

EFFECTIVENESS OF VEDIC MATHEMATICS ON THE ACHIEVEMENT OF THE STD. VIII STUDENTS

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INTRODUCTION

The National Policy on Education (1986) has also considered the importance of mathematics in general education and suggests that 'mathematics should be visualized as the vehicle to train a child to think, reason, analyze and to articulate logically. Apart from being a specific subject it should be treated as concomitant to any subject involving analysis and reasoning'. In the recent past there have been tremendous developments in theories of learning and the science of teaching. Though mathematics occupies a place of importance, the researches in this area have been scanty.

In the existing situation of the country, one can find that the achievement level of majority of children in mathematics is not up to the mark. Failure in mathematics is considered as one of the major factors for the overall failure rate in school, resulting in wastage and stagnation at different levels. To overcome this situation some corrective methods are necessary for improving the quality teaching-learning process in Mathematics in schools. Students with learning difficulties spend a substantial portion of their academic working on mathematics learning. Major deficits in mathematical skills are baseless and determined in them. Secondary pupils with difficulties in learning will make only a slow progress in the learning concepts and skills. Teachers complain that the lack of skills in basic computation and numeration are most common even among students at higher classes. By the time students complete schooling or drop-out of schools, they might have made only the most rudimentary achievements in mathematical skills. Only a few might have acquired the levels of application and problem solving skills necessary to function independently. It is to be noted that the progress in the learning of mathematics depends on their receiving better instruction in mathematics while they are at primary level. Many studies show that students in primary graders fail to acquire sufficient skills in fundamental operations and their

applications. This persistent skill deficit. Combined with limited fluency in the recall of basic mathematical facts and concepts hinder the development of higher level learning. One of the reasons for the skill deficit can be attributed to unsatisfactory and inefficient techniques of teaching and learning.

NEED OF RESEARCH STUDY

By knowing more about the mathematics, teachers can make better decisions and reach more learners. Recent advances in Vedic Mathematics have helped in the student learning needs. Now a day in the changing modern world of teaching only bare academics is not enough. Students are now facing personal problems at home, and not being able to focus when stand with the daily challenges of life.

However, implementing innovative changes in education is not easy. Therefore researcher decided to prepare a Vedic Mathematics program considering regular teaching of mathematics. Through the vedic mathematics program the achievement in mathematics can be increased. The academic achievement has great value in the carrier of students, so there is a need of researches on Vedic Mathematics□

- Therefore further research is needed in subject like mathematics because students have difficulties in mathematical basic abilities.
- The basic needs of mathematical development are the mathematical abilities and it is the foundation of education.
- No special efforts are taken in schools to boost and develop the mathematical learning in our education system.
- Actually mathematics is an elementary skill, but it is not given prime importance in the schools.
- Today's evaluation pattern has become more children centered but still the development of mathematics achievement is not noticeable in various schools. So it is necessary that at primary stage the entire teaching-learning process should be child centered and activity oriented.
- The students have much capacity to do better studies and make progress but lack of mathematical abilities, lack of opportunity to express, increased use of calculators, availability of computers to do calculations the intelligence remains hidden and undeveloped also. It is often seen that the students have no voice in the classrooms

and no activities are conducted in the classrooms. There is no scope for interactions with teachers and peers.

- No opportunity is provided to the students to think out of the box, their chances for creative thinking are nil and their opinions as well as their emotions are suppressed.

Researcher thought that by using vedic mathematics at primary stage, it will help the students at their initial years to attain the desired competencies and the education will become enjoyable and interesting to attain mastery level in mathematics. Vedic mathematics gives idea about different sutras and subsutras. These vedic mathematics sutras can be used to enhance the mathematics achievement in 8th standard students. For example mathematical calculations like addition, subtraction, multiplication and division can be done in single line. This study underlines the need of students in thinking and doing logical activities. The present study aimed to give various opportunities to measure the achievement in mathematics. According to researches first fifteen years are very crucial for acquiring basic mathematical abilities, because of rich sensory inputs dendrites grow, change shapes, which is useful for overall education. Therefore 8th standard students are considered as a sample for this study.

