

PROBLEMS FACED BY SECONDARY SCHOOL STUDENTS IN LEARNING MATHEMATICS IN SHILLONG CITY

¹Sayasree Bordoloi

¹Assistant Professor, Education, University of Science and Technology, Ribhoi District, Meghalaya, India.

Abstract: This study was undertaken to investigate the problems faced to learn mathematics by the secondary school students of Shillong city. 206 students were randomly selected for the study. Self developed open-ended questionnaire was used for the purpose of the data collection. Data collection was done during the period of November 2018 to March 2019.

Key words: mathematics, secondary school, learning mathematics.

I. Introduction:

Mathematics is all around using our daily life activities from dawn to midnight. It is in our life from birth to death, from creation of universe to today's modern world, from home to society. Hence, not only today but since past, Mathematics learning has been essential for all of us from the very beginning of school education. As a school subject mathematics enjoys a hierarchical position among all other subject. Since the significance of subject was immense and also students feared most of mathematics, it attracted the attention of educationist and scholars in the area. Different report has acknowledged this problem and suggested the means and ways to tackle this issue.

According to the National Curriculum Framework (NCF) 2005, the main goal of Mathematics education in schools is the 'mathematisation' of a child's thinking. Clarity of thought and pursuing assumptions to logical conclusions is central to the mathematical enterprise. NCF recommends that Board examinations be restructured, so that the minimum eligibility for a State certificate is numeracy, reducing the instance of failure in Mathematics. At the higher end, it is recommended that examinations be more challenging, evaluating conceptual understanding and competence.

Primary education act was passed in 1947 for the second time to introduce free, compulsory and universal primary education in graded stage for the children up to the age 6 to 11 years. The major reform in curriculum for all stages of school education came after National Policy of School Education, 1968 as per the report of the 'Kothari' commission. A common curriculum for class I to class X was prepared at national level for adoption by all the states in the country with adjustments according to local needs. Then, the 10+2+3 pattern

was adopted in the country. Mathematics and Science was made compulsory core subject at Middle and Secondary stage.

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II.Objective of the Study:

- To study student's perception of mathematics as a school subject.
- To find out the problems faced by students in learning mathematics

III.Rationale of the Study:

Related studies in mathematics suggested that students had fear towards Mathematics. They were unable to understand the basic concepts of Mathematics and their techniques due to various reasons. The problems that occurred in the process of learning mathematics were relatively less in case of other subjects. Hence, for common students mathematics became a tougher subject and consequently, they try to avoid it. ASER -Annual Status of Education Report all India figures suggest that from 2014 to 2018, there is a gradual improvement in both basic reading and mathematics. In STD VIII, more than half of all children are still struggling with division. Additional 'value added' in terms of math skills for each year of schooling is low. In the age group 14-16, there is a gender difference in basic math capability. All India, 50.1% of boys in the age group 14-16 can do division and for girls it is only 44.1%.

Final Draft Meghalaya State Education Policy states that Quality of learning continues to remain a big challenge for the Meghalaya's education system. The National Achievement Survey, 2015 (NAS) grade X results show over 35% of the students scored less than the average scores of 250 on math, social science and science assessment. Chapter 4 (Science and Mathematics Education) of Meghalaya State Education Policy, National Achievement Survey (2015), out of the seven identified domains in mathematics, student achieved higher than the national average in only three domains. In science, students performed below national average in all the five domains. Further, the results indicate that in mathematics around 56% needed improvement, whereas in science 63% students needed improvement.

Recently, during the budget session of the Meghalaya Legislative Assembly, the policy of the Meghalaya Board of School Education (MBOSE) has changed its criteria for passing the SSLC. According to MBOSE rule, in the Secondary School Leaving Certificate (SSLC) examination a candidate who clears any five of the six subjects is declared passed. In other words, a student is affirmed passed even if he fails in one of the six subjects. The failed subject can be Mathematics or Science. Earlier students needed to compulsorily pass these two subjects. Now the only compulsory subjects are English and Modern Indian Language (MIL). The system has led students to take important subjects like Mathematics and Science lightly. They are certain that

even if they fail in one of the subjects they can still get through. A majority of the student community do not look to excel in these two subjects which is not a positive step towards improving learning outcomes in mathematics. (Ref: MBOSE 5th March 2012 notification no.541, dated Tura)

Students' poor performance in mathematics and recent amendment in passing criteria for SSLC may attribute to deteriorating learning levels in mathematics. Instead of allowing students to fail in one subject, it would be better to explore and identify the learning difficulties faced by students in specific subjects and try to address those difficulties. In present study researcher tend to explore and identify the learning difficulties experienced by students in mathematics at secondary level, thereby suggesting effective strategies to the same.

