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PIRLS 2016 in Northern Ireland: Reading achievement

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Contents

Executive Summary	v
Introduction	1
1 Attainment in PIRLS 2016 in Northern Ireland	3
1.1 Reading attainment in Northern Ireland	3
1.2 Attainment in PIRLS 2016	6
1.3 Attainment in PIRLS compared with PIRLS 2011	8
1.4 Conclusion	10
2 Attainment in PIRLS 2016 by gender	11
2.1 Attainment by gender in PIRLS	11
2.2 Conclusion	15
3 Distribution of attainment in PIRLS 2016	17
3.1 Distribution of attainment in PIRLS	18
3.2 Conclusion	25
4 Attainment by content and skill in Northern Ireland	26
4.1 The reading purposes and reading comprehension processes in PIRLS 2016	27
4.2 Attainment by reading purposes (content)	28
4.3 Attainment by reading comprehension processes (skills)	29
4.4 Difference in attainment between 2011 and 2016	30
4.5 Attainment by gender in reading purposes and reading comprehension processes	33
4.6 Conclusion	34
5 Pupil attitudes and engagement	36
5.1 Pupils' attitudes towards reading	37
5.2 Pupils' confidence in reading	40
5.3 Engaging pupils in reading lessons	42
5.4 Conclusion	45
6 Workforce	46
6.1 Principals' and teachers' formal education	47
6.2 Teachers' educational emphasis and specialisms during training	49
6.3 Teachers' participation in professional development	50
6.4 Teachers' reported job satisfaction	51
6.5 Conclusion	53
7 School resources	54

7.1	Resources and conditions for teaching reading in schools	55
7.2	Access to a school library	62
7.3	Access to a classroom library	64
7.4	Conclusion	66
8	School learning environment	67
8.1	Schools' emphasis on academic success – views of teachers and principals	68
8.2	The extent to which schools are 'safe and orderly'	73
8.3	Principals' views of school discipline problems	78
8.4	Pupil reports of bullying in school	82
8.5	The extent to which teaching is limited by disruptive or uninterested pupils	84
8.6	Conclusion	86
9	The curriculum and learning activities	87
9.1	Teaching time	88
9.2	Emphasis in early years on reading skills and strategies	90
9.3	Teachers' focus on specific comprehension skills and strategies	92
9.4	Classroom practices for teaching reading	94
9.5	Conclusion	98
10	Characteristics of pupils and home	100
10.1	Home resources for learning	101
10.2	Parental attitudes towards reading	103
10.3	Pupil level factors that limit teaching	106
10.4	Conclusion	110
11	References	111
	Appendix A	112
	Progress in International Reading Study (PIRLS) 2016: Overview	112
A.1	PIRLS 2016: Introduction	112
A.2	PIRLS 2016 participants	112
A.3	PIRLS 2016 in the UK	114
A.4	PIRLS 2016 sampling strategy	114
A.5	Northern Ireland's PIRLS 2016 samples	115

Executive Summary

PIRLS is a study of reading at ages 9-10 and has a five-yearly cycle. Northern Ireland took part in PIRLS for the first time in 2011 so comparisons can be made between cycles where appropriate.

Countries with which Northern Ireland will mainly be compared in this report

Fifty countries took part in PIRLS 2016, with a further 11 benchmarking participants. Northern Ireland's performance in PIRLS 2016 is outlined and compared with that of six other participating countries. These countries were selected because they have some similarities with Northern Ireland and/or because they are high performers and/or have demonstrated significant improvement between PIRLS cycles.

Of the 49 other countries participating in PIRLS 2016, the selected comparator countries are:

- Canada
- England
- New Zealand
- Poland
- Republic of Ireland
- Singapore.

These are referenced throughout the summary and report as applicable. Reported findings relate to Northern Ireland unless otherwise specified. Findings are based on the international PIRLS reports (Martin *et al.*, 2017 and Mullis *et al.*, 2017a and 2017b), available through the NFER website¹.

¹ <https://www.nfer.ac.uk/research/centre-for-international-education/>

Attainment

- Pupils in Northern Ireland significantly² outperformed 41 of the 49 other participating countries in reading and were significantly outperformed by two countries.
- The average score for reading (565) in Northern Ireland is statistically similar to six other countries, including two comparator countries (Republic of Ireland and Poland).
- Northern Ireland's performance in reading has remained stable from 2011 to 2016, with no significant difference in the overall average score. This was also the case for Singapore. In contrast, the Republic of Ireland and England have improved significantly since 2011, while Canada and New Zealand's scores have significantly decreased³.
- Of the four countries that outperformed Northern Ireland in 2011, only the Russian Federation and Singapore outperformed Northern Ireland again in 2016.
- In Northern Ireland, and all comparator countries, there were significant gender differences in attainment in reading, favouring girls. This was in line with the gender differences seen internationally.
- The gender difference in attainment in Northern Ireland in reading was apparent in both the 2011 and 2016 PIRLS cycles. This was the same in Canada, England, New Zealand, the Republic of Ireland and Singapore⁴.
- The gap between boys and girls has increased slightly since 2011. Northern Ireland has shown an increase of two scale points, whereas the international average increased by three scale points.
- Compared to Northern Ireland and the other comparator countries, England has shown the largest reduction (eight scale points) in the difference between girls' and boys' average scale scores in reading since 2011.
- Over a fifth of pupils in Northern Ireland (22 per cent) reached the 'Advanced International Benchmark' in reading, the third highest percentage internationally.
- Only three per cent of pupils in Northern Ireland failed to reach the 'Low International Benchmark'. In comparison, the international average was four per cent.
- There was a significant increase in the percentage of pupils in Northern Ireland reaching the 'Advanced International Benchmark' in PIRLS 2016 compared with 2011 (22 per cent in 2016; 19 per cent in 2011).
- In Northern Ireland, there was a relatively wide spread of attainment for reading between the highest and the lowest attainers. Only one of the comparator countries, New Zealand, had a greater gap in mean scores between the highest and lowest attainers.

² Throughout this report, the term 'significant' refers to statistical significance.

³ Comparable trend data is not available for Poland.

⁴ The pattern across cycles was similar in Poland although the samples are not directly comparable.

Attainment by content and skill

- **Reading purposes** – Compared to the overall national average reading score, pupils in Northern Ireland:
 - scored significantly better on *Literary purposes*
 - scored significantly less well on *Informational purposes*.
- **Reading comprehension processes** – Compared to the overall national average reading score, pupils in Northern Ireland:
 - scored significantly less well on the *Retrieving and Straightforward Inferencing* scale
 - were not significantly different from the national average on *Interpreting, Integrating and Evaluating*.
- Between 2011 and 2016, there was no significant change in Northern Ireland’s scores for reading purposes or for reading comprehension processes.
- In Northern Ireland, girls’ scores were significantly higher than boys’ in both of the reading purposes and both of the reading comprehension processes. This was also the case in all six comparator countries.

Pupils’ engagement

- In Northern Ireland, the proportion of pupils who ‘Very Much Like Reading’ (39 per cent) was lower than the international average (43 per cent). Pupil engagement was in line with the international average (61 and 60 per cent respectively) and pupil confidence was higher than internationally (50 and 45 per cent respectively)⁵.
- In Northern Ireland, and internationally, pupils who most liked reading had higher average attainment scores than those who did not like reading.
- In Northern Ireland, pupils who were categorised as ‘Very Confident’ had higher attainment scores than those who were less confident. This was also seen internationally.
- Pupils who were ‘Less than Engaged’ in their reading lessons were likely to have a lower average attainment score than pupils who were ‘Somewhat Engaged’ or ‘Very Engaged’.
- Compared to the six comparator countries, Northern Ireland had the second highest percentage of pupils categorised as ‘Very Engaged’ in their reading lessons but the third lowest percentage of pupils feeling ‘Very Confident’ in reading. However, the percentages for these two categories were greater than the international average in Northern Ireland.

Education Workforce

- Northern Ireland had a high proportion of pupils (80 per cent) attending schools run by principals who have completed a postgraduate university degree, relative to the international average (48 per cent).
- The proportion of pupils taught by teachers who have completed a postgraduate university degree was 19 per cent, and similar to the international average (20 per cent).

⁵ No significance tests have been conducted internationally.

- Of the comparator countries, Poland had the highest percentage of pupils attending schools run by principals and taught by teachers who have completed a postgraduate university degree (99 and 100 per cent respectively).
- Of the three specialist areas surveyed (language, pedagogy/teaching reading and reading theory), 69 per cent of pupils in Northern Ireland were taught by teachers who had specialised in language, a proportion similar to the international average (70 per cent).
- The percentage of pupils whose teachers reported being very satisfied with their jobs was higher in Northern Ireland (62 per cent) than in all six comparator countries and higher than the international average (57 per cent).

School resources

- Overall, Northern Ireland was categorised as ‘Somewhat Affected’ by shortages in reading resources. However, the percentage of pupils who, according to principals, were ‘Not Affected’ by shortages (44 per cent) was higher than the international average (31 per cent).
- All comparator countries were categorised as being ‘Not Affected’ by shortages in reading resources, except the Republic of Ireland which, like Northern Ireland, was ‘Somewhat Affected’.
- Principals in Northern Ireland reported that only three to seven per cent of pupils were taught in schools where teaching was affected ‘A Lot’ by a shortage or inadequacy of the following four technological resources:
 - technically competent staff
 - audio-visual resources
 - computer technology for teaching and learning
 - computer software / applications for reading.

In each of these, the percentage of pupils affected in Northern Ireland was lower than international averages.

- Four-fifths of pupils attended schools in which the principals indicated that there were sufficient computers to equip one or two pupils per computer.
- Findings from the teacher questionnaire indicated that over three-quarters of pupils had computers available to use for reading lessons and that pupils in Northern Ireland were more likely to use computers for reading activities than the average internationally.
- Northern Ireland had a lower percentage of pupils attending schools equipped with a school library (74 per cent) than the international average (87 per cent). However, nearly all Year 6 classes in Northern Ireland had a well-stocked classroom library (93 per cent), used regularly by the pupils. This was much higher than the international average of 72 per cent.

School learning environment

- Principals and teachers in Northern Ireland reported some of the highest levels of emphasis on academic success of any nation. Teachers reported similar, but slightly lower, levels of emphasis on academic success than principals did. This is similar to the findings from 2011.
- The majority (83 per cent) of pupils in Northern Ireland attended schools which were categorised as ‘Very Safe and Orderly’ (as reported by teachers). This had improved significantly since the 2011 PIRLS survey.
- Eighty-five per cent of pupils in Northern Ireland attended schools categorised by principals as having ‘Hardly Any’ discipline problems; the third highest proportion internationally.
- Pupils in Northern Ireland reported experiencing bullying behaviours less frequently than those in most other participating countries, leading them to be categorised as being ‘Almost Never’ bullied. This was also the case in 2011.
- Teachers in Northern Ireland reported that their teaching was rarely limited by disruptive or uninterested pupils. Nearly two-thirds of pupils had teachers who reported that their teaching of reading was ‘Not at All’ limited by disruptive pupils. ‘Uninterested’ pupils were a greater problem, although 41 per cent of pupils still had teachers who reported that this did ‘Not at All’ limit their teaching of reading.

The curriculum and learning activities

- In Northern Ireland, over a quarter of teaching time (27 per cent) was spent on teaching English (including reading, writing, speaking, literature and other language skills)⁶. This was proportionally similar to the international average. This compares with the 23 per cent of teaching time spent on mathematics but is much greater than the four per cent for science, both reported in TIMSS 2015.
- The proportion of time spent specifically on teaching reading, including reading across the curriculum, was 14 per cent. The international average was 18 per cent.
- Of 14 identified skills and strategies for reading, seven were emphasised one grade (year group) earlier in Northern Ireland than internationally. Only two of the key skills (‘Describing the Style or Structure of a Text’ and ‘Determining the Author’s Perspective or Intention’) were introduced in Year 5, the remaining 12 were introduced earlier.
- All key reading skills were taught to the vast majority of Year 6 pupils at least weekly. The two most commonly taught skills were ‘Locate Information Within the Text’ and ‘Explain or Support Their Understanding of What They Have Read’ at least weekly.

⁶ Referred to in the Northern Ireland curriculum as Communication in English

- The skill that received least attention in Northern Ireland, and across most comparator countries, was to ‘Determine the Author’s Perspective or Intention’, which was nonetheless taught at least weekly to around two-thirds of pupils in Northern Ireland.
- Teachers in Northern Ireland were most likely to report creating same-ability groups ‘Always or Almost Always’ to teach reading. This was also the case in England and New Zealand.
- The most common approach internationally on average (as well as in the comparator countries of Singapore, the Republic of Ireland and Canada) was to teach reading as a whole-class activity.
- The most common type of literary text that was frequently given to pupils by teachers in Northern Ireland was a ‘Longer Fiction Book with Chapters’. Teachers were more likely to report using these with students at least weekly than ‘Short Stories’ or ‘Plays’.
- The most common non-fiction text type that was frequently given to pupils by teachers in Northern Ireland was a ‘Non-Fiction Subject Area Book’. Teachers were more likely to report using these with students at least weekly than ‘Longer Non-Fiction Books with Chapters’ or ‘Non-Fiction Articles’.

Characteristics of pupils and their homes

- In Northern Ireland, two-fifths of children reported having ‘Many Resources’ for learning at home. Children with access to more home resources for learning had higher average achievement in reading.
- A higher proportion of children in Northern Ireland reported having ‘Many Resources’ (42 per cent) compared with the comparator countries and the international average (20 per cent).
- Just under half of pupils’ parents who responded to the survey (49 per cent) reported they ‘Very Much Like’ reading. This percentage was greater than in any comparator country. Children with parents who ‘Very Much Like’ reading had higher average achievement in reading.
- The teachers of the majority of pupils (67 per cent) reported that their teaching was limited, to ‘Some’ extent, by pupils’ lack of prerequisite knowledge or skills, and teachers of a further seven per cent stated they were limited ‘A Lot’. The proportion was similar to those, on average, internationally.
- Teachers of pupils in Northern Ireland were more likely to report pupils’ lack of sleep as limiting their teaching than their pupils’ lack of nutrition (55 per cent compared to 22 per cent respectively).
- The proportion of pupils whose teachers reported lack of sleep as a limiting factor (‘Some’ or ‘A Lot’ of the time) was slightly higher in Northern Ireland than internationally (59 per cent and 54 per cent respectively).

Introduction

Report outline

This report summarises Year 6 pupils' attainment in the PIRLS survey of 2016 in Northern Ireland and explores the context of that attainment.

PIRLS is an international comparison study of reading at ages 9-10. PIRLS has a five-yearly cycle. Northern Ireland took part in PIRLS for the second time in 2016, having previously participated in the 2011 cycle.

What PIRLS assesses at ages 9-10

PIRLS identifies and assesses two purposes for reading: reading for literary experience and reading to acquire and use information. Within each of the two reading purposes, the PIRLS items measure four comprehension processes:

- Focus on and retrieve explicitly stated information
- Make straightforward inferences
- Interpret and integrate ideas and information
- Examine and evaluate content, language and textual elements.

Countries with which Northern Ireland is mainly compared in this report

The report compares performance in Northern Ireland with that of the six comparator countries listed below. These countries were selected because they have some similarities with Northern Ireland and/or because they are high performers and/or because they have demonstrated significant improvement between PIRLS cycles.

Of the 49 other countries participating in PIRLS 2016, the selected comparator countries are:

- Canada
- England
- New Zealand
- Poland⁷
- Republic of Ireland
- Singapore

These countries will be referred to throughout the report as applicable.

⁷ Although Poland did participate in the 2011 and 2006 PIRLS cycles, its data is not comparable for measuring trends to 2016, primarily due to adjustments/improvements to translations or increasing population coverage.

Trend Comparisons: PIRLS 2016 and PIRLS 2011

The report compares Northern Ireland's performance in PIRLS 2016 with the performance in PIRLS 2011. Where possible, the report also explores whether the background factors that impact on attainment have changed between these two cycles of PIRLS. It should be noted that the contextual questionnaires (school questionnaire, teacher questionnaire, pupil questionnaire and home questionnaire) have undergone some changes since PIRLS 2011. In some cases, the changes are minimal and comparisons with the 2011 findings are made but should be interpreted with caution. In other cases the changes to the questionnaires are more fundamental and, as a result, trend comparisons are not possible. (Any such changes will be detailed, as appropriate.)

1 Attainment in PIRLS 2016 in Northern Ireland

Chapter outline

This chapter summarises pupils' attainment in reading in Year 6 at ages 9-10 in PIRLS 2016. In each section, the relevant tables of results are presented, accompanied by discussion of the outcomes.

Outcomes for Northern Ireland are compared with those of other relevant nations.

Key findings

- Pupils in Northern Ireland significantly⁸ outperformed 41 of the 49 other participating countries in reading and were significantly outperformed by two countries.
- The average score for reading (565) in Northern Ireland is statistically similar to six other countries, including two comparator countries (Republic of Ireland and Poland).
- Northern Ireland's performance in reading has remained stable from 2011 to 2016, with no significant difference in the overall average score. This was also the case for Singapore. In contrast, the Republic of Ireland and England have improved significantly since 2011, while Canada and New Zealand's scores have significantly decreased⁹.
- Of the four countries that outperformed Northern Ireland in 2011, only the Russian Federation and Singapore outperformed Northern Ireland again in 2016.

1.1 Reading attainment in Northern Ireland

Table 1.1 below summarises Northern Ireland's attainment in reading, taking account of the significance of any apparent differences in attainment. The table is separated into three sections (higher, similar and lower) to show how the other countries scored in comparison to Northern Ireland.

⁸ Throughout this report, the term 'significant' refers to statistical significance.

⁹ Comparable trend data is not available for Poland.

Interpreting the data: performance groups

The PIRLS achievement scales have a centrepoint of 500 and a standard deviation of 100. The scales are 'standardised' in this way to facilitate comparisons between countries and over time. The summaries below compare the average performance in Northern Ireland in the reading scale with that of the other participating countries¹⁰. The summaries indicate whether average scores, which may appear similar, are statistically significantly different from each other.

Countries participating in PIRLS follow guidelines and strict sampling targets to provide samples that are nationally representative¹¹.

The PIRLS 2016 reading score for Year 6 pupils in Northern Ireland was 565, above the centrepoint of the international scale (500) and ranking seventh¹² among the participating nations.

Table 1.1 summarises Northern Ireland's performance internationally, taking account of the significance of any apparent differences in attainment. The table shows that Northern Ireland was significantly outperformed by only two of the 49 other participating countries (Russian Federation and Singapore). However, six countries performed similarly to Northern Ireland. Northern Ireland significantly outperformed the remaining 41 participating countries.

¹⁰ Fifty participating countries and eleven benchmarking participants administered the PIRLS assessments (ages 9-10) in 2016.

¹¹ For full details of PIRLS Methods and Procedures see Martin *et al*, 2017.

¹² Rankings should be treated with caution as some apparent differences in attainment may not be statistically significant. See 'Interpreting the data: international rankings' in section 1.2 for more information. In absolute terms, Northern Ireland is ranked seventh, but Hong Kong, for example, which is ranked third, has an achievement score that is not significantly different from that of Northern Ireland (see Table 1.1).

Table 1.1 PIRLS 2016 performance groups: reading at ages 9-10

HIGHER performance compared with Northern Ireland			
Participants performing at a significantly higher level than Northern Ireland			
Country	Scale score	Country	Scale score
Russian Federation	581	Singapore	576

SIMILAR performance compared with Northern Ireland			
Participants performing at a similar level to Northern Ireland (565) (not significantly different statistically)			
Country	Scale score	Country	Scale score
Hong Kong SAR	569	Poland	565
Republic of Ireland	567	Norway (5)*	559
Finland	566	Chinese Taipei	559

*Norway fifth grade pupils.

LOWER performance compared with Northern Ireland			
Participants performing at a significantly lower level than Northern Ireland			
Country	Scale score	Country	Scale score
England	559	Spain	528
Latvia	558	Belgium (Flemish)	525
Sweden	555	New Zealand	523
Hungary	554	France	511
Bulgaria	552	Belgium (French)	497
United States	549	Chile	494
Lithuania	548	Georgia	488
Italy	548	Trinidad and Tobago	479
Denmark	547	Azerbaijan	472
Macao SAR	546	Malta	452
Netherlands	545	United Arab Emirates	450
Australia	544	Bahrain	446
Czech Republic	543	Qatar	442
Canada	543	Saudi Arabia	430
Slovenia	542	Iran, Islamic Rep. of	428
Austria	541	Oman	418
Germany	537	Kuwait	393
Kazakhstan	536	Morocco	358
Slovak Republic	535	Egypt	330
Israel	530	South Africa	320
Portugal	528		

Source: Exhibit 1.1, International reading report (Mullis *et al.*, 2017a).

