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## Cooperative learning: An alternative instructional system

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## Cooperative learning: An alternative instructional system

### Abstract

During the last two decades, educators have searched for more productive and efficient ways to organize classrooms. Learning can be implemented under three possible structures: competitive, cooperative, and individualistic (Johnson & Johnson, 1974). Traditionally, American schools have relied heavily on competition as a goal structure. Students routinely are placed in settings wherein they compete for grades, teacher attention, approval, and a place in the social order of the classroom. Yet, the major problems facing our society today call for cooperation, understanding, problem solving, and altruism

Cooperative Learning:  
An Alternative Instructional System

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Submitted to the  
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by  
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Introduction

During the last two decades, educators have searched for more productive and efficient ways to organize classrooms. Learning can be implemented under three possible structures: competitive, cooperative, and individualistic (Johnson & Johnson, 1974). Traditionally, American schools have relied heavily on competition as a goal structure. Students routinely are placed in settings wherein they compete for grades, teacher attention, approval, and a place in the social order of the classroom. Yet, the major problems facing our society today call for cooperation, understanding, problem solving, and altruism (Welsh, 1986). There is a great deal of evidence that the process by which students learn and the outcomes of learning are both largely determined by the goal structure implemented by educators (Johnson & Johnson, 1974). There is little doubt that all three goal structures have a place in the classroom, depending upon the learning objectives. The basic skills necessary to function in each structure should be taught to the students. Educators need to be aware of, and knowledgeable of alternatives to the highly utilized competitive structure.

A paradox emerges with an examination of the vast majority of research comparing student-student interaction patterns. While most classrooms are organized in a competitive structure, interaction patterns indicate that students learn more effectively when they work cooperatively. Over 800 studies suggest that students who learn via cooperative learning groups (as compared to competitive or individualistic learning) achieve more; are more positive about school, subject areas, and teachers; are more positive about each other, regardless of ability, ethnic background, or physical disabilities; and are more effective interpersonally (Johnson & Johnson, 1981; Johnson & Johnson, 1975; Johnson, Maruyama, Johnson, Nelson, & Skon, 1981).

Despite the convincing evidence, cooperation as a classroom organization method is used sparingly by educators. The intent of this review is to examine the cooperative learning research and methods of classroom implementation, explore the forces working against wider use, and suggest some changes that educators might consider so that students are better able to meet the demands of society in the future.

## Review of Literature

### Cooperative Learning Research

Social psychological research on cooperation dates as far back as the 1920s with laboratory studies undertaken by Maller (1929). This research indicates that competition may be superior to cooperation or individualistic goal structures when a task is a simple drill activity or when sheer quantity of work is desired on a skill-oriented task. Research on specific applications of cooperative learning to the classroom began emerging in the 1970s. At that time, four independent groups of researchers began to develop and research cooperative learning methods in the classroom. In the past few years, a substantial body of information stemming from this research has given new emphasis to cooperative learning as a means for increasing student achievement and interpersonal relationships.

Three essential elements are inherent in classroom instruction: a task structure, a reward structure, and an authority structure (Slavin, 1980). The blend of activities that make up a school day compose the task structure. Most classrooms use a combination of lecture, class discussion, and seatwork as task structure. Grouping systems are also dimensions of task structure that vary in make-up and purpose.

Rewards for appropriate behavior may take the form of grades, teacher approval, and tangible items. The manner and degree of dispersement varies from classroom to classroom. In competitive structures, such as grading on the curve, one student's success necessitates another's relative failure. The opposite of competition is cooperation. Using the analogy of a sports team, wherein teammates support one another toward a common goal, cooperation in the classroom means one student's success helps another student to be also successful. A third type of reward system is individualistic, where the students' achievements are independent and unrelated to each other.

Authority structure refers to the amount of control students have in their choice of activities and how their goals will be met. The locus of control varies from high student autonomy to high teacher- or school-imposed control.

Cooperative learning may involve changes in all three instructional elements, but primarily incurs changes in the reward system from competitive to cooperative (Slavin, 1980).

