CHAPTER - V

SUMMARY

Significance of the Study

It is clear that secondary education is of decisive importance in the economy of developing countries. At the secondary stage science and maths are important because they play an important role in the development of critical reasoning in the minds of the people. In modern times, the future of every country depends on scientific and technological development. In fact the distinction between the developed and under developed and developing countries is largely based on their achievements in the field of science. Mathematics is the pillar of science. The study of mathematics as a subject has a unique position in any school curriculum. Many methods and techniques have been used to develop the mathematical and scientific attitude among students. Since many efforts are being made by our government to improve the standard of mathematics at school level, it is disappointing to see a high percentage of students continuously failing in mathematics for more than 20 years. In spite of efforts made by government the problem still persists. The achievement of students in mathematics is low, though mathematics occupies a place of importance all over the country. In Punjab also the achievement of students in mathematics is always low in comparison to other subjects. It is clear that our efforts to improve the status of mathematics at school levels over the past decades have been largely ineffective.

Why is there a little visible progress, the study will bring in light the factors causing low achievement in mathematics at secondary stage. Why do students achieve low marks in mathematics will be discovered by the investigator through this study. No research work has been done to study the causes of low achievement in mathematics. The investigator will try to find out main causes behind
the low achievement of mathematics. The removal of these causes will lead to better achievement in mathematics

**Statement of the Problem**

The problem in a measured language can be stated as under:

CAUSES OF LOW ACHIEVEMENT IN MATHEMATICS AT SECONDARY STAGE.

**Objectives of the Study**

1. To identify the low achievers in Mathematics in secondary schools.
2. To study intelligence, academic achievement motivation, attitude towards mathematics and socio-economic status of the subjects having low achievement in mathematics.
3. To compare intelligence, academic achievement motivation, attitude towards mathematics and socio-economic status of low achievers in mathematics in relation to their gender, locale and type of school.
4. To enlist causes of low achievement in mathematics of the students as perceived by the low achievers in mathematics, their teachers and their parents.

**HYPOTHESES**

1. Students having low achievement in mathematics, both boys-girls, rural-urban, government-private separately and as a combined group have various levels of intelligence.
2. There is no significant difference in intelligence level of low achievers in mathematics in relation to their gender, locality and type of school.
3. Students having low achievement in mathematics both boys-girls, rural–urban, government-private separately and as a combined group have various levels of academic achievement motivation.
4. There is no significant difference in academic achievement
motivation of low achievers in mathematics in relation to their gender, locality and type of school.

5. Students having low achievement in mathematics both boys-girls, rural-urban, government-private separately and as a combined group have various levels of attitude towards mathematics.

6. There is no significant difference in attitude towards mathematics of low achievers in mathematics in relation to their gender, locality and type of school.

7. Students having low achievement in mathematics both boys-girls, rural–urban, government-private separately and as a combined group belong to various levels of socio-economic status.

8. There is no significant difference in socio-economic status of low achievers in mathematics in relation to their gender, locality and type of school.

9. Perceptions of low achievers in mathematics, their teachers and their parents are different regarding the causes of low achievement in Mathematics.

**DELIMITATION**

1. The study was confined to the students who were low achievers in mathematics in the matriculation examination of Punjab School Education Board in the March 2008-2009.

2. While studying the causes of low achievement in mathematics, the study was delimited to variables namely intelligence, academic achievement motivation, attitude towards mathematics and socio-economic status and perceptions of parents, teachers and students about the causes of low achievement in mathematics.

3. The study was restricted to Malwa area.

4. It was delimited to teachers who taught Mathematics to the Matriculation classes and parents of students having low
achievement in mathematics and students who were low achievers in Mathematics.

Sample
In the present study the population comprised the students who passed the matriculation examination with low achievement in mathematics. A sample of 354 students from three districts (Sangrur, Mansa and Faridkot) of Malwa region who have passed matriculation examination from Punjab School Education Board during 2008-09 have been taken. The students who have scored 33-40 marks in Mathematics subject and more than 40% in other subjects (at least four subjects) have been selected as sample. Equal number of male and female low achievers in mathematics has been selected from rural and urban areas and from government and private schools for this study. The parents of students having low achievement in mathematics and teachers who had taught them made the sample for securing teachers and parents ‘perceptions. The investigator herself visited secondary and senior secondary schools of these three districts and was able to collect information regarding their personal, social, psychological and economic causes of low achievement in mathematics from these students, parents and teachers.

Tools
The following tools were used to collect data related each variable of the study.
1. Intelligence Test of Ojha and Chowdhury (2006).
5. A self-constructed checklist was used to find out the perceptions of students; teachers and parents regarding the causes of low achievement.

Procedure
For the present study, descriptive survey method was employed. Data was collected for variables like intelligence, achievement motivation, mathematical attitude and socio-economic status. Standardized tests were administered to 354 low achievers in mathematics. From the gazette and internet the result of final examination of matriculation was scrutinized and the low achievers were found in different government and private schools of three districts (Sangrur, Mansa and Faridkot) of Malwa. The low achievers (male and female) were chosen from rural and urban areas of three districts.