As a researcher is working in the field of education, find some problems in learning of mathematics subject in traditional teaching-learning process. In order to draw out problems in understanding basic mathematics and to have joyful learning in fear free atmosphere researcher considered the vedic mathematics for enhancing mathematics achievement. Vedic mathematics sutras are the basic support for present study. Till now most of the studies are done on mathematics. It needs to apply and study its effectiveness. Many researches were done with the brain based principles, CAI, Attitude of students, etc.

A classroom is a learning space, a room in which children learn about various things . The classroom attempts to provide a space where learning and teaching takes place uninterrupted, but today's classroom situation is different. Overloaded classrooms and schools are also associated with decreased level of students engagement resulting in decreased level of learning. Along with this these students face family and peer pressure problems. As both the parents are working nobody is

there to teach values with such social background students come to school with various psychological problems.

Students now a day are not interested in studies. So it is very important to device variety in teaching methods as a researcher gives guidance of mathematics subject in the secondary school

Researcher found that students do not like mathematics subject and also many students fail in the mathematics subject. Most of the students find it difficult to follow the learning of mathematics. Sometimes the subject is blamed as dry and dull. But mathematics is the most important subject and it has lot of use in our day to day life and is a basic need of human being.

To overcome this situation the researcher has come to the conclusion that vedic maths is the only solution to grab the attention as well as interest of students.

Std. VIII is a threshold of secondary education, it is a crucial class, wherein students are expected to learn more comprehensive and abstract concepts in all arithmetic, algebra and geometry of mathematics on the basis of amount of knowledge imported and internalized by them in terms of basic principles, skills and fundamentals up to now. Students, however, are unable to grasp abstract structure, so if we want to stress them we must find concrete realizations of such structures in the real world, which is being done by studying the basic plane geometry at the primary level. Std. VIII is the transition phase between these two levels. So the students are likely to have a tendency to commit errors if they are weak in the interrelated learning of mathematics up till now.

Bhardwaj (1987) found that the error rate at middle standard in all the three areas that is arithmetic, algebra and geometry came out to be 30.4 percent, 50.6 percent and 51.4 percent respectively and there was a significant improvement in achievement of the students after they had gone through the remedial exercises. Adding to this, the new mathematics textbook is introduced recently in the year 2004-2005 for std. VIII, following the CBSE pattern syllabus, so it is contemporary to carry out this study.

IMPORTANCE OF THE RESEARCH.

Mathematics is the most important & compulsory subject in our present school curriculum It is useful from Multi-millionaires to daily laborers have been using mathematics

in one or another way. Therefore everyone should have the knowledge of mathematics. But today most of our younger generations are completely depending upon technology. Technology has been diminishing their creativity. Because of many barriers, they cannot depend upon technology. They should know Vedic mathematics to solve mathematics problem very easily & quickly. It is the duty of teachers to preserve our traditions as well as lead our students to be self-dependent & solve the mathematics problems with confident. Mathematics being a compulsory subject of present curriculum and also getting basic mathematics education is each and every child's right. It is the duty of the teacher to give quality education to all students.

In the present day mathematics, many students do not like mathematics subject. They require more effort in understanding and solving mathematical problems. But it the help of vedic mathematics we can change students mind. They can understand the basic concepts and solve the problems without much effort but with much interest. Today interest in the Vedic mathematics system is increasing in many people. Some of the mathematics teachers are looking for something better. Now-a -days using vedic mathematics as well as the effects of learning Vedic Mathematics on students.

Today, many schools and even universities use Vedic mathematics as an alternative system of mathematics in modern mathematics. Modern mathematics has established methods and allows the use of calculators. In the case of Vedic math, it is flexible and encourages the use of arithmetic, geometry & trigonometry. This may contribute to brain development in children. With the help of Vedic mathematics students can score high marks and also excel in competitive examinations. In the present scenario, all the competitive examinations contain Mathematical aptitude sessions, in which students should score good marks. If the candidate or student is going to solve or calculate problems in a traditional manner he has to spend a lot of time for completing that particular examination. If one uses Vedic mathematics in a proper way, then he can solve mathematical problems in very fast. And also he can save a lot of time in completing examination. Now Vedic Mathematics plays a significant role in Arithmetical, Algebra, geometry statistics and also in the theory of equations etc.

