CHAPTER SIX
Summary, Major Findings, Conclusion, Recommendation and Suggestion for Further Studies

6.1 Introduction
This chapter states the entire research work in brief along with conclusion and recommendation.

6.2 Summary of the Study
6.2.1 Background of the Problem
The role of education in facilitating social and economic progress is well recognized. Development in the functional and analytical ability of children and youth through education open up prospects leading to both individual and group entitlements. Education in its broadest sense of improvement is the most crucial input for empowering people with skills and knowledge and giving them right of entry to productive and gainful employment in forthcoming future. Enhancements in education do not merely boost effectiveness but also augment democratic participation, upgrade health and the overall condition of individual and societal life.

Elementary education is the foundation of the pyramid of education system, stemming from provisions enshrined in the Directive Principles of State Policy and the 86th Amendment in the Constitution of India. The Sarva Shiksha Abhiyan (SSA), a flagship programme for Universalization of Elementary Education, has created a tremendous awareness among the masses regarding the importance of elementary education and the newfound enthusiasm among villagers in school management has no parallels. SSA has achieved provisioning of basic minimum conditions including physical infrastructure and teachers. However, it has yet not been possible to give good quality education at elementary level to a wide cross-section of children. This is because SSA has not yet addressed systemic reforms with a broad based objective of equalizing opportunities and life chances for all children. Besides, it was lacking in rights approach.
As elementary education is the base of the educational pyramid, it is here that we must ensure access to good quality education for all the sections of the population with special attention to the needs of the SC, ST, OBC and minority communities and girls. RTE, 2009 that made Free and Compulsory Education is imperative to give good quality elementary education to all children in the age group of 6 to 14 years. The Constitutional Right to Free and Compulsory Elementary Education to all children in the 6-14 age groups would be meaningful only if the education they receive is of good quality. The 12th Plan shall evolve the necessary policy, programmes and strategies for specifically improving the quality of elementary education after taking into account the achievements of the quality education so as to rectify some of its major shortcomings.

Mathematics is a creative discipline, the language of Mathematics is international. Mathematics become an indispensable factor for the progress of our present day world. It is the pivot of all civilization. Mathematical thinking is important for all members a modern society as a habit of mind for its use in the work place, business and finance and for personal decisions making. Mathematics is fundamental to National prosperity in providing tools for understanding Science, Engineering, Technology and Economics. It is essential in public decision making and for participation in the knowledge economy, Math equips pupils with uniquely powerful way to describe, analyze and change the world. Pupils who are functional in Maths and financially capable are able to think independently and applied and abstract ways and can reasons, solve problem and assess risk. An ideal system of education should enable individuals to know and develop to the fullest their physical and intellectual potentialities and promote their awareness of societal and human function as responsible members of society. In modern world we have to be more and more exact, we make larger use of quantitative terms we have to accurate to a split of second. Mathematics is vital to the continued growth of the nation, both for expanding internal advancement and maintenance of leading role of the world community. A strong background in Mathematics is crucial for many career and job opportunities in today’s increasing technological society. There can be no schooling without Maths. Mathematics helps in the process of decision making through its application to real life situations. It contributes in the development of precision, rational and analytical thinking, reasoning, positive attitudes and aesthetic sense. NPE(1986) Mathematics should be visualized as the vehicle to train a child to think, reason, analyze and to articulate logically. From ancient times, our society has given a lots of renowned Mathematician who have contributed a lot towards universalization of Mathematics as well accepted discipline in the whole education system. Along with this there is a myth in the society from yester year that a lot of gender bias prevails regarding choice and inclination towards Mathematics by the softer sex (female). Female were considered to be lacking logical and reasoning
abilities as a result, they were diverted towards non-scientific discipline. On the contrary human physiology has proved that there is only difference of one pair of gene in the biological make up of male and female. So, schools are expected to not just impart education in its narrow sense but, more broadly, to mould children's attitudes. Egalitarian values, compassion, tolerance, concern towards others, respect for cultural diversity, gender sensitivity and health education must be integrated in the curriculum at the elementary stage itself to help develop healthy and humanitarian attitudes.

