"Effect of Constructvist Class Room Environment on Achievement of Students in Mathematics at Primary School Level"

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Abstract

The present study entitled as "Effect of Constructivist Class Room Environment on Achievement of Students in Mathematics at Primary School Level." The main objective for the present study was to study the effect of constructivist class room environment on Achievement of students in Mathematics at primary school level. Experimental method used in this study with Pre-test, Post-test equivalent group design. For the present study the intelligence test (Raven,1998) and an Achievement test in mathematics(Surya vasan,2013) were administrated on 76 students of class VII of Government Vocational Higher Secondary School, Payyoli, Calicut. Researcher classified the whole students in to two category ie, experimental and control group. Here the researcher adopt the co-operative learning strategy for create a constructivist class room environment to the experimental group and the control group was taught the same topic by traditional method. The treatment period for both groups was about two weeks. After the treatment the both groups were administered post-test on the same topics. For the analysis of the collected data, investigator used mean, standard deviation and 't' test as statistical techniques. Result revealed that there was a significantly positive effect of constructivist class room environment on achievement of students and the effect of constructivist class room environment on achievement of boys was not significantly differ from girls.

Introduction

Constructivism is the name given to a set of learning theories which fall somewhere between cognitive and humanistic views.

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The term Constructivism refers to the idea that learners individually construct meaning and knowledge for themselves as they learn. Constructivism emphasis the building of meaning and knowledge that occurs in people's minds when they learn. The following are the important principles of Constructivism.

Knowledge is socially constructed, and the learner construct knowledge for himself when he learns in a social context. Learning is an active process in which the learner uses sensory input and constructs meaning out of it. Learning is an interpretive and building process by active learners interacting with the physical and social world. Knowledge is not a fixed object. It is constructed by an individual through his own experience. People learn to learn as they learn. Learning consists both of constructing meaning and constructing systems of meaning. Learning involves language. The language that we use influences our learning. Learning is a social activity and contextual. And also one needs knowledge to learn.

The studies performed by Manesh(2008),Salahudheen(2011) have arrived the result showing that the constructivist based learning environment was a significant factor for improvement of students environmental literacy. Constructivist class room environment has emerged as a very powerful model for explaining how knowledge is produced in the world as well as how students learn.

To teach children successfully, requires an understanding of how children think and construct mathematics knowledge as well as thorough understanding of Mathematics. Learning is an integral process that takes place within the mind. Constructivism presently the dominant way of thinking about learning. In Kerala context, an effect of constructivist classroom environment of students related to mathematics at primary level is researchable.

Statement of the Problem

The present study was designed to study the effect of constructivist classroom environment. Thus the study is entittled " Effect of constructivist classroom environment on achievement of students in mathematics at primary school level."

Objectives

1. To study the effect of constructivist class room environment on Achievement of students in Mathematics at primary school level.

2. To compare the effect of constructivist class room environment on Achievement of boys and girls students in Mathematics at primary school level.

Hypotheses

1. There should be a significant positive effect of constructivist class room environment on Achievement of students in mathematics at primary school level.
2. The effect of constructivist class room environment on Achievement of boys would be significantly more than that of girls in mathematics at primary school level.

Methodology

Design

The research method used in this study was experimental method with Pre-test, Post-test equivalent group design.

Table No-1: Pre-Test, Post-Test Equivalent Group Design

Random arrange	Matching of the g	Pre-test	Treatment	Post-test
Experimental group	Intelligence test	Achievement test in Mathematics	Learning through constructivist class room environment	Achievement test in Mathematics
Control group	Intelligence test	Achievement test in Mathematics	Learning through conventional method	Achievement test in Mathematics

Sample

The sample of the study consisted of 76 students of class VII of Government Vocational Higher Secondary School, Payyoli, Calicut.

The mentioned 76 students were assigned to two groups .ie,38 students to experimental group and 38 students to control group through the use of intelligent test score. Here researcher used the Stratified random sampling methods for data collection.

