



A Study of Attitude of Secondary School Students Towards Mathematics in Relation to Their Learning Styles in District Yamuna Nagar

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Abstract- Mathematics play a significant role in education as it develops logical thinking, reasoning, analytical abilities and problem-solving skills. The present study examines the attitude of secondary school students towards mathematics in relation to their learning styles in District Yamuna Nagar. It is important to understand the attitudes held by the learners toward mathematics as these attitudes can have an immense impact on their learning process. Enactive learning, which involves learning through experience, figural learning that involves learning through pictures, and verbal learning that involves learning through words are different styles of learning that contribute greatly to developing learners' perceptions about mathematics. The insight gained from the study are anticipated to highlight the importance of using varied teaching resources in students learning styles and promote positive attitude towards mathematics.

Keywords- Attitude towards Mathematics, Learning styles, Secondary School Students, Enactive learning, Figural Learning, Verbal learning, Mathematics Education.

I. Introduction

Education is a life-long process that continues from birth till death. It Includes all the experiences that helps in the growth and development of a human. Education is an instrument which changes the behaviour of a Child. With education one gains experiences that contribute to the learning, personal growth, values, language and personality development. As we know every child is born with unique abilities and talents and education helps to identify these abilities and nurture these talents. With education one can achieve success in life. A child should be educated so that, he can



develop skills which will help him in his coming life. As a lifelong process, education influences an individual through various direct and indirect experiences, ultimately contributing to the holistic development of the child.

Mathematics is a subject which is used by every individual in their day-to-day life, like at marketplaces, transportation, businesses of all sort by both literate and illiterate member of the society. Mathematics is a relevant subject in education. It develops the logical and reasoning skills in a child. A child who is good at math's able to solve all the personal as well as the professional situations of his life easily. Moreover, mathematics teaches Self-discipline and helps in achieving the Success in life. Mathematics is a subject which is related to every other subject that a child studies throughout his life that's why mathematics is termed as "Science of all Sciences and Art of all Arts". Thus, there is no valid reason to ignore the importance of mathematics. Attitude towards mathematics is the feeling, beliefs, interest and confidence that a child develops towards the subject mathematics. A classroom environment affects the learning of the student towards mathematics. A positive environment creates a positive attitude in the student, while a negative environment creates fear and anxiety towards subject. Hence, it is the responsibility of a teacher as well as of the society to build the confidence and interest in the child towards the mathematics and remove the fear towards the subject. So, mathematics education should create a joyful, practical and supportive learning environment where students can understand the problems and able to find the solutions by themselves. Moreover, mathematics education should help a child to solve their real-life problem with ease.

The term learning style describes how an individual learns things. All individual has different ability and hence uses different style of learning. Learning style refers to the method by which an individual is able to absorb and remembers knowledge. For example, one student is able to learn with the help of visuals shown to him about the properties of the triangle, while the other understands only when the teacher explains all the properties in the class verbally thus learning style of both the students is different for learning the same thing. Every student differs in terms of cognitive abilities, emotional characteristics, environmental influences, interests, motivation, and previous experiences, which affect their way of learning. Thus, students may use different approaches to learn the same concept. The present study considers three dimensions of Learning style:

- Enactive Learning style
- Figural Learning style



- Verbal Learning style

II. Review of Related Literature

Attitude towards Mathematics Tapia & Marsh (2004)

Tapia & Marsh conducted a study titled “An Instrument to Measure Mathematics Attitudes.” In this study, the aim of the researchers was to design an instrument for measuring the attitudes of students toward mathematics. Tapia & Marsh recognized four main dimensions of mathematics attitudes; namely self-confidence, value, enjoyment, and motivation.

Frenzel, Goetz, Pekrun & Watt (2010)

Frenzel, Goetz, Pekrun & Watt conducted a study with the title “Development of Mathematics Interest in Adolescence: Influences of Gender, Family, and School Context.” In this study, the researchers looked at the development of students’ interest and emotions toward mathematics. They found that students’ interest in mathematics was affected by their achievement, self-concept, class experience, and teacher support.

