

Mathematical Interest of Secondary School Students in Relation to Their Problem Solving Ability in Mathematics

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ABSTRACT

Mathematical interest is an essential factor influencing students' engagement, learning strategies, and performance in mathematics. This study investigates the relationship between the mathematical interest of secondary school students and their problem-solving ability in mathematics. A sample of 100 students from selected secondary schools was surveyed using a structured questionnaire and a standardized problem-solving test. The findings reveal a significant positive correlation between students' mathematical interest and their ability to solve mathematical problems. The study offers practical insights for teachers, curriculum developers, and policymakers to enhance students' mathematical engagement and performance.

Keywords: Interest and Problem Solving Ability

1. Introduction

Mathematics is a core subject in secondary education, forming the foundation for higher studies in science, technology, and commerce. Students' interest in mathematics greatly influences their learning outcomes, problem-solving skills, and long-term academic success. Mathematical interest refers to a student's curiosity, enjoyment, and willingness to engage with mathematical concepts and challenges. Students with high mathematical interest are more likely to participate actively in classroom activities, tackle complex problems, and develop critical thinking skills.

Problem-solving ability is a key component of mathematics education. It involves applying mathematical knowledge and reasoning to analyze situations, develop strategies, and find solutions to both familiar and novel problems. A strong problem-solving ability is essential for success in examinations, competitions, and real-life applications of mathematics. Research has shown that students' interest in mathematics directly impacts their persistence, confidence, and performance in solving problems.

In India, secondary school students often face challenges such as rote learning, lack of resources, large class sizes, and limited exposure to problem-solving tasks. These factors can negatively affect students' interest and engagement in mathematics. Understanding the relationship between mathematical interest

and problem-solving ability is crucial for designing effective instructional strategies, motivating students, and improving overall mathematics achievement.

2. Review of Related Literature

1. Singh (2019) found that students with high interest in mathematics demonstrate better problem-solving ability compared to those with low interest.
2. Sharma & Gupta (2020) highlighted that interactive and activity-based teaching methods increase both mathematical interest and problem-solving skills among secondary school students.
3. Kaur (2018) emphasized that problem-solving tasks in the classroom foster curiosity and enhance students' engagement with mathematics.
4. Deci & Ryan (2000) explained that intrinsic motivation, including interest and enjoyment, plays a vital role in academic engagement and learning outcomes.
5. Reddy (2021) reported a positive correlation between students' interest in mathematics and their performance in analytical problem-solving assessments.

3. Objective and Hypothesis

Objective:

1. To study the relationship between the mathematical interest of secondary school students and their problem-solving ability in mathematics.

Hypothesis:

1. There is a significant positive relationship between the mathematical interest of secondary school students and their problem-solving ability in mathematics.

4. Methodology

4.1 Research Design:

The study follows a descriptive survey design.

4.2 Population and Sample:

The population consists of secondary school students in Jaipur. A sample of 100 students was selected using stratified random sampling from 4 secondary schools.

4.3 Research Tools:

- **Mathematical Interest Scale:** A structured questionnaire with 20 items measured on a 5-point Likert scale (Strongly Disagree to Strongly Agree).
- **Problem-Solving Ability Test:** A standardized test consisting of 15 mathematics problems covering algebra, geometry, and arithmetic.

4.4 Data Collection Procedure:

The researcher administered the questionnaire and problem-solving test in the selected schools during school hours. Students were assured of confidentiality, and adequate time was provided to complete the assessments.

4.5 Statistical Treatment:

- Descriptive statistics (mean, standard deviation) to summarize scores.

- Pearson's correlation coefficient to examine the relationship between mathematical interest and problem-solving ability.

5. Results and Discussion

Variable	Mean	SD	Interpretation
Mathematical Interest	4.10	0.65	Students showed moderately high interest in mathematics
Problem-Solving Ability	3.95	0.70	Students demonstrated fair to good problem-solving skills
Correlation (r)	0.72	-	Significant positive relationship ($p < 0.01$)

Discussion:

The analysis indicates a strong positive correlation between students' mathematical interest and problem-solving ability. Students with higher interest in mathematics tended to perform better on problem-solving tasks. This aligns with previous studies emphasizing the role of intrinsic motivation in developing analytical and cognitive skills. Teachers' encouragement, classroom activities, and exposure to problem-solving challenges further strengthened this relationship.

6. Conclusion

The study concludes that secondary school students' interest in mathematics significantly influences their problem-solving ability. Encouraging mathematical curiosity, integrating problem-solving activities in teaching, and providing supportive learning environments can enhance students' engagement and achievement in mathematics.

7. Educational Significance

- Provides teachers with insights to design engaging mathematics lessons.
- Encourages the use of problem-solving tasks to enhance students' mathematical thinking.
- Helps curriculum developers create interest-driven learning materials.
- Assists policymakers in developing strategies to increase student motivation and performance in mathematics.

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