

## EFFECT OF 5E MODEL IN TEACHING LEARNING PROCESS IN SCIENCE AT ELEMENTARY LEVEL

**SUBRAT KUMAR CHHATOI**

(Asst. Tr.) School & Mass Education Deptt., Odisha

**BISWANATH SAHOO**

(Asst. Tr.) School & Mass Education Deptt., Odisha

**BHASKAR CHANDRA SAHOO**

(Asst. Tr.) School & Mass Education Deptt., Odisha

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### ABSTRACT

Present study examined effect of 5E model in teaching learning process in science subject of elementary school students. The study used sample of 60 elementary school students from Dompada block of cuttack district, Odisha. Self-developed lesson plan on 5E model and achievement test was used for the study. Findings indicated there is a significant difference between 5E model and traditional approach in science at elementary level. The group taught by constructivist approach of teaching (5E model) have better achievement in science than the group taught through traditional approach. Implications for elementary students, teachers, teacher educators, parents and curriculum were suggested.

**Keywords:** Constructivist approach of teaching (5E model), Elementary school students

### 1.0 INTRODUCTION

5E Instructional Model is the model which is based on research oriented constructivist learning theory and experimental activities. It was developed by Roger Bybee, in 1993, which involves five instructional steps; Engage, Explore, Explain, Elaborate and Evaluate. The National Curriculum Framework for School Education (2000) stressed the importance of changes in the assessment area incorporating competency based teaching and mastery learning. This was followed by National Curriculum Framework (2005), which emphasized upon constructivist approach to learning process and development of values in students. Right to Education (RTE act 2009) also emphasized that learning through activities, discovery and exploration in a child friendly and child-centered manner. The focus of teaching is one of guiding the learner, focusing on knowledge construction rather than knowledge transmission.

### 2.0 RATIONALE OF THE STUDY

The 5E Instructional Model provides experiences and time for students to recognize the inadequacy of their current ideas, to explore new ways of explaining the world, to reflect on their thinking, and to construct new conceptions of the natural world. Walia (2021), Chowdhury (2022), Gharibi & Aydisheh (2015), Raval (2023) concluded that Constructivist Instructional Programme was found significantly effective as compared to traditional approach.

The traditional teacher-centered approach and text books guided classrooms has failed to bring about the desired outcomes among students. So there is alternative to change the focus of the classroom to learner-centered or more appropriately to the learning-centered using a 5Econstructivist approach by providing space for the child to construct his knowledge. Most of the study indicates that constructivist approach (5E model) of teaching is better than traditional method of teaching in mathematics and science in outside Odisha and in English medium schools. No study reported that conducted in Odisha and in Odia medium rural based schools in science subject. Therefore the researcher will decided to study the effect of constructivist approach of teaching (5E model) in science at elementary level.

### **3.0 STATEMENT OF THE PROBLEM**

#### **“EFFECT OF 5E MODEL IN TEACHING LEARNING PROCESS IN SCIENCE AT ELEMENTARY LEVEL”**

### **4.0 OBJECTIVE**

To find out the difference between constructivist approaches (5Emodel) and traditional approach in teaching learning process at elementary level.

### **5.0 HYPOTHESES**

There is no significant difference between constructivist approach (5Emodel) and traditional approach of teaching learning process in science at elementary level.

### **6.0 METHODOLOGY**

The method adopted in the study is quasi-experimental in nature having control group pre-test and post-test design. The present study was conducted 60 numbers of students of Govt. UPS Bheda Ramachandra Pur, Banki, Cuttack and purposive sampling was used for this research. The investigator used the school record of the summative assessment of students, to determine the level of performance on achievement in science. Then, the students were divided into two groups, control and experimental group on the basis of marks secured in the summative assessment. Students having similar marks in the summative assessment are allotted to both control and experimental group randomly. Afterward the researcher conducted the experiment for 3 weeks. The researcher covered 2 units from science book for Class VII. Experimental group was taught through constructivist approach (5Emodel) of teaching and traditional method for control group. After experimental treatment post-test was conducted on both of the groups. The result of pre-test and post-test of both the groups compared to find out the effect of constructivist approach (5Emodel) of teaching on achievement in science. The result of pre-test and post-test of both the groups compared to find out the effect of constructivist approach (5Emodel) of teaching on achievement in science.

#### **6.1 Data Analysis and Interpretation**

The hypothesis was there is no significant difference between constructivist approach (5Emodel) and traditional approach of teaching learning process in science at elementary level.

The investigator compared the post-test score of achievement in science of control and experimental group by using t-test.

Variables	Group	N	Mean	SD	Mean Difference	df	t-value	Significance
	<b>Control</b>	<b>30</b>	<b>27.93</b>	<b>3.433</b>	<b>6.367</b>	<b>29</b>	<b>8.863</b>	<b>0.000</b>
<b>Achievement</b>	<b>Experimental</b>	<b>30</b>	<b>34.30</b>	<b>3.239</b>				

The table indicates that mean of achievement in science for control group is 27.93 with SD of 3.43, and for experimental group it is 34.30 with SD is 3.23. Mean difference score of achievement in science between control and experimental group is 6.367 and calculated t-value is 8.86, which is significant at 0.01 levels. The hypothesis “there is no significant difference between constructivist approach (5E model) and traditional approach in science at elementary level” is rejected at 0.01 levels. Hence the hypothesis “there is a significant difference between constructivist approach (5E model) and traditional approach in science at elementary level” is accepted. It can be concluded that the group taught by constructivist approach of teaching (5E model) have better achievement in science than the group taught through traditional approach. It can be concluded from above discussion that achievement in science both control and experimental groups are not similar after experiment. It can be said that achievement in science, experimental group of students has improved significantly as compared to control group of students. It can be concluded that the group taught by constructivist approach (5E model) have better achievement in science than the group taught through traditional approach.

### 6.2 Major Findings of the Study

There is a significant difference in means of achievement in science of control and experimental group in post-test at 0.01 levels. The mean of experimental group is significantly higher than the mean of control group on achievement in science. There is a significant effect of constructivist approach (5E model) of teaching on achievement in science.

### 6.3 Educational Implications

The present study found that the effect of constructivist approach 5E model in teaching and learning in science at elementary level. The present study has the following contribution.

This study was lesson plan based on 5E model which will be utilized by teachers/teacher educators/trainers/students for teaching learning science. The study will be useful for the teachers to teach in a constructivist way, arrange different activities and create constructivist classroom environment which helps students to dipper learning. The study will be helpful for educational authorities, curriculum developers, and parents.

### 7.0 CONCLUSION

The present study it can be concluded that constructivist approach (5E model) definitely provides greater opportunity for the development of achievement in science during each stage of 5E model. In the end, looking at the prospect of constructivist approach (5E model) of teaching, it can be stated that all teachers and educational administrators need to be oriented to use constructivist approach (5E model) of teaching method and create a conducive atmosphere to development of achievement in science among the students.

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