3. Distribution of attainment in PIRLS and TIMSS 2011

Chapter outline

This chapter outlines the distribution of attainment in reading, mathematics and science in Northern Ireland in Year 6 (Y6, ages 9-10) in 2011. It describes the PIRLS and TIMSS 'benchmarks' of attainment and the proportions reaching each benchmark.

Key findings

- Among the selected comparator countries, only Singapore had more pupils than Northern Ireland reaching the Advanced international benchmark in reading.
- Almost a quarter of pupils in Northern Ireland reached the Advanced benchmark in mathematics, the sixth highest percentage internationally.
- Only 5 per cent of Northern Ireland's pupils reached the Advanced international benchmark for science.
- For reading, mathematics and science respectively, 3 per cent, 4 per cent and 6 per cent failed to reach the Low international benchmarks. This compares with 1 to 3 per cent for reading, 0 to 1 per cent for mathematics, and 1 to 7 per cent for science, in the countries performing better than Northern Ireland.

3.1   Distribution of attainment, PIRLS and TIMSS

PIRLS and TIMSS achievement outcomes for each country are reported as an average scale score, as outlined in Chapter 1 and broken down by 'international benchmarks' (i.e. levels of attainment within the overall achievement). Tables 3.1 to 3.3 below summarise the international benchmarks for each of reading, mathematics and science respectively.

Interpreting the data: international benchmarks

The PIRLS and TIMSS achievement scales summarise pupil performance on a scale with a centre point of 500 and a standard deviation of 100. PIRLS and TIMSS report achievement at four points along the scale as 'international benchmarks'. The Advanced International Benchmark is set at a scale score of 625, the High International Benchmark at 550, the Intermediate International Benchmark at 475, and the Low International Benchmark at 400. The benchmark descriptions summarise what pupils scoring at each PIRLS or TIMSS International Benchmark typically know and can do in the target subject.

Table 3.1 Summary of international benchmarks for reading, Y6

| 625 | Advanced International Benchmark ● |

When reading **literary** texts, students can:
• Integrate ideas and evidence across a text to appreciate overall themes
• Interpret story events and character actions to provide reasons, motivations, feelings, and character traits with full text-based support

When reading **information** texts, students can:
• Distinguish and interpret complex information from different parts of text, and provide full text-based support
• Integrate information across a text to provide explanations, interpret significance, and sequence activities
• Evaluate visual and textual features to explain their function
• Evaluate content and textual elements to make a generalization

| 550 | High International Benchmark ○ |

When reading **literary** texts, students can:
• Locate and distinguish significant actions and details embedded across the text
• Make inferences to explain relationships between intentions, actions, events, and feelings, and give text-based support
• Interpret and integrate story events and character actions and traits from different parts of the text
• Evaluate the significance of events and actions across the entire story
• Recognize the use of some language features (e.g., metaphor, tone, imagery)

When reading **information** texts, students can:
• Locate and distinguish relevant information within a dense text or a complex table
• Make inferences about logical connections to provide explanations and reasons
• Integrate textual and visual information to interpret the relationship between ideas
• Evaluate content and textual elements to make a generalization

| 475 | Intermediate International Benchmark ● |

When reading **literary** texts, students can:
• Retrieve and reproduce explicitly stated actions, events, and feelings
• Make straightforward inferences about the attributes, feelings, and motivations of main characters
• Interpret obvious reasons and causes and give simple explanations
• Begin to recognize language features and style

When reading **information** texts, students can:
• Locate and reproduce two or three pieces of information from within the text
• Use subheadings, text boxes, and illustrations to locate parts of the text

| 400 | Low International Benchmark ○ |

When reading **literary** texts, students can:
• Locate and retrieve an explicitly stated detail

When reading **information** texts, students can:
• Locate and reproduce explicitly stated information that is at the beginning of the text

Source: Exhibit 2.1, international PIRLS report.

