A COMPARATIVE STUDY ON TEACHERS' CONSCIOUSNESS TOWARDS VEDIC MATHEMATICS OF DISTRICT MOHALI AND BARNALA (PUNJAB)

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Abstract

Mathematics is considered to be a tricky subject who leaves a scary impression on the mind of children. Some children who are good in mathematics lag behind in it, owing to their sluggish speed in mathematical calculations. Speed and anxiety of the students towards mathematics can be improved with the help of Vedic mathematics. Vedic mathematics is a holistic mental approach. Tricks of Vedic mathematics can assist the students to perk up their calculations and speed. In present scenario, Vedic mathematics is getting popular among students but do our teachers conscious about it? The present study aimed to find the consciousness among mathematics teachers towards Vedic mathematics and how far they are using it in normal classroom teaching. The researchers interviewed 120 mathematics teachers from the Districts of Mohali and Barnala (Punjab) who were selected through purposive sampling technique. The results of the study revealed that most of the teachers were not conscious about Vedic Mathematics and those who were aware were not using it in their regular classrooms. It also revealed that teachers of Barnala District were more conscious than teachers of Mohali District.

Introduction

The Vedic method has been drawn from the prehistoric institution of *Veda* which means complete knowledge. Just like the modern world's science Veda strives of whole comprehension of the laws of nature (Boyer, R. W. 2012). Veda is the huge body of knowledge manuscript originated in antiquity Indian subcontinent. The study of number, structure or space is known as Mathematics. When combined together Vedic Mathematics becomes a technique which helps in solving Mathematical problems easily and in quicker way. Vedic Mathematics consists of 16 sutras and 13 sub-sutras which help in solving algebra, geometry and arithmetic questions. With the help of Vedic Mathematics techniques Mathematical calculations can be done in speedy manner (Bhangale, R. 2013). It deals with numbers as well as with Mathematical advanced theories. The sutras of Vedic Mathematics enrich the learners with the skills of Mathematical calculations. By practising these sutras learners become confident and they can perform calculations rapidly. It is useful in calculating very tricky problems in mind and can be solved faster than a calculator (Jiji, S. 2014).

Vedic Mathematics positively affected computational speed and attitude towards Mathematics of secondary students. It has shown better results than traditional mathematics instructions and students retained their computational speed after having Vedic Mathematics training (Smitha,

S. 2016). The techniques of Vedic Mathematics have found to be more helpful than the traditional maths techniques on students of Class VII which included male-female, low-high achievers, and rural-urban students (Doshi, M. J. 2015). Research conducted by Rani, P. & Sharma, A. (2016) showed that Vedic sutras significantly enhanced the speed of the grade X students and they achieved better scores in Mathematics. Vedic Mathematics has not only shown improvement in the calculations power of normal children but it has also shown positive impact on the children with special needs as well. The children with special needs shown improvement in Mathematical scores after learning 6 sutras of Vedic Mathematics than the conventional methods of Mathematics (Rani, P. & Kaur, S. 2016).

So, Vedic mathematics is indispensable component of students' lives. With the help of it, students can lead on the road of mathematics by following footsteps of Vedic mathematics. Considering the brilliant results of Vedic Mathematics, the Indian Government is thinking to include Vedic Mathematics as a compulsory subject through new education policy (Tekriwal, G. 2015).

Teacher's Role

A teacher is a fundamental pillar of an education system. The responsibility of providing education lies on the shoulders of teachers. A teacher needs to use variety of methods for making learning process simple and captivating for all students. A Mathematics teacher needs to apply different methods to make students understand about solving mathematical problems with ease and concentration. This is possible only through thrust of knowledge (Sunishthananda, S. 2005). A teacher should learn and teach Vedic maths as it will increase student's sharpness, rational ability and attention power (Sharma, V. 2017).

Only a good teacher who has full command on his subject can assist his students to learn the things in most ease way. Vedic Mathematic teacher Rajeshwari Sharma says that Vedic Maths not just enhances the computation skills of the students but it also changes the student's connection with the mathematical numbers. It brings out logic behind the mathematical calculations and improves the understanding of Mathematics (Joseph, A. 2005).

