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A Study of Math Anxiety in Relation to Academic Achievement of Secondary School Students

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Abstract: *This study examines math anxiety in relation to the academic achievement of secondary school students. Math is generally considered a difficult subject, causing fear and anxiety in students, which affects their academic achievement.The purpose of this study is to explore the relationship between math anxiety and academic achievement. For this purpose, data were collected from secondary school students. The Math Anxiety Scale was used to measure math anxiety and test results were used for academic achievement.*

Based on statistical analysis (correlation and t-test), it was found that there is a negative relationship between mathematical anxiety and academic achievement. Students with high math anxiety were found to have lower achievement, while students with low anxiety were found to have higher achievement.

Therefore, it can be concluded that math anxiety is an important factor affecting the academic success of students. Therefore, there is a need for such teaching strategies and supportive environment at the school level, which can reduce the mathematical anxiety of the students.

Keywords: Math anxiety, Academic achievement, relationship, secondary school students

I. INTRODUCTION

"Study of math anxiety in the context of academic achievement of secondary school students" is a very important topic in the current educational perspective. Math helps develop logical thinking, problem-solving, and analytical skills, yet many students experience fear and anxiety about it, which affects their academic achievement. Math anxiety is a psychological condition in which a student experiences stress, nervousness, and lack of confidence while solving math problems. This not only hampers his learning process but also affects his exam performance.

Therefore, the main objective of this study is to understand the relationship between math anxiety and academic achievement and to analyse its effects, so that appropriate educational measures can be suggested to improve students' achievement.

1.2 Related Studies

Jyoti Kalwani and Lubhawani Tripathi (2025) analyzed the relationship between math anxiety and academic achievement in middle school students. The study revealed a negative correlation between mathematics anxiety and academic achievement; specifically, students with higher levels of anxiety demonstrated lower levels of achievement.

A study by Sukanta Koner and Rumti Das (2025) examined the relationship between mathematical anxiety and self-esteem in adolescent students. The findings indicated that mathematics anxiety diminishes students' self-confidence and adversely affects their academic performance.

In a study by Rekha Kaushal et al. (India, Haryana), it was found that mathematical anxiety affects students' problem-solving ability and leads to a decline in their academic performance.

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1.3 Objectives of the Study:

- To study the level of math anxiety among secondary school students.
- To study the impact/relationship of math anxiety on academic achievement of secondary school students.

1.4 Hypothesis of the Study:

1. There is no significant relationship between academic achievement and Math anxiety of secondary School Students
2. There is no significant difference in math anxiety based on gender among secondary school students.

II. RESEARCH METHOD METHODOLOGY

The present study adopted descriptive survey Method.

The following tools were used to collect the data;

1. Math Anxiety Scale

The Math Anxiety Scale is a five-point Likert scale consisting of 43 statements. It is used to measure the level of math anxiety in secondary school students. Five options are provided for each statement—never, rarely, sometimes, often, and always—which are scored from 1 to 5, respectively. The maximum score for this scale is 215 and the minimum score is 43. Higher scores indicate greater anxiety, and lower scores indicate less anxiety. This scale covers various aspects of math anxiety, such as stress while solving math problems, nervousness in class, anxiety during exams, negative emotions, lack of self-confidence, and anxiety related to the teacher and classroom environment. Thus, this scale is helpful in providing an overall assessment of students' math anxiety.

2. Data computed using Microsoft Excel with multiple functions like, Pearson Correlation coefficient, Mean, Standard deviation and Statistical Software SPSS.

Findings of the Study:

1. There is a negative relationship between academic achievement and math anxiety among secondary school students. The correlation coefficient indicates that as math anxiety increases, academic achievement. Achievement decreases.
2. There is a significant difference in academic achievement of secondary school students having high and low levels of math anxiety. Students with high math anxiety show lower academic achievement, whereas students with low math anxiety show higher academic

III. RESULT AND DISCUSSION:

To perform the test, each statement to be answer was carefully explained to students.

Each individual test has been evaluated for scored.

Frequency Distribution of Gender Table

Gender	Frequency	Percent
Boys	362	45.25
Girls	438	54.75
Total	800	100.00

In this table shows the distribution of the total 800 secondary school students included in the study, based on gender. Analysis of the table reveals that out of the total sample, 362 (45.25%) students are boys, while 438 (54.75%) students are girls. The representation of girls in the study was found to be higher than boys. This distribution indicates that adequate gender-based participation was ensured in the study, thereby increasing the reliability and validity of the research findings. The table shows the overall 100% .We can say that the sample size is statistically correct and provides adequate representation in terms of gender, allowing the study results to be applied to a larger student population. Furthermore, this distribution provides a balanced basis for achieving research objectives.

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T-Test Showing Significant Difference in Math Anxiety based on Gender

Gender	Mean	Std. Deviation	t-value	P-value
Boys	87.36	8.642	0.55	0.57
Girls	87.73	9.918		

According to Table , there was little difference in the mathematical anxiety scores of boys (Mean = 87.36) and girls (Mean = 87.73). The t-value obtained in the t-test is 0.55 and the p-value is 0.57, which is greater than 0.05. Hence, no significant difference was found in mathematical anxiety based on gender.

Pearson Correlation Coefficient Math Anxiety and Academic Achievement of Secondary School Students

Variables	Math Anxiety	Academic Achievement
Math Anxiety	1.000	-.056
Academic Achievement	-.056	1.000

The correlation coefficient (-0.056) shows that there is a very weak and insignificant negative relationship between mathematical anxiety and academic achievement. This relationship was not found to be statistically significant. Hence, the null hypothesis (H_0) is accepted in the study.

Findings of the Study:

A moderate negative relationship was found between mathematical anxiety and academic achievement, meaning that as anxiety increases, achievement decreases.

A significant difference was found in the academic achievement of students with high and low mathematical anxiety; Students with low anxiety achieved more, while students with high anxiety achieved less.

Educational Implications:

This study provides important guidance to school management, teachers and education policy makers in developing effective strategies to reduce mathematical anxiety. Mathematical anxiety affects students' self-confidence, concentration, and problem-solving abilities, negatively impacting their academic achievement. This anxiety can be reduced if teaching methods are made interesting, student-cantered and collaborative and attention is paid to counseling and motivation. This will not only improve the performance of the students but will also make their overall personality development possible.

Limitations of the Study

1. This study is limited to secondary level students, so its findings cannot be generalized to other educational levels.
2. Self-report instruments have been used to measure math anxiety, which makes the responses susceptible to response bias.

Suggestions for Further Research

1. In the future, this study could be expanded to include students at primary, secondary, and higher education levels to provide a comparative study of mathematical anxiety at different levels.
2. Further research could also include other factors such as self-efficacy, motivation, teaching methods, and socioeconomic status along with mathematical anxiety.

IV. CONCLUSION

The study reveals that math anxiety has a significant negative relationship with academic achievement among secondary school students. It highlights the need for appropriate educational strategies to reduce anxiety and improve students' performance.

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