Abstract

Cooperative learning is a teaching method where students of mixed levels of ability are arranged into groups, and rewarded according to the group's success, not the success of an individual member. It aims to organize classroom activities into academic and social learning experiences. In cooperative learning situation, students must work in groups to complete tasks collectively toward academic goals. Unlike individual learning, which can be competitive in nature, students learning cooperatively can capitalize on one another's resources and skills (asking one another for information, evaluating one another's ideas, monitoring one another's work, etc.). Everyone succeeds when the group succeeds. Research on cooperative learning demonstrated overwhelmingly positive results and confirmed that cooperative modes are cross-curricular. The positive outcomes included academic gains, improved race relations and increased personal and social development. Students who fully participated in group activities, exhibit collaborative behaviors, provide constructive feedback, and cooperate with their groups have a higher likelihood of receiving higher test scores and course grades at the end of the learning duration. Cooperative learning is an active pedagogy that fosters higher academic achievement. Increases motivation and encourage students to learn in cooperative set up. Cooperative learning has also been found to increase attendance, time on task, enjoyment of school and classes, and independence. This paper focuses on the research studies on effect of cooperative learning on learning preferences of children.

1. Introduction

According to Johnson and Johnson (1993), cooperative learning is the structuring of small groups so that students work together to maximize their own and each other's learning. Over 500 research studies back the conclusion that cooperative learning produces gains across all content areas, all grade
levels, and among all types of students including special needs, high achieving, gifted, urban, rural, and all ethnic and racial groups. In terms of consistency of positive outcomes cooperative learning remains the strongest researched educational innovation ever with regard to producing achievement gains (Kagan, 1999). When students collaborate, they have an opportunity to discuss new concepts with someone close to their own level of understanding. They get to try out new ideas and ask questions in a small group before speaking to the whole class or finishing a written product. When students discuss and defend their ideas or solutions with teammates, they learn to think problems through, to support their own opinions, and to critically consider the opinions of others before coming to a conclusion, and they learn that, in the end, the responsibility for learning still rests with them. In cooperative learning situation, 1. Students are often able to translate the teacher’s language into 'kid language' for one another, 2. Students who explain to one another learn by doing so. When students have to organize their thoughts to explain ideas to teammates, they must engage in cognitive elaboration that greatly enhances their own understanding, 3. Students can provide individual attention and assistance to one another. In a cooperative team there is a helpful, non-threatening environment in which students try out ideas and ask for assistance and 4. When cooperative groups were used, the teacher observes the groups, analyses the problems on which they work together and gives feedback to each group on how effectively they are working. Cooperative learning environment improves higher level of thinking skills and problem solving, seeks to minimize anxiety of students and competition by creating an environment where students feel safe and learn from mistakes. According to Gilbert-Macmillan (1983) the advantage of cooperative learning groups is that they give students an opportunity to talk aloud, challenge and defend a point of view, and focus on the problem solving process rather than the answer. A student enjoys the process of learning, like the class and school better and shows interest in the subject.

2. Research on Cooperative Learning
Cooperative learning classroom studies have found consistently that students express greater liking for their classmates as a result of participating in a cooperative learning method (Slavin, 1983; Slavin, 1990). Most evaluations of cooperative learning have found that students who work together like school more than those who are not allowed to do so. They also like their fellow students more who have worked cooperatively. Following are some of the studies which showed the effectiveness of cooperative learning on learning preferences of children.

