Chapter – VII

SUMMARY
CHAPTER VII

SUMMARY

INTRODUCTION

One of the important goals of education is to improve both academic achievement and Physics relations in school. There is an urgent need to practice alternative education programs or instructional methods to solve the problem of students' poor achievement as well as an attempt to provide environments and curriculum that meet the needs of students.

Among the methods for changed outline in the new reform-movement for teaching Physics is a recommendation for using different instructional methods. Such as cooperative learning, for building students' capacity for thinking and reasoning, (Mevareeh, 1999). The report of the National Governor's Association, Washington (Brown and Goren, 1993), indicated the following.

In cooperative learning, small groups of students of mixed ability work together to solve problems and complete tasks. In this setting, lower achieving students can model the study skills and work habits of more proficient students. In the process of explaining the material, higher achieving students often develop greater mastery themselves by developing a deeper understanding of the task or skill.

Cooperative learning is an instructional technique designed to promote the academic and Physics development of students. It is one of the most common techniques used by educators throughout the world especially in United States (Johnson and Johnson, 2000). Johnson and Johnson et. al. (1991) proposed five elements are essential for increasing the likelihood of success of the cooperative learning endeavor.

- Positive Interdependence
- Face to face promotive interaction
- Individual Accountability
- Physics Skills
- Group Processing
NEED OF THE STUDY

Research on student thought processes is based on the belief that teaching is mediated by student thought processes and that teachers influence student achievement, not directly but by causing students to think and behave in certain ways (Wittrock, 1986). Cooperative learning is one of the teaching learning methods which is not expensive, makes learning easier and more enjoyable for the students. It is an easy technique to implement in the classroom, particularly in block scheduled time table. The rationale for using cooperative learning techniques is that the principles on which they are grounded are important not only for helping people to work together better, but also for recognizing every one's gifts and strengths. Experimental studies show that cooperative learning methods have positive benefits to students (enhanced academic achievements) questions continue to surface about students performance in small group settings. It seems that not all students receive the same benefit from participation in heterogeneous cooperative learning groups.

Physics is considered to be an exceptionally difficult subject among various students. The percentage of marks in middle and high school examinations in this subject is low in comparison to other subjects of the school curriculum. This backwardness in subject may be due to the lack of interest and wrong methods of learning.

In cooperative learning settings, heterogeneous group of students of mixed abilities help each other to learn by discussing the things which, include self-effort and understanding.

Cooperative interdependence in classroom settings is the base of many interventions designed to improve both academic achievement and social interaction in schools and as such has been a primary focus in educational and Physics psychological literature for more than three decades. The investigator believes that it is natural tendency of children to grow and learn through Physics interaction and that understanding cooperative interactions within school contents will not only help children achieve educational goals but also create more long term benefits for human kind.
HYPOTHESES

In terms of hypotheses, the objectives of the study would translate themselves as:

H₁: At the end of experimental treatment the group of students taught Physics through cooperative learning method Students Team Achievement Division (STAD) scores significantly higher on the achievement test than the group of students taught through the traditional method.

H₂: At the end of experimental treatment the group of students taught Physics through cooperative learning method Group Investigation (GI) scores significantly higher on the achievement test than the group of students taught through the traditional method.

H₃: At the end of experimental treatment the group of students taught Physics through cooperative learning method Student-Team Achievement Division (STAD) shows a significantly higher gain score on the achievement than the group of students taught through the traditional method.

H₄: At the end of experimental treatment the group of students taught Physics through cooperative learning method Group Investigation (GI) shows a significantly higher gain score on the achievement than the group of students taught through the traditional method.

DELIMITATION

The study was delimited to

- Class VII students of two sections of Govt. Model sr. Sec. School, Sector-28, Chandigarh.
- Only four units selected from Physics syllabus of Class VII for instructional treatment as prescribed by NCERT, New Delhi.
- Students-Team Achievement Division (STAD) method of cooperative learning.
- Group Investigation (GI) method of cooperative learning.
TOOLS USED

For the present investigation the following tools were used:-

A Standardised Tests

1. Culture Fair Intelligence test (R.B. Cattell and A.K.S Cattell)
2. Socio-Economic Status Scale (Singh, Radhey Shyam and Kumar)

B Self Developed Tool

1. Achievement Test (developed by investigator)
2. Cooperative Learning Lesson Plans (developed by the investigator)
3. Worksheets (STAD) (developed by the investigator)
4. Worksheets (GI) (developed by the investigator)
5. Formative Tests (developed by the investigator)

PROCEDURE

Procedure of the experiment comprised of two main stages, which are selection of the sample and conducting the experiment.

