

EFFECTIVENESS OF VEDIC MATHEMATICS BASED INSTRUCTION ON THE ATTITUDE TOWARDS LEARNING MATHEMATICS OF GRADE III SCHOOL STUDENTS.

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ABSTRACT

Attitude is the way an individual shows his involvement towards different aspects. This study focuses on the effectiveness of Vedic mathematics on attitude towards learning mathematics. The study has involved 160 samples of third grade students. Eighty samples were selected from government aided schools and eighty were selected from private schools. These selected samples were divided as experimental and controlled group. Traditional method was employed with control group and Vedic mathematics method with experimental group. Pretest-posttest non-equivalent group design was applied for this study. A module on Vedic mathematics was constructed based on the state board syllabus of Tamil Nādu and it was administered among the students. An attitude towards mathematics Scale was constructed and standardized by the investigator. Pretest and post test was conducted, and data was analyzed. The results inferred that Vedic mathematics applied in the experimental group is effective on enhancing the attitude towards learning mathematics of the III standard students.

KEYWORDS: Vedic mathematics, Attitude towards learning mathematics, III grade students.

INTRODUCTION:

Education is a process of human illumination, civilization, refinement, and empowerment which leads to the betterment of life. Education enables the all-round development of an individuals. It allows the students to develop thinking capacity and positive attitude towards learning. 'The school curriculum aims to make the learners able to gain knowledge, foster understanding and inculcation of skills, values, positive attitude, and habits conducive to the all-round development of their personality' (National curriculum framework for school education,2005). The inclusion of mathematics in school curriculum enables the development of reasoning, logical thinking, and critical analysis. National policy on education put forwarded in 1986 says "mathematics should be visualized as the vehicle to train a child, to think, reason, analyze and to articulate logically".

Mathematical knowledge is much essential to learn and understand all other subjects and it is the base of all other knowledge. Enu (2015), "Mathematics is more important in the scientific and technological development of countries". Learning mathematics is considered to be a tough task by many of the students due to its formulas and procedures. Learning process is highly influenced by attitude towards the subject, having a positive attitude towards learning, will enable the students to understand the concepts clearly and to attain proficiency in the subject. The present study sheds light on the attitude towards learning mathematics of third grade students. In order to improve the student's attitude towards learning mathematics, Vedic methods were used to instruct mathematics and tried to find the effectiveness of Vedic mathematics-based instruction on the attitude towards learning mathematics.

Allport defines "attitude is a mental or neural state of readiness organized through experience, exerting a directive or dynamic influence upon the individuals' response to all objects and situations with which it is related". Attitude can be a favorable or an unfavorable state of readiness to act. Attitude towards mathematics is an individual's feeling towards the subject. The subject mathematics has a vital role in one's life and mathematics proficiency is considered to be an important aspect in the society as well as individually.

Learning of mathematics depends on different factors, it might include the attitude towards the subject mathematics or the instructional procedure or the environment in which he belongs. The expected proficiency in mathematics can be attained only when there arouses positive attitude towards the mathematics. When there occurs a lack of positive attitude for the subject, it creates a hatred towards the subject. Positive attitude acts as a booster and enables the brain to work function intelligently. Positive attitude brings achievement closer, and achievement drags you to excellency.

Mensah (2013) focused on the attitude towards mathematics of both students and teachers and found that the mathematics performance of is having a significant relation with the attitude of the students towards mathematics. Mzomwe (2019) found that the attitude towards the subject is not the only issue with learning mathematics but also there are many other

factors and mainly it includes the strategies made used by the teachers to convey the instructions. Kumar (2020) tried to find whether the attitude towards mathematics is having a positive relationship with achievement in mathematics which is significant. Das (2015) found that attitude towards mathematics is having a significant relation with their achievement in mathematics. Sujata (2017) made an attempt to find that there was no significant variation on the basis of gender and also it was found that mathematics achievement was significantly correlated with attitude towards mathematics.

VEDIC MATHEMATICS:

The primitive treasure Vedic mathematics was reframed and brought to light again by the Indian monk Bharathi Krishna Tirtha in the period between 1911 and 1918. Vedic mathematics arose out from Vedas, 'Veda' means knowledge, it is a Sanskrit word. Vedic mathematics involves sutras and techniques which helps in solving mathematics in an easier, faster way. The 16 sutras and 13 sub sutras in Vedic math makes the calculations easier.

The expanding world of mathematics can still be captured by five thousand years old Vedic methods. Shakuntala devi quotes that "without mathematics, there's nothing you can do. Everything around you are mathematics. Everything around you are numbers". Mathematics is the basis for all other knowledge and so it should be made easy and enjoyable for those who find learning, mathematics as a burden. Mathematics taught through Vedic mathematics makes learning an enjoyable task for the children. Much research has been taken place in the past and present to hold up the fact.

Vedic mathematics is more flexible, coherent, improves memory, promotes mental ability and creativity. On practicing Vedic mathematics, we can perform calculations in easy and efficient way. Amulya (2021) pointed out that Vedic method of multiplication is effective over the conventional method in terms of students' achievement. Dipika (2015) experiment on Vedic mathematics stood as evidence for the effectiveness of Vedic mathematics and it was found that Vedic mathematics was more effective than traditional approach.

