CHAPTER 5

SUMMARY AND CONCLUSION

The significance of Education in fostering individual growth and development cannot be overstated. The success of educational endeavours is primarily contingent upon the teaching and learning methodologies applied. This research aimed to provide students with a pedagogical approach that facilitates an enjoyable and effective learning of mathematics. The study investigated the academic achievement and attitude toward learning mathematics of third-grade and eighth-grade students. Gender and type of schools have been taken as the subsamples in the study. An experimental methodology was employed and the "Pre-test-post-test non-equivalent control group design" was used in this research. A total of 160 third-grade students and 160 eighth-grade students from various educational institutions in the Gudalur area participated in the research. Data collection tools included a "personal data sheet", "an achievement test on mathematics", "an Attitude towards learning mathematics scale", and an "inventory of learning style preferences".

5.1 MAJOR OBJECTIVES OF THE STUDY

Objectives are categorized under three heads:

Development and Validation:

- To construct and validate a package for Vedic Mathematics-based instruction (VMPBMO).
- To develop and validate a Previous knowledge test and Achievement test in Mathematics.
- To construct and validate a rating scale on attitude towards learning Mathematics.
- To develop and validate a Learning Style Inventory.

Relationship Analysis:

- To analyse the relationship between 'Achievement in Mathematics' and 'Attitude towards learning Mathematics' specifically focusing on participants from Eighth and Third grades.

Comparative Analysis:

- To compare the effectiveness of Vedic Mathematics-based instruction on 'Achievement in Mathematics' and 'Attitude towards learning Mathematics' of

both Eighth-grade and Third-grade students and also with respect to gender and type of school.

- To identify which type of learners, benefit the most from Vedic Mathematics Instruction.
- To compare the computing speed of students taught by Vedic Mathematics-based instruction and conventional methods of teaching.

5.2 FINDINGS OF THE STUDY

The major findings of the present study conducted on eighth-grade and third-grade students are given below.

1. The descriptive analysis of pre intervention and post intervention scores from Achievement test in mathematics and learner's attitude towards mathematics for eighth grade was performed for both students taught through the conventional method and through the Vedic method. For the students taught through conventional methods , the results of pre intervention scores yielded (mean of 15.91,a median of 15.50, a mode of 12.00, skewness of 0.049, kurtosis of -0.167 and a standard deviation of 4.44)for achievement test and (a mean of 95.42,a median of 93.00, a mode of 85.00, skewness of 0.580, kurtosis of 0.998 and a standard deviation of 14.23)for attitude test scores.

   The post intervention results showed a value (22 for mean, median and mode, skewness of 0.012, kurtosis of 0.677 and standard deviation of 4.75) for achievement scores and yielded (a mean of 97.78, a median of 97.50, a mode of 93.00, skewness of 0.396, kurtosis of 0.608 and a standard deviation of 12.36)for attitude scores.

   Conversely for experimental group pre intervention scores depicted a mean of 17.10, a median of 18.00, a mode of 18.00, skewness of -0.360, kurtosis of -0.214 and a standard deviation of 5.41 for scores of achievement test and yielded a mean of 95.02, a median of 94.50, a mode of 92.00, skewness of 0.339, kurtosis of -0.012 and a standard deviation of 15.38 for attitude scores.

   A mean of 22.04, a median of 23.00, a mode of 25.00, skewness of -0.610, kurtosis of -0.275 and a standard deviation of 5.96 was the result obtained for post

intervention test scores of achievement and yielded a mean of 99.65, a median of 100.00, a mode of 100.00, skewness of-0.031, kurtosis of -0.118 and a standard deviation of 13.09 for the post intervention scores of attitude of learners' towards mathematics. The obtained values for the measures of central tendency, dispersion, and normality suggest that the data exhibit the characteristics of normal distribution.

2. The analysis of the pre intervention and post intervention test scores from Achievement test in mathematics and attitude scores for third grade was performed for both students taught through the conventional method and students taught through the Vedic method.

