CHAPTER VI
SUMMARY, CONCLUSION AND FINDINGS
CHAPTER VI
SUMMARY, FINDINGS AND CONCLUSION

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Introduction</td>
<td>133</td>
</tr>
<tr>
<td>6.2 Statement of the Problem</td>
<td>133</td>
</tr>
<tr>
<td>6.3 Objectives of the study</td>
<td>133</td>
</tr>
<tr>
<td>6.4 Hypothesis of the study</td>
<td>134</td>
</tr>
<tr>
<td>6.5 Method of study</td>
<td>135</td>
</tr>
<tr>
<td>6.6 Sample of the study</td>
<td>136</td>
</tr>
<tr>
<td>6.7 Variables under study</td>
<td>136</td>
</tr>
<tr>
<td>6.8 Tools used</td>
<td>136</td>
</tr>
<tr>
<td>6.9 Findings of the study</td>
<td>137</td>
</tr>
<tr>
<td>6.9.1 Correlation Analysis</td>
<td>143</td>
</tr>
<tr>
<td>6.9.2 Multiple Regression Analysis</td>
<td>144</td>
</tr>
<tr>
<td>6.9.3 Structural Equation Model Analysis</td>
<td>145</td>
</tr>
<tr>
<td>6.10 Conclusion</td>
<td>146</td>
</tr>
<tr>
<td>6.11 Educational Implications</td>
<td>147</td>
</tr>
<tr>
<td>6.12 Recommendations</td>
<td>148</td>
</tr>
<tr>
<td>6.13 Suggestions for further research</td>
<td>149</td>
</tr>
</tbody>
</table>
CHAPTER VI
SUMMARY, FINDINGS AND CONCLUSION

6.1 INTRODUCTION
An important feature of educational development in India during the post several
dudes has been the sustained effort to evolve a national system of education. A uniform
education system was introduced by the Tamilnadu government for the students of
secondary and higher secondary education to improve the quality of education and to
increase the achievement of students in education.

The present study is an attempt to study and analyze certain factors associated
with scholastic achievement with special reference to the research variables.

6.2 STATEMENT OF THE PROBLEM
The present study is entitled as “Scholastic Achievement in Mathematics
Education”.

6.3. OBJECTIVES OF THE STUDY
The following were the objectives of the study:

1. To study the attitude, classroom environment, home environment, anxiety and scholastic
   achievement in mathematics of X standard students.
2. To study whether students differ in their attitude, classroom environment, home
   environment, anxiety and scholastic achievement in mathematics with respect to gender,
   medium of instruction, type of management, community and family monthly income.
3. To study whether gender, medium of instruction, type of management, community and
   family monthly income of students are associated with the following
   i. Level of attitude
   ii. Level of Classroom environment
   iii. Level of Home environment
   iv. Level of anxiety
   v. Level of Achievement in Mathematics
4. To study whether Level of achievement in Mathematics is associated with
   i. Level of attitude
   ii. Level of anxiety
   iii. Level of class room environment
   iv. Level of home environment
5. To study the correlation and regression of scholastic achievement in Mathematics on the
   variables attitude, anxiety, class room environment and home environment.

6.4 HYPOTHESIS OF THE STUDY

The hypotheses formulated for the present study are stated as follows:
1. Male and female students differ with respect to the variables of scholastic achievement
   such as attitude, classroom environment, home environment and anxiety.
2. Students belonging to English and Tamil medium differ with respect to the variables of
   scholastic achievement.
3. Students studying in different management type of schools differ with respect to the
   variables of scholastic achievement.
4. Students belonging to different communities differ with respect to the variables of
   scholastic achievement.
5. Students with different family monthly income differ with respect to the variables of
   scholastic achievement.
6. Gender of students is associated with level of their attitude.
7. Gender of students is associated with level of their anxiety.
8. Gender of students is associated with level of their classroom environment.
9. Gender of students is associated with level of their home environment.
10. Gender of students is associated with level of achievement in Mathematics.
11. Medium of students is associated with level of their attitude.
12. Medium of students is associated with level of their anxiety.
13. Medium of students is associated with level of their classroom environment.
14. Medium of students is associated with level of their home environment.
15. Medium of students is associated with level of achievement in Mathematics.
16. Type of management of school is associated with level of attitude of students.
17. Type of management of school is associated with level of classroom environment of
   students.
18. Type of management of school is associated with level of home environment of students.
19. Type of management of school is associated with level of anxiety of students.
20. Type of management of school is associated with level of achievement in mathematics of
   students.
21. There is association between community and level of attitude of students.
22. There is association between community and level of anxiety of students.
23. There is association between community and level of class room environment of students.
24. There is association between community and level of home environment of students.
25. There is association between community and level of achievement in Mathematics of students.
26. There is association between family monthly income and level of attitude of students.
27. There is association between family monthly income and level of anxiety of students.
28. There is association between family monthly income and level of class room environment of students.
29. There is association between family monthly income and level of home environment of students.
30. There is association between family monthly income and level of achievement in Mathematics of students.
31. There is association between level of achievement in mathematics and level of attitude of students.
32. There is association between level of anxiety and level of achievement in Mathematics of students.
33. There is association between level of class room environment and level of achievement in Mathematics of students.
34. There is association between level of home environment and level of achievement in Mathematics of students.
35. There is correlation between scholastic achievement in Mathematics and attitude, anxiety, class room environment and home environment.

