4 Attainment by content and skill in Northern Ireland

Chapter outline

This chapter focuses on performance in Northern Ireland in mathematics and science in Year 6 (Y6, ages 9-10) in TIMSS 2015. It summarises pupils' mathematics and science attainment across the TIMSS content and cognitive domains.

TIMSS assesses content domains in mathematics and science, and the cognitive domains of Knowing, Applying and Reasoning in both subjects. Sections 4.1 to 4.4 provide more information about each of these domains. The international reports (Mullis *et al.*, 2016a; Martin *et al.*, 2016a) provide further information about international performance in these domains.

This chapter also reports any gender differences across these domains. Findings for mathematics are presented first, followed by findings in science.

- In the mathematics content domains, pupils in Northern Ireland performed significantly[14] better on Number and less well on Geometric Shapes and Measures.
- In the mathematics cognitive domains, they performed better on Knowing and Applying and less well on Reasoning.
- In the science content domains, they did less well on Physical Science.
- In the science cognitive domains, there was no significant difference between pupils' performance in each of the cognitive domains and overall science performance.
- Since the last TIMSS survey in 2011, there has been some change in Northern Ireland's performance across the content and cognitive domains for both mathematics and science. Most notably:
    - improved performance on Data Display, Applying and Reasoning items in mathematics
    - improved performance on Earth Science and Reasoning items in science.
- For both mathematics and science, most countries participating in TIMSS 2015 demonstrated gender differences in performance in the content or cognitive domains. Northern Ireland was unusual in having no significant gender differences in performance in either the mathematics or science content or cognitive domains.

[14] Throughout this report, the term 'significant' refers to statistical significance.

4.1 The content and cognitive domains in TIMSS 2015

Mathematics: what TIMSS assesses at ages 9-10

The content domains assessed for Y6 mathematics are:

- Number - Whole Number; Fractions and Decimals; Expressions; Simple Equations and Relationships
- Geometric Shapes and Measures - Points, Lines and Angles; Two- and Three-dimensional Shapes
- Data Display – Reading, Interpreting and Representing.

The cognitive domains are:

- Knowing – Recall; Recognize; Classify/Order; Compute; Retrieve; Measure
- Applying – Determine; Represent/Model; Implement
- Reasoning – Analyze; Integrate/Synthesize; Evaluate; Draw Conclusions; Generalize; Justify.

More information is available in the TIMSS Assessment Framework[15].

[15] Mullis *et al*., 2013.

Science: what TIMSS assesses at ages 9-10

The content domains assessed in Y6 science are:

- Life Science – Characteristics and Life Processes of Organisms; Life Cycles, Reproduction and Heredity; Organisms, Environment and their Interaction; Ecosystems; Human Health
- Physical Science – Classification and Properties of Matter and Changes in Matter; Forms of Energy and Energy Transfer; Forces and Motion
- Earth Science - Earth's Structure, Physical Characteristics and Resources; Earth's Processes and History; Earth in the Solar System.
- The cognitive domains are:
- Knowing – Recall/Recognize; Describe; Provide Examples
- Applying – Compare/Contrast/Classify; Relate; Use Models; Interpret Information; Explain
- Reasoning – Analyze; Synthesize; Formulate Questions / Hypothesize / Predict; Design Investigations; Evaluate; Draw Conclusions; Generalize; Justify.

More information is available in the TIMSS Assessment Framework[16].

Although the primary level curriculum in Northern Ireland (CCEA, 2007) does not include science as a discrete subject, it is covered as part of 'The World Around Us'[17]. While there are some differences between the Key Stage 2 curriculum in Northern Ireland (8- to 11-year-olds) and the TIMSS Assessment Framework for science, all but one of the TIMSS science topics are included in the Northern Ireland Curriculum. Chapter 1 of this report gives more information.

Interpreting the data: numerical scales

In this section, pupils' attainment across the TIMSS content and cognitive domains for each subject is discussed. To allow this comparison, scale scores are generated for each domain for each subject. It is important to note that the scale scores representing the domains are not directly comparable since they represent different constructs. However, each sub-scale can be compared directly with the overall mean scale score for the subject from which it is drawn, and this allows comparison of the relative strengths and weaknesses of each country for each domain. Differences between the scale score and the mean in each case are rounded to the nearest whole number.

[16] Mullis *et al.,* 2013.
[17] See the TIMSS 2015 Encyclopaedia (Mullis *et al.*, 2016b).

4.2 Attainment by content domains

4.2.1 Attainment in the mathematics content domains

Northern Ireland's mean scale score for mathematics in TIMSS 2015 was 570.