In the cooperative classroom, students work together in small groups to accomplish shared goals. Within a group, students learn designated material and coach each other on it, making sure all members have mastered the

material. Discussion, drill, and encouragement are all integral parts of cooperative learning. Reward or recognition is awarded on the basis of group accomplishment. Johnson and Johnson (1984) outline four basic elements essential for small-group learning to be cooperative. The first of these is that of positive interdependence, achieved by establishing mutual goals; dividing labor, materials, and resources among members; assigning roles; and giving joint rewards. Second, cooperative learning requires students to interact face-to-face. The interaction patterns and verbal exchange affect educational outcomes. The third basic element of cooperative learning is individual accountability for mastering the assigned material. The purpose of any learning situation is to improve individual student achievement. Determining the level of each student's mastery is necessary so that group members can provide proper support and assistance to each member. Finally, cooperative learning requires that students use interpersonal and small-group skills appropriately. Merely assigning students to groups and telling them to cooperate does not automatically bring about cooperation. Slavin (1983) repeatedly emphasizes that the goal structure must reward cooperation. All group participants must know exactly what they must do to earn a good evaluation. Vague, ambiguous preaching about

"getting along" and "being helpful" merely confuse the students. The manner in which instructions are given for cooperation is also important. Teachers need to model the behaviors they expect children to use in their groups. If teachers want students to learn mutual assistance, fair distribution of speaking privileges, collective decision making and shared responsibility for task performance, the critical attributes of these behaviors must be modeled.

The majority of research on practical cooperative learning techniques has focused on four models: Teams-Games-Tournament (DeVries & Slavin, 1978); Student Teams-Achievement Divisions (Slavin, 1978); Jigsaw (Aronson, 1978); and Small-Group Teaching (Sharan & Sharan, 1976). All of the four techniques have been well researched in field settings and have well-defined teaching strategies that are in use in many classrooms (Slavin, 1980).

Teams-Games-Tournament (TGT) uses four to five member teams and instructional tournaments. The teams represent the cooperative element of TGT, and are composed heterogeneously as to ability, ethnicity, and sex. After the teacher presents a lesson, teams work to make sure all members have mastered the lesson. Weekly tournaments are held in which students compete as representatives of their teams. The score each student

earns at the tournament table is added into an overall team score. Students are assigned tournament tables on the basis of homogeneous ability, thereby ensuring equal chance of contributing a maximum score for his or her team. Following the tournament, the teacher prepares a newsletter which recognizes successful teams and first place scorers.

Student Teams-Achievement Divisions (STAD) is similar to TGT, but replaces the tournaments with individual quizzes on the lesson. The main idea behind STAD is to motivate students to encourage and help one another master skills presented by the teacher. Since team scores are based on students' improvement over their own past records, there is equal opportunity for success.

Jigsaw has students assigned to six-member teams to work on academic material that has been broken down into sections. Each student is responsible for reading and learning one particular section. It is a technique most appropriate for studying material written in narrative form. Social studies, science, literature, and biographies can be broken down into concepts, chapters, and stories. Next, students with like topics meet in "expert" groups to further discuss and understand their assigned topic. They then return to their respective teams and take turns teaching their portion to their

teammates. Finally, all students are quizzed on the entire unit of material. Quiz scores are awarded on an individual basis. Since listening carefully to their teammates is the only way students can learn about other sections of material, they are motivated to support and show interest in one another's work. In Jigsaw, the emphasis is on high task interdependence rather than high reward interdependence.

Slavin (1978) constructed a modified version of Jigsaw called Jigsaw II. In Jigsaw II, students all read the same material but focus on different topics. The students then meet with their counterparts to discuss their topics, and then return to their teams to teach their teammates. Then students are quizzed on the entire unit and quiz scores are compiled into team scores. Thus, Jigsaw II is reward interdependent.

Small-Group Teaching emphasizes interdependence among groups as well as interdependence among students within a group. The entire class is assigned a general area of study and each small group is responsible for research on a topic related to that general area. Small groups are formed through individual choice and tasks are assigned by mutual agreement among members. Each group ultimately presents a presentation or display from which other members of the class are expected to learn.

Examinations may or may not be given. Informal, on-going evaluation through observation is encouraged.

In addition to the foregoing models of cooperative learning, several others have been developed and researched to a lesser extent. Among them are Team Assisted Individualization (TAI) which combines cooperative learning with individualization for instruction in mathematics (Slavin, Leavey, & Madden, 1984). Cooperative Integrated Reading and Composition (CIRC) is a comprehensive reading and writing program for upper elementary grades (Madden, Slavin, & Stevens, 1986). Circles of Learning (Johnson, Johnson, Holubec, & Roy, 1984) is a technique wherein groups of students work on assignment sheets cooperatively and hand in one sheet per group. Rewards are based on the group project.

