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 Measurement & Geometry Data	Life Science Physical Science 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 Fourth Class pupils

Maths

Ireland: 546

TIMSS International Average: 503

▲ Significantly above **Ireland**	**7 Countries:** Singapore, Chinese Taipei, Rep. of Korea, Hong Kong SAR, Japan, Macao SAR, Lithuania(EU)
≈ Similar to **Ireland**	**4 Countries:** Türkiye, England, Poland(EU), Romania(EU)
▼ Significantly below **Ireland**	**46 Countries including:** Netherlands(EU), Latvia(EU), Norway, Finland(EU), Czech Republic(EU), Sweden(EU), Bulgaria(EU), Australia, Germany(EU), Denmark(EU), Serbia, Belgium (Flemish)(EU), Hungary(EU), Portugal(EU), United States, Cyprus(EU), Slovak Republic(EU), Slovenia(EU), Italy(EU), Armenia

Science

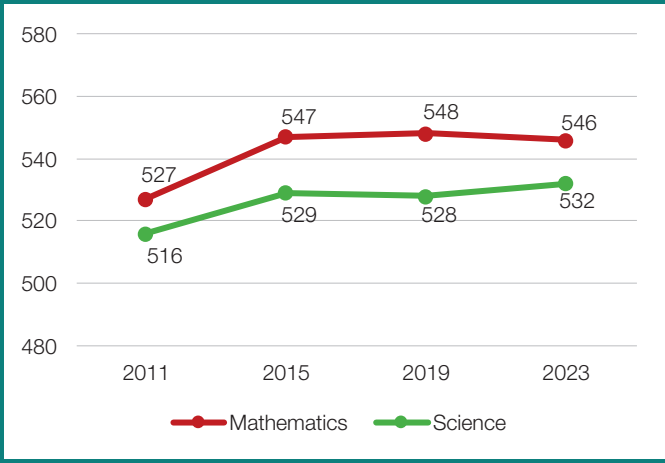
Ireland: 532

TIMSS International Average: 494

▲ Significantly above **Ireland**	**10 Countries:** Singapore, Rep. of Korea, Chinese Taipei, Türkiye, England, Japan, Poland(EU), Australia, Hong Kong SAR, Finland(EU)
≈ Similar to **Ireland**	**11 Countries:** Lithuania(EU), Macao SAR, Sweden(EU), United States, Norway, Bulgaria(EU), Romania(EU), Czech Republic(EU), Slovenia(EU), Latvia(EU), Hungary(EU)
▼ Significantly below **Ireland**	**36 Countries including:** Denmark(EU), Canada, Slovak Republic(EU), New Zealand, Netherlands(EU), Germany(EU), Portugal(EU), Italy(EU), Serbia, Spain(EU), United Arab Emirates, Albania, Belgium (Flemish)(EU), France(EU) Cyprus(EU), Belgium (French)(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.

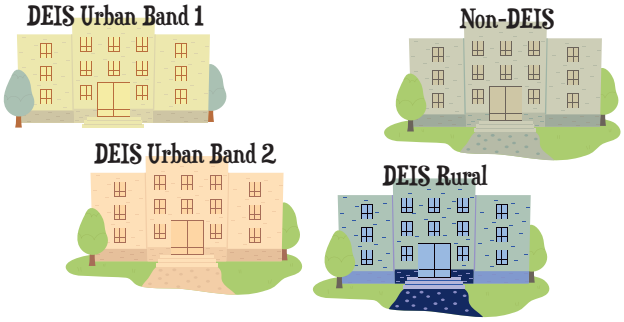


Gender

There were no significant differences in average achievement of boys and girls in maths and science.

DEIS

Pupils in DEIS Urban Band 1 and Urban Band 2 schools had significantly lower mean achievement scores in maths and science than pupils in non-DEIS schools.



The mean achievement of pupils in DEIS Rural schools was not significantly different from 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 pupils
Advanced	Pupils can select and relate information to implement appropriate operations to solve problems.	16
High	Pupils relate concepts or representations in extended contexts.	52
Intermediate	Pupils demonstrate mathematical knowledge in simple situations and relate representations.	81
Low	Pupils demonstrate basic mathematical understanding.	95

- There was no significant difference in the percentage of pupils who reached each of the TIMSS Benchmarks in 2023 compared to 2019.
- Significantly more boys (18%) than girls (13%) achieved the Advanced Benchmark.

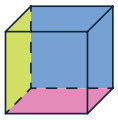
Science

Benchmark	Description	Cumulative % of pupils
Advanced	Pupils can show, apply, and communicate their knowledge of life, physical, and earth sciences, and engage in multiple scientific inquiry practices.	10
High	Pupils can show and apply knowledge of life, physical, and earth science, and they engage in some scientific inquiry practices.	45
Intermediate	Pupils can show and apply knowledge of some scientific concepts.	78
Low	Pupils can show knowledge of some science facts.	93

- There was no significant difference in the percentage of pupils who reached each of the TIMSS International Benchmarks in 2023 compared to 2019.
- Similar percentages of boys and girls reached each of the TIMSS International Benchmarks.

