A study on:

"Problems faced by students in learning Mathematics at Secondary Level"

A Minor Project Report

For the year

2016-2017

Submitted by:

J. Rivulet Gidon
Assistant Professor
Department of Mathematics,
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Acknowledgements

At the very outset, I would like to extend my sincere and heartfelt obligations towards all the personages who have helped me in this endeavour. Without their active guidance, help, cooperation and encouragement, I would not have made headway in the project.

I am ineffably indebted to Dr.K.D.Ramsiej, Principal of Shillong College for conscientious guidance and encouragement to accomplish this project on the topic **"A study on problems faced by students in learning Mathematics at Secondary Level".**

I am extremely thankful to Dr.D.L.Buam, the entire team of the Research Committee for financing the project.

I also acknowledge with a deep sense of gratitude towards the Head of various Schools/Institutions as well as teachers for allowing me to conduct the survey in their respective school.

Last but not the least, my gratitude goes to all my friends who directly or indirectly helped me to complete this Project.

Any omission in this brief acknowledgement does not imply lack of gratitude.

Thanking You,

J.RivuletGidon

Abstract: This study analysed the problems and difficulties faced by students in learning Mathematics at School Level. The problems and difficulties are categorised into personal problems, emotional problems, language problems, problems on teacher's instruction, problems with school facilities and infrastructure and problems arising from over- workloads/ extracurricular activities in schools.

During the course of the study,it was found that there are certain issues pertaining to the process of teaching and learning Mathematics that needs to be judiciously redressed. Lack of adequate motivation in learning Mathematics is a major factor which discourages students into learning the subject. They were taught Mathematics from examination point of view while the core issue, i.e. to conceptualise the subject is being neglected and therefore the student's perception of the subject is being diverted. They now think that Mathematics would mean just calculation and is all about memorising formulae and thereby conclude that the subject is dull, difficult and complicated as revealed by the respondents in the survey, as such, less number of students are willing to continue Mathematics in higher studies.

Remedy to the problem, toname one, is to make the subject interesting. This aspect of the process of teaching the subject is often overlooked as evident from the study to be discussed later.

Key words: Mathematics, difficulties, student attitude.

Introduction:The fear of Mathematics has increased spontaneously among the student community in spite of the fact that Mathematics is vital for their career formation, etc. The move of the MBOSE to make Mathematics as optional subject at Secondary Level has added fuel to the fire. As a result there has been a decline in the amount of Mathematics knowledge a student possesses at Higher Secondary and Degree Level which makes them lose interest in the subject concern. Therefore, to solve the problem, what they learnt, how they learn and what motivates them to learn at Lower Classes has to be look upon in order to find a solution to the problem for good.

The first step that drives a student in to learning Mathematics is the interest in learning the subject. In fact, the readiness in learning anything begins with the love and interest of that particular thing. This rule applies to learning Mathematics also. The more interesting the subject is, the more is the desire to learn it.

Subnormal Teaching is the main factor that affect Mathematics learning at School Levels especially in rural areas in which Mathematics is being taught by untrained teachers or teachers from non- mathematics background (as revealed by the District School Education Officer of one of the District in Meghalaya).

Most students are of the opinion that Mathematics is a difficult and dull subject that devoid application in real life. During my 8 years of teaching at higher Secondary and Degree level, I have come across students who lacks basic concept of the subject which he/she, in fact, should have possess or acquired during School Level. This, coupled with curriculum gap between Secondary and Higher Secondary level, is the main cause of Mathematics phobia which students encountered during the process of Mathematics learning at Higher Secondary and College Level to the extent of dropping or stop pursuing Mathematics. The pointer now tilts towards the process of learning the subject at the grass root levels which prompted me to conduct a survey on the problems and challenges faced by students in learning Mathematics at school level and to devise some sort of solution to the problem.

Aim of the study: The study was designed to pursue the following objectives:

i) To understand the problems faced by the students in learning Mathematics.

ii) To find ways and suggest measures to remove the fear psychosis that prevails among the students community in learning Mathematics.

Methodology adopted:

Method: -A survey approach was used for the investigation. The data was statistically analysed, interpreted and conclusions were drawn.