Research Findings. The major outcomes of cooperative learning techniques fall into two main categories: academic achievement and group cohesiveness (Slavin, 1980). The effects of cooperative learning techniques on variables of group cohesiveness such as mutual concern and race relations are unquestionably positive. Slavin and Madden (1979) conducted a secondary analysis of data in a national sample of high schools by the Educational Testing Service, and found that teacher workshops, multiethnic texts, minority

history, heterogeneous groups, and classroom discussions of race relations had very limited effects on students' racial attitudes and behavior. On the other hand, the assignment of students of different races to work with each other and the participation of students on multiracial sports teams had strong and consistent effects on race relations. A Johnson and Johnson study (1981) showed significantly greater cross-ethnic interaction among fourth graders in a cooperative learning situation as compared to a group using individualistic techniques. Repeated positive findings in a wide variation of types of schools and percent minority in the schools enhances the general applicability of the findings.

Teaching strategies that promote cooperative learning within heterogeneous groups of students can be effective ways to deal with mainstreamed students. The research indicates that classrooms should be dominated by cooperation among students when handicapped students are being mainstreamed (Johnson & Johnson, 1983).

Mutual concern among students is measured by obtaining from students ratings of peers and their perceptions of being liked by peers. The findings, regardless of the model of cooperative learning used, have been extremely positive with regard to

interpersonal liking, attraction, trust, and sense of acceptance by peers and teachers (Slavin, 1980).

In a meta-analysis of the research literature, Johnson, Maruyama, Johnson, Nelson, and Skon (1981) reviewed 122 studies on cooperative learning. Their analysis supported the overwhelming superiority of cooperation for promoting student achievement and productivity. Although this conclusion has not gone unchallenged (Slavin, 1983; Sharan, 1980), the overall weight of evidence supports these relationships.

Slavin (1980) posits some possible explanations for the differences in results on achievement. The particular techniques, settings, measures, experimental designs, and other characteristics used by researchers have influence on the outcomes. TGT and STAD consistently had high positive outcomes over other techniques. These methods focus heavily on basic skills such as computation, punctuation, and vocabulary. They had less strong outcomes on higher level thinking skills and problem solving. On the other hand, Small-Group Teaching, Jigsaw, and the Johnson techniques found high positive outcomes on high level skills. The latter three techniques use the team structure as a facilitative device to brainstorm, share ideas, and devise a product or activity. The former techniques, TGT and STAD, use the teams as a motivational device and

reward system to encourage students to drill and practice on material together until it is mastered. These findings would seem to indicate that the subject matter, posttests, and structure all highly influence the outcomes.

Another variable that appears to have positive effects on achievement is intergroup competition and an explicit group rewards. Yet an additional factor that differentiates the techniques is the use or nonuse of training of teachers and students in group processing skills. Small-Group Teaching, Jigsaw, and the Johnson studies place heavy emphasis on training, while TGT and STAD do no training at all. The pattern of results from these studies seem to indicate that group process training is not a particularly useful addition to the cooperative learning models (Slavin, 1980).

At present, the research on cooperative learning in classrooms indicates promise for these techniques. In comparison studies with more conventional methods and a few individualized classrooms, the results for achievement tend to favor the cooperative learning techniques. Similar findings are true for group cohesiveness, race relations, and mainstreaming of handicapped students (Bolvin, 1982).

### Myths and Negative Forces

The pervasiveness of competition as an instructional goal system in American schools has led to several myths about its benefits (Johnson & Johnson, 1974). Our society has long been thought of as a highly competitive structure. People believe that students should be taught to function in this "survival of the fittest" world. However, the "real" world is much more cooperative than competitive in human interactions. Daily existence absolutely depends upon people cooperating for communication, food, movement, education, entertainment, and many other routine activities. Competition plays but a small part in our interaction with other people.

The second myth concerning competition is that success and achievement depend upon competing with other individuals. This myth can be dispelled by the positive findings of cooperative learning techniques. Motivation does not depend upon competition. Success in achieving a goal does not depend upon winning over others just as failing to achieve does not mean losing to others. Cooperative groups can succeed or fail at a task just as competitive individuals can do so.

A third myth is that competition builds character and hardens students for life in the "real" world. A study by Ogilvie and Tutko (1971) of the effects of

competition on personality found no evidence that competition builds character for success in future competition.

A final myth is that students prefer competitive structures. Most children enjoy competitive structures as long as they are winning or are having success toward mastery. However, for the habitual losers, or those who have difficulty with a task, competition may cause those individuals to give up entirely.

There is further concern that low achievers will hinder the progress of the group and therefore will be disliked. This belief was not substantiated in the cooperative learning studies on interpersonal relationships, mutual concern, and mainstreaming of academically and behaviorally handicapped students with their peers. Collaboration with schoolwork led to more interaction during free time between the two groups (Johnson & Johnson, 1981).

The suggestion has also been made that high achievers will be held back by others in the group. Johnson, Skon, and Johnson (1980) found that high ability students in cooperative learning situations generally achieved higher than did high ability students in competitive or individualized situations.