However, much research is still ongoing, especially in India to find ways to facilitate the application of Vedic mathematics in calculus, geometry and calculus. Keeping the above

points in mind, this topic has been selected by the investigator to serve the students' community & also give awareness about Vedic mathematics.

The research would have importance to develop ability of students related to analysis skills and application skill for competitive exams. It would encourage students to do self studies and to like mathematics subject. The importance to Mathematics' teachers to get an idea about the use of Vedic Mathematics in school effectively. Research is important because it gives direction to deal with a specific problem. Whether the problem is thoroughly solved or not is not the forte of the research work. Accumulating amicable and all the possible solutions hypothetically are in itself considered a commendable achievement. There are many types of researchers that are carried out.

Important benefits of the development of mental computation should be pointed out. Traditionally in schools, proficiency in pencil and paper algorithm is equated to success in mathematics, however research has shown that students normally perform poorly with pencil and paper are sometimes capable of impressive feats of mental calculations which is possible by Vedic Mathematics.

For Students

1. To learn new technique in mathematics.
2. To make their calculation easy.
3. To create interest in mathematics.

For Teachers

1. To teach new technique to the students.
2. To check the progress in students with new technique.
3. To make mathematics interesting for teaching

STATEMENT OF THE RESEARCH PROBLEM

Effectiveness of Vedic Mathematics on the achievement of the VIII students of Sinhgad City School, Kondhwa,Pune.

RESEARCH DEFINITIONS:

CONCEPTUAL DEFINITIONS:

The key words have special meaning. Here the definitions of such keywords are given below-

1) Effectiveness:

The degree to which objectives are achieved and the extent to which targeted problems are solved is called effectiveness.

<http://www.bussinessdictionary.com/definition/effectiveness.html>

2) Vedic Mathematics:

Vedic mathematics is the name given to a supposedly ancient system of calculation which was “rediscovered” from the Vedas between 1911 and 1918.

<http://en.m.wikibooks.org/wiki/whatisvediemaths>

3) **Achievement** : The act of achieving or performing ,successful performance.

(Ksrivastava. Murti.2002.Pg.No.18)

FUNCTIONAL DEFINITION:

1. Effectiveness:

The significant difference between the means of pre-test and post-test scores of controlled and experimental group about the achievement of students in Vedic Mathematics.

2. Vedic mathematics

It is the study of mathematics, teaching with the help of Vedic maths method with the help of sutras given by Vedas.

3. Standard VIII

The student who passed VII Std from Sinhgad City School and enrolled in the further standard is called VIII Students, whose age group is between 13 and 14 years.

4. Sinhgad City School Pune:

Sinhgad Technical Education Society's, Sinhgad City School, a co-ed school, comprises of preprimary to Secondary (ie std 10) under CBSE pattern. It's a day- scholar school.

OBJECTIVES OF THE RESERCH PROBLEM

1. To select and finalize the units which can be taught by Vedic Mathematics
2. To develop the program with the help of Vedic Mathematics of selected and finalized topics of VIII std.
3. To implement the program of teaching by Vedic Mathematics of selected topics of Mathematics for VIII std.
4. To study the effectiveness of Vedic Mathematics on the achievement of VIII std students.

ASSUMPTIONS OF THE RESEARCH:

- 1) Vedic mathematics methods help to develop critical thinking and problem solving in the students of Std VIII. **(Jayasree.N .1996.Pg.no.57)**
- 2) Mathematics achievement can be measured through an achievement test developed by the researcher.

**HYPOTHESIS OF THE RESEARCH:
FOR SURVEY RESEARCH QUESTION**

Which topics can be taught by vedic mathematics method of Std VIII ?

RESEARCH HYPOTHESIS:

There will be no significant difference between pre-test and post- test mean score of experimental Group and control Group.

NULL HYPOTHESIS:

There will be no significant difference between pre-test and post- test score of experimental Group and control Group.

RESEARCH METHOD

The present study has adopted the multi-method. The researcher has used survey method to achieve objective1 for identifying the unit which can be taught by Vedic Mathematics, Product development method to achieve objective 2 for developing the program with the help of Vedic Mathematics of selected and finalized topics of std VIII and experimental method to achieve objective 3 for studying the effectiveness of Vedic Mathematics on the achievement of VIII students.

