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ABSTRACT

Jigsaw, a form of cooperative learning, was researched by Aronson (1978). Later, Slavin (1981) adapted Jigsaw to Student Team Learning and called it Jigsaw II. Jigsaw currently shows the least achievement gains among the various cooperative methodologies. Nonetheless, it is a viable methodology and is useful for covering and reviewing material. This document provides a way of implementing a Jigsaw-type lesson about cooperative learning. Student instructions, questions for each group to answer, and 16 abstracts selected from the ERIC database under the descriptor of "Cooperative Learning" are included. The abstracts are to be used by student groups as evidence or research findings from which they make their decisions. A five item bibliography is included. (GEA)

COOPERATIVE LEARNING

Research and Practice

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Jigsaw, a form of cooperative learning, was researched by Aronson (1978). Later, Slavin (1981) adapted Jigsaw to Student Team Learning and called it Jigsaw II. In the Aronson version, student teams studied material together. Each student was responsible for different parts of the material. Then, the team members divided and formed new groups called "expert groups". These expert groups consisted of students who had studied the same material. Upon reviewing the same content, the students then returned to their original group to share new insights or added knowledge. In addition, in the Slavin version, students take a test upon which improvement scores are based. These individual student improvement scores when added together provide a team score. This team score is then used to determine a group reward.

Jigsaw currently shows the least achievement gains among the various cooperative methodologies. McNergney and Haberman (1988) noted that research indicated a 17% success rate in terms of student achievement for Jigsaw; whereas, Student-Teams-Achievement-Divisions (STAD) had a 89% success rate, Teams-Games-Tournament (TGT) 75%, Learning Together 73%, and Group Investigations 67% success rate. Nonetheless, Jigsaw is a viable methodology and is useful for covering material and reviewing material.

Foyle and Lyman (1988) have noted the benefits of cooperative learning in various kinds of lessons. In addition, those benefits were demonstrated by Foyle and Lyman (1989) in fourth, ninth, twelfth, and adult level classrooms.

The following material is one way of implementing a Jigsaw type lesson about cooperative learning. The following abstracts were selected from the ERIC data base under the descriptor of Cooperative Learning.

WHAT DOES EDUCATIONAL RESEARCH SAY
ABOUT COOPERATIVE LEARNING?

Directions:

Your group has been given a set of summaries of educational research, literature reviews, and articles published in the ERIC data base. The ERIC number (or journal), author and date are contained at the top of each summary.

(1) Divide the summaries among members of your group. Take a few minutes to read them. In the space below, in questions #1 and #2, write what you think are the most significant or salient findings from the summaries that you personally reviewed.

(2) The instructor will divide you into "expert groups" according to your summary numbers.

(3) As "expert groups", discuss the findings of your summaries in questions #1 and #2 in order to ascertain the critical elements of each summary.

(4) The instructor will reassemble your original groups. Then, respond to questions #3 and #4 as a group.

(5) The instructor will hold a large group discussion based upon your findings for questions #1, #2, #3, and #4.

(6) The instructor will hold a large group discussion based upon questions #5 and #6.

QUESTIONS

1. What was the main finding(s) or conclusion(s) from the research summary or summaries that you reviewed?

2. In the opinion of your group, what are the three or four most important findings of the research summaries given to your group?

3. Based on your group's discussion, what suggestions would you make to a group of first-year teachers beginning their planning for the school year?

4. Are there any implications for the classrooms in your school system?

5. Which study would you like to learn more about and what would you like to know?

6. What other topic or issue in cooperative learning would you like to know more about?

(1) ED 231 619

Slavin, Robert E. and Others
Combining Student Teams and Individualized Instruction in Mathematics: An Extended Evaluation. Baltimore, MD: Johns Hopkins University, 1983.

This study evaluated the achievement effects of the Team-Assisted Individualization (TAI) mathematics program over a 24-week period. Involved were 1,317 students in grades 3, 4, and 5, with 700 students in 31 classes receiving TAI instruction and a control group of 617 students in 30 classes receiving other mathematics instruction on the same objectives. Analysis of covariance was used to analyze the data, with achievement measured by the Mathematics Concepts and Applications and the Mathematics Computation subtests of the Comprehensive Test of Basic Skills. TAI classes gained more than control classes on each test at each grade level. The differences were statistically significant for grades 3 and 5 on the Computation subtest. On the Concepts and Applications subtest, differences were statistically significant for grade 4 and marginally significant for grade 5. In overall analyses, the TAI classes significantly exceeded control classes on both tests.

(2) EJ 360 613

Stevens, Robert J. and Others (Fall, 1987)
Cooperative Integrated Reading and Composition: Two Field Experiments. Reading Research Quarterly. 22(4): 433-454.

