CHAPTER - V

FINDINGS, DISCUSSIONS, SUMMARY, IMPLICATION, SUGGESTIONS AND CONCLUSION

5.1.0 INTRODUCTION

The results, summary, implications and conclusions presented in the current chapter are based on the previous chapter. The chapter four presented data analysis, results and interpretations. Objective-wise interpretation of results and the related discussions are presented, below, under different headings in this chapter. Summary, implications and suggestions for further studies are also being part of this chapter.

Objective-wise findings and interpretation of results with discussions have been presented in this section under different sub-headings.

5.2.0 FINDINGS OF THE STUDY

Objective-wise findings are presented in Chapter – IV, under different sub-headings. Findings flow from the interpretation of data presented in the previous chapter. Findings of the present study are presented, below.

1. The Learning Progression of Students of Experimental group is higher than that of Control group students of class VII of Jharsuguda district, Odisha.
2. The Attitude towards Science of Students of Experimental group is nearly Similar to that of Control group students of class VII of Jharsuguda district, Odisha.
3. There is a significant effect of Treatment (Constructive Teaching) on Achievement in Science Subject of Class VII students as compared to traditional method.
4. There is a no significant effect of Gender on Achievement in Science Subject of Class VII students.
5. There is no significant interaction effect of Treatment and Gender on Achievement in Science Subject of Class VII students.

5.3.0 LEARNING PROGRESSION IN SCIENCE OF CLASS VII STUDENTS

The Constructivist Approach of teaching was found to be effective to enhance the Achievement of students in Science Subject with Achievement test scores. This finding was supported by Corcoran.T, Mosher F.A & Rognat.A (2009) indicated how standard based educational reform can be developed through learning progression. It describes that what any student learns at present situation depend on what he/she has learned before. Kids learn. They start out by knowing and being able to do little, and over time they know and can do more, lots more. Their thinking becomes more and more sophisticated. That's why Curriculum developers pay attention to what, when, and how concepts and skills should be taught; while there are notable exceptions, they often pay less attention to whether and how they learned when their scope and sequence are implemented. Further Kobrin et.al (2015) describes about the framework for the evaluation of learning progression. It can be evaluated based on its elements like 1) notion of learning as development 2) Importance of instruction in facilitating movements of the learner 3) empirical research and validation to refine LP. Thus, in this case a constructive approach of teaching can evaluate the learning progression more efficiently than the conventional method. The result of the present investigation also concludes the learners show more engagement in study in constructive approach of teaching compared to traditional method.

5.4.0 ATTITUDE TOWARDS SCIENCE OF CLASS VII STUDENTS

The Constructivist Approach was found to be ineffective in terms of Attitude towards Science of Students with Attitude scores. The findings of Gavia. W. Futmer, Hongjia & Ling.L.Liang (2019) stated that attitudes toward science were positively related to cooperative teaching strategies like group work in class or developing small-group projects. There was no significant effect of constructivist-oriented instruction or of direct instruction on students' attitudes. Building and sustaining students' attitudes toward science has been a consistent goal in science education and a topic of significant research, as attitudes are an important aspect of students' persistence in school science and interest in pursuing science careers. Science is related to different natural phenomena which are used as the base while teaching science. A student may get good score in Science achievement test but it's not necessary to have the attitude toward science at the same test scores rate. Unfortunately, students' attitudes toward science

generally decline over the middle and high school years (George, 2000; Potvin & Hasni, 2014). The results of the present investigation shows that the two groups' students i.e., control group and experimental group based on traditional method and constructive method of teaching respectively have very less difference. It means that Constructive teaching has also no impressive change in attitude towards science of students and also the attitude towards science is independent of achievement test scores in both groups.

5.5.0 Effect of treatment on achievement in science of class vii students

The effect of Treatment on Achievement in Science of Class VII students was found significant by taking their Pre-achievement scores of Achievement in Science as a covariate. Therefore, it may be said that Constructivist Approach made a significant difference in the Achievement in Science language of Class VII students. According to the findings of Mustafa Cakir (2008), the reason for the broad, intuitive appeal that has stimulated the growth of constructivism as an epistemological commitment and instructional model may be that it includes aspects of Pia-getian, Ausubelian and Vygotskian learning theories; namely, the importance of ascertaining prior knowledge, or existing cognitive frameworks, Von glasersfeld stated that Knowledge is actively built up from within by a thin-king person; knowledge is not passively received through the senses or by any form of communication. Second, Von glasersfeld described the importance of social interaction in the construction of knowledge. Social interactions between and among learners are central to the building of knowledge by individuals. Third, the character of cognition is functional and adaptive. Cognition and the knowledge it produces are a higher form of adaptation in the biological context. So, in order to get all these a construction of knowledge is very important which can be imparted through Constructive teaching techniques. That's why Students taught through Constructivist Approach, constantly, gave good test result. After forty-five days of interventions, a significant difference was observed when compared to the Control group of the study. Therefore, it may be stated that Constructivist Approach made a significant difference in the Achievement in Science of Class VII students as compared to Traditional method of teaching.

