

# Effect of Reciprocal Peer Teaching on Prospective Teachers' Achievement in Mathematics in Tamilnadu

# **KEYWORDS**

Constructivism, Reciprocal Peer Teaching, Prospective teachers.

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# ABSTRACT

This study investigated the effect of Reciprocal Peer Teaching based on constructivism on achievement in algebra of 80 prospective teachers' in DIET. The constructivist theory to teaching and learning has been broadly addressed in a number of researches in mathematics education(Katic,Hmelo-Silver&weber,2009:Steelye,1995) According to this theory, students do not just passively receive information but constantly create new knowledge based on prior knowledge(schema) in conjunction with new experiences. Reciprocal Peer Teaching(RPT) is a best method to teach the students which is based on constructivism. Parallel group experimental design adopted in this study. The Experimental group (40) was taught algebra through Reciprocal Peer Teaching for 3 weeks and control group (40) was taught in the existing normal process of teaching. Results revealed that the Reciprocal Peer teaching is most effective in enhancing academic achievement. The researcher recommends that Reciprocal Peer Teaching be adopted regularly in the classroom so as to help Prospective teachers' learn mathematical concept more efficiently , enhance academic achievement and developing their teaching competency skill.

# INTRODUCTION

The constructivist theory to teaching and learning has been broadly addressed in a number of researches in mathemateducation(Katic,Hmelo-Silver&weber,2009:Steelye,1995) According to this theory, students don not just passively receive information but constantly create new knowledge based on prior knowledge(schema) in conjunction with new experiences. As opposed to the traditional approaches where students learn by copying "word for word" what teachers say. constructivism has shifted to a more radical conception of teaching and learning where by learners' fresh ideas are brought to class, acknowledged, and enhanced through a variety of teaching and learning techniques that actively engage them.

In most pedagogies based on constructivism, the teacher's role is not only to observe and assess but to also engage with the students while they are completing activities, wondering aloud and posing questions to the students for promotion of reasoning (Devries et al., 2002).From constructivist perspective, learners try to make sense of the world by relying on their pre-existing schemas. Learning is aided by social interaction with peers and teachers and via real world experiences. Reciprocal Peer Teaching(RPT) is a best method to teach the student teachers which is based on constructivism . A cooperative learning approach wherein students alternate roles as teacher and Learner(Krych,Mar ch,Bryan,Peake,Wojciech,and Carmichael,2005). The utilization of Reciprocal Peer Teaching(RPT) in educational settings has been effective in the development of teamwork, leadership, and communication skills in addition to improving students' understanding of course content(Krych et al.,2005).Many educators of modern age have recognized "Reciprocal Peer teaching" as a beneficial teachinglearning technique for different subjects. When full RPT structures are implemented, the benefits in student teacher achievement often can be astounding. Therefore, this paper explores the extent to which prospective teachers were given the opportunity to construct their own knowledge through Reciprocal Peer Teaching in algebra in Mathematics lessons.

# OBJECTIVES

The following objectives were formed to carry out the plan of the study.

- To find out the pre-test mean scores of two groups (E and C) of student teachers in Mathematics
- To find out the post-test mean scores of two groups (E and C) of student teachers in Mathematics
- To find out the mean gain scores of two groups (E and C) of student teacher in Mathematics .

#### **HYPOTHESES**

Based upon the above mentioned objectives, the following null hypotheses were formulated:

- There is no significant difference in the pre-test mean scores of two groups (E and C) of student teachers in Mathematics
- There is no significant difference in post-test mean scores of two groups (E and C) of student teachers in **Mathematics**
- There is no significant difference in mean gain scores of two groups (E and C) of student teacher in Mathematics .

# METHODOLOGY

The research was carried out using a parallel group design with pre and post test with experimental group and control group.

# SAMPLE

Diploma in Elementary Education student teacher from DIET, T.Kallupatti, Madurai District, Tamilnadu, India were taken as the sample of the study. The sample was devided into two groups consisting of 40 students.

# TOOLS

#### Mathematics Achievement Test(MAT)

To measure the achievement of student teachers, the investigators developed a mathematics achievement test

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in algebra(MAT) which includes 16 items. MAT was trial tested and the reliability coefficient and the value obtained was 0.86. The discriminating indices for each of the 16 items in the test as well as the average difficulty levels were computed. The average difficulty index obtained was 0.46 which shows that the test was neither too difficulty nor too simple. This MAT was used as pretest and post test.

#### ANALYSIS The collected data of pre-test and post-test were analysed and tabulated below: Table 1

ltem	Total number of students E vs. C	Mean score of C group	Mean score of E group	S.D. of C group	S.D. of E group	't'-value	Decision
Pre-Test Achievement Scores	40	7.6	7.8	5.35	5.53	0.87	Hypothesis accepted
Post-Test Achievement Scores	40	12.5	31.8	8.38	14.94	2.95	Hypothesis rejected

(Table value of 't' is 1.96)

It is inferred from the above table 1, that the calculated value of 't' (0.87) is less than the table value (1.96) in the pre-test scores of control group and experimental group . Hence,' there is no significant difference in the pre-test mean scores of two groups (E and C) of student teachers in Mathematics' is accepted.

It is inferred from the above table 1, that the calculated value of 't' (2.95) is greater than the table value (1.96) in the pre-test scores of control group and experimental group .Hence, there is a significant difference in the post-test mean scores of two groups (E and C) of student teachers in Mathematics' is rejected. It is clear from the table ,the Reciprocal Peer Teaching is given the greater achievement of student teachers in post-test.

#### Table 2

ltem	Total number of students 'E' Vs 'C'	Mean gain score of 'C' group	Mean gain score of 'E' group	Decision
Gain Achievement	40	4.9	24	Hypothesis
Scores				rejected

It is inferred from the above table 2, that the mean gain of experimental group(24.1) is greater than the control group(4.9) .Hence the stated hypothesis, 'there is no significant difference in mean gain scores of two groups (E and C) of student teacher ' is rejected.

#### FINDINGS

- There is no significant difference in the pre-test mean scores of Control group and experimental group in Mathematics.
- There is a significant difference in mean gain scores of Control group and experimental group in Mathematics
- There is a significant difference in mean gain scores of Control group and experimental group in Mathematics.

#### IMPLICATIONS

The findings of the present study have an implication for the improvement of present system of teacher education .

- Teacher educators encourage Prospective teacher to monitor the effectiveness of their new strategy in comparison to the effectiveness of old strategy. These help Prospective teachers to see the utility of using the new strategy.
- Teacher educators should give many opportunities to practice RPT in DIET.As Prospective teacher practice the activities, provide guidance and support to the students. Give them feedback until they can use the method independently.

#### CONCLUSION

Reciprocal Peer Teaching, which can motivate Prospective teacher and give them the opportunity to learn, understand and enhancing the problem solving skills and teaching competency in mathematics. This will make the Prospective teacher to be more and more independent in facing new situations. For this study we can infer that Reciprocal peer Teaching based on constructivism is found to be more effective than Conventional Teaching. Hence, let us adopt it for better learning of Mathematics.

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