

COOPERATIVE LEARNING: A REVIEW OF
RECENT METHODS AND THEIR
ACADEMIC AND NONACADEMIC OUTCOMES

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Special Education

by
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ABSTRACT

COOPERATIVE LEARNING:
A REVIEW OF RECENT METHODS AND
THEIR ACADEMIC AND NONACADEMIC OUTCOMES

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The purpose of this study was to examine the major cooperative learning methods and their academic and nonacademic outcomes. The review of literature included basic features of cooperative learning in general and the characteristics and applications of the major cooperative learning models. The review of research was limited to studies that took place over a period of at least two weeks in an elementary or junior high classroom. Effects of the major methods of cooperative learning in regular and special education were considered in terms of their differential effects on academic achievement and nonacademic outcomes. Results of the review of literature supported the utility of cooperative learning in general for improving academic achievement. The pattern of research findings also indicated that cooperative learning methods have had a positive effect on cooperation, acceptance of the handicapped, mutual concern, self-esteem, and race relations. The increased use of cooperative learning methods in both regular and special education settings was recommended.

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CHAPTER I

Introduction

What context is better for learning: group or individual? Traditionally, much of a student's day is spent working individually or receiving instruction in large groups through lecture and class discussion; most interaction occurs between teacher and student, with students often expected to outperform or compete with peers (Johnson, D., & Johnson, J., 1975; Slavin, 1983). The vast majority of adult interaction requires cooperation, but the traditional classroom has been found to be more competitive than cooperative (Johnson, D., & Johnson, R., 1975; Slavin, 1983).

What would happen if a classroom was organized to encourage and reward students cooperative interaction? "Cooperative learning" is a term that refers to classroom techniques in which students work on learning activities in small groups and are encouraged to help one another learn academic material or perform a group of tasks. In most cooperative learning techniques, students are given rewards based on their group's performance (Sharan, 1980; Webb, 1982).

Cooperative learning methods differ from traditional methods in task structure, authority structure, reward structure, and goal structure. The task structure is the mix of activities that make up the school day: lecture, class discussion, and seatwork are different task structures in use in most classrooms (Slavin,

1980a). The authority structure varies from high student autonomy to high teacher-imposed structure. Goal and reward structures may be individualistic, cooperative, or competitive. Cooperative learning may involve changes in all of these class structures (Slavin, 1980a).

Five major models for conducting cooperative learning have been described in the literature: Learning Together (Johnson, D., & Johnson, R., 1975), Small Group Teaching (Sharan & Sharan, 1976), Teams-Games-Tournaments (Edwards, DeVries, & Snyder, 1972), Student Teams-Achievement Divisions (Slavin, 1978), and Jigsaw (Aronson, Stephan, Sikes, Blaney, & Snapp, 1978). Positive outcomes of cooperative learning have included significant achievement in all academic subjects in both regular and special education classrooms (Slavin, Madden, & Leavey, 1984; Sharan, 1980; Slavin, 1980a). Nonacademic outcomes have also been achieved, including increased self-esteem, positive attitude toward school, interracial interaction, mutual concern, and social acceptance of handicapped peers (Johnson, D., & Johnson, R., 1980; Sharan, 1980; Slavin, 1980b).

Extensive reviews of research on the major models of cooperative learning have been conducted by Slavin (1980) and Sharan (1980). These researchers have established cooperative learning as a way to achieve academic and nonacademic goals in the regular classroom (Sharan, 1980; Slavin, 1980a). The present study will

review and update this research through 1984 and explore the effects of cooperative learning on academic achievement and non-academic outcomes for regular and special education populations.

The objectives of this study were:

1. To examine major cooperative learning strategies currently in use:

1a. Jigsaw (Aronson et al., 1978).

1b. Teams-Games-Tournaments (Edwards et al., 1972).

1c. Student Teams-Achievement Divisions (Slavin, 1978).

1d. Learning Together (Johnson, D., & Johnson, R., 1975).

1e. Small Group Teaching (Sharan & Sharan, 1976).

1f. Variations and combinations of the major models of cooperative learning.

2. To determine which strategies are associated with achievement in the major academic areas of reading, mathematics, and social studies for regular and special education students in the elementary and junior high grades (K-9).

3. To examine nonacademic outcomes of cooperative learning including self-esteem, positive attitude toward school, mutual concern, and social acceptance of handicapped peers for regular and special education students in the elementary and junior high grades (K-9).

Definitions

For purposes of this study, important terms are defined as follows:

1. Academic outcomes. Level of achievement in academic subjects such as reading, math, and social studies.
2. Cooperative learning. Classroom techniques in which students work on learning activities in small groups and are encouraged to help one another learn academic material or perform a group of tasks. Rewards or recognition are usually based on group performance (Slavin, 1980a).
3. Criterion referenced tests. Criterion referenced tests are made up of items taken directly from curriculum material presented to the students.
4. Exceptional educational needs (EEN) students. Students identified through a multidisciplinary team evaluation as significantly deviating from the average in what they need to succeed in education (Haring, 1978). The EEN category includes among others the diagnostic categories of learning disabled (LD), emotionally disturbed (ED), and educable mentally retarded (EMR). The needs of these students may be met by spending all or part of a school day with a resource or special education teacher.
5. Goal interdependence. Individual efforts contribute to a group goal (Johnson, D., & Johnson, R., 1975; Slavin, 1980a).
6. Individual accountability. A team member's contribution to the team score is separately quantifiable (Slavin, 1980a).

7. Individualized instruction. Achievement of goal by a student that is unrelated to the achievement of the goal by other students (Johnson, D., & Johnson, R., 1975).

8. Interpersonal attraction. Mutual liking and seeking each other out (Johnson, R., & Johnson, D., 1982).

9. Interpersonal reward structure. The consequences for an individual of his classmates' performance. In a competitive reward structure such as grading on the curve, one student's success necessitates another's relative failure. In a cooperative reward structure one student's success helps another to be successful. In reward independence or individualization, goal achievement of different students is unrelated (Slavin, 1980a).

10. Language arts. The interrelated subjects of reading, spelling, language, and grammar.

11. Mainstreaming. Students with academic or behavioral handicaps placed in regular education classes, for part or all of the day, with or without support from special educators.

12. Mildly academically handicapped. Students that have been identified as needing special education services for a learning problem, including the diagnostic categories of educable mentally retarded (EMR) and learning disabled (LD) (Madden & Slavin, 1983a).

13. Nonacademic outcomes. Changes in emotions, feelings, social behavior, or learning.

14. Reward interdependence. Individual efforts that contribute to a group goal.
15. Student autonomy. The ability of a student to understand what other people expect in a given situation and the freedom to choose whether to meet their expectations (Johnson, R., & Johnson, D., 1982).
16. Task interdependence. Positive behavior that helps other team members (i.e., doing the task well).
17. Traditional instruction. Classroom instruction that includes large group lecture, large and small group discussion, working independently, and competitive tests in varying proportions (Cooper, Johnson, Johnson, & Wilderson, 1980).

CHAPTER II

Review of Literature

The positive effects of research using cooperative learning methods with regular and exceptional educational needs (EEN) students appear to justify continued study so that educational practice can gain full benefit of these productive strategies. The present study was undertaken (a) to examine the major models of cooperative learning, (b) to determine which cooperative learning strategies appear to facilitate academic achievement among regular and special education students in the elementary and junior high grades, and (c) to determine which cooperative strategies appear to facilitate nonacademic outcomes among regular and special education students in the elementary and junior high grades.

This chapter presents a contemporary review of cooperative learning models: Jigsaw, Teams-Games-Tournaments, Learning Together, Student Teams-Achievement Division, Small Group Teaching, and variations of these models. The studies reviewed were field experiments that took place in actual elementary classrooms with regular and special education populations. These experiments were of at least 2-weeks' duration and usually much longer.

In this chapter the basic similarities and differences among cooperative learning strategies are examined and each of the five major cooperative learning models are described. Related research follows the description of each major model. Also included in the

review are two adapted models: Team Assisted Individualization (Slavin, Leavey, & Madden, 1984) and Jigsaw II (Slavin, 1978). Research on Jigsaw II has been limited to regular education programs. Team Assisted Individualization was developed and researched in special education programs only, with the goal of facilitating mainstreaming.

Basic Features of Cooperative Learning

The models examined in this study vary enormously in their detail, philosophies, and application, but they share these characteristics: (a) students work in small learning teams that remain stable in composition for many weeks; (b) students are encouraged to help one another to learn academic material or perform a group task, and (c) in most models students are given rewards or recognition based on their group performance. In essence, if students cooperate in teams on learning tasks, that is a cooperative learning technique. However, on other important features, cooperative learning methods vary widely (Sharan, 1980; Slavin, 1980a).

Cooperative learning methods vary from each other primarily along five dimensions: reward interdependence, task interdependence, individual accountability, teacher-imposed structure, and use or non-use of group competition (Slavin, 1980a). In high reward interdependence there is an explicit group reward based on group performance. Low reward interdependence describes a situation in which students work in a group and are praised as a group, but performance does not lead to a concrete goal. In high task

interdependence, students must rely on one another to do their group tasks; in low task interdependence, a student could work alone without disrupting the group activity. With high individual accountability an individual contribution to the team score is separately quantifiable. Individual accountability is an important feature as without it, it is possible for group members to let others do most of the work (Slavin, 1980a). Teacher-imposed structure refers to the degree to which tasks, rewards, and schedules are imposed by the teacher or by the techniques. High student autonomy and participation in classroom decisions are the opposite of high teacher-imposed structure (Slavin, 1980a).

Major Cooperative Learning Methods

Teams-Games-Tournaments (TGT)

In the Teams-Games-Tournaments method (Edwards et al., 1972) students are assigned by the teacher to teams composed of four to five members. Team composition is designed to be heterogeneous with regard to academic ability, sex, and race. The function of these teams is to prepare its members, through peer tutoring, to do well in a learning game tournament. An initial class presentation is made by the teacher, then the teams are given worksheets containing academic material similar to that included in the tournament. Teammates use the worksheets to study together and quiz each other to be sure that all team members are prepared for the tournament.