Table 3.2 Summary of international benchmarks for mathematics, Y6

| 625 | Advanced International Benchmark | ● |

Students can apply their understanding and knowledge in a variety of relatively complex situations and explain their reasoning. They can solve a variety of multi-step word problems involving whole numbers including proportions. Students at this level show an increasing understanding of fractions and decimals. Students can apply geometric knowledge of a range of two- and three-dimensional shapes in a variety of situations. They can draw a conclusion from data in a table and justify their conclusion.

| 550 | High International Benchmark | ○ |

Students can apply their knowledge and understanding to solve problems. Students can solve word problems involving operations with whole numbers. They can use division in a variety of problem situations. They can use their understanding of place value to solve problems. Students can extend patterns to find a later specified term. Students demonstrate understanding of line symmetry and geometric properties. Students can interpret and use data in tables and graphs to solve problems. They can use information in pictographs and tally charts to complete bar graphs.

| 475 | Intermediate International Benchmark | ● |

Students can apply basic mathematical knowledge in straightforward situations. Students at this level demonstrate an understanding of whole numbers and some understanding of fractions. Students can visualize three-dimensional shapes from two-dimensional representations. They can interpret bar graphs, pictographs, and tables to solve simple problems.

| 400 | Low International Benchmark | ○ |

Students have some basic mathematical knowledge. Students can add and subtract whole numbers. They have some recognition of parallel and perpendicular lines, familiar geometric shapes, and coordinate maps. They can read and complete simple bar graphs and tables.

Source: Exhibit 2.1, international mathematics report.

Further detail about each benchmark is given in the international report.

Table 3.3 Summary of international benchmarks for science, Y6

| 625 | Advanced International Benchmark | ● |

Students apply knowledge and understanding of scientific processes and relationships and show some knowledge of the process of scientific inquiry. Students communicate their understanding of characteristics and life processes of organisms, reproduction and development, ecosystems and organisms' interactions with the environment, and factors relating to human health. They demonstrate understanding of properties of light and relationships among physical properties of materials, apply and communicate their understanding of electricity and energy in practical contexts, and demonstrate an understanding of magnetic and gravitational forces and motion. Students communicate their understanding of the solar system and of Earth's structure, physical characteristics, resources, processes, cycles, and history. They have a beginning ability to interpret results in the context of a simple experiment, reason and draw conclusions from descriptions and diagrams, and evaluate and support an argument.

| 550 | High International Benchmark | ○ |

Students apply their knowledge and understanding of the sciences to explain phenomena in everyday and abstract contexts. Students demonstrate some understanding of plant and animal structure, life processes, life cycles, and reproduction. They also demonstrate some understanding of ecosystems and organisms' interactions with their environment, including understanding of human responses to outside conditions and activities. Students demonstrate understanding of some properties of matter, electricity and energy, and magnetic and gravitational forces and motion. They show some knowledge of the solar system, and of Earth's physical characteristics, processes, and resources. Students demonstrate elementary knowledge and skills related to scientific inquiry. They compare, contrast, and make simple inferences, and provide brief descriptive responses combining knowledge of science concepts with information from both everyday and abstract contexts.

| 475 | Intermediate International Benchmark | ● |

Students have basic knowledge and understanding of practical situations in the sciences. Students recognize some basic information related to characteristics of living things, their reproduction and life cycles, and their interactions with the environment, and show some understanding of human biology and health. They also show some knowledge of properties of matter and light, electricity and energy, and forces and motion. Students know some basic facts about the solar system and show an initial understanding of Earth's physical characteristics and resources. They demonstrate ability to interpret information in pictorial diagrams and apply factual knowledge to practical situations.

| 400 | Low International Benchmark | ○ |

Students show some elementary knowledge of life, physical, and earth sciences. Students demonstrate knowledge of some simple facts related to human health, ecosystems, and the behavioral and physical characteristics of animals. They also demonstrate some basic knowledge of energy and the physical properties of matter. Students interpret simple diagrams, complete simple tables, and provide short written responses to questions requiring factual information.

Source: Exhibit 2.1, international science report.
Further detail about each benchmark is given in the international report.

Tables 3.4 to 3.6 show the percentages reaching each benchmark for each subject in Northern Ireland. The outcomes for Northern Ireland are then discussed for each subject in turn.

Interpreting the data: performance at the international benchmarks

These tables indicate the percentage of pupils reaching each of the four benchmarks and this information is summarised in the series of dots on the chart. Percentages are cumulative (reading the chart from left to right). Thus, for each country the black dot shows the percentage reaching at least the Advanced benchmark. The clear dot then shows the percentage reaching at least the High benchmark and this figure includes those who reached the Advanced benchmark. The darker shaded dot indicates the percentage reaching at least the Intermediate benchmark, and this includes those in the two previous categories. The lighter shaded dot shows cumulatively how many reached at least the Low benchmark. The position of that dot also indicates the percentage that did not reach any of the listed benchmarks.

