

# Effectiveness of 5E model based teaching on Academic Performance of school going students of Assam

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## **ABSTRACT:**

*This paper highlights the study “5E model based teaching on Academic Performance of school going students of Assam”. An experimental research is carried out for the study. The investigator used experimental method for the investigation. The data had been collected through self-made questionnaire. Researcher had given treatment to the experimental group for 20 days. Experimental group had been taught by the investigator and control group had been taught by the subject teacher through traditional teaching method of the school. The population of the study consists of all the VIII grade students studying in BHSS School, Assam. Total sample size of the study was 60. For the experimental group, 30 students were selected and for the control group, 30 students were selected by using purposive sampling technique. Researcher used 5E model based lesson plan for the treatment period. SPSS 2.0 was used to calculate the collected data. ‘T’ test measures were used to see whether there had major variations of achievement within the two groups or not. The main aim of the study was to analyze the distinction between the both group on achievement in English at post test phase or after treatment. The major findings indicate that 5E model based teaching learning has significant effective on Academic progress than traditional teaching method.*

**Keywords:** 5E model based teaching, Academic Performance

## **Introduction**

Constructivism is only a philosophy of meaning-making or learning. According to this theory, people construct their own meaning and comprehension by fusing new experiences with what they already know and take for granted. Constructivists hold that truth and knowledge are created by the student and do not exist elsewhere. Thus, by actively engaging in the learning process, learners develop their own knowledge, according to constructivists.

Constructivism places a strong emphasis on the individual way that each learner creates knowledge from experience (**Olusegun, 2015**). Constructivist methodology founded The 5E model is an instructional strategy that allows pupils to generate their own knowledge. The 5E Model of Instruction encourages students to learn actively. Pupils engage in activities beyond reading and listening. Inquiring, observing, modelling, analysing, explaining, drawing conclusions, arguing from facts, and discussing their own understanding are among the skills they acquire. Students collaborate with their peers to develop and execute investigations, solve challenges, and create explanations. . **Bybee (1997)** states that “through introspection, engagement with peers, and engagement with their surroundings, students use this approach to redefine, restructuring, expand upon and alter their original ideas.” **Bakris & Adnan (2021)** found that implementing the 5Es learning paradigm was significant and improved students' mastery.

### **Stages of 5Es**

- **Engagement:** The instructor's objective at the beginning of the cycle is to assess the students' prior knowledge and/or identify any possible misconceptions. This motivating, pupil-centred stage to pique students' curiosity about the impending subject.
- **Exploration:** This phase gives the pupils a shared, tangible learning experience after the engagement phase, which motivates a concentrate on the concept mentally. Additionally, active investigation is incorporated throughout this student-centred phase.
- **Explanation:** Following the exploration phase comes a "minds-on" phase that is more teacher oriented and informed by the prior experiences of the students during the discovery phase.
- **Elaboration:** This learning cycle's activities ought to build on newly learned skills and motivate students to use their newly acquired conceptual understanding.
- **Evaluation:** Traditional classroom assessment is substantially different from that of an inquiry-based learning environment. It is appropriate and should be included to use both formal and informal assessment procedures.

### **Need of the study**

For educators and learners alike, creative teaching methods can yield several advantages. Innovative teaching techniques can aid in producing a more productive learning environment for students by fostering an atmosphere that is stimulating and supportive of active learning. Our educational system has long been criticised for having no overarching goal and a dull curriculum. Sometimes, the Indian educational system prevents pupils from pursuing their interests or aspirations, which destroys their creativity and cognitive abilities. Students are being forced to choose or pursue careers in fields they are not attracted towards further due to the system's rigidity and lack of options, which is resulting in mediocre performance. By addressing the flaws in the current educational system, the National Education Policy 2020 plays a significant role in laying the groundwork for educational changes. The majority of educators at the university solely employ the lecture technique; they do not use creative teaching methods. Developing a smart nation is impossible in any case if education is not delivered in an intelligent manner. Innovative methods should be applied to the entire educational system. Before they begin teaching, teachers should learn about a teaching framework,

which can increase student accomplishment to previously unheard-of levels and increase teaching effectiveness more quickly than any conventional method. Students can develop their own knowledge through a sort of teaching technique called constructivism, which is based on the 5E learning cycle. Through constructivist learning activities, students were able to increase their success and cultivate positive attitudes. (Oguz, 2008). When learning using the 5E paradigm, students are more engaged than when using other approaches (Amann 2005). There for the investigator wants to see the effect of this method on academic performance after applying this practice, whether its work or not.

### **Objectives of the present study**

1. To study the significance difference between experimental group and control group in pre-test scores.
2. To study the significance difference between pre-test and post test scores of experimental group.
3. To study the significance difference between pre-test and post test scores of control group.
4. To study the significance difference between experimental group and control group in post test scores.

