COURSE OVERVIEW

What You Will Learn

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COOPERATIVE LEARNING

1. What is Cooperative Learning?

Cooperative learning is a successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement. Students work through the assignment until all group members successfully understand and complete it.

Cooperative efforts result in participants striving for mutual benefit so that all group members:

- gain from each other's efforts. (Your success benefits me and my success benefits you!)
- recognize that all group members share a common fate. (We all sink or swim together here!)
- know that one's performance is mutually caused by oneself and one's team members. (We cannot do it without you!)
- feel proud and jointly celebrate when a group member is recognized for achievement. (We all congratulate you on your accomplishment!).

2. Types of Cooperative Learning

i) Jigsaw - Groups with five students are set up. Each group member is assigned some unique material to learn and then to teach to his group members. To help in the learning, students across the class work on the same sub-section and get together to decide what is important and how to teach it. After practice in these "expert" groups the original groups reform and students teach each other. Tests or assessment follows.

ii) Teams-Games-Tournaments (TGT) - is a Johnson & Johnson cooperative learning activity which consists of teaching, team study, and tournament games. We use this at the conclusion of each chapter. The usual heterogeneous groups are split up temporarily. Students are put into homogeneous ability groups of three or four students for a competition, using the list of questions at the end of the chapter. Students randomly select a numbered card corresponding to the question they are to answer. Their answers can be challenged by the other students and winner keeps the card. Students earn points (one point for each card won) to bring back to their regular teams, a team average is taken, and the teams' averages are announced and all congratulated. On occasion, I follow up with a quiz for a grade. The quiz takes a random selection of three or four of the questions just reviewed; students write the quiz individually.

iii) Student Teams-Achievement Divisions (STAD) - devised by Slavin and his associates at Johns Hopkins University. STAD is one of the simplest and most flexible of the cooperative-learning methods, having been used in grades 2 through 12 and in such diverse subject areas as math, language arts, social studies, and science. As with other cooperative-learning methods, students are assigned to four- or five-member groups, with each group mirroring the make-up of the class in terms of ability, background, and gender. Once these assignments are made, a four-step cycle is initiated: teach, team study, test, and recognition. The teaching phase begins with the presentation of material, usually in a lecture-discussion format. Students should be told what it is they are going to learn and why it is important. During team study, group members work cooperatively with teacher-provided worksheets and answer sheets. Next, each student individually takes a quiz. Using a scoring system that ranges from 0 to 30 points and reflects degree of individual improvement over previous quiz scores, the teacher scores the papers. Each team receives one of three recognition awards, depending on the average number of points earned by the team. For example, teams that average 15 to 19 improvement points receive a GOOD TEAM certificate, teams that average 20 to 24 improvement points receive a GREAT TEAM certificate, and teams that average 25 to 30 improvement points receive a SUPER TEAM certificate.

3. Five Elements of Cooperative Learning

It is only under certain conditions that cooperative efforts may be expected to be more productive than competitive and individualistic efforts. Those conditions are:

i) Positive Interdependence (sink or swim together)

- Each group member's efforts are required and indispensable for group success

Each group member has a unique contribution to make to the joint effort because of his or her resources and/or role and task responsibilities

ii) Face-to-Face Interaction (promote each other's success)

- Orally explaining how to solve problems
- Teaching one's knowledge to other
- Checking for understanding
- Discussing concepts being learned
- Connecting present with past learning

iii) Individual & Group Accountability (no hitchhiking! no social loafing)

- Keeping the size of the group small. The smaller the size of the group, the greater the individual accountability may be.
- Giving an individual test to each student.
- Randomly examining students orally by calling on one student to present his or her group's work to the teacher (in the presence of the group) or to the entire class.
- Observing each group and recording the frequency with which each member contributes to the group's work.
- Assigning one student in each group the role of checker. The checker asks other group members to explain the reasoning and rationale underlying group answers.
- Having students teach what they learned to someone else.