Describes two studies conducted to evaluate a comprehensive cooperative learning approach to elementary reading and writing instruction: Cooperative Integrated Reading and Composition (CIRC). Found significant effects in favor of the CIRC students on standardized measures of reading comprehension, vocabulary, grammar, language expression, oral reading, and spelling. Grades 3 and 4.

(3) EJ 355 130

Heleen, Owen
Cooperative Classrooms: Implementing Cooperative Learning: One District's Experience. (Winter, 1987) Equity and Choice, 3(2): 19-26.

Describes the background, goals, and classroom experience of the cooperative learning program initiated in Fall 1986 by the Bay Shore Union Free School District, Bay Shore, NY. Results indicate cooperative learning is effective in narrowing the margin between the achievement of minority and majority students.

(4) ED 274 551

Sherman, Lawrence W. & Zimmerman, Deborah
Achievement in Cooperative versus Competitive Reward-Structured Secondary Science Classrooms. Paper presented at the Midwestern American Educational Research Association Meeting (Chicago, IL, October, 1986).

The reward structure of a classroom refers to the means by which a teacher motivates students to perform school tasks. This document reports on a study in which academic achievement in competitive and reward-structured environments was examined in two high school sophomore level biology classes of equal academic ability. Each class was pretested and taught an identical unit of study, one in a competitive structure and one using a cooperative structure called the Group-investigations Model. In this model groups of 5 or 6 students are formed for the study of particular topic, and each student works on a subtopic for the group. At the end of 7 weeks both classes were post-tested. The results indicated that although both cooperative and competitive techniques obtained significantly higher post-test scores than their pre-test scores, neither strategy was superior to the other in producing academic achievement. Results are discussed and compared to previous studies which have examined differences between cooperatively, competitively, and individually structured classroom environments.

(5) EJ 345 379

Johnson, David W. and Others
Different Cooperative Learning Procedures and Cross-Handicap Relationships (November, 1986) Exceptional Children, 53(3): 247-252.

Two studies compared effects of different levels of cooperation (cooperative controversy, cooperative debate, individualistic; and intergroup cooperation vs intergroup competition) on cross-handicap interaction among 123 intermediate grade students (normal or learning/behavior disordered). Pure cooperation promoted more frequent cross-handicap interaction than did a mixture of cooperation and competition.

(6) EJ 324 664

McDonald, Barbara A. and Others
Cooperative Dyads: Impact on Text Learning and Transfer. Contemporary Educational Psychology (October 1985) 10(4): 369-377.

In two experiments, college student pairs who were given a systematic strategy for learning cooperatively from a text were compared with pairs who created their own strategies and with individuals who used the systematic or their own strategy. The cooperative learning strategy facilitated both initial learning and transfer.

(7) EJ 317 435

Johnson, Roger and Others
The Effects of Controversy, Concurrence Seeking, and Individualistic Learning on Achievement and Attitude Change. (March 1985) Journal of Research in Science Teaching. 22(3): 197-205.

Compared effects of cooperative learning activities (with and without structured controversy) and individualistic learning activities on the achievement and attitudes of fifth graders (N=84) toward wolves. Results show that cooperative-controversy resulted in the highest achievement, greatest motivation to learn about wolves, and more positive attitudes toward the wolf.

(8) ED 093 883

Edwards, Keith J. & DeVries, David L.
The Effects of Teams-Games-Tournament and Two Instructional Variations on Classroom Process, Student Attitudes, and Student Achievement. Report Number 172. Baltimore, MD: Johns Hopkins University, 1974.

This study assessed the effects of Teams-Games-Tournaments (TGT) and two variations on student attitudes, achievement, and classroom processes in mathematics and social studies classes. The two variations involved weighted scoring in the game component and the deletion of team competition. The experiment involved 128 seventh-grade students for a 12-week period. Neither TGT nor its variants had any significant impact on the social studies classes when compared to a traditionally structured control class. TGT and its variants had significant impact on the mathematics classes affecting a variety of dependent variables.

(9) EJ 316 139

Moskowitz, Joel M. and Others
Evaluation of Jigsaw, a Cooperative Learning Technique (April 1985) Contemporary Educational Psychology, 10(2): 104-112.

Eleven fifth-grade teachers received Jigsaw training and conducted Jigsaw in their classes for one year. Process evaluation revealed the quality and frequency of Jigsaw implementation varied greatly. Jigsaw had no positive effect on the outcome variables (student attitudes, achievement, attendance, behavior), even in proficiently implemented classes.