6.5 METHOD OF STUDY

The present study is a Normative method of research, since the study is on the effect of the variables attitude towards Mathematics, anxiety, class room environment and home environment on achievement in Mathematics. The descriptive research concentrates on describing, recording, analyzing and interpreting conditions that exist. It involves some type of comparison or contrast and attempts to discover relationship between existing non-manipulated variables. Therefore the Normative research method has been used in the present study.
6.6 SAMPLE OF THE STUDY

The study was conducted on a representative sample of 1007 students of standard X, selected by random sampling method from 11 schools in two districts Chennai and Thiruvallur. Due representation was given to the personal variables and school related variables.

6.7 VARIABLES UNDER STUDY

**Dependant Variable**
Achievement in Mathematics

**Independent Variable**
Attitude towards Mathematics
Anxiety
Class Room Environment for Mathematics
Home Environment for Mathematics

**Personal Variables**
Gender, Community, Medium of Instruction and Family Monthly Income

**School related variables**
Type of Management

6.8 TOOLS USED

The dependant and independent variables were measured using the standardized tools.
1. Aiken’s Revised Math Attitude Scale (1974) has been adopted and revalidated by the Investigator.
2. Maths Anxiety Scale constructed by Sadia Mahmood (2011) (has been adopted and revalidated by the Investigator.
3. Class Room Environment Inventory for Mathematics constructed by Santhamma Raju and Ancel Maria (1998) has been adopted and revalidated by the Investigator.
4. Home Environment Inventory for Mathematics constructed by Santhamma Raju and Ancel Maria (1998) has been adopted and revalidated by the Investigator.

5. Achievement Test in Mathematics has been developed and validated by the Investigator to measure scholastic achievement in Mathematics.

6.9 FINDINGS OF THE STUDY

The average level of attitude of students towards Mathematics is assessed to be 48.05. The average level of classroom environment of the students for mathematics learning is assessed to be 97.51. The average level of home environment of the students for mathematics learning is assessed to be 48.91. The average level of anxiety of the students towards mathematics is assessed to be 46.10. The overall achievement in mathematics of the students is assessed to be 50.62.

Male students differ significantly with female students and female students scored more than male students with respect to all the dimensions of scholastic achievement. Since the P value of anxiety is greater than 0.05 and less than 1.000, the null hypothesis is accepted and hence gender do not differ significantly with respect to anxiety.

English medium students differ significantly with Tamil medium students with respect to all the dimensions of scholastic achievement and English medium students performed and scored better with respect to all the dimensions of scholastic achievement excluding anxiety, since Tamil medium students scored high with regard to anxiety.

Type of management of schools differ significantly with respect to all the dimensions of scholastic achievement excluding attitude, since there is no significant difference between attitude of students with type of management of schools.

Community of students differ significantly with respect to anxiety, factors of achievement test and achievement in mathematics but there is no significant difference between community and attitude, classroom and home environment for mathematics.
Family monthly income of students differ significantly with respect to all the dimensions of scholastic achievement excluding attitude and skill since there is no significant difference between family monthly income with regard to attitude and skill.

Gender of students is not associated with level of attitude of students towards mathematics. Hence, it is clear from the analysis that there is no connection with gender of the students and their attitude about mathematics and hence with the achievement in mathematics.

Gender of students is associated significantly with the level of classroom environment for mathematics. Hence it can be concluded that gender of students have connection with the classroom environment and from the analysis it is found that female students can view and make the classroom as a favourable environment for learning.

Gender of students is associated significantly with the level of home environment for mathematics. Hence it can be concluded that gender of students have connection with the home environment and from the analysis it is found that female students have a pleasant home environment for learning mathematics.