Justification of the problem

In the competitive world everyone tries hard to make their pace high compared to others. Mathematics is the common area which is focused in every competition. Every student knows how to solve the problem but the main problem lies on speed. To crack this problem Vedic mathematics is the effective tool which assists the students to elevate their speed in mathematical calculations. The Vedic Method improves the multiplication abilities of the students (Ismail, S. A. B. S. & Sivasubramniam, P. 2010). So, the implementation of Vedic mathematics by the teachers in the classroom is the need of the hour. Mathematics teachers should encourage their students to learn Vedic Mathematics to excel in the field of Mathematics. For this, it is essential that teachers to be aware of Vedic Mathematics. Teachers can apply their knowledge in their classrooms and make their students able to solve Mathematical problems without using calculators.

According to the census report of Punjab 2011, out of total 22 districts, Mohali falls in the top three districts whereas district Barnala falls in the bottom three districts in terms of literacy rate (www.punjabdata.com/Literacy-Rate-In-Punjab.aspx). The literacy rate of Mohali is 83.80% whereas for Barnala it is 67.80%. That's why the researchers selected these two districts to find out whether or not the teachers of both the districts were conscious about Vedic Mathematics.

Despite of the efforts of the Government specially the then education minister Dr. Diljit Singh Cheema, the teachers are still not using Vedic Maths in their classes. Most of the students don't know about the techniques of Vedic Maths and in a test conducted by education department of Punjab Government for students of grade 6-10, it was found that students were not even able to solve simple mathematical calculations with Vedic methods (Tekriwal, G. 2016).

In the light of the above reasons the researchers carried out the present study to find the teachers awareness for Vedic Mathematics.

Objectives

The following were the main objectives of the study:

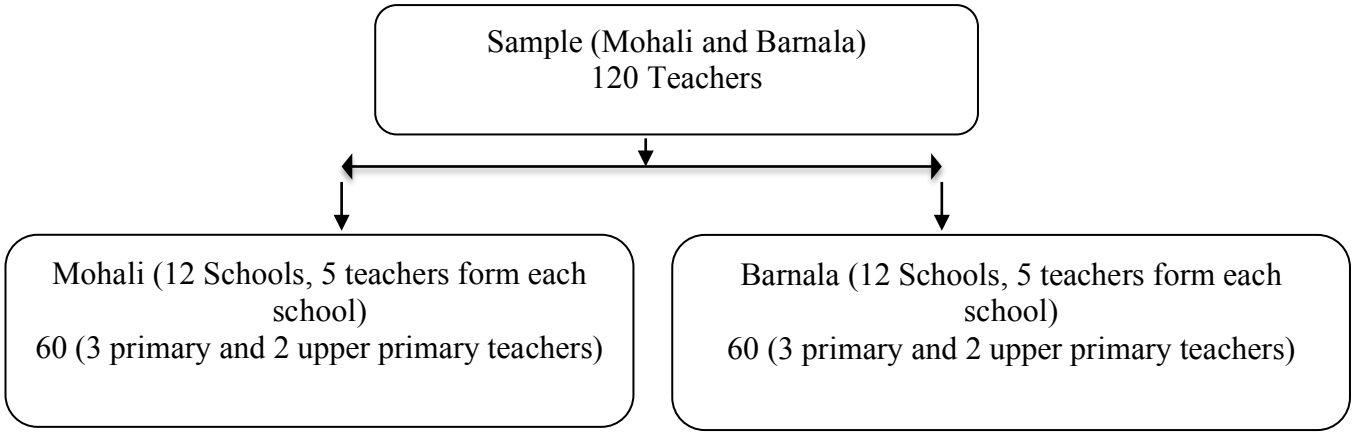
- To see the consciousness among primary and upper primary Mathematics teachers for Vedic Mathematics.
- To check how far the Mathematics teachers using Vedic Mathematics in their classrooms.