1.2 Attainment in PIRLS 2016

Table 1.2 below shows the full rankings for all countries participating in PIRLS 2016. Northern Ireland's ranking is indicated by a red outline. The PIRLS Scale Centrepoint (500) is highlighted in dark red.

Interpreting the data: international rankings

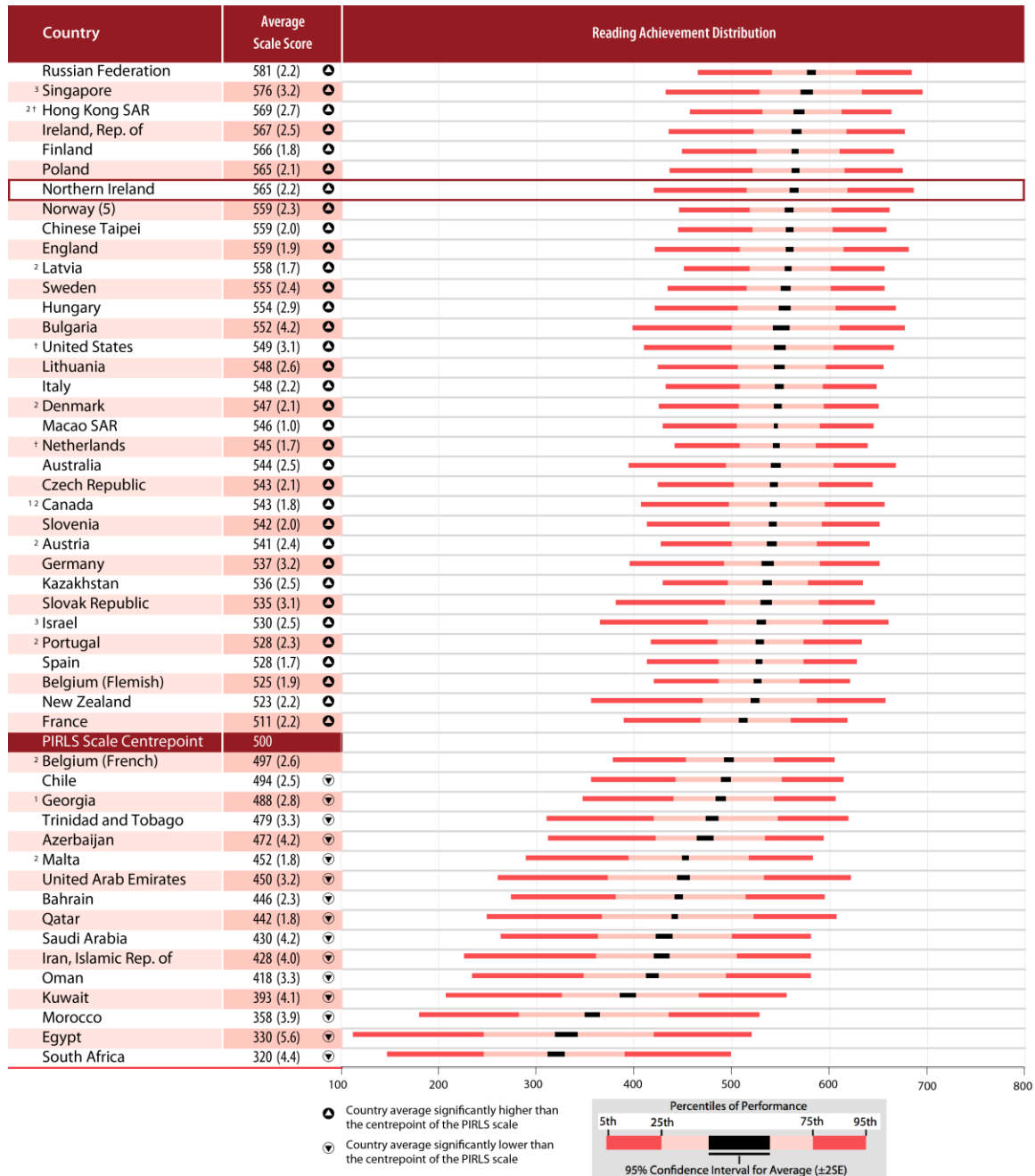
The mean scores on the PIRLS achievement scales are listed (together with standard errors) in the 'Average Scale Score' column of the tables and are also shown graphically as the darkened areas on the achievement distributions (with 95 per cent confidence intervals). Arrows beside the scores indicate whether the average achievement in that country is significantly higher (upward arrow) or lower (downward arrow) than the PIRLS Centrepoint of 500. The standard error refers to uncertainty in estimates resulting from random fluctuations in samples. The smaller the standard error, the better the score is as an estimate of the population's score. The distribution of attainment is discussed further in Chapter 3.

It is important to bear in mind that small differences may or may not be statistically significant, depending on the size of the standard error for each country. Table 1.1 identifies whether any given difference between Northern Ireland's score and those of other countries is, or is not, statistically significant. More information is available in Chapter 1 of the international report (Mullis *et al.*, 2017a).

Interpreting the data: participation notes

Northern Ireland successfully met the sampling requirements for participation, which indicates that the PIRLS sample is nationally representative of pupils in the target age group.

Table 1.2 Mean scores and distribution of reading achievement at ages 9-10, PIRLS 2016



Note: Five countries and one benchmarking entity participated in the PIRLS Literacy assessment: Egypt, Iran, Kuwait, Morocco, and South Africa as well as Denmark (3). Iran and Morocco also took part in the fourth grade assessment and their results are based on an average of both assessments.

The PIRLS achievement scale was established in 2001 based on the combined achievement distribution of all countries that participated in PIRLS 2001. To provide a point of reference for country comparisons, the scale centrepoint of 500 was located at the mean of the combined achievement distribution. The units of the scale were chosen so that 100 scale score points corresponded to the standard deviation of the distribution.

See Appendix C.1 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.4 for sampling guidelines and sampling participation notes †, ‡, and #. () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 1.1, International reading report (Mullis *et al.*, 2017a).

Table 1.2 illustrates how well Northern Ireland performed in PIRLS 2016 in reading. The mean scale score of 565 is only 16 scale points behind that of the highest performing country, Russian Federation, and 245 scale points ahead of the lowest performing country, South Africa.

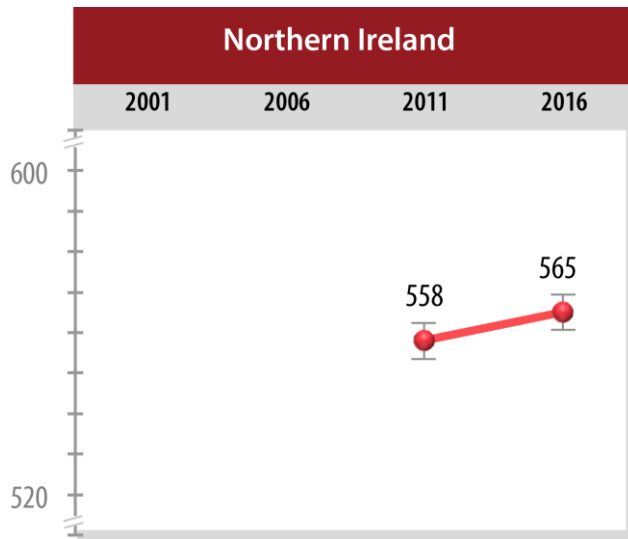
Three of the comparator countries are shown to have higher rankings than Northern Ireland (Singapore, Republic of Ireland and Poland at 576, 567 and 565 respectively). However, the differences are not statistically significant for the Republic of Ireland and Poland. Therefore, their performance is considered to be similar to Northern Ireland, whereas Singapore scored significantly better. Although Norway is shown to have a lower ranking than Northern Ireland in Table 1.2, the difference is not statistically significant. Therefore, Norway is also considered to have performed similarly to Northern Ireland, the Republic of Ireland and Poland. The remaining comparator countries, England, Canada and New Zealand performed significantly less well than Northern Ireland. Of these countries, England was the nearest scoring country (559) to Northern Ireland, and New Zealand performed least well of the comparator countries (523), with a score 42 scale points lower than Northern Ireland.

1.3 Attainment in PIRLS compared with PIRLS 2011

Rankings can be volatile, varying according to the mix of countries participating in any given cycle. However, measurement of trends in scores can indicate progress in a more stable fashion, since the outcomes from successive cycles of PIRLS are analysed on comparable scales.

Figure 1.1 shows that reading attainment of 9- and 10-year-olds in Northern Ireland has remained stable since the last PIRLS cycle in 2011. Northern Ireland's score in 2011 was 558, and although this was seven points lower than the 2016 score, the two scores are not significantly different statistically.

Figure 1.1 Trends in Year 6 reading achievement in Northern Ireland



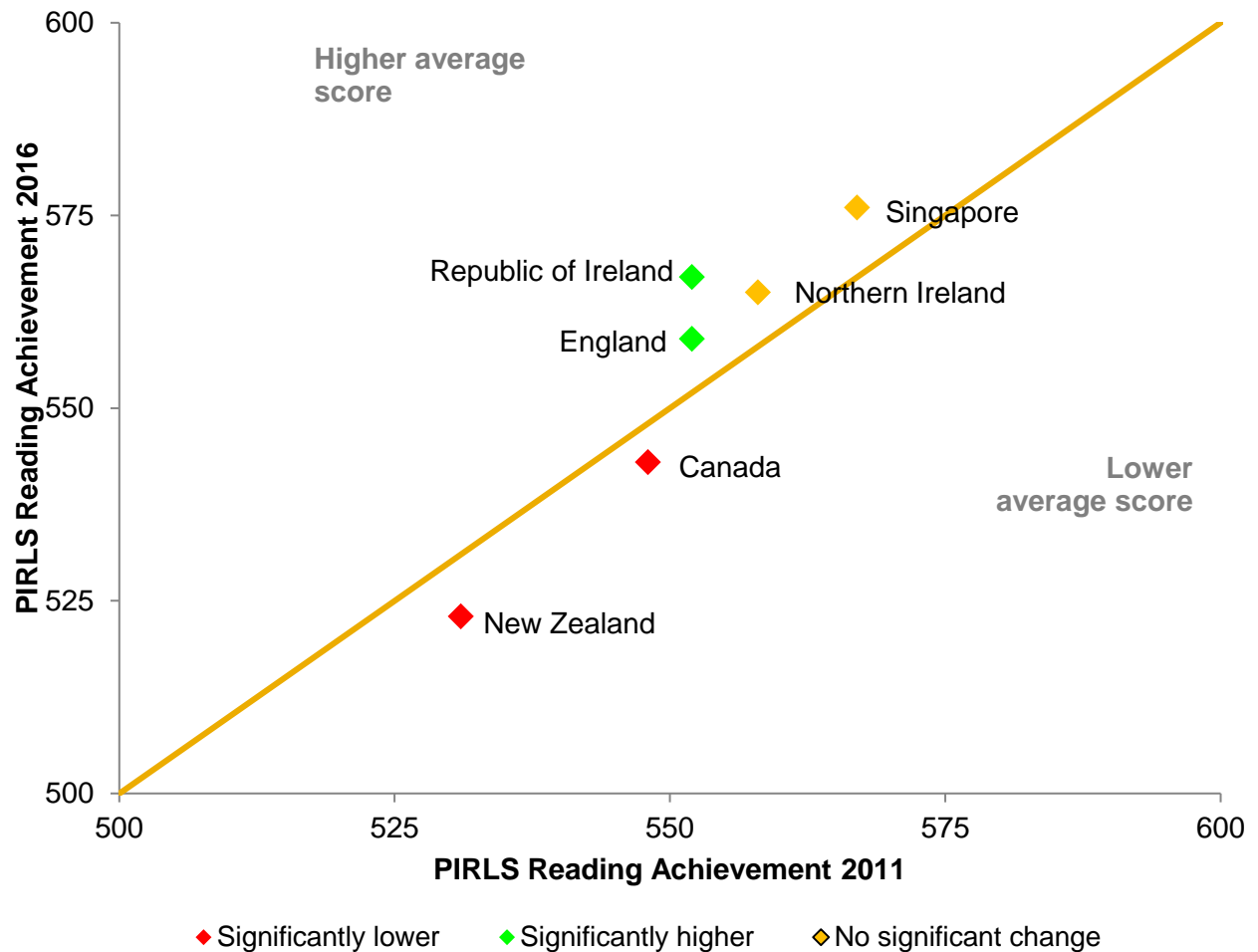
Source: Exhibit 1.3, International reading report (Mullis *et al.*, 2017a).

Although Northern Ireland appears to have dropped from fifth in 2011 to seventh in 2016 in absolute ranking, only two countries significantly outperformed Northern Ireland in 2016 (Russian Federation and Singapore), whereas four countries significantly outperformed Northern Ireland in 2011 (Hong Kong and Finland, in addition to the Russian Federation and Singapore).

While Northern Ireland's average scale score was similar to that achieved in 2011, one of the comparator countries (Republic of Ireland) which performed less well than Northern Ireland in 2011 had improved significantly to perform similarly to Northern Ireland in 2016¹³. England's performance had also significantly improved from 2011 to 2016 but remained significantly below Northern Ireland's, with a difference of six scale points in both cycles. Canada and New Zealand both saw a significant decline in performance since 2011. Like Northern Ireland, Singapore's average scale score remained stable from 2011 to 2016.

¹³ Poland's data is not comparable on trends.

Figure 1.2 PIRLS reading achievement in 2016 compared with PIRLS 2011



Note: Poland is not shown on this chart because it has no comparable trend data. In 2016, Poland’s average scale score was 565.

Source: Exhibit 1.3, International reading report (Mullis *et al.*, 2017a).

1.4 Conclusion

Pupils in Northern Ireland performed very well in PIRLS 2016, significantly outperformed by only two of the 49 other participating countries. Overall, reading achievement in Northern Ireland is similar to that achieved in PIRLS 2011 with no statistically significant difference in scores. This shows that the performance of pupils in Northern Ireland in reading, as measured by the PIRLS assessments, has been stable between 2011 and 2016. In contrast, two comparator countries, the Republic of Ireland and England, have improved significantly since 2011, while Canada and New Zealand’s scores have significantly decreased, and Singapore’s has remained stable.

2 Attainment in PIRLS 2016 by gender

Chapter outline

This chapter summarises pupils' attainment by gender in reading in Year 6 at ages 9-10 in 2016. Outcomes for Northern Ireland are compared with those of the subset of main comparator nations: Canada, England, New Zealand, Poland, the Republic of Ireland and Singapore.

Key findings

- In Northern Ireland, and all comparator countries, there were significant¹⁴ gender differences in attainment in reading, favouring girls. This was in line with the gender differences seen internationally.
- The gender difference in attainment in Northern Ireland in reading was apparent in both the 2011 and 2016 PIRLS cycles. This was the same in Canada, England, New Zealand, the Republic of Ireland and Singapore¹⁵.
- The gap between boys and girls has increased slightly since 2011. Northern Ireland has shown an increase of two scale points, whereas the international average increased by three scale points.
- Compared to Northern Ireland and the other comparator countries, England has shown the largest reduction (eight scale points) in the difference between girls' and boys' average scale scores in reading since 2011.

2.1 Attainment by gender in PIRLS

Table 2.1 shows the international average scale scores for reading, ordered by the size of the gender differences.

All but two of the participating countries had a significant gender difference favouring girls.

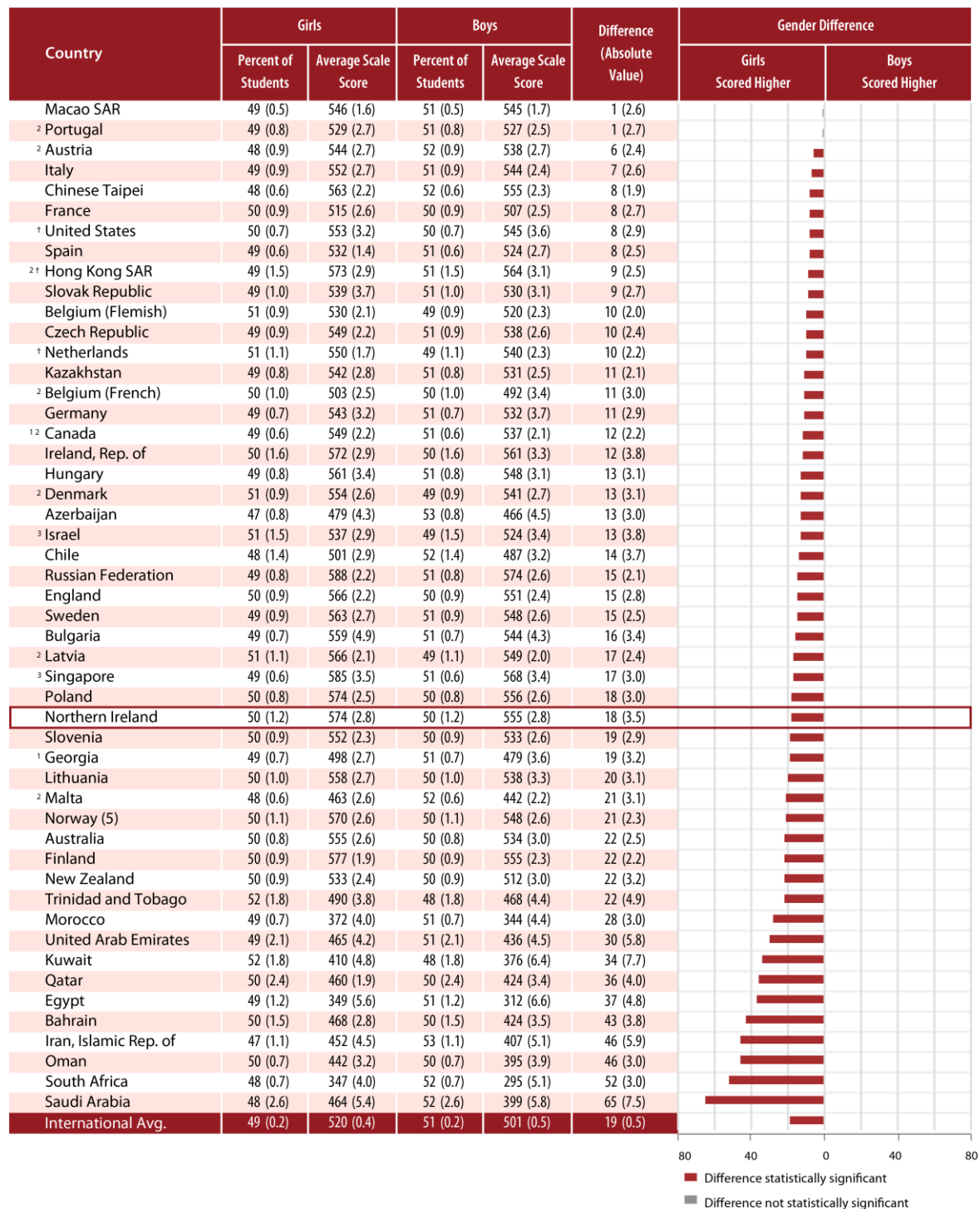
Interpreting the data: gender differences

The PIRLS achievement scales have a centrepoin of 500 and a standard deviation of 100. The tables show the direction and size of any gender difference for each country. Statistically significant differences are shown in colour in the 'Gender Difference' column while non-significant differences are in grey (Macao SAR and Portugal).

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

¹⁵ The pattern across cycles was similar in Poland although the samples are not directly comparable.

Table 2.1 PIRLS 2016 gender differences, reading at ages 9-10



See Appendix C.1 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.4 for sampling guidelines and sampling participation notes †, ‡, and #. () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 1.5, International reading report (Mullis *et al.*, 2017a).

2.1.1 Gender differences in reading attainment

Table 2.1 shows that, in keeping with almost all countries taking part in PIRLS 2016, girls in Northern Ireland scored significantly higher in reading than boys. Girls achieved an average scale score of 574 while boys had an average scale score of 555. The difference of 18 scale points (taking rounding into account) was equal to Poland and close to the international mean difference of 19 scale points.

