

Vedic Mathematics-Based Instruction And Attitude Towards Mathematics Among School Students

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ABSTRACT

Math learning is always found as a hazard by students of all the time. Somehow or other, math is viewed as a complex subject. Most of the learners show no interest in math learning. In this study, the researcher tries to introduce a different method of math, which was there during the Vedic period – Vedic Mathematics. This is based on sutras. Sutras give ways to solve problems. An experimental study was conducted by taking VIII standard students as samples to know how Vedic Mathematics affects the attitude of the learners towards Mathematics. The control group and experimental group consisted of 40 students each. The experimental group was taught with a Vedic Mathematics-based instructional package developed by the researcher and the control samples were taught using the traditional method. The data was collected before and after using the Attitude Scale towards Learning Mathematics prepared by the researcher. Through this study, the researcher found that Vedic Mathematics has no significant effect on the Attitude of VIII-standard students toward learning mathematics.

Keywords: attitude, effectiveness, Vedic Mathematics, VIII standards students

INTRODUCTION

Mathematics is always considered to be a challenging subject for many learners. Most of the learners have lesser positive attitudes toward studying mathematics due to so many reasons. The process and methods in math problem solving are one among them. Problem-solving enhances the development of mental faculties. Confrontation with a mathematical problem makes the brain of the child active with an intention to solve that problem. Every mathematical problem has its own sequence, and this is needed for constructive as well as

creative processes. Scarpello (2007) in a study denotes that about 75 % of students from America quit studying mathematics and also stay far away from mathematic-related careers. Mathematics anxiety is identified as the major reason for this (Scarpello, 2007). Researchers have been working on methods to make mathematics study easier and free of anxiety. Vedic Mathematics is found to be one of the useful methods. Vedic mathematics makes learning mathematics easy, enjoyable and satisfying as well as encourages innovation in this field. Sutras cover every branch of mathematics. It can be applied even to complex problems which need many mathematical operations. In comparison with the present formal methods, the Vedic method needs minimum time and effort. Coherence is the supreme characteristic of the Vedic system. The whole system is interrelated and unified. Vedic mathematics is much simple, as the calculations can be done mentally. As there is no one correct method, learners can find their own ways to solve a problem which helps to make the learners creative, innovative, and intelligent and inculcate interest in learning mathematics.

Background of the Problem

The mathematics teaching method is found to be creating fear and phobia among students. In the traditional method, the children are finding difficult and vague to memorize formulas and they feel a burden to retain them in memory. Students are psychologically affected due to their anxiety towards the subject of mathematics and this can be reduced by giving an alternative way by which they can understand and solve problems in a trouble-free method. Our ancient history had many eminent mathematicians like Brahmagupta, Aryabhata, and many others. They have contributed a lot to the world, they have given the value of zero, trigonometry, algebra, and most important the decimal system. Ancient mathematics includes Vedic mathematics, which evolved in the Vedic period and involves 16 sutras and 13 sub-sutras. The sutras of Vedic mathematics enable the children to think naturally and direct them to arrive at an appropriate solution and this obviously improves the creativity of the students, equipping them to solve even complex problems.

The gadgets and math applications and software assist students nowadays with math calculations and hence they are not much involved in doing mathematical calculations on their own. In other words, like in the past, today also mathematics is a subject that is kept away by students due to many reasons. The complexity of calculations, the lack of basic knowledge, and many such come as the reason for the unpleasant feelings about mathematics. Assefa (2018) found that classroom instruction is one of those factors that affect the attitude of the learners toward math learning. The researcher thought of finding a way to make math learning interesting for the students. Likely the researcher reached the ancient system of math calculation- Vedic Mathematics. Shriki and Lavy (2018) found that Vedic Mathematics helps to strengthen the self-efficacy of low achievers. From the reviews, the researcher found that “does the Vedic mathematics affect the attitude towards math learning?” is not explored much as a novel method for teaching mathematics. It needs more attention.

Statement of the Problem

This study is entitled “Vedic Mathematics-based Instruction on Attitude towards Mathematics among School Students”. The researcher tries to find out whether the application of the Vedic mathematics method can make positive changes in the attitude towards the mathematics of VIII standard students.

Objectives of the study

1. To compare the pre and post-test scores of Attitude towards Mathematics of the experimental group with that of the control group.
2. To study the effectiveness of Vedic mathematics-based instruction on the Attitude towards Mathematics of VIII standard students.

The hypothesis of the Study

1. There is no statistically significant difference in the pre and post-test scores of Attitude towards Mathematics of the experimental group with that of the control group
2. There is no statistically significant effect of Vedic mathematics-based instruction on Achievement in Mathematics and Attitude toward Mathematics of lower primary students.

Methodology of the Study

A pretest-Posttest nonequivalent group design was used for the present study. Two groups were considered for this study, one group was taught through Vedic mathematics and the other was taught through the conventional method, each group consists of forty VIII standard students. The researcher developed an Instructional package on Vedic mathematics. 14 lesson plans were prepared on the basis of Vedic mathematics. The data needed for the study was collected through an Attitude Scale towards Learning Mathematics which was developed and standardized by the researchers with the supervision of the guide.