Delimitations

- The study was delimited to 120 Mathematics teachers only.
- The study was delimited to two districts of Punjab i.e. Mohali and Barnala only.
- The study was further delimited to a total number of twenty four (24) schools i.e. twelve (12) schools from Mohali and twelve (12) schools from Barnala.

Sample

The sample of the study, that is, 120 Mathematics teachers was selected from two districts of Punjab i.e. Mohali and Barnala, through purposive sampling technique. From each district the researchers selected twelve (12) schools purposively and chose five mathematics teachers from each school in which three were primary teachers and two were upper primary teachers. From each district sixty (60) Mathematics teachers were selected for the study.



Tool

A self-developed interview schedule was used by the researchers for the collection of the qualitative data of the study.

Data Collection

The researchers gained the permission of school authorities to conduct the survey. The teachers were assured that their identity would not be disclosed and were able to answer freely. Thus, the data was collected by the researchers themselves.

Results

At the time of data collection different teachers gave different views regarding Vedic mathematics.

Some teachers explained it as, "It has complex methods. Students get confused due to lengthy formulae. So, it is not good for students."

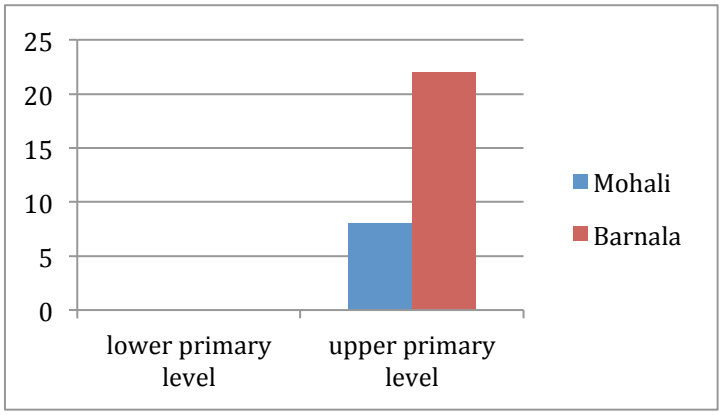
Some take it as, "It is not different from regular mathematics. But, it is part of traditional maths. It gives the foundation for the mathematical calculations by which they can produce better and accurate results."

To understand their awareness, the teachers were asked different questions to know their knowledge about Vedic Mathematics and their answers were as follows:

1. When the teachers were asked about the problems faced by students in Mathematics, 89 (51 from Barnala and 38 from Mohali) were of the view that students face problems in multiplication and division, 74 (31 from Barnala and 43 from Mohali) said there were difficulties in understanding the formulae, 56 (15 from Barnala and 41 from Mohali) reported difficulties in learning the formulae whereas 49 (34 from Barnala and 15 from Mohali) teachers said that students faced problems in applying the formulae.
2. The teachers were asked what do they do to solve the problems of the students. 96 (59 from Barnala and 37 from Mohali) said that they simplify the steps involved in solving a particular mathematical problem, 87 (52 from Barnala and 35 from Mohali) said they repeat the formulae for students and 79 (48 from Barnala and 31 from Mohali) said that they use different teaching strategies for teaching mathematic, for example, learning through play or giving daily life examples, and so on.
3. Primary education is the main foundation for students' future. At this stage each query of a child needs to be addressed. But, during our survey we found that none of the teachers at primary level has knowledge of Vedic mathematics.
4. When enquired this, 30 teachers (all from upper primary level) said that yes they knew about it, in which 22 teachers were from Barnala whereas only 8 teachers were from

Mohali (as shown in graph 1). Only 21 (17 from Barnala and 4 from Mohali) teachers said that they are using it in the classrooms for the last 4-5 years.

Graph-1



5. Teachers who were using Vedic methods in the classrooms said that this method is different from traditional method as it simplifies the mathematical calculations and students find it easy to solve long calculations in no time. Teachers also said that students enjoy Vedic Mathematics as it gives them the chance to solve mathematical problems without any complication.

6. Teachers who were aware but not using Vedic Maths in their normal classroom were of the view that these methods are complicated for children. They said that students got confused and didn't understand where to apply particular formulae. So, they are not using it in the normal class environment.