For the students taught through conventional methods , the result yielded for preintervention scores were(mean =9.25, median=9.00, mode=9.00, skewness=0.077, kurtosis= - 0.556 and standard deviation=2.51) for achievement test and for attitude scores it was(mean =33.80, median=33.00, mode=26.00, skewness=0.512, kurtosis=-0.770 and standard deviation=6.81).For post intervention scores the values obtained for achievement test was (mean =11.66, median =12.00, mode=12.00, skewness=0.524, kurtosis=0.048 and standard deviation=2.52) and for attitude scores it was (mean =38.76, median=37.00, mode=32.00, skewness=0.769, kurtosis=0.145 and standard deviation=7.22).

For the students taught through the Vedic method the pre intervention score yielded the results as mean =9.31, median=9.00, mode=9.00, skewness= -0.313, kurtosis= 0.097 and standard deviation=2.46 for achievement test and mean =47.36, median=48.00, mode=44.00, skewness= -0.061, kurtosis= -0.913 and standard deviation=6.58 for attitude scores. The values obtained for the measures of central tendency, dispersion, and normality shows that the data is not so scattered and exhibits the characteristics of normal distribution.

3. The Pearson coefficient correlation calculated for pre intervention test scores related to achievement in mathematics and the attitudes of eighth grade students towards learning mathematics was found to be (r = -0.125, p =0.117) indicating that there is no significant correlation as the p-value is greater than .05. Similarly, the correlation for the post intervention scores was found to be.069 which was also did not indicate significance.

4. The Pearson coefficient correlation obtained for pre and post intervention test scores related to achievement in mathematics and the attitudes of third grade students towards learning mathematics yielded values as (r = 0.344, $p < 0.0001$) and (r =.469, $p < 0.0001$) respectively. This result suggests a significant relationship between the performance of third-grade students in mathematics and their "attitude towards learning mathematics" as evidenced by a p value of less than .05.

5. The mean pre intervention test scores for achievement in mathematics among eighth grade students taught through the conventional method and those instructed via the Vedic method yielded a *t* value of -1.516, which is below the critical value of 1.96 at a .05 level of confidence. This indicates that there exists "no significant difference in the mean pre-intervention test scores of achievement in mathematics of students taught through the conventional method and students taught through the Vedic method".

6. The *t* value for the mean pre intervention test scores of the attitude of students taught through the conventional method and students taught through the Vedic method of the eighth grade is found to be 0.171 which is below the critical value at .05 level of confidence suggesting that "there is no significant difference in the mean pre intervention test scores of attitude toward learning mathematics of students of the control and experimental group".

7. The t test results for the pre intervention test scores of achievement in mathematics of students of third grade indicate that those taught through the conventional method achieved a mean score of 9.25 and a standard deviation of 2.51. Conversely, the students taught through the Vedic method has a mean score of 9.31 and a standard deviation of 2.46. The computed t value for these scores is 0.159, which is less than the critical value at the .05 significance level. This outcome implies that "there is no significant difference in the mean achievement scores in mathematics between the students taught through the conventional and Vedic mathematics based method."

8. Among third grade students, those who received instruction through the conventional method recorded a mean pre intervention attitude score of 33.80, with a standard deviation of 6.81. In contrast, students taught through Vedic mathematics achieved a

mean attitude score of 34.48 and a standard deviation of 6.60. The t value derived was 0.636 which is lower than critical value at .05 confidence level. This indicates that there exists no significant difference in the mean pre intervention test scores of attitude towards learning mathematics of students taught through conventional methods and those taught through the Vedic mathematics based approach.

9. The mean pre and post intervention test scores of eighth grade from achievement in mathematics was compared using paired t test for the students who were trained through the conventional method. The average values were recorded as 15.91(*SD*=4.44) for pre intervention scores and 22.03 (*SD*=4.75) for post intervention scores. The coefficient of correlation, *r,* was calculated to be 0.741, indicating a significant relationship at .05 level of confidence. Furthermore, the t value of 16.44 exceeds 1.96, the critical value confirming that the difference is statistically significant at a .05 level of significance. Therefore, it is concluded that the difference in mean pre intervention and post intervention test scores of the achievement test of the students who were trained through the conventional method is significant. The findings indicate that the mean post intervention test scores surpass the pre intervention test scores, which demonstrates that conventional method of teaching mathematics followed in the control group has a substantial impact on students' performance in mathematics.

