



CHAPTER-V
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5.1. RESULTS

1. The table indicates that the 't' critical value is significant at 0.05 level with the degree of freedom 46. It indicates that the mean scores of students taught through Cooperative Learning based teaching learning strategies differ significantly from those taught through constructivist method of teaching. There is a significant statistical difference between experimental and the control group students' scores of the post-test in favour of the experimental group taught through Cooperative Learning based teaching. The mean score of the students in the experimental group is 24.42, which is higher than those of the mean score of the students in the control group i.e., 19.54. The value of effect size ($d = 1.507$) indicates a large effect size. Thus, the cooperative learning-based teaching learning strategies has a large effect towards the constructivist method of teaching learning process.
2. As the calculated value of 't' i.e., 0.175 is less than table value at 0.05 level of significance for degree of freedom 46 i.e., 2.020, therefore, 't' value is **not significant** and null hypothesis is **accepted**. Thus, it can be stated that there is **no significant difference** in the achievement scores on the basis of gender taught by Cooperative Learning based teaching learning strategy and constructivist method respectively. The mean score of the male students is 21.88, which is little lower than those of the mean score of the female students in the control group i.e., 22.09.

5.2. MAJOR FINDINGS

1. There was a significant difference between mean scores of achievements of the students who studied through cooperative learning strategy and that with conventional method. Experimental group students scored higher than control group students and thus cooperative learning helped in increasing science achievement of students than the traditional method of teaching.
2. There was no significant difference between mean scores of achievements of experimental group students with respect to gender. It can be therefore concluded that cooperative learning does not influence gender and it produces similar positive results for both boys and girls.

3. There was a significant improvement in face-to-face interaction of students while undergoing cooperative learning.
4. A significant improvement was found in individual accountability of students after implementation of cooperative learning.
5. It was found that there was a significant difference in leadership skills of experimental group students after undergoing cooperative learning.
6. Cooperative learning also had a positive impact on communication skills of students. It brought a significant development in communication skills of the experimental group students.
7. After implementation of cooperative learning, students' reaction towards cooperative learning was found that students favoured cooperative learning.

It is evident from the data analysis that cooperative learning-based teaching-learning strategies are better than the normal constructivist approach of teaching. It is more effective and the children enjoy by learning through his method.

5.3. EDUCATIONAL IMPLICATIONS OF THE STUDY

Cooperative learning-based teaching-learning strategies are based on self-engaged research-oriented constructivist learning theories. It includes skills and activities that increase curiosity for research, satisfy students' expectations and make the students focused on the topic for understanding. The students use their previous knowledge in discovering new concepts regarding the topic.

This method enhances the achievement of the students towards the subjects of the study. The findings of this study have an important implication for teaching science. The mean achievement of the pupils taught through cooperative learning approach is significantly higher than those taught through normal constructivist approach. Does the result of this study indicate that using this approach in the classroom, the teachers can improve the students' achievement towards the subject taught? Several educational implications of this study given as follows:

5.3.1. For Students:

- a) The study gives importance to child centredness where the children are given opportunities to explore and discover things themselves. The study focuses on innovative and democratic classroom where the child is given freedom to

discover, ask question. Researcher during experimentation, observed that the child learns to construct his own knowledge through hand on experience.

- b) The Cooperative Learning based teaching learning strategies help students to improve their concepts, to increase achievements, motivation in science. During learning, to learn more effectively this approach plays a very important role, the major cause of failure is loss of interest so this is the approach by which a teacher can maintain and gross interest in the subject. This approach can give very good results for elementary and secondary classes. The Cooperative Learning based teaching learning strategies help students to improve their self-concept, achievement, motivation in science therefore in schools mainly in successfully so that achievement of the students can be increased.

5.3.2. For Teachers:

- a) In the present educational institutions, the teachers to a large extent dominate the teaching learning processes, teachers are initiator of the teaching learning process. But today is major focus being on construction of knowledge by the children by themselves, to facilitate thinking ability teachers can realize this objective by employing constructivist model in their teaching.
- b) In the present study teaching activity-based teaching learning strategy is found to be significantly superior to the traditional method. This points out the need of training programs could be organised for pre-service and in-service teachers for understanding and implementation of activity-based teaching learning strategies for constructive approach in classroom situation.

5.3.3. For Teacher Educator:

- a) Even number of studies including the present one this model is found to be effective for the teaching and learning so the teacher educator be equipped to translate this method in to practice by giving demonstration of the usability of The Cooperative Learning based teaching learning strategies to the student teachers. The instructional material available in the form of lesson plans developed in the present study can be used to give demonstration to student teachers.