### **Hypotheses of the study**

1. There is no significance difference between experimental group and control group on achievement in English at pre- test phase.
2. There is no significance difference between pre-test and post test scores of experimental group.
3. There is no significance difference between pre-test and post test scores of control group.
4. There is no significance difference between experimental group and control group in post- test scores.

### **Methodology**

#### **Design of the study:**

For this study researcher has used experimental design. A pre-test post-test control group quasi experimental design was employed. It involved two groups of student's one experimental group and one control group; the experimental group were taught through 5E learning methods by the investigator and the control group was taught with conventional method by the subject teacher of the school.

#### **Population of the study:**

All the VIII grade students of BHSS students of Assam selected for the present study.

#### **Sample Size of the study:**

Total 60 students were selected as the sample for the present study. 30 students selected for experimental group and 30 students selected for control group.

#### **Sampling Technique:**

Purposive sampling technique used as a sampling technique for the present study.

**Tools used for the present study:**

For the present study researcher prepared lesson plan based on Constructivist Approach based 5E model based lesson plan to teach experimental group and self-made questionnaire to assess achievement in English of VIII grade students.

**Analysis and Interpretation:**

**Objective 1 & Hypotheses 1:**

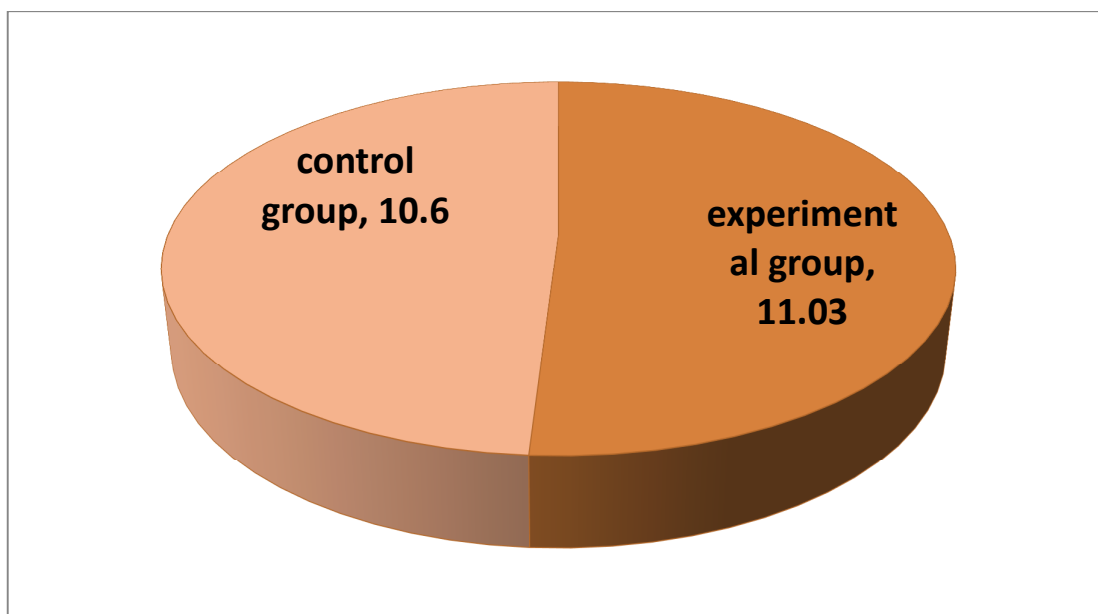
**Table No. 1**

<b>Experimental Group</b>	<b>N</b>	<b>Mean</b>	<b>S.D</b>	<b>df</b>	<b>t-value</b>	<b>Levels of Significance</b>
Pre-Test Scores	30	11.03	3.11	58	.627	Significant at 0.05 level
<b>Control Group</b>	30	10.60	2.51			
Pre-Test Scores						

**Interpretation:**

Table No. 1 showed that the mean scores of Academic Achievement and SD of Experimental group and Control Group prior to the experiment (pre-test) are **11.03** & **10.60** respectively and Standard Deviation are **3.11** & **2.51**. T- Value at 58 df is .627 which is less than tabulated value. The comparison of mean scores further reveals that the mean of achievement scores of control group is comparatively similar in pre- test scores than pre-test scores. There for the hypotheses there has no difference at pre- test phase is accepted.