Sample:-A sample of 848 students from various schools of Pynursla, Mawkyrwat, Cherrapunjee, Ri-Bhoi and Shillong regions were randomly selected for the study. The sample included male and female students studying in class IX and X.

Tools:- The investigator had developed questionnaires which consist of only closed- ended dichotomous questions. Keeping in view on the objectives of the study, the items included in the questionnaire were intended to be relevant to the following issues:

1. **Personal problems** - To identify student's perception as well as their attitude towards the subject.
2. **Emotional problems** - To test their confidence in the process of learning Mathematics.
3. **Language problem**- To see weather medium of teaching affect learning.
4. **Problem on teacher's instruction** - To get a picture of teacher's skill and to see whether students are really motivated to learn Mathematics in the classroom.
5. **Problem with school management, facilities and infrastructure**- For instance, to see weather ideal infrastructure for learning is available or not and weather students avails programme to expose into Mathematics world
6. **Problems arising from over workloads** - Time management in learning Mathematics.

These primary data was collected by the investigator with the help of the teachers from the respective schools and they were individually studied and analysed collectively.

DATA COMPILATION AND ANALYSIS

Table 1: Personal problems faced by the students

Sl No	REGIONS → QUESTIONS ↓	PYN	MAWK	RB	CHERRA	SHIL	TOTAL
1	Not interested	44	25	29	48	33	34
2	Not aware of scope	67	34	55	72	59	57
3	Mathematics means just calculation.	31	13	34	37	25	27
4	Time consuming	36	18	25	36	44	34
5	Do not want to continue	50	32	36	43	50	43
6	Too complicated to understand.	57	53	72	68	52	59
7	Mathematics needs extra coaching.	76	85	60	84	77	76
8	Lack of encouragement from parents	39	21	38	32	23	29

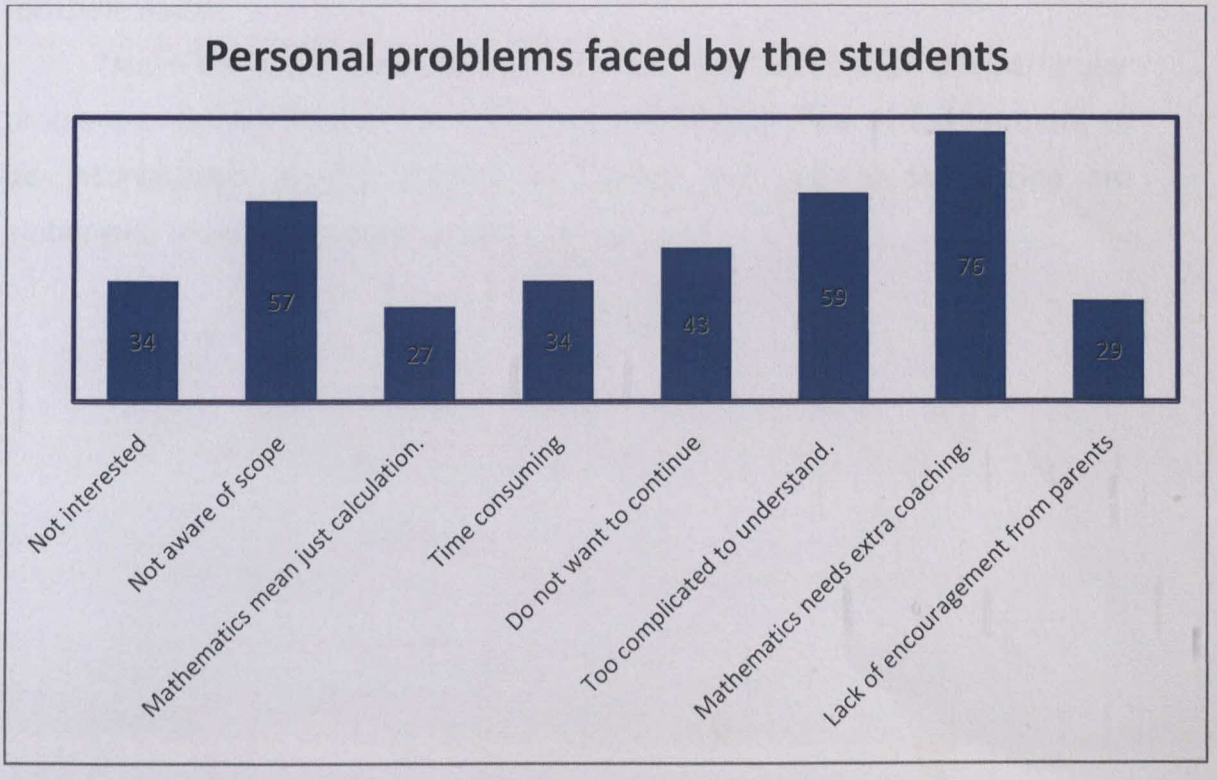


Table 1represents the personal problems encountered by the respondents.

