Effect of Vedic teaching method on achievement in Mathematics subject of students of standard IX

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Abstract:
Although mathematics is very boring and tough subject for some students, it could be easy by using ancient Indian techniques called Vedic mathematics. In present study the researcher studied the effect of Vedic mathematics on achievement in mathematics of students of standard 9. The researcher selected two different schools of Ahmedabad city to perform this study. The results revealed that achievement of students learned through Vedic techniques is more than the achievement obtained by the students of controlled group.

1. Introduction

Mathematics is a subject that many students either love or hate. Many students struggle with mathematics at some point. It's not uncommon to hear students complain that they hate mathematics because "it's too hard." But why do so many students seem to share this opinion? What makes math so difficult for students to learn? Math challenges aren't always a result of a learning difficulty. For many students who struggle with math, it's simply because they don't have the proper foundation needed for success.

To improve the solution power of mathematics problems, there are simple methods in Vedic mathematics. The researcher wanted to study the effect of methods of Vedic mathematics over traditional mathematical technique. For this purpose, the researcher had selected some mathematical techniques for the students of standard IX.

2. Vedic methods

Vedic Mathematics is a system of reasoning and mathematical working based on ancient Indian teachings called Veda. It is fast, efficient and easy to learn and use. Vedic mathematics, which simplifies arithmetic and algebraic operations, has increasingly found acceptance the world over. The "Vedic Mathematics" is called so because of its origin from Vedas. To be more specific, it has originated from "Atharva Vedas" the fourth Veda. "Atharva Veda" deals with the branches like Engineering, Mathematics, sculpture, Medicine, and all other sciences with which we are today aware of. There are 16 Sutras and 13 Subsutras in Vedic mathematics. The researcher has used following Sutras to teach problems regarding square and cube.

- **आनुरुप्येण**
- **यावदूनम**
- **गुणक समुच्चयः**

3. Objectives

Objectives of the present study are as follows:

1. To study the effect of Vedic mathematics on achievement in mathematics subject of students of standard 9.
2. To study the effect of Vedic mathematics on achievement in mathematics subject of students of standard 9 in context of group.

3. To study the effect of Vedic mathematics on achievement in mathematics subject of students of standard 9 in context of gender.

4. Hypotheses

Hypotheses of present research are as follows:

H_{O1} There is no significant difference between mean scores obtained in achievement test of students of experimental group and controlled group.

H_{O2} There is no significant difference between mean scores obtained in achievement test of boys of experimental group and controlled group.

H_{O3} There is no significant difference between mean scores obtained in achievement test of girls of experimental group and controlled group.

H_{O4} There is no significant difference between mean scores obtained in achievement test of boys and girls of experimental group.

5. Limitations of the study

1. The present study was conducted in Shivam Vidyalaya and Sagar Vidyalaya of Ahmedabad city.
2. The present study was performed on students of standard 9 of English medium.

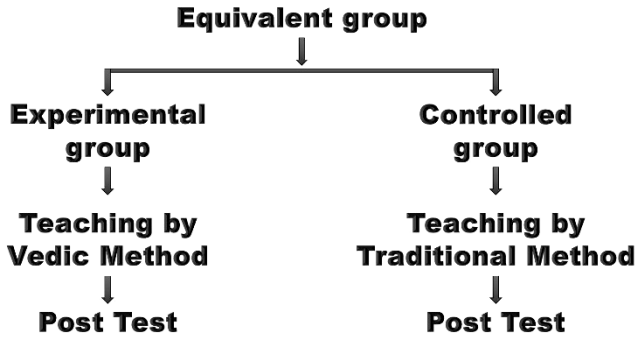
6. Importance of the study

1. The present research will show the importance of Vedic mathematics in current Education system.
2. The students will learn short mechanism to solve hard mathematical problems.
3. The teachers will understand the importance of the Vedic mathematics.
4. The methods of Vedic mathematics will help students to prepare for competitive examinations.
5. The education of mathematics will be interesting using Vedic mathematics.
6. It's an Indian method of teaching mathematics. So, this will make proud of students, teachers and parents.
7. The students can be prepared for future.
8. Classroom education can be interesting using Vedic techniques.

7. Research method

The researcher has chosen experimental research method for this research.

8. Experimental design



9. Sample of the study

In present study, the researcher has chosen 160 students from standard 9. The sample was selected from two different schools as follows.

1.Shivam Vidyalaya

2.Sagar Vidyalaya

From each school the researcher has chosen 80 students out of which, 48 boys and 32 girls were selected.

Table 1: Sample of the study

Strata	Experimental Group		Controlled Group		Total
	Boys	Girls	Boys	Girls	
Shivam Vidyalaya	24	16	24	16	80
Sanskar Dham	24	16	24	16	80
Total	48	32	48	32	**160**
	80		**80**		

10. Research tool

- As teaching tool, teaching material constructed using Vedic methods were used.
- For data collection, the researcher has used self-constructed achievement test in mathematics subject.

11. Data collection

The researcher has constructed an achievement test in mathematics subject worth 30 marks. To complete this achievement test, the students were given 30 minutes. Before this test, the researcher has given proper information about achievement test to the students. After completing of test, answer sheets were collected and proceeded further process of analysis.

12. Data analysis and interpretation

The obtained data of scores were classified, tabulated and analyze using proper statistical methods. The researcher has constructed few hypotheses to study the effect of Vedic mathematics on achievement in mathematics subject of students of standard 9. The results obtained by analysis of hypotheses are as follows.