Table 3.4 Percentages reaching each benchmark for reading, Y6

Country	Percentages of pupils reaching international benchmarks	Advanced international benchmark (625)	High international benchmark (550)	Intermediate international benchmark (475)	Low international benchmark (400)
[2] Singapore		24 (1.6)	62 (1.8)	87 (1.1)	97 (0.4)
Russian Federation		19 (1.2)	63 (1.7)	92 (1.1)	99 (0.2)
[†] Northern Ireland		19 (1.2)	58 (1.4)	87 (0.9)	97 (0.6)
Finland		18 (0.9)	63 (1.3)	92 (0.7)	99 (0.2)
[†] England		18 (1.1)	54 (1.3)	83 (1.1)	95 (0.5)
[3] Hong Kong SAR		18 (1.2)	67 (1.5)	93 (0.8)	99 (0.2)
[2] United States		17 (0.7)	56 (0.8)	86 (0.6)	98 (0.3)
Ireland, Rep. of		16 (0.9)	53 (1.4)	85 (0.8)	97 (0.5)
[3] Israel		15 (0.9)	49 (1.3)	80 (1.3)	93 (0.8)
New Zealand		14 (0.7)	45 (1.1)	75 (0.9)	92 (0.5)
[2] Canada		13 (0.7)	51 (1.1)	86 (0.6)	98 (0.2)
Chinese Taipei		13 (0.9)	55 (1.3)	87 (0.7)	98 (0.3)
[2] Denmark		12 (0.8)	55 (1.2)	88 (0.8)	99 (0.2)
Hungary		12 (0.9)	48 (1.5)	81 (1.2)	95 (0.7)
Bulgaria		11 (0.8)	45 (2.0)	77 (1.9)	93 (1.0)
[2] Croatia		11 (0.7)	54 (1.3)	90 (0.7)	99 (0.2)
Australia		10 (0.7)	42 (1.1)	76 (1.0)	93 (0.7)
Italy		10 (0.7)	46 (1.4)	85 (1.1)	98 (0.4)
Germany		10 (0.8)	46 (1.4)	85 (1.0)	98 (0.3)
Portugal		9 (1.1)	47 (1.8)	84 (1.2)	98 (0.5)
Sweden		9 (0.8)	47 (1.6)	85 (1.0)	98 (0.3)
Czech Republic		8 (0.9)	50 (1.4)	87 (0.9)	98 (0.5)
Slovak Republic		8 (0.6)	44 (1.5)	82 (1.3)	96 (0.8)
Slovenia		8 (0.7)	42 (1.2)	79 (0.9)	95 (0.6)
Poland		7 (0.6)	39 (1.2)	77 (0.9)	95 (0.5)
Romania		7 (0.7)	32 (1.6)	65 (2.1)	86 (1.5)
[†] Netherlands		7 (0.5)	48 (1.5)	90 (0.8)	100 (0.2)
[1 2] Lithuania		6 (0.5)	39 (1.4)	80 (1.2)	97 (0.4)
France		5 (0.5)	35 (1.6)	75 (1.5)	95 (0.8)
Austria		5 (0.5)	39 (1.5)	80 (0.9)	97 (0.3)
Malta		4 (0.4)	24 (0.7)	55 (0.8)	78 (0.6)
Spain		4 (0.5)	31 (1.3)	72 (1.2)	94 (0.7)
Trinidad and Tobago		3 (0.5)	19 (1.4)	50 (1.9)	78 (1.5)
United Arab Emirates		3 (0.3)	14 (0.6)	38 (1.0)	64 (0.9)
[1] Georgia		2 (0.3)	21 (1.2)	60 (1.6)	86 (1.4)
[2 †] Belgium (French)		2 (0.5)	25 (1.4)	70 (1.7)	94 (1.1)
[2] Qatar		2 (0.5)	12 (1.2)	34 (1.4)	60 (1.5)
[‡] Norway		2 (0.4)	25 (1.5)	71 (1.3)	95 (0.7)
Iran, Islamic Rep. of		1 (0.2)	13 (0.9)	45 (1.6)	76 (1.1)
Colombia		1 (0.3)	10 (1.3)	38 (1.7)	72 (1.9)
Saudi Arabia		1 (0.2)	8 (1.0)	34 (2.0)	65 (1.9)
[2] Azerbaijan		0 (0.3)	9 (0.9)	45 (2.1)	82 (1.6)
[Ψ] Oman		0 (0.1)	5 (0.4)	21 (0.9)	47 (1.2)
Indonesia		0 (0.1)	4 (0.6)	28 (1.9)	66 (2.2)
[⌘] Morocco		0 (0.0)	1 (0.2)	7 (0.7)	21 (1.3)
International Median		**8**	**44**	**80**	**95**

⌘ Average achievement not reliably measured because the percentage of students with achievement too low for estimation exceeds 25%.