Assignment to tournament tables places together three students of comparable academic achievement as determined by prior performance in the same subject area. Upon completion of the game, the three contestants are ranked and given points; highest score in each tournament gets 6 points, middle score gets 4 points, and lowest score gets 2 points. The team scores for each original tutoring team are obtained by adding the scores gained by its individual members at the tournament table, thus creating reward interdependence. The more that students help each other, the more likely they are to win points in the tournament (Edwards et al., 1972).

Following the tournament, the teacher prepares a newsletter which recognizes successful teams and students with first place scores. Team assignments remain constant for a 6- to 10-week period to permit the development of positive relationships. Tournament assignments are changed for every tournament according to a system that maintains equality of past performance at each table. TGT is high in reward interdependence and accountability and low in task interdependence and student autonomy (Slavin, 1980a). For a complete description of Teams-Games-Tournament, the reader is referred to DeVries and Slavin (1978).

Research in regular education. "Traditional instruction", TGT, and modifications of TGT were compared by DeVries and Edwards (1973). They attempted to evaluate TGT and to indicate the relative importance of its components. Four experimental groups were

formed: (a) "traditional large-group instruction," (b) TGT, (c) team component without the games component, and (d) games, omitting the team component. The subjects were 110 seventh-grade students; 43% of the sample was black. The subjects and teachers were randomly assigned to experimental math groups. The experiment was conducted over a 4-week period, and teachers were rotated to another condition after 2 weeks. Identical math objectives and materials were given to all four teachers. Pre- and post-criterion referenced tests were designed to assess achievement. An adapted Learning Environment Inventory (Walberg & Anderson, 1968) and a sociometric question, "Who are your friends in this class?" assessed mutual concern, "liking of school", and race relations.

A significant game tournament effect was found on math achievement gains, but no significant team effect was noted. However, the achievement measure was specific to the game. As predicted, the significant positive effects of TGT on mutual concern was entirely due to the team component. No significant effects were found for race relations or liking of school (DeVries & Edwards, 1973).

In a similar study, Edwards and DeVries (1974) compared TGT, "traditional large group instruction", and two modifications of TGT using 128 seventh graders in math and social studies. The duration of the study was 12 weeks. In one modification the scores of high achievers were heavily weighted in determining

team scores. This was an attempt to make the reward system (i.e., the scores) seem more equitable. The other modification deleted the inter-team competition.

Criterion referenced pre- and post-tests indicated that TGT without modifications was more effective than either the modification or the traditional control group in increasing mathematics achievement ($p < .05$). There were no significant differences ($p < .10$) in social studies achievement (Edwards & DeVries, 1974).

An adapted Learning Environment Inventory (Walberg & Anderson, 1968) and the question "Who are your friends?" were used to measure mutual concern, race relations, and liking of school. Significant gains in mutual concern were attributed to the team component. The modifications (i.e., the weighting of scores and the elimination of competition) had a somewhat negative effect on mutual concern. TGT had a positive effect on race relations and liking of school compared to the traditional control group. There was no significant difference between groups using TGT and the TGT modifications (Edwards & DeVries, 1974).

Six other similar TGT research efforts with regular education classes are summarized on Tables 1 and 2. In these studies TGT was again compared to "traditional large group teaching methods." TGT methods have been more successful in producing significant achievement gains than in producing noncognitive outcomes. The reader is referred to Tables 1 and 2 for specific study characteristics and their outcomes.

Table 1
 Characteristics and Academic Outcomes
 of Cooperative Learning Studies^a

| Major Studies | n | Grade Level | Duration (Weeks) | Subject Area | Criterion Referenced Test | Standardized Test | Outcome Measure |
|---|------|-------------|------------------|---|---------------------------|-------------------|----------------------------|
| <u>Teams-Games-Tournaments--Regular Education</u> | | | | | | | |
| Edwards, DeVries, & Snyder (1972) | 96 | 7 | 9 | Math | * | * | Stanford Achievement |
| DeVries & Edwards (1973) | 110 | 7 | 4 | Math | * | | |
| Edwards & DeVries (1974) | 128 | 7 | 12 | Math Social Studies | * NS | | |
| DeVries & Mescon (1975) | 60 | 3 | 6 | Language Arts | * | * | Hoyum Sanders English Test |
| DeVries, Lucasse, & Shackman (1975) | 1742 | 7-8 | 10 | Language Arts | * | NS | Hoyum Sanders English Test |
| DeVries, Mescon, & Shackman (1975a) | 53 | 3 | 6 | Language Arts | * | * | Hoyum Sanders English Test |
| DeVries, Mescon, & Shackman (1975b) | 53 | 3 | 5 | Reading Vocabulary Verbal Analogies | * * | | |
| Hulten & DeVries (1976) | 299 | 7 | 10 | Math | | * | Stanford Achievement |

^a A blank space in a column indicates an outcome measure was not taken

Key: * = $p < .05$
 ** = $p < .01$
 *** = $p < .001$
 NS = No significant difference between experimental and control group
 # = Control group exceeded experimental group

Continued

Table 1
 Characteristics and Academic Outcomes
 of Cooperative Learning Studies^a

| Major Studies | n | Grade Level | Duration (Weeks) | Subject Area | Criterion Referenced Test | Standardized Test | Outcome Measure |
|---|-----|-------------|------------------|----------------|---------------------------|-------------------|--|
| <u>Teams-Games-Tournaments--Special Education</u> | | | | | | | |
| Slavin (1977a) | 39 | 7-8 | 10 | Social Studies | NS | NS | Cooperative School and College Ability Tests: Tests of Educational Progress (1972) |
| <u>Learning Together--Regular Education</u> | | | | | | | |
| D. Johnson, R. Johnson, & Scott (1978) | 30 | 5-6 | 10 | Math | # | | |
| <u>Learning Together--Special Education</u> | | | | | | | |
| Armstrong, Johnson, & Balow (1981) | 40 | 5-6 | 4 | Reading | NS | | |
| <u>Small Group Teaching--Regular Education</u> | | | | | | | |
| Sharan, Luzarowitz, & Steinberg (1980) | 217 | 2 | 3 | Social Studies | * | | |
| | | 3 | | | NS | | |
| | | 4 | | | * | | |
| | | 5 | | | NS | | |
| | | 6 | | | * | | |
| <u>Student Teams-Achievement Divisions--Regular Education</u> | | | | | | | |
| Slavin (1977b) | 62 | 7 | 10 | Language Arts | * | * | Hoyum Sanders English Test |

^a A blank space in a column indicates an outcome measure was not taken

Key: * = $p < .05$
 ** = $p < .01$
 *** = $p < .001$
 NS = No significant difference between experimental and control group
 # = Control group exceeded experimental group

Continued

Table 1
 Characteristics and Academic Outcomes
 of Cooperative Learning Studies^a

| Major Studies | n | Grade Level | Duration (Weeks) | Subject Area | Criterion Referenced Test | Standardized Test | Outcome Measure |
|---|-----|-------------|------------------|----------------|---------------------------|-------------------|----------------------------|
| <u>Student Teams-Achievement Divisions--Regular Education (continued)</u> | | | | | | | |
| Slavin (1978a) | 336 | 4-5 | 9 | Language Arts | * | | |
| Slavin (1978b) | 205 | 7 | 10 | Language Arts | NS | NS | Hoyum Sanders English Test |
| Slavin (1979) | 420 | 7-8 | 12 | Language Arts | NS | NS | Hoyum Sanders English Test |
| Slavin (1980c) | 424 | 4 | 12 | Language Arts | * | * | Hoyum Sanders English Test |
| Slavin & Oickle (1981) | 230 | 6-8 | 12 | Language Arts | NS | * | Hoyum Sanders English Test |
| <u>Student Teams-Achievement Divisions--Special Education</u> | | | | | | | |
| Madden & Slavin (1983b) | 175 | | 7 | Math | * | | |
| <u>Jigsaw--Regular Education</u> | | | | | | | |
| Lucker, Rosenfield, Sikes, & Aronson (1976) | 303 | 5-6 | 2 | Social Studies | * | | |
| Blaney, Stephan, Rosenfield, Aronson, & Sikes (1977) | 304 | 5-6 | 6 | Social Studies | NS | | |

^a A blank space in a column indicates an outcome measure was not taken

Key: * = $p < .05$

** = $p < .01$

*** = $p < .001$

NS = No significant difference between experimental and control group

- Control group exceeded experimental group

Continued

Table 1
 Characteristics and Academic Outcomes
 of Cooperative Learning Studies^a

| Major Studies | <u>n</u> | Grade Level | Duration (Weeks) | Subject Area | Criterion Referenced Test | Standardized Test | Outcome Measure |
|---|----------|-------------|------------------|----------------------------|---------------------------|-------------------|---|
| <u>Combined Program: Teams-Games-Tournaments, Jigsaw II, & Student Teams-Achievement Divisions--Regular Education</u> | | | | | | | |
| Slavin & Karweit (1981) | 456 | 4-5 | 16 | Math (TGT) | NS | | Comprehensive Test of Basic Skills (CTBS) |
| | | | | Language Arts (STAD) | * | | |
| | | | | Social Studies (Jigsaw II) | NS | | |
| | | | | Reading (STAD, Jigsaw II) | * | | |
| <u>Team Assisted Individualization--Special Education</u> | | | | | | | |
| Slavin, Leavey, & Madden (1984) | 504 | 3-5 | 8 | Math | | * | CTBS |
| Slavin, Leavey, & Madden (1984) | 375 | 4-6 | 24 | Math | | * | CTBS |
| Slavin, Madden, & Leavey (1984) | 504 | 3-5 | 10 | Math | | NS | CTBS |