10. The mean pre and post intervention test scores of third grade from achievement in mathematics was compared using paired t test for the students who were trained through the conventional method. The average values were recorded as 9.34(*SD*=2.55) for pre intervention scores and 11.66 (*SD*=2.52) for post intervention scores. The coefficient of correlation, *r,* was calculated to be 0.725, indicating a significant relationship at .05 level of confidence. Furthermore, the t value of 11.055 exceeds 1.96, the critical value confirming that the difference is statistically significant at a .05 level of significance. Therefore, it is concluded that the difference in mean pre intervention and post intervention test scores of the achievement test of the students who were trained through the conventional method is significant. The findings indicate that the mean post intervention test scores surpass the pre intervention test scores, which demonstrates that conventional method of teaching

mathematics followed in the control group has a substantial impact on students' performance in mathematics.

11. The correlation coefficient calculated, r, stands at 0.698, which is statistically significant at a .05 level of confidence when comparing the pre intervention and post intervention attitude test scores of eighth grade students taught through the conventional method. Furthermore, the t value 2.005 exceeds 1.96 confirming that the difference is significant at a .05 level. Thus, it can be inferred that difference in the mean scores of pre and post intervention test scores of the attitude test of the students taught through the conventional method is significant. The result shows that the post intervention scores surpass the pre intervention scores, suggesting that conventional method followed in the control group has a considerable effect on the attitude towards learning mathematics.

12. Correlation coefficient of the mean pre and post intervention score from attitude scale of third-grade students taught through conventional method *r,* is 0.555, and is significant at a .05 level of confidence. The *t*-value obtained is 6.698 which is more than 1.96, thereby indicates that the difference is statistically significant. The result reveals that the mean post intervention score is more than the pre intervention score, which means the conventional method of teaching mathematics applied in the group has enhanced attitude towards mathematics.

13. The analysis yielded a t value of 6.503 for the mean scores of post intervention and delayed post intervention test concerning achievement in learning mathematics of the eighth grade control group students . This value surpasses the critical threshold of 1.96confirming the significance at a 0.05 level of confidence. The result shows that the mean delayed post intervention test value is more than the post intervention test value, meaning conventional method of teaching mathematics applied in the control group considerably influence the students' mathematics learning achievement.

14. The results from the paired sample t test applied to the post and delayed post intervention achievement test for third grade students taught through the conventional method indicate a correlation coefficient, *r,* obtained is 0.693, which is significant at .05 level. This suggests a noteworthy correlation between post and delayed post intervention test. The calculated t value 0.638 is below the critical value of 1.96. The obtained t value for the mean post intervention and delayed post intervention test

score of achievement score in mathematics of the third-grade students taught through the conventional method is not significant at a 5 percent confidence level. That means the retention effect of the conventional method and post intervention performance are not significantly different for third-grade students.

15. The t value for the mean post intervention and delayed post intervention test scores of attitude of eight grade students taught by conventional method was found as 1.361 and is not significant as the values in below the critical threshold.

16. The correlation coefficient, r, 0.963 obtained for post and delayed post-intervention test scores for attitude of students of third grade is not significant statistically indicating that the post and delayed post-intervention attitude test scores of the students trained through the conventional method have no significant correlation. Furthermore, the t value obtained is 0.342 which is less than 1.96 specifies that there is no significant difference at a .05 level of confidence.

17. The analysis conducted through the "paired sample t-test" on the mean achievement scores of the eighth-grade experimental group revealed that the *t*-value obtained was 14.365 which is higher than 1.96 at the .05 level. The obtained value of the correlation coefficient, *r,* was determined to be 0.858, demonstrating a significant correlation at the .05 level. This indicates that the difference in the mean scores is significant. The mean scores for the pre-intervention (M= 17.10) and post-intervention (M=22.03) show that Vedic mathematics-based instruction helped the experimental group students to get better achievement scores.