Table 5.2: Research Methodology

Objective No	Objectives	Method	Reason
1	To identify the units which can be taught by Vedic Mathematics	Survey Method	To see which vedic sutras can be applied in teaching regular mathematics
2	To develop the program with the help of Vedic Mathematics of selected and finalized topics of VIII std.	Product development (Hand book)	To apply 7 sutras out of 14 sutras which are useful for students
3	To study the effectiveness of Vedic Mathematics on the achievement of VIII std students	Experimental Method	To see the effectiveness of sutras which are taught

15 RESEARCH DESIGN

The researcher selected two non-equivalent pretest posttest design because technically it was not possible to select whole group, IQ of all student is not same, due to time limit school was not ready for it pre-test and post-test group for the research.

17 POPULATION OF THE RESEARCH

Table 5.3: Population of the Research

Sr no.	Name of the school	VIII Std students
1	Sinhgad City School	240
2	Kothari International School	105
3	Hillgreen High School	200
4	Rosary High School	130
5	Sungrace High School	090
	Total students	695

Populations for proposed research study consist of those who are studying in VIII std. CBSC board.

18 SAMPLE

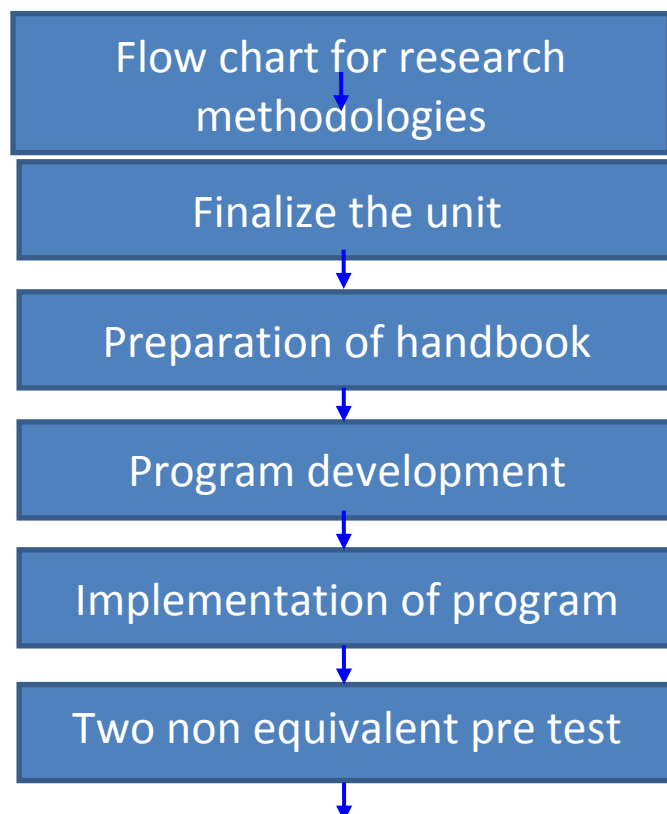
The researcher used incidental sampling technique from nonprobability method of sampling for this study. 650 students of Kondwa area were available for research . Out of that 240 students of VIII std Sinhgad City School were available for research as they were easily available and Principal of Sinhgad City School allowed for experiment .Facilities like infrastructure required for further studies were available in the school. Out of 240 students 60 were selected for the research .They were divided into two groups. 30 students were selected in the experimental group and 30 were selected in the control group for the study.

