

# EFFECTIVENESS OF CONSTRUCTIVIST TEACHING METHOD: AN EXPERIMENTAL STUDY

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## ABSTRACT

*In the present study an attempt has been made by the researcher to study the effectiveness of Constructivist Teaching Method on students' academic achievement in the subject of Physical Science at secondary level. A sample of 50 (fifty) VIII th grade students of Bengali medium school were selected by using the random sampling technique for the present study. For the analysis of data, the researcher has used 't' test in the present study. The result shows that the teaching through Constructivist method is more effective and meaningful as compared to the traditional teaching method.*

**Keywords:** *Effectiveness, Constructivist Teaching Method, Traditional Teaching Method and Academic Achievement.*

## INTRODUCTION

Learning without meaningful understanding is more or less valueless in our life. That's why teachers should always taught their students by using a fruitful teaching method so that students can learn meaningfully and applied their learned experiences in their daily life.

Constructivist teaching method is such a method which draws on students' existing knowledge, beliefs, and skills. With a constructivist approach, students synthesize new understanding from prior learning and new information. In constructivist teaching, a teacher sets up problems and monitors student exploration, guides student inquiry, and promotes new patterns of thinking. Constructivist teaching asks students to work with their own data and learn to direct their own explorations. Ultimately, students begin to think of learning as accumulated, evolving knowledge.

Constructivist teaching poses a question to the students, who then work together in small groups to discover one or more solutions (Yager, 1991). Students play an active role in carrying out experiments and reaching their own conclusions. Teachers assist the students in developing new insights and connecting them with previous knowledge, but leave the discovery and discussion to the student groups (VAST, 1998). Students are able to develop their own understanding of the subject matter based on previous knowledge, and can correct any misconceptions they have.

But, in the Traditional teaching method, classes are usually dominated by lecture or direct instruction. The idea is that there is a fixed body of knowledge that the student must come to know. Students are expected to blindly accept the information they are given without questioning the instructor (Stofflett, 1998). The teacher seeks to transfer thoughts and meanings to the passive student leaving little room for student-initiated questions, independent thought or interaction between students (VAST, 1998). This teacher-centered method of teaching also assumes that all students have the same level of background knowledge in the subject matter and are able to absorb the material at the same pace (Lord, 1999).

## **ROLE OF A TEACHER IN CONSTRUCTIVIST CLASSROOM**

In the constructivist classroom, the teacher's role is to prompt and facilitate discussion. Thus, the teacher's main focus should be on guiding students by asking questions that will lead them to develop their own conclusions on the subject. David Jonassen identified three major roles for facilitators to support students in constructivist learning environments: Modelling; Coaching and Scaffolding.

## **OPERATIONAL DEFINITION OF THE TERMS USED**

### **Traditional Teaching Method:**

In the present study, the researcher has used the term 'Traditional Teaching Method' in the sense of instruction only through lecture method, assisted by chalk board or text book.

### **Constructivist Teaching Method:**

One of the primary goals of using constructivist teaching is that students learn how to learn by giving them the training to take initiative for their own learning experiences. Here the researcher has used the Term 'Constructivist Teaching Method' in the following ways:

- A teaching where all learners are actively involved.
- A teaching where classroom environment is democratic.
- A teaching where all activities are interactive and student-centered.
- A teaching where the teacher facilitates a process of learning in which students are encouraged to be responsible and autonomous.
- A teaching where students work in a groups through practical experiences.
- A teaching where teacher taught his students by giving many practical examples.
- A teaching where students can learn their subject matter individually through experiment.

## ACADEMIC ACHIEVEMENT

In the present study 'Academic Achievement' refers to the marks obtained on the achievement test in Physical Science developed by the researcher related to the units taught through the constructivist teaching method as well as traditional teaching method.

## OBJECTIVES OF THE STUDY

1. To compare mean scores on the achievement test in Physical Science of the two groups of students of class VIII to be taught Physical Science with the use of constructivist teaching method and traditional teaching method before the experimental treatment.
2. To compare mean scores on the achievement test in Physical Science of the two groups of students of class VIII to be taught Physical Science with the use of constructivist teaching method and traditional teaching method after the experimental treatment.
3. To study the effectiveness of constructivist teaching method and traditional teaching method in relation to academic achievement of VIII grade students in Physical Science.

