ISSN: P-2455-0515
E- 2394-8450

Educreator Research Journal

VOLUME–IX, ISSUE– III

MAY – JUNE 2022

Original Research Article

A STUDY ON THE MATHEMATICS ANXIETY ON SECONDARY SCHOOL STUDENTS

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In the process of developing country by the year 2020, science, mathematics and technology have become an emphasis in the education system. However, the mathematics performance among students as early as in the primary institutions up to the higher level institution is still a major issue. Most of them think mathematics course is tough paper, difficult to learn, very complex, hard to pass out and so on. These entire negative thinking always interposes to the mathematical anxiety.

The impact of mathematics anxiety contrasts based on each individual student. Students who suffer from higher levels of mathematics anxiety, they develop negative attitudes and emotions toward mathematics. By the time the students participate in mathematics courses, their attitudes toward mathematics are relatively constant; the students with mathematics anxiety are more likely to dodge taking mathematics courses in their future studies. Perhaps the most difficult outcome of mathematics anxiety is a decreased level of mathematical achievement in the present era.

Need of the study

Math anxiety influences many students as early as the grade first by affecting their functioning memory. The Working memory is like a 'mental scratchpad'. It is now very crucial when we need to keep the track of numbers. But this functioning of memory can be interrupted by math anxiety in both the students of elementary and secondary school. This can escort them with math anxiety to be as much as half a school year behind their peers in math. Even for students who don't struggle with math anxiety, it's very crucial to build a positive attitude in study habits which will lead them and also help them because mathematics courses have become more complex and substantial.

Taking everything into consideration, the present meta-analysis aimed to quantitatively blend these studies to provide an updated and overall view on the math anxiety-performance relationship and investigate the specific variables that may play a role in variability. First, we calculated the overall effect size of the correlations between math anxiety and math performance. We then assessed whether this link differed across gender, grade level, geographical regions, measurement of math anxiety, measurement aspects of math performance and measurement forms of math performance and publication year.

Operational definition of the terms

Math anxiety can be described as strong negative emotions toward math, and Ashcraft (2002) defines math anxiety as "a feeling of tension, apprehension, or fear that interferes with math performance."

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"Mathematics Anxiety" is a psychological status, which comes forth in people when dealing with mathematical content whether in teaching and learning situations or in solving mathematical problems and assessing mathematical behaviour (Alam al-Hoda, 2000).

Although for many years, the causes of mathematics anxiety have been investigated by many researchers, there has not been presented any combined approach in math anxiety development. Since, environmental factors have a high impact on human personality development viz "ego" or its meaning, which is one of the main dimensions of human personality is influenced by environmental factors.

Aim of the study

To study the Mathematic Anxiety on Secondary school students.

Objectives of the study

The following are the objectives of the present study:

1) To study the Mathematical Anxiety of the total sample of Secondary School students.
2) To study the Mathematical Anxiety of Secondary School students based on Gender.
3) To study the Mathematical Anxiety of Secondary School students based on three different schools.
4) To study the Mathematical Anxiety of Secondary School students based on emotions, assessment and environmental factors.
5) To study the Mathematical Anxiety of Secondary School students based on a different class.

Method of the study

Descriptive research is used to describe characteristics of the population or phenomenon being studied. It does not answer questions about how/when/why the characteristics occurred. Rather it addresses the "what" question (what are the characteristics of the population or situation being studied?) The characteristics used to describe the situation or populations are nature of electrons, protons and neutrons to devise this categorical scheme. We now take for granted the periodic table, yet it took descriptive research to devise it.

Population

The population under this study comprises of sixty secondary school students studying in three different schools of Mumbai i.e. Rizvi Springfield High School, Shri V.V.K. Sarma High School and Bandra Hindu Association High School. There were 38 male respondents and 22 female respondents. A questionnaire was developed and administered on the group of students under study. Convenience sampling method has been adopted for the study.