METHODOLOGY:

Experimental method is a scientific approach to a problem. The present study is an experimental study, which is an appropriate method to accomplish the objectives of the study. Pretest-Posttest non-equivalent group design was adopted for conducting this study. Convenient Sampling technique was embraced for picking up the samples from the grade III.

SAMPLE:

160 students from the Grade III were selected for the purpose of this study. The sample distribution is presented in Table 1

Table 1

Type of school	Experimental group	Controlled group	Total
Government aided	40	40	80
Private	40	40	80
Total sample	80	80	160

TOOLS:

The investigator constructed a module and an Attitude towards learning mathematics scale. The module was constructed based on the Tamil Nadu state board syllabus prescribed for third grade. The module clearly explains the concepts and steps that are to be followed for a clear understanding of the basic arithmetic operation such as addition, subtraction, and multiplication. Attitude towards learning mathematics scale initially consisted of 45 items then on the suggestions of two educationists the scale was left with 36 items. Pilot study was conducted to standardise the scale and item analysis and item discrimination was computed and the scale was concise to 20 items.

OBJECTIVES FORMULATED:

- 1 To study whether the Vedic mathematics-based instruction is effective on the Attitude towards Mathematics of third standard students.
- 2 To compare the effectiveness of Vedic mathematics-based instruction on Attitude towards mathematics of third standard students based on their type of school.

HYPOTHESIS:

1. There is no statistically significant effectiveness of Vedic mathematics-based instruction on Attitude towards Mathematics of third standard students.
2. There is no statistically significant effectiveness of Vedic mathematics-based instruction on Attitude towards mathematics of third standard students based on their type of school.

NEED OF THE STUDY:

Attitude measures the level of one's success. Having a positive attitude towards an action, will lead to excellence. The purpose of this study is to create a fearless, enjoyable learning environment to learn mathematics. Vedic mathematics is predominant to assist the students to understand the concepts easily and will enable the students to learn mathematics without any fear or hatred. This will create a positive attitude towards learning mathematics.

LIMITATION OF THE STUDY:

The following limitations that restrict the generalizability of the findings. The limitations are given below:

- The samples selected were confined to Gudalur.
- Only 160 samples were selected for the study.
- Among primary school students only third standard students were taken for the study.

STATISTICAL ANALYSIS:

Hypothesis 1: There is no statistically significant effectiveness of Vedic mathematics-based instruction on Attitude towards Mathematics of third standard students.

The intention of the research was to know the effectiveness of Vedic mathematics on attitude towards mathematics of school students. To test this, the researcher analysed whether the difference in the mean score of control and experimental group obtained for the post-test conducted is significant or not. For this the researcher subjected the data for independent sample *t*-test. Table 2 summarises the result.

Table 2

Significance of Difference in the Mean Post-test Scores of Attitude Test Obtained by Control and Experimental Group

Variable	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Attitude	Control	80	38.76	7.22	8.562*	<i>p</i> <0.0001
	Experimental	80	47.38	6.58		

Note. * Denotes the value is significant at .05 level

From Table 2 it can be said that the students of control group have a mean post-test achievement score of 38.76 with a standard deviation 7.22. And students of experimental group have obtained a mean score of 47.38 (SD= 6.58) for the post-test conducted. The *t*-value for the test of significance of difference in the mean post-test score of attitude towards learning mathematics of control and experimental group is found to be 8.562 which is found as greater than the table value (1.96) at .05 level. The obtained *t*-value shows that the difference in the mean post-test score of attitude towards learning mathematics of students of control group and experimental group is significant at .05 level of confidence. That means, the difference in the mean score is significant.

Discussion. The *t* value obtained for attitude towards learning mathematics shows that the difference in the post-test score is significant at .05 level of significance. The mean value obtained by the experimental group is higher than that of the selected control group.

Hence, it can be interpreted that the Vedic mathematics applied in the experimental group is effective on enhancing the attitude towards learning mathematics of the III standard students. A graphical representation of mean post-test score of the control group and experimental group is given in Figure 1

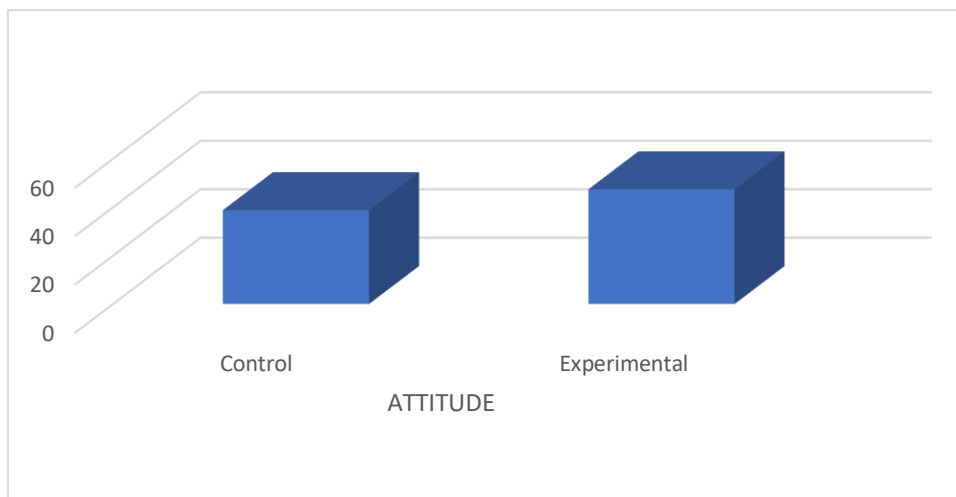


Figure 1. Graphical representation of the difference in the mean post-test scores of attitude towards mathematics learning of control group and experimental group.