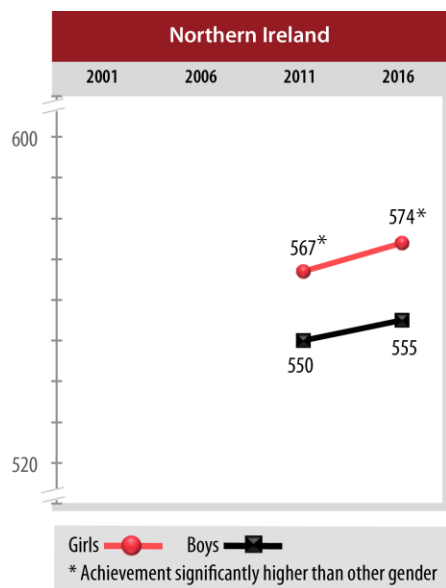
The results revealed that girls in all comparator countries significantly outperformed boys. Canada, the Republic of Ireland, England and Singapore all had a lower scale point difference between girls and boys than Northern Ireland, rounded to 12, 12, 15 and 17 respectively, while New Zealand had a larger scale point difference of 22.

2.1.2 Trends in gender differences in reading attainment

Figure 2.1 shows that girls performed significantly better than boys in Northern Ireland in both 2011 and in 2016. The *difference* between girls and boys has increased slightly, by two scale points, from 16 to 18 between cycles¹⁶.

Internationally, the *difference* between the scale scores of girls and boys increased, on average, by three scale points, from 16 to 19 between 2011 and 2016.

Figure 2.1 Trends in reading attainment by gender in Northern Ireland



Source: Exhibit 1.6, International reading report (Mullis *et al.*, 2017a).

¹⁶ The difference between boys' and girls' scores is most accurately reported as 18 scale score points. Although the attainment scores in Figure 2.1 suggest a 19 point difference in 2016 between girls and boys, this is due to rounding. Similarly, the absolute difference in 2011 was 16 points.

In comparator countries, although a significant gender difference in reading attainment has been apparent in all cycles of PIRLS for each comparator country¹⁷, some appear to be closing the gap to a greater extent. Figure 2.2 indicates that England showed the largest reduction (8 scale points) in the difference between girls' and boys' average scale scores between 2011 and 2016 compared to Northern Ireland and the other comparator countries. England's difference decreased from 23 scale points in 2011 to a 15 scale point difference in 2016. While the average score of boys in England increased by 11 scale points between 2011 and 2016 it is the much smaller increase in the girls' score, only three scale points, that largely accounts for the reduced gap between genders.

In the Republic of Ireland, the difference in the average scale score for girls and boys decreased by three¹⁸ scale points between 2011 and 2016. In New Zealand, the difference in the average scale score for girls and boys increased by two¹⁹ scale points between 2011 and 2016. In Singapore and Canada, there has been no change in the difference between girls' and boys' average attainment scores²⁰.

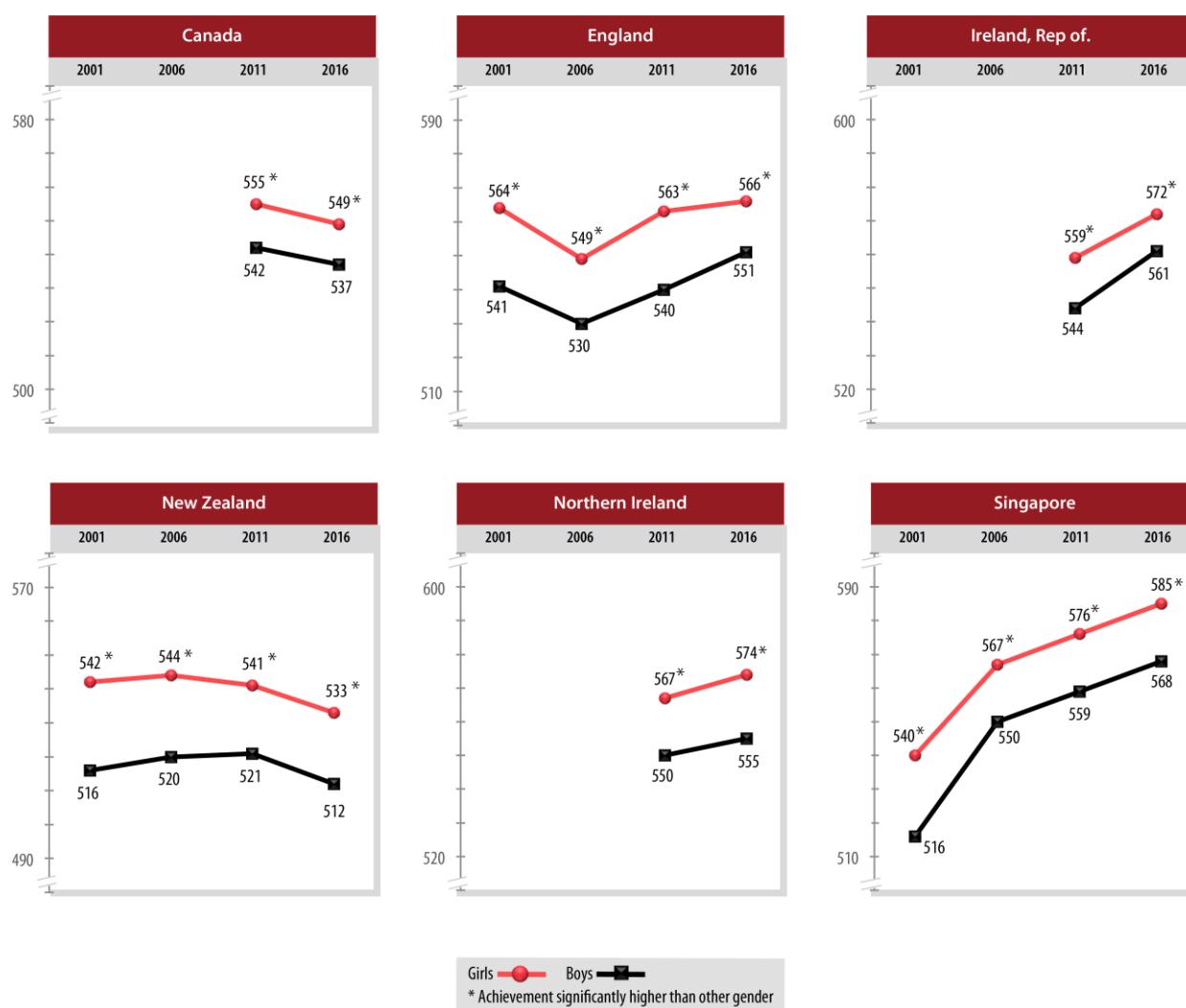
¹⁷ Poland's results from 2006 and 2011 PIRLS are not comparable to 2016; therefore trends cannot be measured.

¹⁸ The difference between boys' and girls' scores in the Republic of Ireland is most accurately reported as 12 scale score points in 2016. Although the attainment scores in Figure 2.2 suggest an 11 point difference, this is due to rounding.

¹⁹ The difference between boys' and girls' scores in New Zealand is most accurately reported as a 22 scale score points in 2016. Although the attainment scores in Figure 2.2 suggest a 21 point difference, this is due to rounding.

²⁰ Although the attainment scores in Figure 2.2 suggest a 1 point difference, this is due to rounding.

Figure 2.2 Trends in reading attainment by gender in comparator countries



Source: Exhibit 1.6, International reading report (Mullis *et al.*, 2017a).

2.2 Conclusion

A gender difference exists in reading attainment in PIRLS, with girls on average performing better than boys. This can be seen in Northern Ireland, across all comparator countries, and internationally. This gender difference has been apparent across both cycles of PIRLS for Northern Ireland and for the previous cycles for the applicable comparator countries.

When compared with other subjects, it is interesting to note that there was no significant difference between the average attainment of boys and girls in either mathematics or science in TIMSS 2015 in Northern Ireland. In fact, in science, girls and boys actually had the same average attainment score. No gender differences were seen in TIMSS 2011 either. Internationally, in cases where there was a significant gender difference in mathematics, it tended to favour boys.

With regard to the comparator countries, Canada and England had a significant gender difference in mathematics in TIMSS 2015, favouring boys, but no comparator country showed a gender difference in science.

In PISA 2015, which reports on the abilities of 15-year-olds in scientific, mathematical and reading literacy, boys in Northern Ireland had a significantly lower average reading score than girls, but there was no significant difference between boys and girls in either mathematics or science. The difference in reading scores in PISA 2015 in Northern Ireland was lower than many countries internationally, including Singapore, England, Canada, Poland and New Zealand.

Since PIRLS 2011, the average difference between boys and girls in Northern Ireland has increased very slightly from 16 to 18 scale points in 2016, but standard errors suggest that this difference is unlikely to be significant. Among comparator countries, the difference between the performance of girls and boys in England has reduced the most since 2011, (decreasing from a 23 to a 15 scale points difference), although girls still perform significantly better than boys.

3 Distribution of attainment in PIRLS 2016

Chapter outline

This chapter outlines the distribution of attainment in reading in Northern Ireland in Year 6 ages 9-10 in PIRLS 2016. It describes the PIRLS ‘benchmarks’ of attainment and the proportions of Northern Ireland’s pupils reaching each benchmark, and provides examples of questions at each of the benchmarks.

In addition, the chapter shows the score distributions for reading for Northern Ireland and the subset of six main comparator countries (Canada, England, New Zealand, Poland, the Republic of Ireland and Singapore).

Key findings

- Over a fifth of pupils in Northern Ireland (22 per cent) reached the ‘Advanced International Benchmark’ in reading, the third highest percentage internationally.
- Only three per cent of pupils in Northern Ireland failed to reach the ‘Low International Benchmark’. In comparison, the international average was four per cent.
- There was a significant²¹ increase in the percentage of pupils in Northern Ireland reaching the ‘Advanced International Benchmark’ in PIRLS 2016 compared with 2011 (22 per cent in 2016; 19 per cent in 2011).
- In Northern Ireland, there was a relatively wide spread of attainment for reading between the highest and the lowest attainers. Only one of the comparator countries, New Zealand, had a greater gap in mean scores between the highest and lowest attainers.

²¹ Throughout this report, the term ‘significant’ refers to statistical significance.

3.1 Distribution of attainment in PIRLS

In PIRLS, achievement outcomes for each country are reported as an average scale score, as outlined in Chapter 1. In addition to knowing how well pupils in Northern Ireland performed overall (Chapter 1) and across different content and cognitive domains assessed in PIRLS (see Chapter 4), it is also important, for the purposes of teaching and learning, to examine the spread in performance between the highest and lowest achievers. Amongst countries with similar mean scores, there may be differences in the percentages of high- and low-scoring pupils (the highest and lowest attainers). A country with a wide spread of attainment may have large proportions of pupils who are underachieving as well as pupils performing at the highest levels. A country with a lower spread of attainment may have fewer very high achievers but may also have fewer underachievers.

The first way of examining the spread of attainment is by looking at Northern Ireland's performance at each of the PIRLS 'International Benchmarks' (that is, the levels of attainment within the overall achievement).

Table 3.1 below summarises the International Benchmarks for reading.

Interpreting the data: International Benchmarks

The PIRLS achievement scale summarises pupil performance on a scale with a centrepoint of 500 and a standard deviation of 100, and reports 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 International Benchmark typically know and can do in the target subject.

Table 3.1 Summary of International Benchmarks for reading

<p>● Advanced International Benchmark</p>	
625	<p><i>When reading relatively complex Literary Texts, students can:</i></p> <ul style="list-style-type: none"> • Interpret story events and character actions to describe reasons, motivations, feelings, and character development with full text-based support • Begin to evaluate the effect on the reader of the author’s language and style choices <p><i>When reading relatively complex Informational Texts, students can:</i></p> <ul style="list-style-type: none"> • Distinguish and interpret complex information from different parts of text, and provide full text-based support • Integrate information across a text to explain relationships and sequence activities • Begin to evaluate visual and textual elements to consider the author’s point of view
<p>○ High International Benchmark</p>	
550	<p><i>When reading relatively complex Literary Texts, students can:</i></p> <ul style="list-style-type: none"> • 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, traits, and feelings as they develop across the text • Recognize the use of some language features (e.g. metaphor, tone, imagery) <p><i>When reading relatively complex Informational Texts, students can:</i></p> <ul style="list-style-type: none"> • 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 and make generalizations about content and textual elements
<p>● Intermediate International Benchmark</p>	
475	<p><i>When reading a mix of simpler and relatively complex Literary Texts, students can:</i></p> <ul style="list-style-type: none"> • Independently locate, recognize, 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, recognize evidence, and give examples • Begin to recognize language choices <p><i>When reading a mix of simpler and relatively complex Informational Texts, students can:</i></p> <ul style="list-style-type: none"> • Locate and reproduce two or three pieces of information from text • Make straightforward inferences to provide factual explanations • Begin to interpret and integrate information to order events
<p>○ Low International Benchmark</p>	
400	<p><i>When reading predominantly simpler Literary Texts, students can:</i></p> <ul style="list-style-type: none"> • Locate and retrieve explicitly stated information, actions, or ideas • Make straightforward inferences about events and reasons for actions • Begin to interpret story events and central ideas <p><i>When reading predominantly simpler Informational Texts, students can:</i></p> <ul style="list-style-type: none"> • Locate and reproduce explicitly stated information from text and other formats (e.g., charts, diagrams) • Begin to make straightforward inferences about explanations, actions, and descriptions

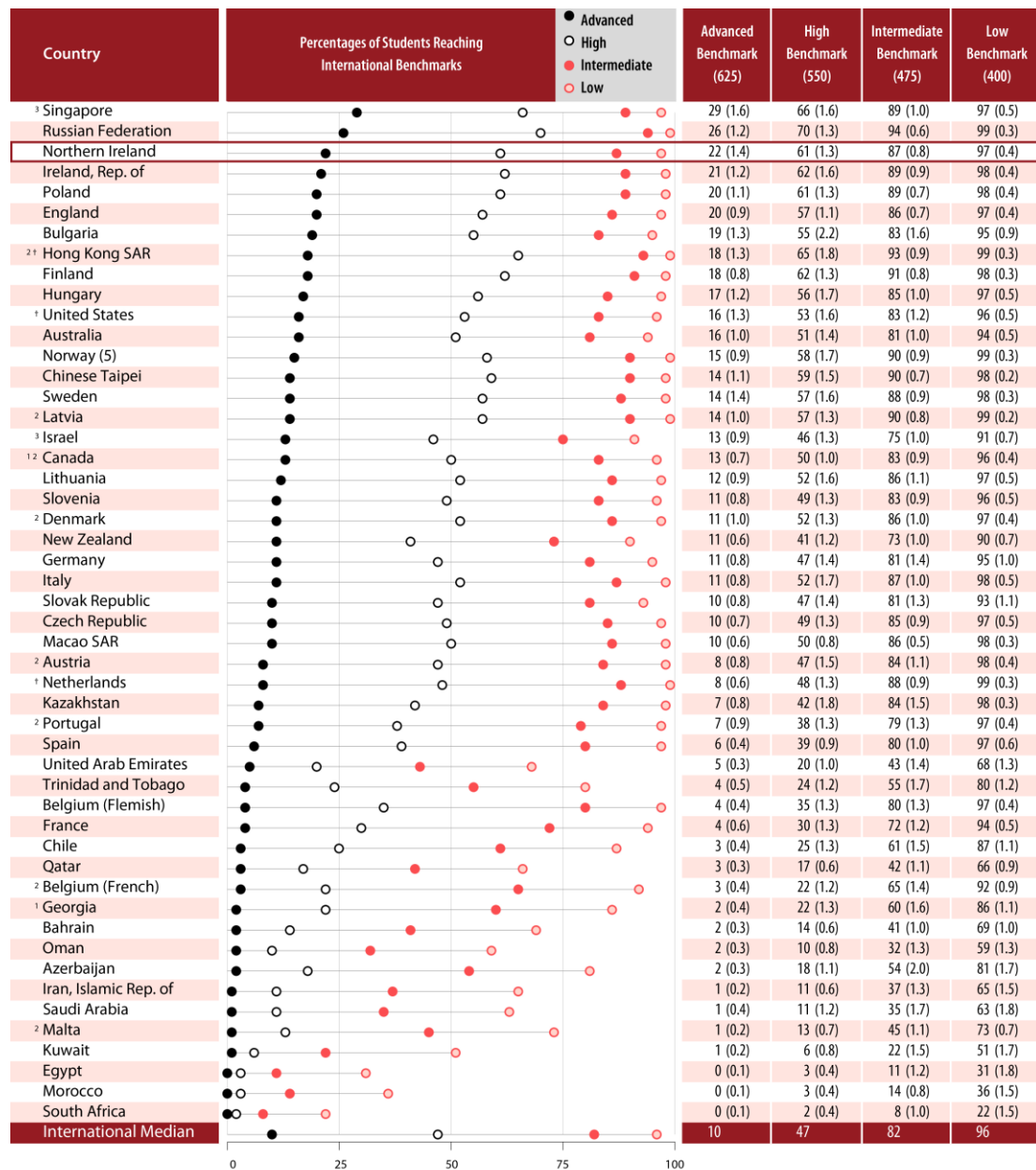
Source: Exhibits 2.3, 2.4, 2.5 and 2.6, International reading report (Mullis *et al.*, 2017a).

Table 3.2 shows the percentage of pupils reaching each benchmark for reading in Northern Ireland. The outcome for Northern Ireland is then discussed.

Interpreting the data: performance at the International Benchmarks

This table indicates the percentage of pupils reaching each of the four benchmarks; the information is summarised in the series of dots on the chart. Percentages are cumulative (reading the chart from left to right). For each country, the black dot shows the percentage reaching at least the Advanced International Benchmark. The clear dot then shows the percentage reaching at least the High International Benchmark (and this figure includes those who reached the Advanced International Benchmark). The darker shaded dot indicates the percentage reaching at least the Intermediate International Benchmark (it also includes those in the two previous categories). The lighter shaded dot shows cumulatively how many pupils reached at least the Low International Benchmark. When compared to the 100 per cent mark, the position of the lighter shaded dot also indicates the percentage that did not reach any of the listed benchmarks.

Table 3.2 Percentages reaching each benchmark for reading



See Appendix C.1 in the international report for target population coverage notes †, ‡, and #. See Appendix C.4 for sampling guidelines and sampling participation notes †, ‡, and #. () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 2.1, International reading report (Mullis *et al.*, 2017a).

3.1.1 Distribution in reading attainment in Northern Ireland: PIRLS 2016 International Benchmarks

In Northern Ireland, 22 per cent of Year 6 pupils reached the Advanced International Benchmark in reading, with a further 39 per cent reaching the High International Benchmark (i.e. 61 per cent in total reached at least the High International Benchmark). Only Singapore and Russia had a greater percentage of pupils reaching the Advanced International Benchmark in reading with 29 and 26 per cent reaching that level, respectively, and 66 and 70 per cent respectively reaching at least the High International Benchmark (Table 3.2).

Compared with 2011, there was a significant increase in the percentage of pupils in Northern Ireland reaching the Advanced International Benchmark (in 2011, this was three percentage points lower at 19 per cent). There was also a three per cent increase since 2011 in the proportion of pupils reaching the High International Benchmark (from 58 per cent in 2011 to 61 per cent in 2016), though this difference was not significant. The percentages reaching the Intermediate and Low International Benchmarks did not change for Northern Ireland between 2011 and 2016.

Among the main comparator countries, the Republic of Ireland saw a significant increase since 2011 in the percentage of pupils reaching the Advanced International Benchmark (an increase of 5 percentage points). New Zealand saw a significant decrease of three percentage points and for Canada and England there were no significant differences. (Changes to Poland's sample population and test materials mean comparisons are not possible between 2011 and 2016.)

At the other end of the scale, 97 per cent of pupils in Northern Ireland reached at least the Low International Benchmark for Year 6 reading, with only three per cent achieving below that level. This was the same as in 2011. In the two countries performing significantly better than Northern Ireland, Singapore and the Russian Federation, 97 and 99 per cent of pupils reached at least the Low International Benchmark, respectively. This was also the finding in 2011. Among the other comparator countries, there was a significant increase in England in the percentage of pupils attaining at least the Low International Benchmark (an increase of 2 percentage points to 97 per cent). Canada and New Zealand both had significant decreases in this figure, each falling by two percentage points to 96 and 90 per cent, respectively. This represents a higher proportion of pupils failing to reach the lowest benchmark than in 2011. (Finland, the United States and Germany were among nine countries which also showed a significant decrease in the percentage of pupils reaching at least the Low International Benchmark.)


Figures 3.1 to 3.4 below provide some examples of reading items from PIRLS 2016 at each of the International Benchmarks. These items cover a range of content and cognitive demands. Open response type questions are shown here, but there are also a number of multiple choice questions included at each level. Chapter 4 provides more information.

Figure 3.1 Example reading item – Advanced International Benchmark

Purpose: Literary Experience
Process: Interpret and Integrate Ideas and Information
Description: Interpret ideas from across the text to identify a character trait and support it with 2 examples

13. You learn what Macy is like from the things she does.

Describe what Macy is like and give two examples from the story that show this.

