

## **“Impact of Constructivism on the Achievement of V standard students in Mathematics.”**

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### **Abstract:**

The present study is an attempt to know the Impact of Constructivism on the Achievement in Mathematics. 100 samples were drawn from class V standard students taken from Kamrup(rural) District of Assam. Instructional material based on constructivistic method were prepared and implemented on the students after pretest and gain scores were computed after posttest for all the students. To collect the relevant data, an achievement test was conducted by the investigator. The present paper is tried to highlight the need and importance of constructivistic method, specially in mathematics of V standard students. Statistical techniques like- chi-square, Mean, S.D, t-test etc were used to test the hypotheses of the present study.

Key words: Impact, Constructivism, Achievement, Mathematics.

### **Introduction:**

Constructivism theory is a new theory introduced in the field of learning. The concept of constructivism has roots in classical antiquity, going back to Socratic’s dialogues with his followers, in which he asked questions that led his students to realize for themselves the weaknesses in their thinking. The Socratic dialogue is still an important tool in the way of constructivist educators to assess their students’ learning and plan new learning experiences.

Constructivism is simply a learning or meaning-making theory. This theory proposes that people create their own meaning and understanding, combining what they already know and believe to be true with new experience with which they are confronted. Constructivist believe that knowledge and truth are constructed by the learner and do not exist outside his mind. Therefore, according to constructivists, learner construct their own knowledge by actively participating in the learning process.

In this century, Jean Piaget and John Dewey developed theories of childhood development and education, what we now call Progressive Education, that led to the evolution of constructivism.

Jean Piaget was the founder of constructivism theory and Jerom Bruner was the supporter of constructivism and discovery learning. Seymour Papert also one the supporter of constructivism theory. There were some writers who influenced the development of constructivism in learning. These were John Dewey, Montessori, Wladyslaw Strzeminiski, Lev Vygotsky etc.

Constructivism is basically a theory based on observation and scientific study about how people learn. It says that people construct their own understanding and knowledge of the world

through experience. When we encounter something, we have to reconcile it with our previous ideas and experiences for which either one previous ideas may be changed or new information's or ideas may be proved as irrelevant. Learners are active creators of their own knowledge.

In the classroom, the constructivist view of learning can point towards a number of different teaching practices. In the most general sense, it usually means encouraging students to use active techniques (experiments, real-world problem solving) to create more knowledge and then to reflect on and talk about what they are doing and how their understanding is changing.

By applying constructivistic idea, teachers are able to encourage students to constantly assess how the activity is helping them to gain understanding. By questioning themselves

and their strategies students in the constructivist classroom ideally became "expert learners". This gives them over broadening tools to keep learning. With a well planned classroom environment, the students learn 'how to learn'.

Constructivism is an approach to teaching and learning is based on the premise that cognition (learning) is result of mental construction. In other words students learn by fitting new information together with what they already know. Constructivists believe that learning is affected by the context in which an idea is taught as well as by students' belief and attitudes. Constructivistic idea helps the students to control their own learning process, and they lead the way by reflecting on their experiences. The teacher helps to create situation where the students feel safe in questioning and reflecting on their own processes, either privately or in group discussions. The teacher should also create activities that lead the students to reflect on his or her prior knowledge and experiences.

Students need to construct their own understanding of each mathematical concept, so that the primary role of teaching is not to lecture, explain, or otherwise attempt to 'transfer' mathematical knowledge, but to create situations for students that will foster their making the necessary mental constructions. A critical aspect of the approach is a decomposition of each mathematical concept into developmental steps following a Piagetian theory of knowledge based on observation, and interviews with students as they attempt to learn a concept.

It's not surprising that constructivism has a strong voice in the current dialogue on mathematics. Many are concerned about the success or lack of success of mathematics. Constructivism cuts a nice path between the main ideas that have influenced how mathematics has been taught. The concept of mathematics as facts to be transmitted to

the student, and the view that some students have it and some don't, where the educator's task is to figure out how "smart" students are chosen the right tasks for them to perform and offer rich information for improving the students who aren't succeeding.

In contrast, constructivism focuses our attention on how people learn. It suggests that mathematical knowledge results from people forming models in response to the questions and challenges that come from actively engaging math problems and environments not from simply taking in information, nor as merely the blossoming of an innate gift. The challenge in

teaching is to create experiences that engage the student and support his or her own explanation, evaluation, communication, and application of the mathematical models needed to make sense of these experiences.

Given this view, there are many approaches to improving teaching, look for different ways to engage individual students, develop rich environments for exploration, prepare coherent problem sets and challenges that focus the model building effort, elicit and communicate student perceptions and interpretations, and so on. That is why the investigator try to explore here the theory and applications of constructivism in mathematics of class V standard students.

### **Need of the study:**

Low achievement in Mathematics is a major problem seen among school students. Most of the students have an anxiety towards mathematics. Constructivistic method helps in maximum utilization of sense organs and thereby facilitate gaining of knowledge and improve achievement level of the students in mathematics.

