CHAPTER 8
CONCLUSIONS AND RECOMMENDATIONS
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FOR FURTHER WORK

(A) CONCLUSIONS:

8.1 INTRODUCTION:

The purpose of the present study was to answer the following questions:

"i) What are the attitudes of the urban students and rural students toward Mathematics and its branches (Algebra and Geometry) regarding the favourableness or direction of the attitude?

ii) Are there any significant differences between the attitudes of urban students and those of rural students towards Mathematics and its branches?

iii) Are there any significant differences between the attitudes of urban boys and those of rural boys towards Mathematics and its branches?

iv) Are there any significant differences between the attitudes of urban girls and those of rural girls towards Mathematics and its branches?

v) Are there any significant differences between the attitudes of urban boys and those of urban girls towards Mathematics and its branches?
vi) Are there any significant differences between the attitudes of rural boys and those of rural girls towards Mathematics?

vii) Are there any significant differences between the attitudes of boys and those of girls towards Mathematics and its branches?

To study and to seek the answers to the questions mentioned above the researcher had constructed three attitude scales, the dependent variables, toward three specific subjects: Mathematics as a whole subject, Algebra as a branch of Mathematics and Geometry as a branch of Mathematics. The three attitude scales were based on the Likert technique and were prepared.

Another set of variables were taken to observe the influence of dependent variable over the independent variables. The set of independent variables consisted of Tenth Standard students varied with respect to sex and the area they lived in. Those independent variables were as follows:

1) Urban students
2) Rural students
3) Urban boys
4) Urban girls
5) Rural girls
vi) Rural boys

vii) Boys, irrespective of their area in which they lived in.

viii) Girls, irrespective of their area in which they lived in.

To answer the questions mentioned behind six pairs of groups were compared, by testing the significance of the difference between the means of the each pair of groups by 't' test. The six pairs of groups compared were:

1) Attitudes of urban students versus rural students.

2) Attitudes of urban boys versus rural boys.

3) Attitudes of urban girls versus rural girls.

4) Attitudes of urban boys versus urban girls.

5) Attitudes of rural boys versus rural girls.

6) Attitudes of boys versus girls.

8.2 Conclusion About Mathematics as a Whole Subject:

1. The result of this study revealed that the total students of the Jalgaon district had favourable attitude towards Mathematics as well as the subgroups also had a favourable attitude towards Mathematics. Even though the subgroups had a favourable attitude towards Mathematics still they differed in their percentages of favourable, unfavourable and neutral attitudes. Majority of the students
had a favourable attitude. More of the urban boys had favourable attitude towards Mathematics than those of rural boys. But no such difference was observed in case of urban girls and those of rural girls. But in case of boys and those of girls irrespective of the area in which they lived in majority of boys had a favourable attitude than those of girls and more of the girls had unfavourable and neutral attitude in comparison of the boys. Elizabeth B. Hurlock in the Developmental Psychology (Third edition) says that "... boys for example, like science and Mathematics because they are both practical and sex appropriate in their young adolescent's". The researcher's obtained result indicated that Mathematics was sex appropriate.

2. There was a significant difference between the attitudes of urban students and those of rural students towards Mathematics as a whole subject. This obtained result was quite similar to the result obtained by Desai H.G. in his doctoral thesis - "The attitudes to Mathematics". The result obtained was "Urban children, in general had more favourable attitude to Mathematics than rural children".


3. There was a significant difference between the attitudes of urban boys and those of rural boys towards Mathematics.

4. There was no significant difference between the attitudes of urban girls and those of rural girls towards Mathematics.

5. There was a significant difference between the attitudes of urban boys and those of urban girls towards Mathematics.

6. There was a significant difference between the attitudes of rural boys and those of rural girls towards Mathematics.

7. There was a significant difference between the attitudes of boys and those of girls towards Mathematics.

From the conclusions five, six and seven it was found that Mathematics was a sex appropriate subjects.

8.3 High Agreement And High Disagreement Statements : (About Mathematics as a Whole Subject)

The high agreement statements had maximum agreement and the high disagreement statements had maximum disagreement. The high agreement statements and High disagreement statements were listed below:
High Agreement Statements:

1) I derive pleasure in solving examples when I understand how to solve them in better way.

2) Mathematics is being a useful in daily-life so I like to secure achievement in it.

3) The study of Mathematics is essential for the developments of one's intellect and professional competence.

4) I enjoy solving word problems.

High Disagreement Statements:

1) I am tired of Mathematics period.

2) I have never liked Mathematics.

3) I am not satisfied with the learning of Mathematics.

4) I do not like to learn Mathematics.

From these statements it was concluded that (table 6.23) seventy to seventy five percent of students liked Mathematics as it is - useful in daily-life, essential for the intellectual and vocational development, necessary in the life. The students liked Mathematics due to its practical value.

Twenty five to thirty percent of students (table 6.23) disliked Mathematics because of - complicated subject, no
confidence, not enthusiastic, not understanding the language in Mathematics, carelessness, not feeling to have progress in it, remaining absent at the period.