**Education in India**

India has placed great priority on educating all its children, since independence. Soliciting a more just and equitable society, the Constitution of India is firm to providing to all children, opportunities for developing their potentialities and maximizing their learning in their areas of interest. In spite of this, unfortunately India is not competent to reach the interminable esteemed goal of Universal Elementary Education until now. Specifically, we are far away to achieve the goals of quality education in mathematics.

Education in India is provided and controlled by three levels: the central government in Delhi, the state governments and local sources (mainly private). It is directed by both the centre and the states.

The Eleventh Plan places the highest preference on education as a central gadget for achieving rapid and inclusive augmentation. It presents a comprehensive programme for strengthening the education sector covering all constituent of the education pyramid.

Elementary education, that is, classes I–VIII consisting of primary (I–V) and upper primary (VI–VIII) is the foundation of the pyramid in the education system and has received a major push in the Tenth Plan, 11th Plan and 12th Plan through the Sarva Shiksha Abhiyan (SSA). Free and compulsory education to all children up to the age of fourteen years is the Constitutional commitment in India and it became fundamental right through RTE, 2009. At the time of adoption of the Constitution in 1950, the aim was to achieve the goal of *Universalization of Elementary Education* (UEE) within the next ten years i.e. by 1960. Further, the quality of education is far from satisfactory. Therefore, The *Quality of Education* is at present, in the focus in all programmes relating to elementary education in general and primary education in particular. Significant efforts have been made in the last fifty years to universalize elementary education.

**6.2.2 Objectives of the Study**

- To construct a standardized achievement test in mathematics of class VIII.
- To find out the level of students’ achievement in mathematics.
• To compare the students’ achievement in mathematics gender wise.

• To identify the areas of under achievement of the students in different components of mathematics.

• To find out the probable causes of under achievement in mathematics.

• To suggest remedial measures for the under achievers in mathematics.

6.2.3 Significance of the Study

In our society academic achievement is considered as key criteria to judge one’s total potentialities and capacities. Several initiatives have been undertaken in Sarva Shiksha Abhiyan for improvement of quality in mathematics learning in the schools. Mathematics being a compulsory subject of study, access to quality mathematics education is every child’s right. Mathematics education at the elementary stage should help children prepare for the challenges they face further in life. Above all, since elementary education being every child's right, achievement in mathematics at this stage plays an important role in future perspectives. In this context, the researcher had tried to find the level of achievement of mathematics at the end of elementary education.

6.2.4 Hypotheses

\( H_{01} \): There is no significant difference between the achievement in mathematics of boys and girls students of schools in rural areas of south 24 Parganas.

\( H_{02} \): There is no significant difference between the achievement in mathematics of students of active delta area and matured delta area.

\( H_{03} \): There is no significant difference between the achievements in mathematics of the boys students of active delta area and matured delta area.

\( H_{04} \): There is no significant difference between the achievements in mathematics of the girls students of active delta area and mature delta area.

\( H_{05} \): There is no significant difference between the achievement in mathematics of boys and girls students of active delta area.

\( H_{06} \): There is no significant difference between the achievement in mathematics of boys and girls students of matured delta area.
There is no significant difference between the achievement in mathematics of girls of active delta area and boys of matured delta area.

6.2.5 Methodology of the Research

6.2.5.1 Population

Students of different government aided/sponsored schools of rural area of South’ 24 Parganas is considered as population for the study.

6.2.5.2 Sample and Sampling Technique

Stratified random techniques were adopted for the study. 400 students were taken from nineteen schools. Out of these 160 students were taken from 7 schools in active delta area and 240 students from 12 schools were taken in mature delta area randomly.

6.2.5.3 Tools

An Achievement test in mathematics for class VIII was made and standardized. The test was comprised of 40 items with full marks 50 and the researcher found the reliability by Split Half method. Value of reliability was 0.91.

6.2.6 Delimitation of the Study

The study will be delimited to the students of class VIII of government-aided schools under the West Bengal Board of Secondary Education (Bengali Medium).

6.2.7 Collection of Data

To construct the achievement test in mathematics, the test was initially administered for pilot study to 77 students of class IX. After standardization of the test being completed, the test was administered to 400 students of class IX in the months January – February, 2014 i.e. after completion of elementary education. The test was taken in a fare and free atmosphere created by the investigator and the respective teachers of the school. The investigator discussed with teachers, Headmaster / Headmistress, students and few parents also for qualitative analysis.

