SHIKSHA SAMVAD
International Open Access Peer-Reviewed & Refereed
Journal of Multidisciplinary Research
ISSN: 2584-0983 (Online)
Volume-1, Issue-4, June- 2024
www.shikshasamvad.com

"Anxiety of mathematical aptitude among science and arts students of tenth standard belonging to Bareilly"

Prof. (Dr.) Rakesh Kumar Azad
B.Ed. Department
Bareilly College,
Bareilly U.P. (India)

Summary:

In conclusion, the concern about mathematical ability among science and arts students in class 10 highlights the need for a balanced and inclusive approach to education. By fostering a positive learning environment and equipping students with the necessary skills and confidence, educators can empower them to navigate mathematical challenges effectively, irrespective of their chosen academic path. This approach not only enhances academic outcomes but also prepares students for future endeavours where mathematical literacy is increasingly essential. Studying the anxiety of mathematical ability among science and arts students in class 10 is essential for promoting inclusive education, improving academic performance, supporting mental health, and preparing students for future success. RESULTS OF RESEARCH: There is no significant relationship in between Anxiety and mathematical aptitude of male students from Science and Arts, There is no significant relationship in between Anxiety and mathematical aptitude of female students from Science and Arts.

Keywords: *Anxiety, Mathematical Aptitude, science and arts students, students of tenth standard.*

Introduction

In the realm of education, mathematics stands as a cornerstone subject that not only challenges students but also plays a crucial role in shaping their academic paths and future opportunities. However, the concern about mathematical ability among students in class 10, particularly those in science and arts streams, presents a nuanced perspective that warrants attention and understanding.

Mathematics often regarded as a universal language of logic and reasoning, demands both cognitive prowess and problem-solving skills. For students in class 10, this subject can evoke a range of emotions from enthusiasm to anxiety. The concern deepens when we explore how these emotions manifest differently among students pursuing science and arts disciplines.

Science students, immersed in subjects like physics, chemistry, and biology, often encounter mathematics as a tool for quantitative analysis and scientific inquiry. Here, mathematical ability is not merely a complement but a necessity, influencing their grasp of scientific concepts and their ability to engage with complex equations and formulas. The pressure to perform well in mathematics can be heightened by the competitive nature of entrance exams and the stringent academic standards prevalent in science streams.

On the other hand, arts students, while not typically specializing in mathematical subjects, still face challenges related to mathematical ability. Their curriculum may involve basic mathematical concepts, such as arithmetic, statistics, or geometry, depending on their educational board and chosen subjects. For arts students, the concern lies in maintaining a foundational understanding of mathematics that supports their broader academic pursuits and prepares them for practical applications in fields like economics, social sciences, or humanities.

The concern about mathematical ability among both science and arts students is multifaceted. It encompasses not only the academic performance but also the emotional and psychological aspects of learning. Students may experience varying levels of mathematical anxiety, influenced by factors such as prior experiences, teaching methods, peer comparisons, and societal expectations. This anxiety can impact their confidence, motivation, and overall academic trajectory.

Addressing these concerns requires a holistic approach within the education system. Educators and policymakers must consider strategies to enhance mathematical literacy across all streams while recognizing and supporting diverse learning styles and aptitudes. This may involve curriculum reforms that emphasize practical applications of mathematics, differentiated instruction that caters to individual strengths and weaknesses, and initiatives to reduce mathematical anxiety through supportive learning environments and effective teacher-student interactions.

Need and Importance of Study

Studying the anxiety related to mathematical ability among science and arts students in class 10 is crucial for several compelling reasons, each emphasizing the significance of understanding and addressing this issue effectively : Mathematical anxiety can disproportionately affect students' performance and engagement, potentially widening existing academic disparities. By studying anxiety levels among science and arts students, educators can identify groups at risk and implement targeted interventions to ensure equitable learning opportunities for all. High levels of mathematical anxiety often correlate with lower academic achievement in mathematics. Understanding the specific challenges faced by science and arts students allows educators to tailor teaching methods and support mechanisms that alleviate anxiety and improve learning outcomes in this critical subject. Mathematical anxiety can lead to negative emotional experiences such as fear, frustration, and self-doubt, which may hinder overall psychological well-being. By studying anxiety levels, educators and counsellors can provide appropriate support and strategies to enhance students' confidence and resilience in tackling mathematical challenges. Proficiency in mathematics is increasingly important across various career paths, including STEM (Science, Technology, Engineering, Mathematics) fields as well as quantitative disciplines within arts and social sciences. Addressing anxiety early on can better prepare students for future academic pursuits and career opportunities, ensuring they are equipped with essential skills for success in a competitive global economy. Insights gained from studying anxiety levels can inform curriculum design and pedagogical approaches that cater to diverse learning styles and needs. Educators can incorporate methods to make mathematics more accessible, engaging, and relevant, fostering a positive learning environment conducive to learning and

growth. Educators play a pivotal role in mitigating mathematical anxiety by creating supportive classroom environments and employing effective teaching strategies. Research on anxiety can guide professional development programs that enhance teachers' ability to recognize and address anxiety-related challenges among their students. Addressing mathematical anxiety in class 10 can have long-term benefits on educational trajectories, influencing students' choices of academic paths, higher education pursuits, and career aspirations. By fostering a positive experience with mathematics early on, students are more likely to continue studying and applying mathematics effectively throughout their academic and professional lives.