A pre-test was administered to both groups to know their initial intensity of attitude. The traditional method of teaching mathematics was adopted for the control group. Math was taught to the experimental group based on the developed instructional package on Vedic mathematics. After completing the classes, a post-test was conducted.

The data were tabulated and subjected to statistical analysis. For testing the formulated hypothesis, an independent sample t-test, and ANCOVA were employed.

Results and Discussion

The result obtained from the statistical calculations is discussed further.

Significance of Difference in the Mean Pre and Post-Test Scores of Attitude towards Mathematics of the two groups of VIII Standard Students

To find whether the difference, if any, in the mean pre and post-test scores of the attitude of the control group with that of the experimental group, independent sample *t*-test was used. The result obtained is presented in Table 1.

Table 1

Significance of Difference in the Mean Pre-Test and Post-Test Scores of Attitude towards Learning Mathematics of Control and Experimental Group

Variable	Group	<i>n</i>	<i>M</i>	<i>SD</i>		<i>p</i>
Pre-test	Control	80	95.43	14.23	0.171	0.865
	Experimental	80	95.03	15.38		
Post-test	Control	80	97.78	12.36	0.932	0.353
	Experimental	80	99.65	13.09		

Note: n -no. of students, M-Mean, SD -Standard Deviation, t- t value, p -probability

From Table 1 it is clear that the students of the control group have a mean pre-test attitude score of 95.43 with a standard deviation of 14.23 and students taught through the Vedic method have a mean attitude score of 95.02 with a standard deviation of 15.38. The *t*-value for the mean pre-test scores of the attitude of the control and experimental group is found to be .171 which is less than the table value of 1.96 at a .05 level of confidence. This reveals that there is no significant difference in the mean pre-test scores of attitude towards learning the subject, mathematics, of students of the control group and experimental group.

Table 1 also denotes that the *t* value obtained for the test between the post-test score of attitude towards learning mathematics of control and experimental group 0.932 is less than 1.96 at a .05 level. That means, the difference in the mean score is not significant.

DISCUSSION. The obtained *t*-value, for the pre-test of attitude, is less than 1.96, this shows that there exists no significant difference in the mean pre-test scores of attitude towards the mathematics of the control group and experimental group at a .05 level of significance. The result shows that the selected two groups are almost equal in attitude towards learning mathematics.

Likewise, the mean post-test scores of the students taught through traditional and the students taught through the Vedic method also showed no significant difference. That means, even after the implementation of the Vedic mathematics-based instructional package, there occurred no change in the attitude of the VIII standard learners towards math learning.

To finalize the findings of the *t*-test, ANCOVA was also employed. The result obtained is discussed below.

There is No Statistically Significant Effectiveness of Vedic Mathematics-Based Instruction on Achievement in Mathematics and Attitude towards Mathematics of Lower Primary Students

ANCOVA was employed with the data by taking the pre-test attitude score as the covariate.

Table 2

Descriptive Statistics

Group	N	Mean	Std. Deviation
Control Group	80	97.78	12.36
Experimental Group	80	99.65	13.08

The mean value obtained for the control group is 97.78 with an SD of 12.36. The mean and SD of the experimental group are 99.65 and 13.08 respectively. The Levens test of equality was obtained as 1.789 with a significant value of .183 which is greater than .05 denoting the homogeneity of the data.

The result of ANCOVA is summarised in Table 3.

Table 3

Significance of Difference in the Mean Marginal Scores of Post-tests by Taking Pre-Test Score as Covariate

Variable	Sum of Squares	df	Mean Square	F	p.
Attitude towards Mathematics	183.420	1	183.420	2.828	.095
	10183.015	157	64.860		

The F value obtained is 2.828 with a p-value of .095. The value of significance denotes that the F value is lesser than the table value and hence is not significant at the 5 percent level.

DISCUSSION. ANOVA shows that there exists no significant difference in the mean marginal score of posttests of both groups. Hence it can be concluded that the Vedic-based instructional package doesn't have any effect on the attitude of the VIII standard learners toward learning mathematics.

Findings:

On analysis of the data based on the formulated hypothesis, the researcher came to the following findings:

1. At the initial stage both the experimental and control group showed a significant difference in their attitude toward learning mathematics.
2. There exists no significant difference in the post-test mean score of the attitude of the students taught through the Vedic method and traditional method.
3. The Vedic Mathematics-based instructional package doesn't make any appreciable change in the students of the experimental group towards learning mathematics.

Educational Implications

The study was conducted with the intention to make mathematics learning more interesting with the novelty of ancient Vedic-based math learning. The sample was selected from high school. With the selected samples, the researcher found that Vedic-based math instruction doesn't make any change in the attitude of VIII-standard students toward learning mathematics. The basics of their math were learned through the traditional method. Hence while suddenly implementing the new method, it was not that easy for them to learn. It may have felt like another burden on them.

As an attempt, this study may be the beginning of thinking about the Vedic Math strategy to be implemented in schools. At least some teachers or educators would be encouraged through this study to explore more about Vedic mathematics.

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