Size and composition of the population

Size	Institute
34	Rizvi Springfield High School
34	Bandra Hindu Association High School
34	Shri. VVK. Sarma High School

Tool for data collection

For the present study, a questionnaire was developed by the researcher. The tool is directed towards determining

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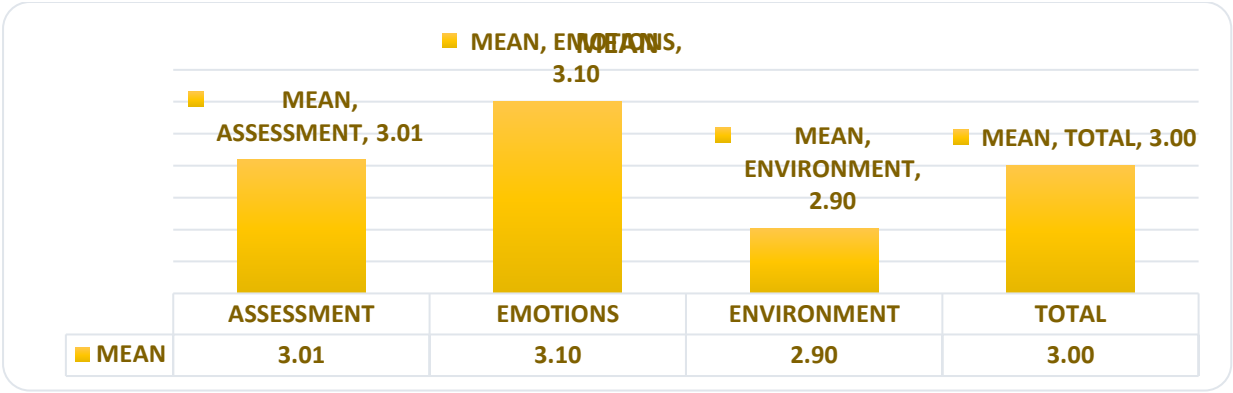
the attitude of secondary school students towards Mathematics. It consists of a total of 30 statements including both positive and negative statements. The scale used in the tool was 5-point Likert rating scale and yes and no type of question. The positive items in the scale are given the points 5, 4,3,2,1 which indicate Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree respectively. The negative items in the scale are given the points 1, 2,3,4,5 beginning from Strongly Disagree to Strongly Agree. The lowest point in the scale is 30 and the highest point in the scale is 150. The tool is valid and reliable.

Data collection

The tool was administered to the students of Rizvi Springfield, Bandra Hindu Association High School and Shri. VVK Sarma School through Google form. In every research work, it is essential to collect factual material or data unknown or untapped so far. They can be obtained from many sources, direct or indirect. It is necessary to adopt a systematic procedure to collect essential data. Relevant data, adequate in quantity and quality should be collected. They should be sufficient, reliable and valid.

Testing of objectives

1: To study the Mathematical Anxiety of total sample of secondary school students.



	ASSESSMENT	EMOTIONS	ENVIRONMENT	TOTAL
MEAN	3.01	3.10	2.90	3.00

Data interpretation: From the above table and graph of mean & percentage, we can interpret that students rated overall factors which affects them with the highest level of environmental factors than assessment and emotions. This may due to not only the students interact but also we interact with our surroundings, our environments can also help us and also it may affect our confidence. On the other hand, while calculating the overall mean of these three factors, we can interpret that emotions has the highest mean as compared to the other two factors. So from these, we can assume that most the participants lie in between the average count. They still have to work on their emotions because plays a crucial factor in mathematic course, one must be psychologically strong.