## HYPOTHESES OF THE STUDY

*H<sub>o.1</sub>*. There is no significant difference in the mean scores on the achievement test in Physical Science of VIII grade students to be taught Physical Science with the use of constructivist teaching method and traditional teaching method before experimental treatment.

*H<sub>o.2</sub>*. There is no significant difference in the mean scores on the achievement test in Physical Science of VIII grade students to be taught Physical Science with the use of constructivist teaching method and traditional teaching method after experimental treatment.

*H<sub>o.3</sub>*. There is no significant difference in the mean scores on the achievement test in Physical Science of VIII grade students to be taught Physical Science with the use of constructivist teaching method and traditional teaching method.

## METHODOLOGY OF THE STUDY

**Method:** The experimental method was used in the present study.

**Sample:**

The sample of the present study was confined to 50 students of class VIII from Bengali medium schools of Burdwan district in West Bengal.

**Tools used:**

Academic Achievement Test in the subject of Physical Science for Class VIII developed by the researcher herself was used in the present study.

**Statistical Techniques Used:**

In the present study 't' test was used to analyse the data.

**Design of the Study**

Stages	Control Group	Experimental Group
<b>1. Pre-Test</b>	Measurement of achievement in Physical Science before the treatment.	Measurement of achievement in Physical Science before the treatment.
<b>2. Treatment</b>	Teaching Physical Science through Traditional method.	Teaching Physical Science through constructivist method.
<b>3. Post- Test</b>	Measurement of achievement in Physical Science after the treatment.	Measurement of achievement in Physical Science after the treatment.

**RESULTS AND DISCUSSION**

**Table-1. Significance of difference between mean scores of pre-test of Control group and Experimental group in respect to their Achievement test.**

Groups	N	MEAN	S.D.	t-value	Level of significance
Control	25	32.50	4.53	0.33	Not significant at 0.05&0.01 level
Experimental	25	32.09	4.19		

$$df=25+25-2=48$$

Table value at 0.05 level =2.01

At 0.01 level = 2.68

### Interpretation:

If we look at Table-1, it shows that the obtained t-value 0.33 which is less than the table value both at 0.05 and 0.01 level of significance. Hence, the null hypothesis no.-1 was accepted. It means that there is no significant difference in the mean scores before the experiment between the groups taught through traditional teaching method and constructivist teaching method.

**Table-2. Significance of difference between mean scores of post-test of Control group and Experimental group in respect to their Achievement test.**

Groups	N	MEAN	S.D.	t-value	Level of significance
Control	25	34.78	4.97	7.53	Significant at 0.05&0.01 level
Experimental	25	45.63	5.23		

df=25+25-2=48, Table value at 0.05 level =2.01 and at 0.01 level = 2.68

### Interpretation:

If we look at Table-2, it shows that the obtained t-value 7.53 which is higher than the table value both at 0.05 and 0.01 level of significance. Hence, the null hypothesis no.-2 was rejected. It means that there is significant difference in the achievement test of the VIII grade students taught through traditional teaching method and constructivist teaching method.

**Table-3. Significance of difference between mean scores of pre-test and post-test of Experimental group in respect to their Achievement test.**