- b) In order to equip teacher to implement variety of concepts, there is a need of development of comprehensive instructional package. This method of teaching helps to increase learning.
- c) To equip teachers in preparation and implementing the Cooperative Learning based teaching to be included in pre-service teacher preparation programs also pre-service teacher preparation programs also pre-service teachers should be equipped with necessary skills and knowledge about preparation and organisation of the Cooperative Learning based instructional materials in transacting science curriculum at primary and upper-primary stages.

5.3.4. For Curriculum Designers:

- a) This method can be applied at several levels in the designing of curriculum material and instructional sequences.
- b) There was an assumption that the Cooperative Learning based teaching would take more time but the present study disapproved it. Thus, this method can be included in the regular curriculum.
- c) Textbooks are the major source of information for students as well as for the teachers so the science textbooks at the secondary-stage need to be activity oriented with an inbuilt scope for conducting activity wherever essential, instructions may be provided for the students in learning science.

5.3.5. For Administrators:

Essentially, Administrators who are experienced supervisors recognized that there are many teaching-learning methodologies used by classroom teachers, including lecture, small group instruction, inquiry, as well as cooperative learning. In cooperative learning classrooms, however, the teacher is not always the primary actor in teaching-learning process. In this method of teaching, the teacher becomes facilitator of the students. It develops democratic environment in the classroom. Thus, it is suggested to adopt from the school level.

5.4. SUGGESTION FOR FURTHER STUDIES

Looking to the constraints under which the study was concluded the findings do not warrant any generalization it is therefore felt that replication of this study on a large sample is requested to arrive at generalization, however studies may be undertaken on the followings:

- The Cooperative Learning based teaching method can be used to teach something other than science and its effectiveness can be studied.
- Similar study can also be conducted with the students of other class.
- The sample for the present study was restricted to the urban population only, the experiment can be tried out with the rural population.
- A study can be undertaken to examine students' perceptions on the classroom based on Cooperative Learning based teaching learning method.
- A study can be undertaken to examine the role of teacher in Cooperative Learning based teaching method in the classroom.
- Similar study can be undertaken by taking more numbers of units in order to arrive at a border generalization.
- A study can also be undertaken to compare the effectiveness of the Cooperative Learning based teaching learning method between different schools. For instance, private and government schools' children where the attitude of the children towards the learning is not favourable.
- A study can be undertaken to find out the effect of Cooperative Learning based teaching learning strategy on other psychological variable like anxiety, stress etc.
- Effect of Cooperative Learning based teaching on achievement on other school subjects in different regions may also be studied.
- A study can be taken on relative effectiveness of Cooperative Learning based teaching on achievement in different school subjects in different type of schools like CBSE schools, private sector, schools, State government schools etc.

SUMMARY

INTRODUCTION

In the present era, globalization has made its impact on all sectors of the society and education is no exception. What is needed at the hour is a globally competent workforce. Learners need to be having global skills that would help them survive and compete in the global world. Opportunities for present generation students often depend as much on their communication and collaboration skills as they do on pure academic skills. The changing scenario of workplace requires responsibility and self-management, as well as interpersonal and project-management skills that demand teamwork and leadership.

According to UNESCO (1996), children should be taught to understand other people's reactions by looking at things from their point of view. Where this spirit of empathy is encouraged in schools, it has a positive effect on young persons' social behaviour for the rest of their lives. From early childhood, education should focus on the discovery of other people in the first stage of education. In the second stage it should encourage involvement in common projects. Thus, one of the essential tools for education in the twenty first century must be a suitable forum for dialogue and discussion. One such strategy promoting this aspect is Cooperative Learning.

Cooperative learning involves students working together in small groups to accomplish shared goals. It is widely recognized as a teaching strategy that promotes socialization and learning among students from kindergarten through college and across different subjects. The most widely used definition of cooperative learning in education is probably that of Johnson & Johnson (1994). According to them, Cooperative Learning is an instruction that involves students working in teams to accomplish a common goal, under conditions that include the five essential elements of Positive Interdependence, Face to face interaction, Individual Accountability, Appropriate use of Collaborative Skills and Group Processing.

STATEMENT OF THE PROBLEM

The study is titled as "Effectiveness of co-operative learning on academic achievement in science of class-VII of Keonjhar District, Odisha".

OPERATIONAL DEFINITION

Effectiveness- In this study effectiveness may be defined as enhancement of learning through cooperative learning strategy.

Constructivist Method- Constructivist Method in teaching learning is related to the child centred learning.