5.6.0 Effect of Gender on Achievement in Science of Class VII Students

The effect of Gender on Achievement in Science of Class VII students was not found significant when their pre-achievement scores of Achievement in Science was taken as covariate. There are various studies on gender differences, out of which some state there is some gender differences in learning whereas some others state there is very negligible differences. Like Janet Sibley Hyde (2005) stated that males and females are alike on most— but not all—psychological variables. Extensive evidence from meta-analyses of research on gender differences supports the gender similarities hypothesis. But it has been reported that boys are significantly better than girls in biology, introduction to science, and physics (Becker, 1989; Steinkamp and Maehr, 1983), while girls are superior in language ability. (Halpern et al., 2007) In this present study, two aspects are taken into consideration, those are Male and Female and their achievement score was calculated. All the students were taught through Constructive Approach and allowed to make their own progress individually. Therefore, it may be said that Gender did not produce a significant differential effect on the Achievement in Science of Class VII students when their pre-achievement scores of Achievement in Science was taken as covariate.

5.7.0 Interaction of Treatment and Gender on Achievement in Science of Class VII Students

The interaction between Treatment and Genders on Overall Achievement in Science of Class VII students was not found to be significant when their pre-achievement scores of Achievement in Science was considered as covariate. The results indicated that the Boy and Girl Students were benefitted to the same extent with the both modes of teaching. But, the mean Achievement scores of Students with different Genders of Experimental group were higher than the mean Achievement scores of Students with different Genders of Control group. The mean Achievement in Science of Girl Students of Experimental group was higher than the Boy Students belonging to Control group. The mean Achievement of the Students did not differ much. Therefore, it can be said that the effect of Treatment on Achievement in Science is independent of the Genders of students. This result shows that no significant interactional effect of Treatment and Gender was found in the present study.

5.8.0 TO SUM UP

5.8.1 INTRODUCTION

In today's world Education is an important aspect of everyone's life. Education starts from the family but what we call official education that starts from the age of 5 and from then it is necessary to keep an eye on the child's Progress throughout his/her education. Like 5 fingers in a hand is not similar, every child is not similar, there is Individual Difference between them. So, a teacher needs to apply or follow different techniques to fulfill all the requirement of each and every child in the classroom. In this study I used Constructive approach to measure the Student's Progress and also compares it with the Student's Progress those were taught through the Traditional method to see which method works best. Also, I wanted to know if there is any effect of Gender in the achievement of Students. My purpose for the study was clearly to know which method suits the student in a better way and how much.

5.8.2 STATEMENT OF THE PROBLEM

To study the learning progression in science of class VII students of Jharsuguda district, Odisha

5.8.3 RATIONAL OF THE STUDY

In recent years, learning progressions (LPs) have captured the interest of educators and policy makers. There have been numerous efforts to develop LPs aligned to college and career readiness standards, to unpack these standards, and to provide more clarity on the pathways students follow to reach them. There is great variation, however, in the structure, content, and features of LPs, and these have implications for the LP's most appropriate use. The purpose of this research was to devise a framework to understand and evaluate key features of an LP, including its structure, content, usability, and validity evidence (Kobrin, et al, 2015). Here also the constructive approach is employed to examine the learning progression of the students. Because meaningful learning does not occur by throwing more science facts and principles at the students or increasing the number of students' laboratory activities. A trendy emphasis on "hands on" will not, by itself, increase students' understanding of science either. What is additionally needed is a "minds on" emphasis in the learning of science (Pines, 1985). So here the learning progression and the constructive method are combinedly used to enhance the teachings-learning process of the system.

5.8.4 OBJECTIVES

1. To study the learning progression in science of class VII students of Jharsuguda district.
2. To study the attitude towards science of class VII students of Jharsuguda district.
3. To study the effect of Treatment, Gender and their interaction on Achievement in Science of Class VII students by taking their previous year Achievement in Science as covariate.

5.8.5 HYPOTHESIS

1. There is no significant effect of Treatment on Achievement in Science Subject of Class VII students when their Pre–test Scores of Achievement in Science Subject was taken as covariate.
2. There is no significant effect of Gender on Achievement in Science Subject of Class VII students when Pre –test Scores of Achievement in Science Subject was taken as covariate.
3. There is no significant interaction of Treatment and Gender on Overall Achievement in Science Subject of Class VII students when Pre-achievement Scores of Overall Achievement in Science Subject was taken as covariate.

5.8.6 METHODOLOGY

Experimental method was employed for the study. Experimental research is a scientific approach to research, where one or more independent variables are manipulated and applied to one or more dependent variables to measure their effect on the latter

5.8.7 DESIGN

Nonequivalent control group design was employed for the study.