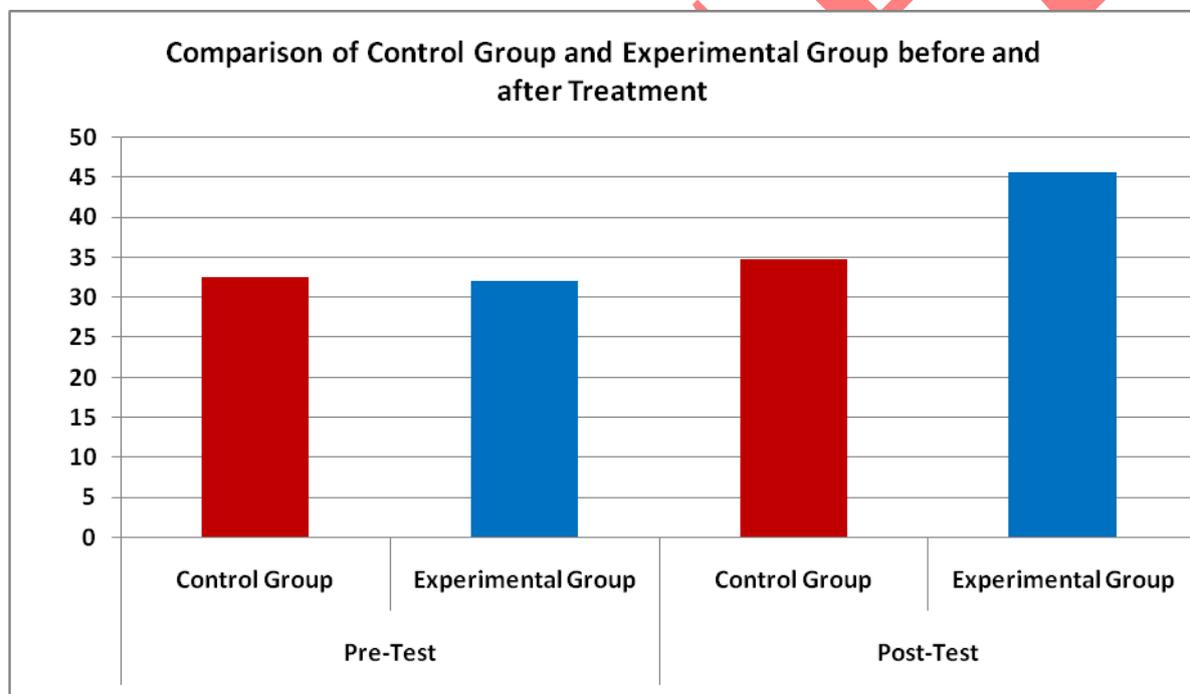
Groups	N	MEAN	S.D.	t-value	Level of significance
Pre-Test	25	32.09	4.19	10.18	Significant at 0.05&0.01 level
Post-Test	25	45.63	5.23		

$df=25+25-2=48$ , Table value at 0.05 level =2.01 and at 0.01 level = 2.68

### Interpretation:

If we look at Table-3, it shows that the obtained t-value 10.18 which is higher than the table value both at 0.05 and 0.01 level of significance. Hence, the null hypothesis no.-3 was rejected. It means that there exists significant difference between the mean pre-test and post-test scores of VIII grade students of experimental group. It shows that the constructivist teaching method is more effective on students' achievement in the subject of Physical Science than the traditional teaching method.

### Graph-1. Comparison of Control Group and Experimental Group in the Achievement Test of Physical Science.



Graph-1 shows that two groups of students were equal in their academic achievement before the treatment and after the treatment control group significantly perform poor than the experimental group. It explores that treatment has a positive effect on academic achievement. Therefore, we can say that constructivist teaching method is significantly better than the traditional method of teaching in the academic achievement of VIII grade school students in the subject of Physical Science.

### FINDINGS OF THE STUDY

1. The constructivist teaching method is found to be significantly more effective and fruitful in teaching Physical Science as compared to traditional method of teaching.

2. The constructivist teaching method is found to be significantly more effective to enhance the performance of students in their academic achievement in the subject Physical Science as compared to traditional method of teaching.
3. The constructivist teaching method makes teaching learning process less abstract and meaningful to the students.
4. The constructivist teaching method is found to be significantly more fruitful in the formation of concept among the VIII grade school students as compared to traditional method of teaching.
5. The constructivist teaching method motivates students better to their learning than the traditional method of teaching.

## CONCLUSION

The main conclusion of the study is that the Constructivist Teaching Method is more effective and fruitful in teaching Physical Science than the Traditional Method of Teaching. Different types of practical examples, experiments and cooperative activities made the constructivist method of teaching effective and interesting to the students.

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