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EFFECTIVENESS OF TRIANGULAR TRICK METHOD TO LEARN PHYSICS FORMULAS

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Abstract

This action research is aimed to explore the effectiveness of Triangle trick method in aiding the ability of students to remember the formulae in physics. The research was conducted involving 36 students from grade 9 during science classes. The study employed a mixed-method approach, with both quantitative and qualitative data collected through pre and post tests. The triangle trick method involved creating a triangle with the variables of formulae, which the students used to visually remember the formulae. The results showed a significant improvement in the students' ability to recall and apply the formulae. The average score in the post-test is increased from 68% to 88%. Additionally, the students reported that the triangle trick method was easy to understand and helped them remember the formulae better. The study contributes to the growing body of research on teaching and learning strategies that can enhance students' academic performance in science. It suggests that the triangle trick method could be used as an effective mnemonic tool to help students learn and remember formulae in physics.

Keywords: *Physics formulae, Mnemonic tool, Visual Remembrance, Triangle trick method.*

INTRODUCTION

Teaching naturally includes action study. To enhance student's learning and the classroom atmosphere, teachers continuously observe students, gather data, and change instructional activities. Action research offers a paradigm that directs educators' efforts towards a better comprehension of the reason, timing and mechanism underlying in the students' improvement as learners.

In general, students find difficult to memorize formulae. Students can visually learn Mathematics and Science formulae by using the triangle trick method. This technique is used to determine the formula arrangement, and when it is moved to the left or right of an equation, it visually explains the formula rearrangement to the students. It can be used for the majority of formulae with three variables. By using the formula of one variable in the triangle approach,

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the learner may easily compute and solve the problem by getting the formulas for the other two unknown variables.

NEEDS AND SIGNIFICANCE OF THE STUDY

Triangular trick method is not only important for science but also in Mathematics. Knowing the triangular trick method helps the students to find out the other two unknown variables, this method was introduced in Tamil Nadu Samacheer text book in 7^{th} grade. Due to corona pandemic students can't get hold of this method. As a teacher the researcher used this method for 9^{th} grade to make the students learn and remember the formulae without any difficulties

OBJECTIVES OF THE STUDY

1. To find out the effectiveness of triangle-trick method in learning formulae.
2. To measure the quantitative and qualitative outcome of triangle-trick method.
3. To enable students to apply this triangle trick method for various formulae of different subjects that have three variables.

HYPOTHESES OF THE STUDY

1. There is no significance difference in the mean score of pretest and posttest.
2. There is no significance difference in the qualitative data before and after test.

METHODOLOGY

True experimental method was used for the study.

Research Sample of the Study

Pre-test, Treatment and Post-test method was administered for 36 students of grade 9.

Tools Used for the Study

A self-developed questionnaire designed by the researcher was used. The questionnaire has 5 questions. Each questions fetches 3 marks and no negative marking for questions that are answered wronged. Phase 1 of action research began with pre-test. The pre-test results showed that students are not able to write the formulae at ease. Phase 2 was proceeded with the treatment. The formulae were taught by using triangular trick method by placing the initial variables in a triangle and to find the other two unknown. Phase 3, the post-test was conducted with the same set of questions to check their understanding.

ANALYSIS AND INTERPRETATION OF THE DATA

Table 1.

Scores of Pre-test and Post-test Percentage Difference

Names	Pre-test (15)	Post-test (15)	Differences
Student 1	7	15	8
Student 2	5	11	6
Student 3	9	11	2
Student 4	8	13	5
Student 5	7	10	3
Student 6	7	10	3
Student 7	9	13	4
Student 8	6	10	4
Student 9	7	13	6
Student 10	5	15	10
Student 11	1	9	8
Student 12	5	9	4
Student 13	10	12	2
Student 14	6	13	7
Student 15	1	4	3
Student 16	11	13	2
Student 17	3	13	10
Student 18	5	12	7
Student 19	1	13	12
Student 20	9	12	3
Student 21	2	9	7
Student 22	3	9	6

Student 23	5	9	4
Student 24	2	8	6
Student 25	6	14	8
Student 26	4	8	4
Student 27	2	13	11
Student 28	5	12	7
Student 29	5	9	4
Student 30	7	12	5
Student 31	3	10	7
Student 32	6	11	5
Student 33	12	13	1
Student 34	1	12	11
Student 35	7	12	5
Student 36	8	12	4
Total	200	404	204
Percentage	37.04%	74.80%	37%

Interpretation

From the above table, it is very obvious that the pre-test (37.04%) and post-test (74.80%) marks have a drastic difference. Pre-test and Post-test difference was 37%, which shows that the effectiveness of the Triangular trick method is commendably high. From the pre-test marks we can understand that students found it difficult to learn the rearrangement of the formulae but after implementing the triangular trick method, favorable improvement was witnessed**.**

Figure 1.