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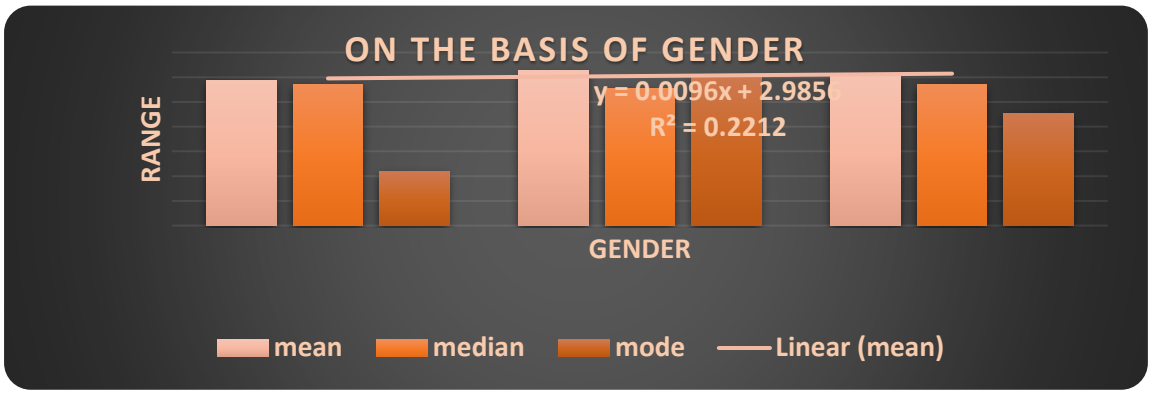
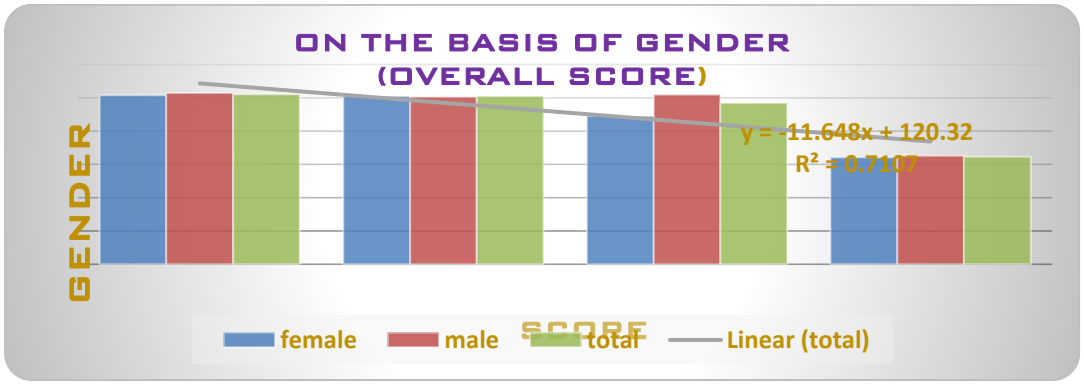
2: To study the Mathematical Anxiety of secondary school students on the basis of Gender.

	MEAN	MEDIAN	MODE	PERCENTAGE
FEMALE	101.48	101.00	89	64.23
MALE	102.88	100.50	102	65.11
TOTAL	102.14	101.00	97	64.64





Data interpretation: From the above table and graph, we can interpret that male has the highest score than female, whereas we can see that male and female has scored at the average level. But overall, as we can see that they both male and female pupil lies under the average score. With the help of this graph, we can say that they are improving as compared to the previous studies.

3: To study the Mathematical Anxiety of secondary school students on the basis of three different schools.

	MEAN	MEDIAN	MODE
RIZVI	103.2353	102.5	97
BHS	103.1471	100.5	95
VVK	100.0294	99.5	97
TOTAL	102.1373	101	97

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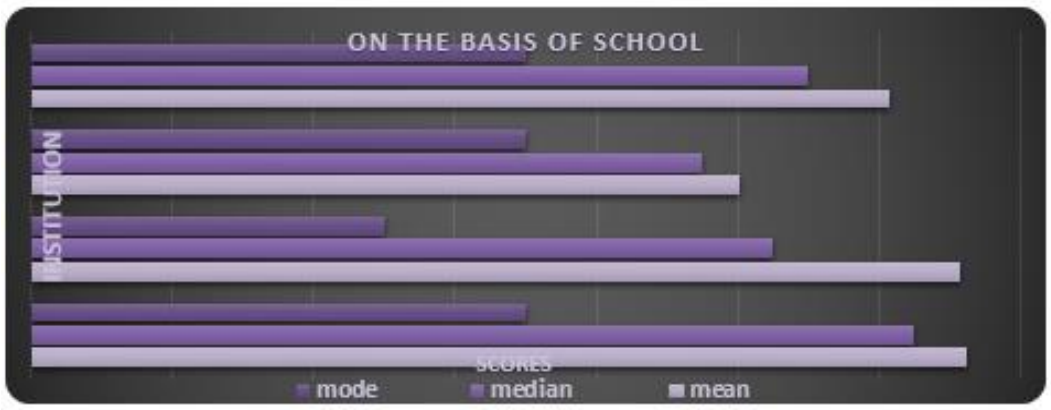
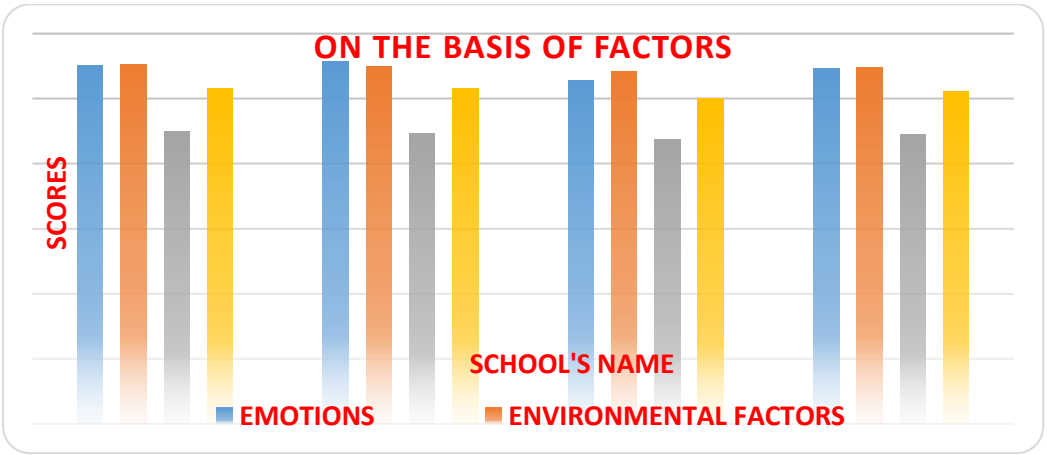