The pattern of performance in 2015 across the content domains was different from 2011. In 2015, pupils in Northern Ireland scored significantly above the overall mean score in the content domain of Number (with a mean scale score of 574). This was the also the case in 2011. However, Northern Ireland scored significantly below the overall mean in the content domain of Geometric Shapes and Measures (566). The score on Data Display (567) was similar to the score for mathematics overall (see Table 4.1). In contrast in 2011, the score on Geometric Shapes and Measures was similar to the score for mathematics overall and the score for Data Display was significantly below it.

In terms of trends over time, in 2015 Northern Ireland's mean score for Data Display was significantly higher than the mean score in 2011 (567 and 555 respectively). For the other content domains the mean scores in 2015 were statistically similar to those in 2011 (see Table 4.2).

The general pattern internationally was for countries to perform more highly on Number than on the other content domains, relative to their mean performance. There was more variability in performance on Data Display and Geometric Shapes and Measures, with some countries significantly exceeding their mean score in these domains, and others doing less well.

As was the case in 2011, there were no clear patterns of content domain performance among the subset of Northern Ireland's main comparator countries (Australia, England, Finland, Hong Kong, Poland, the Republic of Ireland, and Singapore): all had different relative strengths and weaknesses. However, in contrast to 2011, Finland no longer has a 'flat' profile suggesting equal strength across all three domains. In 2015 it showed more varied performance across the domains. Hong Kong now has a flat profile, scoring similarly to its mean score in all three domains. This was also the case in Poland in 2015, but this was not a comparator country in 2011[18].

[18] See Exhibits 3.1 and 3.5, international mathematics report (Mullis *et al.*, 2016a).

Table 4.1 Y6 attainment in the mathematics content domains

Country	Overall Mathematics Average Scale Score	Number (89 items)		Geometric Shapes and Measures (56 items)		Data Display (24 items)	
		Average Scale Score	Difference from Overall Mathematics Score	Average Scale Score	Difference from Overall Mathematics Score	Average Scale Score	Difference from Overall Mathematics Score
‡ Northern Ireland	570 (2.9)	574 (3.1)	4 (1.0) ▲	566 (3.3)	-4 (2.0) ▼	567 (3.8)	-4 (2.4)

▲ Subscale score significantly higher than overall mathematics score
▼ Subscale score significantly lower than overall mathematics score

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.1, international mathematics report (Mullis *et al.*, 2016a).

Table 4.2 Difference in attainment in the mathematics content domains between 2011 and 2015

Instructions: Read across the row to determine if the performance in the row year is significantly higher (▲) or significantly lower (▼) than the performance in the column year.

Country		Number Average Scale Score	Number Differences Between Years		Geometric Shapes and Measures Average Scale Score	Geometric Shapes and Measures Differences Between Years		Data Display Average Scale Score	Data Display Differences Between Years	
			2011	2007		2011	2007		2011	2007
Northern Ireland										
‡	2015	574 (3.1)	8		566 (3.3)	6		567 (3.8)	12 ▲	
†	2011	566 (2.9)			560 (3.2)			555 (2.9)		

▲ More recent year significantly higher
▼ More recent year significantly lower

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.5, international mathematics report (Mullis *et al.*, 2016a).

4.2.2 Attainment in the science content domains

Northern Ireland's mean scale score for science in TIMSS 2015 was 520. Pupils in Northern Ireland scored similarly to this mean in the science content domains of Life Science (with a mean scale score of 521) and Earth Science (522), but significantly lower in Physical Science (514) (see Table 4.3). This is a different pattern from 2011, where pupils in Northern Ireland performed significantly lower in Earth Science and the scores in the other two domains were similar to overall science performance. Since 2011, Northern Ireland's performance in Earth Science has improved significantly while performance in the other two content domains has remained stable (see Table 4.4).

For TIMSS 2015, the general pattern internationally was for countries to perform less well in Earth Science than in the other content domains, relative to their mean performance. Over half of the TIMSS countries had lower relative scores in Earth Science at this age range. There was more variability in performance in Life Science and Physical Science, with some countries significantly exceeding their mean score in these domains, and others doing less

well. This is a slightly different pattern to that in 2011 where over half of the TIMSS countries had lower relative scores in Earth Science and / or Physical Science.[19]

As was the case in 2011, there were no common patterns of performance among the subset of comparator countries. Each, again, had its individual profile of relative strengths and weaknesses.