^a A blank space in a column indicates an outcome measure was not taken

Key: * = $p < .05$
 ** = $p < .01$
 *** = $p < .001$
 NS = No significant difference between experimental and control group
 # - Control group exceeded experimental group

Table 2
 Characteristics and Nonacademic Outcomes
 of Cooperative Learning Studies^a

| Major Studies | n | Grade Level | Duration (Weeks) | Cooperation | Acceptance of Handicapped | Mutual Concern | Race Relations | Liking of School | Self-Esteem | Outcome Measure |
|---|------|-------------|------------------|-------------|---------------------------|----------------|----------------|------------------|-------------|---|
| <u>Teams-Games-Tournaments--Regular Education</u> | | | | | | | | | | |
| DeVries, Edwards, & Snyder (1972) | 96 | 7 | 9 | | | | * | | | |
| DeVries & Edwards (1973) | 110 | 7 | 4 | | | * | NS | NS | | Learning Environment Inventory (LEI) (Anderson, 1973) Sociometric Question |
| Edwards & DeVries (1974) | 128 | 7 | 12 | | | * | * | * | | LEI Sociometric Question |
| DeVries & Mescon (1975) | 60 | 3 | 6 | | | NS | | NS | | LEI Sociometric Question |
| DeVries, Mescon, & Shackman (1975a) | 53 | 3 | 6 | | | NS | | NS | | LEI Sociometric Question |
| Hulten & DeVries (1976) | 299 | 7 | 10 | | | | | * | | |
| DeVries, Lucasse, & Shackman (1979) | 1742 | 7-8 | 10 | | | | | NS | * | Coopersmith Self-Esteem Inventory (1975) |
| <u>Teams-Games-Tournaments--Special Education</u> | | | | | | | | | | |
| Slavin, 1977 | 39 | 7-9 | 10 | | | * | | NS | | Sociometric Questions Behavioral Observation |

^a A blank space in a column indicates an outcome measure was not taken
 Key: * = $p < .05$
 ** = $p < .01$
 *** = $p < .001$
 NS = No significant difference between experimental and control group

Continued

Table 2
 Characteristics and Nonacademic Outcomes
 of Cooperative Learning Studies^a

| Major Studies | <u>n</u> | Grade Level | Duration (Weeks) | Cooperation | Acceptance of Handicapped | Mutual Concern | Race Relations | Liking of School | Self-Esteem | Outcome Measure |
|---|----------|-------------|------------------|-------------|---------------------------|----------------|----------------|------------------|-------------|---|
| <u>Learning Together--Regular Education</u> | | | | | | | | | | |
| D. Johnson, R. Johnson, & Scott (1978) | 30 | 5-6 | 10 | | | | | | * | Minnesota School Affective Assessment (D. Johnson, 1974) |
| D. Johnson & R. Johnson (1981a) | 51 | 4 | 3 | ** | | | ** | | | Freetime Observation Attitude Scales (Talmadge & Waxman, 1980) Social Schema Figure Placement Cohesion Scale (Anderson, 1973) Thought Processes Scale (Stelle, House, Lopen, & Kermis, 1970) Peer Support Scale Classroom Life |
| D. Johnson, R. Johnson, & Anderson (1983) | 859 | 4-9 | 36 | ** | | ** | | | | |
| <u>Learning Together--Special Education</u> | | | | | | | | | | |
| Cooper, Johnson, & Wilderson (1980) | 60 | 7 | 3 | | NS | * | ** | | | Minnesota School Affective Assessment, (D. Johnson) Sociometric Questions |

^a A blank space in a column indicates an outcome measure was not taken
 Key: * = $p < .05$
 ** = $p < .01$
 *** = $p < .001$
 NS = No significant difference between experimental and control group

Continued

Table 2
 Characteristics and Nonacademic Outcomes
 of Cooperative Learning Studies^a

| Major Studies | n | Grade Level | Duration (Weeks) | Cooperation | Acceptance of Handicapped | Mutual Concern | Race Relations | Liking of School | Self-Esteem | Outcome Measure |
|---|-----|-------------|------------------|-------------|---------------------------|----------------|----------------|------------------|-------------|--|
| <u>Learning Together--Special Education (Continued)</u> | | | | | | | | | | |
| Armstrong, Johnson, & Balow (1981) | 40 | 5-6 | 4 | | * | NS | | | | Sociometric Questions |
| R. Johnson & D. Johnson (1981) | 40 | 3 | 3 | ** | * | * | | | | Behavioral Observation Attitude Scales (Talmadge & Waxman, 1980) |
| D. Johnson & R. Johnson (1981b) | 51 | 4 | 3 | ** | NS | ** | | | | Behavioral Observation Attitude Scales (Talmadge & Waxman, 1980) |
| R. Johnson & D. Johnson (1982) | 51 | 4 | 3 | | NS | | | | | Attitude Scale (Talmadge & Waxman) Freetime Observation |
| R. Johnson & D. Johnson (1983) | 59 | 4 | 3 | ** | ** | | | | ** | Distance Density Index (Zaidman, 1980) Behavioral Observation Learning Scale (Talmadge & Waxman, 1980) |
| <u>Small Group Teaching--Regular Education</u> | | | | | | | | | | |
| Lazarowitz, Sharan, & Steinberg (1980) | 393 | 3-7 | 54 | * | | | | | | Choice Board (Kagen & Madsen, 1971) |

^a A blank space in a column indicates an outcome measure was not taken

Key: * = $p < .05$

** = $p < .01$

*** = $p < .001$

NS = No significant difference between experimental and control group

Continued

Table 2
 Characteristics and Nonacademic Outcomes
 of Cooperative Learning Studies^a

| Major Studies | n | Grade Level | Duration (Weeks) | Cooperation | Acceptance of Handicapped | Mutual Concern | Race Relations | Liking of School | Self-Esteem | Outcome Measure |
|---|------|-------------|------------------|-------------|---------------------------|----------------|----------------|------------------|-------------|--|
| <u>Student Teams-Achievement Divisions--Regular Education</u> | | | | | | | | | | |
| Slavin (1977b) | 62 | 7 | 10 | | | NS | * | | | Behavioral Observation Sociometric Questions |
| Slavin (1978b) | 205 | 7 | 10 | | | * | | | | Sociometric Questions Attitude Scale |
| Slavin (1979) | 420 | 7-8 | 12 | | | * | * | | | Sociometric Questions |
| Oickle (1980) | 1026 | 6-8 | 12 | | | * | | NS | * | Coopersmith Self-Esteem Inventory (1975) |
| | 424 | 4 | 12 | | | * | | | | Behavioral Observation Sociometric Questions |
| Slavin & Oickle (1981) | 230 | 6-8 | 12 | | | NS | * | | | Sociometric Questions |
| <u>Student Teams-Achievement Divisions--Special Education</u> | | | | | | | | | | |
| Madden & Slavin (1983b) | 175 | 3-6 | 6 | | ** | NS | | | * | Sociometric Questions Coopersmith Self-Esteem Inventory (1975) |

^a A blank space in a column indicates an outcome measure was not taken

Key: * = $p < .05$

** = $p < .01$

*** = $p < .001$

NS = No significant difference between experimental and control group

Continued

Table 2
 Characteristics and Nonacademic Outcomes
 of Cooperative Learning Studies^a

| Major Studies | <u>n</u> | Grade Level | Duration (Weeks) | Cooperation | Acceptance of Handicapped | Mutual Concern | Race Relations | Liking of School | Self-Esteem | Outcome Measure |
|--|----------|-------------|------------------|-------------|---------------------------|----------------|----------------|------------------|-------------|--|
| <u>Jigsaw--Regular Education</u> | | | | | | | | | | |
| Blanay, Stephan, Rosenfield, Aronson, & Sikes (1977) | 304 | 5-6 | 6 | * | | NS | | NS | * | |
| <u>Combined Program: Team-Games-Tournaments, Jigsaw II, & Student Teams-Achievement Divisions--Regular Education</u> | | | | | | | | | | |
| Slavin & Karweit (1981) | 456 | 4-5 | 16 | | | * | | ** | * | Coopersmith Self-Esteem Inventory (1975) |
| <u>Team Assisted Individualization--Special Education</u> | | | | | | | | | | |
| Slavin, Leavey, & Madden (1984) | 504 | 3-5 | 8 | | * | *** | | *** | *** | Behavior Rating Scale |
| Slavin, Leavey, & Madden (1984) | 375 | 4-6 | 10 | | | ** | | NS | * | Behavior Rating Scale |
| Slavin, Madden, & Leavey (1984) | 504 | 3-5 | 24 | | * | *** | | NS | *** | Behavior Rating Scale |

^a A blank space in a column indicates an outcome measure was not taken

Key:

* = $p < .05$

** = $p < .01$

*** = $p < .001$

NS = No significant difference between experimental and control group

Research in special education. Slavin (1977a) conducted a study that compared TGT methods with individualized instruction in social studies. Two classes in a special school for "adolescents of normal intelligence with emotional and behavioral needs" were assigned to TGT treatment or the individualized instruction control group for 10 weeks. Students were randomly assigned to the classes stratified on three levels of IQ obtained from school records. Thirty-nine students were involved in the study (Slavin, 1977a).

Trained observers made 15 observations of each group using an observation instrument designed for the study. Reliability of the observations was determined by interobserver agreement, and ranged from 84% to 93%. Five sociometrics questions were administered before and after the treatment period to measure mutual concern and liking of school. The Cooperative School and College Ability Test--Sequential Test of Educational Progress (SCAT-STEP) and a criterion referenced test were used before and after treatment to measure achievement (Slavin, 1977a).

Results of the study indicated that achievement gains for the group using TGT were not significantly different from the group using individualized instruction. Results of the sociometric questions indicated the TGT students named significantly more of their peers as friends than did the control group. The behavioral observations revealed that TGT students interacted appropriately more often and spent more time on task than did the

control group. Furthermore, a 5-month observational follow-up of the students who were then in different classes showed that the students who had been in TGT classes still interacted with peers more than the control group ($p < .001$). No significant difference was found for off-task behavior when the two follow-up groups were compared (Slavin, 1977a).