Ψ Reservations about reliability of average achievement because the percentage of students with achievement too low for estimation does not exceed 25% but exceeds 15%.
See Appendix C.2 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 2.2, international PIRLS report.

Table 3.5 Percentages reaching each benchmark for mathematics, Y6

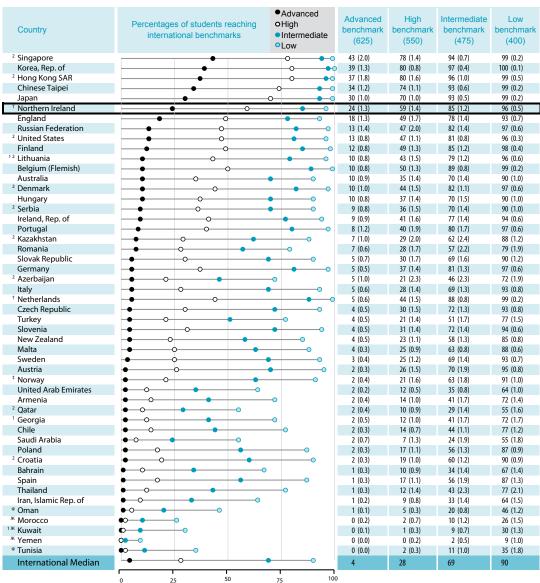| Country	Advanced benchmark (625)	High benchmark (550)	Intermediate benchmark (475)	Low benchmark (400)
[2] Singapore	43 (2.0)	78 (1.4)	94 (0.7)	99 (0.2)
Korea, Rep. of	39 (1.3)	80 (0.8)	97 (0.4)	100 (0.1)
[2] Hong Kong SAR	37 (1.8)	80 (1.6)	96 (1.0)	99 (0.5)
Chinese Taipei	34 (1.2)	74 (1.1)	93 (0.6)	99 (0.2)
Japan	30 (1.0)	70 (1.0)	93 (0.5)	99 (0.2)
[†] Northern Ireland	24 (1.3)	59 (1.4)	85 (1.2)	96 (0.5)
England	18 (1.3)	49 (1.7)	78 (1.4)	93 (0.7)
Russian Federation	13 (1.4)	47 (2.0)	82 (1.4)	97 (0.6)
[2] United States	13 (0.8)	47 (1.1)	81 (0.8)	96 (0.3)
Finland	12 (0.8)	49 (1.3)	85 (1.2)	98 (0.4)
[1 2] Lithuania	10 (0.8)	43 (1.5)	79 (1.2)	96 (0.6)
Belgium (Flemish)	10 (0.8)	50 (1.3)	89 (0.8)	99 (0.2)
Australia	10 (0.9)	35 (1.4)	70 (1.4)	90 (1.0)
[2] Denmark	10 (1.0)	44 (1.5)	82 (1.1)	97 (0.6)
Hungary	10 (0.8)	37 (1.4)	70 (1.5)	90 (1.0)
[2] Serbia	9 (0.8)	36 (1.5)	70 (1.4)	90 (1.0)
Ireland, Rep. of	9 (0.9)	41 (1.6)	77 (1.4)	94 (0.6)
Portugal	8 (1.2)	40 (1.9)	80 (1.7)	97 (0.6)
[2] Kazakhstan	7 (1.0)	29 (2.0)	62 (2.4)	88 (1.2)
Romania	7 (0.6)	28 (1.7)	57 (2.2)	79 (1.9)
Slovak Republic	5 (0.7)	30 (1.7)	69 (1.6)	90 (1.2)
Germany	5 (0.5)	37 (1.4)	81 (1.3)	97 (0.6)
[2] Azerbaijan	5 (1.0)	21 (2.3)	46 (2.3)	72 (1.9)
Italy	5 (0.6)	28 (1.4)	69 (1.3)	93 (0.8)
[†] Netherlands	5 (0.6)	44 (1.5)	88 (0.8)	99 (0.2)
Czech Republic	4 (0.5)	30 (1.5)	72 (1.3)	93 (0.8)
Turkey	4 (0.5)	21 (1.4)	51 (1.7)	77 (1.5)
Slovenia	4 (0.5)	31 (1.4)	72 (1.4)	94 (0.6)
New Zealand	4 (0.5)	23 (1.1)	58 (1.3)	85 (0.8)
Malta	4 (0.3)	25 (0.9)	63 (0.8)	88 (0.6)
Sweden	3 (0.4)	25 (1.2)	69 (1.4)	93 (0.7)
Austria	2 (0.3)	26 (1.5)	70 (1.9)	95 (0.8)
[‡] Norway	2 (0.4)	21 (1.6)	63 (1.8)	91 (1.0)
United Arab Emirates	2 (0.2)	12 (0.5)	35 (0.8)	64 (1.0)
Armenia	2 (0.4)	14 (1.0)	41 (1.7)	72 (1.4)
[2] Qatar	2 (0.4)	10 (0.9)	29 (1.4)	55 (1.6)
[1] Georgia	2 (0.5)	12 (1.0)	41 (1.7)	72 (1.7)
Chile	2 (0.3)	14 (0.7)	44 (1.1)	77 (1.2)
Saudi Arabia	2 (0.7)	7 (1.3)	24 (1.9)	55 (1.8)
Poland	2 (0.3)	17 (1.1)	56 (1.3)	87 (0.9)
[2] Croatia	2 (0.3)	19 (1.0)	60 (1.2)	90 (0.9)
Bahrain	1 (0.3)	10 (0.9)	34 (1.4)	67 (1.4)
Spain	1 (0.3)	17 (1.1)	56 (1.9)	87 (1.3)
Thailand	1 (0.3)	12 (1.4)	43 (2.3)	77 (2.1)
Iran, Islamic Rep. of	1 (0.2)	9 (0.8)	33 (1.4)	64 (1.5)
[Ψ] Oman	1 (0.1)	5 (0.3)	20 (0.8)	46 (1.2)
[※] Morocco	0 (0.2)	2 (0.7)	10 (1.2)	26 (1.5)
[1 ※] Kuwait	0 (0.1)	1 (0.3)	9 (0.7)	30 (1.3)
[※] Yemen	0 (0.0)	0 (0.2)	2 (0.5)	9 (1.0)
[Ψ] Tunisia	0 (0.0)	2 (0.3)	11 (1.0)	35 (1.8)
International Median	**4**	**28**	**69**	**90**

