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Motivation Towards Mathematics in Relation to Academic Performance of 10th Grade Students

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ABSTRACT

Learning and success depend on motivation. In the context of education, motivation is viewed as having a multi-dimensional structure that is linked to learning and academic motivation. Motivation can be interpreted in a variety of ways. In the field of education, motivation is a tridimensional phenomena made up of an individual's beliefs in their capacity to complete a given task, their motivations and objectives for completing the assignment, and their emotional reaction to completing the task. This study aims at investigating to find out the difference of Mathematics motivation between Secondary Boys and Secondary Girls Students. The researcher also attempts to find out the relationship between Mathematics Motivation and Academic Achievement of Secondary Students. The researcher chose a three-dimensional test to assess mathematics motivation. 163 pupils in the tenth grade were chosen by the purposive sample method from the districts of Nadia and North 24 Parganas under West Bengal Board of Secondary Education. The analysis was done through 't' test and correlation method. The study indicated that pupils' desire for mathematics varied significantly by gender, but there was no significant difference between urban and rural students or across any stratum among them.

Keywords: Motivation, Secondary Students, Academic Performance

INTRODUCTION

The motivation of students to learn, work hard, and succeed in school. Learners of all ages can become frustrated with mathematics if they are not careful. A young person's attitude toward mathematics as an adult may be impacted if they had a bad arithmetic experience. It is impossible to overstate the value of mathematics in the world. Poor study habits, indolence, bad classroom instruction, a lack of suitable educational materials, and a lack of enthusiasm are some of the variables that have been linked to low academic attainment among students (Akpan, 2000). Due to their interest in learning and enjoyment of the learning process, students are motivated to participate in academic activities through intrinsic motivation. Extrinsic motivators include good grades, earning potential to enrol in a course later, parental expectations, expectations of other trustworthy role models, and earning possibilities. Extrinsic incentive encourages performance and effort, and rewards act as effective reinforcers of the desired behaviour. In contrast to internal motivation, extrinsic motivation often yields quick results and necessitates less effort.

Mathematics can be challenging to learn, but encouragement can inspire kids to put in the effort and use the successful tactics (Hirchert, 2012). Numerous studies have also shown that intrinsic and extrinsic motivating factors are related to mathematical achievement and play a significant role in mathematics education. Hannula (2006) proposes incorporating incentive into theories of self-regulation

based on needs and objectives. In his perspective, motivation is a function of needs and goals, with needs being more generic than goals that are impacted by students' perceptions of themselves as math learners.

REVIEW OF RELATED LITERATURE

Adamma, & et.al (2018) conducted a study on the impact of intrinsic and extrinsic motivation on students' academic performance in mathematics was looked into. The study's goal was to discover how intrinsic and extrinsic motivation affected students' academic achievement in mathematics. The descriptive research design was used for the investigation. The researcher chose 200 primary six kids as the study's sample size. For school selection, the researcher employed a simple random sample technique. Academic Motivation Scale and Mathematics Achievement Test's instrument for data gathering. For data analysis, the T-test and Pearson product movement correlation were used. The finding that students' academic performance is improved by motivation and that there are gender differences in academic performance and motivation type.

Onyekwere, N. A. (2018) carried out research on "The Influence of Extrinsic and Intrinsic Motivation on Pupils Academic Performance in Mathematics." The primary goal of the study was to ascertain the impact of intrinsic and extrinsic motivation on students' academic performance in mathematics. The research used a descriptive survey methodology. 200 primary six students were chosen as the study's sample size utilising a straightforward random sampling procedure that involved picking two schools. The range of ages is 18 to 21. Academic Motivation Scale was the instrument used to collect the data. According to the study's findings, women were more intrinsically motivated than men. Males, in contrast to females, were more extrinsically motivated. These findings may be explained by the fact that men are traditionally viewed as the family's primary breadwinner in our society. For females, self-discovery and internal fulfilment are the foundations of academic performance and drive. Males are more externally motivated than females are for this reason.

Marilena & George (2014) conducted a study on math classroom motivation among students. The study's goals were to measure math performance using a framework for accomplishment goals. The researcher also looks into if a model exists that links students' math ability to their motivation and other affective components. This study employed a descriptive survey design and a random sample technique. For the purpose of evaluating pupils' mathematical performance and motivation, a sample of 321 sixth-grade students was chosen. Data were analysed using the Pearson product moment method. The relationship between affective components, motivation, and the degree to which these characteristics affect students' performance and interest in mathematics were explored by the researchers.

Sharma & Sharma (2018) carried out research on the link between drive and academic success. The study's goal was to determine the connection between academic success, self-concept, and motivation. 361 upper primary school children were chosen at random for the sample. An analytical quantitative investigation was used in the study. A student survey was used by the researcher. The academic achievement of late childhood school kids was found to be significantly correlated with self-concept, motivation, and drive. A considerable difference in motivation between male and female pupils was also discovered.