(10) ED 141 468

Slavin, Robert E.
Student Learning Teams and Scores Adjusted for Past Achievement: A Summary of Field Experiments. Report No. 227. Baltimore. MD: Johns Hopkins University (1977)

This paper describes a study which evaluates two classroom innovations directed at the problems of student motivation, academic performance and social perceptions. These innovations, "Student Learning Teams" and "Academic Divisions," are evaluated in a two by two factorial field experiment in eight seventh grade English classes (the teams and divisions versus no teams, no divisions comparison was replicated in two additional schools.) The treatments were as follows: Control students worked individually. Cooperative work was allowed, but not encouraged. Students received scores on their quizzes. No Teams, Achievement Divisions: Same as control, except that students were assigned to homogeneous achievement divisions based on past grades in English. At the end of each week each student's score on the sum of two quizzes was compared to that received by the others in his or her division. Students' individual divisional points were reported in a weekly class newsletter. Teams, No Achievement Divisions: Same as control, except that students were assigned to teams. Each team was made up of a high achiever, a low achiever, and average achievers. Students tutored each other. At the end of the week, a newsletter announced the teams with the highest point averages. Teams and Achievement Divisions: This treatment incorporated both the team and division components. In summary, the results are favorable toward the Student Teams-Achievement Divisions (STAD) combination. STAD is more effective than the control in increasing academic achievement, peer support for academic performance, liking of others, and number of students cited as friends.

(11) ED 209 882

Madden, Nancy A. & Slavin, Robert E.
Effects of Cooperative Learning on the Social Acceptance of Mainstreamed Academically Handicapped Students. Baltimore, MD: Johns Hopkins University (1981)

The study investigated the effects of a cooperative intervention designed to allow 40 academically handicapped (learning disabled or mildly retarded) and normal progress students (in third, fourth, and sixth grades) to work cooperatively on academic materials in improving social relationships between these groups of students. In the cooperative treatment, students studied mathematics in heterogeneous teams that were rewarded as a group for improvements in the performance of the individual members. This treatment was compared to a control treatment in which students worked individually on their mathematics work and were rewarded as individuals for improvement in performance. Results indicated that cooperative techniques improved social acceptance, in that rejection of academically handicapped students was decreased, but friendships were not increased. Gains in academic achievement and self-esteem were found for the combined sample of students in the cooperative learning treatment.

(12) EJ 306 272

Perreault, Raymond J., Jr.
(Spring, 1984). Cooperative Learning: Its Effects on Academic Achievement in Suburban Junior High Industrial Arts Classes. Journal of Epsilon Pi Tau, 10(1), 44-49.

Cooperative or student-team learning was found to increase academic achievement in terms of knowledge and comprehension compared to individualized learning in seventh-grade industrial arts classes.

(13) EJ 359 509

Bejarano, Yael.
(September, 1987). A Cooperative Small-Group Methodology in the Language Classroom. TESOL Quarterly, 21(3), 483-504.

Assessment of the effects of two small-group cooperative techniques and the whole-class method on academic achievement in English as a foreign language for seventh-graders (N=665) revealed that the group methods (Discussion Group and Student Teams and Achievement Divisions)registered significantly greater improvement than the whole-class method.

(14) EJ 346 193

Carrol, David W.
(December, 1986). Use of the Jigsaw Technique in Laboratory and Discussion Classes. Teaching of Psychology. 13(4), 208-210.

Describes the use of the jigsaw teaching technique (which requires each member of a small group to provide a key piece of information) in undergraduate psychology laboratory and discussion classes. Results indicate that students evaluate the approach favorably and that their academic performance improves with use of the jigsaw technique.

(15) EJ 357 593

Slavin, Robert E.
(Summer, 1987). Ability Grouping and Its Alternatives: Must We Track? American Educator, 11(2), 32-36, 47-48. (The Professional Journal of the American Federation of Teachers.)

Reviews research on student grouping, focusing on these types: tracking; grouping within classes (reading and mathematics); ability grouping for just one or two subjects; and classes for the gifted and handicapped. Asserts that ability-grouped class assignment is the most harmful form.

(16) EJ 313 072

Warring, Douglas, and Others
Impact of Different Types of Cooperative Learning on Cross-Ethnic and Cross-Sex Relationships. (February, 1985) Journal of Educational Psychology. 77(1), 53-59.

These studies with sixth and fourth graders compared effects of different learning conditions on student relationships. Results indicated that intergroup cooperation promoted more positive cross-sex and cross-ethnic relationships than did intergroup competition. Relationships formed within cooperative learning situations did generalize into unstructured class, school, and home activities.

Selected References

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Slavin, R. (May, 1981). Synthesis of Research on Cooperative Learning. Educational Leadership, pp. 655-660.