The need for teachers to change their role from director to facilitator may cause some teachers to be reluctant to relinquish the traditional role. While the role of facilitator is no less demanding of a teacher's time and expertise, it is less dominating, and one of expediting learning in groups.

One of the greatest forces working against cooperative learning is inertia. Schools tend to change slowly, particularly in traditions involving classroom management. Yet, management is one area, among others, that is in particular need of help from educational research. Collaboration techniques are much more than casual groupings of students for a particular project. They require systematic approaches and specific strategies to promote cooperation between group members so that groups can work effectively and efficiently.

#### Compelling Societal Issues

One of the important social problems facing our country is the prejudice toward groups and individuals who are in some way different from the middle class, white majority. Ethnic groups, lower socioeconomic classes, physically and mentally handicapped, and the aged are all targets of subtle, or not-so-subtle discrimination. If the goal of education is to prepare students to live in a global world, educators must find ways to instill mutual concern and altruism in students.

Dunn and Goldman (1966) found that individuals in a cooperative setting were more accepting of each other than were individuals in a competitive relationship. Deutsch (1949) found more diversity in amount of contributions per member in cooperative groups. Thus, the use of cooperative instructional structures will implicitly teach respect for, and the value of differences among individuals.

Today's student confronts more choices and more problems than did the previous generations of students. Availability of drugs and alcohol, single parent families, and peer pressure to conform are only a few of the major issues that abound in our country. Rapid changes in society require that educators provide the tools and attitudes that will equip students to survive in the midst of economic and social transformations. They must be taught the process of choosing selectively, setting priorities, and discovering what is important to them. Clearly, these goals cannot be attained through competitiveness and isolation. Collaboration, communication, and teamwork will help to instill these traits in our students.

Americans have always prized individuality and will continue to do so. Nevertheless, success in more and more professions is relying on cooperation. Medical personnel engage in more group practice and

consultation; ministers rely heavily on volunteers to coordinate and carry out the work of the church; military officers demand cooperation to teach young men and women intricate maneuvers; assembly line workers in factories and executives in management could not function productively without each other's efforts. Collegiality among educators is also increasing. According to Slavin (1987), a growing number of schools are involving teachers in cooperative planning, peer coaching, and team teaching in an effort to direct these activities toward implementation of cooperative learning in the classroom.

The cost of education has mounted rapidly in the last decade, causing concern among those who support education, not least among them, educators themselves. In many instances teachers are forced to work with inadequate supplies and outdated equipment due to tight budgets. Larger class sizes, too, increase the burden of teachers who are being asked to produce better student achievement results despite the adversities facing them. A little-disputed feature of cooperative learning techniques is that they are inexpensive and easy to use. There are no materials to purchase other than what would normally be used in any given curriculum. Teachers need minimal training to use the

techniques. Once teachers know how to use them, the methods require little or no additional planning time.

### Guidelines For Implementation

Teachers must provide for cooperative groups to be effective. It is not realistic to think that where two or three are gathered, there will be a productive group. It is vital to establish a facilitative climate and provide a flexible structure.

Johnson and Johnson (1984) outline five major sets of strategies that are essential to structuring cooperative classrooms. The first strategy is that of specifying the objectives for the lesson. A collaborative skills objective, as well as an academic objective is defined. In the Johnson and Johnson techniques, group process are an important part of the cooperative learning outcomes.

Secondly, decisions must be made about how the students will be grouped. Cooperative learning groups range in size from two to six, depending on the task, time allowed, and availability of materials. Heterogeneous groups are preferred where the students are different in ethnic background, sex, and ability. The length of time that groups remain together varies from classroom to classroom. Some teachers keep the same groups for a semester or entire year; others regroup after a particular unit. Members of a learning

group should sit close enough to each other that they can share materials, talk quietly, and maintain eye contact with all group members. The teacher should have easy access to all groups. Materials should be planned to promote interdependence among group members. Students must understand that the assignments are joint efforts. Giving a group one copy also ensures that the students will have to work together.

A third strategy is that of explaining the objectives to the students in clear, task-oriented terms. Individual accountability is stressed so that group members will encourage and assist each other. Evaluation of cooperatively structured lessons should be criterion-referenced and students should be given the criteria for evaluation. Teachers will need to specify the desired and appropriate behaviors within the learning groups. Beginning behaviors might be "stay with your group," "take turns," and "use quiet voices."