Table 4.3 Y6 attainment in the science content domains

Country	Overall Science Average Scale Score	Life Science (74 items)		Physical Science (61 items)		Earth Science (33 items)	
		Average Scale Score	Difference from Overall Science Score	Average Scale Score	Difference from Overall Science Score	Average Scale Score	Difference from Overall Science Score
‡ Northern Ireland	520 (2.2)	521 (2.7)	1 (1.7)	514 (2.6)	-6 (1.6) ▼	522 (3.0)	2 (2.1)

▲ Subscale score significantly higher than overall science score
▼ Subscale score significantly lower than overall science score

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.1, international science report (Martin *et al.*, 2016a).

Table 4.4 Difference in attainment in the science content domains between 2011 and 2015

Instructions: Read across the row to determine if the performance in the row year is significantly higher (▲) or significantly lower (▼) than the performance in the column year.

Country		Life Science Average Scale Score	Life Science Differences Between Years		Physical Science Average Scale Score	Physical Science Differences Between Years		Earth Science Average Scale Score	Earth Science Differences Between Years	
			2011	2007		2011	2007		2011	2007
Northern Ireland										
‡	2015	521 (2.7)	3		514 (2.6)	-6		522 (3.0)	15 ▲	
†	2011	519 (2.9)			520 (3.2)			507 (2.7)		

▲ More recent year significantly higher
▼ More recent year significantly lower

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.5, international science report (Martin *et al.*, 2016a).

4.3 Attainment by cognitive domains

4.3.1 Attainment in the mathematics cognitive domains

As was the case with the content domains, there were some differences in the profile of scores in the cognitive domains for Northern Ireland (see Table 4.5). Relative to their overall mathematics score of 570, pupils did significantly better on Knowing (with a mean scale score of 582) and Applying (with a mean scale score of 575), but less well on Reasoning

[19] See Exhibits 3.1 and 3.5, international science report (Martin *et al.*, 2016a).

(550). This was a slightly different pattern to that in 2011 where pupils' performance in the Applying domain was similar to the overall score.

Looking at performance over time (Table 4.6), the performance of pupils in Northern Ireland has improved significantly on both Applying and Reasoning questions in mathematics since 2011.

Northern Ireland's performance in Reasoning relative to its overall mathematics score reflects the general trend internationally, with approximately two-fifths of the participating nations having lower scores for Reasoning relative to their mean. Relative performance on Knowing and Applying was more variable across countries.

As in 2011, comparator countries showed different patterns of relative strength and weakness across the cognitive domains. For example, performance in the TIMSS mathematics cognitive domains in Hong Kong showed a similar pattern to that for pupils in Northern Ireland (relatively higher performance on Knowing and Applying but relatively lower performance on Reasoning). Pupils in Singapore, England and the Republic of Ireland showed relatively higher performance on Knowing, relatively lower performance on Reasoning and similar relative performance on Applying)[20]. In contrast pupils in Finland and Poland showed relatively higher performance on Reasoning.

Table 4.5 Y6 attainment in the mathematics cognitive domains

Country	Overall Mathematics Average Scale Score	Knowing (64 items)		Applying (72 items)		Reasoning (33 items)	
		Average Scale Score	Difference from Overall Mathematics Score	Average Scale Score	Difference from Overall Mathematics Score	Average Scale Score	Difference from Overall Mathematics Score
‡ Northern Ireland	570 (2.9)	582 (3.9)	11 (1.6) ▲	575 (3.2)	5 (1.2) ▲	550 (3.3)	-21 (1.9) ▼

▲ Subscale score significantly higher than overall mathematics score
▼ Subscale score significantly lower than overall mathematics score

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.3, international mathematics report (Mullis *et al.*, 2016a).

[20] See Exhibits 3.3 and 3.7, international mathematics report (Mullis *et al.*, 2016a).

Table 4.6 Y6 Difference in attainment in the mathematics cognitive domains between 2011 and 2015

Instructions: Read across the row to determine if the performance in the row year is significantly higher (▲) or significantly lower (▼) than the performance in the column year.

Country		Knowing Average Scale Score	Knowing Differences Between Years 2011	Knowing Differences Between Years 2007	Applying Average Scale Score	Applying Differences Between Years 2011	Applying Differences Between Years 2007	Reasoning Average Scale Score	Reasoning Differences Between Years 2011	Reasoning Differences Between Years 2007
Northern Ireland										
‡	2015	582 (3.9)	2		575 (3.2)	11 ▲		550 (3.3)	12 ▲	
†	2011	580 (3.4)			565 (2.9)			538 (3.4)		

▲ More recent year significantly higher
▼ More recent year significantly lower

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.7, international mathematics report (Mullis *et al.*, 2016a).