 Macy is determined because she does not give up when the red hen is naughty and she continues to try different ways to get the hen in the cage.

The answer shown illustrates the type of student response that would receive full credit (3 points).

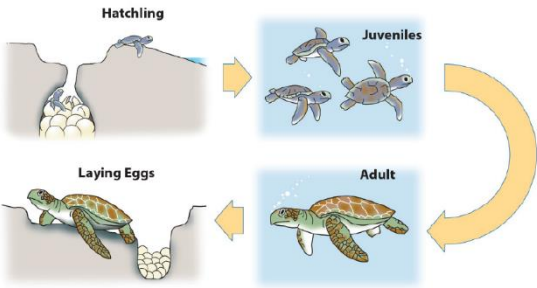
Source: Exhibit 2.3.1, International reading report (Mullis *et al.*, 2017a).


Figure 3.2 Example reading item – High International Benchmark

Purpose: Acquire and Use Information
Process: Evaluate and Critique Content and Textual Elements
Description: Evaluate the content of a diagram and interpret its meaning

14. A diagram from the article is shown below.

What does this diagram help you to understand?



 what all the parts of the life cycle are

The answer shown illustrates the type of student response that would receive full credit (1 point).

Source: Exhibit 2.4.2, International reading report (Mullis *et al.*, 2017a).

Figure 3.3 Example reading item – Intermediate International Benchmark

Purpose: Literary Experience
Process: Make Straightforward Inferences
Description: Make a straightforward inference and reproduce 2 of a character's actions

5. What does Reuben do differently after he gets the pearl?
Write two things.

① 1. He doesn't play with his friends.

② 2. He reads about pearls.

The answer shown illustrates the type of student response that would receive full credit (2 points).

Source: Exhibit 2.5.10, International reading report (Mullis *et al.*, 2017a).

Figure 3.4 Example reading item – Low International Benchmark

Purpose: Literary Experience
Process: Focus on and Retrieve Explicitly Stated Information
Description: Locate and reproduce an explicitly stated reason for a character's words

3. Why does the girl say the pearl really belongs to Josh?

① He found it.

The answer shown illustrates the type of student response that would receive full credit (1 point).

Source: Exhibit 2.6.3, International reading report (Mullis *et al.*, 2017a).

3.1.2 Distribution in reading attainment: score distribution

The second way in which the spread of performance can be examined is by looking at the distribution of PIRLS scale scores. Table 1.2 in Chapter 1 shows the PIRLS scores achieved by pupils at different percentiles. The 5th percentile is the score at which five per cent of pupils score lower, while the 95th percentile is the score at which five per cent score higher. The difference between the highest and lowest attainers at the 5th and 95th percentiles is a better measure of the spread of scores for comparing countries than using the lowest and highest scoring pupils, as the latter comparison may be affected by a small number of pupils in a country with unusually high or low scores. Comparison of the 5th and the 95th percentiles gives a better indication of the typical spread of attainment.

The score of pupils in reading in Northern Ireland at the 5th percentile was 420, while the score at the 95th percentile was 687: a difference of 267 score points. Table 3.3 shows the difference between the highest and lowest attaining pupils (95th percentile – 5th percentile) in Northern Ireland and the six comparator countries. Of the comparator countries, only New Zealand had a wider score distribution than Northern

Ireland, with a difference of 300 score points between the highest and lowest attainers. Among the comparator countries, the narrowest gap between the highest and lowest attainers was in Poland, where the range was 239 score points.

Table 3.3 Year 6 reading score difference between the highest and lowest attainers

Country	Year 6 reading scale score	
	Average scale score	Range ¹
Singapore	576	263
Republic of Ireland	567	243
Northern Ireland	565	267
Poland	565	239
England	559	259
Canada	543	250
New Zealand	523	300
International Centrepoint	500	n/a

¹Difference between the highest and lowest attaining pupils (95th percentile – 5th percentile)

Source: Appendix F.1 International reading report (Mullis *et al.*, 2017a).

3.2 Conclusion

Since 2011, there has been a significant increase in the percentage of pupils in Northern Ireland reaching the Advanced International Benchmark in reading. An increase in the percentage of pupils at the High International Benchmark was also seen, but was not significant. The proportion of pupils achieving at least the Lowest International Benchmark remained unchanged from the previous cycle at 97 per cent.

The distribution of scores in Northern Ireland was relatively wide, with only one comparator country having a greater difference in scores between the highest and lowest attainers.

4 Attainment by content and skill in Northern Ireland

Chapter outline

This chapter focuses on performance in Northern Ireland in reading in Year 6 at ages 9-10 in PIRLS 2016. It summarises pupils' reading attainment across the PIRLS content and skill domains outlined in the *PIRLS 2016 Assessment Framework*²².

PIRLS assesses two reading purposes (*Literary* and *Informational*) and two reading comprehension process domains (*Retrieving and Straightforward Inferencing* and *Interpreting, Integrating and Evaluating*). More information about each of these domains is given in sections 4.1 to 4.5. Further information about international performance on these domains is available in the international report.

This chapter also reports any gender differences across these purposes and processes.

Key findings

- **Reading purposes** – Compared to the overall national average reading score, pupils in Northern Ireland:
 - scored significantly²³ better on *Literary* purposes
 - scored significantly less well on *Informational* purposes
- **Reading comprehension processes** – Compared to the overall national average reading score, pupils in Northern Ireland:
 - scored significantly less well on the *Retrieving and Straightforward Inferencing* scale
 - were not significantly different from the national average on *Interpreting, Integrating and Evaluating*.
- Between 2011 and 2016, there was no significant change in Northern Ireland's scores for reading purposes or for reading comprehension processes.
- In Northern Ireland, girls' scores were significantly higher than boys' in both of the reading purposes and both of the reading comprehension processes. This was also the case in all six comparator countries.

²² Mullis, I.V.S. & Martin, M.O. (Eds.) (2015).

²³ Throughout this report, the term 'significant' refers to statistical significance.

4.1 The reading purposes and reading comprehension processes in PIRLS 2016

Reading: what PIRLS assesses at ages 9-10

The two reading purposes assessed in Year 6 reading are:

- Reading for literary experience
- Reading to acquire and use information.

The four reading comprehension processes are:

- to focus on and retrieve explicitly stated information
- to make straightforward inferences
- to interpret and integrate ideas and information
- to evaluate and critique content and textual elements.

These are combined to form two reading comprehension process domains:

- Retrieving and Straightforward Inferencing
- Interpreting, Integrating and Evaluating.

More information is available in the PIRLS Assessment Framework.

Interpreting the data: numerical scales

In this section, pupils' attainment across the PIRLS purposes and comprehension process domains for reading is discussed. To allow this comparison, scale scores are generated for each domain. 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 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.

4.2 Attainment by reading purposes (content)

Table 4.1 presents the average attainment of Northern Ireland in the two purposes for reading identified in PIRLS 2016, *reading for literary experience* and *reading to acquire and use information*, as compared with overall reading achievement. In this table, and in others in this chapter, an additional three countries which had an overall mean scale score that was higher than Northern Ireland are included, alongside the comparator countries.

Generally, the participating countries with the highest overall reading attainment in PIRLS 2016 also had the highest attainment in both Literary and Informational reading.²⁴

The performance of pupils in Northern Ireland differed between the two purposes for reading. On Literary purposes, their scores were significantly higher than their overall PIRLS score and on Informational purposes, their scores were significantly lower than their overall PIRLS score.

None of the higher performing countries, or those similar to Northern Ireland overall, followed a similar pattern to Northern Ireland regarding reading purposes. Hong Kong's relative attainment on the two reading purposes was the opposite of Northern Ireland's, with pupils scoring significantly less well on Literary purposes and significantly higher on Informational purposes when compared to the overall PIRLS score. The Russian Federation, Singapore and Finland all scored significantly better on Informational reading.

Three comparator countries, England, Canada and New Zealand, followed a similar pattern to Northern Ireland, scoring significantly better on Literary purposes and significantly less well on Informational purposes. The Republic of Ireland also scored significantly better on Literary purposes, but its score for Informational purposes was not significantly different from its mean score overall.

As stated above, Singapore scored significantly better on Informational purposes, but its scores for Literary purposes were not significantly different from its overall country mean.

For Poland, neither the scores for Literary nor Informational purposes was significantly different from its overall country mean.

²⁴ See Exhibit 3.1, International reading report (Mullis *et al.*, 2017a)..

Table 4.1 Year 6 attainment in reading purposes

Country	Overall PIRLS Average Scale Score	Literary		Informational		Difference	
		Average Scale Score	Difference from Overall PIRLS Score	Average Scale Score	Difference from Overall PIRLS Score	Purpose Score Lower than Overall PIRLS Score	Purpose Score Higher than Overall PIRLS Score
Russian Federation	581 (2.2)	579 (2.2)	-2 (1.1)	584 (2.3)	4 (1.0)	○	
³ Singapore	576 (3.2)	575 (3.3)	-2 (1.3)	579 (3.3)	2 (1.1)	○	
^{2†} Hong Kong SAR	569 (2.7)	562 (3.0)	-6 (1.3)	576 (2.8)	8 (1.1)	○	
Ireland, Rep. of	567 (2.5)	571 (2.7)	5 (1.4)	565 (2.7)	-2 (1.1)	○	
Finland	566 (1.8)	565 (1.9)	-1 (1.0)	569 (2.0)	3 (0.7)	○	
Poland	565 (2.1)	567 (2.2)	2 (1.3)	564 (2.6)	0 (1.5)		
Northern Ireland	565 (2.2)	570 (2.5)	6 (1.4)	561 (2.3)	-4 (1.4)	⬇	
England	559 (1.9)	563 (2.2)	4 (1.4)	556 (2.1)	-2 (0.9)	⬇	
^{1‡} Canada	543 (1.8)	547 (1.9)	4 (0.8)	540 (1.9)	-3 (0.8)	⬇	
New Zealand	523 (2.2)	525 (2.3)	3 (1.1)	520 (2.4)	-2 (0.9)	⬇	

Scale score significantly higher than overall PIRLS score ○
 Scale score significantly lower than overall PIRLS score ⬇

Legend: ■ Literary Reading, ■ Informational Reading

See Appendix C.1 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.4 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 reading report (Mullis *et al.*, 2017a).

4.3 Attainment by reading comprehension processes (skills)

The survey also provides attainment scale scores in the two reading comprehension process domains identified in PIRLS 2016 *retrieving and straightforward inferencing* and *interpreting, integrating and evaluating*.

Generally, the PIRLS 2016 participants with the highest attainment overall also had the highest attainment on both reading comprehension process scales.²⁵

Pupils in Northern Ireland scored significantly lower on the Retrieving and Straightforward Inferencing scale relative to their overall mean and showed no significant difference on the Interpreting, Integrating and Evaluating scale compared to their overall mean.

Of the higher performing countries, and those similar to Northern Ireland overall, none followed the same pattern as Northern Ireland in terms of achievement by reading comprehension processes.

For the Russian Federation, Hong Kong and the Republic of Ireland, both reading comprehension process scores were statistically similar to their overall scores. Singapore scored significantly lower than its overall mean on the Retrieving and Straightforward Inferencing scale and significantly higher than its overall mean on the

²⁵ See Exhibit 3.2, International reading report (Mullis *et al.*, 2017a).

Interpreting, Integrating and Evaluating scale. This was also the case for other comparator countries: Poland, England and Canada.

New Zealand scored statistically higher on Interpreting, Integrating and Evaluating but there was no significant difference between its attainment score on Retrieving and Straightforward Inferencing and its overall mean.

Finland was the only high achieving country which scored significantly higher on Retrieving and Straightforward Inferencing than its overall mean and significantly lower on Interpreting, Integrating and Evaluating.

Table 4.2 Year 6 attainment in reading comprehension processes

Country	Overall PIRLS Average Scale Score	Retrieving and Straightforward Inferencing		Interpreting, Integrating, and Evaluating		Difference	
		Average Scale Score	Difference from Overall PIRLS Score	Average Scale Score	Difference from Overall PIRLS Score	Process Score Lower than Overall PIRLS Score	Process Score Higher than Overall PIRLS Score
Russian Federation	581 (2.2)	581 (2.3)	1 (0.9)	582 (2.2)	1 (1.5)		
³ Singapore	576 (3.2)	573 (3.1)	-3 (1.0) ▼	579 (3.2)	3 (0.7) ●		
²¹ Hong Kong SAR	569 (2.7)	568 (2.7)	-1 (1.1)	568 (2.9)	0 (0.9)		
Ireland, Rep. of	567 (2.5)	566 (2.6)	-1 (1.1)	569 (2.9)	3 (1.4)		
Finland	566 (1.8)	572 (2.0)	6 (0.9) ●	562 (1.8)	-4 (0.7) ▼		
Poland	565 (2.1)	560 (2.1)	-5 (1.1) ▼	570 (2.4)	5 (1.7) ●		
Northern Ireland	565 (2.2)	562 (2.1)	-3 (1.1) ▼	567 (2.2)	3 (1.4)		
Chinese Taipei	559 (2.0)	560 (1.9)	1 (0.9)	558 (2.2)	-1 (1.3)		
England	559 (1.9)	556 (2.0)	-3 (0.7) ▼	561 (1.9)	3 (0.7) ●		
^{1,2} Canada	543 (1.8)	541 (1.8)	-2 (0.6) ▼	545 (1.8)	2 (0.7) ●		
New Zealand	523 (2.2)	521 (2.3)	-1 (1.0)	525 (2.4)	2 (0.8) ●		

Scale score significantly higher than overall PIRLS score ●
 Scale score significantly lower than overall PIRLS score ▼

See Appendix C.1 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.4 for sampling guidelines and sampling participation notes †, ‡, and §.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Source: Exhibit 3.2, International reading report (Mullis *et al.*, 2017a).

4.4 Difference in attainment between 2011 and 2016

For both reading purposes and both reading comprehension processes, there was no significant difference in Northern Ireland’s scores from 2011 to 2016.

However, this was not the case for the comparator countries²⁶. For example, the Republic of Ireland scored significantly higher in 2016 than in 2011 on both the reading purposes²⁷ and both reading comprehension processes²⁸. Conversely, New Zealand scored significantly lower in 2016 than in 2011 on both the reading purposes and

²⁶ As Poland’s 2006 and 2011 PIRLS data is not comparable to 2016, trend data cannot be measured.

²⁷ See Exhibit 3.4, International reading report (Mullis *et al.*, 2017a).

²⁸ See Exhibit 3.6, International reading report (Mullis *et al.*, 2017a).

reading comprehension processes. These findings correspond with the significant changes in their scores overall.

England scored significantly higher in 2016 than in 2011 on both the reading purposes and one reading comprehension process (Retrieving and Straightforward Inferencing) but scored the same in 2016 and 2011 on Interpreting, Integrating and Evaluating. Canada's comparative results from 2011 to 2016 were the opposite to England's, with significantly lower scores in 2016 on the reading purposes and one reading comprehension process (Interpreting, Integrating and Evaluating) and with no significant difference in Retrieving and Straightforward Inferencing. Singapore scored significantly higher in 2016 on Informational reading than in 2011 but remained the same for Literary reading and for both of the reading comprehension processes.

Table 4.3 Difference in attainment in reading purposes between 2011 and 2016²⁹

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	Literary				Informational			
	Average Scale Score	Differences Between Years			Average Scale Score	Differences Between Years		
		2011	2006	2001		2011	2006	2001
Canada								
^{1,2} 2016	547 (1.9)	-6 ▼			540 (1.9)	-5 ▼		
² 2011	553 (1.7)				545 (1.6)			
England								
2016	563 (2.2)	10 ▲	22 ▲	1	556 (2.1)	7 ▲	18 ▲	8 ▲
[†] 2011	553 (2.7)		12 ▲	-9	549 (2.6)		11 ▲	1
2006	540 (2.6)			-21 ▼	538 (2.6)			-10 ▼
^{2†} 2001	561 (3.7)				548 (3.6)			
Ireland, Rep. of								
2016	571 (2.7)	14 ▲			565 (2.7)	16 ▲		
2011	557 (2.7)				549 (2.3)			
New Zealand								
2016	525 (2.3)	-8 ▼	-4	-9	520 (2.4)	-9 ▼	-14 ▼	-5
2011	533 (2.2)		4	-1	530 (2.0)		-5	4
2006	529 (2.2)			-6	534 (2.4)			8
2001	535 (4.3)				526 (4.0)			
Northern Ireland								
2016	570 (2.5)	7			561 (2.3)	6		
[†] 2011	564 (2.7)				555 (2.5)			
Singapore								
³ 2016	575 (3.3)	8	21 ▲	44 ▲	579 (3.3)	9 ▲	14 ▲	51 ▲
² 2011	567 (3.5)		13 ▲	36 ▲	569 (3.2)		4	42 ▲
2006	554 (3.1)			23 ▲	565 (3.0)			37 ▲
2001	531 (5.6)				528 (5.1)			

▲ More recent year significantly higher

Blank No significant difference

▼ More recent year significantly lower

See Appendix C.1 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.4 for sampling guidelines and sampling participation notes †, ‡, and §.

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

Source: Exhibit 3.4, International reading report (Mullis *et al.*, 2017a).

²⁹ Comparable trend data is not available for Poland.

Table 4.4 Difference in attainment in the reading comprehension processes between 2011 and 2016³⁰

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	Retrieving and Straightforward Inferencing				Interpreting, Integrating, and Evaluating			
	Average Scale Score	Differences Between Years			Average Scale Score	Differences Between Years		
		2011	2006	2001		2011	2006	2001
Canada								
^{1,2} 2016	541 (1.8)	-2			545 (1.8)	-8 ▼		
² 2011	543 (1.5)				554 (1.5)			
England								
2016	556 (2.0)	10 ▲	19 ▲	7	561 (1.9)	6	19 ▲	5
[†] 2011	546 (2.6)		9 ▲	-3	555 (2.7)		13 ▲	-1
2006	537 (2.7)			-12 ▼	542 (2.6)			-14 ▼
^{2†} 2001	549 (3.4)				556 (3.6)			
Ireland, Rep. of								
2016	566 (2.6)	14 ▲			569 (2.9)	16 ▲		
2011	552 (2.8)				553 (2.3)			
New Zealand								
2016	521 (2.3)	-6 ▼	-6	-3	525 (2.4)	-11 ▼	-12 ▼	-10 ▼
2011	527 (2.0)		0	3	535 (1.9)		-1	1
2006	527 (2.3)			2	537 (2.3)			2
2001	525 (3.9)				534 (3.9)			
Northern Ireland								
2016	562 (2.1)	6			567 (2.2)	5		
[†] 2011	555 (2.5)				562 (2.4)			
Singapore								
³ 2016	573 (3.1)	8	10 ▲	39 ▲	579 (3.2)	9	22 ▲	53 ▲
² 2011	565 (3.4)		2	31 ▲	570 (3.4)		14 ▲	44 ▲
2006	563 (3.2)			29 ▲	557 (2.8)			31 ▲
2001	534 (5.6)				526 (5.1)			

- ▲ More recent year significantly higher
- Blank No significant difference
- ▼ More recent year significantly lower

See Appendix C.1 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.4 for sampling guidelines and sampling participation notes †, ‡, and #.

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

Source: Exhibit 3.6, International reading report (Mullis *et al.*, 2017a).

4.5 Attainment by gender in reading purposes and reading comprehension processes

Table 4.5 shows that, in Northern Ireland, girls scored significantly better than boys in both of the reading purposes and both of the reading comprehension processes. This reflects the general international pattern. In all the comparator countries, girls performed

³⁰ Comparable trend data is not available for Poland.

better than boys on all four scales: reading purposes and reading comprehension processes³¹.