In summary, TGT was found in regular and special education research to be a very effective method for positively influencing academic achievement. In nine studies in regular and special education TGT produced significant academic gains, as demonstrated on one or more measures, in all academic areas except social studies (see Table 1). The social studies research effort in special education (Slavin, 1977a) and the social studies part of the study performed by Edwards and DeVries (1974), both failed to produce significant achievement effects.

The 16 nonacademic measures taken in the TGT studies are summarized in Table 2. Eight of the measures resulted in significant nonacademic outcomes. However, in no study did the control exceed the TGT treatment on academic or nonacademic outcomes in regular or special education.

Learning Together

The Learning Together (LT) approach (Johnson, D., & Johnson, R., 1975) is a goal structure organization plan in which teachers can structure cooperation among students by requiring students to work jointly on an assignment to produce a single product, by re-

warding students on the basis of the performance of all group members, by requiring students to share materials, or by the division of information among group members (Johnson, D., & Johnson, R., 1983). Training of teachers and students is stressed in this method. LT may be described as an inquiry-investigation approach to learning (Sharan, 1980). It is characterized as high in student autonomy and low in individual accountability (Slavin, 1980a).

Research in regular education. In the research efforts using the LT approach "individualistic" control groups were used by Johnson and associates. Students in the individualistic condition were instructed to work independently and avoid interaction with other students. They were to ask the teacher if they needed assistance. The teachers praised or rewarded each student individually. In some LT studies the cooperative condition students were given post-tests individually and cooperatively. Only individualized scores will be reported in this review.

The Classroom Life Instrument (CLI) was administered to 859 students in grades four through nine in three school districts (Johnson, Johnson, & Anderson, 1983). CLI consisted of 59 questions to which students indicated on a 5-point scale the truth or falseness of the statements. The Cronbeck alpha reliabilities for the different factors included in the test ranged from .51 through .83, with an average reliability of .70.

Student responses were submitted to correlational analyses of the relationships between scales measuring attitudes toward cooperative learning and attitudes toward peers and teachers. Cooperative attitudes and experiences were positively correlated ($p < .01$) to perceptions of support, help, and friendship from peers. In this naturalistic study, LT had been used almost an entire school year (Johnson, Johnson, & Anderson, 1983).

The effects of LT on cross-ethnic interaction was explored by D. Johnson and R. Johnson (1981a). Fourth-grade students participated in a social studies unit for 45 minutes a day followed by a 10-minute free time period, for 16 instructional days. Fifty-one students were assigned to a Learning Together or "individualistic" learning experience on a stratified random basis controlling for sex, ability, and ethnic membership.

A free time observation measure was used to determine the frequency of cross-ethnic interaction during the daily 10-minute free time sessions. A social schema figure placement measure was given to half of the students in each condition. The attitude measures used in the study included: (a) two attitude scales (Talmadge & Waxman, 1980); (b) a cohesion scale developed by Anderson (1973); (c) a six item higher thought processes scale (Stelle, House, Lapen, & Kermis, 1970); and (d) a two item scale on peer support developed by the authors (Johnson, D., & Johnson, R., 1981a).

Results indicated there were significantly more ($p < .05$) verbal interactions between majority and minority students during instructional sessions in the LT condition than in the individualistic condition. Students in the LT cooperative condition also gave and received more cross-ethnic help ($p < .01$) during free time ($p < .01$) than in the individualistic condition. Students in the LT cooperative condition placed more minority and majority students together on the social schema ($p < .05$) and displayed more cooperative behavior ($p < .01$) than students in the individualistic control (Johnson, D., & Johnson, R., 1981a).

The Learning Together (LT) cooperative approach was compared to individualistic instruction to determine its nonacademic and achievement effects (Johnson, Johnson, & Scott, 1978). Thirty students in a fifth- and sixth-grade advanced math class were involved for one hour a day for 50 days in the study. Students were randomly divided into Learning Together and individualistic conditions controlling for math ability. Post-tests developed by the publisher of the math materials were given after each of three math units. A retention test written by the teacher was administered 2 months after the study. A post-experimental questionnaire taken from the Minnesota School Affective Assessment (Johnson, D., 1974) was given to assess nonacademic outcomes.

Students in the individualistic condition learned marginally more than those in the cooperative group ($p < .10$) as measured by the post-tests. On the retention test the individualistic group's

advantage was significant ($p < .05$). Students in the Learning Together condition significantly exceeded ($p < .05$) the control group on academic self-esteem consistently agreeing they were doing a good job of learning (Johnson, D., Johnson, R., & Scott, 1978).

Research in special education. Cooper and associates (1980) employed Learning Together (LT) methods for 60 minutes per day for 3 weeks with 60 seventh-grade students in science, English, and geography. They investigated the effects of LT, competitive, and individualistic experiences on personal attraction among heterogeneous students in seventh grade during English, geography, and science class. The stratified random sample of 60 students consisted of 41 white, 19 black, and 12 handicapped students. The handicapped students were identified as learning disabled or emotionally disturbed. The students were randomly assigned to conditions stratifying for ethnic-membership, sex, achievement level, and handicap. Achievement level was determined by the teachers on the basis of students' standardized reading scores and class performance. The teachers were selected for their competence and received 40 hours of training for the three conditions. They each taught one class in each condition. Three white students dropped out of the study in the competitive condition. The LT and individualistic conditions were described earlier in this chapter. In the competitive condition students were instructed to compete to be best in their cluster. Students were assigned to equal

ability clusters and could monitor each other's progress. A post-experimental questionnaire included sociometric questions and an attitude scale taken from the Minnesota School Affective Assessment (Johnson, 1974).

Results indicated LT methods increased mutual helping ($p < .05$) between cross-ethnic peers and handicapped and non-handicapped peers. Students in the cooperative and competitive conditions when compared to students in the individualistic condition, more often chose cross ethnic peers ($p < .01$) or handicapped peers ($p < .10$) (Cooper et al., 1980).

A comparison was made of the effects of LT, competitive, and individualistic learning experiences on the self-esteem and the relationships between handicapped and non-handicapped students (Johnson, R., & Johnson, D., 1983). The subjects were 59 students from two fourth-grade classes, of whom 12 were students with "severe learning and behavior problems." The students were all randomly assigned to one of the three conditions stratifying for sex, ability, and handicap. Ability was determined by teacher ratings. LT and individualistic conditions have been previously described. In the competitive condition students were instructed to work alone, to attempt to do better work than their condition-mates and to seek help from the teacher. Each day students were informed where their work ranked with condition mates; the teachers then praised the five highest students. The students were together

for 50 minutes of instruction and 10 minutes of free time per day for 15 days. Each condition had two teachers. The three regular classroom teachers received 6 hours of training and the three research teachers received over 90 hours of training in the use of LT, competitive, and individualistic instructional procedures. The teachers were rotated so they taught equal time in each condition.

Trained behavioral observers with an interrater reliability over 85% observed cross-handicap interaction during instruction and proximity during free time. Children were administered the Distance-Density Index (Zaidman, 1980), a cooperative and individualistic learning scale (Talmadge & Waxman), a perspective taking measure, and a self-esteem attitude scale. Interaction across handicap and cooperation were significantly higher ($p < .01$) in the LT condition than in the competitive or individualistic conditions. Insignificant differences in favor of cooperative learning were found on the density and perspective taking measure ($p < .10$). The self-esteem scale indicated LT students had a higher general self-esteem ($p < .01$) and school self-esteem ($p < .05$) than the students in the individualistic and competitive condition (Johnson, R., & Johnson, D., 1983).

Nevin, Johnson, and Johnson (1982) reported on four studies each focusing on the effects of group and individual contingencies on academic performance, acceptance of handicapped peers, and self-

esteem. "academically and socially handicapped" students (Nevin, Johnson, Johnson, 1982).

Four elementary-grade children participated in one study. They were part of a class containing 23 children. The goal was to enable the four target subjects to learn to name upper and lower case letters of the alphabet. The design consisted of a 2-week baseline period in which subjects worked individually, a 2-week contingency period when two subjects worked as part of a three member heterogeneous cooperative group, and a second 2-week contingency period in which all four subjects worked in a cooperative group. The four target subjects were tested daily; all testing was conducted by the teacher and an education specialist. The performance of all four subjects improved dramatically when they were placed under cooperative rather than individual contingencies (Nevin et al, 1982).

Eleven seventh-grade students that had been referred to a special math class because they had "disruptive behavior, poor study habits, and low academic achievement" were the subjects of another study (Nevin et al., 1982). An A-B-A reversal design was used in which A was the baseline condition during which subjects worked individually and were praised according to their math performance and how good their study behaviors were. During the group contingency condition (B), the students earned points for their group by completing math problems and demonstrating good study habits. The points could be traded for free time activities

once a week. Students were randomly assigned to groups stratified for ability so that each group had one higher-achieving, one lower-achieving, and one or two middle-achieving students. The dependent variables were the percentage of subjects reaching criteria for math achievement, frequency of good study behavior, and social acceptance of "rejected isolated" subjects.

A multiple baseline was used for evaluating achievement. The group contingency was begun on day four, and on day nine the points were withdrawn for division tests, but still given for multiplication tests. On the fourth day of the group contingency, 100% of the subjects had reached criteria on division tests; when the group points were withdrawn the percentage of subjects meeting criteria dropped to 55%.

On-task behavior and social acceptance were also evaluated in the Nevin et al. (1982) study. During the baseline, on-task behavior averaged 55%, while during the group contingency condition it averaged 65%. When group contingency was withdrawn, on-task behavior decreased to 57%. On a social acceptance questionnaire two subjects were identified as being rejected by their peers. The first student was listed as a positive choice 0 times and a negative choice eight times after baseline. After the group contingency period, he was a positive choice twice and a negative choice only five times. The second rejected peer was listed as a positive choice four times and a negative choice seven times. After the group contingency period he was listed positively seven times and negatively six times.

