

**Celebrating the release of the TIMSS 2019 International Database:  
What TIMSS can tell us about technology integration in mathematics and science  
instruction just prior to the pandemic**

To mark the first public release of the [TIMSS 2019 International Database](#) on 21 January, the recent data is used to explore digitalization in mathematics and science teaching.

The TIMSS 2019 International Database is a free, open-access, invaluable resource for education research, to analyze mathematics and science assessments, context data, and for the first time, process data from digital assessments. The perspectives of students, teachers, parents and schools can be used to explore a wide range of topics such as inequality, gender and digitalization. For the latter, the use of digital technology in mathematics and science teaching is largely considered to have positive impacts on learning, however there can be resource challenges related to access, policies, and training across the world which can be investigated internationally using TIMSS 2019 data.

**Student individual computer access in mathematics and science lessons on the rise**

Across TIMSS study cycles, a higher average achievement is associated to computer availability compared to those without availability, in both mathematics and science at the fourth and eighth grade. Nevertheless, in 2019, fewer than half of students at both grades, on average internationally, were reported to have access to a computer during mathematics lessons (43% of fourth grade students and 38% of eighth grade students), and during science lessons (48% of fourth grade students and 50% of eighth grade students).

Based on those reporting computer availability for use during mathematics and science lessons, and when drilling this down further by the type of computer availability, it appears, on average, there is a move away from computers available per classroom, to a greater availability of computers per student. TIMSS 2019 data reveals 25% of fourth grade students and 34% of eighth grade students attend schools in which each student has access to a computer during mathematics lessons, and 25% at the fourth grade and 33% at the eighth grade in science lessons. This is a percentage point increase of 7 in mathematics lessons and 9 in science lessons at the fourth grade, and by 7 in mathematics lessons and 9 in science lessons at the eighth grade, compared to data collected from the same countries in TIMSS 2015. The availability of computers for each student varies across countries, with some seeing a worrying drop in computer availability, in terms of both general access and students having individual access. For individual country data, see notes to editors, below.

For TIMSS European Union countries, we see this same positive trend towards digitalization, however Europe lagged slightly behind the international average for individual computer access. In 2019, 20% of students attended schools in which they had a computer to themselves during mathematics lessons, up by 6% since 2015, and individual access improved even more in science from 11% in 2015 to 20% in 2019.

## **Growing importance of technology in mathematics and science teaching**

Policies for integrating technology into mathematics and science teaching vary from country to country. Policies that reflect the growing importance of technology were reported by countries in the [TIMSS 2019 Encyclopedia](#), released in November 2020. Internationally, about four-fifths of countries reported having national policies in place at the fourth and eighth grade for integrating technology into mathematics and science teaching, and about two-thirds have similar policies related to information and communications technology in science instruction at both grades.

### **More teacher professional development needed**

TIMSS 2019 uncovered 72% of students internationally are taught by fourth grade teachers indicating a need for future professional development towards integrating technology into mathematics instruction, compared to just 35% having participated in this type of training in the last two years. In science, these figures were slightly lower, with 68% of students internationally taught by fourth grade teachers indicating a need for future professional development, and 32% having participated in training in the last two years. Taking TIMSS 2019 European countries alone, the average participation in this kind of training in the last two years is much lower, at 22%.

At the eighth grade in mathematics, 51% of students are taught by teachers that reported they had participated in 35 hours or more of professional development in the last two years but 71% indicated a need for more professional development. In science at the eighth grade, the figures were similar with 50% participating in training in the last two years and 70% indicated a need for more.

### **Commenting on the TIMSS 2019 International Database release, IEA Executive Director, Dr Dirk Hastedt, said:**

“The TIMSS 2019 International Database provides a treasure trove of data, rich in information on a whole host of important topics, such as digitalization, socioeconomic differences and sustainability, to name a few. I greatly encourage researchers to dig into the vast database to uncover important findings that can help provide information to support and guide policymakers and practitioners in mathematics and science education.

“This short analysis of some of the newly released TIMSS 2019 findings on the topic of digitalization offers some positive messages given the current proliferation of online learning, but it is just the tip of the iceberg for all that we can learn from the now available TIMSS 2019 data.”

-ENDS-

For more information about this release, please contact:

**Heather Millen**

Media and Outreach Manager



*Researching education, improving learning*

International Association for the Evaluation of Educational Achievement

Tel. +31 (0) 20 625 36 25 | Fax +31 (0) 20 420 7136 | [www.iea.nl](http://www.iea.nl)

IEA Amsterdam | Keizersgracht 311 | 1016 EE Amsterdam | The Netherlands



**Notes to Editors**

**Release of TIMSS 2019 International Database**

The TIMSS 2019 International Database serves as an open-access source for a whole host of wide-ranging topics, from digitalization to socioeconomic and environmental factors. The [international database](#) is now available to anyone interested in the data collected as part of TIMSS 2019. Explore student mathematics and science achievement data, as well as the student, parent, teacher, school, and curricular background data from 64 participating countries and 8 benchmarking education systems. In particular, its use is promoted among researchers, policymakers, schools and anyone interested in improving education.

**TIMSS and digitalization**

To explore the digitalization data discussed in this press release by country, subject and grade, please see the [TIMSS 2019 Infographic Dashboard](#) for further insights.

**About TIMSS 2019**

TIMSS 2019 is the seventh assessment cycle of IEA's Trends in International Mathematics and Science Study, and was administered to nationally representative samples of students in the fourth and eighth grades in 64 countries and 8 benchmarking systems. TIMSS has been conducted every four years since 1995, providing 24 years of trends in global student achievement in mathematics and science.

The [TIMSS 2019 Encyclopedia](#) is a comprehensive compendium of how mathematics and science are taught around the world. It consists of a chapter prepared by each TIMSS 2019 country and benchmarking participant, summarizing key aspects of mathematics and science education.

**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.



### **TIMSS International Study Center**

TIMSS is directed by the TIMSS & PIRLS International Study Center in the Lynch School of Education at Boston College ([timssandpirls.bc.edu](http://timssandpirls.bc.edu)), working in close cooperation with the IEA and the national center of the participating countries. TIMSS and PIRLS (Progress in International Reading Literacy Study), an international assessment of reading, together comprise IEA's core cycle of studies measuring achievement in three fundamental subjects—mathematics, science, and reading.