ENHANCEMENT OF MATHEMATICAL APTITUDE OF GRADE SEVEN STUDENTS THROUGH VEDIC MATHEMATICAL TECHNIQUES

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Abstract

In today's competitive world every student wants to score highest mark, for scoring highest mark he needs to master the basic mathematical operations. After completion of his elementary education, a child has optioned for choosing his career in any stream. Mathematics is the subject, which is used in our day-to-day life even an illiterate person should know basic operations of mathematics. At primary and upper primary schooling stage, learning of the mathematic necessary and this is proper stage when students' mathematical aptitude should be enhanced. For this purpose, Vedic mathematic technique is useful, because it is based on 16 main sutras and 13 sub-sutras. By using Vedic mathematic techniques, we can enhance mathematical aptitude of upper primary school students. And can remove their mathematic phobia and anxiety. Researcher developed a mathematical aptitude test and done a pilot study on upper primary school students.

This paper high lights the effect of Vedic mathematic techniques on the student ability to do mathematical operation fastly. Hence enhancing their mathematical aptitude.

Keywords: Vedic mathematic techniques, mathematics, mathematical aptitude, upper primary school students.

Introduction

A child starts to learn counting from his home as informal education in his early age. He starts formal study of mathematics in elementary school in India. Elementary education is divided in two stage primary and upper primary. Duration of primary school education is five years, class 1 to class 5. And upper primary school education is 3 years, class 6 to class 8. After completion of eight years of studied of mathematics subject, it helps to a child for choosing his career or making his future. A child has optioned for choosing his career in mathematics stream,

science stream or art stream. Although all subjects have equal importance but mathematics is used in our day-to-day life in various form or situation. An illiterate person can live without writing and reading, but without calculation very difficult to survive his life in our society. Because of with the help of mathematics, can be developed the abstractness, mental abilities, problem solving attitude and conceptual understanding. A great mathematician Lindsay stated that "Mathematics is the language of physical sciences and certainly no more marvelous language ever created by the mind of man." Our education system knew the importance of mathematics subject. The National Policy on Education (1986) suggested that, "Mathematics should be visualized as a vehicle to train a child to think, reason, analyze and to articulate logically". Understanding the importance of the subject of mathematics is the responsibility of teachers and society that they help for developing mathematical aptitude in students so that they can utilized their mathematical knowledge in his life and making his future. And they keep away themselves from mathematical phobia and anxiety. But it is only a subject which gives the opportunity to learn systematically, abstractly and preciously.

Role of Aptitude

Aptitude plays very important role in learning. If a person has aptitude in any skill or art or subject, he has the chance of success in those field. Aptitude can be used as a predictor tool in school education. According to Traxler – "Aptitude is a condition, a quality or a set of qualities in an individual which is indicative of the probable extent to which will be able to acquire under suitable training, some knowledge, understanding and skill, such as ability to contribute to art or music, mechanical ability, mathematical ability or ability to read and speak a foreign language."

Mathematical Aptitude

Mathematical aptitude is helped to learn mathematics easily. In mathematical aptitude we can considered logical ability, numerical ability, ability of conceptual understanding, ability of accuracy uses of formulae, operations and unit change, ability to transform verbal problem in to symbolic form, power of abstractness and logical thinking. It is necessary that we pay attention towards the student's mathematical aptitude.

Vedic mathematic techniques may be paid a vital role for enhancing of mathematical aptitude in upper primary school student. It is often seen that after completing twelve years school education, student start to preparation of competitive exam, there they learn short cut and fast solving method of mathematics, so that they can crack mathematical aptitude test of various exam. Many competitive exams required good mathematical aptitude, so student want

to enhance their aptitude and develop fast calculation. For enhancing their calculation speed and reduce the error in calculation they also take the help of Vedic mathematic techniques.

If these techniques we imply in upper primary school, then student learn mathematics very easily and enhance his calculation speed and conquer their errors.

Vedic Mathematics

Shankracharya Bharti Krishna Tirthji Maharaj of Puri had invented a new Mathematical method by his Sadhana for eight years, he named it Vedic maths. According to his research the whole Maths is based on 16 main Sutras (formulas) and 13 Sub-sutras (sub formulas). These formulas are normal and written in original Sanskrit.

Divisions, reciprocals, factorization, squares and square roots, cubes and cube roots, algebraic equations, multiple simultaneous equations, quadratic equations, cubic equations, bi-quadratic equations, higher degree equations, differential calculus, Partial fractions, Integrations, Pythagoras theorem, Apollonius Theorem, Analytical Conics related problems can solve mental or one- or two-lines method by Vedic math.

Mathematical aptitude test

Aptitude tests generally used for agencies for selecting various professionals like clerk, teacher, manager, engineer and mechanic etc. This tool is used like a predictor, which indicates that a person can be get success in particular field who has high score in that particular aptitude test. Multiple aptitudes can be measured of a large number of people through a single test at a same time.

There are two types of aptitude tests

i)   Specialized Aptitude Test   ii)   General Aptitude Test

Specialized aptitude test is used for measuring single aptitude while general aptitude measures multiple aptitude of individual same time. For measuring mathematical aptitude, researcher used specialized aptitude test.

Mathematical aptitude has various aspects but researcher want to enhance logical ability, numerical abilities and concept understanding.

Logical Ability

The ability of an individual to solve the problem by abstract thinking and logical thinking or his thoughts on facts and evidence is called as logical ability.

Numerical Ability

Numerical ability is a one of aspect of mathematical aptitude test, which includes basic arithmetic like addition, subtraction, multiplication, and division operations. It also includes number sequences and simple mathematics.