**Diagrammatic Representation:**



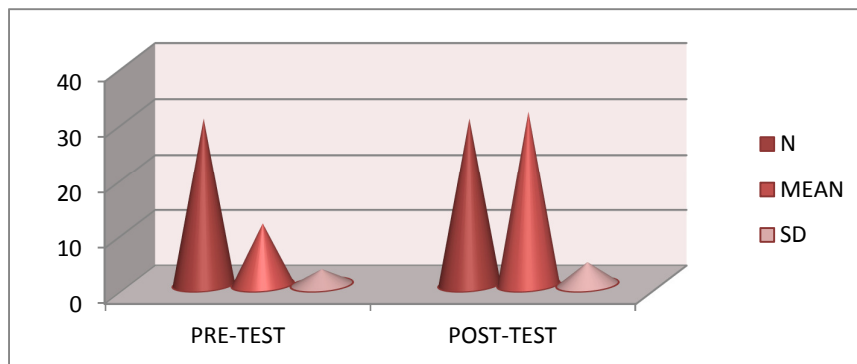
**Objective 2 & Hypotheses 2:****Table No. – 2**

Experimental Group	N	Mean	S.D	df	t-value	Hypotheses testing Report
Pre-Test scores	30	11.03	2.83	29	24.38	<b>Hypotheses Rejected</b>
Post-Test scores	30	31.23	4.08			

(Significant at 0.05 level)

**Interpretation:**

Table no. 2 showed that the mean scores of Academic Achievement and standard deviation of Experimental Group (5E Model Based Teaching) prior to the experiment (pre-test) are **11.03** & **2.83** respectively. After treatment these values were **31.23** & **4.08** respectively. The 't' value at **29** is **24.38** which is more than table value at **0.05** level. The comparison of mean scores further reveals that the mean of achievement scores of experimental group is more at post-test phase. Hypothesis "There is no significant Effect of 5E Model Based Teaching method on Academic Achievement of class VIII grade students" is rejected. This shows that there exist significant effect of Learning through 5E model in pre & post-test scores in English. Results showed that at the post-experiment stage, the experimental treatment was successful in raising the Academic Performance of VIII<sup>th</sup> grade students.

**Diagrammatic Representation:****Objective 3 & Hypotheses 3:****Table no.3**

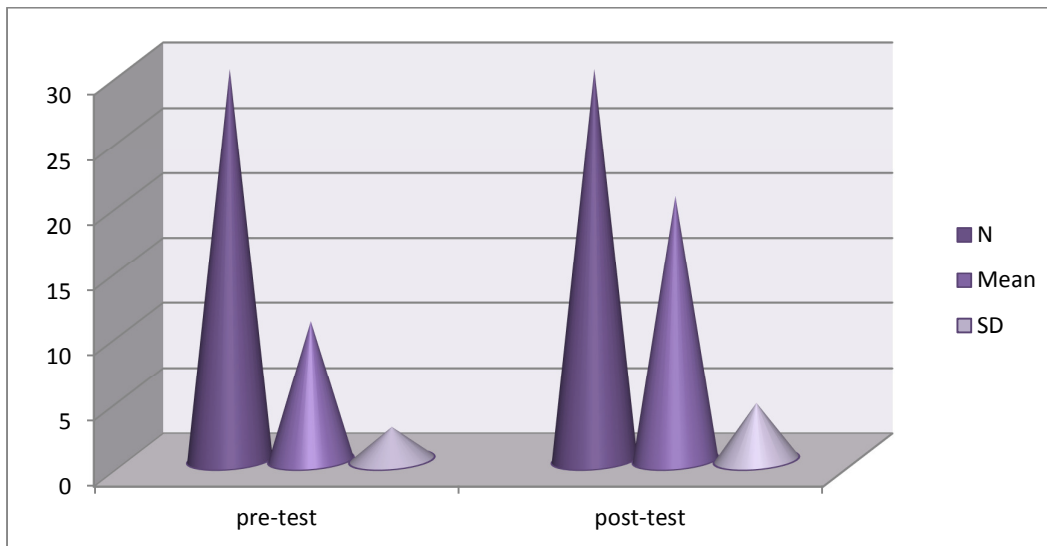
Control Group	N	Mean	S.D	df	t-value	Hypotheses testing report
Pre-Test scores	30	10.60	2.51	29	12.14	<b>Hypotheses Rejected</b>
Post-Test scores	30	20.23	4.32			

(Significant at 0.05 level)

**Interpretation:**

Table no. 3 showed that the mean scores of Academic Achievement and standard deviation of Control Group prior to the experiment (pre-test) are **10.60** & **2.51** respectively. After treatment these values were **20.23** & **4.32** respectively. The comparison of mean scores further reveals that the mean of achievement scores of control group is comparatively higher in post- test phase.