H_{O1} There is no significant difference between mean scores obtained in achievement test of students of experimental group and controlled group.

Table 2 :Results of students of experimental group and controlled group

Group	N	Mean	SD	SED	t	Significance
Exp	80	34.96	4.16	0.82	3.67	0.01
Cont	80	31.96	6.01			

df	0.05	0.01
158	1.98	2.61

Mean of students of experimental group and controlled group are 34.96 and 31.96 respectively, standard deviation of students of experimental group and controlled group are 4.16 and 6.01 and standard error of deviation is 0.82. Calculated t-value is 3.67. For df=158 table t-values are 1.98 and 2.61 at 0.05 level and 0.01 level respectively. Calculated t-value is more than table t-value at both the levels. Therefore, hypothesis is rejected and there is a significant difference between mean scores obtained in post-test by students of experimental group and controlled group. Moreover, mean score of the students of experimental group is more than the students of controlled group. Therefore, it is said that achievement in post-test obtained by the students of experimental group is higher than the students of controlled group. So, it is revealed that teaching through Vedic mathematics is more effective than the traditional method on the achievement in mathematics subject.

H_{O2} There is no significant difference between mean scores obtained in achievement test of boys of experimental group and controlled group.

Table 3:Results of boys of experimental group and controlled group

Boys	N	Mean	SD	SED	t	Significance
Exp	48	35.04	3.70	0.99	2.78	0.01
Cont	48	32.29	5.78			

df	0.05	0.01
94	1.99	2.63

Mean of boys of experimental group and controlled group are 35.04 and 32.29 respectively, standard deviation of boys of experimental group and controlled group are 3.70 and 5.78 and standard error of deviation is 0.99. Calculated t-value is 2.78. For df=94 table t-values are 1.99 and 2.63 at 0.05 level and 0.01 level respectively. Calculated t-value is more than table t-value at both the levels. Therefore, hypothesis is rejected and there is a significant difference between mean scores obtained in post-test by boys of experimental group and controlled group.Moreover, mean score of the boys of experimental group is more than the boys of controlled group. Therefore, it is said that achievement in post-test obtained by the boys of experimental group is higher than the boys of controlled group. So, it is revealed that teaching through Vedic mathematics is more effective than the traditional method on the achievement in mathematics subject.

H_{O3} There is no significant difference between mean scores obtained in achievement test of girls of experimental group and controlled group.

Table 4: Results of girls of experimental group and controlled group

Girls	N	Mean	SD	SED	t	Significance
Exp	32	34.84	4.83	1.42	2.38	0.05
Cont	32	31.47	6.40			

df	0.05	0.01
62	2.00	2.66

Table 4.6 shows that mean of girls of experimental group and controlled group are 34.84 and 31.47 respectively, standard deviation of girls of experimental group and controlled group are 4.83 and 6.40 and standard error of deviation is 1.42. Calculated t-value is 2.38. For df=62 table t-values are 2.00 and 2.66 at 0.05 level and 0.01 level respectively. Calculated t-value is more than table t-value at 0.05 level. Therefore, hypothesis is rejected and there is a significant difference between mean scores obtained in post-test by girls of experimental group and controlled group. Moreover, mean score of the boys of experimental group is more than the girls of controlled group. Therefore, it is said that achievement in post-test obtained by the girls of experimental group is higher than the girls of controlled group. So, it is revealed that teaching through Vedic mathematics is more effective than the traditional method on the achievement in mathematics subject.

H_{O4} There is no significant difference between mean scores obtained in achievement test of boys and girls of experimental group.

Table 5 :Results of boys and girls of experimental group

Exp	N	Mean	SD	SED	t	Significance
Boys	48	35.04	3.70	1.01	0.20	NS
Girls	32	34.84	4.83			

df	0.05	0.01
78	1.99	2.64

Mean of boys and girls of experimental group are 35.04 and 34.84 respectively, standard deviation of boys and girls of experimental group are 3.70 and 4.83 and standard error of deviation is 1.01. Calculated t-value is 0.20. For df=78 table t-values are 1.99 and 2.64 at 0.05 level and 0.01 level

respectively. Calculated t-value is less than table t-value at both the levels. Therefore, hypothesis is not rejected and there is no significant difference between mean scores obtained in post-test by boys of experimental group and controlled group. This result revealed that experimental method is non-bias regarding the gender students. That means, this method is equal effective on boys and girls.

13. Findings

1. It was revealed that achievement in posttest obtained by the students of experimental group is higher than the students of controlled group. So, it is revealed that teaching through Vedic mathematics is more effective than the traditional method on the achievement in mathematics subject.
2. It is found that achievement in posttest obtained by the boys of experimental group is higher than the boys of controlled group. So, it is revealed that teaching through Vedic mathematics is more effective than the traditional method on the achievement in mathematics subject.
3. Achievement in posttest obtained by the girls of experimental group is higher than the girls of controlled group.
4. The result revealed that experimental method is non-bias regarding the gender students. That means, this method is equal effective on boys and girls.

14. Conclusion

Vedic mathematics was very old technique of mathematics evolved in ancient India. The researcher studied the effect of it on achievement in mathematics subject of students of standard 9. It was revealed that the Vedic technique is very effective on achievement in mathematics subject of students of standard 9.

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