Gender of students is associated significantly with the level of anxiety towards mathematics. Hence it can be concluded that gender of students have connection with the anxiety and from the analysis it is found that female students have more math anxiety than male students.

Gender of students is associated significantly with the level of achievement in mathematics. Hence it is concluded that gender of students have connection with the achievement in mathematics and from this analysis it is found that female students performed well and achieved better in mathematics test.
Medium of students is associated significantly with the level of attitude of students towards mathematics. Hence, it is clear from the analysis that there is connection with medium of the students and their attitude about mathematics and hence with the achievement in mathematics. Here, English medium students performed well than Tamil medium students.

Medium of students is associated significantly with the level of classroom environment for mathematics. Hence, it is clear from the analysis that there is connection with medium of the students and the classroom environment. Here, English medium students can make the classroom environment as a favourable one than Tamil medium students.

Medium of students is associated significantly with the level of home environment for mathematics. Hence, it is clear from the analysis that there is connection with medium of the students and their home environment. Here, English medium students can make the home environment as a favourable one than Tamil medium students.

Medium of students is not associated significantly with the level of anxiety towards mathematics. Hence, it is clear from the analysis that there is connection with medium of the students and their anxiety. Here, Tamil medium students have more anxiety on mathematics than English medium students.

Medium of students is associated significantly with the level of achievement in mathematics. Hence, it is clear from the analysis that there is connection with medium of the students and the achievement in mathematics. Here, English medium students scored better in achievement test than Tamil medium students.

Type of management of students is associated significantly with the level of attitude of students towards mathematics. Hence, it is clear from the analysis that there is connection with type of management of schools and the attitude of students about
mathematics and hence with the achievement in mathematics. Here, government aided school students have positive attitude towards mathematics than other management type of schools.

Type of management of students is associated significantly with the level of classroom environment for mathematics. Hence, it is clear from the analysis that there is connection with type of management of schools and the classroom environment of students. Here, corporation school students have a good classroom environment than other management type of schools.

Type of management of students is associated significantly with the level of home environment for mathematics. Hence, it is clear from the analysis that there is connection with type of management of schools and the home environment of students. Here, corporation school students have a good home environment than other management type of schools.

Type of management of students is associated significantly with the level of anxiety towards mathematics. Hence, it is clear from the analysis that there is connection with type of management of schools and the anxiety of students about mathematics and hence with the achievement in mathematics. Here, corporation school students have more anxiety towards mathematics than other management type of schools.

Type of management of students is associated significantly with the level of achievement in mathematics. Hence, it is clear from the analysis that there is connection with type of management of schools and the achievement in mathematics. Here, matriculation school students have more anxiety towards mathematics than other management type of schools.

Community of students is not associated with the level of attitude towards mathematics. Hence, it is clear from the analysis that there is no connection with
community of students and the attitude of students about mathematics and hence with the achievement in mathematics.

Community of students is not associated with the level of classroom environment for mathematics. Hence, it is clear from the analysis that there is no connection with the community of students and their classroom environment.

Community of students is not associated with the level of home environment for mathematics. Hence, it is clear from the analysis that there is no connection with the community of students and their home environment for learning mathematics.

Community of students is not associated with the level of anxiety towards mathematics. Hence, it is clear from the analysis that there is no connection with the community of students and their anxiety level on mathematics.

Community of students is associated significantly with the level of achievement in mathematics. Hence, it is clear from the analysis that there is connection with the community and achievement in mathematics. Here OC community students performed and scored better than other community students.

Family monthly income of students is not associated with the level of attitude towards mathematics. Hence, it is clear from the analysis that there is no connection with family monthly income level and the attitude of students about mathematics and hence with the achievement in mathematics.

Family monthly income of students is not associated with the level of classroom environment for mathematics. Hence, it is clear from the analysis that there is no connection with the family monthly income of students and their classroom environment.
Family monthly income of students is not associated with the level of home environment for mathematics. Hence, it is clear from the analysis that there is no connection with the family monthly income of students and their home environment.

Family monthly income of students is not associated with the level of anxiety towards mathematics. Hence, it is clear from the analysis that there is no connection with the family monthly income of students and their anxiety towards mathematics.

Family monthly income of students is associated significantly with the level of achievement in mathematics. Hence, it is clear from the analysis that there is connection with the family monthly income of students and their achievement in mathematics. Here the income level above Rs.10000/- scored better in the achievement test in mathematics than other income level students.