Stage 1: Selection of the sample:

The sample of the present study comprised of 120 pupils studying in two sections of the seventh grade of Govt. Model Sr. Sec. School, Sector 28D, Chandigarh. One group of 40 students formed the control group whereas 40 students formed the experimental group-I and remaining 40 students formed the experimental group-II.

Stage 2: Conducting the Experiment

The experiment was conducted in three phases as given below:

Phase 1: Administration of Pre-test
Phase 2: Conducting the Instructional programme; and
Phase 3: Administration of Post-test
2. Analysis of variance (ANOVA) was used, in order to adjust pupils intelligence and socio-economic status.

3. (ANOVA) was employed for testing the significance of difference among the means of pupils achievement in Physics.

**FINDINGS**

i) The results arrived at during this study show that the post-test achievement mean scores of the experimental group-I and control group, matching on their intelligence and socio-economic status, differ significantly in favour of the experimental group.

ii) The post-test achievement mean scores of the experimental group-II and control group, matching on their intelligence and socio-economic status, differ significantly in favour of the experimental group.

This implies that the students who are taught Physics through Students-Team Achievement Divisions (STAD) under Cooperative Learning i.e. experimental group-I and students who are taught Physics through Group Investigation under Cooperative Learning i.e. experimental group-II, both show significant improvement in their achievement in this subject than the students who received instruction through the traditional method(i.e. the control group). It suggests that both Students-Team Achievement Divisions (STAD) and Group Investigation methods of cooperative learning contributes towards raising the achievement of students in Physics by its implication in the subjects as well.

iii) The group of students taught Physics through Students-Team Achievement Divisions (STAD) i.e. experimental group-I and students taught Physics through Group Investigation i.e. experimental group-II, both show significantly higher mean gain in achievement than the group of students taught Physics through traditional method(i.e. the control group).
than the group of students taught through the traditional method does prove the superiority of the cooperative learning method over the traditional classroom teaching processes, which indeed has been the growing demand of the fast changing educational scenario today, making schooling a playful endeavour for all practical purposes of sustainable development and joyful learning, especially at the elementary school level. The results of the study do not, in any way, discard or under estimate the importance of individualized learning techniques, nor was it the objective of the study, but it only shows that the method of cooperative learning is much more crucial to the inculcation of values of cooperative living and healthy cooperation rather than the dry bones of sheer competition that narrows down the process of education to self-directed individualized learning. Quite significantly, both healthy cooperation as well as healthy competition complement and supplement each other in making the learning process tangible to sustainable human development. Therefore, both of them are obligatory in their own right to an effective schooling.

EDUCATIONAL IMPLICATIONS

The present research clearly shows that changing from a traditional competitive classroom to a cooperative one does not diminish student achievement; it significantly improves achievement. In the present research, groups were rewarded based on their members learning and also students were individually accountable for their academic performance. Thus a positive effect on students' achievement in Physics was found to be there to suggest the usefulness of cooperative learning for improving students' achievement.

There may remain many unanswered questions in a piece of research, but the main to be commended here is to say that cooperative learning proves to be more tangible in its effectiveness on achievement. Cooperative learning proves to be practical and widely acceptable to students. When students are not able to understand teacher's explanation, group members are able to explain in simpler words that are more easily understood. In this way, it improves students perception about learning and decreases the feeling of alienation. Also that students attain comparably on
• The topics in different subjects to be taught by cooperative learning should be so decided that they should require use of skills that students feel capable of using to maximize their involvement in tasks.

• Even the less structured subjects like language, arts can be taught with this method like the problem-solving topics (grammar, comprehension, compositions, maps).

• Important skills such as critical thinking, creative problem solving and the synthesis of knowledge can easily be accomplished through cooperative group activities in the inclusive classroom.

• Meaningful content in cooperative lessons is critical for the success of all students. For students to succeed within their groups, careful consideration regarding group heterogeneity must be in conjunction with roles that ensure active and equal participation.

• Students in heterogeneous classroom team to solve complex cognitive tasks and the progress of the lower achieving students does not occur at the expense of the higher achievers or vice versa. So cooperative learning is recommended for fostering students reasoning and communication.

The results and conclusions reached during the course of this study clearly highlight the effectiveness of cooperative learning in raising the students cognitive and effective achievement. These findings certainly have a number of important implications for teachers, teacher-educators, curriculum makers and planners and for the society at large.