Learning style Coffield et al. (2004)

A systematic review of 71 learning style theories by Coffield, Moseley, Hall and Ecclestone (2004) was carried out to evaluate their reliability and relevance for educational purposes. The researchers found that despite a plethora of different learning style theories, there are only a few of them which can be considered reliable and valid. Cassidy (2004)

A review of major learning styles theories and assessment instruments was carried out by Cassidy (2004). The researcher analyzed the theories of learning styles and their application in education. The results revealed that learners have different preferences in acquisition and processing of information.

III. Significance of the Problem

Mathematics is an important element of the school curriculum since it enables students to acquire logical thinking, reasoning, problem-solving, and analytical abilities. At the secondary level it also serves as a basis for further studies and for future occupations. Nevertheless, a great many students find the subject difficult and might therefore become frightened of it, feel anxious about it, lose interest in it, or have low self-



confidence in relation to it. The way in which students feel about mathematics can have an effect on their motivation, level of participation, learning behaviour, and academic achievement. At the same time there are differences between students in the way they understand and learn new concepts, which is shown in their learning styles. Some students learn more effectively through visual, verbal, practical or experiential methods. For this reason, it is important to know both students' attitudes towards mathematics and their learning styles if we are to improve the teaching and learning of mathematics. The current study looks at the relationship between secondary school students' attitudes towards mathematics and their learning styles with the aim of finding out how these factors are connected with their mathematics understanding. The results could assist teachers in adopting more appropriate teaching methods which will help students to have good scores in mathematics and in producing positive and effective learning experiences for students.

IV. Statement of the Problem

On the basis of above discussion, the problem was framed as under:

“A Study of Attitude of Secondary School Students Towards Mathematics in Relation to Their Learning Styles in District Yamuna Nagar”.

Objectives the Study

- To study the attitude towards mathematics among secondary school students.
- To study the learning styles (Enactive, Figural and Verbal) of secondary school students.
- To find out the relationship between attitude towards mathematics and learning styles among secondary school students.

Delimitations of the Study

- The present study is delimited to Yamuna Nagar district.
- The present study is delimited only to secondary school students.
- The study is delimited to private school students.
- The study is delimited to two variables only that attitude towards mathematics and learning styles.



V. Hypothesis of the Study

Null Hypothesis

There is no significant relationship between attitude towards mathematics and different learning styles among secondary school students.

Research Method

To achieve these objectives, the descriptive survey method was used.

Population and Sample

As it was not possible to encompass the entire population, search was conducted by the means of sample drawn from the target population on the basis of which generalization was drawn and made applicable to the population as whole. In order to achieve the objective of the present study, the investigator selected 60 students of the private secondary schools of district Yamuna Nagar.

Tools Used

In the present study, investigator used the following tools for collection of required data: -

- Attitude Towards Mathematics Scale (ATMS) developed and standardized by Dr. S. C. Gakhar and Dr. Rajni.
- Learning Style Inventory (LSI) developed and standardized by Prof. K. S. Misra.

Procedure Followed for Data Collection

After selection of the sample and determination of the method of data collection, the researcher made all necessary arrangements for administering the test in the selected schools. The researcher herself visited the selected schools of the Yamuna Nagar District of Haryana for the collection of data. Prior permission was taken from the principals of the respective schools, and the objective of the study was also explained to them. All the arrangements for administration of the test were discussed, and suitable dates and timings were decided in consultation with the school authorities. On the appointed dates, the test was administered to the selected secondary school students after giving them proper instructions and directions.



VI. Statistical Techniques Used

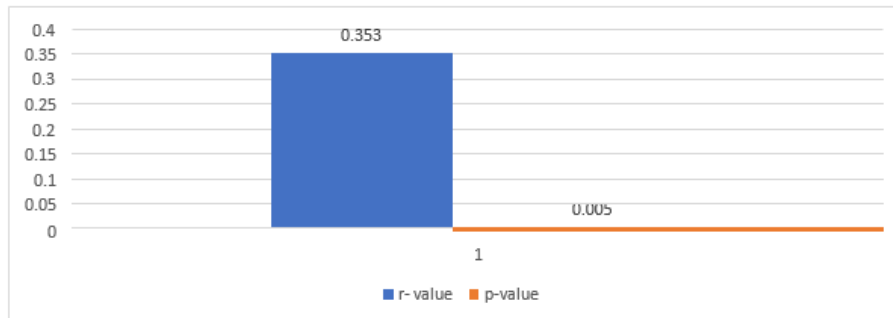
To analyze the data researcher used only one statistical technique. 'Coefficient of Correlation' method in which "Pearson's Product Moment Method" (r) are used for analysis of collect data.

