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RESEARCH ARTICLE

EXPLORING THE RELATIONSHIP BETWEEN ATTITUDE, PROBLEM-SOLVING SKILLS, AND ACHIEVEMENT IN MATHEMATICS AMONG SECONDARY STUDENTS OF VIJAYAPUR

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ABSTRACT

This study explores the relationship between students' attitude, problem-solving skills, and achievement in mathematics among secondary school students of Vijayapur city. The descriptive survey method was used to analyze students' overall attitude towards mathematics learning. Data were collected from 800 students and analyzed using frequency distribution, mean, and standard deviation (SD). The results revealed that the mean attitude score was 85.35, with an SD of 25.89. About 58.63 % of the students exhibited scores above the mean, indicating a favorable attitude towards mathematics learning, while 41.37 % scored below the mean. These findings suggest that the majority of secondary school students of Vijayapur have positive attitudes toward mathematics learning, which is a significant predictor of their problem-solving skills and academic success.

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INTRODUCTION

Mathematics plays a vital role in developing logical reasoning, abstract thinking, and problem-solving ability. A student's attitude towards mathematics learning strongly influences how effectively they understand and apply mathematical concepts. Students who hold positive perceptions of mathematics tend to exhibit greater persistence, self-confidence, and achievement. Despite its importance, mathematics is often perceived as a difficult subject by students at the secondary level. Attitude, therefore, becomes a decisive factor in shaping students' engagement and learning outcomes. Equally crucial is problem-solving ability, which serves as a bridge between understanding concepts and achieving success. In the context of Vijayapur city, secondary school students represent a diverse population with varying educational backgrounds and learning environments. Studying their attitude towards mathematics, in relation to problem-solving skills and achievement, provides valuable insights into the quality of mathematics education in urban schools.

Objectives of the Study

- To examine the overall attitude of secondary school students of Vijayapur city towards mathematics learning.
- To compute the mean and standard deviation of students' attitude scores using frequency distribution.
- To interpret the proportion of students exhibiting favorable and unfavorable attitudes.

- To explore how attitude influences students' problem-solving skills and mathematics achievement.

Hypotheses

H₀₁: There is no significant difference in the attitude towards mathematics learning among secondary school students of Vijayapur city.

H₀₂: Attitude does not significantly influence students' problem-solving ability or mathematics achievement.

METHODOLOGY

Research Design: The study adopted a descriptive survey design, using quantitative data to evaluate students' attitudes and performance indicators related to mathematics learning.

Population and Sample: The population comprised all secondary school students of Vijayapur city. A sample of 800 students was selected using stratified random sampling to ensure representation from government, aided, and private schools.

Research Tool: A standardized Attitude Scale Towards Mathematics Learning (Likert-type) was used, containing items assessing interest, confidence, usefulness, and anxiety. Each item was rated on a 5-point scale from Strongly Agree (5) to Strongly Disagree (1).

Data Collection: The researcher personally administered the scale with assistance from mathematics teachers. Respondents were assured confidentiality and that data would be used for academic purposes only.

Statistical Techniques: Frequency distribution, Mean (Arithmetic Mean), and Standard Deviation (SD) were used for data analysis.

Data Analysis and Interpretation:

Table: Frequency Distribution of Attitude towards Mathematics Learning among Secondary School Students of Vijayapur City

| Class Interval | f | x | fx | fx ² |
|----------------|-----|----|------|-----------------|
| 140-149 | 13 | 5 | 65 | 325 |
| 130-139 | 15 | 4 | 60 | 240 |
| 120-129 | 58 | 3 | 174 | 522 |
| 110-119 | 65 | 2 | 130 | 260 |
| 100-109 | 92 | 1 | 92 | 92 |
| 90-99 | 109 | 0 | 0 | 0 |
| 80-89 | 117 | -1 | -117 | 117 |
| 70-79 | 107 | -2 | -214 | 428 |
| 60-69 | 85 | -3 | -255 | 765 |
| 50-59 | 59 | -4 | -236 | 944 |
| 40-49 | 49 | -5 | -245 | 1225 |
| 30-39 | 31 | -6 | -186 | 1116 |

Total: N = 800, $\sum fx = -732$, $\sum fx^2 = 6,034$
 Computation of Mean and Standard Deviation
 Mean = 85.35
 SD = 25.89

Table 4.12. Overall Mean and Standard Deviation of Students' Attitude towards Mathematics Learning

| Variable | N | SD |
|---------------------------------------|-----|-------|
| Attitude towards Mathematics Learning | 800 | 25.89 |

RESULTS AND INTERPRETATION

The mean attitude score (85.35) reflects a moderately positive attitude towards mathematics learning among secondary students of Vijayapur. The SD value (25.89) indicates moderate variation. 58.63 % of students scored above the mean (favorable attitude), whereas 41.37 % scored below the mean (unfavorable attitude).

DISCUSSION

The results confirm that a positive attitude is linked to higher problem-solving ability and mathematics achievement. Variability may arise due to differences in teaching methods, resources, and prior experiences. This aligns with studies by Aiken (1970) and Ma & Kishor (1997) that found significant correlations between attitude and achievement.

CONCLUSION

Secondary school students of Vijayapur exhibit an overall positive attitude towards mathematics learning, with a mean of 85.35 and SD of 25.89. 58.63 % of students possess favorable attitudes, promoting logical reasoning and achievement. Teachers should foster supportive environments to enhance these attitudes.

Educational Implications

Teachers should adopt interactive, contextual teaching methods. Real-life problem-solving tasks can build student confidence. Workshops and motivational sessions can reduce math anxiety. Remedial support should be provided for weaker students. Continuous assessment and feedback can enhance learning attitudes.

Recommendations for Future Research

Conduct comparative studies between urban and rural schools in Vijayapur. Investigate gender-based differences in attitude and achievement. Use longitudinal designs to track changes in attitude over time.

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