As depicted, not all of the students like Mathematics-a whopping 34% of them found that the subject is not interesting;which prompted that there should be a method in place to address the issue because, as stated earlier , the first step that drives a student in to learning Mathematics is the interest in learning the subject.The'like' and 'dislike' of a thing is very much dependent on the emotion and attitude of the person towards that certain thing. The task now is to change the attitude of the learner towards Mathematics. According to the survey (Table1) the attitude of the students towards mathematics is not on the healthy side. 27% of them convey that Mathematics means just calculation, 34% reveals that it is time consuming,59% of the students thinks the subject is too complicated to understand,76% of the students thinks extra coaching is needed ,43% do not want to continue mathematics and 57% are unaware or are not made aware of the various scopes of Mathematics. Further, 29% of the students feel that their parents are not encouraging them to pursue mathematics and to take interest in the subject. Parent's attitude and perception towards the subject should be altered because they are the source of support and encouragement for their wards.

'Make the subject interesting' is one of the solution for this particular problem to enable learner to rise above the 'dislike'.Few of the methods to be incorporated in the process of making the subject interesting are elaborated in the later stage of the analysis.

Table 2: Emotional problems faced by the students:

Sl No	Regions → Questions ↓	PYN	MAWK	RB	CHERRA	SHIL	TOTAL
1	Lack of confidence	28	53	42	50	32	39
2	Difficulty in establishing desirable relationship with teacher	39	26	38	39	22	30
3	Difficulty in establishing desirable relationship with classmates	47	30	32	36	15	27