iv) Interpersonal & Small-Group Skills

- Social skills that must be taught:
    - Leadership
    - Decision-making
    - Trust-building
    - Communication
    - Conflict-management skills

v) Group Processing

- Group members discuss how well they are achieving their goals and maintaining effective working relationships
- Describe what member actions are helpful and not helpful
- Make decisions about what behaviors to continue or change

4. Does Cooperative Learning Really Work?

The short answer to this question is yes. In the vast majority of studies, forms of cooperative learning have been shown to be more effective than non cooperative reward structures in raising the levels of variables that contribute to motivation, in raising achievement, and in producing positive social outcomes. In line with Multiple Intelligences theory some learners may benefit more than others depending on their prominent intelligences. However, intelligences may change over time with exposure, experience, demand, motivation and desire.

Effect on Motivation

Because a student's sense of self-esteem can have a strong effect on motivation (a point we made in the last section of this chapter), this variable has been examined in several cooperative-learning studies. The results are encouraging, yet confusing. Slavin (1995) found that in eleven of fifteen studies, cooperative learning produced bigger increases in some aspect of self-esteem (general self-esteem, academic self-esteem, social self-esteem) than the non cooperative method with which it was compared. But these effects were not consistent across studies. Some researchers would report increases in academic self-esteem or social self-esteem, but others would find no effect. Adding to the confusion is the conclusion drawn by Johnson and Johnson (1995) that cooperative learning consistently produced higher self-efficacy scores than did competitive or individualistic conditions. Such inconsistencies may reflect weaknesses in the self-esteem instruments that were used (self-ratings are not always accurate), weaknesses in the designs of the studies (many cooperative-learning studies last anywhere from a few days to a few weeks, yet changes in self-esteem happen slowly), or differences in specific cooperative-learning programs. Perhaps future research will clarify this issue.

Another way in which cooperative learning contributes to high levels of motivation is in the proacademic attitudes that it fosters among group members. Slavin (1995) cites several studies in which students in cooperative-learning groups felt more strongly than did other students that their groupmates wanted them to come to school every day and work hard in class.

Probably because of such features as promotive interaction and equal opportunities for success, cooperative learning has been shown to have a positive effect on motivation inducing attributions. Students in cooperative-learning groups were more likely to attribute success to hard work and ability than to luck (Slavin, 1995).

A strong indicator of motivation is the actual amount of time students spend working on a task. Most studies have found that cooperative-learning students spend significantly more time on-task than do control students (Johnson et al., 1995; Slavin, 1995).

Effect on Achievement

Slavin (1995) examined several dozen studies that lasted four or more weeks and that used a variety of cooperative-learning methods. Overall, students in cooperative-learning groups scored about one-fourth of a standard deviation higher on achievement tests than did students taught conventionally. This translates to an advantage of 10 percentile ranks (60th percentile for the average cooperative-learning student versus 50th percentile for the average conventionally taught student). But the beneficial effect of cooperative learning varied widely as a function of the particular method used. The best performances occurred with two techniques called Student Teams-Achievement Divisions and Teams-Games-Tournaments. The cooperative-learning features that seem to be most responsible for learning gains are group goals and individual accountability.

David Johnson, Roger Johnson, and Karl Smith (1995) also reviewed much of the cooperative-learning literature but drew a somewhat different conclusion. They found that the test scores of students in the cooperative-learning groups were about two-thirds of a standard deviation higher than the test scores of students in competitive or individualistic situations. This translates to an advantage of 25 percentile ranks (75th versus 50th). It's not clear why Slavin's analysis produced a somewhat lower estimate of the size of the advantage produced by cooperative learning. It may be due in part to differences in the studies cited by each; Slavin focused on studies lasting at least four weeks. It may also be due to differences in the cooperative techniques used by various researchers.