Akhtar & et al (2017) conducted research on the link between extrinsic motivation and academic achievement in students. The study's goal was to determine the connection between secondary school students'

academic progress and teachers' extrinsic motivation. In Punjab, 950 secondary school teachers were selected using the population proportionate to sample method. Data were gathered using a survey technique and a questionnaire called the Motivational Orientation for Teaching Survey. The annual examination results from grade 10 pupils during the previous two years were used to gauge the students' academic progress. The mean, standard deviation, and Pearson analyses were performed on the data collected (r). Findings revealed a high association between teachers' intrinsic motivation and students' academic progress.

Areepattamannil (2014) explored the links between mathematics achievement and academic motivation. The aim of the study was to examine and explore the relationship between academic motivation and mathematics achievement among adolescents from India and Canada. The t-test and multiple regressions were used to analyse the data. Findings For the Indian Immigrant teens, intrinsic motivation was a reliable indicator of math proficiency. Achievement in mathematics was negatively correlated with extrinsic motivation.

Statement of the problem.

The majority of secondary school students exhibit extreme phobias toward the subjects of mathematics, physics, English, and history. These courses receive very little attention from students, and they find it difficult to attend class. Students begin to leave school and commit various crimes throughout time. The majority of pupils in the village schools do not understand the pronunciation or meaning of English, which makes them disliking the English subject. Due to their lack of motivation and irregular practise, the majority of pupils are quite afraid of mathematics. The researcher has picked his topic with the aforementioned issues in mind because of how to both inspire in a novel way and fix these issues. So, the researcher wanted to know the "Motivation towards Mathematics in relation to Academic Performance of Secondary Students."

OBJECTIVE OF THE STUDY:

1. To find out the Gender wise (Boys & Girls) difference of Mathematics motivation.
2. To find out the Area wise (Rural & Urban) difference of Mathematics motivation.
3. To find out the Gender wise relationship between Mathematics Motivation and Academic Achievement.
4. To find out the Area wise relationship between Mathematics Motivation and Academic Achievement.

HYPOTHESIS OF THE STUDY:

1. There is no significant difference of Mathematics motivation between Boys and Girls students.
2. There is no significant difference of Mathematics motivation between Rural Students and Urban Students.
3. There is no significant relationship between Mathematics Motivation and Academic Achievement of Boys Students.
4. There is no significant relationship between Mathematics Motivation and Academic Achievement of Girls students.
5. There is no significant relationship between Mathematics Motivation and Academic Achievement of Secondary Students.
6. There is no significant relationship between Mathematics Motivation and Academic Achievement of Rural Students.
7. There is no significant relationship between Mathematics Motivation and Academic Achievement of Urban Students.

METHODOLOGY

This study's main goal was to determine the connection between academic achievement and motivation for mathematics. As a result, the research's technique was quantitative. It

involved gathering data, tabulating it, analysing it, and reaching the appropriate conclusions.

Variables: Researcher considered the main variable for the present study: Mathematics motivation, academic achievement and classificatory variable: Class (tenth grade), Gender (Male, Female), Area (Rural, Urban).

Population of the study: All secondary school of West Bengal were considered as population of this study.

Sample of the study: Here the researcher used Non-probability judgmental sampling technique for the research work. He collected data from two districts from the west Bengal by using questionnaire. The researcher collected 163 samples. Among them secondary school students were boys and girls

Tools used in the Study: Following a survey of numerous research papers, journals, theses, etc., the present study's two tool aspects (intrinsic and extrinsic motivation) were chosen. In order to obtain data from the samples for this study, the researcher created a self-made questionnaire.

Standardization of Tools: A good test ought to be valid by definition. For the purpose of determining the test item's validity, the researcher sent 40 statements to his expert, who then rejected 10 of them, amended 13 of them in accordance with his recommendations, and ultimately chose 25 statements. With the aid of Cronbach's alpha, the reliability of the test item was examined in this study, and the computed result was 0.833.

Scoring procedure: Each item on the questionnaire included five possible answers that could be scored: highly agree, agree, unknown, disagree, and strongly disagree. If the answer was yes, there was a credit of 5 for strongly agreeing and 1 for strongly disagreeing. If the question was negative, there was a 1 mark credit for strongly agreeing and a 5 mark credit for strongly disagreeing.

Dimension wise test items for Mathematics Motivation

Dimension	Serial no. of questions	Total
Intrinsic Motivation	1,3,5,7,9,11,13,15,17,19,21,23.25	13
Extrinsic Motivation	2,4,6,8,10,12,14,16,18,20,22,24.	12

Statistical Technique used: There are two categories of statistics employed in this study: descriptive statistics and inferential statistics. To learn more about sample distribution and inferential statistics, the researcher chose only Mean and Standard Deviation in this study. Only the "t" test was chosen by the researcher to determine the significant mean difference among secondary school students. Additionally, he employed correlation (r) to determine the link between secondary students' academic achievement and their motivation for mathematics.

