
**EFFECTIVENESS OF SELF-LEARNING ON VIII STD STUDENTS
ACHIEVEMENT IN MATHEMATICS**

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INTRODUCTION

Education plays a vital role in developing learners' knowledge, skills, attitudes, and overall personality. With the changing educational scenario, the focus has shifted from teacher-centred instruction to learner-centred learning, where students are encouraged to participate actively and construct knowledge independently. In this context, teachers are expected to facilitate learning by adopting appropriate instructional strategies and educational technologies.

Mathematics is an essential subject that develops logical reasoning, analytical thinking, and problem-solving abilities. However, many students face difficulties in learning mathematics, leading to poor academic achievement. Self-learning is a learner-centred approach that encourages students to take responsibility for their own learning, improve conceptual understanding, and develop confidence and independent learning skills. Therefore, the present study attempts to examine the effectiveness of self-learning on the achievement of high school students in mathematics.

SIGNIFICANCE OF THE STUDY

The rapid advancement of science and technology has transformed the educational system from a teacher-centred approach to a learner-centred approach. In this changing environment, teachers are expected to act as facilitators who encourage students to participate actively in the learning process and develop independent learning skills. The effective use of learner-

centred instructional strategies and educational technology can improve students' understanding, motivation, and academic achievement.

Mathematics requires logical thinking, conceptual understanding, and continuous practice. Self-learning enables students to learn at their own pace, develop confidence, strengthen problem-solving skills, and take responsibility for their own learning. Considering the need to improve students' achievement in mathematics, the present study attempts to examine the effectiveness of self-learning among high school students.

STATEMENT OF THE PROBLEM

“Effectiveness of Self-Learning on VIII std Students Achievement in Mathematics.”

OBJECTIVES OF THE STUDY

1. To develop an instructional design for a selected topic in mathematics at the high school level.
2. To develop a suitable self-learning package for the selected topic in mathematics at the high school level.
3. To find out the significance of the difference between the pre-test and post-test mean scores of achievement in mathematics of the experimental group.
4. To find out the significance of the difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to sex.
5. To find out the significance of the difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to parents' educational qualification.
6. To find out the significance of the difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to parents' occupation.

HYPOTHESES OF THE STUDY

The following hypotheses were framed for this study:

1. There is no significant difference between the pre-test and post-test mean scores of achievement in mathematics of the experimental group.
2. There is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to sex.
3. There is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to parents' educational qualification.

4. There is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to parents' occupation.

RESEARCH PROCEDURE

In the present study, the experimental method was adopted for its suitability and accuracy. A single group of students, namely the experimental group, was taken for this study.

The self-learning package was used for the experimental group. A Pre-Test – Treatment – Post-Test design was followed for the experimental group.

SAMPLE OF THE STUDY

The present study is concerned only with VIII Standard students. Forty students studying in Government High School, Nayaganaipiriyal, Ariyalur District, were treated as the experimental group.

TOOLS USED

The effectiveness of evaluation largely depends upon the accuracy of measurement. Accuracy of measurement, in turn, depends on the precision of the instrument or tool. The researcher himself prepared an achievement test in mathematics with the guidance of the expert committee.

STATISTICAL TECHNIQUES USED IN THE STUDY

Statistical techniques serve the fundamental purpose of descriptive and inferential analysis.

The researcher used the following statistical techniques for analyzing the data.

1. Mean and Standard Deviation
2. 't'-test and F-test

TESTING OF THE HYPOTHESES

Hypothesis – 1

There is no significant difference between the pre-test and post-test mean scores of achievement in mathematics of the experimental group.

The hypothesis was tested using the 't'-test.

Group	N	Mean	S.D	S.E	Mean Difference	't'-Value	Level of Significance
Pre-Test	40	53.73665	7.5327	1.8123	42.1067	23.2338	0.01
Post-Test	40	96.8432	8.6388				

The above table shows that the computed value of 't' (23.2338) is greater than the critical value of 1.96 at the 0.05 level of significance. Hence, it is significant. Consequently, the null hypothesis is rejected and it can be said that there is a significant difference between the pre-test and post-test mean scores of achievement in mathematics. It is also inferred that the effectiveness of self-learning on achievement in mathematics is higher compared to the traditional method.

Hypothesis – 2

There is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to sex.

The hypothesis was tested using the 't'-test.

Group	N	Mean	S.D	S.E	Mean Difference	't'-Value	Level of Significance
Male	20	95.5473	8.6853	6.4287	1.2009	0.1868	N.S
Female	20	96.7482					

The above table shows that the computed value of 't' (0.1868) is less than the critical value of 1.96 at the 0.05 level of significance. Hence, it is not significant. Consequently, the null hypothesis is not rejected and it can be said that there is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to sex.

Hypothesis – 3

There is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to parents' educational qualification.

The hypothesis was tested using the 'F'-test.

ANOVA TABLE

Source of Variation	Sum of Squares	df	Mean Variance of Square	F-Value	Level of Significance
Sample Between	318.8674	3	106.2891	1.0669	N.S.
Within Sample	3586.4328	36	99.6231		

The above table shows that the computed value of 'F' (1.4801) is less than the critical value at the 0.05 level of significance. Hence, it is not significant. Consequently, the null hypothesis is not rejected and it can be said that there is no significant difference between the post-test

mean scores of achievement in mathematics of the experimental group with respect to parents' educational qualification.

Hypothesis – 4

There is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to parents' occupation.

The hypothesis was tested using the 'F'-test.

ANOVA TABLE

Source of Variation	Sum of Squares	Df	Mean Square	F-Value	Level of Significance
Sample Between	56.8742	4	14.2186	0.4778	N.S
Within Sample	1054.8424	35	30.1384		

The above table shows that the computed value of 'F' (0.4778) is less than the critical value at the 0.05 level of significance. Hence, it is not significant. Consequently, the null hypothesis is not rejected and it can be said that there is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to parents' occupation.

SUMMARY OF FINDINGS

The following are the findings of the present study:

1. It is inferred that the effectiveness of self-learning on achievement in mathematics is higher compared to the traditional method.
2. There is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to sex.
3. There is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to parents' educational qualification.
4. There is no significant difference between the post-test mean scores of achievement in mathematics of the experimental group with respect to parents' occupation.

CONCLUSION

The present study has investigated the difficult parts in mathematics and the construction of a self-learning package at the high school level. It was found that the effectiveness and utilization of the self-learning package were very high in the case of achievement in

mathematics. Since self-learning has a positive effect on achievement in mathematics, it can be considered an effective instructional strategy for enhancing students' achievement.

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