Data interpretation: From the above table and graph, we can interpret that Rizvi Springfield School has the highest score as compared to the Bandra Hindu Association High School and Shri. VVK High School. We can see that in Bandra Hindu Association High School has the lowest score from which we can assume that these students faces the Mathematic Anxiety, may be they don't understand the concept or they might have less logical thinking.

4: To study the Mathematical Anxiety of secondary school students on the basis of emotions, assessment and environmental factors.

QUESTION TYPE	BHS	RIZVI	VVK	TOTAL
EMOTIONS	110.27	111.55	105.64	109.15
ENVIRONMENTAL FACTORS	110.55	110.00	108.27	109.61
ASSESSMENT	89.83	89.42	87.33	88.86
TOTAL	103.15	103.24	100.03	102.14
% Total	25.25%	25.27%	24.48%	25.00%



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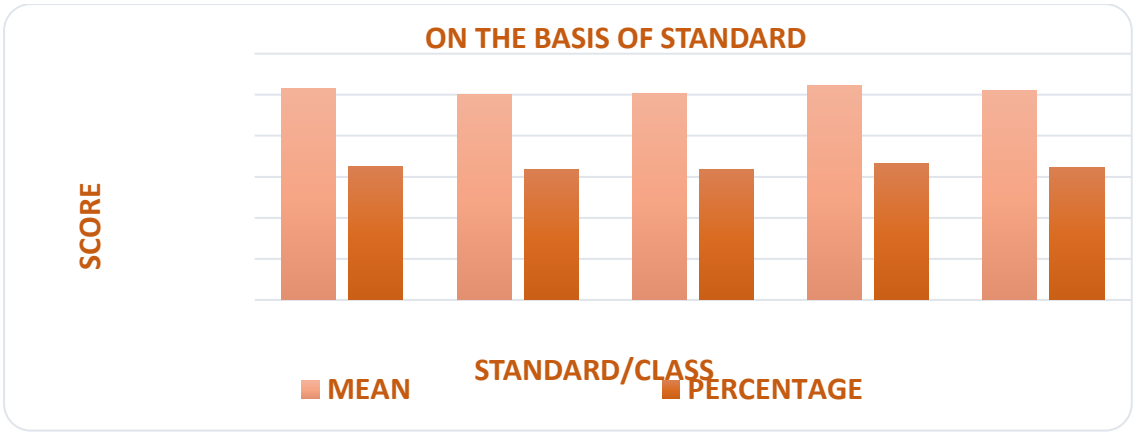
Data interpretation: From the above table and graph, we can interpret that Rizvi Springfield High School has the lowest score as compared to other schools in which Bandra Hindu Association High School has scored the highest place. And in Rizvi School, they have positive emotions factor as compared to BHS and VVK School. Also, we can interpret that all the three schools have scored the lowest place in assessment factors from which we can assume that they need to improvise their practice skill and also must get help from their parents, teachers, or from whom they are comfortable with to mend their confidence in a mathematics course.

5: To study the Mathematical Anxiety of secondary school students based on a different class.