Two additional studies (Nevin et al., 1982) with seventh graders in math and first graders in all subjects also resulted in achievement gains and increased social acceptance. The classroom studies of Nevin and associates (1982) were not included in Tables 1 and 2 because statistical significance of the research outcomes were not determined and thus could not be presented. Characteristics and outcomes of many other research studies using the Learning Together Methods with special education populations are summarized in Tables 1 and 2.

Learning Together studies reviewed here in regular and special education have not documented academic achievement, but have revealed many positive nonacademic outcomes. Mutual concern was seen as a significant effect in four out of five studies. In the five studies that measured cooperation very significant outcomes were obtained. Learning Together has also shown itself to be effective in two studies for increasing self-esteem. Johnson and associates have demonstrated that Learning Together methods promote significant nonacademic outcomes for students in special education.

Small Group Teaching

Small Group Teaching was derived from the work of Dewey (Sharan, 1980). It is a classroom organizational plan in which learning takes place through cooperative group inquiry, discussion, and data gathering by students (Sharan & Sharan, 1976).

Students select subtopics within a general area selected by the teacher and then organize themselves into small groups of two to six members. These student groups further subdivide their topic into individual tasks to be performed by group members in preparation for a group presentation to the class. This group presentation is evaluated by the other students and the teacher (Sharan & Sharan, 1976). Thus, Small Group Teaching is considered to be high in student autonomy and task interdependence and low in individual accountability (Slavin, 1980).

Research in regular education. The studies reported here were conducted as part of a project to retrain teachers and implement Small Group Teaching techniques in Israel. Small Group Teaching had been implemented in the schools during the entire academic year prior to the time when these studies took place.

A 3-week experiment was conducted near the end of the school year to compare the academic achievement of pupils in five classrooms taught with cooperative Small Group Teaching with that of pupils in five comparable classrooms in another school using "traditional whole class" methods (Sharan, Lazarowitz, & Ackerman, 1980). The 217 students (grades 2-6) were taught the same social studies topic in the cooperative class and its equivalent control class for 30 minutes each day.

Five criterion referenced achievement tests were constructed to measure achievement at low and high levels of cognitive functioning according to Bloom's taxonomy. Results indicated signifi-

cant ($p < .05$) social studies achievement gains in grades two, four, and six. Positive effects were found for high level concepts such as identifying concepts, analysis of problems, judgment, and evaluation in grades two, four, and six. No significant difference was found on low level information such as memory, understanding, and descriptions between Small Group Teaching and their traditional controls except for a positive effect ($p < .05$) in second-grade (Sharan et al., 1980).

Another study involved 393 students in grades three through seven (Lazarowitz, Sharan, & Steinberg, 1980). Nine classrooms in two experimental Small Group Teaching schools were compared to nine parallel classrooms in two schools using "traditional whole class" methods. Measures of students' verbal judgment and of their social interaction in small groups were designed to assess their cooperative behavior. Data from both measures showed that pupils from Small Group Teaching classrooms were significantly ($p < .05$) more cooperative and altruistic and less competitive and selfish. Students' cooperative behavior skills were shown to transfer to interactions with peers who were not small group members and to their behavior in social situations not structured by the teacher.

In summary, Small Group Teaching has not been researched outside of Israel. Results of these studies have indicated the effectiveness of Small Group Teaching for stimulating academic achievement, cooperation, and other nonacademic outcomes. No

research efforts have used this cooperative learning model with special education students.

Student Teams-Achievement Divisions (STAD)

Student Teams-Achievement Divisions (STAD) uses four or five member heterogeneous teams to review teacher taught material (Slavin, 1978a). The teacher then assigns students, on paper only, to one of several achievement divisions composed on the basis of equal status achievement membership in light of past performance. Each pupils' score on a weekly test are compared to that of division members only, they are ranked and given 8, 6, 4, or 2 points, which are contributed to their team score. Division groups are changed weekly to maintain equality. STAD requires a highly structured schedule of instructional activities to be repeated twice weekly; 40 minutes of lecture and discussion, 40 minutes of study in teams and a 20-minute quiz (Slavin, 1978). STAD is described as being high in teacher-imposed structure and individual accountability and low in task interdependence (Slavin, 1980).

Research in regular education. Slavin (1978b) conducted a study to validate the STAD model and to separate the effects of its two major components, teams and achievement divisions. A 2 x 2 factorial design was used. The factors were team reward versus individual reward and comparison with equals versus comparison with the whole class. The comparisons with equal treatment was the achievement division part of STAD. Thus, team reward-comparison with equals treatment was identical to STAD.

Four teachers administered the treatment to 205 seventh-grade students in eight intact English classes. Each teacher taught one class in one treatment and a second class in another. All classes studied the same curriculum for 10 weeks (Slavin, 1978b).

Behavioral observation data showed the team reward classes were on task significantly more than individual reward classes ($p < .001$). The comparison with equals group were on task more than comparisons with the whole class group ($p < .05$). Team reward--comparison with equals included both STAD components so this demonstrated total model effectiveness (Slavin, 1978b).

A criterion referenced test and a Hoyum Sanders English Test were administered as pre- and post-tests. The results indicated no treatment effects on either measure (Slavin, 1978b).

A questionnaire, containing eight attitude scales, was administered before and after the 10-week study. Students in the team rewards classes expressed greater liking for their classmates ($p < .01$) than those in individual reward groups. Students in the comparison with equals group expressed greater liking for and being liked by their classmates ($p < .05$) than did the students in comparison with the whole class group. Thus, the two components of STAD (i.e., team reward and comparisons with equals) were found more effective than the control factors (Slavin, 1978b).

Two sociometric questions were administered as pre- and post-tests: "Who are your friends in this class?" and "Who has helped you with your classwork?" Results indicated students in team

classes named more friends ($p < .05$) and more helpers ($p < .10$). The comparison with equals group also named more friends ($p < .05$) than the comparison with the entire class (Slavin, 1978b).

In summary, both factors of STAD, teams and comparison with equals (i.e., achievement divisions), contributed to increasing time on task, positive attitudes, and number of friendship choices. However, neither factor produced any difference in academic achievement (Slavin, 1978b).

Another study employing STAD (Slavin, 1980c) was designed to (a) evaluate the separate effects of a team reward and team task and (b) evaluate the effects of intensive individual instruction. The 2 x 2 factorial design included the factors team reward versus individual reward, and peer tutoring versus working individually. The team reward-peer tutoring treatment was identical to STAD. All four treatments implemented the achievement division component of STAD including the class newsletter, but to assess the independent effects of achievement divisions, a control group with the intensive structure, but without divisions or newsletter was included. A second control group used "traditional methods" of instruction. The subjects were 424 fourth-grade students in 17 intact classes in eight elementary schools. A different teacher taught language arts to each group using the same objectives.

Results of the behavioral observation indicated that (a) team reward classes were on task significantly more than the

individual reward classes ($p < .001$), and (b) the working individually classes were on task more ($p < .05$) than the peer tutoring classes (Slavin, 1980c).

A criterion referenced language arts test and the Hoyum Sanders English Test were administered as pre- and post-tests. Reward effects were in favor of the team reward ($p < .01$), but the task effects were in favor of no peer tutoring ($p < .001$). The STAD group had significant ($p < .05$) achievement effects when compared to the "traditional control" (Slavin, 1980c). Additional research efforts using STAD are summarized in Table 1 and Table 2.

Research in special education. Madden and Slavin (1983b) conducted a study with six elementary math classes enrolling 175 children. Thirty-three of these students were labeled learning disabled or educable mentally retarded. The classes were randomly assigned to STAD or to control classes, in which the same curriculum and schedule of instruction were used, but the students studied individually and received points based on current performance relative to past performances. The experimental conditions were in effect 7 weeks and were used 1 hour per day. One week prior to treatment all teachers were trained in the use of both treatments.

A criterion referenced test was designed in two forms, one given as a pre-test and one as a post-test, to measure achievement. The entire group learned more in the STAD treatment than in the

Focused Instruction group. The STAD handicapped sub-sample did not learn significantly more than the control handicapped sub-sample (Madden & Slavin, 1983b).

A sociometric measure asked students to list their choices of peers as workmates and as friends. The STAD group as compared to the focused instruction group significantly reduced rejection of handicapped peers ($p < .01$). However, there was no difference between treatment group on the number chosen as friends or workmates (Madden & Slavin, 1983b).

The Coopersmith Self-Esteem Inventory was administered to the full sample. No differences were noted for the academically handicapped subsample, but for the full sample general self-esteem was enhanced ($p < .05$) for students in the cooperative treatment (Madden & Slavin, 1983b).

The use of STAD in regular and special education research efforts has resulted in four significant academic outcomes in the six studies reviewed. STAD was also successful for stimulating mutual concern. The most consistent outcomes have been in race relations where STAD has been effective in three out of three studies reviewed.

Jigsaw

In Jigsaw students are assigned to teams on the basis of academic heterogeneity, both sexes and different background (Aronson,

et al., 1978). Academic material is broken into as many sections as there are team members. The students study their sections with members of other teams who have the same sections; then they return to their own teams and teach their sections to other team members. Finally, all students are quizzed on the entire unit; the quiz scores contribute to individual grades, not to a team score (Aronson et al., 1978). In this sense Jigsaw may be seen as high in task interdependence, but low in reward interdependence, as individual performances do not contribute to a group goal (Slavin, 1980b). However, because the positive behavior of each group member (i.e., learning the sections) helps the other team members because they need each other's information, it qualifies as a cooperative learning strategy (Aronson et al., 1978).