6.2.8 Analysts of the Data

For quantitative analysis of data, percentage, mean, standard deviation, t-test were done and qualitative analysis was done on the basis of informal discussion with the subject teachers, headmaster / headmistress, few guardians and students of schools.
6.2.9 Findings of the study

I Construction of a Standardized Achievement Test

Steps of Construction

A standardized achievement test in mathematics was constructed where objectives were defined in behavioral terms focusing on Remembering, Understanding, Application and Skill from the units of Mathematics textbook of classes upto VIII prescribed by W.B.B.S.E. Content were divided into fourteen components from the syllabus of Mathematics textbook of class VIII prescribed by WBBSE as follows:

Component 1: Number
Component 2: Ratio and Proportion
Component 3: Unitary method, Percentage
Component 4: Time and distance
Component 5: Perimeter and area of Plane figure
Component 6: Variable, Algebraic Expressions
Component 7: Identities and factorization of algebraic expressions
Component 8: Linear Equation
Component 9: Fundamental geometrical concept
Component 10: Axioms on straight lines, triangles, polygons etc.
Component 11: Similarity and congruence
Component 12: Construction
Component 13: Geometrical transformation
Component 14: Statistical representation

The test items included fill in the blanks, multiple choice questions, short answer and essay type questions. Total number of items framed was 45 from the whole syllabus in the subject of Mathematics of VIII class based on the textbook prescribed by WBBSE, CBSE, ICSE. In order to ensure adequate coverage in the test items to achieve the intended purpose of the test items, information based on Experts’
opinion, discussion with teachers and Literature already available were taken in to account. This enabled the investigator to prepare items covering the entire unit. These items were examined by school teachers & experts whose comments about the content, structure and language of the items were taken into account and changes were made accordingly. In this way, the first draft of test was developed. The researcher has taken the decision of arrangement of the question in the hierarchy of marks i.e., objective, very short, short and long type questions respectively. Also the questions were arranged by difficulty level subsequently. A scoring key was developed. Clear and precise directions to the students were given in the front page of the test booklet. At first all items were reviewed by the researcher and the experts to eliminate potentially biased items. After preparing the test items and scoring key, the first try out was administered on a sample of 77 students. The achievement test was administered to class IX students who had already studied the content of mathematics upto standard VIII. 2 hours were fixed for first tryout of the test. After the first try out the answer sheets were scored as per the scoring key and scoring directions already prepared by investigator. One mark was assigned to each correct answer to questions with 1 mark and part marking was done in case of items with 2 and 3 marks depending upon the response of the students work and zero to incorrect answer. Item analysis was done by determining difficulty level and discrimination index for the 45 items. Then the achievement test was revised. The number of items became 40 and full marks became 50. After item analysis, the test was administered on 400 students (210 boys and 190 girls) of 19 schools from rural areas of South 24 Parganas. The test was standardized developing norms to use the raw scores obtained in the achievement test. Development of scales helps to compare an individual's performance to that of the average person of various developmental levels. For this purpose, the researcher were normalised the row scores using formula for standard z- scores:

\[ Z = \frac{X - M}{\text{Standard Deviation}} \]

where \(-1 < Z < 1\), where \(X\) stands for raw score and \(M\) for the mean of whole scores obtained in the test. The split-half method was used to calculate reliability. The reliability coefficient of the test was 0.91. Face validity and content validity was determined by inspection of test-items, judgment of subject expert(s) and careful analysis of actual subject-matter studies and instructional objectives against the Blueprint of the test. To ascertain the extent to which the test measures the construct the questions and nothing more by finding correlation between the score obtained on the developed tool and the scores obtained in annual examination of class VIII. The product moment correlation coefficient \(r=0.908\) i.e. it can be said that there exists a high correlation between the two scores obtained by the same group of students. Therefore the concurrent validity of the developed achievement test was justified.
2. Status of Students Achievement in Mathematics

The findings of the study gave an idea about the performances of total students in the achievement test. It was found that 48.39 % students gave correct response, 11.60 % students didn’t respond, 1 % students had given partially correct response and 39 % students had given wrong answer.