Table 4.5 Attainment in reading purposes and reading comprehension processes by gender

Country	Reading Purposes				Comprehension Processes			
	Literary		Informational		Retrieving and Straightforward Inferencing		Interpreting, Integrating, and Evaluating	
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
¹² Canada	556 (2.3) ○	538 (2.1)	543 (2.5) ○	537 (2.1)	546 (2.2) ○	537 (1.9)	552 (2.2) ○	539 (2.1)
England	572 (2.7) ○	553 (2.5)	562 (2.6) ○	551 (2.7)	563 (2.4) ○	549 (2.5)	569 (2.4) ○	554 (2.3)
Ireland, Rep. of	580 (3.2) ○	563 (3.4)	569 (3.2) ○	561 (3.4)	571 (3.2) ○	561 (3.5)	576 (3.4) ○	562 (3.6)
New Zealand	539 (2.5) ○	512 (3.0)	528 (2.9) ○	512 (3.4)	530 (2.5) ○	512 (3.1)	536 (2.8) ○	513 (2.9)
Northern Ireland	582 (3.0) ○	559 (3.1)	569 (3.1) ○	552 (3.3)	570 (2.6) ○	553 (3.0)	577 (2.6) ○	558 (3.0)
Poland	577 (2.4) ○	556 (2.8)	573 (2.9) ○	556 (3.1)	568 (2.6) ○	551 (2.6)	580 (2.7) ○	559 (2.8)
³ Singapore	586 (3.6) ○	563 (3.7)	586 (3.5) ○	571 (3.7)	580 (3.4) ○	566 (3.6)	589 (3.4) ○	568 (3.4)
International Avg.	522 (0.5) ○	499 (0.5)	519 (0.5) ○	503 (0.5)	520 (0.4) ○	503 (0.5)	520 (0.5) ○	500 (0.5)

○ Average significantly higher than other gender

See Appendix C.1 in the international report for target population coverage notes 1, 2, and 3. See Appendix C.4 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 reading report (Mullis *et al.*, 2017a).

4.6 Conclusion

Chapter 1 indicated that Northern Ireland’s pupils scored above the international average in PIRLS 2016. Even so, within this overall high achievement, areas of relative strength and weakness can be identified, as outlined in this chapter.

In terms of reading purposes, pupils in Northern Ireland performed significantly better on reading for Literary purposes than for Informational purposes, relative to their overall PIRLS score. In a number of higher-achieving countries, pupils did better on Informational reading relative to their overall PIRLS score.

When considering the PIRLS reading comprehension processes, Northern Ireland’s pupils scored significantly lower on Retrieving and Straightforward Inferencing, as compared to their overall score, but there was no significant difference between their score on Interpreting, Integrating and Evaluating and their overall score.

England, Canada and New Zealand’s patterns of attainment were similar to those of Northern Ireland on the reading purposes in comparison to their overall scores.

There have been no significant changes in the profile of Northern Ireland’s performance in the reading purposes or reading comprehension processes since the last cycle of

³¹ See Exhibit 3.7, International reading report (Mullis *et al.*, 2017a).

PIRLS in 2011. Reflecting the international pattern seen over several PIRLS cycles, girls in Northern Ireland performed significantly better than boys in all four areas examined in this chapter (in both reading purposes and both reading comprehension processes).

5 Pupil attitudes and engagement

Chapter outline

This chapter summarises Year 6 pupils' attitudes towards reading in Northern Ireland, and their confidence in reading, compared with their performance as measured by PIRLS 2016. The chapter also explores pupil engagement in reading.

Outcomes for Northern Ireland are compared with those of other participating countries and with a subset of six main comparator countries (Canada, England, New Zealand, the Republic of Ireland, Poland and Singapore) where relevant.

Key findings

- In Northern Ireland, the proportion of pupils who 'Very Much Like Reading' (39 per cent) was lower than the international average (43 per cent). Pupil engagement was in line with the international average (61 and 60 per cent respectively) and pupil confidence was higher than internationally (50 and 45 per cent respectively)³².
- In Northern Ireland, and internationally, pupils who most liked reading had higher average attainment scores than those who did not like reading.
- In Northern Ireland, pupils who were categorised as 'Very Confident' had higher attainment scores than those who were less confident. This was also seen internationally.
- Pupils who were 'Less than Engaged' in their reading lessons were likely to have a lower average attainment score than pupils who were 'Somewhat Engaged' or 'Very Engaged'.
- Compared to the six comparator countries, Northern Ireland had the second highest percentage of pupils categorised as 'Very Engaged' in their reading lessons but the third lowest percentage of pupils feeling 'Very Confident' in reading. However, the percentages for these two categories were greater than the international average in Northern Ireland.

³² No significance tests have been conducted internationally.

5.1 Pupils' attitudes towards reading

Interpreting the data: indices and scales

In order to summarise data from a questionnaire, responses to several related items are sometimes combined to form an index or scale. The respondents to the questionnaire items are grouped according to their responses and the way in which responses have been categorised is shown for each index or scale. The data in an index or scale is often considered to be more reliable and valid than the responses to individual items.

5.1.1 Pupils' attitudes: liking reading

Table 5.1 shows the proportions of pupils categorised as 'Very Much Liking', 'Somewhat Liking' and 'Not Liking' reading for Northern Ireland and for the comparator countries, together with the mean attainment score of pupils in each category of the scale. In this table, countries are listed in descending order of the proportion of pupils expressing the most positive attitude.

Pupils' attitudes were measured by their responses to eight statements about reading and two questions about reading outside of school (included below, Figure 5.1). Responses to these parts of the questionnaire were used to create the 'Students Like Reading' scale, which categorises pupils into three bands: 'Very Much Like Reading', 'Somewhat Like Reading' and 'Do Not Like Reading'. (Details of how pupils were assigned to each band are provided in Table 5.1.) Construction of the scale has changed since 2011, so caution is called for when interpreting trends over time³³.

In 2016, 39 per cent of Year 6 pupils in Northern Ireland were in the highest category: those who 'Very Much Like Reading'. This was lower than the international average (43 per cent) but higher than most comparator countries (Table 5.1). Only the Republic of Ireland and New Zealand, had a higher proportion of pupils in the 'Very Much Like Reading' band for this scale (46 and 44 per cent respectively).

In Northern Ireland, the average attainment score for the 39 per cent of pupils categorised in the 'Very Much Like Reading' band in 2016 was high, at 580. This was higher than the international average of 523, as it was in all comparator countries.

Nineteen per cent of Year 6 pupils were in the 'Do Not Like Reading' category and, at 531, the average attainment score for these pupils was lower than those who 'Very Much Like Reading'.

Although significance tests have not been conducted in the international analysis, based on the size of the standard errors, the differences in achievement scores for Northern Ireland across the three groups are likely to be statistically significant, but the direction of causality

³³ In 2011, pupils answered six statements about reading and how often they engaged in two reading activities outside of school. Based on their responses, they were categorised into three bands: 'Like Reading', 'Somewhat Like Reading' and 'Do Not Like Reading'.

cannot be inferred from this data. It could be that pupils who like reading may perform better in the subject, but this relationship could also work in the opposite direction; that is, pupils who perform better in reading may have a more positive attitude to their lessons.

In Northern Ireland, and internationally, the data mirrors that seen in PIRLS 2011: that is, the less pupils like reading, the lower their attainment. The 'Like Reading' scale has been changed and further developed since 2011 so should be interpreted with caution. Although it may appear that Northern Ireland has a higher proportion of pupils in the highest category (from 29 per cent in 2011 to 39 per cent in 2016), this should be considered alongside the fact that the international average in the top category also rose by 15 percentage points. Firm conclusions cannot be drawn.

Table 5.1 Pupils like reading

Reported by pupils
Students' Reports

Students were scored on the *Students Like Reading* scale according to their degree of agreement with eight statements and how often they did two reading activities outside of school. Students who **Very Much Like Reading** had a score on the scale of at least 10.3, which corresponds to their "agreeing a lot" with four of the eight statements and "agreeing a little" with the other four, as well as doing both reading activities outside of school "every day or almost everyday," on average. Students who **Do Not Like Reading** had a score no higher than 8.3, which corresponds to their "disagreeing a little" with four of the eight statements and "agreeing a little" with the other four, as well as doing both reading activities only "once or twice a month," on average. All other students **Somewhat Like Reading**.

Country	Very Much Like Reading		Somewhat Like Reading		Do Not Like Reading		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Ireland, Rep. of	46 (1.1)	580 (3.0)	40 (1.0)	565 (2.9)	15 (0.8)	534 (4.6)	10.0 (0.04)
New Zealand	44 (1.0)	535 (2.6)	42 (0.7)	520 (2.9)	14 (0.7)	508 (4.2)	10.1 (0.04)
Northern Ireland	39 (1.3)	580 (2.9)	42 (1.0)	567 (2.7)	19 (0.9)	531 (3.8)	9.7 (0.05)
Canada	37 (0.7)	555 (2.2)	45 (0.6)	543 (2.1)	18 (0.5)	525 (2.9)	9.7 (0.03)
England	35 (1.0)	575 (2.5)	45 (0.9)	559 (2.2)	20 (0.9)	530 (3.3)	9.7 (0.04)
Poland	32 (1.1)	570 (3.2)	45 (1.0)	567 (2.8)	23 (1.0)	553 (2.7)	9.6 (0.05)
Singapore	31 (0.8)	598 (3.6)	50 (0.6)	574 (3.3)	19 (0.6)	548 (3.7)	9.6 (0.03)
International Avg.	43 (0.2)	523 (0.5)	41 (0.1)	507 (0.5)	16 (0.1)	486 (1.0)	

This PIRLS questionnaire scale was established in 2016 based on the combined response distribution of all countries that participated in PIRLS 2016. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

Source: Exhibit 10.2, International reading report (Mullis *et al.*, 2017a).

Figure 5.1 Pupils like reading

What do you think about reading? Show how much you agree with each of these statements.

Tick one box for each line.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I like talking to other people about what I read	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I would be happy if someone gave me a book as a present	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I think reading is boring*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) I would like to have more time for reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I enjoy reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) I learn a lot from reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) I like to read things that make me think	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) I like it when a book helps me imagine other worlds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* Reverse coded

How often do you do these things when you are not at school?

Tick one box for each line.

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I read for fun	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I read to find out about things I want to learn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The 'Students Like Reading' scale in 2011 included statements a – e from the first question above, and statement a from the second question. Statements f – h from the first question were also included in the 2011 questionnaire, but formed part of the 'Students Motivated to Read' scale. The integration of these statements into the 'Students Like Reading' scale for 2016 means there is no 'Students Motivated to Read' scale for this cycle.

Source: Exhibit 10.2, International reading report (Mullis *et al.*, 2017a) and adapted from the international version of the PIRLS 2016 Pupil Questionnaire.

5.2 Pupils' confidence in reading

Pupils' confidence was measured by their responses to a set of six statements about reading. Pupils were then categorised into one of three bands. (Details of the statements used and how pupils were assigned to each band are provided in Table 5.2 and Figure 5.2.) As construction of the scale has changed since 2011, it is necessary to exercise caution when interpreting trends between the two cycles.³⁴

Half of the Year 6 pupils in Northern Ireland in PIRLS 2016 were categorised as being 'Very Confident' in reading, 33 per cent as 'Somewhat Confident' in reading and 17 per cent were categorised as 'Not Confident' in reading. Internationally, 45 per cent of students fell into the 'Very Confident' category and 21 per cent in the 'Not Confident' category.

Among the comparator countries, Northern Ireland, with 50 per cent, had the third lowest percentage of pupils in the 'Very Confident' category for reading. However, it was higher than the international average (45 per cent) and similar to Singapore, Canada and England (48 per cent, 51 per cent and 53 per cent respectively). Poland had the highest percentage of pupils in this category (59 per cent), followed by the Republic of Ireland (55 per cent). New Zealand, with 35 per cent, had the lowest proportion of pupils in the 'Very Confident' category.

As with pupil attitudes, the findings show that, within each country, as pupil confidence decreases, so does attainment; pupil attainment in reading is higher among those pupils classified as having a higher level of confidence in the subject. In Northern Ireland, among the pupils who were classified as being 'Very Confident' in reading in PIRLS 2016 (50 per cent), the average attainment score was 598. This average attainment score for pupils in Northern Ireland who were 'Very Confident' in reading was higher than the international average and, among comparator countries, only Singapore had a higher score for this group of pupils (612). Internationally, only one other country had a higher score; this was the Russian Federation with 609.

Among the pupils in Northern Ireland who were classified as 'Not Confident' in reading (17 per cent), the average attainment score was lower at 493. This was higher than the international average of 455.

Although no significance tests have been carried out internationally, the standard errors suggest that the differences in achievement data are likely to be statistically significant in Northern Ireland across the three 'Confidence' categories. However, as with previous scales, the data cannot identify the direction of causality. It could be that pupils who are confident in reading are better at it, or it may be that pupils who are better at reading are more confident in the subject.

The confidence scale has changed slightly since 2011 and, internationally the averages show increases of nine and ten per cent of pupils, respectively, in the highest and lowest confidence bands. Northern Ireland's pupils show increases of 15 and seven per cent in the highest and lowest bands respectively, which may indicate increased confidence overall, but should be interpreted with caution.

³⁴ In 2011, pupils answered seven statements about confidence in reading. Based on their responses, they were categorised into three bands: 'Confident', 'Somewhat Confident' and 'Not Confident'.

Table 5.2 Pupils' confidence in reading

*Reported by pupils
Students' Reports*

Students were scored according to their degree of agreement with six statements on the *Students Confident in Reading* scale. Students **Very Confident** in reading had a score on the scale of at least 10.3, which corresponds to their "agreeing a lot" with three of the six statements and "agreeing a little" with the other three, on average. Students who were **Not Confident** had a score no higher than 8.2, which corresponds to their "disagreeing a little" with three of the six statements and "agreeing a little" with the other three, on average. All other students were **Somewhat Confident** in reading.

Country	Very Confident		Somewhat Confident		Not Confident		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Poland	59 (0.8)	587 (2.3)	29 (0.9)	551 (3.1)	12 (0.6)	490 (4.1)	10.7 (0.04)
Ireland, Rep. of	55 (1.0)	593 (2.6)	31 (0.8)	550 (2.7)	14 (0.8)	505 (4.2)	10.4 (0.04)
England	53 (0.9)	591 (1.9)	31 (0.8)	541 (2.6)	16 (0.5)	488 (3.1)	10.3 (0.03)
Canada	51 (0.6)	574 (1.6)	32 (0.5)	530 (2.4)	17 (0.6)	482 (3.2)	10.2 (0.03)
Northern Ireland	50 (1.1)	598 (2.2)	33 (1.0)	553 (3.0)	17 (0.7)	493 (4.1)	10.2 (0.04)
Singapore	48 (0.9)	612 (2.6)	36 (0.6)	562 (3.1)	16 (0.7)	503 (4.8)	10.1 (0.04)
New Zealand	35 (0.8)	577 (2.5)	41 (0.8)	520 (2.7)	24 (0.7)	457 (3.8)	9.6 (0.03)
International Avg.	45 (0.2)	545 (0.4)	35 (0.1)	503 (0.5)	21 (0.1)	455 (0.6)	

This PIRLS questionnaire scale was established in 2016 based on the combined response distribution of all countries that participated in PIRLS 2016. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

Source: Exhibit 10.3, International reading report (Mullis *et al.*, 2017a).

Figure 5.2 Pupils' confidence in reading

How well do you read? Show how much you agree with each of these statements.

*Tick **one** box for each line.*

	Agree a lot		Agree a little		Disagree a little		Disagree a lot
a) I usually do well in reading -----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>
b) Reading is easy for me -----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>
c) I have trouble reading stories with difficult words* -----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>
d) Reading is harder for me than for many of the children in my class* -----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>
e) Reading is harder for me than any other subject* -----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>
f) I am just not good at reading* -----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>	-----	<input type="checkbox"/>

* Reverse coded

Statements a – e were also used in 2011.

Source: Exhibit 10.3, International reading report (Mullis *et al.*, 2017a) and adapted from the international version of the PIRLS 2016 Pupil Questionnaire.

5.3 Engaging pupils in reading lessons

Pupils' engagement was measured by their responses to nine statements about reading lessons. (Figure 5.3 provides further details of these statements.) Using responses to these statements, a 'Students Engaged in Reading Lessons' scale was created and pupils were categorised into three bands: 'Very Engaged' in reading lessons, 'Somewhat Engaged' in reading lessons and 'Less than Engaged' in reading lessons. Construction of the scale has changed since 2011 so caution is called for when interpreting trends over time³⁵. (Details of how pupils were assigned to each band are provided below, Table 5.3.)

Table 5.3 shows that, in Northern Ireland, 61 per cent of pupils participating in PIRLS 2016 were classified as being 'Very Engaged' in their reading lessons, 34 per cent as being 'Somewhat Engaged' in their reading lessons and four per cent as being 'Less than Engaged' in their reading lessons.

The levels of engagement reported by Northern Ireland's pupils were similar to the international average and the second highest amongst comparator countries in the 'Very Engaged' category. The Republic of Ireland had the highest percentage of pupils, 62 per cent, in the 'Very Engaged' category, while Canada, New Zealand and England all had similar percentages of pupils within this category (58, 58 and 57 per cent respectively). Poland had a lower percentage of pupils categorised as 'Very Engaged' in their reading lessons (49 per cent) and the high-attaining country of Singapore had the lowest proportion of 'Very Engaged' pupils out of all comparator countries at 43 per cent.

In Northern Ireland, pupils who reported being 'Very Engaged' in reading lessons and those who reported being 'Somewhat Engaged' in their reading lessons had similar average attainment scores, 567 and 566 respectively, while pupils who reported being 'Less than Engaged' had a lower average score of 539. In most comparator countries, and internationally, the score patterns for different groups are similar to Northern Ireland's. The exception was Poland where, interestingly, the average attainment score for pupils in the middle band of this scale was 570, compared to those in the highest band whose average attainment score was 562, and average attainment in the lowest band was 552.

³⁵ In 2011, pupils answered seven statements about reading engagement. Based on their responses, they were categorised into three bands: 'Engaged' in reading, 'Somewhat Engaged' in reading and 'Not Engaged' in reading.

Table 5.3 Pupils’ engagement in reading lessons

Students’ Reports

Students were scored according to their degree of agreement with nine statements on the *Students Engaged in Reading Lessons* scale. Students **Very Engaged** in reading lessons had a score on the scale of at least 9.5, which corresponds to their “agreeing a lot” with five of the nine statements and “agreeing a little” with the other four, on average. Students who were **Less than Engaged** had a score no higher than 7.1, which corresponds to their “disagreeing a little” with five of the nine statements and “agreeing a little” with the other four, on average. All other students were **Somewhat Engaged** in reading lessons.

Country	Very Engaged		Somewhat Engaged		Less than Engaged		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Ireland, Rep. of	62 (1.4)	569 (2.6)	34 (1.2)	566 (3.3)	4 (0.5)	553 (8.4)	10.0 (0.06)
Northern Ireland	61 (1.5)	567 (2.6)	34 (1.3)	566 (3.1)	4 (0.5)	539 (10.4)	10.0 (0.06)
Canada	58 (0.8)	550 (2.2)	37 (0.7)	540 (2.5)	4 (0.3)	512 (5.1)	9.9 (0.03)
New Zealand	58 (1.0)	526 (2.3)	38 (0.8)	524 (3.1)	4 (0.4)	501 (8.2)	9.9 (0.04)
England	57 (1.3)	562 (2.2)	38 (1.1)	558 (2.3)	5 (0.4)	530 (6.7)	9.8 (0.05)
Poland	49 (1.3)	562 (2.3)	45 (1.1)	570 (3.0)	6 (0.5)	552 (5.9)	9.5 (0.05)
Singapore	43 (0.8)	579 (3.6)	50 (0.7)	578 (3.2)	8 (0.5)	555 (5.3)	9.2 (0.04)
International Avg.	60 (0.2)	516 (0.4)	35 (0.2)	506 (0.6)	5 (0.1)	490 (1.1)	

This PIRLS questionnaire scale was established in 2016 based on the combined response distribution of all countries that participated in PIRLS 2016. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

Source: Exhibit 10.1, International reading report (Mullis *et al.*, 2017a).

Figure 5.3 Pupils' engagement in reading lessons

Think about the reading you do for school. How much do you agree with these statements about your reading lessons?

*Tick **one** box for each line.*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I like what I read about at school-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) My teacher gives me interesting things to read	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I know what my teacher expects me to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) My teacher is easy to understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I am interested in what my teacher says	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) My teacher likes to hear what I think about what I have read	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) My teacher lets me show what I have learned.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) My teacher does different things to help us learn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) My teacher tells me what to do better when I make a mistake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) The things my teacher asks me to read are difficult	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Very Engaged Somewhat Engaged Less than Engaged

9.5 7.1

Statements a – e were also used in 2011. Statement j was administered in Northern Ireland only, was not included in the engagement scale and was designed to be reverse coded before analysis.

Source: Exhibit 10.1, International reading report (Mullis *et al.*, 2017a) and adapted from the international version of the PIRLS 2016 Pupil Questionnaire.

Changes in the engagement scale between cycles means that engagement data between 2011 and 2016 is not directly comparable. However, internationally, the proportion of pupils in the highest category has increased by 18 per cent whereas in Northern Ireland the proportion has increased by 24 per cent. This may suggest higher levels of engagement in Northern Ireland since 2011, but no firm conclusions can be drawn.