Research in regular education. Learning in Jigsaw classrooms was contrasted with traditional methods in an experiment that included 303 fifth- and sixth-grade students from five schools (Lucker, Rosenfield, Sikes, & Aronson, 1976). The sample included 242 Anglos, 35 Mexican-Americans, and 26 Blacks. Teachers in the Jigsaw classes volunteered to join the project. The traditional control teachers were selected for their competence and because their classes had the same racial composition and reading skills. The groups met for 45-minute periods daily for the 2-week period. The pre- and post-tests were composed by the teachers. The 2 x 2 design consisted of Jigsaw and traditional methods, and Anglos and minorities. The teacher-classroom was considered a

nested variable within the type of classroom. Including the teacher-classroom variable insured that each student's performance was independent of the other students' performances since within each class the performances of the students were independent.

Results indicated the students in the Jigsaw classes learned significantly ($p < .02$) more than the traditional control. The differences in the minority subsample performance were even more significant ($p < .01$) than the whole sample. An attempt was made to determine whether the Jigsaw format was more effective for low ability students than for high ability students. There was no interaction between ability level and type of classroom ($F < 1.0$). High ability students benefited as much from Jigsaw methods as low ability students (Lucker et al., 1976).

A second study took place in 13 integrated classrooms (Blaney, Stephan, Rosenfield, Aronson, & Sikes, 1977). Ten of the classrooms used Jigsaw methods and three used traditional methods; none of the classrooms or students were randomly selected. The groups met three times a week for 6 weeks. The authors did not state how many minority children were involved.

A significant increase from pre- to post-test liking for one's team was found without any decrease in liking for other members of the class in the Jigsaw group. Pre-test mean score was 4.04 and post-test mean score was 4.26 on a 7-point scale. In view of this finding the authors concluded that the Jigsaw method has "potential for mitigating school desegregation problems." No differences

were found between Jigsaw and control in ratings of classmates, but they found an effect favoring the control group in feeling of being well liked. A positive effect was found on self-esteem and cooperation. A positive effect for liking for schools was found for Anglos and Blacks, but not for Chicanos. The study found no significant achievement effects on a criterion referenced measure, but the study had not been designed to measure achievement (Blaney et al., 1977).

In summary, Jigsaw has been found to have a positive effect on cooperation and self-esteem, but the other findings are unclear. The effects of Jigsaw on special education classrooms have not been researched.

Jigsaw II

Slavin (1980c) constructed a modification of Jigsaw called Jigsaw II. In this adapted version all students read the same material, but focus on separate topics. The students from different teams who have the same topics meet to learn or discuss the topics and then return to teach them to their teammates. The students then take a quiz and the quiz scores are used to form team scores. Thus, Jigsaw II involves less task interdependence and more reward interdependence than Jigsaw. The only research on Jigsaw II was the combined program with regular education students, carried out by Slavin and Karweit (1981).

Combined Program: Jigsaw II, STAD, and TGT

Three major models were combined for the first time to replace traditional methods for more than half of the school day (Slavin & Karweit, 1981). Teams-Games-Tournaments was used in math, Student Teams-Achievement Divisions in language arts, and Jigsaw II in social studies for 16 weeks. The study included 456 regular education fourth- and fifth-grade students. Ten intact classes in four schools served as the controls; they taught class in their usual manner using what the author considered homogeneous grouping for classes and "usual" instruction. The treatment teachers were given a manual and three hours of training. All classes used the same materials and objectives. The two groups were matched in overall average scores on the Iowa Test of Basic Skills.

Using the Comprehensive Test of Basic Skills, the experimental classes significantly exceeded control classes on three subscales: Language Mechanics, Language Expression, and Reading Vocabulary. No differences were found for mathematics or social studies (Slavin & Karweit, 1981).

Nonacademic effects were assessed with pre- and post-tests. Positive effects of the combined program were found on general self-esteem ($p < .03$) and on academic self-esteem ($p < .07$) using the Coopersmith Self-Esteem Inventory (Coopersmith, 1975). Experimental students named more ($p < .02$) of their classmates as friends on a sociometric question than did control students; they also

expressed greater ($p < .01$) liking of school on an attitude scale (Slavin, 1978a) than did control students (Slavin & Karweit, 1981).

Team Assisted Individualization (TAI)

Team Assisted Individualization (TAI) is the only cooperative learning intervention specifically developed to improve the outcomes of mainstreaming for mildly academically handicapped students (Slavin, Leavey, & Madden, 1984). TAI combines cooperative learning and individualized instruction to allow use of cooperative learning in heterogeneous classes.

In TAI students work in four member heterogeneous teams like those used in Student Teams-Achievement Divisions. The students are pre-tested and placed in an individualized curriculum based on their test performance. Students then work on individualized packets at their own level. Team members check each other's answers and help each other with problems. Team scores are based on the average number of units completed by all team members and on the team members' scores on summative tests taken outside the team. All teams that exceed a criteria previously set receive a certificate (Slavin, Leavey, & Madden, 1984).

Research in special education. The first study of Team-Assisted Individualization (TAI) and mainstreaming (Slavin, Leavey, & Madden, 1984) involved 504 students in grades three, four, and five. Six percent of the students were receiving special education services for a learning problem and another 17% of the students re-

ceived other services, such as special reading or speech instruction. The students were in 18 classrooms in six schools. The schools were randomly assigned either to TAI, to a materials only individualized program, or to an untreated control group for a period of 8 weeks. The materials only program used the same curriculum materials as TAI except they did not work in teams or receive team awards. The Comprehensive Test of Basic Skills (CTBS) was used to measure math achievement. Two eight-item attitude scales and teacher-rated behavior scales were designed for this study. All measures were administered as pre- and post-tests.

Results indicated that mainstreamed mildly academically handicapped students in the TAI and materials only classes were named significantly more often as friends and were rejected significantly less often than were control mildly academically handicapped students. Academically handicapped TAI students were rated by their teachers as having fewer problems than handicapped control students ($p < .001$) in the areas of classroom behavior, self-confidence, friendships, and negative peer behavior. The changes in behavior ratings for TAI handicapped students were dramatic, they were rated much worse than nonhandicapped students on the pre-test, but were equal to them on the post-test. Marginally significant ($p < .06$) differences were found on attitude scale between TAI and control student's liking of class, and TAI students exceeded materials-only students in self-esteem

($p < .06$). The CTBS indicated that the full sample of TAI classes learned significantly more ($p < .03$) than the untreated control students, but the achievement differences were not significant for the mildly academically handicapped subsample. Achievement differences between TAI and the Individualized instruction were not significant (Slavin, Leavey, & Madden, 1984).

The failure to find statistically significant achievement effects for the mildly academically handicapped subsample was thought to be due to the short duration of that study (eight weeks). For this reason Slavin, Leavey, and Madden (1984) conducted a 10-week study again comparing TAI to Individualized instruction and untreated control classes. In this study 375 students in grades four, five, and six in four schools were included. Four percent were receiving special education services and 23% were receiving other services such as special speech and reading instruction. The achievement attitude and behavioral measures were the same as the first study and were again used as pre- and post-tests.

The TAI students scored significantly higher than the control students ($p < .03$). Nonhandicapped students again learned more in TAI than in control classes, but the difference (approximately 40% of a standard deviation) was greater for the mildly academically handicapped subsample. Thus, achievement results confirmed TAI as more effective than control. The strong attitude effects of the first study were not confirmed, but positive effects were found on

a behavior rating scale for friendship ($p < .01$) and self-confidence ($p < .05$) (Slavin, Leavey, & Madden, 1984).

Eighteen classes, grades three through five in six schools were randomly assigned to: TAI, individual instruction, or untreated control groups (Slavin, Madden, & Leavey, 1984). The 117 academically handicapped students and 387 nonhandicapped students served as the subjects. The measures were the same as the two previous studies. Significant positive effects were found for TAI ($p < .02$) and individualized instruction ($p < .04$) on the social acceptance of academically handicapped students by their nonhandicapped peers. Marginally significant effects ($p < .06$) were found on their attitudes toward math. Teacher rated behavior scales found positive effects on self-confidence and friendships only for the TAI group ($p < .001$). No achievement differences were found although students as a whole (handicapped and nonhandicapped) in TAI and individualized instruction classes achieved more than control students (Slavin, Madden, & Leavey, 1984).

Academic Outcomes

Academic achievement is the most measured outcome in cooperative learning research. The 34 studies which measured academic achievement used 44 achievement measures, 27 of which revealed positive significant achievement results (Table 1). In only one study (Johnson, Johnson, & Scott, 1978) did the control group achieve significantly more than the cooperative learning treatment group. Significant achievement effects were demonstrated, on at least one

measure, in 22 out of 34 studies. Significant math achievement was found in nine out of twelve studies. Significant reading gains resulted in three of the four studies in which it was assessed. Positive effects were found for language arts achievement in eight out of the ten studies. However, of the ten studies which measured social studies, only four found significant positive results.

Reading. TGT, STAD, LT, and Jigsaw II were used in studies involving reading (Table 1). Significant achievement gains were found in two TGT measures (DeVries, Mescon, & Shackman, 1975) and when Slavin and Karweit (1984) used STAD and Jigsaw II to teach reading in their combined program. These studies took place in regular education. Armstrong, Johnson, and Balow (1981) evaluated LT with reading in special education, the study did not demonstrate significant reading gains.

Language arts. TGT and STAD were used in language arts to evaluate their effectiveness to stimulate achievement. TGT produced significant effects in the three studies which used TGT methods. STAD was found somewhat less effective; in the studies which employed STAD in language arts positive outcomes were found in four of the six studies reviewed. All of the language arts studies took place in regular education.

Math. Significant gains were found using TGT, STAD, and TAI in math classes. STAD had only one study in this subject area, but it produced significant gains in math achievement. TGT methods significantly exceeded the control group on math achievement in

four of the five studies reviewed. Learning Together was evaluated in math with the control learning marginally more as indicated on the post-test; the control learned significantly more on a retention test. These studies were all in regular education.

Math was evaluated in special education with TAI with two out of three of the studies reviewed documenting significant outcomes.