The instructions and directions given in each manual were strictly followed. The scoring procedure was carried out as directed by the author of the tests.

For finding the causes behind the low achievement in mathematics as perceived by the low achievers in mathematics, their parents as well as their teachers of mathematics, a checklist was prepared. The checklist was administered to each low achiever of the sample and the parents and teachers of mathematics of the low achievers of the sample.

The data were recorded in tabular form for statistical analysis according to the objectives of the investigation. The analysed data was given a statistical treatment for discussion, results interpretation and conclusions.

Means, medians, standard deviations, skewness, kurtosis of all variables i.e. intelligence, achievement motivation, mathematical attitude and socio-economic status were calculated.

t-test was used to find significance of the difference between the male and female, rural and urban and government and private students who are low achievers in mathematics. The obtained results were tabulated for discussion, interpretation and conclusion in the chapter that follows.

5.2 FINDINGS AND CONCLUSIONS
1. **Intelligence of the Low Achievers in Mathematics:**

   a) The mean score on intelligence of the low achievers in mathematics is 60.97 with an SD of 10.74. The distribution of intelligence scores show that 34.18% of the low achievers in mathematics lie in mean interval i.e. 60-69. There are 45.18% of low achievers in mathematics who have intelligence scores less than mean interval and 20.61% of the low achievers in mathematics have score higher than the mean interval. If the norms given in the manual are divided into three categories i.e. bright, average or dull, this group as per mean score (60.97) comes under the category of dull normal.

   b) The intelligence levels of the low achievers in mathematics do not differ significantly in relation to their gender, locale and type of school.

2. **Academic Achievement Motivation of Low Achievers in Mathematics**

   a) The group of low achievers in mathematics has mean value of 28.77 with an SD of 4.39. So this group has an average academic achievement motivation. The distribution of scores of academic achievement motivation indicates that 35.59% of low achievers lie in mean interval. 14.11% of low achievers in mathematics have scores less than mean interval and 50.28% of low achievers in mathematics have academic achievement motivation scores higher than the mean interval.

   b) The male and female low achievers in mathematics differ significantly in relation to their academic achievement motivation.

   c) It is indicated that urban and rural low achievers differ significantly in relation to their academic achievement motivation. Urban low achievers in mathematics are lowly motivated as compared to rural areas.

   d) Academic achievement motivation of low achievers in
mathematics does not differ significantly in relation to their type of school.

3. **Attitude of Low Achievers in Mathematics Towards Mathematics**

   a) The mean value for the attitude of low achievers in mathematics towards mathematics of the total sample (N=354) is 171.19.

   b) 34% of low achievers in mathematics have moderate level of attitude towards mathematics. 43% of low achievers in mathematics have attitude towards mathematics below average and 23% of the low achievers in mathematics have above average attitude towards mathematics.

   c) It is clear that attitude of low achievers in mathematics towards mathematics do not differ significantly in relation to their gender and locality of school.

   d) Attitude towards Mathematics of low achievers in mathematics differ significantly in relation to their type of school.

4. **Socio-Economic Status of Low Achievers in Mathematics**

   a) The mean value for the socio-economic status of low achievers in mathematics of the total sample (N=354) is 70.4. It can be inferred that the majority of students belong to average category.

   b) About 15% low achievers in mathematics belong to category of above average. About 41% low achievers in mathematics have average scores of SES and 35% low achievers in mathematics have below than average scores of SES. About 9% low achievers in mathematics have poor (49 or below than 49) scores of SES.

   c) Socio-Economic Status of low achievers in mathematics does not differ significantly in relation to their gender.

   d) Urban and rural low achievers differ significantly in relation to their socio-economic status.

   e) Socio-Economic-Status of low achievers in mathematics differs significantly in relation to their type of school.
5. Causes of Low Achievement as Indicated by Low Achievers in Mathematics, their Teachers and their Parents

a) The mean scores on causes of low achievement in mathematics indicated by students, teachers and parents for personal causes is 28.77, for causes related to family is 28.06 and for causes related to school is 27.01 respectively.

b) Personal causes have been rated at No. I then family factors at No. II and school factors are at No. III by the low achievers in mathematics. But the teachers rate them in different way. The teachers assign rank I to family factors and Rank II to Personal factors and Rank III to School factors. On the other hand the parents of low achievers in mathematics rank personal factors at No. I, School factors at II and Family factors at No. III.

6. Interco Relations of Variables Under Study

a) Intelligence of low achievers in mathematics is positively related to their academic achievement motivation.

b) Intelligence of female low achievers is correlated significantly at 0.01 level whereas intelligence of male low achievers in mathematics is not significantly correlated to their academic achievement motivation.

c) Intelligence of urban low achievers in mathematics and of government schools is also significantly correlated to academic achievement motivation.

d) Intelligence of low achievers in mathematics belonging to rural and private schools is not significantly correlated to academic achievement motivation.

e) Intelligence of all low achievers in mathematics and low achievers in mathematics studying in private schools is correlated significantly to their attitude towards mathematics.

f) Intelligence is not significantly correlated with attitude of male, female, rural, urban low achievers in mathematics towards mathematics. Intelligence of low achievers studying in
government schools is also not correlated significantly to their attitude towards mathematics.