Level of attitude of students is associated significantly with the level of achievement in mathematics. Low the attitude towards mathematics yields low the achievement in mathematics. Thus, it is clear from the analysis that higher the positive attitude towards mathematics gives high achievement in mathematics. Hence, the teachers and parents should help the students to create a positive attitude towards mathematics by creating a positive thought about it.

Level of classroom environment of students is associated significantly with the level of achievement in mathematics. Low the classroom environment effect of mathematics yields low the achievement in mathematics. Thus, it is clear from the analysis that higher the favourable classroom environment towards mathematics gives high achievement in mathematics. Hence, the teachers should help the students to make the classroom environment as a pleasant one by providing all facilities to the students and make their mind free from all stress and tension towards learning could make them achieve better in mathematics.
Level of home environment of students is associated significantly with the level of achievement in mathematics. Low the home environment effect of mathematics yields low the achievement in mathematics. Thus, it is clear from the analysis that higher the encouraging home environment towards mathematics gives high achievement in mathematics. Hence, the parents and other significant persons at home should help the students to make the home environment as a good one by providing all facilities to the students and make all arrangements like coaching classes and formulate them from all strain and pressure towards learning could make them achieve better in mathematics.

Level of anxiety of students is not associated with the level of achievement in mathematics. Hence, it is clear from the analysis that there is no connection with the level of anxiety and level of achievement in mathematics. If the level of mathematics anxiety is low then the level of achievement in mathematics will increase. Thus, the educators at the teaching institution and parents and other significant persons at home should facilitate the students to decrease their math anxiety level.

6.9.1 CORRELATION ANALYSIS

Table 6.1 Pearson Correlation Coefficient between factors of Achievement Test in Mathematics and dimensions of Scholastic Achievement

<table>
<thead>
<tr>
<th>Dimensions of Scholastic Achievement</th>
<th>Factors of Achievement Test</th>
<th>Overall Score in Achievement Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Knowledge</td>
<td>Understanding</td>
</tr>
<tr>
<td>Attitude</td>
<td>0.317**</td>
<td>0.252**</td>
</tr>
<tr>
<td>Classroom Environment</td>
<td>0.366**</td>
<td>0.295**</td>
</tr>
<tr>
<td>Home Environment</td>
<td>0.306**</td>
<td>0.285**</td>
</tr>
</tbody>
</table>

Note: ** denotes significant at 1% level.
There is a slight correlation between the factors of achievement test and the remaining research variables. The correlation is positive with respect to the variables attitude, classroom environment and home environment and hence higher the values of achievement test performance with attitude, class room environment and home environment, greater is the overall achievement in Mathematics. Hence, all the research variables excluding anxiety have a significant relationship with the achievement in Mathematics.

Table 6.2 Pearson Correlation Coefficient between dimensions of Scholastic Achievement and Anxiety

<table>
<thead>
<tr>
<th>Dimensions of Scholastic Achievement</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>-0.199**</td>
</tr>
<tr>
<td>Classroom Environment</td>
<td>-0.214**</td>
</tr>
<tr>
<td>Home Environment</td>
<td>-0.189**</td>
</tr>
<tr>
<td>Knowledge</td>
<td>-0.156**</td>
</tr>
<tr>
<td>Understanding</td>
<td>-0.106**</td>
</tr>
<tr>
<td>Application</td>
<td>-0.150**</td>
</tr>
<tr>
<td>Skill</td>
<td>-0.073**</td>
</tr>
<tr>
<td>Overall Score in Achievement Test</td>
<td>-0.155**</td>
</tr>
</tbody>
</table>

Note: ** denotes significant at 1% level.

The research variable anxiety has negative correlation towards the achievement of mathematics and the values of anxiety has significant negative relation with the mathematics achievement.

6.9.2 MULTIPLE REGRESSION ANALYSIS

The multiple regression equation of the research variables is

\[ Y = 28.349 + 0.112X_1 + 0.129X_2 + 0.139X_3 - 0.053X_4 \]

Here the coefficient of \( X_1 \) is 0.112 represents the partial effect of attitude on scholastic achievement, holding other variables as constant. The estimated positive sign implies that such effect is positive that scholastic achievement would increase by 0.112 for every unit increase in attitude and this coefficient value is significant at 1% level. The
coefficient of $X_2$ is 0.129 represents the partial effect of classroom environment on scholastic achievement, holding other variables as constant. The estimated positive sign implies that such effect is positive that scholastic achievement would increase by 0.129 for every unit increase in classroom environment and this coefficient value is significant at 1% level. Here the coefficient of $X_3$ is 0.139 represents the partial effect of home environment inventory on scholastic achievement, holding other variables as constant. The estimated positive sign implies that such effect is positive that scholastic achievement would increase by 0.139 for every unit increase in home environment inventory and this coefficient value is significant at 1% level. Here the coefficient of $X_4$ is -0.053 represents the partial effect of anxiety on scholastic achievement, holding other variables as constant. The estimated negative sign implies that such effect is negative that scholastic achievement would decrease by 0.053 for every unit decrease in anxiety and this coefficient value is significant at 1% level.