VII. Analysis and Interpretation of Data

The analysis gives a general picture of the correlation between the two major variables of this research study. To do so the Pearson Product Moment Correlation Coefficient (r) was calculated. The r- value shows us if there is a positive or negative relationship between the two variables here, and the p-value shows us the level of significance of this relation.

Correlation Between Attitude towards Mathematics and Overall Learning Style
Table 1

Variables	N	r- value	p-value
ATM X Different Learning Styles	120	0.353	0.005



From the above table, the value of coefficient of correlation(r-value) is 0.353 and the level of significance (p-value) is 0.005 which is less then 0.05. This means that the realtion between Attitude Towards Mathematics and different Learning Style is statistically significant. It shows that students with high learning values has positive attitude towards mathematics.



Main Findings

There is a significant positive relationship between attitude towards mathematics and different learning styles among secondary school students.

Implications of the Study

- Teaching of mathematics has to be done in multiple ways considering the fact that each child has a different learning style and perception towards the subject. The teacher needs to incorporate varied instructional strategies such as the use of activity-based instruction, presentation using visual aids, verbal instructions and demonstrations, discussions, diagrams, charts and classwork among others.
- It was also observed that individual variations in students' learning styles need to be considered in lesson planning for mathematics. The teacher can incorporate activities in the lesson plans in order to allow students to deal with the subject matter from different perspectives. Presenting information verbally and visually is essential for effective teaching of mathematics.
- Students also need to take responsibility for their own learning strategies while studying mathematics. The school can develop seminars, orientation week and other related programs aimed at helping students identify their best learning strategies which in turn help them acquire better understanding of the subject.

Suggestions for Further Studies

- The present study was conducted in Yamuna Nagar District of Haryana. Similar studies can be carried out in other districts of Haryana as well as in different states of India.
- The study can also be extended to other levels of school education, such as primary, upper primary, and senior secondary levels, to understand how students' attitudes towards mathematics and learning styles may vary across different stages of education.
- A comparative study can be conducted among students from government and private schools to examine differences in their attitude towards mathematics and learning styles based on factors such as category and age.
- Future researchers can explore the relationship between attitude towards mathematics, learning styles, and other important variables such as mathematics achievement, motivation, mathematics anxiety, self-confidence, and academic self-efficacy.



- Similar research can be conducted among secondary school mathematics teachers to understand their attitudes towards mathematics and to examine how their attitudes may relate to their teaching practice.

VIII. Conclusion

The present study, titled “A Study of Attitude of Secondary School Students Towards Mathematics in Relation to Their Learning Styles in District Yamuna Nagar,” highlights the importance of understanding students’ attitudes towards Mathematics in relation to the ways in which they prefer to learn. Mathematics is an essential subject for developing logical reasoning, problem-solving abilities, and analytical thinking; however, students may differ considerably in their interest, confidence, motivation, and attitude towards the subject.

The study concludes that students’ learning styles play an important role in shaping their experiences and attitudes towards Mathematics. Students who receive learning experiences that correspond with their preferred ways of learning may demonstrate greater interest, confidence, participation, and positive attitudes towards the subject. On the other hand, a mismatch between teaching approaches and students’ learning preferences may contribute to reduced engagement, anxiety, or negative perceptions of Mathematics.

The findings emphasize that teachers should recognize individual differences among secondary school students and adopt a variety of teaching strategies rather than depending exclusively on a single instructional method. The use of visual representations, practical activities, discussion, collaborative learning, problem-solving exercises, demonstrations, and technology-supported instruction can provide opportunities for students with different learning preferences to participate effectively.

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