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Review Paper

Poor Enrollment Ratio of Students in Mathematics

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ABSTRACT

The attitude of learning mathematics underpins some psychological parameters which includes anxiety, fear, stress, motivation etc. It is believed that the fear of learning mathematics is so deeply embedded that it creates apprehension and anxiety. We present the reasons behind the critical fall of enrollment and the massive surge in drop out of students studying mathematics. Also, we recommend various ways to remove the bottlenecks in learning and ways to improve the enrollment in secondary schools.

Keywords: *Mathematical Anxiety, Drop Out Ratio*

In the modern day world, education is regarded as a vital human right which fosters both economic and human development. It imparts the cultural values, ethics and promotes the human resource formation. To add to this, it empowers the individual and creates self-awareness, promotes freedom and thus yields the results beneficial for development. Education is such a powerful tool which can pull an individual out of an absolute obscurity and purity and promote them as powerful individuals which become beacon of hope for himself and society.

Mathematics is a vital tool in the modern world. It can help us solve the real world and very complex problems. Mathematics encompasses almost all the domains of life and it is quite impossible to find applicability of mathematics in real life. So, it is very important to have a very good understanding of life to make life easy and avoid any failures. The problem solving is one important aspect of it. It enhances creative and critical thinking, logic. The nation whose students fear mathematics finds hard to overcome failures. The modern-day digital accessories and devices has an algorithm on which they work. The effectiveness of the work of machinery can be improved only when the algorithm is understood. So, the understanding old mathematics is pivotal for the progress and development of every individual.

Despite such diverse applicability, the students remain far from problem solving and don't put efforts to learn it well. There is another dimension to it. The teachers and parents scold a child when he doesn't perform well in mathematical problem solving which puts a child in stress and he feels humiliation and it in turn creates an anxiety known as "Mathematical Anxiety". It ultimately leads to low self-esteem and failure.

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LITERATURE REVIEW

Lot of studies have been carried out regarding the mathematical anxiety, reasons for the drop out ratio, lack of interest in pursuing career in mathematical sciences. We list out some studies that pertain to the topic.

Hembree (1990) published his article based on 151 studies to analyze the mathematical anxiety. Mathematical anxiety is caused due to the poor performance in mathematics. The more one avoids the subjects, the more he is likely to have such anxiety. The studies showed that females are more prone to mathematical anxiety than men. However, such anxiety seems to be linked more to the precollege males than females. The author opines of various treatments to reduce anxieties.

Tobias, S. (1993) conducted a study on mathematical anxiety and he found that it is basically a sadistic state that appears because of inability to deal with the mathematical problems. Due to it, the student/ pupil loses interest and forgets what he remembers usually the mathematical formulae, equations and it makes him loose the confidence ultimately.

Ma, X. (1999) carried out a work related to mathematical anxiety by examining 26 studies on relationship between anxiety towards mathematics and achievement in mathematics of elementary and secondary students. The researchers using standardized achievement tests noted the difference of small magnitude than the mathematics teachers grades. Also, the unpublished studies tend to give larger magnitude results than the published ones. However, there is no significant effects among the various key parameters like gender, ethnicity etc.

Puteh (2002) in his study searched out for various reasons related to the mathematical anxiety. He essentially believes that the parents, and teachers are responsible for leveraging the mathematical anxieties by deeming him as unfit, nerd and incapable. However, it is their responsibility and it would make a serious impact if they motivate him/ her to solve problems, and inculcate a spirit of self-confidence in them.

Ashcraft (2002) Most of the math-anxious people abhor problem solving and it dampens their interest in the academic career. The study explores various reasons behind the factors aggravating the anxiety and provides possible remedies to tackle and avoid the situation to troubleshoot to worse.

Chin (2007) conducted a research study of almost 2000 students by distributing 20- item questionnaire to investigate the mathematical anxieties.

The results showed that the exams and frequent create high level of anxiety and certain topics, aspects in the curriculum which involves heavy calculations, long divisions cause more anxiety in almost all the age groups in the secondary schools.

Ashcraft (2009) conducted a study related to mathematical anxiety and its relationship with personal and educational consequences., and its impact on measures of achievement. They observed that the performance of students gets worse when performance is examined in high stake condition. This implies that the ability of such math-anxious students gets highly disturbed by such conditions and thus drastically degrading their performance. The authors ended the discussion with some precautionary measures to be taken while dealing with math-anxious students.

Chipman (2014). Women and mathematics: Balancing the equation. Psychology Press. discussed various aspects regarding women's ability to understand mathematics. The authors believe that there is a notion about women in newspapers and magazines which undermines women's ability and concludes that they are paralyzed with mathematical anxiety. The authors have noted that there was fall in women students taking up mathematics at graduate level. They have suggested some strategies to improve their number by spreading awareness, ensuring enrollment, and their participation in various programs related to mathematical and technological events. Also, the authors implore more attention to be given to implications of communication theory for such programs, and to the style of mathematics instructions.

Suggestions

1. The onus of keeping students motivated and inclined to mathematics lies with teacher. The teacher should never discourage the wrong answer. This lets down the confidence of students and he/ she will never try to express his opinion with confidence again.
2. Conducting regular assessments is okay but it should not be the last goal. The students should be nurtured and tailored so that they can understand a problem well and apply it to the real-world situations. Even the difficult problems should be taught in a very simple way.
3. The students with fear of mathematics in the early stages of their career should be identified. Some extra classes should be given, more care and robust training will help them learn the subject well.
4. It is believed that the parents can play a crucial role in early nurturing of their kids. Parents should check behavior of children and especially when they get upset while doing mathematics. Instead of blaming them for doing wrong steps, calculations in mathematics, they should be encouraged to try more and do better. This will groom their confidence and they will try to improve and do better. Positive reinforcement surely can help overcome the fear of mathematics.
5. The skill of a child should never be underestimated to the extent that they start feeling low. They should be given the full freedom of doing mathematics in whatever way they enjoy the most.
6. A child should be given intermittent breaks between problem solving time. Taking a whole book for reading without a break or solving a full mathematics book with short breaks taken in between can lead to an impoverished and dismal results.
7. It is very important to manage a very convincing, friendly and healthy environment for learning in both school and home. A child should never shy away in asking any question or the doubt he has related to any concept.

CONCLUSIONS

The student goes through a serious challenge called Mathematical anxiety which is a intense feeling to solve mathematical problems. The students who feel that they can't solve problems in mathematics in their early stages can't cope up the mathematical anxiety and it demotivates them and pushes them to dystopia and hopelessness. To mitigate the crisis, the teacher can play a crucial role in pacifying the stress level and facilitating a innovate and creative learning methods. This will encourage the students, boost their confidence and drive their enthusiasm towards problem solving. Some means including public harassment and pressure of examinations create colossal tension in the students and aggravates the situation. The traditional practices of teaching promote rote learning and it demands the quick and fixed answer curtailing flexibility and freedom adds more tension and thus creates mathematical anxiety.

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Conflict of Interest

The author(s) declared no conflict of interest.

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