6.9.3 STRUCTURAL EQUATION MODEL ANALYSIS (SEM)

Based on the standardized coefficients, the dimension of scholastic achievement attitude (0.115) contributed more followed by classroom environment (0.112) and home environment (0.082) towards the achievement in mathematics. Among the factors of achievement test, application (0.865) is recognized as a most powerful factor for the students to score more followed by knowledge (0.851), understanding (0.806) and skill (0.388).
Using the SEM, it is found that the calculated $P$ value is 0.133 which is greater than 0.05 which indicates perfectly fit. Here GFI (Goodness of Fit Index) value and AGFI (Adjusted Goodness of Fit Index) value is greater than 0.9 which represent it is a good fit. The calculated CFI (Comparative Fit Index) value is 0.994 which means that it is perfectly fit and also it is found that RMR (Root Mean Square Residuals) and RMSEA (Root Mean Square Error of Approximation) values are 0.065 and 0.038 respectively, which is less than 0.08 which indicates it is perfectly fit. Hence it is concluded that, all the independent variables are significant for the academic achievement of Mathematics.

6.10 CONCLUSION

The present study expressed the significant close positive relationship and association between scholastic achievement and each of the research variables attitude, class room environment and home environment and the negative relation between scholastic achievement and math anxiety. Hence, considering the school, the teachers must take care in providing a pleasant learning environment to the students in all possible
modes to create a very positive attitude towards mathematics as well as to make them free from anxiety and also considering home, the parents must concentrate on their children’s scholastic achievement by providing a favourable and comfortable learning environment in all possible ways to create a positive attitude towards mathematics and also by motivating them as well as to make them free from anxiety.

6.11 EDUCATIONAL IMPLICATIONS

Any educational research is worthwhile if the results produce profitable educational implications. As so far the present investigation is concerned, it can be claimed that useful information obtained could be helpful in enhancing the educational success of the X standard students.

The results of the present study reflect that male students hold up behind female counterparts in academic achievement. It may be due to autonomous nature of the boys or may be due to freedom provided by the parents and society. So it is recommended that male students should create a self control and interest on academics and from there on mathematics so that they could perform well in their academics.

The results of the present study revealed that English medium students performed and scored well than Tamil medium students. This study showed that the type of management of schools is also have association with the academic achievement of students but meagerly. This study also showed that community of students also have slight association with the achievement of students in mathematics.

This study showed that family monthly income of students also have trivial association with the achievement of students in mathematics that high income group students performed well in achievement test as they may be comfortable in material wise that they may have all facilities for the learning like study materials, furniture and
coaching classes. This may be the reason for their better performance in mathematics achievement.

The findings of the study revealed that the research variables attitude, classroom environment, home environment and anxiety have influence on the academic achievement of the students of standard X. The present study also proved that there is a negative relation with the anxiety of students towards mathematics and their achievement. Hence lower the anxiety better the achievement in mathematics since the more nervous or fearful situation may cause the students feel discomfort, uneasiness and hate of the subject and this may lead negative thoughts and feelings about the subject. Thus, math anxiety should be minimized to attain achievement in the subject.

6.12 RECOMMENDATIONS

1. Teachers and parents should help the students to create a positive attitude towards mathematics.
2. Teachers should develop a positive relationship with students and make classroom an interesting site for learning by providing all possible facilities and stressless atmosphere.
3. Teachers and educational counselors should try to create awareness in parents about the importance of home environment on the scholastic achievement of their children.
4. Parents at home should make home environments to be learning stimulatory and study friendly for students by proving a pleasant environment without any distractions.
6.13 SUGGESTIONS FOR FURTHER RESEARCH

1. The study can be conducted by including other affective variables of the mathematics achievement.
2. The study can be extended to other state and district levels to find out a remedy in learning disadvantages.
3. The study may be conducted for improving other subject areas.
4. The study can be conducted with more number of samples.