- Prior Knowledge impacts the learning process.
- Initial understanding.
- Building useful knowledge structures.

Science Achievement- Achievement in the present study indicates that students should understand and enhance their achievement in chapter selected by the investigator i.e., 'Nutrition in Plants' of class VII science.

Cooperative learning- Cooperative learning involves students working together in small groups to accomplish shared goals. It is widely recognized as a teaching strategy that promotes socialization and learning among students from kindergarten through college and across different subjects. One can see that several definitions of cooperative learning have been formulated. Cooperative learning is an instruction that involves students working in teams to accomplish a common goal.

OBJECTIVES OF THE STUDY

1. To study the effectiveness of co-operative learning on academic achievement in science of class VII students
2. To study the effectiveness of co-operative learning on academic achievement in science of class VII on the basis of gender

HYPOTHESES OF THE STUDY

H₀1. There is no significant difference in the academic achievement in science of class-VII students.

H₀2. There is no significant difference in the academic achievement in science of class-VII students on the basis of gender.

DELIMITATIONS OF THE STUDY

The study was delimited to:

- 1) Only one English medium Upper Primary School from Champua, Keonjhar, Odisha.
- 2) Class-VII Science (CBSE)
- 3) Only chapter selected is 'Nutrition in Plants'
- 4) Population is restricted to two sections only- 48 students.

VARIABLES

The present investigation is an attempt to determine the Effectiveness of co-operative learning on academic achievement in science of class-VII students.

The variables involved are:

- a) **Independent Variables:** The cooperative learning in the teaching of science was taken to be the independent variable in this study.
- b) **Dependent Variables:** The achievement test of was treated as the dependent variable in this study.

POPULATION

The present study was conducted on class-VII school students of Odisha state. Thus, in the present investigation the population refers to all the students from class-VII studying in Chandra Sekhar English Medium School, Keonjhar.

SAMPLE

The present study is an experimental study concerned with the study of "Effectiveness of Co-Operative Learning on Academic Achievement in Science of Class-VII of Keonjhar District, Odisha." Random sample technique is used for the present study. The researcher selected children of two sections belonging to the seventh standard of CHANDRA SEKHAR ENGLISH MEDIUM SCHOOL, CHAMPUA as sample. It is an English medium school.

Section A and Section B were selected as control group and experimental group respectively. There were 24 students each in control group and experimental group. Both the groups were taught by the researcher only.

TOOLS

Through the review related literature, the investigator identified that the teaching strategies effectively change the pupil's attitude towards science. So, the investigator developed the achievement test to measure the achievement scores. The following tools were used:

I. Achievement Test in Science

The tool is validated by the Supervisor of the study.

DATA COLLECTION

The content analysis in the Science Text book for the appropriate application of cooperative learning strategy for the study was done understanding the terminology of 'cooperative learning-based teaching strategies' for instruction. Lesson Plans were prepared for teaching for the application of cooperative learning strategies as well as for the traditional method. Instructional materials for the enhancement of the level of achievement in science among children were developed through cooperative learning strategies. Preparation and validation of tools were made to measure the scores exhibited by the children in science. The students were grouped into two groups with equal number of students (24) namely, the Control Group and the Experimental Group. Further the Experimental Group was sub-divided into four micro groups each contains six numbers of students (4G×6S). The students were taught through two methods. The students of the Control Group were taught through the constructivist method (5E Model) and the Experimental group were taught through the cooperative learning strategies. The duration of the treatment would be Ten days. Post-test was conducted after the completion of instructions through constructivist method for the children of the control group and through cooperative learning for the experimental group students. The post-test scores were entered, categorized and analysed.

STATISTICAL TECHNIQUES

In the present study, the relevant data obtained from the test scores of the post-test was analysed using different statistical techniques.

Mean and Standard Deviation were calculated to determine the central tendencies of the samples and to compare them. Differential analysis provides inferences involving determination of statistical significance of difference between groups with reference to

selected variables. To compare the difference between the means of the small sample, **T- test** was applied.

CONCLUSION

It can be therefore seen from the present study that cooperative learning helped in increasing science achievement of students than the traditional method of teaching. It helped students develop positive interdependence, face to face interaction and individual accountability in them. The study revealed that students significantly improved on appropriate use of skills like leadership, communication, trust building, decision making and resolving of conflicts. It could however be seen that cooperative learning does not influence gender and it produces similar positive results for both boys and girls.

The study clearly shows that cooperative learning is an effective teaching strategy which not only helps in academic gains but also in developing the social aspects of the learners. It helps in building the desired global skills in learners, which at present, is the need of the hour.