7. When asked whether they have noticed any improvement in their students after teaching Vedic Mathematics, all the teachers who were using Vedic Mathematics in their classes said that student's achievement in Mathematics was enhanced and their concentration power increased. Five teachers even said if primary teachers start teaching Vedic Mathematics to the students from the beginning then students can show magnificent results in Mathematics.

8. The teachers were asked whether or not they have faced any problems while teaching Vedic Mathematics to which 29 teachers said that parents of the students are reluctant to teach Vedic Mathematics to their students and 15 teachers said they do not find time to teach Vedic Mathematics as they have to finish the syllabus.

9. The researchers further asked whether or not they will encourage their students and colleagues to learn Vedic Mathematics to which they said yes they would like to encourage but it should be propagated through seminars and through firsthand experience.

10. When inquired why Vedic Mathematics is not finding any place in curriculum teachers responded that lack of awareness among parents and society at large, disinterest among school authorities and even some students do not support this new technique due to over burden of school syllabus.

Major hurdles for teachers

On the basis of information collected from the teachers, below are the major hurdles for teachers in the path of teaching Vedic mathematics:

1. Teachers said that though they attend workshops on Vedic Mathematics organized by education department they were not enough as it is not possible for them to understand the concept of Vedic Mathematics in one or two sessions. They need a full term course on Vedic Mathematics.
2. Primary teachers told the researchers that most of the workshops are organized only for upper primary teachers. No such workshop has been organized for them.
3. Parents of some students do not encourage teachers to teach Vedic Mathematics to their students as they said it creates confusion among the students.
4. Teachers also said that they need to complete their syllabus in a stipulated time and they do not get enough time to teach Vedic Mathematics to the students.
5. One of the major concerns of teachers is that some schools use Vedic mathematics for a limited number of students e.g. students who are learning NTSE classes or IMO etc. 26 teachers said that they teach Vedic Mathematics to students to make them ready for competitions but do not use it for regular classroom teaching.
6. Few teachers said that they do not get any encouragement from colleagues or school administration to learn and teach Vedic Mathematics.
7. Most of the teachers i.e. 98 said that mathematical calculations involve particular steps which are required for students to follow in order to get marks in the examination. They said each step carry marks and students need to learn all the steps to get good marks, so they prefer to teach through traditional method only.
8. One of the main reasons for not applying Vedic maths in regular classroom is the Government's rule 'pass to all'. Under this none of children fail till they complete elementary education. The result of this is that very few students have basic knowledge about simple mathematical operations. Teachers still try hard to clear students doubt on addition and subtraction at the stage of 6^{th} or 7^{th} class. So, it is very difficult for them to teach them Vedic sutras.
9. Some teachers consider Vedic mathematics as complicated method. They said that its complexity lies in different formulas for different sums and students find it difficult to keep this in mind.

Suggestions recommended by the teachers

1. Vedic mathematics should become a regular part of curriculum at lower primary level.
2. Refresher programmes on Vedic maths should be organized and encouraged by the Government frequently.

3. School organisation should take necessary steps to make parents aware of the importance of Vedic mathematics.
4. Special competitions should be organized by the Government to promote Vedic mathematics at different levels.

Conclusion

The results of the study depicted that most of the teachers are unaware of Vedic Mathematics whereas those who have knowledge about it are not implementing its use in their regular classroom teaching. After learning the benefits of this approach to mathematics from the researchers, teachers who were unaware of its existence showed interest in learning the Vedic Mathematics in the future. If properly propagated Vedic Mathematics can show wonderful results in the Mathematics. In order to make Vedic mathematics successful in education the collaborative efforts of government are needed. Policies alone cannot be successful if not properly executed. So, strong education policies are required to make the students future more glorious. Result of the study also indicated that awareness doesn't depend on the level of literacy in any particular locvation but depends on how much effort is put in to disseminate the awareness. In this research, although Mohali has a high literacy rate yet teachers' knowledge of Vedic mathematics was very poor compared to Barnala teachers.

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