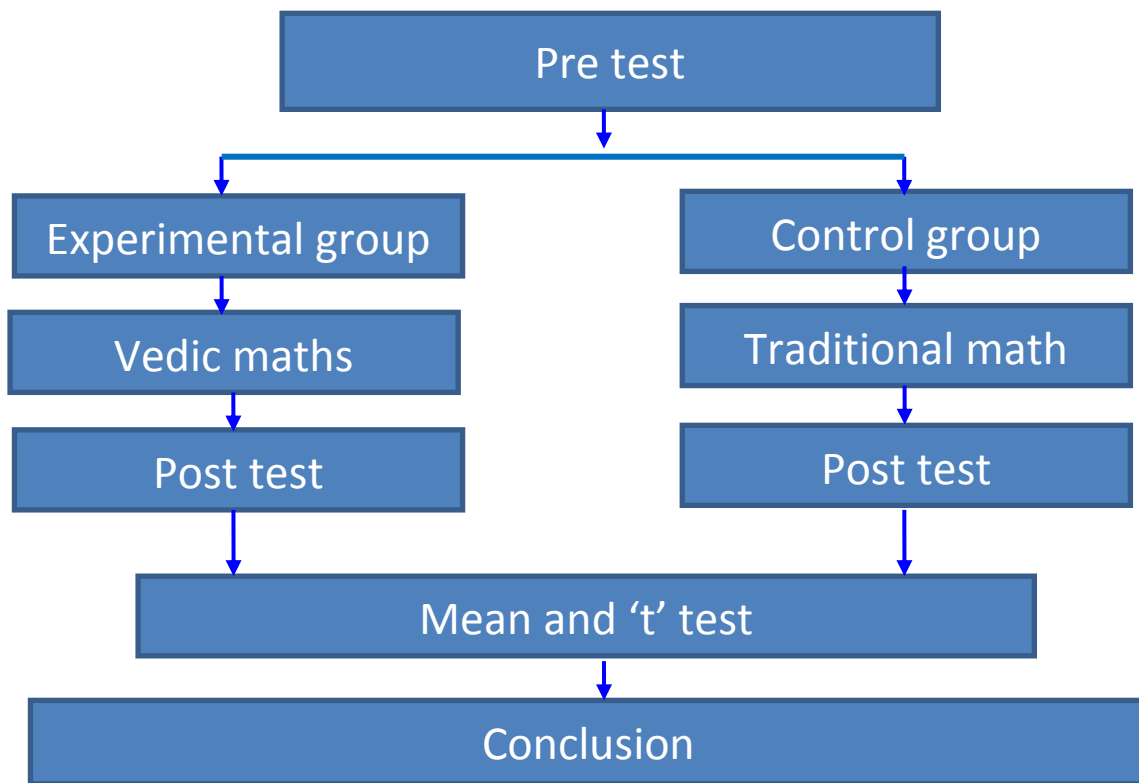
Table 5.4: Research sample

Objective No	Objectives	Research Method	Sample	Sampling Methods
1	To identify the units which can be taught by Vedic Maths	Survey Method	Twenty experts who knows vedic mathematics	Purposive sampling
2	To develop the program with the help of Vedic Mathematics of selected and finalized topics of VIII std.	Product development (Hand book)	30 students (Experimental group)	Purposive sampling
3	To study the effectiveness of Vedic Mathematics on the achievement of VIII std students	Experimental Method	60 students out of 240	Incidental Sampling

Name of the school	Population	Sample
Sinhgad City School	240	60

19 RESEARCH METHODOLOGIES AND DESIGN OF STUDY





21 TOOLS OF DATA COLLECTION

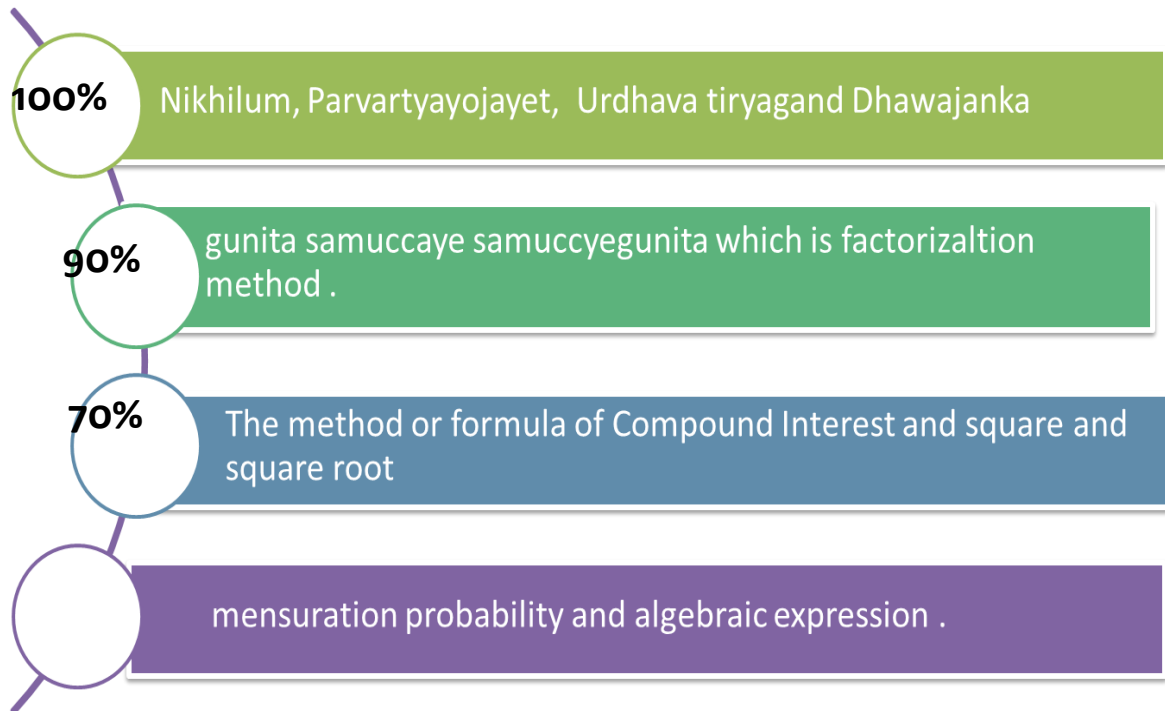
In the present research, researcher has taken experts opinion to prepare hand book from selected topic of Mathematics to prepare pre- test ,post- test and achievement test tools for the data collection