ANALYSIS OF DATA

H_{01}. There is no significant difference of Mathematics motivation between Boys and Girls Students.

Group	Number	Mean	S.D.	df	t-value	Remarks
Secondary Boys	85	93.48	15.16			
Secondary Girls	78	99.65	13.76	161	2.712	significant

The estimated t value was found to be significant, and the null hypothesis was rejected. There is a noticeable motivational difference in mathematics between secondary school boys and secondary school girls.

H_{02} There is no significant difference of Mathematics motivation between Rural Students and Urban Students.

Group	Number	Mean	S.D.	df	t-value	Remarks
Rural Students	89	89.98	15.93	161	4.502	significant
Urban Students	74	97.87	16.16			

The estimated t value was found to be significant, and the null hypothesis was rejected. The motivation for mathematics varies significantly between urban and rural students.

H_{03}. There is no significant relationship between Mathematics Motivation and Academic Achievement of Secondary Students.

Group	Number	Measure	'r' value	Remarks
Secondary Students	163	Mathematics motivation	0.382	significant
		Academic Achievement		

The estimated "r" value was determined to be significant, rejecting the null hypothesis. Secondary students' academic achievement in mathematics and motivation are low correlated.

H_{04}. There is no significant relationship between Mathematics Motivation and Academic Achievement of Secondary Boys Students.

Group	Number	Measure	'r' value	Remarks
Secondary Boys Students	85	Mathematics motivation	0.420	significant
		Academic Achievement		

It was the null hypothesis that was rejected because the estimated 'r' value was significant. The academic achievement of secondary boys' students and their motivation for mathematics have average correlation.

H_{05}. There is no significant relationship between Mathematics Motivation and Academic Achievement of Secondary Girls Students.

Group	Number	Measure	'r' value	Remarks
Secondary Girls Students	78	Mathematics motivation	0.357	significant
		Academic Achievement		

The estimated "r" value was determined to be significant, rejecting the null hypothesis. Academic Success of Secondary Girls Students and Mathematics Motivation Have a low Relationship.

H_{06}. There is no significant relationship between Mathematics Motivation and Academic Achievement of Rural Students.

Group	Number	Measure	'r' value
Rural Students	89	Mathematics motivation	0.299
		Academic Achievement	

The estimated "r" value was found to be significant, and the null hypothesis was rejected. Rural students' academic achievement and motivation in mathematics have a substantial relationship.

H_{07}. There is no significant relationship between Mathematics Motivation and Academic Achievement of Urban Students.

Group	Number	Measure	'r' value
Urban Students.	74	Mathematics motivation	0.070
		Academic Achievement	

The calculated "r" value was not significant, and the null hypothesis was rejected, according to the results. The link between urban students' academic achievement and motivation in mathematics is not very strong.

FINDINGS OF THE STUDY

The findings of the result from the study that are-

- There is a noticeable motivational difference in mathematics between secondary school boys and secondary school girls.
- The motivation for mathematics varies significantly between urban and rural students.

Mathematics motivation correlation to academic achievement by using correlation (r) method. The findings of the result from the study that are-

- Secondary students' academic achievement in mathematics and motivation are significantly correlated.
- The academic achievement of secondary boys' students and their motivation for mathematics have a substantial relationship.
- Academic Success of Secondary Girls Students and Mathematics Motivation Have a Strong Relationship.
- Rural students' academic achievement and motivation in mathematics have a substantial relationship.
- The link between urban students' academic achievement and motivation in mathematics is not very strong.

CONCLUSION

All the above discussion of the researcher concluded that if improve mathematics motivation, teacher first duty to motivate the students. Beside if English teacher to improve the students' academic achievement at first, he motivated his student to read book loudly. Above seen the result maximum student academic result were good and mathematics motivations is too good so researcher found significant difference of Mathematics motivation difference between Boys and Girls, Secondary and higher secondary students, Secondary boys and secondary girls, Rural and urban students.

Secondary students academic result and findings of the study researcher concluded that girls' students are higher achievement and subject motivation than boys' students. Mathematics motivation was more influential of boys' students' achievement than girls' student academic achievement. Urban students were better of academic achievement than rural students from seen and the students have more intrinsic motivation rather than extrinsic motivation. All of the above discussion of the study concludes that "Motivation is the best way of learning and academic achievement". All of the above discussion of the study concludes that "Motivation is the best way of learning and academic achievement".

SUGGESTION FOR FURTHER STUDIES

- The similar study can be conducted in all subjects of curriculum.
- The research can be conducted in various college and university level students.
- A large sample and different state were selected for the study.
- Same study does apply different variables, as like interest, attitude, and economic status of various level of students.

Declaration by Authors

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