

and their understanding of mathematics in their own words. Furthermore, teachers using oral presentation tasks must provide opportunity for students to think through questions and problems; express their ideas; demonstrate and explain what they have learnt; justify their own opinion; and reflect on their own understanding and on the ideas of others.

Thus, in the existing syllabus, changes can be made so as to include oral presentation as a process of mathematics learning by allocating some grades/marks to every paper. This incorporation may induce a better understanding of the subject.

6. Syllabus enrichment

Generally the Mathematics courses of both BSc and BA programmes (with Honours/ Major in Mathematics) are the same as indicated in the NEHU syllabus curriculum to be followed at the undergraduate level in all affiliating colleges in Meghalaya; the two programmes differ in the nature of the stream, a student chooses from, in addition to mathematics, that is, whether from science or social sciences stream. The BA/ BSc (Honours/ Major in Mathematics) curriculum of most of the universities include the following as compulsory courses:

Algebra (Classical and Linear Algebra) and Trigonometry
Calculus (Differential and Integral Calculus, Advanced Calculus)
Differential Equations (*Ordinary Differential Equations and Partial Differential equations*)
Vector Analysis
Analytic Geometry of two and three dimensions
Analysis (Real and Complex analysis, Metric Spaces)
Modern/Abstract Algebra
Mechanics
List of Optional papers
Principles of Computer Science-Theory and Practical
Differential geometry
Discrete Mathematics
Mathematical Modeling
Applications of Mathematics in Finance and Insurance
Special theory of Relativity
Combinatorial Number Theory
Computational Mathematics Laboratory
Numerical Analysis
Operational Research
Astronomy
Complex function Theory and Real Analysis

With new ways of improvement in the teaching-learning process, the Syllabus may also be modified keeping pace with the all round development of the society. Some of the above mentioned optional papers in many of the colleges are options made by the teachers and college authorities and not by the students themselves and as a result the purpose of an optional paper at undergraduate gets defeated in many cases. Thus in order to eliminate such practices, some of the vital optional papers mentioned above can be included into core

courses. The courses that can be incorporated into the core courses, to name a few, are topics from Computer Science (Data storage, Data Manipulations, Operating system and network, algorithm, Programming languages, Software Engineering, Data Structures), Discrete Mathematics (Propositional logic, Relations, Lattices, Boolean algebra, Graphs, Combinatorics) Mathematical Statistics (Probability theory, Descriptive Statistics, Statistical Methods (Sampling, Statistical Tests), Distributions, Sampling theory, Correlation and Regression and multivariate analysis) Differential Geometry (Curves, Surfaces, Manifolds, tensor Analysis) Cryptography (Classical and Modern techniques, Elliptic curves Cryptography)

The inclusion of the above topics to the present syllabus can prove beneficial for the students in enhancing their employability.

This is an exploratory research paper and the above recommended syllabus enrichment is not a technique, but rather a suggestive approach which when followed may prove beneficial for the students studying mathematics in enhancing their employability.

Pedagogic Resources

These are resources that a teacher may integrate in a method for the transaction of a particular content and draw upon to advance the students' learning.

7. Programmed Learning Material (PLM) – As internet usage by the students is increasing day by day, colleges can provide soft copies of important textbooks/learning materials and make them available to students through the colleges/institutions websites. An interactive environment by the use of web 2.0 can also be created by every department of a college/Institution so as to encourage students-teachers interaction as a PLM through which a learner can proceed his self study at his own pace. It has the characteristics of all sequential steps, learner's response, self-pacing, immediate feedback, reinforcement and self-evaluation. It is helpful in acquisition of concepts like fractions, number systems, etc. and can be used as a remedy for slow learners for a specific content.

Tablet- This is essentially an interactive whiteboard (IWB) or EWB that enables the lecturer to write with a special pen on the screen of a tablet that is connected to a data projector. Any work done on the tablet is then simultaneously (real time) broadcast to the whole class. The tablet enables the lecturer to, inter alia, annotate notes, make comments and use colour schemes to highlight important points in a lecture.

4. Activities

Activities here include works wherein students play active roles, interact with different resources and generate knowledge. Some activities are listed below.