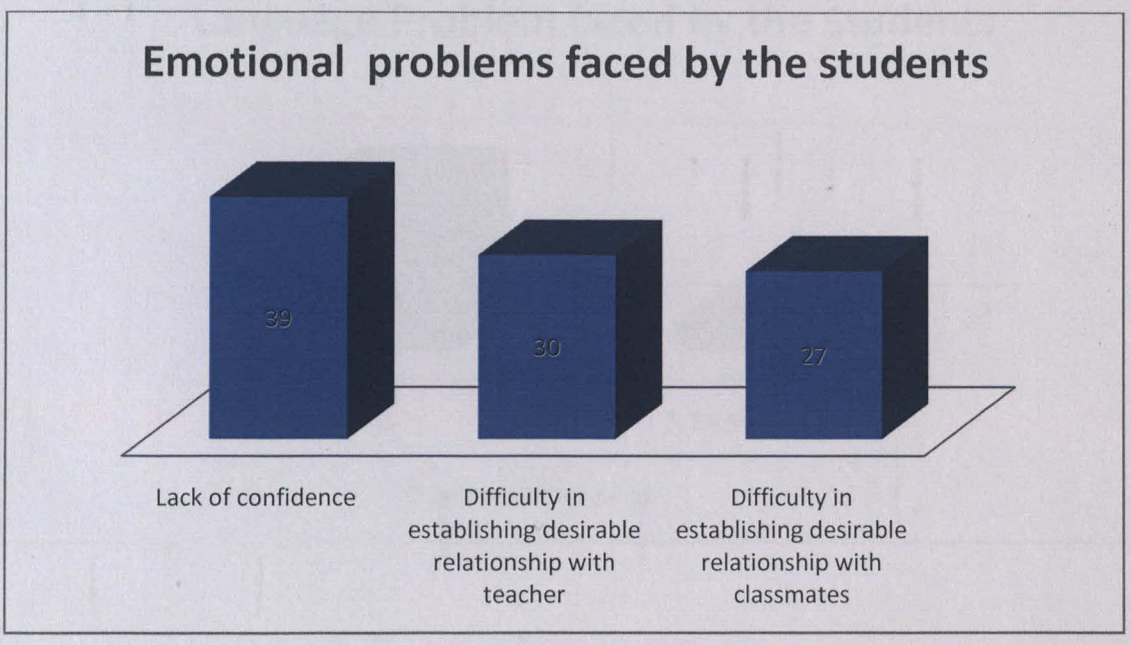
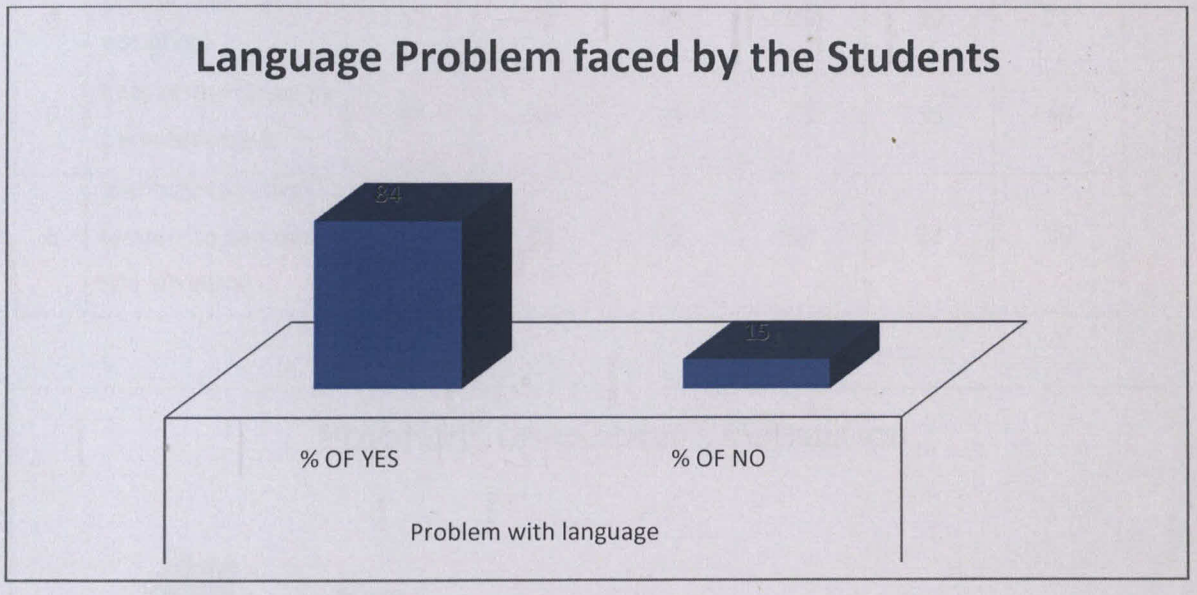


Table 2depicted **the Student-Student, student- teacher, student-peers relationship.** These relationships are factors that affect Mathematics learning to some extent. A healthy relationship between a student themselves and students with their teacher will greatly help in learning Mathematics. Discussions/sharing of knowledge between students and their peers will boost problem solving skills as well as understanding of the topic/subject. A teacher is a guide a helper and a source of inspiration; therefore a good relationship between a teacher and a student will improve the confidence and self-worth of the students which in turns help mathematics learning to a great extent.

Table 3: Language Problem

Sl No	Regions → Questions ↓		PYN	MAWK	RB	CHERRA	SHIL	TOTAL
1	Problem With Language	% OF YES	94	88	82	83	81	84
		% OF NO	6	12	18	15	17	15



From the table above, we found that**Language problem** is one of the peculiar problems that affect Mathematics learning to a great extent. As per table 3, 84% of the respondents understand well in their own language. Flexibility in medium of instructions is the solution in this regard especially in lower classes.

