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PHASING OUT THE LINE, ‘MATH IS NOT FOR A GIRL’

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‘Girls are found to perform better in some southern States, only further implying that it is not any inherent ability that drives this difference’ | Photo Credit: Getty Images/iStockphoto

Student 1 (boy, Class 7): I want to be a mathematics and science teacher. My favourite subject is mathematics.

Student 2 (girl, Class 7): My favourite subject is history. I want to join the police force.

These were responses from an informal discussion with school students in a village in Bihar’s Samastipur district a few months ago. The students who expressed their wishes were among the best performing students. This has been a consistent pattern, where boys were more likely than girls to express a preference for mathematics and science. Even among girls who showed an interest in science, their preference tended to be for life sciences over physical sciences. Evidently, the representation of females in Science, Technology, Engineering, and Mathematics (STEM) or other math-intensive fields and careers remains far from ‘fair’ or desirable. Ask any student in engineering or math-intensive undergraduate degree courses and many will tell you how girls continue to be a rare sight in these classrooms. This underrepresentation is not only found in developing countries such as India but also in the developed world.

Do girls perform poorly in basic maths in comparison to boys? In a recent research paper, we study this issue using child-level test scores in maths and reading ability from 2010-18 for children (between eight to 16 years) from the Annual Survey of Education Report (ASER) conducted across rural India. In our findings, boys outperform girls in mathematics significantly, which has been persistent over time. The difference in reading scores, on the other hand, is negligible. There is a considerable variation though; while in the north Indian States of Uttar Pradesh, Bihar, and Madhya Pradesh, boys outperform girls substantially, in south India, girls outperform boys in mathematics. However, on average, the performance of girls remains worse than that of boys. This is cause for concern as it indicates a lack of interest and understanding in the subject, which has implications for future academic and career success.

What drives this difference in performance? Despite a lot of contradictory evidence, a large section is eager to attribute these disparities to differences in ‘ability’, in turn failing to acknowledge the impact of social and cultural norms. Girls are found to perform better in some southern States, only further implying that it is not any inherent ability that drives this difference. There is a widespread prevalence of the systematic devaluation of girls related to their mathematical aptitude in the classroom, at home, and in society more broadly. The oft-repeated

line that “science and maths are meant for boys and arts and humanities for girls” is reflective of the kind of stereotyping that parents, relatives/neighbours, and even schoolteachers push. For example, the comment section from a YouTube video created on this topic by a popular channel “Soch by Mohak Mangal” includes hundreds of comments echoing these concerns. Among them, a woman reflects on how her favourite subject in school was maths but her male teachers always expressed surprise on “how could you score more than boys”.

Many State and central policies and campaigns show that public policy recognises the discrimination and biases that girls face in enrolling and also continuing school. The National Education Policy 2020 (NEP), too, acknowledges the need to address several gender-related gaps in schooling. Specifically, it recognises the existence of continued disparities across all social groups and the need for developing interventions that enhance attendance and academic performance for girls. Further, it stresses the need to implement gender-sensitive training for teachers and also in establishing a ‘Gender-Inclusive Fund’ for States to utilise in implementing community-based interventions. Similarly, the National Curriculum Framework for Early Childhood Care and Education (ECCE), developed by the National Council of Educational Research and Training (NCERT), also acknowledges these gender disparities.

However, neither of these documents explicitly recognises the causes and consequences of gender differences in mathematics learning at early ages. It is not that these gaps and mechanisms are unknown to the educational administration and policymakers. It was recognised in the position paper on the “Teaching of Mathematics” published by the NCERT in 2005. The paper talks at length about poorer outcomes for girls in mathematics through the devaluation of girls in society. It also discusses classroom research, indicating how gendered perceptions and the behaviour of teachers might negatively impact how girls view and perform in mathematics in the classroom. The recent policies do not fully acknowledge and address the prevalence and impact of these specific biases and perceptions.

Our recent work, which provides evidence of this disadvantage, indicates the need to revisit these issues. Targeted behavioural interventions can curb the gender stereotyping of “math is not for a girl” at the household, societal, and school levels. References to female mathematicians in textbooks, female names, and characters in word problems, and providing exposure to female role models in STEM fields in the course curriculum are among other simple tweaks that are worth trying and likely to be beneficial. There is an urgent need to address this problem to prevent further harm to female education, career choices, and job market opportunities.

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