Table 5.5: tools of data collection

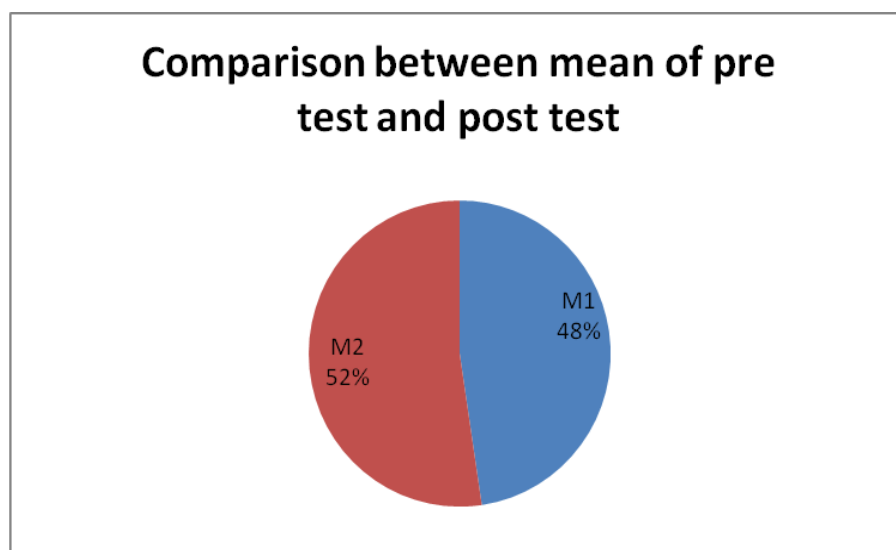
Objective No	Objectives	Tool	Sample
1	To identify the units which can be taught by Vedic Maths	Experts opinion	Teachers which are selected to select the unit from Vedic Maths Sample -20
2	To develop the program with the help of Vedic Mathematics of selected and finalized topics of VIII std.	Product development (Hand book)	Experts opinion Sample-20
3	To study the effectiveness of Vedic Mathematics on the achievement of VIII std students	Experimental method	30-experimental group 30- control group Sample-60