8.4 Conclusions About Algebra:

1. The result of the study revealed that the total students of the district had favourable attitude towards Algebra. The subgroups had also favourable attitude towards Algebra. Even though the subgroups had a favourable attitude towards Algebra they differed in their percentages of favourable, unfavourable and neutral attitudes. More of the urban boys had favourable attitude towards Algebra than those of rural boys. But no such difference was observed in case of urban girls and those of rural girls. But in case of boys and those of girls irrespective of the area in which they lived in majority of the boys had favourable attitude towards Algebra than those of girls. More of the girls had unfavourable and neutral attitude in comparison of boys towards Algebra.

2. There was a significant difference between the attitudes of urban students and those of rural students towards Algebra.

3. There was no significant difference between the attitudes of urban boys and those of rural boys towards Algebra.
4. There was no significant difference between the attitudes of urban girls and those of rural girls towards Algebra.

5. There was a significant difference between the attitudes of urban boys and those of rural boys towards Algebra.

6. There was a significant difference between the attitudes of rural boys and those of rural girls towards Algebra.

7. There was a significant difference between the attitudes of boys and those of girls towards Algebra.

8.5 High Agreement and High Disagreement Statements:

(About Algebra)

The high agreement statements had maximum agreement and the high disagreement statements had maximum disagreement. They were listed below:

**High Agreement Statements:**

1) I like Algebra more than Geometry.

2) The knowledge of Algebra is useful in other subjects too, so I like it.

3) I have a good confidence in the study of Algebra.
4) I am enthusiastic in the work of Algebra.

5) The study of Algebra is vital for my further study.

High Disagreement Statements:

1) I do not feel Algebra an important subject.

2) I am afraid of the study of Algebra.

3) Algebra is a headache to me.

4) I do not feel to learn Algebra.

From the analysis (table 6.43) it was concluded that Algebra was the more popular branch than Geometry in Mathematics.

Seventy five to eighty percent of students (table 6.43) liked Algebra as the knowledge of Algebra is useful in other subjects, having a good confidence in the study of Algebra enthusiastic in the work of Algebra, and the study of Algebra is vital for further study.

Twenty to twenty five percent of the students disliked Algebra because of - not understanding the Algebraic concepts, having no confidence in the test of Algebra, the teacher of Algebra does not teach well, learning a lot of rules and definitions by heart.
8.6 Conclusions About Geometry:

1. The result of this study revealed that the total students of the district had favourable attitude towards Geometry. The subgroups also had favourable attitude towards Geometry. Even though the subgroups had a favourable attitude towards Geometry they differed in their percentages of favourable, unfavourable and neutral attitudes. More of the rural students had favourable attitude towards Geometry than those of urban students. But more of the rural students had neutral attitude towards Geometry than those of urban students. More of the urban boys had a favourable attitude toward Geometry than those of rural boys and more of the rural girls had favourable attitude towards Geometry than those of urban girls. More of the rural boys had a neutral attitudes towards Geometry than those of urban boys and less of the rural boys had a unfavourable attitude towards Geometry than those of urban boys. But more of the urban girls had neutral and unfavourable attitude toward Geometry in comparison of rural girls.

2. There was no significant difference between the attitudes of urban students and those of rural students towards Geometry.

3. There was no significant difference between the attitudes of urban boys and those of rural boys towards Geometry.
4. There was no significant difference between the attitudes of urban girls and those of rural girls towards Geometry.

5. There was a significant difference between the attitudes of urban boys and those of urban girls towards Geometry.

6. There was a significant difference between the attitudes of rural boys and those of rural girls towards Geometry.

7. There was a significant difference between the attitudes of boys and those of girls towards Geometry.

8. High Agreement And High Disagreement Statements:
   (About Geometry)

   The high agreement statements had maximum agreement and the high disagreement statements had maximum disagreement. They were listed below:

High Agreement Statements:

1) I like to do home-works in Geometry.

2) I like to prepare the charts of symbols, formulae and properties of diagram in Geometry.

3) I like to study Geometry in solitude.
4) I like to study Geometry on holiday.

5) The knowledge of Geometry is essential in daily-life.

High Disagreement Statements:

1) The teacher of Geometry is a hard-task master so I have no liking of that subject.

2) I neglect Geometry because I do not understand what is given and what is asked in the problem of Geometry.

3) I dislike to attend the period of Geometry.

4) I avoid Geometry because I do not understand how to apply the postulates, theorems, and properties of diagrams while solving the example.

Seventy percent (table 6.63) of the students liked Geometry because of the knowledge of Geometry was essential in daily life. Seventy four to seventy eight percents of the students were interested in doing Geometrical work such as doing home works and preparing charts of symbols, formulae, and properties of diagrams.