5.4 Conclusion

Overall, pupils in Northern Ireland who were classified in the 'Very Much Like Reading' and 'Very Confident' categories in reading had the highest average attainment. The association between liking the subject and achievement was apparent in most countries participating in PIRLS 2016. The difference in attainment was not as great for pupils who differed in their engagement in reading lessons. Similar patterns between engagement in reading lessons and attainment and attitudes and attainment were seen internationally and among the comparator countries.

As each of the scales above has been altered since 2011, no firm conclusions can be drawn in relation to trends over time, although pupil confidence and engagement appear to have improved when compared to the international averages.

Unlike 2011, in PIRLS 2016, information was not gathered directly from teachers about their approaches to engaging pupils in reading. However, pupil-reported engagement might be related to pupils' experience of classroom instruction, which is discussed further in Chapter 9.

6 Workforce

Chapter outline

This chapter presents findings relating to the education workforce, as reported by teachers and principals. Sections relate to principals' and teachers' qualifications, teachers' major areas of study during training, and professional development. These are followed by sections that examine factors related to teaching and teaching practices including: the extent to which teachers collaborate in order to improve their teaching practice and levels of job satisfaction. Outcomes for Northern Ireland are compared with the international averages, with comparator countries, and where relevant, with those of other high-achieving countries.

Key findings

- Northern Ireland had a high proportion of pupils (80 per cent) attending schools run by principals who have completed a postgraduate university degree, relative to the international average (48 per cent).
- The proportion of pupils taught by teachers who have completed a postgraduate university degree was 19 per cent, and similar to the international average (20 per cent).
- Of the comparator countries, Poland had the highest percentage of pupils attending schools run by principals and taught by teachers who have completed a postgraduate university degree (99 and 100 per cent respectively).
- Of the three specialist areas surveyed (language, pedagogy/teaching reading and reading theory), 69 per cent of pupils in Northern Ireland were taught by teachers who had specialised in language, a proportion similar to the international average (70 per cent).
- The percentage of pupils whose teachers reported being very satisfied with their jobs was higher in Northern Ireland (62 per cent) than in all six comparator countries and higher than the international average (57 per cent).

Interpreting the data: percentages in tables

Most of the data in this chapter is derived from teacher and principal reports. Reported percentages refer to pupils and can usually be interpreted as the percentage of pupils whose teachers or principals reported a particular practice or circumstance.

Year 6 pupils were sampled by class. As a result, the Year 6 Teacher Questionnaire would, in most cases, have been completed by the class teacher of the sampled class.

Interpreting the data: indices and scales

In order to summarise data from a questionnaire, responses to several related items are sometimes combined to form an index or scale. The respondents to the questionnaire items are grouped according to their responses and the way in which responses have been categorised is shown for each index or scale. The data in an index or scale is often considered to be more reliable and valid than the responses to individual items.

6.1 Principals' and teachers' formal education

As part of PIRLS 2016, the surveys completed by principals and teachers included sections regarding their preparedness for managing schools and teaching reading. This data was then used to quantify the percentage of pupils attending schools run by principals, and taught by teachers, with various levels of educational qualifications. Both principals and teachers were asked to indicate the highest level of formal educational qualification they had completed, as shown in Tables 6.1 and 6.2 below.

Eighty per cent of pupils in Northern Ireland attended schools run by principals who have completed a postgraduate university degree. This was higher than the international average (48 per cent).

Of the comparator countries, only Poland had a higher percentage of pupils attending schools run by principals holding postgraduate degrees (99 per cent). Of the remaining five comparator countries, Canada's percentage was the next closest to Northern Ireland's, with 64 per cent. Singapore had 61 per cent of pupils attending schools run by principals with postgraduate degrees. The Republic of Ireland, New Zealand and England had much lower proportions of 42, 30 and 28 per cent, respectively.

The majority of pupils in Northern Ireland participating in PIRLS 2016 (80 per cent) attended schools where their reading teacher had completed a Bachelor's degree or equivalent but had not completed a postgraduate degree. This was higher than the

international average (60 per cent). Nineteen per cent of pupils were taught by reading teachers who had completed a postgraduate university degree; this was below the international average (26 per cent).

In four of the comparator countries, the percentage of pupils taught by reading teachers with a postgraduate degree was lower than in Northern Ireland (Canada 16, England 8, New Zealand 5 and Singapore 9). In the Republic of Ireland and Poland, the percentage of pupils taught by reading teachers with a postgraduate degree was higher than in Northern Ireland, with Poland having the highest percentage (100 per cent) and the Republic of Ireland 26 per cent.

Table 6.1 Principals' formal education

Country	Percent of Students by Principal Education Level			Current Requirements	
	Completed Postgraduate University Degree**	Completed Bachelor's Degree or Equivalent but Not a Postgraduate Degree	Did Not Complete Bachelor's Degree	Teaching Experience	Completion of Specialised School Leadership Training Program
Canada	64 (2.3)	35 (2.3)	0 (0.3)	●	●
England	28 (3.8)	69 (3.9)	3 (1.4)	○	○
Ireland, Rep. of	42 (4.5)	58 (4.5)	1 (0.6)	●	○
New Zealand	30 (3.0)	55 (3.6)	14 (2.7)	●	○
Northern Ireland	r 80 (3.7)	19 (4.1)	1 (0.8)	●	○
Poland	99 (0.7)	1 (0.7)	0 (0.0)	-	-
Singapore	61 (0.0)	37 (0.0)	1 (0.0)	●	●
International Avg.	48 (0.4)	45 (0.4)	7 (0.2)		

** For example, doctorate, master's, or other postgraduate degree.

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

A dash (-) indicates comparable data not available.

An "r" indicates data are available for at least 70% but less than 85% of the students.

● Yes

○ No

Source: Exhibit 8.5, International reading report (Mullis *et al.*, 2017a).

Table 6.2 Reading teachers' formal education

Country	Percent of Students by Teacher Education Level			
	Completed Postgraduate University Degree**	Completed Bachelor's Degree or Equivalent but Not a Postgraduate Degree	Completed Post-Secondary Education but Not a Bachelor's Degree	No Further than Upper-Secondary Education
Canada	16 (1.8)	84 (1.8)	0 (0.0)	0 (0.0)
England	8 (2.2)	92 (2.1)	0 (0.0)	0 (0.3)
Ireland, Rep. of	26 (3.6)	74 (3.6)	0 (0.0)	0 (0.0)
New Zealand	5 (1.3)	82 (2.4)	13 (2.3)	0 (0.0)
Northern Ireland	19 (3.4)	80 (3.5)	1 (0.7)	0 (0.0)
Poland	100 (0.3)	0 (0.0)	0 (0.3)	0 (0.0)
Singapore	9 (1.5)	72 (2.7)	18 (2.4)	1 (0.5)
International Avg.	26 (0.3)	60 (0.4)	11 (0.3)	3 (0.1)

** For example, doctorate, master's, or other postgraduate degree.

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

Source: Exhibit 8.1, International reading report (Mullis *et al.*, 2017a).

6.2 Teachers' educational emphasis and specialisms during training

Teachers were asked to indicate the main area they had studied in post-secondary education in order to determine the percentage of pupils taught by teachers specialising in language, pedagogy/teaching of reading or reading theory. The majority of pupils in Northern Ireland were taught by teachers who specialised in language (69 per cent). This is similar to the international average of 70 per cent. Fifty-six per cent of pupils had teachers with a specialism in pedagogy/teaching of reading³⁶ and 26 per cent of pupils had teachers specialising in reading theory³⁷. These percentages are lower than the international averages which were 64 per cent for pedagogy/teaching of reading and 32 per cent for reading theory.

Among the comparator countries, Poland had the highest percentage of pupils taught by teachers within a single area of subject specialism, with 94 per cent of pupils taught by teachers who had specialised in language. Singapore had the highest proportion of pupils taught by subject specialists in the area of pedagogy/teaching of reading (80 per cent) and the Republic of Ireland had the highest percentage of pupils taught by subject specialists in the area of reading theory (36 per cent). These percentages are all higher than the international averages for each area of subject specialism.

In Northern Ireland, and in comparator countries, there does not appear to be any clear pattern in pupils' attainment in relation to the different areas of emphasis in their teachers' formal training and education.

Table 6.3 Teachers' major area of study during training (reading)

Country	Language			Pedagogy / Teaching Reading			Reading Theory		
	Percent of Students		Average Achievement	Percent of Students		Average Achievement	Percent of Students		Average Achievement
	Area Emphasized	Area Not Emphasized	Area Not Emphasized	Area Emphasized	Area Not Emphasized	Area Not Emphasized	Area Emphasized	Area Not Emphasized	
Canada	55 (2.3)	541 (2.3)	547 (2.3)	61 (2.2)	543 (2.3)	544 (2.7)	20 (1.8)	543 (3.9)	543 (2.1)
England	74 (3.5)	558 (2.3)	559 (4.1)	65 (3.5)	561 (2.8)	554 (4.2)	16 (2.6)	561 (7.7)	558 (2.5)
Ireland, Rep. of	69 (4.1)	568 (2.6)	563 (4.9)	76 (3.6)	567 (3.2)	565 (5.0)	36 (4.1)	565 (5.4)	567 (2.9)
New Zealand	70 (2.9)	525 (2.7)	532 (4.8)	73 (2.6)	531 (2.9)	515 (6.3)	39 (3.1)	528 (4.2)	525 (4.2)
Northern Ireland	69 (3.8)	564 (2.9)	564 (4.8)	r 56 (5.0)	567 (3.6)	561 (3.7)	r 26 (4.3)	571 (5.9)	561 (2.8)
Poland	94 (1.8)	565 (2.3)	564 (9.5)	50 (4.0)	561 (3.2)	569 (3.1)	30 (3.8)	557 (4.4)	568 (2.5)
Singapore	83 (2.2)	578 (3.4)	567 (8.5)	80 (2.0)	580 (3.4)	560 (7.5)	28 (2.4)	591 (5.8)	571 (3.8)
International Avg.	70 (0.4)	512 (0.5)	510 (1.1)	64 (0.5)	512 (0.6)	509 (0.9)	32 (0.5)	511 (0.8)	511 (0.6)

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent. An "r" indicates data are available for at least 70% but less than 85% of the students.

Source: Exhibit 8.2, International reading report (Mullis *et al.*, 2017a).

³⁶ Data is available for at least 70% but less than 85% of the pupils.

³⁷ Data is available for at least 70% but less than 85% of the pupils.

6.3 Teachers' participation in professional development

Teachers were asked to indicate the number of hours spent on professional development related to reading in the previous two years. This information was then used to determine the percentages of pupils in each country taught by teachers who had spent 'sixteen hours or more', 'six to fifteen hours', 'less than six hours' or 'no time' on professional development related to reading in the previous two years.

The percentages for Northern Ireland are shown in Table 6.4 below. Compared to the international average, the proportion of pupils in Northern Ireland taught by teachers engaging in professional development in reading varied in each category.

There were no clear patterns in the results when comparing Northern Ireland and the six comparator countries in terms of time spent on professional development in reading. There were also no clear patterns in pupil attainment and time spent by teachers on professional development in reading in the past two years.

However, the two countries that were ranked highest in average attainment, the Russian Federation and Singapore, each had higher percentages of pupils with teachers who had spent sixteen or more hours on professional development in reading in the past two years (59 and 46 per cent respectively). The proportion of pupils in Northern Ireland in this category was 25 per cent, and the international average was 36 per cent.

Table 6.4 Teachers' participation in professional development in reading

Country	16 Hours or More		6–15 Hours		Less Than 6 Hours		None	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Canada	34 (2.0)	537 (3.3)	30 (2.1)	545 (3.1)	29 (2.2)	546 (3.1)	8 (1.3)	556 (4.5)
England	20 (2.9)	551 (5.8)	29 (3.5)	560 (5.3)	34 (3.4)	556 (3.5)	18 (2.9)	566 (4.5)
Ireland, Rep. of	34 (3.3)	564 (5.9)	22 (3.3)	567 (4.8)	35 (3.6)	567 (4.2)	10 (2.2)	572 (6.2)
New Zealand	41 (2.7)	517 (4.0)	30 (2.5)	529 (3.8)	22 (2.2)	534 (5.5)	7 (1.4)	547 (8.3)
Northern Ireland	25 (4.4)	566 (5.6)	31 (4.8)	559 (5.1)	34 (4.9)	565 (4.2)	10 (2.7)	568 (8.5)
Poland	23 (3.7)	561 (5.2)	27 (2.9)	556 (4.6)	33 (3.5)	570 (2.9)	17 (3.4)	573 (6.4)
Russian Federation	59 (3.3)	582 (3.5)	16 (2.5)	577 (6.1)	15 (2.4)	581 (5.7)	10 (1.7)	580 (5.9)
Singapore	46 (2.8)	584 (5.0)	31 (2.5)	571 (5.6)	16 (1.9)	573 (8.7)	7 (1.2)	562 (10.8)
International Avg.	36 (0.5)	510 (0.9)	27 (0.5)	512 (1.0)	22 (0.4)	513 (1.1)	16 (0.4)	514 (1.5)

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

Source: Exhibit 8.4, International reading report (Mullis *et al.*, 2017a).

6.4 Teachers' reported job satisfaction

Teachers were asked to indicate the extent to which they were satisfied with their profession as a teacher. The statements and details of the scaling are shown in Figure 6.1 and the results are shown in Table 6.5.

The international analysis uses responses to these five statements to create the 'Teacher Job Satisfaction' scale. Teachers were categorised as being 'Very Satisfied', 'Satisfied' and 'Less than Satisfied'. As construction of the scale has changed since 2011, caution should be exercised when interpreting trends over time³⁸.

Figure 6.1 Teacher job satisfaction

How often do you feel the following way about being a teacher?

*Tick **one** circle for each row.*

Very often **Often** **Sometimes** **Never or**

a) I am content with my profession as a teacher ----- ○ ——— ○ ——— ○ ——— ○

b) I find my work full of meaning and purpose ----- ○ ——— ○ ——— ○ ——— ○

c) I am enthusiastic about my job ----- ○ ——— ○ ——— ○ ——— ○

d) My work inspires me ----- ○ ——— ○ ——— ○ ——— ○

e) I am proud of the work I do ----- ○ ——— ○ ——— ○ ——— ○

Very Satisfied Somewhat Satisfied Less than Satisfied

10.2 6.2

Source: Exhibit 6.5, International reading report (Mullis *et al.*, 2017a).

³⁸ In 2011, teachers responded to six statements about their career satisfaction and were categorised into three bands: 'Satisfied', 'Somewhat Satisfied' and 'Less than Satisfied'. In addition, a number of the statements have changed since 2011 (only statements a and b were used in 2011).

Table 6.5 Reading teachers' job satisfaction

Students Categorized by Teachers' Reports

Students were scored according to how often their teachers responded positively to the five statements on the *Teacher Job Satisfaction* scale. Students with **Very Satisfied** teachers had a score on the scale of at least 10.2, which corresponds to their teachers responding "very often" to three of the five statements and responding "often" to the other two, on average. Students with **Less than Satisfied** teachers had a score no higher than 6.2, which corresponds to their teachers responding "sometimes" to three of the five statements and "often" to the other two, on average. All other students had **Somewhat Satisfied** teachers.

Country	Very Satisfied		Somewhat Satisfied		Less than Satisfied		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Northern Ireland	62 (4.7)	564 (3.4)	31 (4.2)	567 (4.0)	7 (2.5)	548 (9.0)	10.2 (0.20)
Ireland, Rep. of	60 (3.6)	570 (3.8)	36 (3.5)	561 (3.9)	4 (1.3)	561 (8.9)	10.1 (0.16)
New Zealand	57 (2.6)	531 (3.0)	40 (2.6)	521 (4.4)	4 (1.0)	527 (15.8)	10.1 (0.11)
Canada	56 (2.4)	542 (2.4)	40 (2.3)	545 (2.6)	4 (1.0)	542 (8.4)	10.2 (0.09)
England	51 (3.7)	558 (3.4)	42 (3.8)	559 (2.8)	7 (2.0)	563 (7.1)	9.8 (0.14)
Poland	43 (4.1)	563 (3.8)	44 (3.7)	566 (2.9)	12 (2.9)	564 (6.0)	9.4 (0.20)
Singapore	40 (2.4)	576 (6.2)	46 (2.7)	573 (4.5)	14 (1.9)	587 (6.6)	9.3 (0.12)
Hong Kong SAR	34 (4.2)	568 (5.9)	47 (4.2)	572 (3.5)	19 (2.9)	561 (6.4)	8.8 (0.20)
International Avg.	57 (0.5)	513 (0.6)	37 (0.5)	508 (0.9)	6 (0.2)	525 (2.3)	

This PIRLS questionnaire scale was established in 2016 based on the combined response distribution of all countries that participated in PIRLS 2016. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

Source: Exhibit 6.5, International reading report (Mullis *et al.*, 2017a).

Sixty-two per cent of pupils in Northern Ireland had teachers who reported being very satisfied with their jobs. This was higher in Northern Ireland than in all six comparator countries and higher than the international average (57 per cent).

Of the comparator countries, Singapore had the lowest proportion of pupils whose teachers reported being very satisfied with their jobs (40 per cent). There are no clear patterns that can be drawn between average pupil attainment and teachers' degrees of job satisfaction.

Of the 50 participating countries, Northern Ireland ranks eighteenth in terms of the proportion of pupils whose teachers are very satisfied with their jobs. All countries that scored higher than or similar to Northern Ireland on overall reading attainment were ranked lower than Northern Ireland on the teacher job satisfaction scale. Of these countries, Hong Kong was ranked the lowest in job satisfaction with 34 per cent of pupils having teachers who were very satisfied with their jobs.

6.5 Conclusion

Northern Ireland had a higher proportion of pupils (80 per cent) attending schools run by principals who had completed a postgraduate university degree, relative to the international average (48 per cent). The proportion of pupils in Northern Ireland whose teachers had postgraduate university degrees was 19 per cent which was similar to the international average of 20 per cent.

Information regarding teachers' main area of study in post-secondary education was gathered through the teacher questionnaire. Of the three specialist areas surveyed, (language, pedagogy/teaching of reading and reading theory), the highest proportion of pupils in Northern Ireland were taught by teachers who specialised in language (69 per cent) which is just below the international average (70 per cent). Of the comparator countries, Poland had the highest number of pupils in this category, with 94 per cent of pupils taught by a teacher who had specialised in language.

When asked about the amount of time spent on professional development related to reading, no clear patterns of comparison emerged between Northern Ireland and the comparator countries. However, the two countries that ranked highest in average attainment, the Russian Federation and Singapore, both had higher percentages of pupils with teachers who had spent sixteen hours or more on professional development in reading in the previous two years.

Regarding teachers' job satisfaction, the survey results show that 62 per cent of pupils in Northern Ireland had teachers who reported being very satisfied with their jobs. This was higher than in all six comparator countries and higher than the international average of 57 per cent.

7 School resources

Chapter outline

This chapter summarises principal and teacher reports concerning the working conditions and resources available in their school for teaching reading to Year 6 pupils.

Outcomes for Northern Ireland are compared with the international averages and, in some cases, comparator countries.

Key findings

- Overall, Northern Ireland was categorised as ‘Somewhat Affected’ by shortages in reading resources. However, the percentage of pupils who, according to principals, were ‘Not Affected’ by shortages (44 per cent) was higher than the international average (31 per cent).
- All comparator countries were categorised as being ‘Not Affected’ by shortages in reading resources, except the Republic of Ireland which, like Northern Ireland, was ‘Somewhat Affected’.
- Principals in Northern Ireland reported that only three to seven per cent of pupils were taught in schools where teaching was affected ‘A Lot’ by a shortage or inadequacy of the following four technological resources:
 - technically competent staff
 - audio-visual resources
 - computer technology for teaching and learning
 - computer software / applications for reading.

In each of these, the percentage of pupils affected in Northern Ireland was lower than international averages.

- Four-fifths of pupils attended schools in which the principals indicated that there were sufficient computers to equip one or two pupils per computer.
- Findings from the teacher questionnaire indicated that over three-quarters of pupils had computers available to use for reading lessons and that pupils in Northern Ireland were more likely to use computers for reading activities than the average internationally.
- Northern Ireland had a lower percentage of pupils attending schools equipped with a school library (74 per cent) than the international average (87 per cent). However, nearly all Year 6 classes in Northern Ireland had a well-stocked classroom library (93 per cent), used regularly by the pupils. This was much higher than the international average of 72 per cent.

Interpreting the data: percentages in tables

Most of the data in this chapter is derived from teacher and principal reports. Reported percentages refer to pupils and can usually be interpreted as the percentage of pupils whose teachers or principals reported a particular practice or circumstance.

