

TIMSS 2019: Does gender or grade affect how much we like mathematics?

On International Day of Mathematics 2021, IEA finds more boys than girls internationally like learning mathematics and would like to pursue a career involving mathematics. Student interest in mathematics is also lower at the eighth grade compared to the fourth grade, according to TIMSS 2019 data from 64 countries.

This year, the day centers on ‘Mathematics for a Better World’ as the discipline plays a key role in understanding, monitoring, and mitigating current challenges such as climate change, natural disasters, and pandemics, but how many students would like a job involving mathematics to work on these key issues? Across the 39 countries that participated in TIMSS 2019 at the eighth grade, 26% of boys surveyed internationally agree a lot with the statement “I would like a job that involves using mathematics”, compared to just 18% of the girls.

Differences in aspirations may derive from how much a student likes learning mathematics or whether they feel confident in the subject. Internationally on average, boys enjoy learning mathematics more than girls at both grades. At the fourth grade, 46% of boys very much like learning mathematics, compared to 43% of girls, and at the eighth grade, 21% of boys very much like the subject, with fewer girls in agreement at 19%. Girls are also less confident in mathematics; at the fourth grade, 26% of girls are not confident in the subject, compared to 21% of boys. Confidence is seen to be even lower in older students, with nearly half of eighth grade girls surveyed (47%) saying they are not confident in mathematics, compared to 41% of boys.

Furthermore, as students get older, interest in mathematics appears to be less positive, perhaps as the subject becomes more difficult. TIMSS 2019 found the number of students that very much like learning mathematics decreased from 45% at the fourth grade to 20% at the eighth grade, and conversely those that said they do not like learning mathematics rose from 20% at the fourth grade, to 41% at the eighth grade. Improved teaching methods may help students understand and enjoy solving mathematics problems more, as students also reported the clarity of their mathematics instruction decreased from the fourth to eighth grade, from 74% to 46%.

Commenting on these findings, IEA Executive Director, Dr Dirk Hastedt, said:

“With a background in mathematics, I find the subject fascinating and beautiful, and I have always enjoyed showing my three girls how engaging mathematics can be, and how useful it is in solving complex problems. I think it is especially important for girls to feel equally as confident in mathematics and to enjoy learning the subject as much as boys do across the world. As the discipline plays a crucial role in responding to future challenges, it is important to encourage more children to learn mathematics and pursue a career involving mathematics internationally.”

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Notes to Editors

This press release is based on extra analysis conducted by IEA using data from the recently released [TIMSS 2019 International Database](#).

An upcoming [IEA Compass: Briefs in Education](#) will be released in partnership with UNESCO on 22 April for International Girls in ICT Day, exploring the relationship between the gender of the teacher and students' mathematics and science achievement, as well as gender differences in science and mathematics teachers' self-efficacy and its relation to job satisfaction. For early-access to the brief, please contact Heather Millen.

About TIMSS 2019

TIMSS 2019 is the seventh assessment cycle of the IEA's Trends in International Mathematics and Science Study, and was administered to nationally representative samples of students in 64 countries and 8 benchmarking systems in total (58 countries and 6 benchmarking entities at the fourth grade, and 39 countries and 7 benchmarking at the eighth grade).

Results can be explored further by subject and grade in [IEA's TIMSS 2019 infographics dashboard](#), on a whole host of topics such as achievement, gender differences, early education, student bullying and teacher professional development.

As well as providing 24 years of trends in global student achievement in mathematics and science, TIMSS administers questionnaires to students and their teachers, school principals, and parents to collect information about contexts for learning. Taken together, more than 580,000 students participated in TIMSS 2019, with questionnaires completed by about 310,000 parents, 19,000 school principals, and 52,000 teachers. Read more about [TIMSS 2019](#).

About the International Association for the Evaluation of Educational Achievement (IEA)

IEA is an independent, international cooperative of national research institutions, governmental research agencies, scholars, and analysts working to research, understand, and improve education worldwide. It conducts high-quality, large-scale comparative studies of educational achievement and other educational aspects, across the globe in order to provide educators, policymakers, and parents with insights into how students perform.