4.3.2 Attainment in the science cognitive domains

In contrast to the pattern of performance in 2011, Northern Ireland showed a 'flat' profile in TIMSS science 2015, scoring similarly to its mean score of 520 in all three cognitive domains (see Table 4.7). This is also a contrast to pupils' performance in mathematics where there was more varied performance across the cognitive domains.

In terms of trends over time, a significant improvement in the mean score on Reasoning in science between 2011 and 2015 mirrors that in mathematics for this domain (Table 4.8).

Internationally, as with mathematics, there was a mixed picture, with strengths and weaknesses in performance across the cognitive domains varying across the subset of main comparator countries. However, over a quarter of countries participating in TIMSS science 2015 showed a flat profile of performance across the cognitive domains, including the comparator countries of England, Finland and the Republic of Ireland. This is in contrast to 2011, where Australia was the only main comparator country to show a flat profile[21].

Table 4.7 Y6 attainment in the science cognitive domains

Country	Overall Science Average Scale Score	Knowing (67 items) Average Scale Score	Knowing (67 items) Difference from Overall Science Score	Applying (66 items) Average Scale Score	Applying (66 items) Difference from Overall Science Score	Reasoning (35 items) Average Scale Score	Reasoning (35 items) Difference from Overall Science Score
‡ Northern Ireland	520 (2.2)	518 (2.9)	-1 (1.7)	519 (2.9)	-1 (1.9)	520 (2.6)	0 (1.7)

▲ Subscale score significantly higher than overall science score
▼ Subscale score significantly lower than overall science score

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.3, international science report (Martin *et al.*, 2016a).

[21] See Exhibits 3.3 and 3.7, international science report (Martin *et al.*, 2016a).

Table 4.8 Y6 Difference in attainment in the mathematics cognitive domains between 2011 and 2015

Instructions: Read across the row to determine if the performance in the row year is significantly higher (▲) or significantly lower (▼) than the performance in the column year.

Country		Knowing Average Scale Score	Knowing Differences Between Years 2011	Knowing Differences Between Years 2007	Applying Average Scale Score	Applying Differences Between Years 2011	Applying Differences Between Years 2007	Reasoning Average Scale Score	Reasoning Differences Between Years 2011	Reasoning Differences Between Years 2007
Northern Ireland										
‡	2015	518 (2.9)	1		519 (2.9)	-3		520 (2.6)	17 ▲	
†	2011	517 (3.1)			521 (2.8)			503 (3.2)		

▲ More recent year significantly higher
▼ More recent year significantly lower

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.7, international science report (Martin *et al.*, 2016a).

4.4 Performance by gender

4.4.1 Attainment by gender in mathematics content and cognitive domains

As was the case in 2011, there were no statistically significant gender differences in performance across the Y6 mathematics content domains (see Table 4.9) or cognitive domains (Table 4.10) for pupils in Northern Ireland. This equality of attainment between boys and girls across both TIMSS mathematics domains is relatively unusual internationally.

On average, the international pattern for the content domains in TIMSS 2015 was for boys to perform significantly better than girls in Number, and for girls to perform significantly better than boys in Geometric Shapes and Measures, and in Data Display. This mirrors TIMSS 2011. For the cognitive domains, the lack of a statistically significant gender difference in performance in Northern Ireland reflected what was seen internationally, with no significant gender difference in the international average for any of the cognitive domains (see Table 4.10).

Among the comparator countries, there was also no significant gender difference in performance in the mathematics content or cognitive domains in both Poland and Singapore. For the five remaining comparator countries the picture was more varied. However, with the exception of Finland, the other comparator countries demonstrated significant gender differences in performance in one or more of the mathematics content and cognitive domains, favouring boys[22].

[22] See Exhibits 3.9 and 3.11, international mathematics report (Mullis *et al.*, 2016a).

Table 4.9 Gender differences, Northern Ireland and international averages, in the Y6 mathematics content domains

Country	Number		Geometric Shapes and Measures		Data Display	
	Girls	Boys	Girls	Boys	Girls	Boys
‡ Northern Ireland	573 (4.1)	576 (3.1)	564 (4.1)	568 (3.9)	566 (4.5)	567 (4.2)
International Avg.	505 (0.5)	507 (0.5) ▲	504 (0.5) ▲	503 (0.6)	505 (0.6) ▲	499 (0.6)

▲ Average significantly higher than other gender

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.9, international mathematics report (Mullis *et al.*, 2016a).

Table 4.10 Gender differences, Northern Ireland and international averages, in the Y6 mathematics cognitive domains

Country	Knowing		Applying		Reasoning	
	Girls	Boys	Girls	Boys	Girls	Boys
‡ Northern Ireland	577 (5.4)	587 (3.9)	576 (4.3)	575 (3.2)	548 (4.6)	551 (3.5)
International Avg.	504 (0.5)	505 (0.5)	504 (0.5)	505 (0.5)	504 (0.6)	504 (0.6)

▲ Average significantly higher than other gender

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.11, international mathematics report (Mullis *et al.*, 2016a).