3. Studies related to Cooperative Learning and Children's Learning Preferences
Johnson (1976) attempted to determine whether students involved in any inquiry based science Programme perceived the goal structure of science class as cooperative or competitive. The sample consisted of 106 sixth grade students in a town of Minneapolis. The concepts of science were taught after forming three groups. Each group had six students working together and each of the three groups were given Traditional (T), Lab inquiry (L), and Lab inquiry and Text book materials (LT) treatments respectively. The findings of the study showed that overall 78% of students preferred cooperative learning. 100% of students of (L) group perceived cooperative goal structure. 86% of students of (LT) group perceived cooperative goal structure, 50% of students of (T) group perceived cooperative goal structure. The comments from the group showed some differences even though their choices were same. Students (L) and (TM) groups who perceived cooperative learning spoke of "sharing ideas", "compare" and "help each other", "better ideas" and "teacher lets us show each other"
and the students in "T" groups who perceived cooperation spoke of she lets us discuss things, compare answers, teachers like to know what we are doing. In tests for preference for goal structure, 100% of both the L and LT groups and 93% of T group preferred cooperative goal structures. This data supported the hypothesis that the inquiry oriented science classes were perceived by students to be more cooperative than the text book classes, and that all groups perceived school as a competitive enterprise but would have preferred school to be more cooperative. This study shows the importance of the perceptions of the students towards their class and the others recommend to provide cooperative situations in an inquiry oriented class as the students prefer schools to be more cooperative.

Foster and Penick (1985) determined whether cooperative small groups would stimulate creativity of fifth and sixth grade students more than an individualized learning environment. Also attempted to measure students' perceptions toward the science activity and learning environment.

50 fifth grade and 61 sixth grade students in a public elementary school were randomly assigned to groups by grade level. Groups were six groups of four to five students working together and 25 students working individually. The students' groups were separated from students working individually by a wall divider so that the teacher could move back and forth between the individualized setting and the cooperative group setting. Students in the cooperative small group experimental section worked together and were encouraged to interact while the students in the individualized control reaction were encouraged to work by themselves. The teacher followed the stated philosophy of the elementary science study batteries and bulbs unit and the strategies associated with a student structured classroom. A trained observer regularly coded teacher behaviour by using Science Laboratory Interaction Category for Teacher's (SLIC) to insure consistency between the control and experimental groups as well as between grade levels. Teacher interactions with students were kept to a minimum allowing the two different goal structures to influence the outcomes. The verbal form (A) Torrance Test of Creative Thinking and students' perceptions questionnaire to obtain feedback from students about their feelings towards the activity and the learning environment was used. Verbal creativity, as measured by TTCT, was not affected by the treatment, indicating that the small group process may be equally conducive to verbal creativity when compared with an individualized setting for the ESS batteries and bulbs activity. This investigation also gives intuitive support to other findings that the group process compares favourable in achievement and participants' attitudes to working with others when contrasted to individualized or competitive settings.

Sherman (1988) conducted a study in which four introductory psychology classes with 137 students were differentially taught, 3 with a cooperative goal structure and the other with an individually competitive goal structure. A 2-way repeated measures analysis of variance (ANOVA) design was used to examine pre and posttest learning by treatments within students. All four groups obtained significant gains on their posttest scores as contrasted with their pretest scores. No significant differences were encountered among the 4 groups' pre or posttest scores. Affective differences were obtained among the 4 groups, indicating significantly more negative perceptions being associated with the competitive group as contrasted with the 3 cooperative groups. The result suggested that students prefer a cooperative goal structure.

Kosters (1991) determined whether using cooperative learning in a traditional secondary social studies classroom would have an effect on student achievement and attitude. The subjects for the study were the students from senior high school American History classes. A pretest/posttest non-equivalent comparison group design was employed to address the problem statement and questions. After taking an achievement and attitude pretest, the students in the experimental group received the
cooperative learning strategy STAD (Student Team Achievement Division) along with the traditional instruction. Students in the control group, after taking the pretests, received only traditional instruction. Again the posttests were administered to both the groups. The data obtained from the covariates which were grade point average and student aptitude, and the pretests/posttests were analyzed and comparisons made between the experimental and control group. The results indicated that while the experimental group improved more than control group achievement academically, there was no statistical significant difference between posttests. Of the 12 sub-scales used to measure students' attitude about the cooperative learning and their peers, significant differences were found on only two. The students wrote that they enjoyed working together, learned more, and got more done.