Table 4: Problems on Teacher's instruction

Sl No	Regions → Questions ↓	PYN	MAWK	RB	CHERRA	SHIL	TOTAL
1	Lack of motivation	51	52	75	76	81	70
2	No teaching aids	57	35	73	80	72	65
3	No problem session	57	41	59	27	55	50
4	Proper concept are not given	10	18	31	26	20	21
5	Lots of formulae to be memorised.	64	47	71	73	55	60
6	Inability to relate lessons to the real life situations.	44	22	27	57	22	30

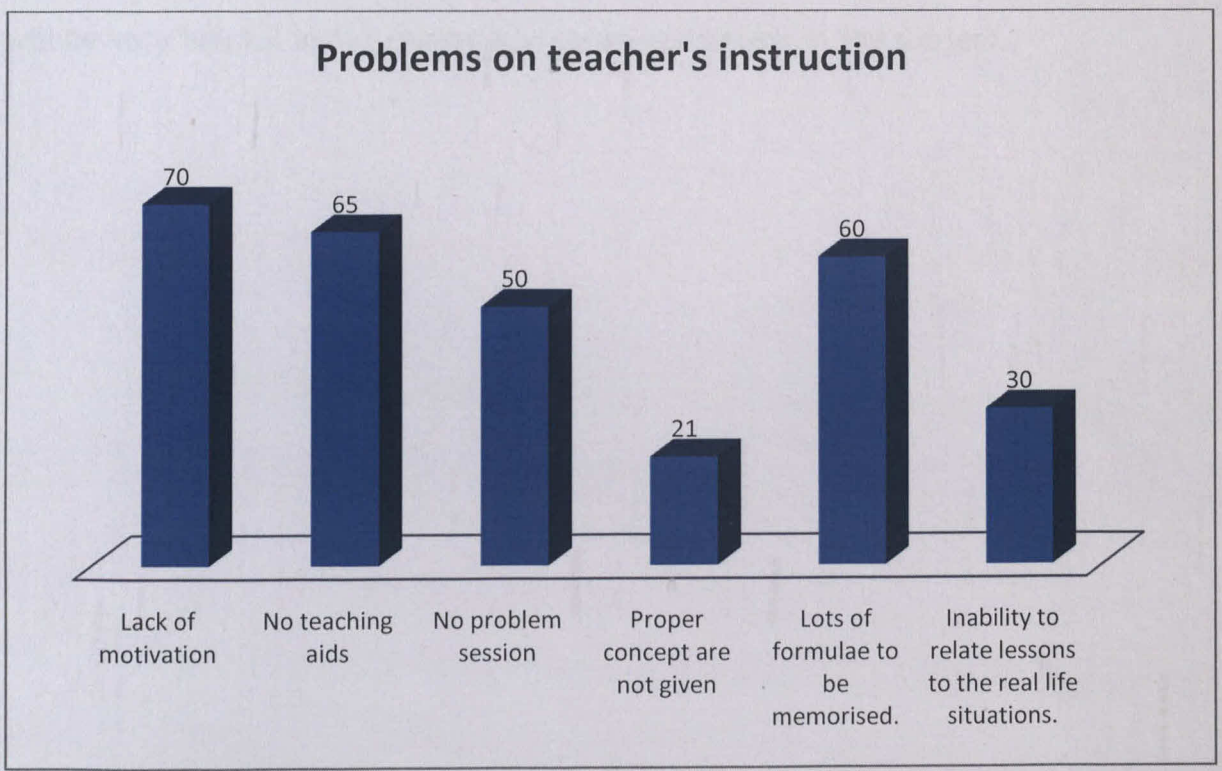


Table 4 shows data regarding problems on teacher's instruction. A teacher's approach while teaching the subject in general and a certain topic/concept, in particular, plays an important role. Adequate motivation now comes into the picture. The Data above revealed that a good number of the respondents(70%) are not being motivated by stories of great mathematicians and 30% of them think that Mathematics was taught in a way that does not relate to the real world. A teacher's approach in his method of teaching plays a pivotal role in making the student love the subject and thus make the subject interesting. Mathematics is not a subject to test the memory of the students but to induce upon them proper concept and improve their problem solving skills. However according to the table above teaching is on the defective side. Most of the respondents are dealing with the problem of memorising loads of formulae(60%) and problem sessions which will help in enhancing problem solving skills of students are hardly conducted in Schools as revealed by 50% of the respondents. A peculiar point to note here is that 65% of the teachers do not use teaching aids while teaching, which otherwise will be very helpful in motivating and creating interest in the subject.