Thirty one percent of the students disliked Geometry because of bored by learning Geometry, 28.25 percent of the students had dislike of Geometry because of not
understanding Geometrical language. 21.5 percents of the students had dislike of Geometry because of not understanding what is given and what is asked in the problem and how to apply the postulates, theorems, and properties of diagram while solving examples in Geometry. 24.25 percent of the students were agreed with statement "Many things in Geometry are learnt by heart. So I do not like that subject". 26.35 percent of students were agreed with the statement that "I do not think that my progress be done in the study of Geometry". 20.45 percents of students were agreed with the statement that "No body helps me to understand Geometry so I dislike Geometry".

8.8 General Conclusions :

From this study it was observed that :

(1) The whole group-students, of Tenth standard of Jalgaon District had favourable attitudes towards Mathematics as a whole subject, Algebra and Geometry, as well as the subgroups also had favourable attitudes towards the three specific subjects. Even though the subgroups had favourable attitudes towards the three specific subjects they differed in their percentages of favourable, unfavourable and neutral attitudes.
(2) There were significant differences, between the attitudes of urban students and rural students, regarding Mathematics as a whole subject and Algebra as a branch, irrespective of the sex. But no such difference was observed regarding Geometry. Urban students had more favourable attitudes than those of rural students towards Mathematics as a whole subject and Algebra as a branch.

(3) There was significant difference between the attitudes of urban boys and rural boys regarding Mathematics as a whole subject but no such difference was observed in case of Algebra and Geometry. Urban boys had more favourable attitudes towards Mathematics as a whole subject.

(4) There were no significant differences between the attitudes of urban girls and rural girls regarding Mathematics and its branches: Algebra and Geometry.

(5) There were significant differences between the attitudes of urban boys and urban girls towards Mathematics and its branches: Algebra and Geometry. Urban boys had more favourable attitudes than those of urban girls.

(6) There were significant differences between the attitudes of rural boys and rural girls towards Mathematics and its branches: Algebra and Geometry. Rural boys had
more favourable attitudes than those of rural girls.

(7) There were significant differences between the attitudes of boys and girls. Boys had more favourable attitudes towards Mathematics and its branches: Algebra and Geometry, than those of girls irrespective of the area lived in.

It could be concluded that there was an effect of area on the attitudes of students towards Mathematics as a whole subject and its branches: Algebra and Geometry from the above conclusions, two, three, four and summary table 6.64. But from the conclusions, five, six and seven mentioned summary table it could be concluded that there was a prominent effect of sex on the attitudes of students towards Mathematics and its branches: Algebra and Geometry. It appeared that Mathematics and its branches: Algebra and Geometry were sex appropriate subjects. The results found to be in agreement with the established facts based on the research elsewhere.

In general seventy to seventy five percents of the students liked Mathematics, seventy five to eighty percent of the students liked Algebra and seventy to seventy five percent of the students liked Geometry, Algebra was found to be more popular branch than Geometry in Mathematics.
From the analysis of individuals statement of each scale generally high agreement statements indicated the students liking of Mathematics and its branches because of - need of Mathematics in life, essential and useful in daily-life, practical value, essential for the intellectual and vocational development, the knowledge of Mathematics is useful in other subject, vital for further study and enthusiastic in the work, Generally the low agreement statements indicated the students disliking of Mathematics and its branches because of - not understanding Mathematical concepts, language of Mathematics, complicated nature of the subject, bored by learning the subjects, Mathematics teacher, no confidence, learning of lot of rules and definitions by heart, remaining absent at the periods, no wish to learn.
In the light of the conclusions of the present study the following recommendations have been made.

(a) Educational implications as reflected from Conclusions:

(1) Reorientation of Training teachers of Mathematics: The training may be given regarding the following points:

i) How to introduce Mathematical concepts.
ii) How to develop Mathematical concepts in students.
iii) How to make the teaching effective.
iv) How the student can understand the language of Mathematics.
v) How to make the teacher aware about the latest teaching techniques and the latest trends in education.

(2) The School environment should be conducive to the learning of Mathematics.

(3) From the view point of the further education of girls and from the view point of Mathematics is a sex appropriate subject, this subject may be optional for girls at S.S.C. examination.
(4) The Text-books of Mathematics should be written in an easy language with good explanations of Mathematical concepts, formulae with the help of diagrams and examples in daily-life.

(5) After all the responsibility of educating students lies on the shoulder of the teacher so the teacher should deal with the students having unfavourable and neutral attitudes towards Mathematics effectively and sympathetically. The teacher should encourage the students to develop interest in the subject. Students having favourable attitudes should be encouraged to develop pronounced liking. The students having pronounced liking of Mathematics should be well-guided so that they can prepare themselves for talent tests and competitive examinations.

(6) The teacher of Mathematics should ponder over the situation that some pupils dislike Mathematics and its branches because of the teacher so he should strive hard to prove himself to be a good teacher of Mathematics.
(b) Topics for further research:

1. The scope of the present study should be extended to the whole Maharashtra State.

2. Developing positive attitude and modifying negative attitude towards Mathematics.

3. Relationship between attitude and achievement in Mathematics.

4. Relationship between attitudes and personality characteristics.

5. Relationship between attitudes and behaviour.


7. Teacher characteristics, attitudes and behaviour towards Mathematics.

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