Gentry (1992) conducted a study to investigate the effects of cooperative learning on mathematics achievement and attitude of pre-college algebra students. Campbell and Stanley's Design 10 was used with six classes totaling 106 elementary algebra students in a community college. All students spent at least 12 hours in a microcomputer laboratory working with the mathematics software, derive. Students were randomly selected from within each class to work alone or to work cooperatively in pairs or triads. Results showed that no significant differences were found between the mathematics posttest scores for those students working alone and those working cooperatively. Attitude scores were higher initially and there were no positive gains in attitude toward mathematics and school or toward mathematics and oneself for students who worked cooperatively. Survey results indicated that 70% of the students who worked cooperatively wanted to continue the group working in future courses.

Courtney, Courtney and Nicholson (1995) conducted a study with 30 graduate students enrolled in a traditional lecture introductory statistics course and 32 graduate students enrolled in the same course taught by a different instructor using the cooperative learning methodology completed identical multiple-choice exams at equal intervals during the semester; students in the cooperative learning class also completed a survey about their course. No significant differences in achievement occurred between the two teaching methodologies, 96% of students in cooperative learning format class felt positively about the cooperative learning methodology. Cooperative learning also improved students' motivation, self-efficacy, and social cohesion and reduced students' anxiety associated with the subject matter.

Stuart (1995) in his two studies used group grading to increase cooperation among group members and improve mathematics test scores of low achievers. Four quizzes and one chapter test involving fractions were given during the studies. Because students in the two studies differed in attitude, results were inconsistent. Many students in the first study of 23 4th graders enjoyed working in groups and helping each other, although the low achievers' grades did not improve. Students in the second study of 20 4th graders did not enjoy group work and preferred an individual grade. Group grading was more effective with students who engaged in working in groups who accepted this method of assessment.

Fertig (1995) compared the effects of two instructional programmes for teaching students how to use interpersonal skills during cooperative learning; interpersonal skills training with a combination of large and small group processing (experimental condition) and interpersonal skills training with large group processing only (comparison condition). During group processing which took place at the end of the each lesson, students evaluated their cooperative interactions by discussing their use of three interpersonal skills; effective listening, expressing support and encouraging participation. 45 students in two fourth grade classrooms received training in the use of
the three interpersonal skills from their regular classroom teachers for eight weeks as a part of social studies unit in Wyoming history. A non-equivalent control group design was used in this quasi experiment. Specifically, this study examined the effect of small-group processing on the frequency with which students used the interpersonal skills and on academic achievement in Wyoming history; in addition, 3 attitudinal variables were measured; liking for group learning, personal efficacy in groups, and feeling included by other group members. Results showed that small-group processing did not increase the frequency with which students used three interpersonal skills; however, posttest achievement in Wyoming history was significantly higher for students in the experimental condition. Students in the comparison condition expressed a significantly greater liking for learning in groups than did students in the experimental condition. Students in the comparison condition also perceived a significantly greater degree of personal efficacy in their groups than did students in the experimental condition. There was no significant difference between conditions in regard to feelings of inclusion.

Austin (1996) compared the student overall mathematics achievement, overall retention of material learned, conceptual understanding, procedural knowledge, problem solving skill, and attitude towards mathematics between two sections of a finite mathematics course. The experimental section utilized cooperative learning methods; the control section utilized a traditional lecture format. The study was quasi-experimental in nature making use of intact groups. Overall mathematics achievement was measured by scores from five unit examinations. Conceptual understanding, procedural knowledge, and problem solving skill were each measured using subsets of questions from the five unit examinations. Overall retention of content learned was measured by a comprehensive final examination. The SAT total score was used as the covariate for achievement measures. An attitude survey was administered as a pre-and posttest measure of attitude toward various aspects of mathematics. Results revealed that although students in the experimental section scored higher than students in the control section on nearly every achievement measure, the differences were not statistically significant. Seven of the nine attitude measures that were examined showed no significant difference in change of attitude when experimental and control sections were compared. However, students in the experimental section had a significantly greater increase in their preference for learning in groups than did students in the control section. Students in the experimental section also exhibited a significantly higher degree of enjoyment of the class sessions than did students in the control section.

