analyses.

If one takes a developmental view of teaching such as the one described by Sherman, Armistead, Fowler, Barsdale, and Reif (1987), then cooperative learning techniques can be seen as an enlargement of teaching repertoires that would move faculty members developmentally toward the "Stage 4" scheme of teaching where learning is influenced "through [complex] interactions between student, teacher, and content" (p. 79).

Cooperative learning techniques can enhance teaching at all levels and in virtually all disciplines without requiring a major change in curricula or textbooks. Once committed to cooperative learning, however, faculty tend to find themselves "liberated" as the burden—or more appropriately, the joy—of learning is shifted to students. They are challenged to rethink their teaching values and philosophies, to search for textbooks reinforcing and promoting cooperative values, and to revise curricula and teaching methods. Thus, cooperative learning is not only an innovative approach to teaching, but it can also serve as a catalyst for other needed changes.

The value of cooperative learning to university teaching and learning is underscored by Johnson and Johnson's (1989) comment that "Cooperative learning is indicated whenever the learning goals are highly important, the task is complex or conceptual, problem solving is desired, divergent thinking or creativity is desired, quality of performance is expected, higher level reasoning strategies and critical thinking are needed, and long-term retention is desired" (p. 3:13). Given the validity of this statement, there are few times when cooperative learning is not beneficial.

As a pedagogical method, cooperative learning provides a means to attain the sense of community mentioned by Edgerton (1987), Astin (1987), Palmer (1987), and others, which is so vital to institutions of higher learning. Astin (1987) points out, for instance, that a conflict of values has complicated our efforts for educational reform. A talent development view of excellence, focusing on the education of the student, emphasizes a cooperative, not a competitive world view, one in which "human progress and the development of society are seen as depending upon the ability of individuals and groups to cooperate with each other" (p. 14). As

Sapon-Shevin and Schniedewind (1989-1990) note, cooperative learning has the “potential to transform classrooms, schools, and ultimately society, by creating communities of caring and support, which in turn, engender high levels of achievement in many domains” (p. 65).

All educators are aware of the cries for educational reform and of the challenges facing higher education and society in general. “Today’s professors are challenged to teach a student population increasingly diverse in age, levels of academic preparation, styles of learning, and cultural background. Professors are now expected not only to ‘cover the material,’ but also to help students to think critically, write skillfully, and speak competently” (Ekroth, 1990, p. 1). Faculty in our colleges and university must be helped to celebrate student diversity—minorities, older students, part-time learners, underprepared underachievers—and to find ways to both motivate and educate them for the 21st century. Cooperative learning, while not a panacea, can help faculty developers help faculty achieve these goals.

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