TIMSS 2023

Results for Ireland in maths and science

What is TIMSS?

The **T**rends in **I**nternational **M**aths and **S**cience **S**tudy (TIMSS) is one of the largest studies of educational achievement.

It assesses the maths and science skills of students in Fourth Class (primary) and Second Year (post-primary).

TIMSS takes place every four years and TIMSS 2023 is the eighth cycle of TIMSS.

Ireland has taken part in five cycles of TIMSS: 1995, 2011 (Fourth Class only), 2015, 2019 and 2023.

TIMSS is managed in Ireland by the Educational Research Centre on behalf of the Department of Education.

TIMSS also collects contextual data from students, teachers, school principals and parents/guardians providing a broad insight from different perspectives.

TIMSS 2023

Internationally, 65 countries and more than 650,000 students participated in TIMSS 2023. In Ireland, 12,686 students in 198 primary schools and 162 post-primary schools participated.

In TIMSS 2023, Ireland transitioned from paper-based to digital testing. To account for this, a national 'mode effect' study was also administered to monitor and assess any differences in student achievement by the mode of testing (results presented below).

TIMSS 2023 was administered in Ireland in March and April 2023 to nationally representative samples of

students. This means that the data from this study can be generalised to the entire national population of Fourth Class and Second Year students.

In addition, high response rates have ensured that the data are accurate and reliable.

What does TIMSS assess?

The TIMSS assessment is based upon an Assessment Framework which is organised around two dimensions: content domains and cognitive domains. The content domains specify the subject matter and the cognitive domains specify the thinking processes.

	Maths	Science
Content Domains	Number Algebra Geometry & Measurement Data & Probability	Biology Chemistry Physics Earth Science
Cognitive Domains	Knowing Applying Reasoning	

Foras Taighde ar Oideachas Educational Research Centre

Thank You!

The ERC would like to sincerely thank all those who took part in TIMSS 2023, including students, teachers, school principals and parents/guardians.

Overall results for Second Year students

Maths

Ireland: 522
TIMSS International Average: 478

▲ Significantly above **Ireland**	**5 Countries:** Singapore, Chinese Taipei, Rep. of Korea, Japan, Hong Kong SAR
≈ Similar to **Ireland**	**4 Countries:** England, Czech Republic(EU), Sweden(EU), Lithuania(EU)
▼ Significantly below **Ireland**	**34 Countries including:** Austria(EU), Australia, Türkiye, Hungary(EU), Finland(EU), Norway, Italy(EU), Malta((EU), Romania(EU), Cyprus(EU), United Arab Emirates, United States, France(EU), Portugal(EU)

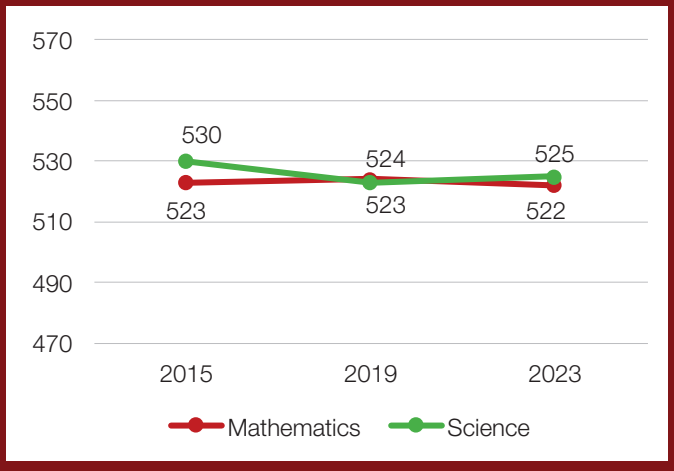
Science

Ireland: 525
TIMSS International Average: 478

▲ Significantly above **Ireland**	**4 Countries:** Singapore, Chinese Taipei, Japan, Korea, Rep. of
≈ Similar to **Ireland**	**9 Countries:** England, Finland(EU), Türkiye, Hong Kong SAR, Czech Republic(EU), Hungary(EU), Sweden(EU), Australia, Lithuania(EU)
▼ Significantly below **Ireland**	**30 Countries including:** United States, Austria(EU), Portugal(EU), Malta(EU), Italy(EU), Norway, United Arab Emirates, France(EU) Qatar, Israel, Romania(EU), Cyprus(EU)

Trends in achievement

- There was no significant change in mean achievement for maths or science since 2019.
- There has been stability in mean maths and science achievement since 2015.