Chart legend: ● Advanced ○ High ● Intermediate ○ Low

※ Average achievement not reliably measured because the percentage of students with achievement too low for estimation exceeds 25%.
Ψ Reservations about reliability of average achievement because the percentage of students with achievement too low for estimation is less than 25% but exceeds 15%.
See Appendix C.2 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.8 for sampling guidelines and sampling participation notes † and ‡.
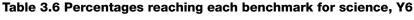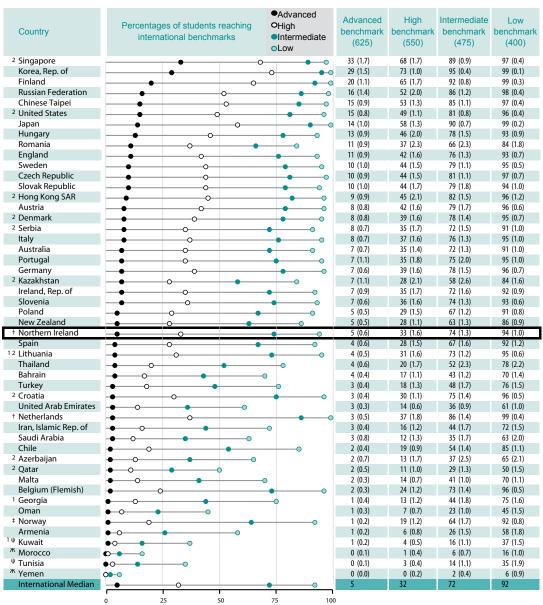( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 2.2, international mathematics report