18. The t-test conducted for the mean scores of pre-intervention and post-intervention tests of achievement in mathematics of students taught through Vedic mathematics-based instruction of third grade, demonstrated a correlation coefficient of correlation of 0.750 and a t value of 31.646 indicating a statistical significance, which is significant at a .05 level of confidence. Hence, it can be said that the pre-intervention test and post-intervention test scores of the students taught through Vedic mathematics-based instruction had a significant correlation. The *t*-value obtained is 31.646 which is higher than 1.96 at a .05 significant level. Hence, the difference in the mean value is significant. The result shows that the mean post-intervention score (M=15.29) is higher than the pre intervention score (M=9.36). This illustrates that Vedic

mathematics-based instruction effectively enhanced the student's achievement in mathematics.

19. From the paired t-test conducted between the mean pre intervention test and post intervention test attitude score of eighth-grade students taught through Vedic mathematics-based instruction, the *t*-value obtained was 5.022 which is more than 1.96 at a 5 percent significant level. The correlation was significant as the obtained r value was 0.844. The mean scores recorded for pre intervention (M= 95.02) and post intervention (M=99.65) suggests that implementation of Vedic mathematics-based instruction positively influenced the attitude of students towards learning mathematics.

20. The r value obtained for correlation coefficient 0.714, is found to be significant at the .05 level illustrating that the pre intervention and post intervention attitude scores of the third-grade students taught through Vedic mathematics-based instruction. The t value obtained is 23.145 which is higher than 1.96 and so, the difference is significant at the .05 level. The result shows that the mean post intervention test value(M=47.38) is higher than the pre intervention test(M=34.48), which suggests that implementation of Vedic mathematics-based instruction positively influenced the attitude of students towards learning mathematics.

21. The t statistic derived from the comparison of mean scores between post intervention test and delayed post intervention achievement test score for eighth grade students taught through Vedic mathematics-based instruction of is 0.278 which is less than the table value of 1.96 signifying that the observed difference does not reach statistical significance at the .05 level. As there has been no significant change in the mean achievement scores between the two-testing period, it reflects the effectiveness of the instruction.

22. The calculated t value for the post intervention and delayed post intervention test scores of achievement in mathematics of third grade students taught through Vedic mathematics-based instruction is 0.835 which is less than the table value of 1.96 and r value is 0.784, which is significant at .05 level of confidence indicating a significant correlation between the post intervention and delayed post intervention test scores of

the students taught through Vedic mathematics-based instruction reflecting the effectiveness of instruction.

23. The t value 2.518 for the analysis of difference in post intervention test and delayed post intervention attitude scores of students taught through Vedic mathematics-based instruction in eighth grade is greater than the table value 1.96 and is significant at .05 level of confidence. The average score (M=96.7) shows a slight decrease in the mean of delayed post intervention attitude score than the post intervention average score(M=99.65) revealing that the discontinuation of the Vedic method causes a decline in the attitude of students towards mathematics.

24. The paired sample t test applied for the post intervention test and the delayed post that intervention test score of the attitude of the group taught through Vedic mathematics-based instruction of third grade shows that r *value* 0.946 is significant at .05 level of confidence and t value 0. 262 is not significant at .05 level implying that there "is no significant difference in the post and the delayed post intervention scores of attitude test of students taught by Vedic mathematics-based instruction.

25. The computed t value for the mean post intervention achievement scores in mathematics of eighth grade students taught through the conventional method and Vedic mathematics-based instruction is 0.015. The value is below .05 level of confidence indicating that the difference in the mean post-intervention scores of achievement test of students taught through the conventional method and students trained through Vedic mathematics-based instruction showed no significance at .05 level. Hence, it interprets that the Vedic mathematics applied to the students taught through Vedic mathematics-based instruction did not have any additional effect on the achievement.

26. Among the participants from third-grade who were taught through the conventional method achieved a mean post intervention achievement test score of 11.66 with a standard deviation of 2.52 and students taught through Vedic mathematics-based instruction achieved a mean post intervention test score of 15.29 and a standard deviation of 2.29. The *t*-value calculated for the mean post intervention test scores of both groups is 9.510 which is higher than 1.96 at a 5 percent level of confidence. The obtained t value shows that mean post intervention test scores of achievement tests of

students taught through conventional and Vedic mathematics-based instruction is significant at a .05 level of confidence. The mean value of students taught through Vedic mathematics-based instruction (15.29) is higher than the students taught through conventional methods (11.66) and this suggests that the Vedic mathematics-based method is effective in improving students' achievement in mathematics.