Social studies. Small Group Teaching was the most effective model using social studies in kindergarten through ninth grade. Small Group Teaching significantly exceeded the control group in three out of the five studies reviewed with regular education. Other methods had even less impressive records. Jigsaw methods elicited significant positive results in one of the two social studies research efforts in regular education. Jigsaw II methods also did not exceed the control group in regular education. Two TGT studies showed a lack of significant outcomes in social studies; one of the research efforts was in regular education and one was in special education.

In summary, 65% of the regular education research efforts reviewed revealed significant academic achievement outcomes. In special education, only six studies measured achievement, and significant effects were found in three of the studies (50%).

Nonacademic Outcomes

Cooperation. Cooperation was measured in seven of the studies reviewed (Table 2). Learning Together research efforts used cooperation as a dependent variable five times, and each time

significant gains were demonstrated. Two of these successful research efforts were in regular education, and three were in special education. SGT and Jigsaw were each employed in one study with significant outcomes on cooperative measures in regular education.

Acceptance of handicapped peers. A major goal of particular importance in mainstreaming is the acceptance of handicapped peers. Of the 9 studies measuring acceptance of handicapped students, six studies had a significant positive outcome (Table 2). Two of the three studies with Team Assisted Individualization had positive results for acceptance of handicapped. Learning Together had significant results in three out of the six studies reviewed. STAD was used in one study and resulted in a positive outcome for acceptance of handicapped peers.

Mutual concern. Mutual concern was measured in 22 of the studies reviewed and 15 studies reported significant results (Table 2). Mutual concern was measured in five Learning Together studies with significant results in four studies. STAD, Jigsaw, Jigsaw II, and TGT had significant results in only eight of the 14 studies measuring mutual concern (Table 2). TAI elicited positive outcomes on the three studies that measured mutual concern.

Race relations. Eight of the studies using STAD, LT, and TGT had improvement of cross-race interactions as a dependent variable; seven of the studies reported significant results as shown on Table 2. Learning Together had the only study measuring race relations

in special education, and significant positive effects were found. Cooperative learning methods taken as a whole appear to have a relative consistent positive effects on student race relations.

Liking of school. Liking of school was measured in 13 studies in this review. Positive effects were found in four studies and marginal effects or no differences between groups was found in nine studies. However, if students were asked specifically about cooperative learning methods they gave positive responses (Slavin, 1983).

Self-esteem. The effects of cooperative learning on student self-esteem were positive. All of the 10 studies reviewed had positive effects. In summary 30 studies measured nonacademic outcomes, and at least one positive outcome was found in each of 27 studies. In no case did the control group significantly exceed the treatment group on nonacademic outcomes.

CHAPTER III

Interpretation

Research on the various cooperative-learning techniques has been conducted in field experiments in which experimental cooperative learning groups were compared to control groups. The studies vary widely in methods so it is difficult to compare results from one study to another or to draw conclusions about the usefulness of a specific technique. However, a general pattern of outcomes can be observed. In this chapter a review of the research outcomes will be presented. Methodological differences in research design across studies will also be discussed.

Outcomes of Cooperative Learning Research

Achievement

Results reported on the effects of cooperative learning on academic achievement reflected superior performance for cooperative learning groups when compared to traditional or individualized control groups. However, these gains were not consistent for all studies. Many studies used criterion referenced tests as outcome measures. This procedure is valid only when the content and rate of progress is held constant in the experimental and control groups. Other studies used standardized tests as outcome measures. These measures may be so comprehensive that they are not sensitive enough to change due to treatment (Slavin, 1980a).

Teams-Games-Tournaments (TGT) was shown to be the most effective model for promoting achievement when compared to traditional

or individualized methods of instruction. The TGT research program was more systematic and extensive than that of any other model in the regular education classroom. Significant results were shown in reading vocabulary, math, and language arts. The nonsignificant results in social studies in regular and special education suggested that this model may be better utilized for retention of information and skill learning rather than for tasks involving reading comprehension.

The achievement results for Student Teams-Achievement Divisions (STAD) in regular and special education were also positive, but somewhat less consistent than those for TGT. A possible explanation for this was that the control groups for STAD studied the exact same materials on the same schedule as the STAD students, whereas in the TGT studies with regular education the same objectives and material were available to the control teachers, but they were not held to the same schedule of instruction. SGT, Jigsaw, and the combined program had similar positive results, but with some inconsistency across interventions.

In special education, Team Assisted Individualization (TAI) was associated with positive academic gains in two out of three studies. The Learning Together (LT) model did not find significant achievement gains in the special education study that measured achievement. In regular education LT was used in only one study: the control group marginally exceeded the treatment group ($p < .10$) as measured by post-tests. On a retention test the individualistic

control group's advantage was significant ($p < .05$). In this study there were 30 students from a fifth- and sixth-grade advanced math class (Johnson, D., Johnson, R., & Scott, 1978). These noteworthy positive outcomes for the control raise questions. Do gifted students learn better individually than cooperatively? When working on math problems that require comprehension and reasoning rather than memorization or basic skills, is solving the problem individually more of a learning experience than solving it cooperatively?

In summary, the various cooperative learning techniques tend to have positive effects on student achievement. While the positive academic outcomes of each cooperative learning research effort are not conclusive in themselves, the results of many efforts with many models provide positive evidence for the effects of cooperative learning on achievement.

Nonacademic Outcomes

Slavin noted, "Cooperative learning methods always involve much more contact during class time on school tasks than would be likely to occur in a traditional classroom" (Slavin, 1983, p. 346). It is possible this increased interaction leads to noncognitive outcomes such as increased cooperation, acceptance of handicapped students, mutual concern, positive interethnic relations, liking of school, and self-esteem. Results of the research seem to indicate that cooperative learning methods can have a positive effect on many of these variables.

Cooperation. Learning Together (LT) had very significant cooperative effects in five of the studies reviewed for regular and special education. In four of the studies cooperation was measured with a cooperation scale by Talmadge and Waxmen (1980). The results of the scale indicated that students in the cooperative condition had stronger perceptions that they were working together and helping each other learn. These perceptions were probably accurate since the students in the individualistic condition, in each of the studies, "were instructed to work on their own, avoiding interaction with other students. . . ." (Johnson & Johnson, 1983, p. 325). Perhaps a better test of increased cooperation would be behavioral observation in a setting other than the treatment setting. It appears logical that students instructed to work together will do more working together than students instructed not to interact, and will have stronger perceptions that they are working together and helping each other learn.

Lazarowitz et al. (1980) measured cooperation using a choice board developed by Kagen and Madsen (1971). Results indicated students who had experienced Small Group Teaching made more altruistic choices than did control students. Blaney and associates (1977) found that following an experience with Jigsaw, students expressed less agreement with the statement, "I would rather beat a classmate at schoolwork than help him," than did control students.

The effect of cooperative learning strategies on cooperation has been consistently positive.

Acceptance of handicapped. Acceptance of academically handicapped peers when mainstreamed was measured in three TAI studies and revealed significant effects in two studies (see Table 2). In another special education study using STAD significant effects on acceptance of handicapped peers were also found (Madden & Slavin, 1983). Learning Together studies were less successful, with significant effects found in three of six studies reviewed. Acceptance of handicapped peers is an important part of facilitating mainstreaming and these results seem to indicate TAI, STAD, and LT are beneficial aids to mainstreaming.

Mutual concern. The strongest and most consistent effects on mutual concern were found in the three TAI studies conducted in mainstreamed classes. The TAI studies demonstrated that an individualized curriculum, implemented with cooperative teams and group rewards can have a profound effect on mutual concern. Mutual concern was measured in five of the LT studies, and significant positive results occurred in four of the studies. According to Slavin, "The Johnson studies operationalized mutual concern as students' ratings of their classmates" (Slavin, 1980b, p. 107). STAD and TGT had very mixed results on sociometric measures of mutual concern with 7 out of 12 studies yielding positive results. These results raise the question: Is the low structure and student autonomy of LT responsible for its positive effects on mutual con-

cern? It seems possible that more interaction takes place in an "inquiry investigation" approach such as Learning Together and this could lead to group members becoming better acquainted and more concerned about each other. It also seems plausible that the student training advocated with LT methods might result in the student being more aware of the other students as they observe and evaluate.

Race relations. The most consistently positive effects on race relations have been found in the three STAD studies that took place in integrated schools (see Table 2). These effects were measured by the number of cross-race choices made on a sociometric instrument and the percentage of all choices that crossed racial lines. In one study these effects were still evident in a 9 month follow-up (Slavin, 1979).

LT had strong and consistent positive effects in two integrated studies. One of these studies found positive effects when it was compared to individualized learning on cross-racial friendships, but also found positive effects for the competitive treatment (Cooper et al. 1980). The results of the Cooper study suggested that the grouping and interacting that comes with grouping and not the common goal was important in improving race relations.

Race relations were also evaluated in three TGT studies with positive results found in two of them. Blaney and associates (1977) measured race relations in a Jigsaw study by comparing ratings of teammates to ratings of non-teammates. This procedure seems questionable since teammates and non-teammates were of

about the same ethnic composition. In general, the cooperative learning research on race relations has shown consistent positive effects. The STAD research demonstrated that these effects can be long lasting.

Liking of school. The inconsistency of the effects of cooperative learning on liking of school is noteworthy. Liking of school was measured in 13 of the studies; significant effects were found in four studies and marginal effects or no difference between groups was found in nine studies. The lack of positive effects in some studies has been attributed to ceiling effects in younger children's attitude toward school. Also, since attitudes toward school may be influenced by many factors that cooperative learning treatments do not change, measures of general school satisfaction may be difficult to change. However, when students were asked specifically about cooperative learning methods they gave positive responses (Slavin, 1983).

Self-esteem. The effects of cooperative learning on student self-esteem have been generally positive. The 10 studies reviewed all indicated significant positive results (see Table 2). Self-esteem has been included as a variable in cooperative learning studies because most cooperative learning methods are designed to increase a student's chances for academic success and make them feel more liked by their classmates (Slavin, 1983).