4.4.2 Attainment by gender in science content and cognitive domains

As was the case for mathematics, there were no gender differences in Northern Ireland for either set of science domains (see Table 4.11 and Table 4.12). In terms of the content domains, this reflects a change since 2011 when girls significantly outperformed boys in Life Science.

Internationally, the pattern of gender differences across the content domains has changed since 2011, when girls did significantly better than boys in Life Science and boys did significantly better in Physical Science and Earth Science. In 2015, the international averages showed no significant difference in the performance of boys and girls in Physical Science (see Table 4.11). (Boys still outperform girls in Earth Science and girls still outperform boys in Life Science internationally.)

There were some gender differences among the group of comparator countries, mostly with girls outperforming boys in Life Science and boys outperforming girls in Earth Science (mirroring the international average). All of the comparator countries showed a significant gender difference in one or two of the science content domains.[23]

For the science cognitive domains, there was a more varied picture internationally. The international averages showed no significant gender difference overall for Knowing, but that Applying and Reasoning items were generally answered better by girls (see Table 4.12). Five of the comparator countries showed some gender differences, not corresponding to the international patterns, while two of the comparator countries (Australia and England), like

[23] See Exhibit 3.9, international science report (Martin *et al.*, 2016a).

Northern Ireland, demonstrated no gender differences in performance in the science cognitive domains.[24]

Table 4.11 Gender differences in the Y6 science content domains

Country	Life Science		Physical Science		Earth Science	
	Girls	Boys	Girls	Boys	Girls	Boys
‡ Northern Ireland	524 (3.5)	518 (3.3)	510 (3.6)	518 (3.1)	522 (4.0)	522 (3.7)
International Avg.	513 (0.6) ▲	502 (0.6)	505 (0.6)	505 (0.6)	498 (0.7)	501 (0.7) ▲

▲ Average significantly higher than other gender

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.9, international science report (Martin *et al.*, 2016a).

Table 4.12 Gender differences in the Y6 science cognitive domains

Country	Knowing		Applying		Reasoning	
	Girls	Boys	Girls	Boys	Girls	Boys
‡ Northern Ireland	516 (3.8)	521 (3.3)	518 (3.2)	520 (3.9)	524 (3.1)	516 (4.1)
International Avg.	504 (0.6)	505 (0.7)	508 (0.6) ▲	504 (0.6)	510 (0.6) ▲	498 (0.7)

▲ Average significantly higher than other gender

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.11, international science report (Martin *et al.*, 2016a).

4.5 Conclusion

Chapter 1 indicated that Northern Ireland's pupils scored above the international average in TIMSS 2015 in both mathematics and science, performing particularly well in mathematics. Even so, within this overall high achievement, areas of relative strength and weakness can be identified, as outlined in this chapter.

In terms of content domains, there were areas of strength alongside less well developed areas for both subjects. In mathematics, pupils performed significantly better on Number and less well on Geometric Shapes and Measures. In science, they did less well on Physical Science.

For the cognitive domains, in mathematics, Northern Ireland's pupils performed less well on the more complex Reasoning items than on the more straightforward Knowing and / or Applying items. This was not uncommon internationally with 20 of the participating countries demonstrating weaker performance on Reasoning items compared with their overall mathematics achievement. This included four of the comparator countries: Singapore, Hong Kong, the Republic of Ireland and England. However, Northern Ireland's performance on Reasoning items has improved significantly since 2011.

In contrast, in science, there were no significant differences between the performance in each of the cognitive domains and the overall science performance of pupils in Northern Ireland. They performed similarly on the straightforward Knowing and Applying items and the more complex Reasoning items.

[24] See Exhibit 3.11, international science report (Martin *et al.*, 2016a).

There have been some changes in the profile of Northern Ireland's performance in the content and cognitive domains since the last cycle of TIMSS in 2011. In mathematics, there has been an improvement in performance on Data Display items and on Knowing and Applying items. However, pupils in 2015 did significantly less well on complex Reasoning items. In science, pupils demonstrated an improvement in Earth Science as well as in the cognitive domains of Applying and Reasoning.

Pupils in Northern Ireland did not conform to international trends in terms of gender differences in their performance in mathematics and science. There were no gender differences in either subject indicating that, for pupils in Northern Ireland, there is equality of attainment in mathematics and science as measured by TIMSS 2015.