CLASS	MEAN	PERCENTAGE
7TH	103.08	65.24
8TH	100.35	63.51
9TH	100.44	63.57
10TH	104.72	66.28
TOTAL	102.14	64.64



Data interpretation: From the above table and graph, we can interpret that the 10th standard has scored the highest rate as compared to the other standard and 8th standard students have scored the lowest rate and all the others are in the proportion of equal.

6: To study the Mathematical Anxiety secondary school students based on a different class.

FACTORS	A	B	TOTAL
ASSESSMENT	3.07	2.96	3.01
EMOTIONAL	3.09	3.11	3.10
ENVIRONMENTAL	2.95	2.86	2.90
TOTAL	3.04	2.97	3.00

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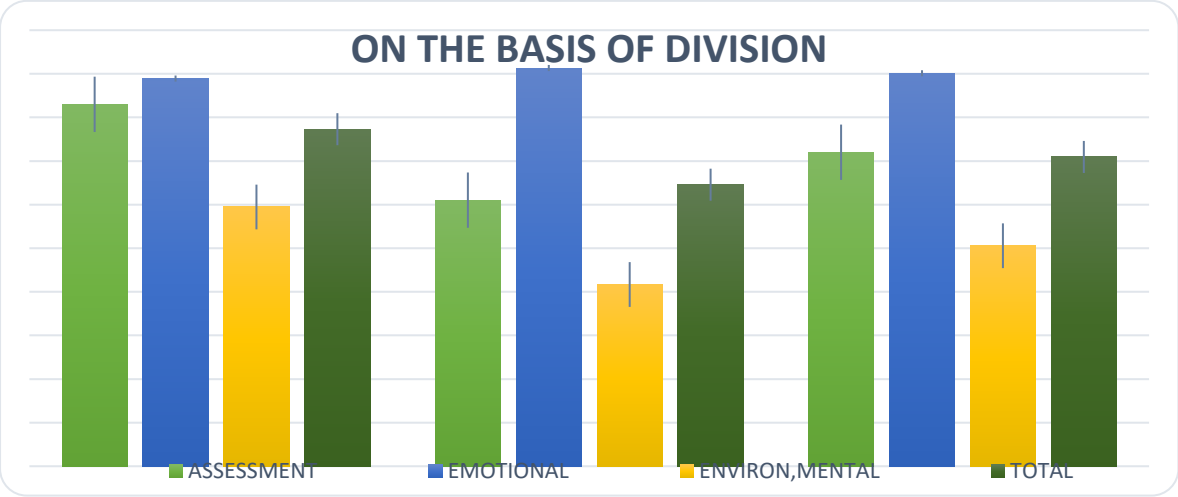

Data interpretation: From the above table and graph, we can interpret that division "A" has scored highest in the assessment factors as compared to division "B". In the other factors both the division has scored proportion.

Major findings and solutions

After processing the data, obtaining and interpreting the results in the previous chapter. The findings have been delineated and discussed in the present chapter. These findings can be generalized to the extent of representativeness of the sample and methodology employed in the study. Therefore, this chapter is devoted to focusing on the findings, conclusions, discussion of results of this study and for indicating their education implications & suggestions for further studies.

Understanding the mathematic anxiety of students

The present study examined the relationships between mathematics anxiety and their attitude towards their performances. The findings revealed a neutral correlation between the factors, which was not consistent with the previously reported findings. For example, Meena Thakur (2014) found the high anxiety group, the mean difference in creativity scores between less and more favorable mathematical attitude group of students was not significant. The participants of the present study were Secondary School students from a private school in Mumbai. In the current study, while finding the overall result, it has been revealed that environmental actor has the lowest mean value which indicates that the student from the same fields does not have much confidence to pursue help from their surroundings because they are afraid of what other people will say about them and in academic courses environmental factors play a crucial role in the performances of the student.

As discussed in the earlier chapters, extreme competition exists in the education system, with students under pressure to excel in their studies, also to fulfil the expectations of their family instead of personal goals and self-interest. The findings of the study have to be viewed with great caution by the math teacher. Still, for some students, the level of anxiety can be motivational and stimulating on the other hand the same level of anxiety can have opposite effects on them.

Understanding the differences of students individually and the effects of anxiety, mathematics teachers and professors have to develop innovative strategies to maintain the anxiety of every individual student to a healthy

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level.