(a) Component wise and group wise achievement of the students

If component wise achievement of the students is considered then it could be observed that in the component Construction and Statistical Representation, students were at excellent level of achievement. In the components - Geometrical Transformation, Similarity and Congruence and Perimeter, area of Plain figures, the achievement of the students were at very good level of grade. In the component Unitary Method, Weighted Mean, Percentage, performance of the students were not well, actually they were at disqualified level of grading i.e. their performances were below 25% level of achievements. It was found that almost 45% students had given wrong answer by guessing or somehow in the components - Ratio and Proportion, Time and Distance, Perimeter, area of Plain figures and Linear Equations and its application. Surprisingly, 30.42% students could not give any answer in the component - Unitary Method, Weighted Mean, Percentage. Among different groups of mathematics it was found that the students had done better in statistics and geometric construction, performance was not good in arithmetic, mensuration groups. They faced problems in application based questions in algebra and geometry also.

(b) Gender wise Achievement in Mathematics

It was found that boys students performed little better than girls students in almost all components. The mean value of the test was found 25.67 for boys students and that of girls students was 22.03. It was seen by testing t- test that the computed t-value is 3.97. It is more than the critical values at 1 percent levels of significance (critical t-value 1% level of significance for 398 degrees of freedom is 2.59 respectively ) It should thus be taken as quite significant and consequently the null hypothesis $H_0$ stands rejected at the levels of significance ($H_0$.There is no significant difference between the achievement in mathematics of boys and girls students of schools in rural areas of south 24 Parganas) . Therefore, it can be said that there stands significant difference between the achievements of boys and girls signifying that boys have better achievements than girls in mathematics. With respect to grade it was observed that 22.9% boys students had achieved grade A while 15.3% girls students had gained that grade. Again, in achieving grade B+ girls students had performed better than boys, 25.8% girls students acquired that level of grade while only 18.6 boys students had got that grade. Among five groups of mathematics both of boys and girls were at outstanding level of performance in statistics, in arithmetic, algebra and geometry boys had
done better than girls and in mensuration girls students had outperformed than boys. So, boys were in a better position than girls though girls were not in a dreadful state at all as convention of our society.

(c) Area wise Achievement in Mathematics

The total area under study was divided into two parts namely active delta area and matured delta area. The reason behind separating the region is demographic as well as geographic. Achievements of the students of these two regions differ in a great extent. The mean value of the test in mathematics found for active delta area was 31.16 and that of matured delta area was 19.13, full marks of the test were 50. That is there was a difference of 12 marks in the mean value, in percentage that become 24, so performance of students of active delta area were better. Grade wise 4.4% students of active delta area had achieved AA grade whereas 0.4% students of matured delta area had got that grade. Also 37.5% students of active delta area had acquired A grade and only 7.1% students of matured delta area had secured that level of grade. Even girls students of active delta area had performed very much better than boys students of matured delta area. The mean value of the test was found for girls students of that region was 28.43 and that of boys of the mentioned area was 20.62. Again 32.5 % girls students had achieved grade A whereas the boys students of matured delta area had got that grade. It will be noteworthy to point out that 21.3% boys students of active delta area had achieved A+ grade while no students of the matured delta area had acquired that grade. Also no girls students of active delta area were disqualified but 25.5% girls students of the matured delta area were at disqualified level i.e. they were not eligible for promotion to next class. More statistically, it was observed that the critical value of t-test 1% levels of significance is 2.59 for degree of freedom 398. Consequently the null hypothesis $H_{02}$ stands rejected at both the levels of significance ($H_{02}$.There is no significant difference between the achievement in mathematics of students of active delta area and matured delta area.). It can be said that there stands very significant difference between the achievements of students of the two areas. Therefore it can be said that the overall performance of the students of active delta area were better than the students of matured delta area in all respect in achievements in mathematics.