Year 6 pupils were sampled by class. As a result, the Year 6 Teacher Questionnaire would, in most cases, have been completed by the class teacher of the sampled class.

7.1 Resources and conditions for teaching reading in schools

7.1.1 Views about limitations caused by resourcing

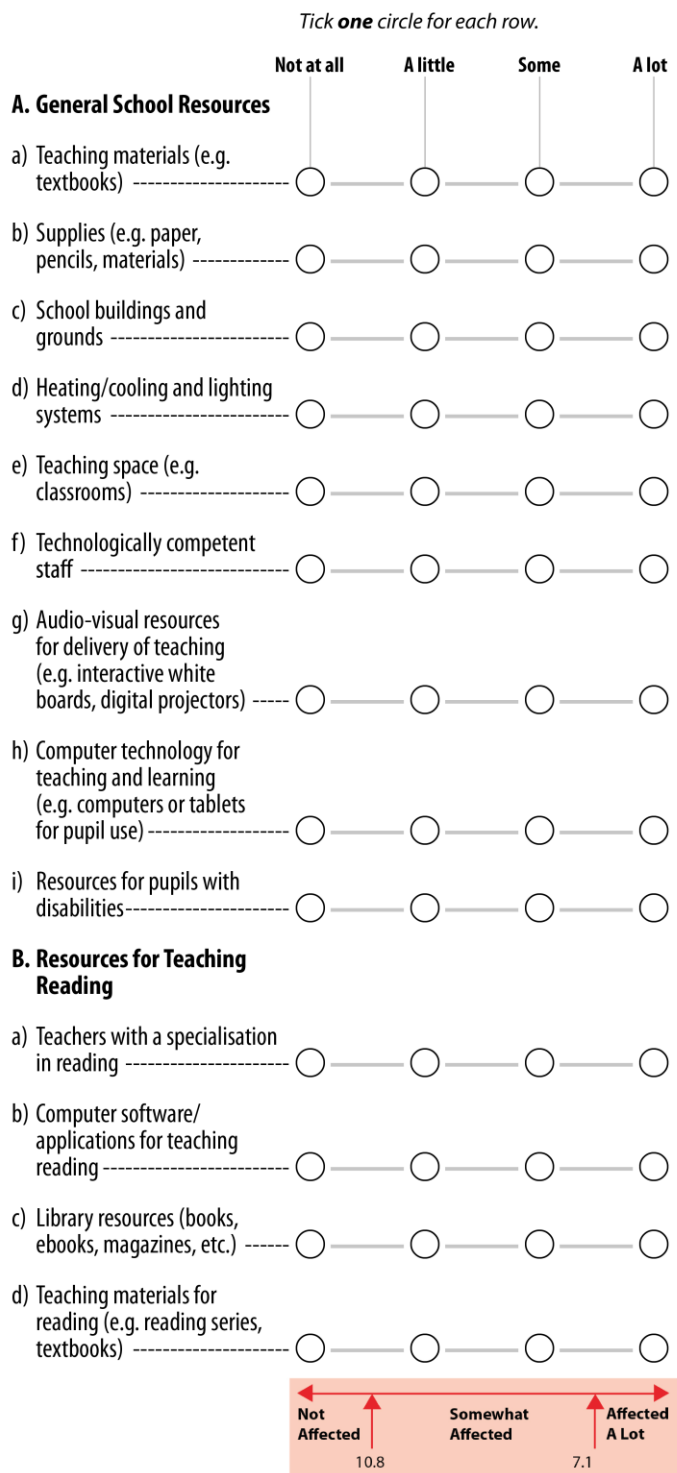
Principals were asked to rate how much their school's capacity to provide reading teaching was affected by a shortage or inadequacy in a range of 13 school and classroom resources.

Pupils were grouped according to their principals' responses to areas of questioning on the 'Reading Resource Shortages' scale, which cover general school resources (e.g. school buildings and textbooks) and resources for teaching reading (e.g. specialist teachers and libraries). (See Figure 7.1.)

Principals were asked to rate the impact of any shortage; the results are presented in Table 7.1.

Figure 7.1 Teaching affected by resource shortage

How much is your school's capacity to provide teaching affected by a shortage or inadequacy of the following?



Source: PIRLS 2016 School Questionnaire for Northern Ireland.

In 2011, statements a – f in part A and a – b in part B formed part of the equivalent scale (Limitations on teaching caused by resourcing); the remaining statements included in 2016 are either new or adapted. The new scale was developed to be comparable across cycles with a centrepoint of 10 and a standard deviation of 2.

Interpreting the data: indices and scales

In order to summarise data from a questionnaire, responses to several related items are sometimes combined to form an index or scale. The respondents to the questionnaire items are grouped according to their responses and the way in which responses have been categorised is shown for each index or scale. The data in an index or scale is often considered to be more reliable and valid than the responses to individual items.

Table 7.1 Extent of limitations on teaching caused by resourcing

Students Categorized by Principals' Reports

Students were scored according to their principals' responses concerning twelve school and classroom resources on the *Reading Resource Shortages* scale. Students in schools where instruction was **Not Affected** by resource shortages had a score on the scale of at least 10.8, which corresponds to their principals reporting that shortages affected instruction "not at all" for six of the twelve resources and "a little" for the other six, on average. Students in schools where instruction was **Affected A Lot** had a score no higher than 7.1, which corresponds to their principals reporting that shortages affected instruction "a lot" for six of the twelve resources and "some" for the other six, on average. All other students attended schools where instruction was **Somewhat Affected** by resource shortages.

Country	Not Affected		Somewhat Affected		Affected A Lot		Average Scale Score	Difference in Average Scale Score from 2011
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement		
Northern Ireland	r 44 (5.6)	564 (4.3)	54 (5.6)	564 (3.9)	2 (1.3)	~ ~	10.6 (0.16)	r 0.0 (0.24)
International Avg.	31 (0.5)	521 (1.4)	62 (0.5)	507 (0.6)	6 (0.2)	474 (2.8)		

This PIRLS questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in PIRLS 2011. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70% but less than 85% of the students.

Source: Exhibit 5.4, International reading report (Mullis *et al.*, 2017a).

In Northern Ireland, 44 per cent of pupils were taught in schools where principals' responses revealed that they were 'Not Affected' by shortages in resources. Just over half (54 per cent) were in schools where the responses indicated that they were 'Somewhat Affected'. This was less than the international average of 62 per cent. Only two per cent of pupils attended schools where principals reported they were 'Affected A Lot'.

In 2016, the proportion of pupils in Northern Ireland reported to be in schools that were 'Not Affected' by shortages or inadequacies of resources was higher (at 44 per cent) than in 2011, when it was 28 per cent of pupils. However, the average scale score for Northern Ireland on the overall Reading Resources Shortages scale had not changed significantly since 2011.

Overall, thirteen countries were classified on the Reading Resource Shortages scale as 'Not Affected' by resource shortages. This categorisation was based on an average scale score of 10.8 or above. The average scale score for Northern Ireland was 10.6, placing it in the category of 'Somewhat Affected' by shortages overall.

Of the six comparator countries, only the Republic of Ireland fell below Northern Ireland on this scale, with a score of 10.3 (66 per cent 'Somewhat Affected', 33 per cent 'Not Affected'). All other comparator countries had scores above 10.8 and fell into the category 'Not Affected' by reading resource shortages. Singapore, Canada, New Zealand, Poland and England all had more than 50 per cent of pupils in schools

where the principals indicated they were not affected by shortages (63, 55, 54, 53 and 51 per cent, respectively).

Although its average scale score, in terms of resource shortages, had improved significantly since 2011, Singapore was unusual among comparator countries in having six per cent of pupils attending schools where principals indicated that they were ‘Affected A Lot’ by shortages. For Northern Ireland and all the remaining comparator countries, this figure was between zero and two per cent.

Internationally, there are associations apparent between the degree of shortage in reading resources and achievement. That is, the greater the reported extent of shortages, the lower the level of achievement. Pupils in schools where teachers reported that they were ‘Not Affected’ by shortages appeared, on average, to have higher scores than those that were ‘Somewhat Affected’. These scores were, in turn, higher than those of pupils in schools that were ‘Affected A Lot’. In Northern Ireland, this was not the case: average achievement was the same for pupils in schools classified as ‘Not Affected’ as those that were in schools classified as ‘Somewhat Affected’ by a shortage or inadequacy in school resources. Only two per cent of pupils were in schools in Northern Ireland which reported that they were ‘Affected A Lot’ by shortages, and, because of the low numbers, no average achievement score can be reported for that category. These are similar findings to those reported in 2011 for Northern Ireland.

7.1.2 Availability of computers

Principals were asked about the availability of computers, including tablets, in their schools. This information was combined with the number of Year 6 pupils in the school to calculate the number of pupils per computer, presented in Table 7.2.

Table 7.2 Number of pupils per computer

Students Categorized by Principals' Reports

Country	1–2 Students per Computer		3–5 Students per Computer		6 or More Students per Computer		No Computers Available	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Northern Ireland	82 (4.5)	562 (3.1)	10 (3.4)	574 (12.8)	8 (3.6)	582 (7.9)	0 (0.0)	~ ~
International Avg.	51 (0.5)	514 (1.8)	23 (0.5)	515 (2.1)	19 (0.4)	508 (1.2)	7 (0.2)	477 (3.3)

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70% but less than 85% of the students.

Source: Exhibit 5.6, International reading report (Mullis *et al.*, 2017a).

In Northern Ireland, four-fifths of pupils attended schools in which the principals indicated that there were sufficient computers to provide one computer per child or one between two. A tenth of schools had sufficient computers for three to five pupils per computer, and a similar proportion had six or more pupils per computer. The availability of computers was greater in Northern Ireland than the international average.

Across all participating countries, just over half of pupils attended schools that provide one computer between two pupils or better. Ten countries had better provision than Northern Ireland with larger percentages able to offer a computer for

each child or one between two; this included the comparator countries Singapore, England and Canada (87, 86 and 85 per cent, respectively). There did not appear to be any pattern of average attainment linked to the number of pupils per computer.

Since 2011, in Northern Ireland, the percentage of pupils in schools with computers available for use by one or two pupils has increased slightly (five percentage points' increase from 77 per cent). A similar pattern is shown in the international averages. In both 2016 and 2011, on average internationally, seven per cent of pupils attended schools where principals reported that no computers were available. In 2016 and 2011, no pupils in Northern Ireland attended schools without available computers.

Teachers were asked whether their Year 6 pupils had access to computers for reading lessons. Table 7.3 shows the percentages of pupils in Northern Ireland, and comparator countries, whose teachers reported that computers were available, the average achievement of those pupils, and the availability of computers for the pupils in the class.

Table 7.3 Availability of computers for reading lessons

Students Categorized by Teachers' Reports

Country	Computers Available for Students to Use for Reading Lessons			Percent of Students		
	Percent of Students	Average Achievement		Each Student has a Computer	The Class has Computers that Students can Share	The School has Computers that the Class can Sometimes Use
		Yes	Yes			
New Zealand	93 (1.6)	529 (2.5)	498 (15.9)	13 (2.5)	83 (2.5)	66 (2.8)
Northern Ireland	77 (3.6)	563 (3.0)	566 (4.4)	6 (2.2)	58 (4.9)	70 (3.7)
Canada	65 (1.8)	544 (2.5)	542 (2.4)	8 (0.9)	41 (2.0)	59 (2.2)
England	55 (4.0)	554 (3.0)	564 (3.4)	11 (2.2)	36 (3.3)	46 (4.0)
Singapore	55 (2.4)	584 (4.2)	567 (5.5)	31 (2.4)	20 (2.0)	54 (2.4)
Ireland, Rep. of	39 (3.7)	564 (3.9)	568 (3.4)	2 (1.0)	18 (3.0)	33 (3.7)
Poland	25 (3.0)	566 (4.4)	565 (2.6)	5 (1.6)	4 (1.4)	24 (2.9)
International Avg.	43 (0.4)	516 (1.0)	508 (0.7)	10 (0.3)	23 (0.4)	36 (0.4)

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

Source: Exhibit 9.7, International reading report (Mullis *et al.*, 2017a).

In Northern Ireland, just over three-quarters of pupils had teachers reporting that computers were available for use in reading lessons (77 per cent). Only four countries reported a greater availability of computers for reading lessons, with New Zealand reporting the greatest percentage at 93 per cent. The international average was less than half (43 per cent) and, of the comparator countries, the Republic of Ireland and Poland both had percentages lower than this (39 and 25 per cent, respectively).

In Northern Ireland, six per cent of pupils were in schools which provided access to a computer for their own use in reading lessons, which is below the international average of ten per cent. Across most comparator countries, it was uncommon for each pupil to have access to a computer for his or her own use. Singapore was the exception, with 31 per cent of pupils having access to a computer for themselves. The second highest percentage was reported in New Zealand, at 13 per cent.

In Northern Ireland, 58 per cent of pupils were in classes with computers to share and 70 per cent were in schools with computers the class could sometimes use. There was no apparent pattern of average achievement linked to the availability of computers for teaching reading. However, it is interesting to note that in Northern Ireland, the Republic of Ireland and England (in contrast to other comparator countries), the average achievement of pupils in schools without computers for use in reading lessons appears slightly higher than in those with computers.

Teachers were also asked how often each week they did a number of computing activities during reading lessons. Table 7.4 shows the responses for Northern Ireland and comparator countries.

Table 7.4 Computer activities used in Reading lessons.

Students Categorized by Teachers' Reports

Country	Percent of Students Whose Teachers Do the Following Computer Activities in Reading Lessons at Least Weekly					
	Ask Students to Read Digital Texts	Teach Students Strategies for Reading Digital Texts	Teach Students to Be Critical When Reading on the Internet	Ask Students to Look Up Information (e.g., facts, definitions, etc.)	Ask Students to Research a Particular Topic or Problem	Ask Students to Write Stories or Other Texts
Canada	30 (1.9)	16 (1.7)	22 (1.8)	36 (1.9)	29 (1.7)	27 (2.2)
England	26 (3.4)	13 (2.6)	25 (3.4)	40 (3.4)	35 (3.5)	16 (2.5)
Ireland, Rep. of	14 (2.5)	10 (2.2)	11 (2.7)	21 (3.0)	17 (2.6)	11 (2.3)
New Zealand	57 (3.0)	30 (2.6)	44 (3.1)	78 (2.8)	70 (2.7)	64 (2.8)
Northern Ireland	33 (4.5)	14 (3.0)	25 (4.1)	54 (5.1)	41 (4.9)	21 (3.6)
Poland	5 (1.4)	5 (1.2)	9 (2.2)	10 (2.1)	8 (1.9)	2 (1.0)
Singapore	17 (1.8)	13 (1.4)	16 (1.7)	24 (2.2)	16 (1.9)	14 (1.9)
International Avg.	19 (0.4)	13 (0.3)	17 (0.4)	25 (0.4)	19 (0.4)	17 (0.4)

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

Source: Exhibit 9.8, International reading report (Mullis *et al.*, 2017a).

The most common computer activity that pupils in Northern Ireland did in reading lessons was looking up information, as reported by teachers of over half of the pupils (54 per cent). The next most common activity was researching a particular topic or problem (41 per cent). A third of pupils were asked to read digital texts, but only 14 per cent were taught strategies for reading digital texts.

Internationally, eight countries reported a greater total weekly use of computers in reading lessons than Northern Ireland, across all six types of reading activity. Of these eight, the only comparator country was New Zealand, which had the highest use of computers among all participating countries. In Canada and England, the level of pupils' computer activity was similar to that in Northern Ireland. In contrast, Singapore, the Republic of Ireland and Poland reported computer activity by pupils in reading lessons below the international average for each of the six activities.

7.1.3 Limitations on teaching caused by technological resources

As discussed in section 7.1.1, principals reported the extent to which their schools' capacity to provide teaching was affected by shortages in or inadequacies of resources. Table 7.5 highlights the statements that focused on various technological

resources. It shows the percentages of pupils in schools where principals reported that teaching was affected 'A Lot' by shortages of these technological resources.

Table 7.5 Limitations on teaching caused by technological resources

Country	Percentage of pupils whose principals reported teaching being affected 'A Lot' by shortages or inadequacies			
	Technologically competent staff	Audio-visual resources for delivery of teaching	Computer technology for teaching and learning	Computer software / applications for reading
	(%)	(%)	(%)	(%)
Canada	5	5	8	5
England	1	4	4	1
Ireland, Rep. of	4	6	22	13
New Zealand	2	3	8	6
Northern Ireland	3	3	7	5
Poland	2	2	4	8
Singapore	7	8	7	2
International Average	12	12	14	11

Sources: 2016 School Context Data Almanac, questions ACBG12AF, ACBG12AG, ACBG12AH, ACBG12BB.

In Northern Ireland, seven per cent of pupils were taught in schools which principals reported were affected 'A Lot' by shortages or inadequacies of 'Computer technology for teaching and learning'. Five per cent of pupils were in schools classified as having a shortage or inadequacy of 'Computer software/applications for reading', and three per cent in schools where shortages in 'Technologically competent staff' and 'Audio-visual resources for delivery of teaching' were reported. All of these reported limitations were below the international averages.

Among comparator countries, there was some small variation in these figures. The only exception was reported in the Republic of Ireland where shortages or inadequacies in 'Computer technology for teaching' and 'Computer software for reading' were much higher than comparator countries, and above the international average. More broadly, international findings varied considerably, which may reflect the way in which different education systems benchmark the availability of resources and the competence of staff.

Since 2011, for Northern Ireland and among comparator countries, there has been little change in the percentages of pupils affected 'A Lot' by shortages or inadequacies of technology, with the exception of Poland. It has seen a reduction in the percentages of pupils affected by such shortages in all four categories.

7.2 Access to a school library

In Northern Ireland, nearly three-quarters of pupils participating in PIRLS attended schools with a library (74 per cent). This was higher (by 5 percentage points) than in 2011, but is lower than the international average of 87 per cent (as it was in 2011).

Table 7.6 Percentage of pupils attending a school with a library

Country	Percentage of pupils (%)
Canada	99
England	92
Ireland, Rep. of	64
New Zealand	99
Northern Ireland	74
Poland	96
Singapore	100
International Average	87

Source: 2016 School Context Data Almanac, question ACBG09.

Among comparator countries, Northern Ireland and the Republic of Ireland are unusual in having a percentage of pupils attending a school with a library that is below the international average. (A higher proportion of Northern Ireland's pupils, however, have access to class libraries. See section 7.3 below.)

The international average and percentages for comparator countries are very similar to those reported from 2011, with the exception of the Republic of Ireland, which has seen an increase from 52 per cent to 64 per cent since 2011 for the percentage of pupils attending schools with a school library.

Where principals reported that there was a library in the school, they were asked to indicate:

- the number of printed books with different titles available in the library
- the number of magazines and other (printed) periodicals available in the library (Table 7.7).

Table 7.7 Availability of books, magazines and other periodicals in school libraries

Country	Percentage of pupils	
	Books with different titles	Magazines and other periodicals
	More than 5000 (%)	More than 10 (%)
Canada	51	33
England	18	13
Ireland, Rep. of	9	12
New Zealand	44	20
Northern Ireland	3	8
Poland	73	12
Singapore	71	45
International Average	33	25

Sources: 2016 School Context Data Almanac, questions ACBG09A, ACBG09B.

Principals indicated that three per cent of pupils in Northern Ireland attended a school with a large school library (more than 5000 printed books). This was considerably lower than the international average (32 per cent) but similar to the 2011 findings. Four of the comparator countries had a percentage above the international average, with the Republic of Ireland and England, like Northern Ireland, well below. Principals in Northern Ireland were most likely to report the size of their libraries to be between 501 and 2000 books; this was the case for 31 per cent of pupils in Northern Ireland.

The responses also showed that only eight per cent of Northern Ireland's pupils attended schools that had more than ten magazines or other periodicals available in the school library. This is lower than the international average (25 per cent). Northern Ireland was not unusual in this regard. When looking at comparator countries, only Singapore and Canada had an above-average percentage of pupils at schools with more than ten magazines in the school library.

Principals were also asked whether their schools provided access to digital books. The results are presented in Table 7.8.

Table 7.8 Percentage of pupils attending schools which provide access to digital books

Country	Percentage of pupils
	(%)
Canada	55
England	46
Ireland, Rep. of	19
New Zealand	55
Northern Ireland	53
Poland	43
Singapore	52
International Average	41

Source: 2016 School Context Data Almanac, question ACBG10.

In Northern Ireland, just over half of pupils participating in PIRLS attended schools which provided access to digital books (53 per cent). This is greater than the international average of 41 per cent and similar to Canada, New Zealand and Singapore. Of the comparator countries, only the Republic of Ireland reported a percentage lower than the international average (19 per cent).