Constructivist approaches stress the importance of learners being engaged in constructing their own knowledge. The constructivist theories of learning dominated today and propagate that learning is achieved by the active construction of knowledge

supported by various perspectives within meaningful contexts and social interactions. It emphasizes that there is no single version of reality, rather a multitude of realities situated within each learner. Learning is dependent upon the learner's ability to analyze, synthesize and evaluate information to create meaningful, personalized knowledge. The present study is conducted to know the impact of Constructivism on the Achievement of V standard students in Mathematics.

### **Statement of the problem:**

The problem of the present study is entiled as- **“Impact of Constructivism on the Achievement of V standard students in Mathematics.”**

### **Objectives of the study:**

1. To compare the achievement of mathematics through constructivistic method and conventional method of teaching.
2. To study the impact of construtrivistic method on achievement of boys and girls of in mathematics.
3. To study the impact of construtrivistic method on achievement of govt. and private students in mathematics.

### **Hypotheses:**

H1: Constructivistic method is more effective than conventional method on the achievement in mathematics.

Ho1: There exist no significant difference between boys and girls achievement in mathematics through constructivistic method

Ho2: There exist no significant difference between govt. and private students achievement in mathematics through constructivistic method.

**Methodology:**

Looking into nature and need of the present study experimental method is used to collect the relevant data. A self structured achievement test in Mathematics was prepared by the investigator. To assess the impact of constructivism on the achievement of the students in Mathematics pre-test and post-test were constructed and applied by the investigator. Both the tests were designed for one and half hour duration and set for 50 marks.

**Sample:**

100 V standard students were drawn from Kamrup (rural) district. The sampling technique used was that of Purposive Cluster Sampling.

**Tools used:**

- Pre-test and post-test were constructed by the investigator.
- Achievement test in Mathematics.
- Four modules for four lessons in Mathematics based on constructivistic method of teaching prepared by the investigator.

**Delimitation of the study:**

1. The study is delimited to class V standard students from Kamrup (rural) District.
2. 100 students are taken as sample for the present study.

**Analysis and Interpretation:**

The data obtained from the pre-test and post-test was analyzed by using appropriate statistical technique such as- Chi-square, Mean, S.D. and t-test.

**Objective no 1:** To compare the achievement in mathematics through constructivist method and conventional method of teaching.

Ho1: Constructivistic method is more effective than conventional method on the achievement in mathematics.

**Table 1:Chi-square value and level of significant**

Variable	Calculated chi-square value	Df	Critical chi-square value		Level of significance
			5%	1%	

Constructivistic method	4.25	2	5.99	9.21	Not significant
Conventional method					

Table 1: shows the chi-square value of achievement in mathematics through constructivist method and the conventional method of teaching . Here the calculated chi-square value is 4.25 which is less than both the levels of significance. Consequently formulated hypothesis i.e. Constructivistic method is more effective than conventional method on the achievement of V standard students in mathematics is accepted. The result reveals that achievement in Mathematics is higher through constructivistic method than conventional method.

**Objective no 2:** To study the impact of constructivist method on achievement of boys and girls of in mathematics.

Ho1: There exist no significant difference between boys and girls achievement in mathematics through constructivist method.

**Table-2: t-test Result for comparison of Boys and Girls.**

Variable	Sample	N	Mean	SD	t-value	Obtained t-value	Level of significance
					0.05		
Sex	Boys	50	15.57	3.14	2.04	1.99	Not Significant at 0.05 level
	Girls	50	14.03	2.35			

Table 2 shows that the obtained t-value is less than the table 't'-value at 0.05 level of significance of difference. Therefore, formulated hypothesis is accepted. It is concluded that there is no significant difference between boys and girls achievement in Mathematics. Result shows that constructivistic method was found equally effective for both boys and girls of V standard students in increasing their achievement in Mathematics.

**Objective no 3:** To study the impact of constructivist method on achievement of govt. and private students in mathematics.

Ho2: There exist no significant difference between govt. and private students achievement in mathematics through constructivist method.

**Table-3: t-test Result for comparison of Govt and Private school students.**

Variable	Sample	N	Mean	SD	t-value	Obtained t-value	Level of significant
					0.05		
Sector	Govt.	50	16.21	2.87	2.04	3.79	Significant at 0.05 level
	private	50	18.06	4.13			

Table 3 shows that the obtained t-value is higher than the table 't'-value at 0.05 level of significance of difference. Therefore, formulated hypothesis is rejected. It is concluded that

there exist a significant difference between Govt. and Private school student's achievement in Mathematics. Therefore study shows that achievement of private school students is higher than govt. school students. Because Private school provides better facilities and more attention in achievement of students. Condition of private school is also better than that of govt school. As a result constructivistic method is found to be more effective in private school students' achievement in Mathematics.

### **Conclusion:**

The present study revealed that achievement in mathematics of V standard students taught through constructivistic method was more effective than conventional method of teaching. This study has an important educational significance for teaching mathematics as a compulsory subject for V standard students. It is an effective method that improve the achievement in Mathematics. Hence the mathematics teachers have to change their traditional method and way of teaching and adopt constructivistic method of teaching to teach the mathematics in an effective way and to reduce the mathematics anxiety among the students to improve their achievement.

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