(d) Areas of Weaknesses / underachievement

In the study it was found from the analysis set in the fourth chapter that the students faced difficulties in the problems of number system and arithmetic. The students have difficulties with computation with decimal fraction application based problem

In the four items namely Item no. 17, Item no. 31, Item no. 34 and Item no. 35 the position was very shocking. Item no. 17 was an application based problem of algebraic identity. Item no. 31 was a problem of geometrical application, item 34 was from decimal and fraction and item 35 from weighed mean of
arithmetic. An identical observation about the weaknesses in those four items for both boys and girls students was seen. In all the four items performances were in a disgraceful stage. It also revealed the fed-up condition of students of Matured Delta Area in those four items. Again among those four items in two items 17 and 34 9.58 % and 9.16% students gave correct response exposing an awful status of weaknesses.

(e) Causes of Weakness in Mathematics

Table 6.1 Causes of Weaknesses

<table>
<thead>
<tr>
<th>Types of error</th>
<th>Causes of Weakness</th>
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<tbody>
<tr>
<td>Lack of Knowledge to identify the problem</td>
<td>The students’ previous knowledge is not clear</td>
</tr>
<tr>
<td>Lack of Understanding the method</td>
<td>The students do not have appropriate acquaintance with the method of the problem</td>
</tr>
<tr>
<td>Lack of Power to apply</td>
<td>The students do not have adequate comprehension to identify mathematical logic</td>
</tr>
<tr>
<td>Lack of Power of Skill to compute/evaluate the</td>
<td>The students may be short of sufficient realization for conversion verbal statement to mathematical statement</td>
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<tr>
<td>answer to the problem</td>
<td></td>
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<tr>
<td></td>
<td>The students may be deficient in an adequate amount of practices to crack accurate answer</td>
</tr>
<tr>
<td></td>
<td>The students do not have ample proficiency recognize geometrical figure and associated properties.</td>
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</tbody>
</table>
In this context, the researcher draws attention to four problems which the society believes to be the core areas of concern:

1. A sense of fear and failure regarding mathematics among a majority of children,
2. A curriculum that disappoints both a talented minority as well as the non-participating majority at the same time,
3. Crude methods of assessment that encourage perception of mathematics as mechanical computation, and
4. Lack of teacher preparation and support in the teaching of mathematics

Also, four main issues in the teaching and learning of mathematics in the classroom are accountable for achievement / underachievement of the learners (source, NCERT):

1. **Teaching methods**

   Students learn best when the teacher uses a wide range of teaching methods.

2. **Resources and teaching aids**

   Students learn best by doing things: constructing, touching, moving, and investigating. There are many ways of using cheap and available resources in the classroom so that students can learn by doing.

3. **Language of the learner**

   Language is as important as mathematics in the mathematics classroom. In addition, learning in a second language causes special difficulties.

4. **The culture of the learner**

   Students do all sorts of mathematics at home and in their communities. This is often very different from the mathematics they do in school. Examples should be taken from all over the surroundings world of students. Helping students to make that link will improve their mathematics.

(f) **Remedies**

There are few remedies for intervening in the classroom for teachers:

1. Screen all students to identify those at risk for potential mathematics difficulties and provide interventions to students identified as at risk.
2. Instructional materials for students receiving interventions should focus intensely on in-depth treatment of whole numbers in kindergarten through grade 5 and on rational numbers in grades 4 to grade 8.

3. Instruction during the intervention should be explicit and systematic. This includes providing models of proficient problem solving, verbalization of thought processes, guided practice, corrective feedback, and frequent cumulative review.

4. Interventions should include instruction on solving word problems that is based on common underlying structures.

5. Intervention materials should include opportunities for students to work with visual representations of mathematical ideas and interventionists should be proficient in the use of visual representations of mathematical ideas.

6. Interventions at all grade levels should devote about 10 minutes in each session to building fluent retrieval of basic arithmetic facts.

7. Monitor the progress of students receiving supplemental instruction and other students who are at risk.

8. Include motivational strategies - Reinforce or praise students for their effort and for attending to and being engaged in the lesson.


10. Allow students to chart their progress and to set goals for improvement.

In addition, some group activities should be done as follows:

- **Tutorial classes** where additional problems are solved and students interact with each other in addition to a faculty member.

- Where there are a large number of weak students who cannot be handled individually, a ‘Student Academic Support Program’ could systematically provide extra classes, extra notes and extra guidance.