5.8.8 SAMPLE

One schools of Jharsuguda district that is Odisha Adarsha Vidyalaya, Lakhanpur was selected randomly and 60 students of class VII of the school were selected randomly. The 60 students then divided into 2 groups, one group of 30 students was designated as experimental group and another group with 30 students was designated as control group.

5.8.9 TOOL

Mainly two tools, such as Achievement test in Science and Attitude towards Science were used for the study. The Achievement test in Science was developed by the investigator Mr Bibhuti, 2021. Attitude towards Science was measured by administering the Attitude towards Science scale by Mrs. Abinash Grewal, 1978.

5.8.10 PROCEDURE OF DATA COLLECTION

One schools of Jharsuguda district that is Adarsha Vidyalaya, Lakhanpur was selected randomly and 60 students of class 7 of the school were selected randomly. The 60 students then divided into 2 groups, one group was designated as experimental group and another group was designated as control group. The experimental group was taught through specially designed contents in science and the control group students were taught through the traditional teaching method. Treatment of 45 days will be given to both the groups as per the respective methods mentioned above.

Before giving treatment of 45 days the attitude towards Science scale (Grewal, 1978) was administered to both the groups. Previous year Science achievement marks of the students of respective group were collected from the school register. An achievement test of 20 marks in Science was developed by the investigator and administered at the end of the treatment of 45 days to both the groups.

Both the tools were scored properly and data was analyzed using appropriate statistical technique.

5.8.11 STATISTICAL TECHNIQUE

1. Mean
2. Standard deviation
3. Percentile
4. Coefficient of variation
5. 2 X 2 factorial designed ANCOVA of unique size will be used for the analysis of data.

5.9.0 FINDINGS

The finding from the research are The Learning Progression of student taught trough the Constructivist Approach was higher than the students taught through the Traditional Method of Teaching, The Attitude towards Science of students taught through the

Constructivist Approach was nearly similar to the students taught through the Traditional Method of Teaching, There is a significant effect of Treatment (Constructive Teaching) on Achievement in Science Subject of Class VII students as compared to traditional method, There is no significant effect of Gender on Achievement in Science Subject of Class VII students and There is no significant interaction effect of Treatment and Gender on Achievement in Science Subject of Class VII students. From the interpretation of results, we can conclude that The Treatment is effective for the Progress of Student ignoring their Gender.

5.10.0 IMPLICATIONS

The implications of this study are for direct class room teaching as well as for the teacher education programme. Some of the major implications visualized are as follows.

- The strategies used, in this study, may be used by the class room teacher in teaching different subjects other than Science.
- The components used in this study may be used, separately or combined, for teaching Subjects other than Science.
- The lessons developed, in this study, may be used by the teacher of Science.
- Teacher should be trained to develop instructional material on the lines of the lesson plans presented in this study.
- Teachers should be trained to teach through the constructivist approach. These lesson plans may be used as models for imparting training to the teachers as well as to the teacher-educators.

5.11.0 SUGGESTIONS FOR FURTHER STUDIES

Taking into Consideration the Present studies and its findings, the following studies may further be conducted-

- The study may be conducted by faking the different samples of different classes of different level taking into consideration the other cognitive and psychomotor variables.
- Studies may be conducted in e-content, developed by different agencies for starting its effectiveness.

- Studies may be conducted for making comparisions of different methods by taking selected variables.
- Studies may be conducted in the area of inclusive education and studying the effectiveness of this approach in terms of Cognitive and other demographic variables.
- Studies may be conducted using different treatments other than Constructive approach.
- Studies may be conducted Administering this research in tribal area to find out the problems present there.
- Studies may be conducted using this study to analyze Learning Progression in Subjects other than Science.
- Studies may be conducted Appling this study to rural and urban area schools and compare their results.
- Studies may be conducted Including learning style as an independent variable with Gender and Treatment.
- Studies may be conducted increasing the Sample size to get more accurate result.

5.12.0 CONCLUSION

In this study the effect of constructive method of teaching is examined for student's learning progress along with the possibility of any deference in their Attitude towards Science and if Gender of a student affects its achievement or not. Constructivist approach is effective in improving the achievement in the subject concerned. It was also experienced during the study that this approach was effective not only in cognitive development but also in personality development. From the above finding it was concluded that the Treatment that means Constructive Approach is effective in increasing Student's achievement in Science but it has no effect on their attitude towards Science. Gender also plays a very negligible role in case of Student's Achievement in Science.

A major change in different educational curriculum to relate the science subjects and its practices with the Constructive learning is needed. In short, access to information and data, its interpretation and critical evaluation, will become central features of any new syllabi. Such a shift would encourage a change in pedagogy and the use of

Constructive Approach to support and develop students' scientific reasoning and analytic skills. Thus, to enhance the learning ability, critical thinking, skill development, a critical role of Constructive approach will be seen in future educational scenarios.