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D Packiam
Research Scholar, Lecturer, DIET, T. Kallupatti, Madurai District

M Parimala Fathima
Asst. Prof. Alagappa University College of Education, Karaikudi, Sivangangai District

Correspondence
D Packiam
Research Scholar, Lecturer, DIET, T. Kallupatti, Madurai District

Efficacy of Constructivist Approach in Facilitating Learning Addition of Fraction

D Packiam, M Parimala Fathima

Abstract
This paper is outlines of an experimental study on students' learning in constructivist approach and its effect on achievement in mathematics at primary level. Classroom teaching practice becomes more effective, when it is well informed by an understanding of how students' learn and learning will be more successful if students are given the opportunity to explain or clarify their ideas. So in terms of approach, the development of education now requires teaching strategies that emphasize student involvement in their learning, where focus is on knowledge construction rather knowledge transformation. Constructivism is an emerging approach among the teaching community across the world. This study was pre and posttest design. The Sample consists of 9 boys and 13 girls were selected from one Panjayat Union Primary School, Madurai city. The hypotheses were tested using mean and t-tests. Findings of this study proved that constructivist approach is an effective strategy to learn mathematics. So the teachers need to incorporate constructivist approach in their teaching.

Keywords: Constructivist approach, Mathematics.

Introduction
Mathematics has the ability to confuse, frighten and frustrate learners of all ages. If a child has negative experience in mathematics, that experience would affect his /her achievement as well as attitude towards mathematics during adulthood. The obvious question is whether students' failure to learn mathematics can be described to problems of curriculum, problem of teaching or student or perhaps the combination of these (Carnine, 1997) [1]. In a recent study, constructivist instruction is found to be more effective than the direct instruction for achievers (Kroesbergen and Van Luit, 2012).

Constructivist approach learning is one strategy that can enable all the learners to construct valid knowledge and also enable them to transmit it in different context. Learning in the constructivist framework contributes to intellectual, social and psychological development of learners unlike other methods of instruction. Constructivist approach in Mathematics believes that learner can construct knowledge by active participation rather than acquiring knowledge by watching teachers' demonstration in the classroom and to learn to speak and act mathematically participating in Mathematical and solving new or unfamiliar problems (Richards, 1991)

Constructivism is an epistemological view of learning rather than teaching. Students' previous knowledge and their active participation in problem solving and critical thinking play a crucial part in the construction of knowledge. One of the most important goals of constructivism is to develop students' critical thinking skills, which is possible only in conducive learning environment in the class. In the view of above said confirmation, researcher thought that this constructivist approach has impact on students' achievement of learning addition of fraction in Mathematics. This present study aims to find out the efficacy of constructivist approach in facilitating learning addition of fraction among V STD students.

Objectives of the Study
Find out the efficacy of constructivist approach in facilitating learning addition of fraction among V Std students.

Hypotheses of the Study

The following hypotheses are formulated for the present study

H_0: There is no significant difference in mean scores of pretest between boys and girls among V std.

H_1: Students taught through constructivist approach will gain high achievement of learning addition of fraction in Mathematics.

H_1: There is no significant difference in mean scores of posttest between boys and girls among V std.

Methods

Research Methodology

Single group, pre-test, treatment, post-test and experimental design was followed in the study.

Sample

While selecting the sample for the present study, the researcher had adopted the purposive sampling method. One primary school of Madurai cy was purposively selected for the sake of convenience in conducting the experimental for the study. There were 9 boys and 13 girls of V standard selected for the sample.

Tools and Techniques

The researcher prepared pre-test and post-test questionnaire about addition of fraction in mathematics and the collected data were analyzed using mean score and‘t’ test in this study.

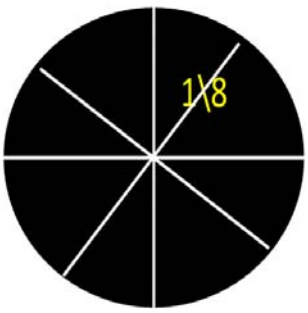
Constructivist Approach

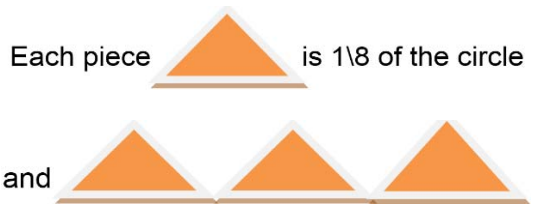
- Student –centered
- Active learning through constructivist activities
- Formal co-operative groups
- Constant interaction among students
- Daily assessment of learning

Constructivist Activity 1: Performance is assisted by a more capable adult/teacher

Adding Like fraction	In words: To add fractions with like denominators, add the numerators Arithmetic Algebra 2\8+3\8=5\8 a\ c+ b\c= a+b \c c≠ 0

Let’s draw a circle into 8 pieces





These are 3\8 of the circle so what if we wanted to add 1\8 +3\8

Count them = 4\8

So 1\8 +3\8 = 4\8

Constructivist Activity 2: Performance becomes automatic

Let’s do one without pictures

2\9 +4\9

= (2+4)\9

= 6\9

Procedure of Data Collection

Before the treatment process, pre-test was conducted. During the treatment process, the researcher taught to addition of fraction through constructivist activities. The treatment was given 10days to the students. At the end of the experiment, post test was conducted to ensure the effect of intervention through constructivist activities**.**

Data Analysis and Discussions

The analysis was carried out using mean, SD and ‘t’ value. The hypotheses were tested at $p<0.05$ levels of significance.

Table1: Pre-test Mean, SD and t-value of scores

Gender	N	Mean	SD	“t” value
Boys	9	10.08	2.055	0.143
Girls	13	10.21	2.572	

It is inferred from the table: 1 that the means of in learning mathematics boys and girls were 10.08 and 10.21 respectively and the values of SD for both boys and girls were 2.055 and 2.572 respectively. It is further indicated that the obtained t- value is 0.143 is less than the table value 1.96 at 0.05 level of significance. Hence there is no significance difference between boys and girls on their pre-test in mathematics.

Table 2: Pre-test and Post –test scores

Test	N	Mean	SD	“t” value
Pre-test	22	10.15	2.311	14.512
Post -test	22	19.42	3.101	

Table: 2 reveals that the posttest greater mean score (19.42) than that of the pre-test mean score (10.15) after the intervention given through constructivist approach. The value of ‘t’ (14.512) is greater than the table value at 0.05 level of significance. Hence “students taught through constructivist approach will gain significantly higher score in learning addition of fraction in Mathematics.

Table 3: Post-test Mean, SD and t-value of scores

Gender	N	Mean	SD	“t” value
Boys	9	19.08	3.145	0.511
Girls	13	19.71	3.147	

It is inferred from the table: 3 that the means of in learning mathematics boys and girls were 19.08 and 19.71. It is further indicated that the obtained t- value is 0.511 is less than the table value 1.96 at 0.05 level of significance. Hence there is no significance difference between boys and girls on their post-test in learning addition of fraction through constructivist activities.

Conclusion

Findings of the study showed that the students learning through constructivist approach have impact on learning addition of fraction in mathematics. Constructivist approach is very effective mean of mathematics teaching in primary level.

Reference

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