g) Intelligence of all low achievers in mathematics as well as male low achievers in mathematics is also correlated significantly with socio-economic status. Whereas intelligence of female, rural, urban, govt. and private low achievers in mathematics is not correlated significantly to socio-economic status.

h) Academic achievement motivation and attitude towards mathematics of all low achievers in mathematics and male, female, urban low achievers in mathematics and low achievers in mathematics studying in private schools is correlated significantly but academic achievement motivation and attitude towards mathematics of low achievers of government schools and low achievers belonging to rural schools is non-significant.

i) The relationship between academic achievement motivation and socio-economic status for entire group is totally negative and non-significant. Academic achievement motivation of only male low achievers in mathematics is negative but correlated significantly to their socio-economic status.

j) Attitude towards Mathematics of whole group of low achievers in mathematics and of male low achievers is negative and not related significantly to socio-economic status. Attitude towards Mathematics of female, rural, urban low achievers in mathematics and belonging to government and private schools is not related to their socio-economic status. But low intelligent group of low achievers in mathematics belonging to high socio-economic status families have higher attitude towards mathematics.

5.3 RECOMMENDATIONS AND SUGGESTIONS

1. Mathematics and science have always been important areas of study both for students in elementary and secondary schools. Intelligence is considered as a relevant and powerful factor for
the achievements of the individuals. The present study has proved that intelligence is an important factor contributing low achievement of subjects in mathematics. The students achieving less marks in mathematics belong to low intelligence level. It can be concluded therefore, that low achievers in mathematics have a low intelligence level. So intelligence level of the students should be improved.

2. Teachers as well as the parents of students should pay attention to the students sincerely. Concepts of mathematics should be made clear at early stage. Students should be taught in an interesting way by using effective techniques. It can help students better comprehend the material being taught. Extra time should be provided to low achievers so that they are not left behind academically. Moreover the teachers should not emphasize on completing the whole syllabus. Easy and simple concepts should be taught earlier and a lot of practice is needed on the part of students to learn difficult concepts. Teachers should give home work to students daily. More time should be spent with students having low intelligence level. So more time should be given to students for practice.

3. Parents themselves should try to solve personal and family problems which hamper the students’ mental abilities. They themselves should create interest of students in mathematics. Child centered approach should be applied to find individual differences among students. Syllabus should be simplified. Syllabus should be completed earlier every year in order to have time for revision.

4. The study shows that low achievers in mathematics have average academic achievement motivation. Low achievers are not characterised by poor academic achievement motivation but they are average on this variable. They want to learn but there may be certain other causes behind their low achievement in
mathematics. Their academic achievement motivation should be enhanced. New technology should be used to enhance academic achievement motivation of students. Teachers need to be aware of the effects of mathematics anxiety on students’ achievement and motivation. They should make an effort to lessen mathematical anxiety of these students.

5. Conducive environment should be created in which students do not feel threatened. Students should be encouraged to work hard and to understand the value of mathematics. Students should be divided into cooperative grouping. It helps students to understand that others have the same problems as they do. Teachers should create good rapport with students. They should motivate students by giving them rewards and incentives.

6. Stakeholders should organize periodic seminars and workshops for students, parents and teachers designed to promote positive attitudes towards mathematics. Role models in Mathematics should be invited to schools to encourage students. The importance of mathematics should be realised by parents and the students.

7. This group has an average attitude towards mathematics. It is suggested that Mathematics teacher should show their students a sincere, caring attitude to help them to overcome mathematics anxiety. The teacher should develop positive relationship with students and stress classroom activities, which will involve active teaching-learning process and students’ participation in the class.

8. Secondary schools, Faculties of Education, State Ministries of Education, Teachers and other stakeholders in the education industry should organize periodic seminars and workshops for students, parents, teachers and school administrators designed to promote positive attitudes towards mathematics.

9. Socio-economic factor plays an important role in the
achievement. The group of this study has below than average socio-economic status. The main factor of the social environment is the parent’s Socio-economic Status (SES) which affects the learning of an individual. A general perception is that the students belonging to upper class have greater opportunities to interact with learning environment and show greater achievement, on the other hand students coming from lower SES class have fewer opportunities and fewer resources and they remain behind in every walk of life. They may not be more productive as compared to other groups. So state government should provide more opportunities and resources to students belonging to low income families.

10. Perceptions of the teachers, parents as well as the low achievers in mathematics are different. The study shows that parents blame teachers and teachers blame parents and students for low performance in mathematics. But it is a fact that all the three parties i.e. low achievers in mathematics, their teachers of mathematics and parents all can be equally blamed for low achievement of subjects. Teachers have to do many official duties to perform so sometimes the students are neglected. The parents are busy in their own business and they also have no time to make the difficult concepts clear or they are busy in earning their livelihood. They themselves are not well qualified. They are not aware of importance of mathematics as a subject at school level. So it is recommended that factors related to personal factors, school factors as well as family factors should be given full attention at the very initial stage.

11. The study in hand is the pioneer study done on only three hundred and fifty four students. It is essential that the study be replicated on greater data and on other variables and in different areas.