Table 5: Problem with school facilities

Sl No	Regions → Questions ↓	PYN	MAWK	RB	CHERRA	SHIL	TOTAL
1	No laboratory	100	99	99	100	100	100
2	Never attend any Seminar on Mathematics	98	94	89	80	92	91

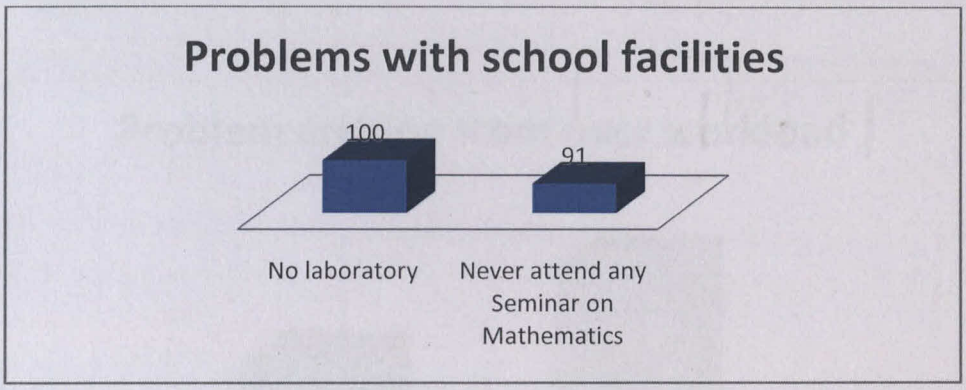


Table 5 shows **School Management and Infrastructure** as another factor which affects Learning of Mathematics. As per findings, no Mathematics laboratory is being setup in any of the school selected for survey.Laboratory, if there is one in each school, will immensely help in raising the level of interest in learning. Further, no workshops/Seminars are being conducted nor do students have the opportunity to attend the same.

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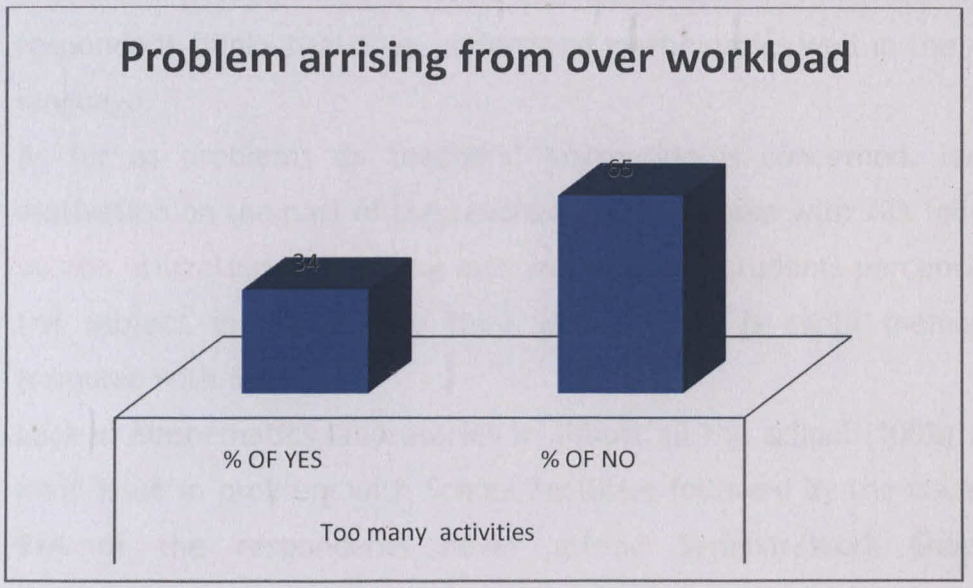
Table 6: Problems arising from over workload

Sl No	Regions → Questions ↓		PYN	MAWK	RB	CHERRA	SHIL	TOTAL
1	Too many activities	% OF YES	24	32	47	43	30	34
		% OF NO	76	68	52	56	69	65



Finally, 34% of the respondents feel that involving themselves in different School Activities is affecting their time of study.