Conclusions

The research on cooperative learning supported the following conclusions:

1. Cooperative learning methods were usually better than traditional and individual methods for increasing academic achievement.
2. The relationship between mainstreamed academically handicapped and nonhandicapped students was usually enhanced by cooperative learning methods.
3. Cooperative learning methods had a fairly consistent positive effect on mutual concern.
4. Cooperative learning methods had a strong consistent effect on relationships between blacks, white, and Hispanics.
5. Cooperative learning methods may have increased self-esteem.
6. There was some indication that cooperative learning increased liking for school.
7. Teams-Games-Tournaments and Student Teams-Achievement Divisions and Jigsaw II were effectively used to teach reading.
8. Teams-Games-Tournaments and Student Teams-Achievement Divisions were usually effective for increasing language arts achievement.
9. Teams-Games-Tournaments and Student Teams-Achievement Divisions produced significant results when used for teaching math.

10. Small Group Teaching was somewhat effective in promoting social studies achievement.

11. Cooperative learning and Team Assisted Individualization were effective in facilitating mainstreaming.

Methodological Differences Across Research Design

Control Groups

The control groups varied widely across the cooperative learning studies. Many used traditional "lecture-discussion-practice" methods in the control classes. The exact amounts of lecture, discussion, and practice were unspecified. In some studies individualized controls were used. These also varied, but always included an individual goal and product. The Learning Together, Jigsaw, and Student Teams-Achievement Divisions (STAD) methods used the same curriculum for equal amounts of time in the control groups and treatment groups. Although the controls used in these studies were more stringent, STAD and Jigsaw methods were as successful as the other methods (Slavin, 1983; Sharan, 1980).

Randomization

The research studies reviewed used random assignment of students or controlled for pre-test differences, suggesting that a student assignment problem was probably not serious. However, this was not true of teacher assignment. In the studies of Teams-Games-Tournaments (TGT) and STAD random assignment of teachers was used. Learning Together (LT) and Small Group Teaching required training of the teachers. In Small Group Teaching there was no randomiza-

tion of teachers, but some LT studies in special education rotated teachers across treatments.

Duration

Cooperative learning research reviewed by this study varied in length from 2 weeks to an entire school year (see Tables 1 and 2). The effect of duration on outcomes was difficult to evaluate. It can be argued that if a project showed positive results in 2 weeks the effect would have been even stronger with an intervention of longer duration. However, it was also possible that the effects of a short term intervention may have been influenced by the Hawthorne effect, i.e., students enjoying "new" activities. Teachers may have been able to give an outstanding performance for a short period of time, but may not have been able to keep their level of performance up for long periods of time. As Slavin (1980) noted, "Because the only relevance of instructional innovations is over the long run a short intervention has much less external validity than would a long one" (Slavin, 1980b, p. 103).

Other Methodological Issues

Sample size also varied widely across studies reviewed, ranging from 30 to 1,742 students. Slavin (1980a) suggested the following explanation:

Statistics conspire against significant findings in small studies. . . . A large study is likely to be higher in external validity and lower in internal validity than a small one because of the probability that there will be less experimenter involvement with each teacher in a large study (Slavin, 1980b, p. 103).

The studies with the most stringent and least biased designs also tended to have the most positive effects, thus increasing the power of the positive results of demonstrated effectiveness.

CHAPTER IV

Implications

The major models of cooperative learning have been validated in numerous field experimental studies that used a variety of subjects, settings, and academic areas. The academic and nonacademic outcomes of cooperative learning methods in regular and special education suggest the usefulness of these methods for the classroom. The generalization of these outcomes is supported by the wide range of academic subject areas, grade levels, research methodologies, staffs, level of teacher and student training, and composition of classrooms involved across studies.

The procedure for implementing all of the cooperative learning models discussed in this review are available and can be applied by individual teachers without additional help, added expense, or any changes in the structure of the school day. The effects of student and teacher training in cooperative learning methods on outcomes need further investigation. The usefulness of training was indicated in the studies of Learning Together, Small-Group Teaching, and Jigsaw. Two of the models, Learning Together and Small-Group Teaching, are less structured and have more student autonomy, thus possibly requiring more training for implementation.

Follow-up research on the long term effects of cooperative learning has been limited. However, cooperative learning is a treatment that can be applied continuously in elementary through college grade levels. If cooperative learning was applied contin-

uously, it would need to be evaluated continuously as should all teaching methods.

Many changes occur in the classroom when cooperative learning methods are used. There are changes in the task structure, authority structure, goal structure, evaluation system, and reward structure. What changes account for the positive outcomes? Though TGT and STAD research efforts have evaluated the components of cooperative learning, more research is needed. Thorough evaluation of components should aid teachers in choosing a cooperative learning approach.

Two models have been effectively evaluated in mainstreaming settings: Learning Together and TAI. The research of LT has been more extensive, but both have been successful in eliciting acceptance of handicapped students by their nonhandicapped peers. In TAI students have individual goals at their ability level, but are divided into heterogeneous groups and allowed to interact and help each other. In LT there are more ways to structure cooperation, which increases variety. We need more research using other cooperative learning models for mainstreaming.

Research on combining cooperative learning models has been limited in regular education and there have been no research efforts on combining models in special education. The combination of TAI and LT in mainstreaming could prove to be an effective teaching strategy. The positive outcomes documented by TAI and LT research suggest these approaches would also be effective.

Thousands of teachers throughout the United States and other countries are using cooperative learning methods, but it is thought that few use cooperative methods as their primary way to organize instruction (Slavin, 1983). Slavin and Karweit (1983) have demonstrated that it is possible to move cooperative learning from a supplementary role to a primary one. Cooperative learning methods provide an effective means of achieving nonacademic and academic goals while teaching regular curriculum. A vast improvement in our education system may result from the use of cooperative learning as the primary means of instruction in the classroom.

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APPENDIX*

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Structuring Cooperative Learning Experiences in the Classroom

The 1982 Handbook

Patricia A. Roy, Editor

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READING

Louise LaValley
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BEFORE THE LESSONAppropriate Grade Level

Grade one

Content Area

Reading

Goal

Practice with rhyming words

Group Size

3 to 4 children in each group

Time Required

30 to 40 minutes

Materials

| ITEM | NUMBER NEEDED |
|-----------|----------------|
| Pencils | One per person |
| Worksheet | One per group |

THE LESSON

Procedure

1. Instructional Objectives

Children will be able to identify and write rhyming words.

Children will be able to read the words on the paper and the rhyming words they wrote.

2. Group Size

3 to 4 children per group. Small groups are better for first graders.

3. Assigning Students to Groups

The teacher assigns the groups, making sure that there is one good reader, one average reader, and one low reader. In my classroom, we work in cooperative reading groups every morning for 30 to 40 minutes. The cooperative reading groups are set up so they work with the same children for 2 weeks. Consequently, the children know who they are working with and where they are to go.

4. Classroom Arrangement

The room is arranged so each group is seated around one desk so all can see the materials and can talk to each other easily. The groups are separated from each other.

class back together and we share some of the rhyming words each group came up with. After sharing the words, we share any problems the groups had and what could be done next time to solve the problems.

8. Observers

The teacher is the only observer.

DURING THE LESSON

Monitoring

I move from group to group and listen to what is being said in each group and find out how each group is solving the task. I look for participation by all members, sharing of materials, sharing of ideas, listening to one another, checking one another, and praising one another.

Interventions to Teach Social Skills

I only intervene if necessary. I intervene if I see a group is having problems doing the task. I will review what I want them to do and make sure they understand before I go on. I also intervene if a group is having problems with the cooperative skills. Examples: child who refuses to help, child who hides the paper, child who has hurt feelings, child who is being left out, child

5. Explaining the Learning Task

Each group is to take the worksheet with the words written on it. Each group is responsible for reading each word and writing a word that rhymes beside it. The rhyming word must be a real word and it must be spelled correctly.

6. Explaining the Goal Structure

A. Means of creating positive interdependence

Each group member is to make sure that everyone in the group understands the task. When the group has finished, everyone signs his or her name, showing that he or she helped, shared, and understood.

B. Behaviors expected or social skill to be stressed

Before the children begin the task, I go over what I will be looking for in the groups and what they mean.

1. Everyone gets a chance to talk.
2. Everyone helps.
3. Everyone listens to one another.
4. Checking to see if everyone agrees.
5. Checking to see if everyone understands.
6. Praising one another.

7. Criteria for Evaluation

As each group finishes, I score the worksheet immediately. I ask each child if he or she helped and how he or she felt about the task. When all the groups are finished, I bring the whole

who fools constantly, etc. I stop the group and we define what the problem is and come up with the ways to solve it.

AFTER THE LESSON

Processing the Interaction in the Groups

I often have the children go back into their groups and take a few minutes for each member in the group to say why he or she liked working with the others in the group.

I ask myself the following questions:

1. Did the children name and write rhyming words correctly?
2. Did the children exhibit cooperative skills?
3. What skills were missing?

R H Y M E T I M E

| | | |
|-------------|--------------|--------------|
| CAT _____ | MITTEN _____ | LIKE _____ |
| RED _____ | ME _____ | POT _____ |
| MAKE _____ | MAN _____ | BIG _____ |
| BOAT _____ | DAM _____ | PLAY _____ |
| BOY _____ | TALL _____ | FEET _____ |
| FOX _____ | BUG _____ | JAR _____ |
| BOOK _____ | HEN _____ | JUMP _____ |
| PIG _____ | RUN _____ | TAX _____ |
| WET _____ | TED _____ | MOP _____ |
| HOUSE _____ | RIDE _____ | WELL _____ |
| DUCK _____ | BEAT _____ | FILL _____ |
| TEAM _____ | SEE _____ | WIN _____ |
| BIT _____ | NUT _____ | BREEZE _____ |

SIGN HERE: _____