V. Period of the Study: The period of study has been from November 2018 to March 2019.

VI. Population & Sample: The population consists of the 8762 students in 76 secondary schools and 129 Mathematics teachers of Shillong under different management. The details are given in table 1.

No of schools	Management				Total no students	Total no of Mathematics Teacher
	Government	Deficit	Ad-hoc	Private		
90	41	12	6	31	8762	129

Table No .1. Population of secondary schools in Shillong

The systematic random sample technique was used for selecting the sample of the present study. Where a total number of 8 schools were selected as every 10th number school from the list collected from Office of the District School Education Officer East Khasi Hills District Shillong was chosen. Further all the students and teachers from selected schools were included in study.

Sl. No.	Variable		Category		Total
1	Type of School		Government	5	8
			Private	3	
2	Teacher	Sex	Male	5	8
			Female	3	
3	Student	Sex	Male	87	206
			Female	119	
4	Qualification of Teachers	Trained		5	8
		Un-trained		3	

Table No. 2. Sample selected of the study

VII. Analysis and Findings

SI No	Response Categories	Students response(Percentage)
	Difficult subject, Not interested, Boring subject, Different from other subject	66.99
	Important subject, Gives knowledge, Favorite subject	18.44
	Interesting subject, Refreshing mind, Easy to understand	14.56

Table 3: Student's perception of mathematics as a school subject

The analysis table 3 showed that about 66.99 percent students who did not like mathematics as a school subject they found no interest in learning mathematics and bored with, as they found it very different from other subject. On the other hand about 18.44 percent students found mathematics as important and favourite subject which gives knowledge and 14.56 percent students replied that mathematics was interesting subject which refreshed their mind and was easy to understand.

SI No	Response Categories	Teachers response(Percentage)
1.	Interesting and favorite subject ,fun to teach as well as learn	50
2.	Essential in our daily life and modern technologies would be impossible without Mathematics	37.5
3.	Enhance the reasoning and aptitude ability of students	12.5

Table 4: Teacher's perception of mathematics as a school subject

The analysis table 4 showed that about 50 percent teachers found mathematics as interesting and favourite subject it was fun to teach as well as learn. On the other hand 37.5 percent teachers informed that mathematics was essential in daily life and modern technologies would be impossible without Mathematics. However 12.5 percent teachers reported that mathematics enhance the reasoning and aptitude ability of students.

In the present study it was found that majority of students don't like mathematics as a subject. The students who reported otherwise had the reason like, 'mathematics is an important subject' and 'different from other subjects'. It reflects that their opinion towards mathematics was high as they believed in hierarchical

position of mathematics as a school subject. For students it was a matter of pride to undertake and be able to learn mathematics.

Only a small proportion of students found mathematics interesting and a refreshing subject.

Students' dislike towards mathematics as a school subject was also reported by the previous researchers (Arthur, et al., 2017). Students' lack of interest in mathematics may be attributed to the factors like mathematics is much complex to understated in comparison to other subjects that means it is different from other subjects, classes in schools is not sufficient, lack of parents' awareness, negative feelings towards mathematics, lack of prior knowledge of the subject, lack of connections to the use of mathematics in daily life and relevance in daily life in relation to other sciences fosters low motivation and negative attitudes towards mathematics as reported by different research studies (Singha et al; 2012; Tata et al; 2014; Archrya, 2017; Borah, 2018).

From the teachers point of view the study found that half of the teacher's choose mathematics as favourite and interesting subject, which was fun to teach as well as learn. Some of the teacher's prefers mathematics is an essential subject in daily life. And the remaining teacher's opinion was that mathematics helps to enhance the reasoning and aptitude ability of the students.

SI No	Area	Percentage
1.	Algebra	43.20
2.	Statistics and Probability	26.21
3.	Geometry	24.28
4.	Trigonometry	6.31

Table 5: Area of mathematics liked most by the students

The analyzed table 5 shows that about 43.20 percent students liked algebra, 26.21 percent students liked Statistics and Probability, 24.28 percent students liked Geometry and only 6.31 percent students liked Trigonometry.

However the finding of the present study is identical to the findings of Arthur, et al; 2017 that the students have negative perception towards mathematics that means maximum students are not interested in mathematics.