Findings:

The Data discussed above reveal the following:

1. When regards to personal problems, the major issues are , (76%) of the respondents are of the opinion that learning Mathematics needs extra coaching, 59% think that mathematics is too complicated to understand and 57% are not aware of the scope of Mathematics.
2. In respect of emotional problems, lack of confidence with 39% tops the table.
3. There is a problem in the medium of instruction in which 84% of the respondent thinks that they understand mathematics well in their own language.
4. As far as problems on teachers' instruction is concerned, lack of motivation on the part of the teachers tops the issue with 70% followed by non utilization of teaching aids with 65% and students perception of the subject in which they think Mathematics is about memorising formulae with 60%.
5. Lack of Mathematics laboratories in almost all the school (100%) is the main issue in problem with School Facilities followed by the issue that 91% of the respondents never attend Seminar/Work Shops in Mathematics.
6. Also, with regards to problem arising from over workload, 34% of the students revealed that they find hard times in adjusting their study with too many co-curricular activities.

SUGGESTIVE MEASURES:

Based on the findings as depicted in the bar diagram above, the investigator made the following suggestive measures:

(i) Mathematics should be taught in a way to create and induce interest in the minds and hearts of the student in the subject.

(ii) This can be achieved to some extent by installing Mathematics Laboratories in Schools to make the subject more practical and factual and to promote mathematical awareness, skill building and learning by doing. In the laboratories, pictures of great Mathematicians along with their works and contribution towards Mathematics should be displayed. Relevant experiments and apparatus to demonstrate a particular topic should be procured.

(iii) Teachers should be well trained and mathematics teachers should be the one with mathematics background only and should be the one who knows the subject properly.

(iv) Curriculum and text books should be well planned and revised regularly to reduce the gap between different Academic Levels. Topics and lessons in textbooks should be well demonstrated in the form of pictures and practical Activity.

(v) There should be flexibility in medium of instruction allowing students to learn in languages they are comfortable with.

(vi) Application of Mathematics to the real world should be well demonstrated while teaching.

(vii) Problem session should be arranged periodically to boost problem solving skills of the students. Co-curricular

activities should be well managed so that Learning is not affected.

(viii) Workshops/Seminar on mathematics should be organised frequently at School Levels for both teachers and students.

(ix) Mathematics club should be formed at Schools Levels. These clubs can organize debates; discussion, quiz, exhibitions, etc. Mathematics competitions at district level, state level, etc. should be organized

(x) Parents should be involved at all levels in the process of learning of the subject.

CONCLUSION:

The study reaffirms that poor performance in Mathematics in higher classes is attributed to poor learning-teaching background at school level

The investigator concludes: nonetheless, one should not forget that students should be taught in such a way to enable them acquire effective ways for developing their emotional, social, educational, and professional life skills apart from sensitization on confidence and self-worth, etiquette and grooming.

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Appendix A - Questionnaire:

1. Do you find Mathematics interesting? YES/NO

2. Are you aware of the various scope of Mathematics? YES/NO

3. In your opinion, Mathematics would mean just calculation. YES/NO

4. Do you have sufficient time to learn Mathematics? YES/NO

5. Do you wish to continue Mathematics in higher classes? YES/NO

6. According to you, Mathematics is too complicated to understand.

   YES/NO

7. Mathematics needs extra coaching. YES/NO

8. Do you understand better in your own language while learning Mathematics? YES/NO

9. Do your parents encourage you to take interest in Mathematics?

   YES/NO

10. Do you hesitate asking questions in class? YES/NO

11. Do you have a feeling of not being accepted by your teacher?

    YES/NO

12. Do you have a feeling of not being accepted by your classmates?

YES/NO

13. Have you ever motivated by stories of great Mathematicians?

YES/NO

14. Do teachers use teaching aids while teaching Mathematics? YES/NO

15. Do you have problem sessions in school? YES/NO

16. Proper concepts are always given for every topic. YES/NO

17. Mathematics is all about memorising formulae. YES/NO

18. Mathematics is taught in a way that does not relate to the real world.

YES/NO

19. Do you have a Mathematics laboratory in school? YES/NO

20. Do you attend workshop/seminar on Mathematics? YES/NO

21. Do you interact with your classmates while learning Mathematics?

YES/NO

22. Learning Mathematics consume most of your study time. YES/NO

23. Co-curricular activities are affecting your time of study. YES/NO

Appendix B - List of Abbreviation

Sr. No.	Abbreviation	Stands For
1	PYN	Pynursla
2	MAWK	Mawkyrwat
3	RB	Ri-Bhoi
4	CHERRA	Cherrapunjee
5	SHIL	Shillong