- **Student and faculty collaborations on projects** (which may be integrated in the curriculum) where teachers are available to students formally and informally and focus attention on weak members of the group.
Improving Classroom Practices

- One of the most critical needs is to ensure classroom sizes in which teachers can give adequate attention to the students and involve them in the daily lesson practice is an important request from students – which also means giving more time to lab work, projects.

- **Move around the classroom and interact** with students while they solve problems or read texts,

- **Speak clearly and audibly**.

- **Use media** beyond ‘chalk and board’, **OHPs and Power-points** - classrooms can be equipped with **charts, models, projectors and videos** to make instruction more visual and tactile.

- **Give feedback** to students on their performance and how to improve it. Weak students (and others) say they rarely get constructive feedback; in some instances, they get no feedback at all. Besides making such feedback part of teachers’ responsibilities, they need to be trained in how to provide it.

- **Be available for formal and informal contact** after class.

Increasing Student Participation in the Classroom

Both faculty and students agree that student participation in the classroom must be encouraged because it engages students more, builds their confidence, and helps clear their doubts.

6.3. **Conclusion**

To sum-up the study the following thrust points appeared in the findings of the research.

- Overall mean value of the scores of the achievement test in mathematics was 23.94 out of 50.

- Only 5.8 % students had got above 80 % of marks and 19.3 % students had got above 60 % of marks.

- Boys had done better performances than the girls students in the achievement test in mathematics. The difference in their achievement was by 7.3 %.

- Students of Active Delta Area had done very much better than the students of Matured Delta Area. Mean value of scores obtained by students of Active Delta Area was 31.16 whereas that of Matured Delta Area was only 19.16 out of 50.
Also it was noticeable that 38% students of Active Delta Area had achieved above 60% of marks while only 7% students of the other area had achieved so.

A significant observation that revealed the fact that girl student of Active Delta Area had achieved by more than 15% in mean value scores than that of boys students of Matured Delta Area. While 7.6% girl students had scored above 80%, no boy students of the mentioned area had achieved such percentage of marks.

Students were more comfortable in statistical representation and construction section. More than 90% of students gave a correct response in those items.

From the weakness point of view it can be said that most of the students had faced the problem in arithmetic and geometrical items. For example 42% students gave wrong answer, 30.42% students gave no response in a problem sum of arithmetic section. Also it was found that students had faced difficulties in application based items.

In sum, additional collaborative efforts – institutional, financial and analytical – are needed in order to supplement the lessons learned from this study and add a new dynamic to ongoing national efforts to improve the quality of learning for all elementary school-age children in mathematics.

6.4 Recommendation

A research study is meaningful if and only if its findings can be put to a profitable use to solve a problem of human interest. The psychology of individual differences states that even individual is different from every individual in the world in all respect of personality. Therefore, it is obviously highly unreasonable to place every child in the same kind of learning situation. It needs not to be emphasized that all educational efforts are aimed at improving academic performance. Some of the recommendations of the study are as follows:

- Promotion of Information and Communication Technology Systems in School Education should be encouraged. Lack of awareness of Information and communication technology and its usage in life in general and education in particular is holding back its application and tremendous benefits.

- New knowledge, pedagogies and approaches for teaching of Mathematics in School Education to improve learning outcomes of students should be highlighted. Children, especially in rural areas, demonstrate great learning skills through their curiosity, exploration, experiments, and innovations with locally available material. However, their activity based learning is severely
challenged in the classrooms which centre on textbooks, information and examinations. The worst sufferer in this situation is science, the subject of explorations, discoveries and innovations.

- Schools must have to facilitate interface of students with science professionals such as scientists, mathematicians, from different institutes and rural entrepreneurships to enable children how scientists work and how science progresses through collective efforts. India is on a mission towards skill development and entrepreneurship. The foundational skills of early years and elementary education can only actualize this dream of the nation. Therefore emphasize more on understanding mathematics and acquisition of mathematical skills for children than mugging up information. Understanding and skills need to be measured than information in examinations. Using local curriculum will encourage parents and local community participation and evolving pedagogy suited to the local contexts.