27. The t value derived from the analysis of post-intervention scores on attitude towards learning mathematics in the eighth-grade control and experimental group students is 0.932 which is lesser than 1.96 at a .05 level of confidence leading to the conclusion that the difference in the mean score is not significant indicating both the instructional methods are equally effective in creating a positive attitude among students towards learning mathematics.

28. The analysis of post-intervention attitude scores of third-grade students taught through the conventional method and Vedic mathematics-based instruction yielded a mean post-intervention score of 38.76 with a standard deviation of 7.22 and a mean post-intervention test score of 47.38 with a standard deviation 6.58 respectively. The t value calculated for the mean post-intervention test scores reflecting the attitude toward learning mathematics between the control and experimental group is 8.562. This value is higher than 1.96 at a .05 level of significance. Consequently, the results reveal that the difference in mean scores of attitude towards learning mathematics of students taught through the conventional method and Vedic mathematics-based instruction is significant at a .05 level of confidence. This indicates that the implementation of Vedic mathematics in the experimental group effectively enhances third-grade students' attitude toward learning mathematics.

29. Gender-wise comparison of achievement test of eighth-grade boys and girls yielded a t score of girls 4.723 and boys 3.275 shows that the difference is significant at a 5 percent level of confidence. The mean achievement score of girls (mean =23.08) for the students taught through the conventional method is higher than the students taught through the Vedic method (mean =17.60), which means, the conventional method of teaching mathematics is more effective than Vedic mathematics-based instruction. The achievement mean score (mean =24.05) of boys of students taught through Vedic mathematics is greater than the students taught through the conventional method

(mean =20.35), which denotes that Vedic mathematics-based instruction has some effect on the achievement in mathematics of boys.

30. The *t* value obtained for the third grade, a post-intervention test score of achievement in mathematics of students taught through the conventional method and students taught through Vedic mathematics-based instruction for the subsample girls is 7.014 and boys is 6.965, which is said to be more than 1.96. Therefore, the difference is significant. The mean value (girls M-16.16, boys M-14.89) of students taught through Vedic mathematics-based instruction is higher than the students taught through the conventional method (girls M-11.89, boys M-11.16). This denotes that the Vedic Mathematics-based instruction taught for the third-grade has a considerable effect on the achievement in mathematics based on gender.

31. The t value obtained for the mean post-intervention score of attitude towards mathematics of both girls 0.813 and boys 1.500 of eighth grade shows no significant difference. Hence it reveals that the applied Vedic method did not make any enhancement on the attitude of eighth-grade students towards mathematics.

32. The *t* value obtained for the third grade, post-intervention score of attitude towards mathematics of students taught through the conventional method and through Vedic mathematics for the subsample girls is 6.456 and boys is 6.346 which is more than 1.96 and hence can be said that the difference is significant at 5 percent level of confidence. The mean score (girls M=50.36, boys M=46.02) of the students taught through Vedic mathematics is more than the obtained mean value (girls M=40.15, boys M=35.72) of the control group. This denotes that the Vedic Mathematics-based instruction applied to students in third grade has a positive effect on the attitude toward learning mathematics based on gender.

33. From the analysis carried out on eighth-grade post-intervention test scores of achievements in mathematics of students taught through the conventional method and through Vedic mathematics based on the type of school resulted in the following finding.

    The *t* value of post-test score of achievement in mathematics of students taught through the conventional method and students taught through Vedic mathematics-based instruction for the govt-aided school is 0.441 and for private schools is 0.312

The t value is lower than the 1.96 and hence the difference can be said to be not significant for the students of both govt-aided and private school.

34. The third-grade students of government aided school taught through the conventional method had a mean post-intervention achievement score of 12.07 with a standard deviation of 2.12 and students taught through Vedic mathematics-based instruction had a mean post-test score of 5.50 with a standard deviation of 2.33. The *t* value of the post-intervention test score of achievement in mathematics of the students taught through conventional and Vedic mathematics-based instruction for the government - aided school is 6.878 indicating a statistical significance.