The fourth strategy calls for monitoring the effectiveness of student learning and intervening when necessary. The teacher, as a facilitator, spends much time observing and gathering information to assess how the students are cooperating and completing the assignment. Assistance is given by clarifying instruction, reviewing procedures, answering questions, and teaching task skills as necessary. If students are

having collaborative problems, the teacher may intervene to suggest more appropriate and productive procedures and behaviors. At the end of the lesson, teachers should provide closure to the lesson by summarizing main points and objectives with the students.

Lastly, assessment and evaluation are done in terms of the preset criteria. The teacher should provide immediate feedback to the students. Groups should evaluate how well they have worked together and plan for future improvements. This self-evaluation provides the teacher with valuable information for future lessons and leads to group cohesiveness.

Slavin (1980) emphasizes team rewards and individual accountability as essential elements for producing basic skills achievement. It is not enough to tell students to work together. They must have a reason to take one another's achievement seriously. The teams are not in competition to earn scarce rewards; all or none may achieve the criterion in a given week. The team's success depends on the individual learning of all members. This focuses the activity of the members on tutoring one another and ensuring that all members are prepared for a quiz or other assessment that will be done without teammate help.

Implementing cooperative learning requires support from the principal. For a teacher to become proficient

in the use of cooperative learning procedures, there must be regular classroom use of the techniques. This necessitates a firm support system initiated by the principal, but involving peer support as the basis of the structure (Brandt, 1987; Slavin, 1987). Collegial relationships promote the social support needed in a time of increased pressure. When teachers are being told to work harder and do a better job and when students are expected to learn more complex material faster and more thoroughly, teachers need the support and encouragement of their colleagues. Constructive help can come from peers as well as superiors, and in many ways peer support is better. The principles of cooperative learning need to be expanded to teachers, principals, and entire districts.

#### Summary And Conclusions

Schools, as an American institution, are faced with the major tasks of preparing students to become knowledgeable, skilled, and psychologically well-adjusted citizens. Students are to be motivated to pursue careers in a society that is more and more technologically and scientifically oriented. They are to have the problem solving skills, the understanding, the cooperation, and the altruism that characterizes a global society. Yet, this institution, the school, continues to place students in competitive situations

where only the best succeed and learning becomes a means to an end, the end being "winning."

The research on cooperative learning has yielded a sound basis for implementing it as a classroom management system. There is substantial evidence that students working together in small cooperative groups can master material presented by the teacher better than can students working on their own. Moreover, there is strong, consistent evidence that students' attitudes toward school, concern for one another, and self-esteem are all improved in a cooperative setting.

Changing family and community patterns have left many young people isolated and disconnected from parents and peers. The impersonal character of many of our schools has not helped this problem. Consequently, society is confronted with many individuals who are unable to build and maintain relationships with others, and who have no motivation to contribute to the well-being of others. Cooperative learning has a major contribution to make in the area of interpersonal relationships and motivation to learn.

The cooperative learning methods developed in the 1970s by Slavin, Aronson, Johnson and Johnson, and Sharan and Sharan are all generic forms of cooperative learning. They are applicable to almost any area of the

curriculum and are characterized by their ease of use and minimal amount of preparation time. Most often they are used as supplements to traditional instructional methods and rarely have brought about fundamental change in classroom management. Two recent projects have been developed and researched that would use cooperative learning as an entire replacement for traditional instruction. They are Team Accelerated Instruction (TAI) for mathematics in grades three through six, and Cooperative Integrated Reading and Composition (CIRC) for grades three through five (Slavin, 1987).

In order for teachers to implement cooperative learning successfully, there must be support from the administrators, colleagues, and the community. A change from traditionally structured instruction to cooperative methods requires that principals provide for a teacher support system through peer planning and coaching. Parent and community participation also help to develop a sense of responsibility for students' success.

There is sufficient evidence from field research to warrant the use of cooperative learning techniques in schools. Further longitudinal research needs to be carried out on various aspects of collaborative learning (Slavin, 1980). There is yet much to be discovered about explicit circumstances under which cooperative

learning techniques can bring about higher achievement in both the cognitive and affective domains.

American educators cannot continue to be an impregnable fortress that resists change. The needs of society in the future must be met with decisions made in creative, intelligent, and altruistic ways. Good schools must resemble good families in their caring qualities. Teachers and classrooms can no longer remain isolated entities. By introducing cooperative learning techniques into our classrooms, we can begin to open doors that will allow students to experience challenging dialogue and activities and instill in them a sense of responsibility, self-discipline, and a capacity for working harmoniously with others. As with any new method of instruction, change will be slow, and there will be problems to overcome. This exciting instructional approach requires patience and perseverance. In turn, such an expenditure will bring long-term gains where all students reap the benefits of cooperative learning.

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