Hypothesis 2: There is no statistically significant effectiveness of Vedic mathematics-based instruction on Attitude towards mathematics of third standard students based on their type of school.

Sample for this study was taken from Government-aided school and Private school. The researcher has done the analysis separately for both the type of schools to know the effectiveness of Vedic method. The result of the analysis is presented in Table 3

Table 3

Test of Significance of Difference in the Mean Post-test Scores of Attitude Test of Control and Experimental Group for the Subsample Type of School

Sub Sample	Variable	Group	n	M	SD	p
Private Govt aided	Attitude	Control	40	36.60	6.11	8.031* p < 0.0001
		Experimental	40	47.78	6.34	
	Attitude	Control	40	40.93	7.67	3.715* p < 0.0001
		Experimental	40	46.98	6.88	

Note. ** denotes the value is significant at .01 level

n= no. of students, M=Mean, SD = Standard Deviation, r = coefficient of correlation, t= t value, p = probability

The t value obtained for the test of significance of difference in the post-test score of attitude towards learning mathematics of control group and experimental group for the subsample from govt-aided school is 8.031. As the t value is greater than the table value, 1.96, it can be said that the difference is significant at .05 level of confidence.

From Table 3, it can also be inferred that the test of significance of difference in the post-test score attitude of control group and experimental group for the students from private school gives a t value of 3.715 at .05 level, which can be reported as significant.

Discussion. The test of significance of difference was employed to test the effectiveness of Vedic method on the attitude towards mathematics of Govt-aided school students and Private school students separately. The results report that for both sub sample experimental groups are significantly higher in attitude. Hence it can be concluded that Vedic Mathematics applied in the III standard experimental group is effective in improving the attitude towards learning mathematics of the III standard students.

The difference in the mean post test score obtained by both the groups for the sub sample, type of school is presented in Figure 2.

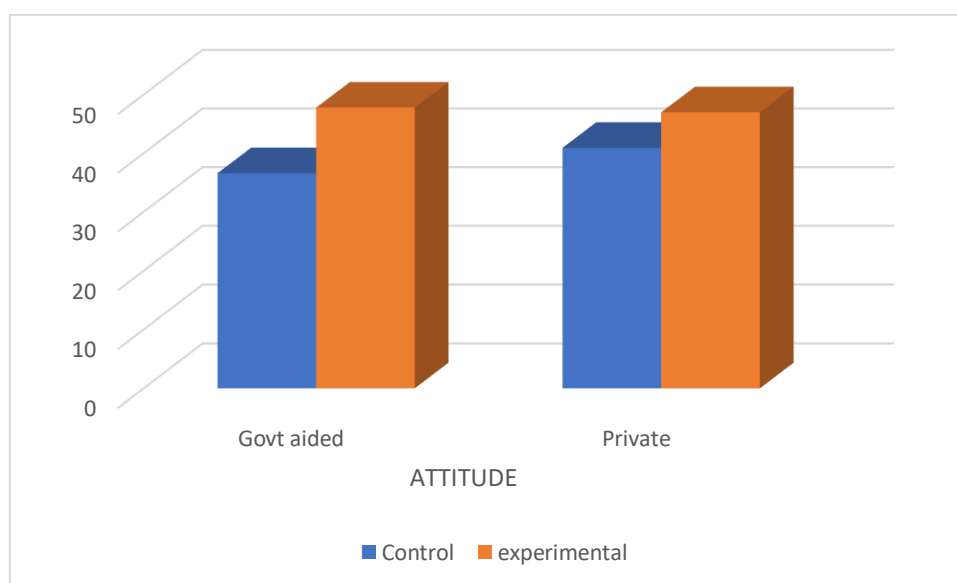


Figure 2. Graphical representation of difference in the mean post-test score of attitude towards learning mathematics of control and experimental group for the sub sample-type of schools.

CONCLUSION:

The study disclosed the fact that the Vedic mathematics applied in the experimental group is effective on enhancing the attitude towards learning mathematics of third grade students. In

addition to that, it was also found that Vedic mathematics is effective on attitude towards learning mathematics, based on their type of school. Vedic mathematics facilitates a fearless and enjoyable method of learning mathematics, and it helps to do calculation very quickly and correctly. This treasure of Vedas should be taught to school students at their early age itself. The education department should implement Vedic mathematics academically and as a beginning, it can be added to the school syllabus. By doing so, the subject mathematics would become an easy and interesting subject for majority of students and, can generate a positive feel for learning mathematics

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