    The students of private school taught through the conventional method had a mean post-intervention achievement score of 11.25 with a standard deviation of 2.83 and students taught through Vedic mathematics-based instruction had a mean post-intervention score of 15.08 with a standard deviation of 2.27. The t value calculated for the post-intervention achievement score of students taught through the conventional method and Vedic mathematics-based instruction of private schools was 6.662,which is statistically significant.

    The *t* value for the post-intervention score of achievement in mathematics of students taught through the conventional method and Vedic mathematics-based instruction for the subsample from govt-aided school and private school is more than 1.96 and hence it is significant at .05 level. Hence, Vedic Mathematics applied is effective in enhancing the achievement in mathematics of the third-graders of private schools.

35. The *t* value obtained for the eighth-grade students for post-intervention score of attitude towards mathematics of students taught through the conventional method and Vedic mathematics-based instruction for govt-aided school is 2.782 which is more than 1.96, and hence the difference is significant at .05 level. The t-test on the post-intervention attitude score of students taught through the conventional method and Vedic mathematics-based instruction for the private school gives a t-value of 1.746 which is less than 1.96, hence the difference is not significant at the .05 level. This indicates that students of government-aided schools taught by Vedic mathematics-based instruction possess better attitudes towards learning mathematics.

36. The control group students of third grade belonging to government-aided school have a mean post-intervention attitude towards mathematics score of 36.60 with a standard deviation of 6.11 and students taught through Vedic mathematics-based instruction have a mean post-intervention score of 47.78 with a standard deviation of 6.34. The *t-value* obtained between post-intervention scores of attitude towards mathematics of students taught through the conventional method and Vedic mathematics-based instruction is 8.031.

37. The students taught through the conventional method of private schools have a mean post-intervention attitude towards learning mathematics score of 40.93 with a standard deviation of 7.67 and students taught through Vedic mathematics-based instruction have a mean post-intervention value of 46.98 with a standard deviation of 6.88. The t-test for the post-intervention score of attitude towards mathematics of students taught through the conventional method and Vedic mathematics-based instruction of the private school is 3.715 The *t* value obtained for the post-intervention score of Attitude towards mathematics of the students taught through the conventional method and the students taught through the Vedic method for the subsample from govt-aided school and private school is more than the table value 1.96 and hence the difference can be said to be significant at .05 level. The mean score of the students taught through Vedic mathematics-based instruction is much higher than the students taught through the conventional method. Hence, Vedic Mathematics applied in the third-grade is effective in enhancing the attitude toward mathematics of the third-graders.

38. The endeavor to examine the effectiveness of Vedic mathematics based on the learning style of students brought out the following findings.

    From the analysis done, it was seen that there existed three different learning styles among the selected sample. Of the sample selected in eighth grade (38) % of students fall under the visual category, (26) % were auditory and (16) % were kinesthetic learners. When the students in third grade were analyzed, it was seen that (34) % of students fall under the visual category, (26) % were auditory and (20) % were kinesthetic learners.

39. One-Way ANOVA was employed for eighth grade to know the significant difference in the achievement of students trained through Vedic mathematics-based instruction

based on their learning styles and the F value 1.105 has no significance at .05 level. It tells that the students with different learning style is equally benefitted from the Vedic mathematics method and has no separate effect on the students according to their learning style.

The *F* value obtained for the ANOVA 0.228 (*df* – 77/2) found out for the third grade with their learning style is less than the Table value (R =3.13). The value of significance 0.797 clearly shows that there is no significance at the .05 level. The result, reveals that the students taught through Vedic mathematics-based instruction is effective for all three learning groups equally. The results indicate that Vedic mathematics-based instruction is effective for students with auditory, visual, and kinesthetic learning styles.

40. The t value obtained for computation speed of the students taught through the conventional method and through Vedic mathematics (4.423 and 5.680) for the VIII and III grade students shows a significant difference, and the mean value indicates that students taught through Vedic mathematics have enhanced computational speed.

41. Qualitative analysis was done by asking the opinions of teachers and students with a semi-structured interview and the responses suggest that teachers and students find Vedic mathematics beneficial in several key areas, particularly in enhancing student engagement and improving mathematical skills.