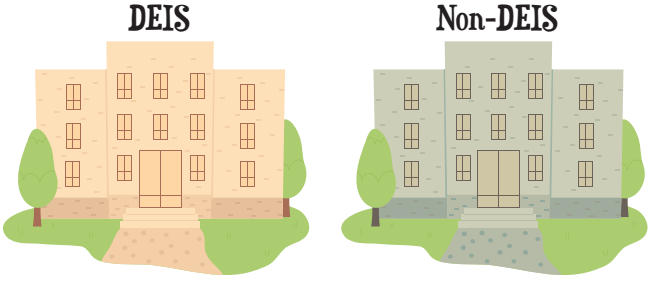


Gender

Boys achieved significantly higher mean scores than girls in both maths and science.

DEIS

Students in DEIS schools had significantly lower mean achievement scores in maths and science than students in non-DEIS schools.



International benchmarks

The TIMSS International Benchmarks are used to describe the specific skills and knowledge that students can demonstrate at various levels of maths and science achievement.

Maths

Benchmark	Description	Cumulative % of students
Advanced	Students can extend their understanding beyond working with integers alone to solve a variety of problems in novel contexts.	9
High	Students can apply their conceptual understanding in a variety of relatively complex situations.	38
Intermediate	Students can apply mathematical knowledge in a variety of situations.	73
Low	Students have knowledge of integers, basic shapes, and visual representations.	93

- There was no significant difference in the percentage of students who reached each of the TIMSS Benchmarks in 2023 compared to 2019.
- In 2023, significantly more boys achieved the Intermediate, High and Advanced Benchmarks than girls.

Science

Benchmark	Description	Cumulative % of students
Advanced	Students can show, apply, and reason with knowledge of concepts related to biology, chemistry, physics, and earth science in various contexts, and they can engage in more complex scientific practices.	13
High	Students show and apply knowledge of concepts from biology, chemistry, physics, and earth science, and they engage in multiple scientific practices.	41
Intermediate	Students can apply understanding of some concepts from biology, chemistry, physics, and earth science, and they engage in some scientific practices.	72
Low	Students show and apply knowledge of some science facts.	91

- Significantly more students reached the Advanced Benchmark in 2023 compared to 2019.
- In 2023, significantly more boys achieved High and Advanced Benchmarks than girls.

Content domains

Maths

A Strength	Number
	Data & Probability
A Weakness	Geometry & Measuremment
	Algebra

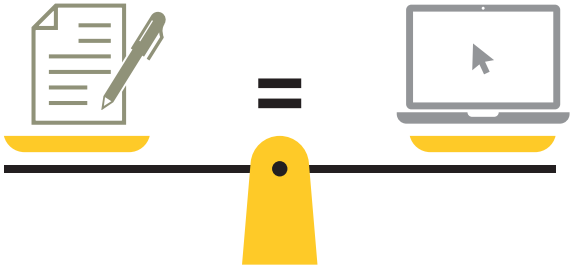
Science

A Strength	Earth Science
Neither a Strength or a Weakness	Chemistry
	Physics
A Weakness	Biology

