MATHS ANXIETY IS ONE OF THE LEADING CAUSES OF POOR PERFORMANCE IN MATHS. DIVYA KAPOOR DISCUSSES SIMPLE INSTRUCTIONAL STRATEGIES TO HELP TEACHERS SUPPORT STUDENTS SUFFERING FROM MATHS ANXIETY.
Introduction

Helping students overcome the fear of maths is a daunting challenge for many teachers. Mathematics phobia can lead to anxiety, lack of involvement, and even behavioural issues among students. It is one of the leading causes of poor performance in maths.

Better and improved teaching methods can instil in students a love for the subject and make maths less threatening. This article highlights the origins of maths anxiety and the instructional strategies that can be used by teachers to help students overcome the fear of maths.

What is maths anxiety?

It is imperative to understand what maths anxiety is before we look for solutions to overcome it. Maths anxiety can be described as the mind block that students develop towards mathematical activities. It hampers classroom learning and affects the performance of students.

According to Miller and Bischel's study (2004), close observation reveals that maths anxiety can broadly be categorised into two types – state and trait. State anxiety refers to the situational stress that a student faces in solving a difficult maths problem. Trait anxiety, on the other hand, is the preconceived notion that the students bring to the class even before they face an actual maths problem.

The root cause


Parents themselves suffering from this may unknowingly transfer it to their children at home. Frequent errors by children coupled with inadequate parental support can often inhibit them from exploring new possibilities, thus, developing a hatred towards the subject.

Societal myths are another reason contributing to maths anxiety. Myths like boys have better mathematical aptitude as compared to girls or the thought that only some people are born with a 'maths mind' often push students away from learning the subject.

Anxious teachers may also be the cause for maths-anxious students. Traditional teaching techniques, including textbook teaching and rote learning, assigning the same task to all the students without understanding their needs and capabilities, insisting on a single solution to given mathematical problems, and laying more focus on basic skills than concepts may lead to maths anxiety among students.

An invigorating classroom – what works?

The changes and complexities of today’s world present new challenges to our education system. Along with the transmission of knowledge by teachers to students, modern teaching desires a focus on student self-learning and self-expression.

Traditional educational practices and instructional strategies can often fail to provide practical and in-depth knowledge to students. In addition, they do not take into account the varied learning styles and special needs of students, and can result in creating phobia and anxiety towards the subject.

In the following section, I have focused on various instructional strategies that can be used to make mathematics classes interesting for students.

Arts:

Art integrated learning helps students explore mathematical concepts while simultaneously inculcating creativity and art appreciation among them. Many opportunities for art integrated learning can be provided in the classroom through activities based on visual and performing arts. Activities in the maths class may include role-plays, song compositions, model creation, collage and poster making, clay modelling, etc. For instance, students can create beautiful artwork using their knowledge of fractions. They can be asked to divide a given circle into different fractional parts (half, one fourth, one eighth etc.) and then use these parts to create some daily life objects like trees, flowers, fishes, baby cots, etc.

Discussion on global topics:

Mathematical concepts can be used to discuss global issues encouraging students to think critically and conceive solutions for global problems. Mathematical concepts like percentage, graphical presentation, and analysis and solid shapes, etc. can be used to discuss themes like optimum uses of coal and petroleum, crop production trends, architecture across the globe, etc. This can help students have a clearer understanding of applied mathematics while making them aware of global issues at the same time.

Interdisciplinary projects:

Thematic project work enables students to apply their skills of communication and collaboration, creativity and imagination, critical thinking and problem solving, student autonomy, etc. To give an example, under a common theme like ‘Harness today
for a better tomorrow’ focussing on SDG 7, students can be given the task of analysing the energy requirements and consumption trends in different states of India. Apart from helping students to develop a deeper understanding of mathematics, this activity will also enhance their abilities in English and science. Once students have collected the data, they can be asked to represent it using a bar graph/line graph. They may also develop a new energy plan suggesting alternate ways of energy production in different states. As a part of the project, a debate on optimum usage of electricity can also be organised for the students. Such team activities can help students tackle maths anxiety and build more confidence in the subject.

Outdoor teaching:
Being confined to the four walls of the classroom can sometimes be monotonous for students. The school campus if utilised effectively can be a great environment for teaching scientific and mathematical concepts to students. Nature walks and outdoor activities can help students channelise their energy positively. For example, certain mathematical concepts like parallel lines, area, perimeter, and angles formed by a transversal can be taught in the school ground, giving students the opportunity to play and study simultaneously.

Digital learning:
Technology can bridge the gap between classroom and self-learning. Students can collaborate with peers and teachers through online platforms. In many of these platforms, lessons can be customised to suit each student’s progress and learning style. Microsoft tools, educational games, Popplet, GeoGebra, Twitter, Smore, etc. are some of the online learning platforms that help students learn independently and build upon their mathematical skills.

Hands-on learning activities:
Experiential learning provides students with the autonomy to construct their own knowledge. Hands on activities in mathematics such as creating NETS of 3-D shapes, mathematical games, mathematical mehendi, and rangoli patterns etc. support students to apply mathematical concepts in real-life situations.

Role of the teacher
A teacher’s attitude towards mathematics can have a huge impact on her students’ learning. Teachers are instrumental in creating positive and active learning environments that help students acquire mathematical skills. They can seek support from professional networks for discovering new teaching methods that help students cope with mathematics anxiety. Nonetheless, at the system-level, the curriculum needs to acknowledge that there are students with maths phobia and provide flexibility in teaching so that teachers are able to customise instructional strategies to complement the learning needs of those students.

Maths educators dream of the day when students can confidently say, ‘I love maths!’ This dream will be realised only when the entire educational community strives to prevent, recognise, and support maths anxiety.

All images in the article are student projects and assignments of Pragyan School.

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REFERENCES

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