**Diagrammatic Representation:**



**Objective 4 & Hypotheses 4:**

**Table No. – 4**

Experimental Group	N	Mean	S.D	df	t- value	Hypotheses testing report
Post-Test scores	30	31.23	4.08	58	10.126	<b>Hypothesis Rejected</b>
<b>Control Group</b>	30	20.23	4.32			
Post-Test scores						

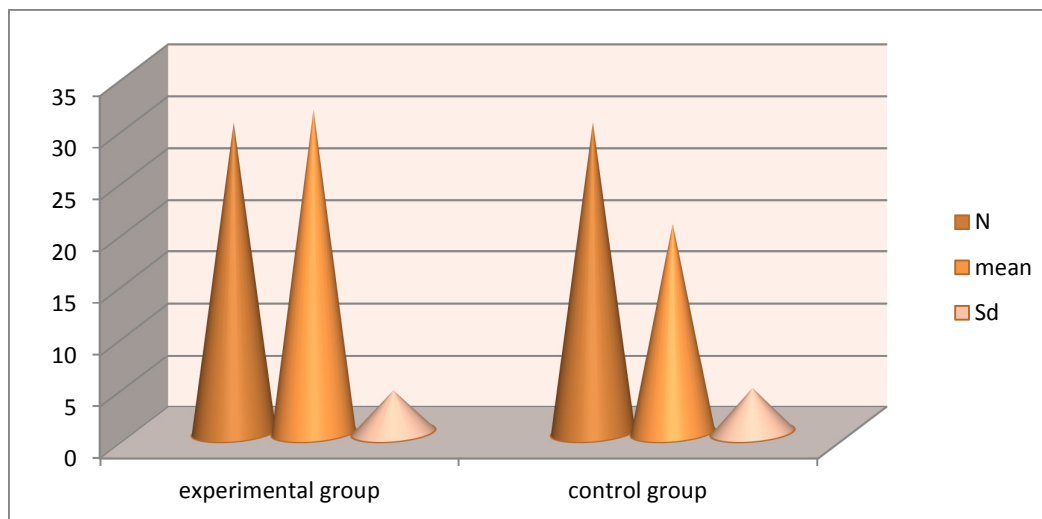
**(Significant at 0.05 level)**

**Interpretation-**

Table no.4 showed the achievement scores of Experimental group (5E model based teaching) and Control Group in post-test was **31.23** & **20.23** respectively with standard deviation **4.08** & **4.32** respectively. The ‘t’ value at **58** df is **10.126** which is greater than table value at **0.05** level. Hypothesis “There exist no significant difference in Academic Achievement through 5E model based teaching and Conventional method at post experiment stage” is not accepted. It indicates that there exist significant differences in

achievement in English through 5E model based teaching and Conventional method at post experiment stage. Thus, it is interpreted that experimental group is more effective than Conventional Learning in enhancing the achievement of VIII grade students at post experiment stage.

### Diagrammatic Representation:



### Finding and results of the study:

From the analysis part it was found that-

1. There exist no distinction between experimental group and control on achievement in English at Pre-test phase. Before the treatment the score of students in English was almost same.
2. It was found that there is significance difference between pre-test score and post- test score of experimental group. There for it can conclude that 5E model based teaching has significant effect on achievement in English.
3. It was found that there is a significant difference between pre-test and post-test scores of control group on achievement in English.
4. It was also found that there is significance difference in post test scores between experimental group and control group as the mean score of experimental group at the post-test phase is 31.23 and mean score of control group is 20.23 which is lower than the experimental group.so it can be said that 5E model based teaching has more impact on achievement in English than the traditional teaching method.

From the above findings it can be conclude that 5E learning method has significantly impact on student's academic growth. Teachers from different grade level may apply this method in the teaching learning process.

## References:

- [1]. Amann, G. (2005). "Exploring physics in classroom" Books, guides class room teacher. Retrieved from ERIC database. (ED506062)
- [2]. Bakris, S., & Adnan M. (2021). Effect of 5E learning model on Academic Achievement in teaching mathematics: a meta-analysis study. *Turkish Journal of Computer and Mathematics Education*, 12(8), 196-204.
- [3]. Bybee, R. (1997). *Achieving scientific literacy: From purposes to practices*. Portsmouth, NH: Heinemann Publications.
- [4]. Ismiyatin, S. A. V. (2015). Application of learning cycle model (5E) learning with chart variation towards student's creativity. *Indonesian Journal of Science Education*, 4(1), 56-66
- [5]. Oguz, A. (2008). The Effects of Constructivist Learning Activities on Trainee Teachers' Academic Achievement and Attitudes. *World Applied Science Journal*. 4(6), 837-848. IDOSI Publications.
- [6]. Olusegun, S. (2015). Constructivism Learning Theory: A Paradigm for Teaching and Learning. *Journal of Research & Method in Education*. 5(6), 66-70
- [7]. Srinivas Kadem. (2013). Effectiveness of Constructivist Approach on the Achievement in Science of IX Standard Students. *Edutracks*, Vol. No. 12. No. 9 Neelkamal Publications (P) Ltd., Hyderabad. India, pp 22-31

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