Concept understanding

Concept understanding involves understanding of cardinal and basic concepts behind the algorithms performed in mathematics like geometry, algebra, profit loss, time distance, HCF- LCM etc.

Researcher took both aspects of mathematical aptitude and developed a mathematical aptitude test for measuring the effectiveness of Vedic mathematical techniques for enhancing the mathematical aptitude of upper primary school students. He did pilot study on VIIth standard students.

Objective of study

To enhance the mathematical aptitude of upper primary school student with the help of Vedic mathematics technique.

Research Methodology

In this study experimental method, single group design is used for data collection. Researcher developed a questionnaire which includes three aspects, logical aptitude, numerical ability and concept understanding.

Research Tool

Researcher constructed a questionnaire for this study. This questionnaire has 26 question and duration of the test was 35 minutes.

Papulation

Population is VIIth standard students of SSC board English Medium schools of Uttar Pradesh

Sampling

Researcher selected purposive type non- probability technique of sampling method. 20 schools of urban and rural area have been selected. 12 schools from urban and 8 schools from rural area are selected. Thus, from the 20 schools 2135 students have been selected by purposive sampling.

Hypothesis

Vedic mathematical techniques makes significant difference on mathematical aptitude of upper primary school student

Null Hypothesis

There is no significant effect of Vedic Mathematical techniques on the Mathematical Aptitude of upper primary school students.

Data Analysis

Scoring

Questionnaire has 26 question and every question is of 1 mark. Number of correct answers indicate the total obtain marks.

In the analysis of hypothesis, effect of Vedic Mathematical techniques on the Mathematical Aptitude of class VII school students, table -1 shows the result:

Table

N	Mean score of pre-test	SD of pre-test score	Mean score of Post-test	SD of Post-test score	SE_D	df	t-value	Significant Level	Significant table-value
2018	11.9459	4.4074	19.7388	3.8574	0.13038	2017	59.76	0.05	1.96

COMPARISION

19.73885035

11.94598612

MEAN SCORE OF PRE-TEST   MEAN SCORE OF POST-TEST
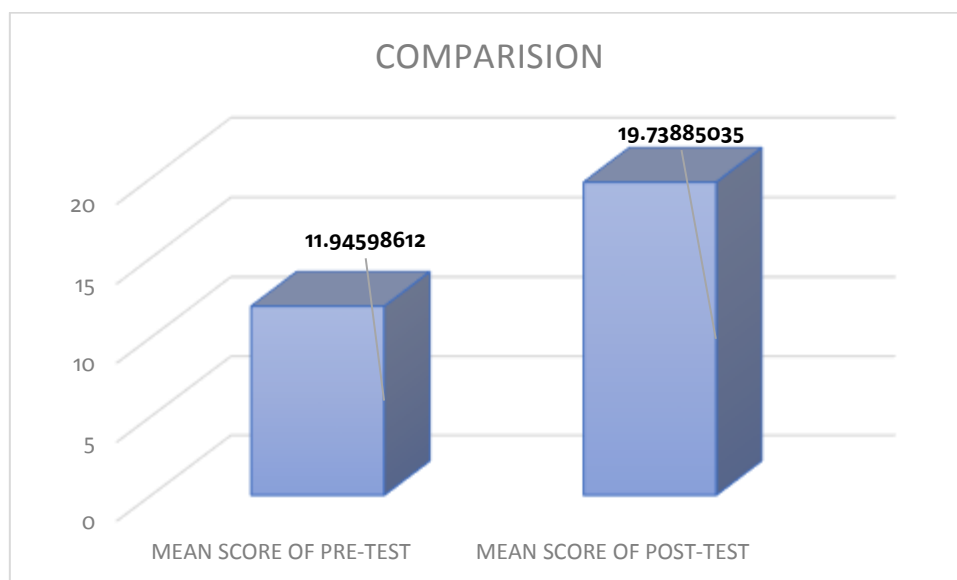
Interpretation

Table-1 shows the descriptive statistics of the variable mathematical aptitude which includes logical ability, numerical ability and conceptual understanding for 7th standard students of upper primary school (N=2018) which presents that:

Post-test was conducted after the learning of Vedic mathematic techniques by the students. The effect of Vedic mathematic techniques can be found by comparison of pre-test and post-test. The value of mean of pre-test is 11.9459 and standard deviation is 4.4074 while mean of post-test is 19.7388 and standard deviation is 3.8574. in the compare of mean of pre-test score and mean of post-test, mean of post-test score is greater than mean of pre-test score. And t-value is 59.76 whish is greater than table value 1.96 at 0.05 significant level. Therefore, the null hypothesis is rejected. Thus, there is significant effect of Vedic Mathematical techniques on the Mathematical Aptitude of class VII students of upper primary school.

Conclusion

The result of study shows that after learning of Vedic mathematical techniques, students make a significant difference between pre-test score and post-test score, which shows the effectiveness of Vedic mathematical techniques.

Scenario our society have high competition to each other, no one show lower in his life. Similarly, students want to score high marks in mathematics, Vedic mathematical techniques increase the mathematical aptitude and develop fast calculation technique so that students can be scored high score and can get victory on mathematics phobia and anxiety. Because Vedic mathematical techniques differ the method of conventional mathematics. Conventional mathematics has systematic steps and rules but Vedic mathematical techniques give freedom from rules and steps. It gives opportunities to solve maximum steps in mind and can be done maximum calculation with help of 2to 9 tables.

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