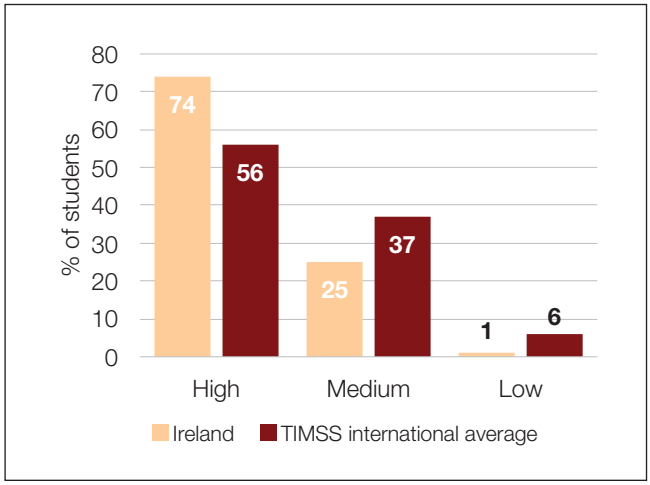
National mode effect study

As part of the transition to digital testing, a national mode effect study was conducted. In addition to the digital test that was given to most students, a paper version of the test was administered to an additional nationally representative sample of students.

The mode of administration (paper or digital) did not have a substantial impact on students' overall maths or science achievement.



Digital self-efficacy

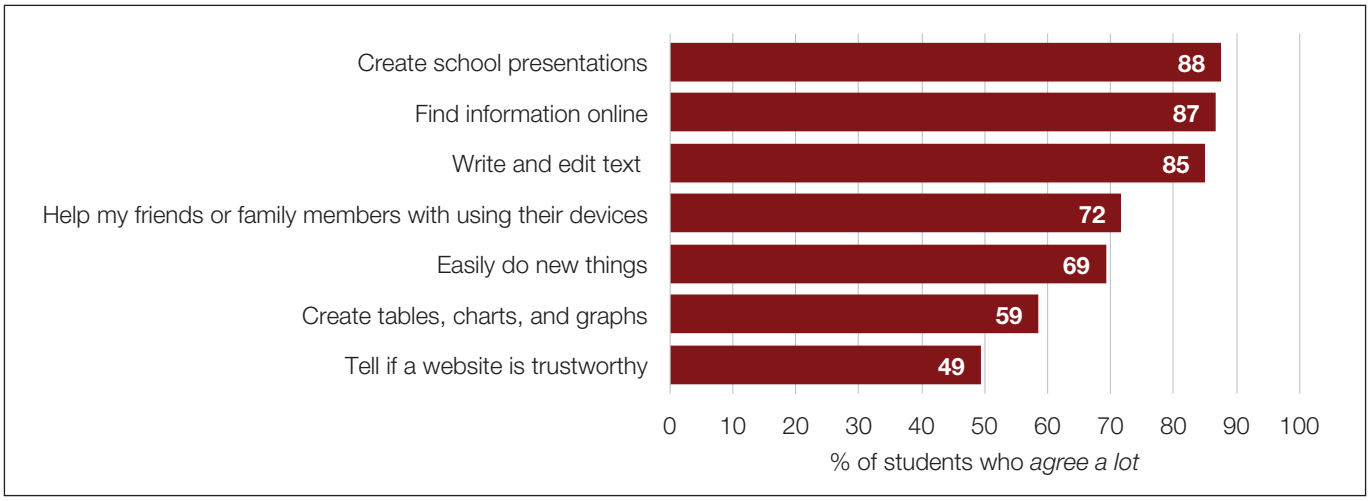


Digital self-efficacy is based on students' level of agreement with various statements about their confidence in using digital devices.

From seven items in the Student Questionnaire, a scale was created, and students were categorised into *high, medium* and *low digital self-efficacy*.

In Ireland, three-quarters of students were categorised as having *high digital self-efficacy*, substantially above the international average.

Looking at the individual items which make up this scale, the percentage of students in Ireland who *agree a lot* that they can use a digital device for the following tasks are as follows:



More information

The national report on the main achievement results for TIMSS 2023 is accessible here: https://doi.org/10.70092/2009137.1224.

Follow-up contextual reports will be made available through the ERC's website (erc.ie/studies/timss/reports/) when released and will include:

- Students' attitudes towards, and perspectives, on maths and science.
- Examination of characteristics, resources and practices in schools and classrooms at primary and post-primary level.
- Features of students' home learning environment.
- Environmental awareness.