CHAPTER - V

FINDINGS, DISCUSSIONS, SUMMARY, IMPLICATION, SUGGESTIONS AND CONCLUSION

5.0.0 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.

5.1.0 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.

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

5.2.0 DISCUSSION

The findings of the study are discussed below-

5.2.1 Learning Progression in Science of Class Ix Students

The Constructivist Approach was found to be effective in terms of Achievement of students in Science Subject with Achievement test scores. This finding was supported by Bransford, Brown and Cocking (2000). Bransford et al. (2000) indicated the value of practice of teaching in developing Student's learning. Tai and Sheppard (2009) described their work on developing a learning progression for students' understanding of combustion. Based on the responses, the researchers found six patterns of progression in students' understanding of combustion, called 1) gradual increase, 2) stepwise increase, 3) persistent misunderstanding, 4) early misunderstanding, 5) varied misunderstanding, and 6) reverse-V understanding. They used a cross-age design and a questionnaire having knowledge and cognitive abilities questions applied to 1,237 Taiwanese students from grades sixth trough twelve and university students. As mentioned in the Chapter - I, First, children learn to sit on their own, then crawl, then stand and then take some steps before taking off and running. Not all children will do this of course—some may go from sitting to standing without crawling in between! Also, not all learning develops in a nice predictable linear pathway—sometimes a separate, but inter-related area of learning needs to act as a trigger for us in our current learning. Not with standing, in many areas of learning, such as science, we have been able to use knowledge of learning paths in traditional academic learning to structure curricula. The results of the present investigation are an outcome of the comparison of two types of methods used to teach the students those are Constructivist Approach and Traditional method of teaching. Consequently, it may be concluded that Constructivist Approach used as a teaching strategy led to the results observed in this study.

5.2.2 Attitude towards Science of Class Ix Students

The Constructivist Approach was found to be ineffective in terms of Attitude towards Science of Students with Attitude scores. . This finding was supported by Bindia Rani (2018). Bindia Rani (2018) analyzed her research findings and stated Science as an important part of our life for which it has made an integral part of curriculum. Teaching of science is not purposeful if it fails to develop the scientific knowledge, scientific attitude, various skills and methods to solve problems in day to day life. Science has helped in developing various values like intellectual value, practical value, cultural value, vocational value and democratic value which make a one complete human being of better value. Sometimes, there is more achievement in science among students, but they do not possess positive scientific attitude. In her investigation, she concluded

no significant relation between science attitude and achievement in Science between the Students. Ram Niwas *et al.*, 2015 indicated that for development of knowledge and field of science, inculcation of scientific attitude, scientific thinking and attitude towards science is essential in general science among rural high school all students Boys only Girls only has been observed. From Chapter – I, Scientific thinking and attitude towards science is necessary to develop scientific knowledge. Scientific attitude may be an act in a certain way or expression of feelings or thoughts. Honesty, objectivity, respect for evidence, open-mindness, critical thinking, questioning attitude, logical thinking, tolerance of uncertainty, willingness to change options etc are the attributes of scientific attitude. The results of the present investigation are an outcome of the comparison of Attitudes of students towards Science between two groups of students studying through different methods those are Constructivist Approach and Traditional method of teaching. Consequently, it may be concluded that Constructivist Approach and the Traditional Method of Teaching used as teaching strategies led to the results observed in this study. Therefore, it may be stated that Attitude of Students towards Science was independent of their achievement in Science.

5.2.3 Effect of Treatment on Achievement in Science of Class Ix Students

The effect of Treatment on Achievement in Science of Class IX students was found significant by taking their Pre-test 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 IX students. The study by Ivan Salinas (2009) supported this finding. He identified two approaches for learning progression. 1st approach constructs a progression in terms of levels, being its extreme the lower anchor and upper anchor and having a strong empirical component in the depiction of the progression. The 2nd approach have stronger analytical component to define and construct the progression, presenting connections among elements of the progression by levels and threads while resting mainly in previous research for validating its analysis of progress on learning. The Achievement score was added to calculate the Overall scores. Science offers a powerful platform for building confidence, developing communication skills, and making sense of the world around us. Science also involves a lot of communication with other people and develops patience and perseverance in Student. Students were taught through Constructivist Approach, constantly, throughout the interventions to make conscious improvements. 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 IX students as compared to Traditional method of teaching.

5.2.4 Effect of Gender on Achievement in Science of Class Ix Students

The effect of Gender on Achievement in Science of Class IX students was not found significant when their pre-test scores of Achievement in Science was taken as covariate. This finding was supported by Hyde (1990). As Hyde (1990) pointed out, meta-analyses have consistently shown that there are no significant gender differences in general cognitive abilities. Thus, although cognitive abilities are significantly and positively related to school achievement, they cannot explain gender differences in school achievement (Spinath et al., 2010). Various Surveys reported that Men participated more in an active learning course in science, technology, engineering and math, while women reported lower perceptions of their scientific abilities, were more aware of gender identity and more likely to feel judged based on gender. In the 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 IX students when their pre-test scores of Achievement in Science was taken as covariate.

5.2.5 Interaction of Treatment and Gender on Achievement in Science of Class Ix Students

The interaction between Treatment and Genders on Overall Achievement in Science language of Class IX students was not found to be significant when their pre-test 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. Gender was not noticed in the said interaction of. 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 language 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.

5.3.0 TO SUM UP

5.3.1 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.

5.3.2 STATEMENT OF THE PROBLEM

Today's education is basically focusing on quality education and overall development of child. Since science is a subject which often think as a difficult one for most of the students and hence they develop a fear towards it. There is many more development in the educational pedagogy and new techniques are developed to make the lessons easier for the child. There is a need of studying the mentality of the students and the problems they are facing in ground level.

Also in the locality, where I was conducting the research is the area where I was born and had my secondary education. I also faced many problems during my study days like understanding the concepts easily rather than rote learning, hearing the teacher's voice clearly, communication with teachers, practical knowledge rather than theoretical concept etc. To have a better understanding in science specially one should have learn its practical aspect and do the experimentation, but due to lack of infrastructure, teaching learning resources, scientific instruments and a proper science lab , it becomes difficult for a teacher to teach science.

Science is an very easy subject if explained and understood the basics of it, but students often find it difficult may be due to lack of interest, which is because they are unable to understand the concepts of science well. To make them understand the concepts we can take help of the TLMs, ICT, different scientific models, movies etc. it is necessary to choose a material wisely as per the student's interest while teaching science.

By studying their progress in learning science, we can have a constant eye on them, by which we can learn where the problem lies and which scientific concepts are often find difficult by the students and why. We can also study the individual differences among the students, which will help us to plan accordingly. So I decided to have a study to see if now also same problem present among the students regarding science and use some techniques to see if they worked to solve the problem and studied their progress basically in science subject.

5.6.0 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 Including learning style as an independent variable with Gender and Treatment.
- Studies may be conducted increasing the Sample size to get more accurate result.
- Studies may be conducted using different treatments other than Constructive approach.
- Studies may be conducted Appling this study to rural and urban area schools and compare their results.
- 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.

5.5.0 CONCLUSION

This study attempts to know the effect of Constructive Approach on Student's Learning, to calculate their progress in learning, to know if there is 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 not only effective in cognitive development but also effective in interpersonal 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.

As the school curriculum begins to forge a stronger link between science-as-it-is taught and science-as-it-is-practiced, a major constraint currently affecting the use of Constructive Approach

within the curriculum may be lifted. 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. The use of Constructive Approach will then, perhaps, lie at the core of science teaching and learning.