Activity	Situations related to Activity
Quiz competition	Mathematical rules, results, formulae, Properties of numbers
Projects	Contribution by Mathematicians
Seminars	Applications of Mathematics, talks on Ancient Mathematics etc.
Discussion	Concept of Pi , Golden ratio, Presence of Mathematics in real world viz, nature and music
Mathematics Clubs	Preparing models , Paper folding
Assignments	Solving problems, proving of theorems
Field trips	Visit to banks, Insurance companies
Self study	Library, internet, resource centers
Scholarship exams	Mathematics Olympiads, Mathematics Training and Talent Search (MTTS), Advanced Training in Mathematics etc, all funded by NBHM (National Board for Higher Mathematics)

5. Explorative Study

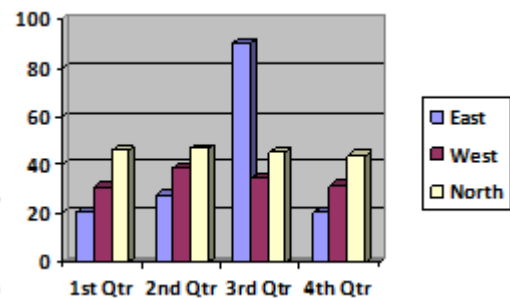
A brief explorative study is done in connection with mathematics performances of the students in the state by using the data obtained from Meghalaya Board of School Education and North Eastern Hill University, Shillong. One can draw a clear picture (Table 1) that the percentage of students failing in Mathematics in class X is increasing.

Data from Table 2 reveals a marginal decline on the percentage of students failing in Mathematics for class XII in the year 2011. However, it may not be authentic to draw a definite conclusion about this percentage as it again shows an increase in the following year. But an overall study reveals that more than 50% of the students are not able to stand to the subject and as a result few of them may continue with higher studies related to the subject

The figures from Table 3 are inconsistent and do not show an increase or a decrease in the trend .The previous data revealed that approximately 3000 students appeared for the class XII exams in Meghalaya. However, in spite of this, only a handful of students opt for Mathematics as an Honours paper.

Mathematics is believed to be the key for all other subjects but it is surprising that most students fail and yet pass in other subjects. Some of the reasons may be because there is a negative attitude towards mathematics, fear due to pressure from friends that the subject is tough, limited or even lack of learning materials or lack of enough practice by the students.

The present exploratory example is simply an attempt to quantify crudely the success level of students at different level of education in the subject mathematics, and this failure rate may not have a connection to the methods of teaching and curriculum of the subject. However this study is simply an attempt to bring out new ideas for making the subject more interesting and appealing to the learners, which in the process can also benefit the students in enhancing employability by the choices of optional papers listed above.



6. Conclusion

At present, we are in the growing needs of our society and the needs of the discipline itself, unless we take strong ameliorative steps, the rate at which we are improving is just not going to be enough. If we take a closer look we can see many gaps and lacunae that require immediate healing. There is a requirement to both work out long-term strategies and at the same time to also have good achievable short-term goals.

To sum up, the curriculum in most of the high weightage undergraduate mathematics Programmes seem to be focused on fast-tracking young men and women to be research Mathematicians. On average, however, much less than a fourth of undergraduate Mathematics students actually decide to pursue an academic career in mathematics. Further the pedagogy and assessment patterns followed actually do not do much to foster or enhance the ability to think originally or to critically analyze and solve unseen questions. Thus on average the undergraduate programmes in mathematics fail in at least two important ways: firstly, they are not really equipping and training the minority that plan to take up a career in mathematics in the manner they should; secondly, the majority are neither gaining any understanding of the role of mathematics in society nor are they learning the skills required by all in terms of communication, presentation, or the use of modern computer technology.

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Table 1: Number and percentage of students who failed in Mathematics at the Secondary School Leaving Certificate (Std X) Examination conducted by Meghalaya Board of School Education.

Year	Number Appeared	Number Failed in Mathematics	Percentage Failed
2010	36153	14027	38.79
2011	36122	17874	49.48
2012	38942	38942	54.93

Source: MBOSE

Table 2: Number and percentage of students who failed in Mathematics at the Higher Secondary School Leaving Certificate (std XII), Science Examination conducted by the Meghalaya Board of School Education.

Year	Number Appeared	Number Failed in Mathematics	Percentage Failed
2010	2946	1941	65.89
2011	3058	1708	55.8
2012	3072	1803	58.69

Source: MBOSE

Table 3: Number of students who appeared as Mathematics Major Students at the First year Bachelor of Science Examination conducted by North Eastern Hill University

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number Appeared	65	57	99	72	40	59	45	51	66

Source: NEHU