Educational implications

The following are the consequences of this phenomenon: avoidance because students choose careers and areas of knowledge that are not related to mathematics; solidification of negative feelings toward anything that could be correlated with Calculus and arithmetic, and negative impact on the mathematical motivation and self-confidence as well as academic performance deficiency. Regarding the mathematical anxiety - academic performance relation, Reyes (1984) states that research on this relation has determined the existence of a substantial negative correlation between these two factors, that is, the greater mathematical anxiety there is, the lower the academic performance. According to Ashcraft and Kirk (2001), students showing high levels of mathematical anxiety have to encounter other issues when doing a math assignment such as feeling concerns, anguish, and fear of this topic.

The situation has an impact on their own perception of skills to approach the course content successfully. Hidalgo, Maroto and Palacios (2004, p. 93) found a series of events where anxiety plays the role of being the producing factor regarding the difficulty experienced by students to achieve their academic expectations in the area of mathematics. The Intrinsic and cumulative difficulty of students in the area of mathematics could delay the gaps in their education that, sooner or later, could result as non-satisfactory in academic performance. This, in turn, clarifies a progressive decrease of their mathematical self-concepts and the adoption of negative feelings such as rejection and feelings of tediousness that deteriorate the situation. With time, students shall perceive mathematics as a torment that they have to endure year after year.

One explanation for the relation between low academic performance in mathematics and undesirable levels of anxiety is the fact that this anxiety is the product of student actions that diminish the importance of attaining good academic performance in this area to focus on their personal difficulties and previous failures.

Suggestions for further studies

The research highlights a plethora of findings conducted by the researchers. The statistical data throws light on the effects of recreational activities on the emotional health of the specified age group. For better future research, the following suggestions must be taken into consideration: Wider geographical location: The research could have been conducted in a more expansive manner. More areas of suburban Mumbai could have been covered for a precise study, giving a clearer picture of the emotional intelligence health of Degree College students.

- The researcher has specifically tested the mathematics anxiety and their performances of Higher Secondary Students aged 11yrs to 15yrs only. Future researchers may extend their research on testing the emotional health of teenagers as well as of students in their early twenties to understand the level of anxiety of adulthood.
- The research was conducted on students belonging to the three different schools following the State board only. To obtain better research, future researchers must consider the students from vernacular mediums or other boards too.
- It has been found that the more time devoted to the research the better is the result of the study. Future

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E- 2394-8450

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researchers must avoid time constraints and begin the collection of data early thus it will help them to conduct the research peacefully.

- In this research, the researcher focused only on the survey method as a strategy and effort to better the mathematics performance of Higher Secondary School students. Various other strategies like activity-based, experimental method and many more can be used for further research.
- It was seen that during the research only mathematic anxiety and attitude towards this course was covered. This must not be the case for further researchers. Other aspects like social development, academic performance, self-efficacy, peer pressure, mental health etc. could be covered for a defining result.

For a better and more precise research in the future, the above-mentioned suggestions must be kept in mind. These are a few suggestions; nevertheless, more changes can be made by other researchers.

Bibliography

https://en.wikipedia.org/wiki/Mathematical_anxiety

Achievement in Mathematics in Relation to Mathematics Anxiety and Self Efficacy among Secondary School Students (shodhganga.com)

https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/Pages/research_overcomingmathsanxiety.aspx

Mathematics Anxiety, Mathematics Performance and Overall Academic Performance in High School Students, (https://journals.sagepub.com/)

The Role of Parental Math Anxiety and Math Attitude in Their Children's Math Achievement, *International Journal of Science and Mathematics Education* volume 15, 15, pages 331–347 (2017), (https://link.springer.com/)

Learning environment, attitudes and anxiety across the transition from primary to secondary school mathematics, *Learning Environments Research* volume 22, pages133–152(2019) (https://link.springer.com/)

http://www.allsubjectjournal.com/download/1721/3-1-46.pdf

http://www.ijsrp.org/research-paper-0413/ijsrp-p16134.pdf

https://www.grin.com/document/448181

http://fau.edu/education/centersandprograms/mathitudes/documents/math-anxiety-research-paper-2.pdf

Cite This Article:

Dr. Gyanprakash Arya & Ms. Mubasshira, (2022). *A Study On The Mathematics Anxiety On Secondary School Students,* ***Educreator Research Journal****, Volume–IX, Issue– III, May – June 2022, 168-176.*