Overall it was found that majority of the students did not like mathematics as a school subject because they found it as difficult and boring subject. Students' lack of interest in mathematics was due to the reasons like mathematics was much complex to understated in comparison to other subjects, negative feelings towards mathematics, lack of prior knowledge of the subject, lack of connections to the use of mathematics in daily life and relevance in daily life in relation to other sciences fosters low motivation and negative attitudes towards mathematics. Very small proportion of students found mathematics interesting and a refreshing subject. According to the teacher's mathematics was favourite and interesting subject, which was fun to teach as well as learn it is an essential subject in daily life. In different areas of mathematics liked by the students responses

were first Algebra, second Statistics and probability, third Geometry and last the fourth was Trigonometry. It was shows that only few of them they liked trigonometry.

SI No	Nature of Problems	Percentage
	Geometry	36.38
	Lots of formula to be memorized	24.38
	Algebra	18.93
	Faced problem with every topic	10.67
	Trigonometry	4.85
	Calculation	3.39
	Statistics	1.4

Table 6: Problems faced by the Students in learning Mathematics

The analyzed table 6 shows that 36.38 percent students find problem while learning geometry. 24.38 percent students informed that in mathematics lots of formula are to be memorised. 18.93 percent students found problem while learning algebra. 10.67 percent students found difficult to learn every topic of mathematics. However 4.85 percent students reported that they found problem while learning trigonometry only 3.39 Percent students found problem while doing calculation and lastly 1.4 percent students reported that they found problem while doing statistics.

SI No	Nature of Problem	Percentage
	Students concept was not clear in the previous class/lower class	75
	Students find difficult to memorize formula	12.5
	Do not face any problem while teaching	12.5

Table 7: Problems faced by Teachers in teaching Mathematics in Schools

The analyzed table 7 shows that about 75 percent teachers found that student's concept of mathematics was not clear in the previous class/ lower class so they find difficult while learning mathematics on the other hand 12. 75 percent teachers found that student's find difficult to memorize formula however 12.5 percent teachers do not face any problem while teaching mathematics.

According to the findings it was found that maximum of the students found difficulty in learning mathematics. It was indicate that majority students were not free from problems. They found problem while learning geometry, algebra, trigonometry and statistics. In mathematics lots of formulas are to be memorised specially in algebra, trigonometry and statistics. Few students were found difficulty in understandings every concept of mathematics.

In the present study according to teachers' it was shows that student's concept of mathematics was not clear in the previous class/ lower class and rapid forgetting of the learned material was one of the factor to find difficult while learning mathematics on the other hand teachers found that student's find difficult in remembering the content learned in the previous class, in mathematics lots of formula to be memorized specially in algebra and trigonometry. While only small proportion of teachers did not face any problem while teaching mathematics.

According to teachers' students lack of interest in mathematics may be attributed to the factors like students' lack of effort and prerequisites are the major reasons for mathematics as a difficult subject for students, inattention in the classroom and lack of motivation were also perceived to contribute toward difficulty in learning mathematics, lack of relevant prerequisites, difficulty in speedy grasping of the concepts and more number of students in a classroom is causing difficulty in teaching mathematics reported by(Gafoor & Kurukkan, 2015).

VIII. Conclusion and Recommendation

The researcher found that maximum students were not interested in mathematics, they found it boring and difficult subject. They reported that they don't like the subject. Some of them said mathematics was their favorite and interesting subject for them. A few numbers of students said it was very refreshing and easy to understand for them. They considered mathematics as an important subject. This study found that half of the teacher's choose mathematics as favorite and interesting subject, which was fun to teach as well as learn. Some of the teacher's prefers mathematics was an essential subject for daily life. And the remaining teacher's opinion was that mathematics helps to enhance the reasoning and aptitude ability of the students. The researcher found that Mathematics was much complex to understated in comparison to other subjects. Students found difficulty in learning Geometry, Algebra, Trigonometry and Statistics. Students convey that lots of formula to be memorized in Mathematics especially in Algebra, trigonometry and calculus. Teacher's opinion was that, students were unable to memorize formulas due to unclear concept or low understanding. Very few teachers don't face any problem while teaching mathematics.

Based on the findings and the conclusion from this study, the following recommendations were developed.

- Teacher should be used child centered and participatory method besides traditional lecture method.
- Training, orientation courses and seminar should be conducted for the Mathematics teacher.
- Supervisions and guidance program should be provided to upgrade teachers.
- Policy makers and curriculum developers make the curriculum in such a way that it should be relevant to the students and time to time it should be revised and up dated.
- Trained and skillful teacher could be selected without any bias.

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