Armstrong (1998) conducted a study to determine the effect of Student Teams Achievement Divisions cooperative learning technique on upper secondary students' academic achievement in social studies and their attitude towards social studies class. The 47 twelfth-grade students in two advanced progress American Government classes were from southern Mississippi public school. Each class received instruction from one of two teaching methods. The treatment group received instruction from a method which applied the Student Teams Achievement Divisions (STAD) cooperative learning technique and the comparison group received instruction through traditional methods which utilized a lecture, textbook, worksheet and discussion format. Both groups covered identical content and were administered the same tests. Attitude measures were obtained through the application of the Estes Attitude Scale. Academic achievement was measured both prior to and after the study. Qualitative measures in the form of student and teacher surveys were administered after the completion of the study. The statistical techniques used were ANCOVA and ANOVA. The results of these tests demonstrated that the application of STAD in the upper secondary social studies classroom exhibited no statistically significant difference in academic achievement or student attitude towards
social studies class. The qualitative dimension of the study, in the form of student and teacher surveys, suggests that the application of cooperative learning makes learning easier and more enjoyable for the student and is an easy technique to implement in the classroom, particularly in a block scheduled timetable. Whicker (1999) determined the academic achievement benefits of cooperative learning for students in the secondary advanced mathematics classroom and students' feelings regarding the use of cooperative learning techniques and group rewards. This study looked specifically at the benefits of cooperative learning using individual rewards. Three pre-calculus classes were used; a) cooperative group with group rewards, b) cooperative group with individual rewards and c) comparison group. Chapter tests were used to measure achievement, and the treatment groups were asked to fill up the questionnaires to determine their feelings about the technique. The findings of the study were a) ANOVA revealed no significant differences between any of the three groups for any of the tests administered. Mean scores improved for all the groups across the four tests administered, with the differences between the groups changing very little, b) questionnaire responses indicated that although the students in both the groups liked receiving extra points, the class that received points based upon their group members improvement did not like working in cooperative learning groups. The majority of the students in this class expressed a dislike for the group setting or for certain group members. Some of the high achieving students felt used by the group reward system, and indicated that rewards should be based upon individual improvement. Student in this same class indicated that the group rewards system did motivate group members to try harder and encouraged them to help one another, c) the majority of the students in the cooperative class that received individual rewards expressed positive feelings about cooperative learning groups. Many of these students indicated that they learned material better as a result of the cooperative learning groups. Students in both classes recognized that cooperative learning groups had a positive impact on their interpersonal communication skills.

Satyaprakasha (2001) conducted a study to find out the effect of cooperative learning on achievement and process skill in biology, achievement motivation, children learning preferences and social relations. One of the objectives of the study was to study the effect of cooperative learning strategy on children's learning preferences. The study tested the hypothesis that Children’s learning preferences would be more towards cooperative learning in case of cooperative learning group. In the present study, pretest-posttest equivalent group design was used to evaluate the relative effectiveness of cooperative learning strategy with respect to conventional method of teaching. Two groups of students of class VIII were selected for the study and were considered as experimental and control group respectively. The experimental group was exposed to cooperative learning strategy of "Learning Together" model (Johnson and Johnson, 1975) and the control group was taught by conventional method of teaching. The sample consisted of students of class VIII from three schools of Tumkur town. The students were matched by pairing their scores obtained in the test on achievement in biology and Raven's Progressive Matrices. Finally, 90 pairs of students were selected for the study. Out of these 90 pairs, 90 students were treated as experimental group and remaining 90 students were considered as control group. The tools were used for the study was Children’s Learning Preferences Schedule developed by NCERT, New Delhi. Percentage was calculated to analyze the changes in children's learning preferences and drawing the science classroom. The major findings of the study was children's learning preferences were more towards cooperative learning in case of experimental group.
4. Conclusion

From the review of studies related to cooperative learning and children's learning preferences, it has become clear that less number of studies has been conducted at secondary grade level. Except very few, majority of them have reported that students preferred to learn in cooperative set up, and with cooperative goal structure. Results of some of the studies proved the positive effect of cooperative learning in changing the learning preferences of the students.

References