- Involvement materials should include opportunities for students to work with visual representations of mathematical ideas and interventionists should be proficient in the use of visual representations of mathematical ideas i.e. each school should develop mathematics laboratory.

- It is important to accelerate the process of eradicating gender gap with special emphasis on girls students. Girls students should be informed the importance of mathematics and it is the basic tool for further education. Mathematics teaching and evaluation strategies should be bias-free. This way, males and females will tend to see themselves as equals, capable of competing and collaborating in classroom activities. A lot need to be done to fill this gender gap in mathematics achievement. Male and female students should make the competitive environment, coordinate and exchange their knowledge from one another in mathematics teaching and learning..

- Where there are a large number of weak students who cannot be handled individually, a ‘Student Academic Support Program’ could systematically provide extra classes, extra notes and extra guidance.

6.5 Implication of the study

Research of all kinds are directed towards the goal of discovering new knowledge about nature so that the new knowledge might be utilize for making human living more comfortable. The findings of this study have some important implication for educational practices in general and curriculum planning, teaching methods and evaluation techniques in particular. The findings also have some implications for further research in this field. Some of the Educational Implications of the study are as follows:
The persons and organization involved in upper primary education shall get the comprehensive picture of mathematics education at the end of elementary education in rural areas of south 24 parganas along with detail authentic data.

The findings of the study shall help directly the educationist, education planners, policy makers, administrators, West Bengal Board of Primary Education and West Bengal Board of Secondary Education, District Primary School Council, Three Tier Panchayatee Raj and SSM authorities including Village Education Committee and Community members in their works.

This study shall be helpful for both Central and State Government to adopt appropriate policies and plan of effective execution to achieve the goals of universalization of elementary education.

The Head Teachers and the teachers of primary and secondary schools, the guardians and the school inspectors can get the present status of mathematics education in primary and secondary schools at the end of completing the eight years compulsory elementary education in various dimensions.

This study opens many avenues for future studies in the field of teaching methodologies, role of teachers communities, attitude of teachers towards creating and establishing fear free environment of learning mathematics in schools.

6.6 Suggestion for Further Studies

- Observation done in 19 schools in six blocks in the district of South 24 Parganas may not be the representative in nature in consideration of multifarious differences in caste, community and other demographic condition of south 24 Parganas.

- The researcher did not observe for a considerable period the ongoing practice of teaching learning process, the methodologies practiced in school and its effect on the area of difference of quality among the different type of institutions. So a study may be conducted regarding quality difference among the institutions covering all quality aspects.

- A study can be conducted on the status of achievement level in mathematics in private schools and then comparison could be done with the Government aided and sponsored schools.

- A study can be conducted to evolve teaching learning process through deep rooted comprehensive diagnostic test to overcome the learning difficulties in mathematics to acquire some competencies in those components as identified by this study.
• A study can be conducted on scope and feasibility of use of Information Communication Technology (ICT) and Mathematics Laboratory for improving quality of mathematics teaching in rural primary, upper primary and secondary schools in the district of south 24 Parganas of West Bengal.

• The research findings presented are intended to be used as a starting point, which can initiate staff development activities and spark discussion among educators, rather than as a prescription that is equally applicable to all classrooms. As Miriam Met writes in her chapter on foreign languages on improving student achievement:

> Research cannot and does not identify the right or best way to teach […] But research can illuminate which instructional practices are more likely to achieve desired results, with which kinds of learners, and under what conditions. […] While research may provide direction in many areas, it provides few clear-cut answers in most. Teachers continue to be faced daily with critical decisions about how best to achieve the instructional goals embedded in professional or voluntary state or national standards. A combination of research-suggested instructional practices and professional judgment and experience is most likely to produce [high student achievement].

• Each findings should be followed by further analysis and action by national and state level decision makers. For example, state educational authorities should review findings within their local context and against local priorities.

Thus, this paper cannot give educators all the information they need to become expert in research-based instructional practices in mathematics. Rather, these materials are designed to be used as a springboard for discussion and further exploration. Research studies on relevant themes should be assigned to competent agencies. Further, universities and social science research institutes of repute and standing should be addressed to encourage the researchers to work in the field of different aspects of elementary education for the award of doctoral and post-doctoral degree.