In addition to achievement outcomes, researchers have also assessed the impact of cooperative learning on problem solving. Given the complex nature of problem solving and the multiple resources that a cooperative group has at its disposal, one would logically expect cooperative learning to have a positive effect on this outcome as well. This hypothesis was confirmed by Zhining Qin, David Johnson, and Roger Johnson (1995). After reviewing forty-six studies, they concluded that students of all age levels (elementary, secondary, college, adult) who worked cooperatively outscored students who worked competitively. The average student in a cooperative group solved more problems correctly than 71 percent of the students who worked competitively.

Effect on Social Relationships

In most studies students exposed to cooperative learning were more likely than students who learned under competitive or individualistic conditions to name a classmate from a different race, ethnic group, or social class as a friend or to label such individuals as "nice" or "smart." In some studies the friendships that were formed were deemed to be quite strong. A similar positive effect was found for students with mental disabilities who were mainstreamed. Finally, the cooperation skills that students learn apparently transfer. Cooperative-learning students

were more likely than other students to use the cooperative behaviors they were taught when they worked with new classmates (Johnson & Johnson, 1995; Slavin, 1995).

Students who learn cooperatively tend to be more highly motivated to learn because of increased self-esteem, the pro-academic attitudes of group mates, appropriate attributions for success and failure, and greater on-task behavior. They also score higher on tests of achievement and problem solving and tend to get along better with classmates of different racial, ethnic, and social class backgrounds. This last outcome should be of particular interest to those of you who expect to teach in areas marked by cultural diversity.

5. Why Does Cooperative Learning Work?

When researchers attempt to explain the widespread positive effects that are typically found among studies of cooperative learning, they usually cite one or more of the following explanations (Slavin, 1995).

Motivational Effect

The various features of cooperative learning, particularly positive interdependence, are highly motivating because they encourage such achievement-oriented behaviors as trying hard, attending class regularly, praising the efforts of others, and receiving help from one's group mates. Learning is seen as an obligation and a valued activity because the group's success is based on it and one's group mates will reward it.

Cognitive Development Effect

According to Lev Vygotsky, collaboration promotes cognitive growth because students model for each other more advanced ways of thinking than any would demonstrate individually. According to Jean Piaget, collaboration among peers hastens the decline of egocentrism and allows the development of more advanced ways of understanding and dealing with the world.

Cognitive Elaboration Effect

New information that is elaborated (restructured and related to existing knowledge) is more easily retrieved from memory than is information that is not elaborated. A particularly effective means of elaboration is explaining something to someone else. On Elaboration Theory by Charles Reigeluth and associates (Merrill, Wilson and Spiller) refer *The elaboration theory of instruction: Prescriptions for task analysis and design.*

6. Resources for Further Investigation

The New Circles of Learning: Cooperation in the Classroom and School (1994), by David Johnson, Roger Johnson, and Edythe Johnson Holubec is a brief (105 pages) and readable description of the basic elements of the authors' version of cooperative learning.

In Cooperative Learning: Theory, Research, and Practice (2d ed., 1995), Robert Slavin describes the cooperative-learning techniques that he favors, analyzes the research evidence that supports their use, and provides detailed directions on how to use them.

Cooperative learning is sufficiently flexible that it can be used at all level of education. Four books that describe how to use cooperative methods for specific grade levels are *Cooperative Learning in the Early Childhood Classroom* (1991), by Harvey Foyle, Lawrence Lyman, and Sandra Thies; *Cooperative Learning in the Elementary Classroom* (1993), by Lawrence Lyman, Harvey Foyle, and Tara Azwell; *Cooperative Learning in Middle-Level Schools* (1991), by Jerry Rottier and Beverly Ogan; and *Secondary Schools and Cooperative Learning* (1995), edited by Jon Pederson and Annette Digby.

Finally, a collection of forty-eight articles that originally appeared in the *Journal of Educational Leadership* between 1985 and 1991 can be found in *Cooperative Learning and the Collaborative School* (1991), edited by Ronald Brandt.

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