TOOLS OF DATA COLLECTION ANALYSIS

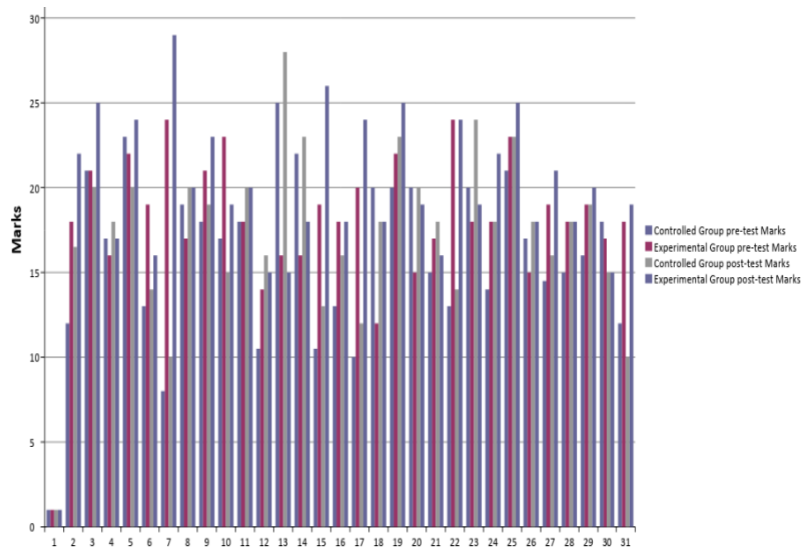
For objective 1 percentage method is used



Comparison between mean of pretest and post test



Comparison between control group and experimental group pre test and post test marks



23 CONCLUSION AS PER OBJECTIVES

For objective 1:

The suggestion the researcher got from the experts, the researcher interpreted the topics in the research and the researcher was told that the conducted survey was favourable above findings from the conducted survey suggest that the topics which are selected by researcher have favorable opinion about using Vedic Mathematics for teaching Mathematics, but not confident for using as solving in examination All formulae were correct no suggestion was given. Out of 20 experts all experts selected same topic from vedic mathematics which was selected by researcher

For objective 2:

The errors suggested by the experts and guide were rectified and accordingly changes were done.

For objective 3:

The obtained value of 't' at 0.01 is significant Therefore the null hypothesis, after implementing the Vedic Maths Programme, will be no significant. Difference in the Vedic Maths proficiency is rejected.

The research hypothesis, after implementing the Vedic Maths Programme, will be significant difference in their Vedic Maths proficiency which will be ultimately beneficial to their words is accepted.

The analysis of the above data shows that implementation of the Vedic Maths Programme correctly received

The researcher has treated the significance of difference between two means of the groups due to statistical analysis using different tool. The researcher has found out the effectiveness of the treatment given to the group. The analysis is the systematic process carried out by the researcher to find out the mean of the population from which the sample is drawn. The t-test can be applied to even large sample and will get very dependable result.

24 DISCUSSION ON THE CONCLUSION OF THE RESEARCH ALONG WITH RESEARCH QUESTION IF ANY

Following are the discussion of the research study done by the researcher with the findings as below.

- 1) 8th Standard students were not aware about Vedic Maths.
- 2) Vedic Maths method is effective than traditional Maths method.
- 3) The students showed a marked improvement in multiplication.
- 4) The Vedic Maths method was found to be effective
- 5) Significant progress was show by the student after implementation of Vedic Maths method.
- 6) Positive learning understanding was seen among the students after learning the Vedic Maths method.
- 7) Effectiveness of Vedic Maths method was very good and it led to better understanding.
- 8) Vedic Maths method is effective teaching strategy for making the students awareness

25 RECOMMENDATIONS

The Vedic Maths Method for students of std VIII was found to be effective. In future school should take initiatives as ultimately it is beneficial to the students. Not only for the students but can also conducted for teaching and non-teaching staff.

26 RESEARCH SUBJECT FOR THE FURTHER STUDY

While conducting the research, the researcher felt that there are some areas where further research can be carried out in future.

These are the areas as follows;

- 1) There is wide scope of research in developing Vedic Maths method in future.
- 2) Due to time constraint the researcher could teach only a few formulae.
- 3) The Vedic Maths method can also developed for the students standard wise.
- 4) The Vedic Maths method can be conducted on teaching as well as non-teaching staff of the school.
- 5) Research can be conducted for other standard and other schools also.

27 EDUCATIONAL IMPLICATION

The following implications can be formulated from the study.

1. This study proves that sufficient practice helps in developing the multiplication skills.
2. Student showed interest in learning new method.
3. The Vedic Maths method helped students to express themselves more effectively and creatively.
4. Vedic Maths method can be used by teacher for reference.
5. The present research study will help to contribute to knowledge of the students by knowing new multiplication technique.
6. This research helped to increase students' critical thinking and problem solving.
7. This research study helped to increase mental ability of the students.
8. It helped to simplify complex sums in simple way.
9. This research study helped to increase logical and analytical thinking.

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