REVIEW OF THE RELATED LITERATURE:

Villa and Sebastian (2021), Biswas (2021), Musaad (2022), Manikandan & Ambedkar (2022), Arthur, Kofi and Asiedu-Addo (2022), Mukuka (2023), Majeed (2023), Rani (2024), Khan (2024).

Statement of the Problem

Anxiety of mathematical aptitude among science and arts students of tenth standard belonging to Bareilly.

Definition of Variables

District Bareilly - Bareilly District blends historical richness with modern developments, offering a blend of cultural heritage, economic activities, and tourist attractions that contribute to its significance in the state of Uttar Pradesh and India as a whole.

Secondary Students - secondary students represent a diverse group of young learners who are in a pivotal stage of their educational journey, laying the foundation for their future academic and professional endeavours. The experiences and skills gained during secondary education shape their academic achievements, personal growth, and readiness to contribute to society.

Science Students - science students represent a diverse group of learners passionate about understanding the natural world through scientific inquiry and exploration. Their education equips them with knowledge, skills, and perspectives essential for contributing to scientific advancements and addressing complex societal challenges.

Arts Students - Arts Students encompass a diverse group of learners passionate about exploring and understanding human experiences, creativity, and societal

dynamics through academic inquiry and creative expression. Their education equips them with valuable skills and perspectives essential for contributing to cultural enrichment, social discourse, and addressing contemporary challenges in an increasingly interconnected world.

Mathematical Aptitude - Mathematical Aptitude is a multifaceted attribute that encompasses conceptual understanding, problem-solving skills, critical thinking, and numerical fluency. It plays a crucial role in academic achievement, professional success, and everyday problem-solving, making it an essential skill for navigating the complexities of modern life.

Anxiety - anxiety is a complex emotional state that varies in intensity and impact from person to person. While occasional anxiety is normal, persistent and overwhelming anxiety may indicate an anxiety disorder that requires professional intervention and support. Understanding anxiety disorders, their causes, symptoms, and available treatments, is essential for promoting mental health and well-being in individuals affected by anxiety.

OBJECTIVES OF THE STUDY:

1. To study the relationship between anxiety and mathematical aptitude of male students from Science and Arts.
2. To study the relationship between anxiety and mathematical aptitude of female students from Science and Arts.

HYPOTHESIS:

1. There is no significant relationship between anxiety and mathematical aptitude of male students from Science and Arts.
2. There is no significant relationship between anxiety and mathematical aptitude of female students from Science and Arts.

METHOD

The study is descriptive survey type of research aiming at a study of effect of Anxiety of mathematical aptitude among science and arts students of tenth standard.

SAMPLE SIZE

The sample of this study 500 students.

Total Students			
(500)			
Science Students		Arts Students	
(260)		(240)	
Male Students	Female Students	Male Students	Female Students
(130)	(130)	(120)	(120)

TOOLS USED

Anxiety : **A.K.P. Sinha & L.N.K. Sinha**

Mathematical Aptitude : ***Dr. Ali Imam & Dr. Tahira Khatoon***

ANALYSIS AND INTERPRETATION OF DATA

Table 1

The correlation in between Anxiety and Mathematical Aptitudeof Male Students from Science and Arts.

Male Students	No. of Students	Correlation	Significant Level
Science	130	0.140	Positive Correlation
Arts	120	0.081	Positive Correlation

Interpretation: -In table 1 shows the correlation in between Anxiety and Mathematical Aptitude of Male students from Science and Arts. The correlation value in Anxiety and Mathematical Aptitude of Science Students is 0.140. The result demonstrates a favourable association between the Science Male students in the Anxiety and mathematical aptitude. The correlation value in Anxiety and Mathematical Aptitude of Arts Students is 0.081. The result demonstrates a favourable association between the Arts Male students in the Anxiety and mathematical aptitude.

Table 4.2

The correlation in between Anxiety and Mathematical Aptitude of Female Students from Science and Arts.

Female Students	No. of Students	Correlation	Significant Level
Science	130	0.079	Positive Correlation
Arts	120	0.017	Positive Correlation

Interpretation: -In table 4.31 shows the correlation in between Anxiety and Mathematical Aptitude of Female students from Science and Arts. The correlation value in Anxiety and Mathematical Aptitude of Science Students is 0.079. The result demonstrates a favourable association between the Science Female students in the Anxiety and mathematical aptitude. The correlation value in Anxiety and Mathematical Aptitude of Arts Students is 0.017. The result demonstrates a favourable association between the Arts Female students in the Anxiety and mathematical aptitude.

RESULTS OF RESEARCH

1. There is no significant relationship in between Anxiety and mathematical aptitude of male students from Science and Arts.
2. There is no significant relationship in between Anxiety and mathematical aptitude of female students from Science and Arts.

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SHIKSHA SAMVAD

An Online Quarterly Multi-Disciplinary
Peer-Reviewed or Refereed Research Journal
ISSN: 2584-0983 (Online) Impact-Factor, RPRI-3.87
Volume-01, Issue-04, June- 2024
www.shikshasamvad.com
Certificate Number-June-2024/19

Certificate Of Publication

This Certificate is proudly presented to

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For publication of research paper title

"Anxiety of mathematical aptitude among science and arts students of tenth standard belonging to Bareilly"

Published in 'Shiksha Samvad' Peer-Reviewed and Refereed Research Journal and E-ISSN: 2584-0983(Online), Volume-01, Issue-04, Month June, Year- 2024, Impact-Factor, RPRI-3.87.

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