Table 3.6 Percentages reaching each benchmark for science, Y6

Country	Percentages of students reaching international benchmarks	Advanced benchmark (625)	High benchmark (550)	Intermediate benchmark (475)	Low benchmark (400)
[2] Singapore		33 (1.7)	68 (1.7)	89 (0.9)	97 (0.4)
Korea, Rep. of		29 (1.5)	73 (1.0)	95 (0.4)	99 (0.1)
Finland		20 (1.1)	65 (1.7)	92 (0.8)	99 (0.3)
Russian Federation		16 (1.4)	52 (2.0)	86 (1.2)	98 (0.4)
Chinese Taipei		15 (0.9)	53 (1.3)	85 (1.1)	97 (0.4)
[2] United States		15 (0.8)	49 (1.1)	81 (0.8)	96 (0.4)
Japan		14 (1.0)	58 (1.3)	90 (0.7)	99 (0.2)
Hungary		13 (0.9)	46 (2.0)	78 (1.5)	93 (0.9)
Romania		11 (0.9)	37 (2.3)	66 (2.3)	84 (1.8)
England		11 (0.9)	42 (1.6)	76 (1.3)	93 (0.7)
Sweden		10 (1.0)	44 (1.5)	79 (1.1)	95 (0.5)
Czech Republic		10 (0.9)	44 (1.5)	81 (1.1)	97 (0.7)
Slovak Republic		10 (1.0)	44 (1.7)	79 (1.8)	94 (1.0)
[2] Hong Kong SAR		9 (0.9)	45 (2.1)	82 (1.5)	96 (1.2)
Austria		8 (0.8)	42 (1.6)	79 (1.7)	96 (0.6)
[2] Denmark		8 (0.8)	39 (1.6)	78 (1.4)	95 (0.7)
[2] Serbia		8 (0.7)	35 (1.7)	72 (1.5)	91 (1.0)
Italy		8 (0.7)	37 (1.6)	76 (1.3)	95 (1.0)
Australia		7 (0.7)	35 (1.4)	72 (1.3)	91 (1.0)
Portugal		7 (1.1)	35 (1.8)	75 (2.0)	95 (1.0)
Germany		7 (0.6)	39 (1.6)	78 (1.5)	96 (0.7)
[2] Kazakhstan		7 (1.1)	28 (2.1)	58 (2.6)	84 (1.6)
Ireland, Rep. of		7 (0.9)	35 (1.7)	72 (1.6)	92 (0.9)
Slovenia		7 (0.6)	36 (1.6)	74 (1.3)	93 (0.6)
Poland		5 (0.5)	29 (1.5)	67 (1.2)	91 (0.8)
New Zealand		5 (0.5)	28 (1.1)	63 (1.3)	86 (0.9)
[†] Northern Ireland		5 (0.6)	33 (1.6)	74 (1.3)	94 (1.0)
Spain		4 (0.6)	28 (1.5)	67 (1.6)	92 (1.2)
[1 2] Lithuania		4 (0.5)	31 (1.6)	73 (1.2)	95 (0.6)
Thailand		4 (0.6)	20 (1.7)	52 (2.3)	78 (2.2)
Bahrain		4 (0.4)	17 (1.1)	43 (1.2)	70 (1.4)
Turkey		3 (0.4)	18 (1.3)	48 (1.7)	76 (1.5)
[2] Croatia		3 (0.4)	30 (1.1)	75 (1.4)	96 (0.5)
United Arab Emirates		3 (0.3)	14 (0.6)	36 (0.9)	61 (1.0)
[†] Netherlands		3 (0.5)	37 (1.8)	86 (1.4)	99 (0.4)
Iran, Islamic Rep. of		3 (0.4)	16 (1.2)	44 (1.7)	72 (1.5)
Saudi Arabia		3 (0.8)	12 (1.3)	35 (1.7)	63 (2.0)
Chile		2 (0.4)	19 (0.9)	54 (1.4)	85 (1.1)
[2] Azerbaijan		2 (0.7)	13 (1.7)	37 (2.5)	65 (2.1)
[2] Qatar		2 (0.5)	11 (1.0)	29 (1.3)	50 (1.5)
Malta		2 (0.3)	14 (0.7)	41 (1.0)	70 (1.1)
Belgium (Flemish)		2 (0.3)	24 (1.2)	73 (1.4)	96 (0.5)
[1] Georgia		1 (0.4)	13 (1.2)	44 (1.8)	75 (1.6)
Oman		1 (0.3)	7 (0.7)	23 (1.0)	45 (1.5)
[‡] Norway		1 (0.2)	19 (1.2)	64 (1.7)	92 (0.8)
Armenia		1 (0.2)	6 (0.8)	26 (1.5)	58 (1.8)
[1 Ψ] Kuwait		1 (0.2)	4 (0.5)	16 (1.1)	37 (1.5)
[ж] Morocco		0 (0.1)	1 (0.4)	6 (0.7)	16 (1.0)
[Ψ] Tunisia		0 (0.1)	3 (0.4)	14 (1.1)	35 (1.9)
[ж] Yemen		0 (0.0)	0 (0.2)	2 (0.4)	6 (0.9)
International Median		5	32	72	92