Bar diagram Showing the Difference between the Pre-test and Post-test Score

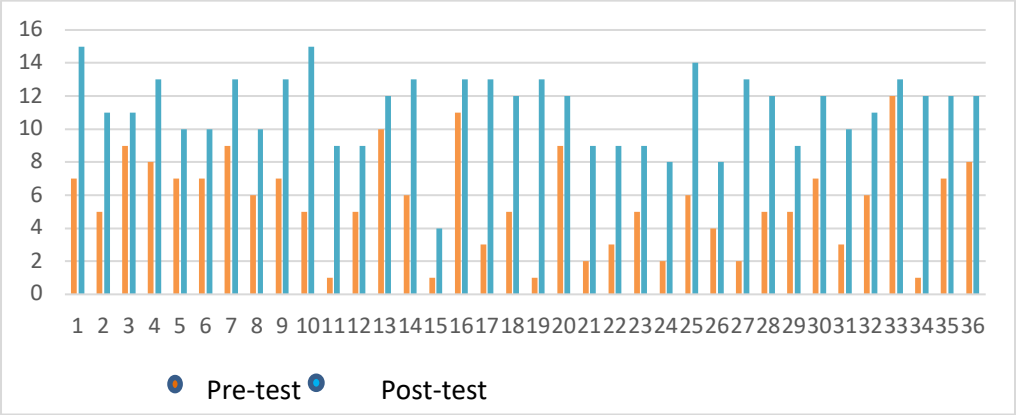
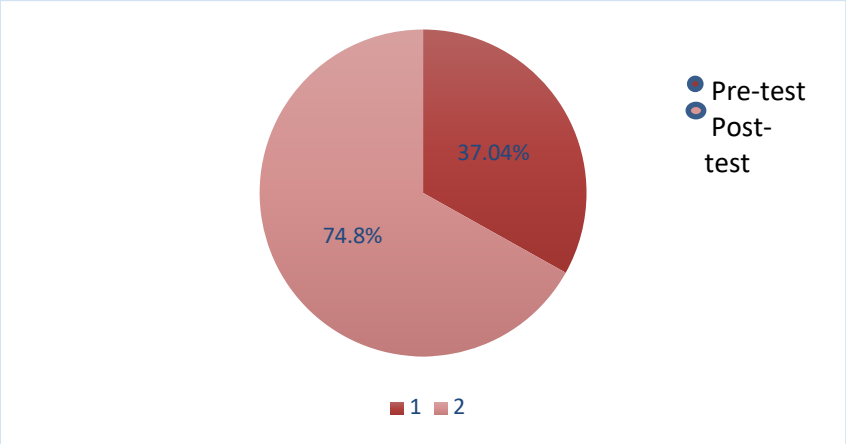


Figure 2.

Pie Diagram Showing the Overall Percentage of Pre-test and Post-test



DELIMITATIONS OF THE STUDY

- The sample size was limited to 36.
- Only 5 formulae from Physics were used for the study.
- Grade 9 students alone were considered.

FINDINGS

- Pre-test scores showed that the students were not to the expected level in learning and remembering the formulae.
- Implementation of the triangular trick method helped the students more in understanding about the formulae and remembering the same was confirmed through the marks in post-test.

DISCUSSION

The results of this study showed that the implementation of triangular trick method helped the students to visually remember the arrangements of the variables of formulae and improved their self-learning by finding the formulae for the other two unknown variables. After using this methodology students found it easy to write and apply the formulae to solve the problems.

SUGGESTIONS

- This method can be used in other related subjects.
- Sample from different levels of education can be studied.
- This study can be extended with a greater number of formulae to find out the consistent effect of this triangular method.

EDUCATIONAL IMPLICATIONS

- This triangular method enhanced the understanding of the students and visual remembrance in learning the formulae.
- Students can rewrite the formulae on their own for the unknown variables using triangular trick method

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