EFFECTIVENESS OF CONSTRUCTIVIST APPROACH IN MATHEMATICS

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ISSN 2277-7733
Volume 8 Issue 2, September 2019

Abstract

In the present study Researcher tried to Study the effectiveness of Constructivist approach in Mathematics. Random sampling technique was used for selecting the school and the total sample compressed 89 students in which 51 students in Experimental group and 38 students in control group were selected with the use of cluster sampling technique. Researcher develop various activities for experiment like as Envelop Techniques, Model of the square and square root and Model of the circle. Researcher collect the data with the use of Achievement test and Questionnaire for data analysis. Researcher was used Randomized pre-test post-test equivalent group design as experimental design. Researcher used t-test for comparison and calculate the percentage for analysis of questionnaire related to the constructivist approach. Experimental group and Control group were equal at the stage of experiment start. Constructivist approach and Conventional teaching method were equally effective in mathematics. Most of the students are interested in all the constructivist activity. Student taught in constructivist learning environment have significantly enhanced their understanding and application abilities as compared to other abilities like knowledge and skill.

Keywords: *Constructivist approach, effectiveness, conventional teaching method.*

The main goal of mathematics education in schools is the mathematisation of the child's thinking. Clarity of thought and pursuing assumptions to logical conclusions is central to the mathematical enterprise. There are many ways of thinking, and the kind of thinking one learns in mathematics is an ability to handle abstractions, and an approach to problem solving.

In our vision, school mathematics takes place in a situation where Children learn to enjoy mathematics. Mathematics is a part of children's life experience which they talk about and solve meaningful problems. Children use abstractions to perceive relationships and structure, also understand the basic structure of mathematics and Teachers expect to engage every child in class.Constructivism opens new avenues for the research in education and offers new challenges for the teachers to reform the traditional methods of teaching. The teachers who believe that learning should be interesting and meaningful have to move past their concern that his/her role is of information executive and that of the students is of passive recipients.

Researchers Influenced by constructivist ideas, and decided to take up this approach to teaching Mathematics at standard VIII student. Researchers viewed Mathematics as the most appropriate subject for employing constructivist model because of the complex nature of this subject. On the part of teacher, it requires careful observations of internal working patterns of students' minds and analyse their thought processes. Also, the factors such as current status of Mathematics teaching and high rate of failure in Mathematics are attributable to the selection of this subject for the present study.

Objective of The Research

1. To compare the mean score of pre-test of experimental group and control group; 2. To compare the mean score of post-test of experimental group and control group; 3. To compare the mean gain score of post-test of experimental group and control group; 4. To know the opinion of boys and girls on constructivist approach.

Hypothesis of The Research

1. There will be no significant difference between mean score of the pre-test of experimental group and control group; 2. There will be no significant difference between mean score of the post-test of experimental group and control group; 3. There will be no significant difference between mean gain score of the post-test of experimental group and control group.

Research Design

Researcher consider Traditional method and Constructivist method as Independent variable, Score of Achievement test and Response on Questionnaire taken as Dependent variable, Gender taken as moderate variable and interaction in the class, maturity, understanding were taken as Intervening variable. For present study, the population consisted of the Aravalli district, Bayad taluka, government Gujarati medium school students of academic year 2017-2018. For the present study, convenient sampling technique were used for selecting the school that is M.C.P. shah primary school, Gabat. Researcher were used cluster sampling technique for selecting two class of Standard 8 from selecting school.Total 89 students (experimental group (51) and control group (38) were included in sample. Researcher develop various activities for experiment like as Envelop Techniques, Model of the square and square root and Model of the circle. Researcher collect the data with the use of Achievement test and Questionnaire for data analysis. For the present study, the researcher usedt-test for comparison and calculate the percentage for analysis of questionnaire related to the constructivist approach. In the present study, researcher was used experimental research method. According to the need and suitability for the present study, researcher used "Randomized pre-test post-test equivalent group design."

Results of the Study

Comparison of mean score of pre-test of experimental group and control group

Table 1 - Comparison of mean score of pre-test of experimental group and control group

Group	N	Mean	SE_D	t-value	Significance
Experimental	51	20.60	1.27	1.02	Not Significant at 0.01 level
Control	38	19.07			

Table-1 reveals that, calculated t-value is 1.02 which is not significant at 0.01 level. Therefore, the null hypothesis no.1 is not rejected. So, we can say that there will be no significant difference between the mean score of pre-test of experimental group and control group. It means that both the group were equal at the stage of experiment start.

Table 2 - Comparison of mean score of post-test of experimental group and control group

Group	N	Mean	SE_D	t-value	Significance
Experimental	51	29.97	1.77	1.80	Not Significant at 0.01 level
Control	38	33.29			

Table-2 reveals that, calculated t-value is 1.80 which is not significant at 0.01 level. Therefore, the null hypothesis no.2 is not rejected and So, we can say that there will be no significant difference between the mean score of post-test of experimental

group and control group. It means that both the group were equally affected by teaching methods.

Table 3 - Comparison of mean score of gain score of experimental group and control group

Group	N	Mean	SE_D	t-value	Significance
Experimental	51	12.68	1.16	1.53	Not Significant at 0.01 level
Control	38	10.89			

Table-3 reveals that, calculated t-value is 1.53 which is significant at 0.01 level. Therefore, the null hypothesis no.3 is not rejected and we can say that there will be no significant difference between the mean score of gain score of experimental group and control group. It means that constructivist approach and conventional teaching method were equally effective in mathematics.

Major Findings of the Study

1. Experimental group and Control group were equal at the stage of experiment start. 2. Experimental group and Control group were equally affected by teaching methods. 3. Constructivist approach and Conventional teaching method were equally effective in mathematics. 4. Most of the students are interested in all the constructivist activity. Student taught in constructivist learning environment have significantly enhanced their understanding and application abilities as compared to other abilities like knowledge and skill. Students convenes for researcher preparing all the activity. Most of the student give the positive answer for modal through understand the types of triangle, modal through understand the circle, and modal through understand the square and square root.

Suggestions of Further Research

Constructivist approach was very useful in developing students logical thinking and problem solving in mathematics. This approach will also try for Science subject. Studies should be conducted at teachers training level so the teacher in future to apply constructivist strategies in their classroom. The study on the constructivism and its implementation should be conducted on large and various samples.The constructivism and its implementation should be efficacy with respect to different variables such as I.Q., Age, Sex, Community, medium of instruction, geographical area etc. Constructivist approach should be use for teaching the children at elementary school level because the basic idea and disciplines of knowledge built up at this stage. Experiment should be conducted on the implementation of constructivist approach to teaching the children with special needs. Thus, the gifted students may be guided better if the teacher knows how they think and construct knowledge for themselves

Conclusion

Any instructional process should be based on understanding with reference to need of the subject. We provide direct guidance regarding instructional process to promote understanding.The promotion of procedural knowledge and conceptual understanding are in alignment with Principles and Standards for School Mathematics, which encourages higher-level thinking and reasoning skills, as well as communicative justifications. Due to this approach we can increase basic understanding, basic clarification in mathematics.

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