Legend: ● Advanced ○ High ● Intermediate ○ Low

0   25   50   75   100

ж Average achievement not reliably measured because the percentage of students with achievement too low for estimation exceeds 25%.

Ψ Reservations about reliability of average achievement because the percentage of students with achievement too low for estimation does not exceed 25% but exceeds 15%.

See Appendix C.2 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.8 for sampling guidelines and sampling participation notes † and ‡.

( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 2.2, international science report

3.1.1   Distribution in reading attainment: PIRLS 2011

High achievement in reading was evident with 19 per cent of pupils in Northern Ireland reaching the Advanced international benchmark. Among the comparator countries, this proportion was exceeded only by Singapore (24 per cent). A further 39 per cent of pupils in Northern Ireland reached the High benchmark (i.e. 58 per cent in total reaching at least the High benchmark). In relation to the Low benchmark, just 3 per cent of pupils failed to reach this standard. This was the same proportion as Singapore.[1] The highest performing countries were characterised by a very small proportion of pupils failing to reach the Low international benchmark.

3.1.2   Distribution in mathematics attainment: TIMSS 2011

In Northern Ireland, 24 per cent of Y6 pupils reached the Advanced international benchmark in mathematics, with a further 35 per cent reaching the High benchmark (i.e. 59 per cent in total reaching at least the High benchmark). This compared with 70 to 80 per cent reaching at least the High benchmark in the highest scoring Pacific Rim countries. The country with the most pupils reaching the Advanced benchmark was Singapore, with 43 per cent reaching that level in mathematics (in the context of the level of exclusions outlined in the footnote below).

At the other end of the scale, 96 per cent of pupils in Northern Ireland reached at least the Low international benchmark for Y6 mathematics, with 4 per cent achieving below that level. In the five countries performing better than Northern Ireland, 99 or 100 per cent reached at least the Low benchmark.

3.1.3   Distribution in science attainment: TIMSS 2011

For Y6 science, only 5 per cent of pupils in Northern Ireland reached the Advanced international benchmark, with a further 28 per cent achieving the High benchmark (making a total of 33 per cent reaching at least the High international benchmark). Among the three highest scoring countries, the percentage reaching at least the High benchmark ranged from 65 to 73 per cent. The country with the most pupils reaching the Advanced benchmark was, again, Singapore, with 33 per cent reaching that level in science.

For science, 94 per cent of pupils in Northern Ireland reached at least the Low international benchmark for Y6, with 6 per cent achieving below that level. Among the three highest performers, the comparable percentages reaching at least the Low benchmark were 97 to 99 per cent.

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1   Singapore excluded a combined total of 6.3 per cent of 9-10 year old pupils (5.9 per cent at school level and 0.4 per cent within-school exclusions); Hong Kong also had high exclusions at this age range (9.1 per cent at school level and 2.7 per cent within-school exclusions, making a total of 11.8 per cent). The comparable exclusion figures for Northern Ireland were 2.6 per cent and 0.9 per cent respectively (making a total of 3.5 per cent, within the international target limit of 5 per cent exclusions). Exclusions can be for a variety of reasons, including geographical (e.g. remote and/or very small schools), linguistic (e.g. countries opting not to translate the test into minority languages) or due to special educational needs (e.g. special schools teaching pupils who cannot access the assessment). See the technical report (Martin *et al*, 2011) and Appendix C of the international reports for more information.

3.2 Conclusion

Patterns in Northern Ireland's attainment in each subject overall are reflected in its patterns of distribution of attainment: just as pupils scored better in reading and mathematics than in science, so more pupils reached at least the High international benchmark in reading and mathematics than in science. Correspondingly, the tail of low performance for each subject is relatively small, but marginally greater in science than for reading or mathematics.