5.3 EDUCATIONAL IMPLICATION

This research aims to assess the effectiveness of Vedic mathematics-based instruction on academic success and attitude of primary and upper-primary students regarding mathematics. The results underscore that Vedic mathematics create a positive attitude towards the subject mathematics and apart from this, it also demonstrates that Vedic mathematics serves as an inevitable method for improving the achievement of students in mathematics.

Vedic mathematics is an ancient treasure that was hidden for several years. Vedic mathematics is meant for fast calculations and is proved to be a simple way to teach various concepts in mathematics. It helps to understand the relationships between the various concepts and numbers. Vedic mathematics is a wide-eyed method, as it is capable

of solving problems in a very short time and reduces the time of calculation. It enables us to arrive at quick answers.

Many students find mathematics a fearful subject. They are scared of the concepts and formulae used to solve problems. This can be assisted by Vedic mathematics as it enhances a positive attitude towards learning mathematics and motivates the students and thereby creates interest in the subject.

By emphasizing learning mathematics through Vedic methods, the students can develop confidence and concentration. Vedic mathematics helps students to develop mental calculations and a better understanding of the concepts. Vedic mathematics can be mastered only if the sutras are practiced. On continuous practice, an individual will have proper knowledge of Vedic mathematics and will be able to do calculations faster, and will find mathematics a blissful and playful subject.

5.4 RECOMMENDATIONS OF THE STUDY

The study has explored the "effectiveness of Vedic mathematics-based instruction on two different levels namely the primary level (third grade) and upper primary level (eighth grade)" and found that it is more effective in the primary level. This makes the investigator recommend the introduction of Vedic mathematics-based instruction from the early stages of education. Department of Education which is responsible for moulding the teachers can take necessary measures to implement new methods of teaching mathematics in addition to the existing methods of teaching mathematics and Vedic mathematics-based instruction can be in addition to it. The study has brought out the importance of teaching mathematics through Vedic mathematics-based instruction. Teaching through Vedic mathematics-based instruction has enhanced the achievement in mathematics and the attitude toward learning mathematics of school students. As the students lack the awareness of the importance of learning Vedic mathematics, it is imperative to create awareness of Vedic mathematics among the school students. This can be made possible by conducting seminars, webinars, and workshops on Vedic mathematics. The policy makers in the education sector can play a pivotal role in promoting the inclusion of Vedic mathematics in the school curriculum. In addition, educational institutions should make provisions for the availability of Vedic mathematics-based books in the library. All the stakeholders of education can be sensitized to the importance of Vedic mathematics-based

instruction as a quick and simple way of doing calculations and hence create a positive attitude towards Vedic mathematics. Time table can incorporate specific periods dedicated to Vedic mathematics starting from the lower-class level.

5.5 SUGGESTIONS FOR FURTHER RESEARCH:

With the knowledge from related literature on Vedic mathematics and through the experience gained during the process of conducting the research, the investigator suggests a few proposals in which research can be done in the future. Here in this study mathematics is taught through Vedic mathematics-based instruction but apart from the subject of mathematics, research on Vedic mathematics can be done in other disciplines also. Vedic mathematics is used to develop algorithms. Research on Vedic mathematics can be conducted at all levels of schools and also in colleges. Research can also be done on Vedic mathematics using technologies and games. Studies can be extended on low achievers and with a greater number of samples. Vedic mathematics includes a total of sixteen primary sutras and thirteen associated sub sutras providing a comprehensive framework for that can encompass all these sutras.

5.6 CONCLUSION:

The study **“Effectiveness of Vedic mathematics-based instruction on achievement in mathematics and attitude towards learning mathematics among primary and upper primary students"** indicates a significant enhancement in students mathematical performance and their disposition towards learning mathematics with the help of an enjoyable learning experience provided to them. Mathematics is considered to be the base for all other subjects. Learning mathematics is imperative but most of the students feel mathematics to be a tough subject. Students are scared of memorizing many formulas and concepts and this can be made easy by learning mathematics through our ancient method named Vedic mathematics. Vedic mathematics makes calculations easier and quicker. With the help of sutras, the concepts could be made simple, and calculations were done in a very short time. Vedic mathematics can be effective only if it is practiced. In addition to the conventional method, Vedic mathematics must also be given importance in the earlier class itself. If this could be done, learning mathematics would become an interesting task.