Tools

The following tools were used to measure the variable of the study.
Raven's progressive metrics test.
Achievement test (Class VII) in Mathematics (Surya vasan,2013)

Achievement test include 22 items on two topic ie, Ratio and proportion and Solids related to mathematics. For that case items were developed for 50 marks. In Achievement test, 50 percent weightage was given to each topic in which each contained 25 marks. In this, six marks were allocated for knowledge based items, Ten marks were allocated for understanding based items, Eighteen marks were for application based items and the rest of Sixteen marks were for skill based items. It also contained essay type, short answer type and objective type items. The achievement test was developed in consultation with six experts.

The Procedure

For the present study the intelligence test (Raven.1998) was administrated on 86 students of class VII of Government Vocational Higher Secondary School, Payyoli, Calicut. After matching the 76 students were assigned in to two groups ie,38 students to experimental group and 38 to control group.

Pre-test

In the beginning the both groups ie, experimental and control were administrated the pre- test on the achievement test.

Treatment

Researcher classified the whole students in to two category ie, experimental and control group.

In the beginning both the groups were administered the pre-test employed by self made achievement test based on two topics and collect the achievement scores. Then researcher gave the guidance to the experimental group only and classified them in to eight miniature group. Each student of this groups actively participate and construct the new knowledge with the guidance of his/her teacher(Facilitator).

Here the researcher adopt co-operative strategy for create a constructivist class room environment to the treatment groups. Every student of these groups were very interested during treatment period.

The control group was taught the same topic by traditional methods. Here the teacher was the donor of the knowledge and the students were the receiver of the knowledge. The treatment period for both groups was about two weeks.

Post-test

After the treatment the both groups were administered post-test on the same topics.

Statistical Techniques used

The collected data was analysed through application of required Statistical Techniques. ie, Mean, Standard Deviation and 't' test.

Analysis and Interpretation of Data

Hypohesis-1

There should be a significant positive effect of constructivist class room environment on Achievement of students in mathematics at primary school level

Table No-2: Pre-Test Score of Students Achievement in Experimental and Control Groups

	Experimental group			Control group			Degrees of freedom(df)	't' Value
Pre-test	M1	N1	SD1	M2	N2	SD2		
	21.05	38	10.57	20.00	38	10.85	74	0.43

Table No-2 shows that critical value of 't' with 74 degrees of freedom at 5% and 1% is 1.99and 2.64. The computed value of t is 0.43 is less than the table value.

Hence it is not significant up to 5% and 1% level of significance. There exist no significant relation in mean score of achievement of experiment and control group.

Table No-3: Post-Test Score of Students Achievement in Experimental and Control Groups

Post-test	Experimental group			Control group			Degrees of freedom(df)	't' Value
		N1	SD1	M2	N2	SD2		
		38	9.66	24.2	38	10.17	74	3.52

Table No-3 shows that mean achievement of students in experiment group is higher than the control group. The computed value of t is 3.52 which is greater than the table value and hence it is significant up to both 5% and1% level of significance. Therefore the hypothesis is accepted. As a result there exist significant positive effect of constructive classroom environment on achievement of students of standard VII.

Table No-4: Hypothesis-2

The effect of constructivist class room environment on Achievement of boys would be significantly more than that of girls in mathematics at primary school level

Post-test score of boys and girls achievement in constructive class room environment of experimental groups.

Post-test	Boys			Girls			Degrees f freedom (df)	't' Value
	M1	N1	SD1	M2	N2	SD2		
	31.42	21	8.21	33.17	17	9.77	74	0.59

Table No-4 shows that mean achievement of boys and girls in experiment group is more or less same. The computed value of t is 0.59 which is less than the critical value. Therefore the hypothesis   is rejected. As a result the effect of constructivist class room environment on achievement of boys is not significantly more than that of girls.

Major Findings

Post- test score of student's achievement in constructivist class room environment of experimental group were more than control group.

There was no significant difference in mean achievement score of boys and girls in experimental group of post test.

Conclusion

From the analysis of the results, it was clear that there was a significantly positive effect of constructivist class room environment on achievement of students and the effect of constructivist class room environment on achievement of boys was not significantly differ from girls. Therefore on the basis of the study it can be concluded that traditional method of teaching could never develop effective foundation for critical as well as divergent thinking and understanding for the students. They could learn more where learning becomes personal and it was only possible by using constructivist class room environment. The learners would be able to construct their own concepts and find their own solutions to their problems. So the use of constructivist method in mathematics teaching-learning process, will create a tremendous changes in the field of education especially mathematics education.

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