Content domains

Maths

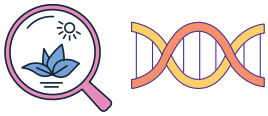


Measurement & Geometry is an **area of weakness**

Number and Data are neither a strength or a weakness

Science

Physical Science is an **area of weakness**

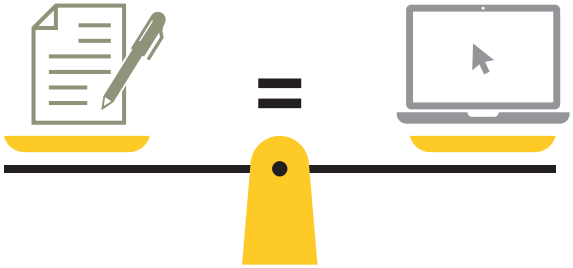


Life Science and Earth Science are neither a strength or a weakness

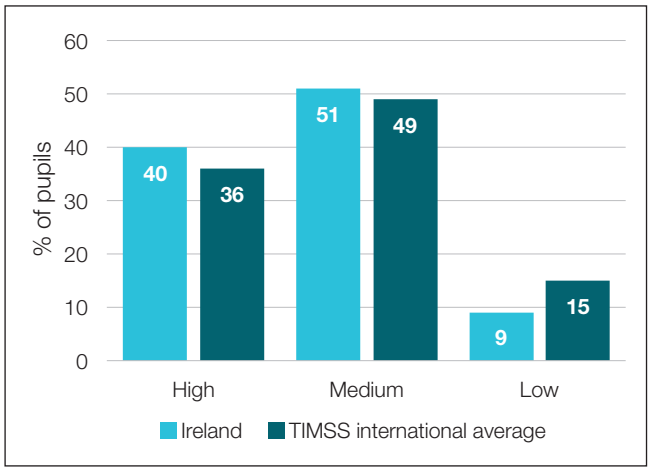
National mode effect study

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

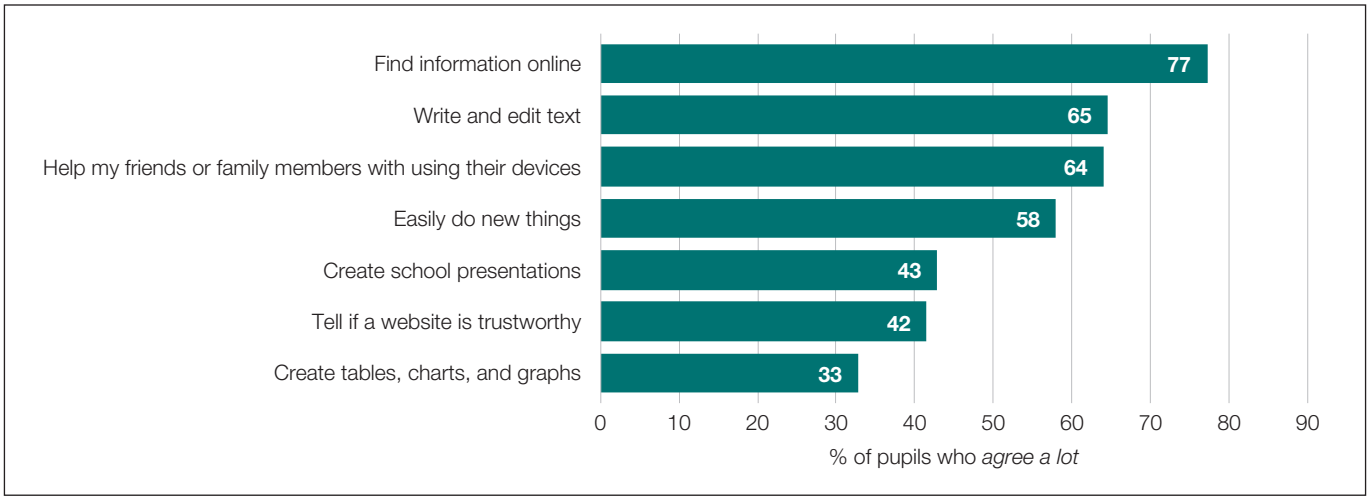


Digital self-efficacy is based on pupils' level of agreement with various statements about their confidence in using digital devices.

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

In Ireland, 40% of pupils were categorised as having *high digital self-efficacy* and more than half as *medium digital self-efficacy*.

Looking at the individual items which make up the scale, the percentage of pupils 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.
- Students' environmental awareness.