7.3 Access to a classroom library

Teachers were asked whether their Year 6 classroom had a library or reading corner. Where teachers reported that there was a class library, they were asked to indicate:

- the number of books in the class library
- the number of magazines with different titles in the class library
- how often pupils were given class time to use the class library
- whether pupils could borrow books to take home.

Teachers were also asked how often pupils were taken or sent to a library other than the class library. The results are presented in Table 7.9.

Table 7.9 Percentage of pupils with a class library and class library size

Students Categorized by Teachers' Reports

Country	Have a Classroom Library			Percent of Students				
	Percent of Students	Average Achievement		With More than 50 Books in Their Classroom Library	With At Least 3 Magazine Titles in Their Classroom Library	Given Class Time to Use Classroom Library At Least Once a Week	Who Can Borrow Books From Classroom Library	Whose Teachers Take Them to Library Other than the Classroom Library At Least Once a Month
		Yes	Yes					
New Zealand	97 (1.2)	527 (2.4)	533 (11.6)	36 (3.5)	42 (3.5)	95 (1.4)	60 (3.1)	91 (2.0)
Ireland, Rep. of	96 (2.0)	567 (2.6)	569 (18.7)	82 (3.7)	23 (3.0)	94 (2.2)	86 (3.1)	43 (4.6)
Canada	95 (1.0)	542 (2.0)	564 (6.8)	84 (1.7)	47 (2.2)	94 (1.2)	76 (2.1)	93 (1.2)
Northern Ireland	93 (2.4)	565 (2.3)	551 (14.1)	85 (3.0)	23 (3.6)	90 (3.0)	88 (3.1)	65 (4.5)
England	92 (2.2)	557 (2.1)	574 (7.8)	78 (3.3)	29 (3.3)	89 (2.6)	81 (3.0)	80 (2.8)
Singapore	84 (2.0)	575 (3.6)	584 (7.7)	33 (2.0)	33 (2.4)	70 (2.5)	63 (2.4)	50 (2.2)
Poland	48 (3.5)	562 (3.5)	567 (2.6)	11 (1.8)	9 (2.3)	15 (3.0)	21 (3.4)	70 (3.7)
International Avg.	72 (0.4)	514 (0.6)	507 (1.2)	33 (0.4)	32 (0.4)	61 (0.5)	55 (0.5)	67 (0.5)

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

Source: Exhibit 9.4, International reading report (Mullis *et al.*, 2017a).

Teachers indicated that 93 per cent of Year 6 pupils in Northern Ireland were in a class with a classroom library. This is greater than the international average (72 per cent) and only ten countries reported a greater percentage. Among the comparator countries, Poland had a percentage below the international average.

In 2011, the percentage of pupils in Northern Ireland in classes where teachers reported there was a class library was slightly higher than in 2016, at 97 per cent.

The class libraries of 85 per cent of pupils in Northern Ireland contained more than 50 books; only one country in the PIRLS 2016 survey had a greater percentage of classes with this size of library (United States, 92 per cent). Magazines were a much less common part of class libraries in Northern Ireland, with 23 per cent of pupils having access to at least three magazines in their class libraries, compared to the international average of 32 per cent.

Across all participating countries, pupils in Northern Ireland were the most likely to be able to borrow books from their class libraries to take home (88 per cent) and 90 per cent of pupils were given time to use the class library at least once a week.

Teachers indicated that nearly two-thirds (65 per cent) of pupils in Northern Ireland were taken or sent to a library other than the class library at least once a month. This percentage is just below the international average of 67 per cent. Among the comparator countries, only Singapore and the Republic of Ireland had a lower percentage at 50 and 43 per cent, respectively.

7.4 Conclusion

In Northern Ireland, the majority of pupils attended schools where the principals reported that teaching was ‘Somewhat Affected’ by a shortage of resources. Compared with the international average, fewer pupils in Northern Ireland were affected by shortages and the picture for Northern Ireland appeared slightly better than in 2011, although the difference was not statistically significant.

All of the comparator countries, except the Republic of Ireland, were categorised as being ‘Not Affected’ by resource shortages. The pattern in the international results was for pupils in less well-resourced schools to show lower attainment. This was not the case for Northern Ireland, where the average attainment level was the same for those ‘Somewhat Affected’ and those ‘Not Affected’ by shortages.

Principals in Northern Ireland reported a high level of availability of computers, with a large majority of pupils having access to computers to be used alone or shared with one other pupil. Teachers reported a similar level of availability of computers for use in reading lessons and, compared with the international average, use of computers by pupils for activities in reading lessons was relatively high in Northern Ireland. There were no apparent patterns of achievement linked to the availability of computers in school or the availability for teaching reading. In terms of the impact of shortages or inadequacies in technological resources and support, more pupils were reported to be affected by a shortage or inadequacy of computer technology for teaching and learning than three other issues. However, in all areas of shortage, Northern Ireland had a lower percentage of pupils affected than the international average.

In Northern Ireland, a higher percentage of pupils attended a school without a school library than the international average or among the comparator countries (except the Republic of Ireland). School libraries were also reported to be less well-resourced than the international average; among the comparator countries; this was also the case for England and the Republic of Ireland. However, teachers reported that the vast majority of pupils in Northern Ireland had access to class libraries which were well stocked and which they were given time to use on a weekly basis.

8 School learning environment

Chapter outline

This chapter presents findings from PIRLS 2016 relating to the school learning environment, as reported by teachers and principals. Sections relate to the emphasis placed on academic success and perceptions of safety, orderliness, discipline, bullying and the impact of disruptive and uninterested pupils.

Outcomes for Northern Ireland are compared with the international averages, and where relevant, with those of other countries.

Key findings

- Principals and teachers in Northern Ireland reported some of the highest levels of emphasis on academic success of any nation. Teachers reported similar, but slightly lower, levels of emphasis on academic success than principals did. This is similar to the findings from 2011.
- The majority (83 per cent) of pupils in Northern Ireland attended schools which were categorised as 'Very Safe and Orderly' (as reported by teachers). This had improved significantly since the 2011 PIRLS survey.
- Eighty-five per cent of pupils in Northern Ireland attended schools categorised by principals as having 'Hardly Any' discipline problems; the third highest proportion internationally.
- Pupils in Northern Ireland reported experiencing bullying behaviours less frequently than those in most other participating countries, leading them to be categorised as being 'Almost Never' bullied. This was also the case in 2011.
- Teachers in Northern Ireland reported that their teaching was rarely limited by disruptive or uninterested pupils. Nearly two-thirds of pupils had teachers who reported that their teaching of reading was 'Not at All' limited by disruptive pupils. 'Uninterested' pupils were a greater problem, although 41 per cent of pupils still had teachers who reported that this did 'Not at All' limit their teaching of reading.

Interpreting the data: percentages in tables

Most of the data in this chapter is derived from teacher and principal reports. Reported percentages refer to pupils and can usually be interpreted as the percentage of pupils whose teachers or principals reported a particular practice or circumstance.

Year 6 pupils were sampled by class. As a result, the Year 6 Teacher Questionnaire would, in most cases, have been completed by the class teacher of the sampled class.

Interpreting the data: indices and scales

In order to summarise data from a questionnaire, responses to several related items are sometimes combined to form an index or scale. The respondents to the questionnaire items are grouped according to their responses and the way in which responses have been categorised is shown for each index or scale. The data in an index or scale is often considered to be more reliable and valid than the responses to individual items.

8.1 Schools' emphasis on academic success – views of teachers and principals

Principals and teachers were asked to rate the emphasis placed on academic success within their school by teachers, parents and pupils. Principals were asked a set of 14 questions, shown in Figure 8.1. Teachers answered a similar set of questions to principals; these are shown in Figure 8.2. The principals' and teachers' responses were analysed to form two separate 'School Emphasis on Academic Success' scales. The scale categories for principals and teachers are summarised below the questions.

The data for both principals and teachers is shown in Table 8.1.

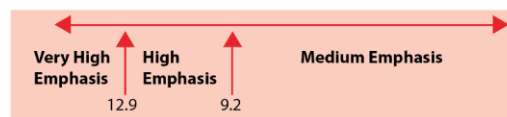
Some caution should be exercised when comparing 2011 and 2016 because the number of statements contributing to the scale has increased to 12. This change was intended to make the scale more reliable and the five statements from the 2011 scale have been retained. It should also be noted that the data for the principals' scale is only available for between 70 and 85 per cent of pupils, and therefore may not be representative of all primary school pupils in Northern Ireland. (This is shown by the 'r' in Tables 8.1, 8.2, 8.3, 8.4 and 8.5.)

Figure 8.1 Schools' emphasis on academic success – questions for school principal

How would you characterise each of the following within your school?

Tick one circle for each row.

	Very high	High	Medium	Low	Very low
a) Teachers' understanding of the school's curricular goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Teachers' degree of success in implementing the school's curriculum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Teachers' expectations for pupil achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Teachers' ability to inspire pupils	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Collaboration between school leadership (including senior teachers) and teachers to plan lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Parental involvement in school activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Parental commitment to ensure that pupils are ready to learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Parental expectations for pupil achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Parental support for pupil achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j) Pupils' desire to do well in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k) Pupils' ability to reach school's academic goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l) Pupils' respect for classmates who excel academically	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m) Teachers' interest in trying new methods and teaching practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n) Teachers' preference to stay with well-known methods and practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Source: PIRLS 2016 School Questionnaire for Northern Ireland and Exhibit 6.2, International reading report (Mullis et al., 2017a).

Statements m) and n) did not contribute to the 'School Emphasis on Academic Success' scale.

Statements a – l were common to both the principal and teacher questionnaires.

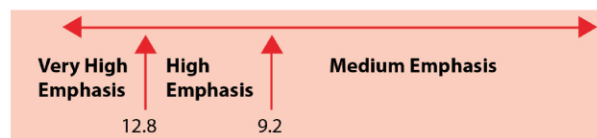
Statements a), b), c), i) and j) were also used in 2011.

Figure 8.2 Schools' emphasis on academic success – questions for teachers

How would you characterise each of the following within your school?

*Tick **one** circle for each row.*

	Very high	High	Medium	Low	Very low
a) Teachers' understanding of the school's curricular goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Teachers' degree of success in implementing the school's curriculum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Teachers' expectations for pupil achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Teachers' ability to inspire pupils	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Collaboration between school leadership (including senior teachers) and teachers to plan lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Parental involvement in school activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Parental commitment to ensure that pupils are ready to learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Parental expectations for pupil achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Parental support for pupil achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j) Pupils' desire to do well in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k) Pupils' ability to reach school's academic goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l) Pupils' respect for classmates who excel academically	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Source: PIRLS 2016 Teacher Questionnaire for Northern Ireland and Exhibit 6.3, International reading report (Mullis et al., 2017a).

Statements a – l were common to both the principal and teacher questionnaires.

Statements a), b), c), i) and j) were also used in 2011.

Table 8.1 Schools' emphasis on academic success (principal and reading teacher reports)

As reported by principals

Students were scored according to their principals' responses characterizing twelve aspects on the *School Emphasis on Academic Success* scale. Students in schools where their principals reported a **Very High Emphasis** on academic success had a score on the scale of at least 12.9, which corresponds to their principals characterizing six of the twelve aspects as "very high" and the other six as "high," on average. Students in schools with a **Medium Emphasis** on academic success had a score no higher than 9.2, which corresponds to their principals characterizing six of the twelve aspects as "medium" and the other six as "high," on average. All other students attended schools with a **High Emphasis** on academic success.

Country	Very High Emphasis		High Emphasis		Medium Emphasis		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
England	24 (3.3)	572 (4.4)	62 (4.1)	559 (3.0)	15 (2.5)	535 (4.9)	11.3 (0.15)
Northern Ireland	r 23 (3.7)	571 (5.3)	67 (4.8)	565 (3.5)	9 (3.1)	547 (12.4)	11.7 (0.17)
Ireland, Rep. of	23 (3.0)	580 (3.6)	66 (4.0)	569 (2.9)	12 (2.9)	527 (5.9)	11.4 (0.17)
New Zealand	17 (3.1)	547 (5.1)	66 (3.9)	528 (3.2)	17 (2.8)	491 (9.5)	11.2 (0.14)
Singapore	12 (0.0)	615 (8.8)	59 (0.0)	576 (3.7)	30 (0.0)	560 (6.7)	10.4 (0.00)
Canada	8 (1.0)	564 (4.8)	63 (2.9)	551 (2.5)	30 (2.7)	523 (3.1)	10.3 (0.09)
Poland	6 (2.0)	583 (15.0)	58 (4.2)	570 (2.6)	36 (3.7)	554 (3.9)	9.9 (0.12)
International Avg.	8 (0.3)	531 (1.9)	54 (0.5)	518 (0.6)	38 (0.5)	494 (0.8)	

This PIRLS questionnaire scale was established in 2016 based on the combined response distribution of all countries that participated in PIRLS 2016. To provide a point of reference for country comparisons, the scale centrepoin of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

An "r" indicates data are available for at least 70% but less than 85% of the students.

As reported by teachers

Students were scored according to their teachers' responses characterizing twelve aspects on the *School Emphasis on Academic Success* scale. Students in schools where their teachers reported a **Very High Emphasis** on academic success had a score on the scale of at least 12.8, which corresponds to their teachers characterizing six of the twelve aspects as "very high" and the other six as "high," on average. Students in schools with a **Medium Emphasis** on academic success had a score no higher than 9.2, which corresponds to their teachers characterizing six of the twelve aspects as "medium" and the other six as "high," on average. All other students attended schools with a **High Emphasis** on academic success.

Country	Very High Emphasis		High Emphasis		Medium Emphasis		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
England	19 (2.6)	568 (4.4)	62 (3.7)	559 (2.6)	18 (3.1)	548 (4.7)	11.0 (0.14)
Northern Ireland	19 (3.1)	579 (5.6)	68 (3.9)	561 (3.0)	14 (3.0)	556 (8.2)	11.4 (0.15)
Ireland, Rep. of	16 (2.7)	579 (6.7)	67 (3.5)	571 (2.9)	17 (2.6)	539 (6.1)	11.0 (0.16)
New Zealand	13 (2.3)	545 (6.9)	65 (2.8)	532 (3.0)	23 (2.5)	501 (5.7)	10.7 (0.13)
Canada	8 (1.3)	556 (6.6)	56 (2.4)	549 (2.2)	36 (2.4)	532 (3.5)	10.2 (0.10)
Poland	6 (2.1)	568 (11.4)	53 (3.9)	568 (3.1)	41 (4.1)	559 (3.9)	9.8 (0.16)
Singapore	5 (1.3)	610 (16.3)	49 (2.7)	588 (4.4)	46 (2.7)	560 (4.4)	9.6 (0.09)
International Avg.	8 (0.3)	522 (1.9)	55 (0.5)	518 (0.6)	37 (0.4)	497 (0.9)	

This PIRLS questionnaire scale was established in 2016 based on the combined response distribution of all countries that participated in PIRLS 2016. To provide a point of reference for country comparisons, the scale centrepoin of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

Sources: Exhibits 6.2 and 6.3, International reading report (Mullis *et al.*, 2017a).

8.1.1 Categories reported by principals

In Northern Ireland, principals of 90 per cent of pupils participating in PIRLS 2016 reported that their schools placed a 'High' or 'Very High' emphasis on academic success. This is similar to the 2011 results, which showed principals of 93 per cent of

pupils reporting that their school had either a 'High' or 'Very High' emphasis on academic success³⁹.

Northern Ireland was one of the nations with the highest school emphasis on academic success among all PIRLS 2016 participants. In the top category, 'Very High Emphasis', only three countries had a larger proportion of pupils than Northern Ireland (as reported by principals); these were England (just above Northern Ireland at 24 per cent), Qatar (25 per cent) and United Arab Emirates (28 per cent). Principals' responses in the Republic of Ireland indicated the same percentage as Northern Ireland (23 per cent). The international average for this category was eight per cent; the percentage for Canada matched the average, and of the other comparator countries, only Poland's percentage was below the international average (6 per cent).

When the percentage of pupils taught in the 'High' and 'Very High' categories are combined, principals in Northern Ireland reported a greater emphasis on academic success than any other participating country.

8.1.2 Categories reported by teachers

Teacher responses broadly reflected those of principals, with 87 per cent of pupils in schools where their teachers reported a 'High' or 'Very High' emphasis on academic success. Teachers in Northern Ireland were less likely to report that their school placed a 'Very High Emphasis' on academic success than principals, but indicated little change between 2011 and 2016 in the percentage of pupils in schools in this category.

Internationally, teachers' responses in only one country (Kazakhstan) revealed a higher percentage of pupils taught in schools categorised as having a 'High' or 'Very High' emphasis on academic success than in Northern Ireland (95 and 87 per cent respectively).

Internationally, five countries exceeded Northern Ireland in the percentage of pupils taught in schools in the highest category: 'Very High Emphasis' on academic success (Oman, United Arab Emirates, Qatar, Bahrain and Kazakhstan). Among the main comparator countries, England matched Northern Ireland's percentage of pupils in this category (19 per cent), the Republic of Ireland was close behind (16 per cent) and New Zealand had 13 per cent. As with the principals' reports, Canada matched the international average (8 per cent) in terms of placing a 'Very High Emphasis' on success, while Poland (5 per cent) was joined by Singapore (6 per cent) below the international average.

³⁹ Note – the 2016 scale included the five statements from the 2011 scale and added seven more.

8.1.3 Average Scale Scores

On the ‘School Emphasis on Academic Success’ scale, principals in Northern Ireland had an average scale score of 11.7 and teachers 11.4. (Details of how the scale scores were calculated are provided in Table 8.1.) This score for principals was the highest of all participating countries; the teachers’ score was exceeded by only two countries (Kazakhstan and Qatar). Like Northern Ireland, all the comparator countries achieved scores for both principals and teachers that met the criteria for the category ‘High Emphasis’, or above, on academic success.

On average, across all countries internationally, pupil attainment in reading tended to be higher in schools where teachers and principals reported a greater emphasis on academic success. This was also the case in Northern Ireland; however, the association between emphasis on academic success and achievement is unlikely to be statistically significant.⁴⁰

8.2 The extent to which schools are ‘safe and orderly’

Teachers were asked about their perceptions of safety and the behaviour of pupils in their school. Based on their responses, pupils were categorised as attending schools which were categorised as ‘Very Safe and Orderly’, ‘Safe and Orderly’ or ‘Less than Safe and Orderly’ (see Figure 8.3). The results are shown in Table 8.2.

⁴⁰ Although significance tests have not been conducted in the international analysis, based on low percentages in some categories and/or the size of standard errors, the association between emphasis on academic success and achievement is unlikely to be statistically significant.

Figure 8.3 Safe and orderly schools (teacher reports)

Thinking about your current school, indicate the extent to which you agree or disagree with each of the following statements.

Tick **one** circle for each row.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) This school is located in a safe area -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I feel safe at this school -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) This school's security policies and practices are sufficient ----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) The pupils behave in an orderly manner -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) The pupils are respectful of the teachers -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) The pupils respect school property -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) This school has clear rules about pupil behaviour -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) This school's rules are enforced in a fair and consistent manner -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Statements a – e were also used in PIRLS 2011.

Source: PIRLS 2016 Teacher Questionnaire for Northern Ireland.

Table 8.2 Safe and orderly schools

As reported by teachers

Students were scored according to their teachers' degree of agreement with eight statements on the *Safe and Orderly School* scale. Students in **Very Safe and Orderly** schools had a score on the scale of at least 9.9, which corresponds to their teachers "agreeing a lot" with four of the eight qualities of a safe and orderly school and "agreeing a little" with the other four, on average. Students in **Less than Safe and Orderly** schools had a score no higher than 6.6, which corresponds to their teachers "disagreeing a little" with four of the eight qualities and "agreeing a little" with the other four, on average. All other students attended **Somewhat Safe and Orderly** schools.

Country	Very Safe and Orderly		Somewhat Safe and Orderly		Less than Safe and Orderly		Average Scale Score	Difference in Average Scale Score from 2011
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement		
Northern Ireland	83 (3.0)	567 (2.6)	16 (3.1)	547 (7.3)	1 (0.9)	~ ~	12.1 (0.14)	r 0.7 (0.19) ⬆
England	82 (2.7)	562 (2.4)	17 (2.7)	543 (4.4)	0 (0.5)	~ ~	11.5 (0.12)	0.7 (0.18) ⬆
Ireland, Rep. of	79 (2.9)	570 (3.0)	19 (2.8)	555 (4.8)	2 (1.0)	~ ~	11.6 (0.15)	0.4 (0.21)
New Zealand	77 (2.4)	536 (2.4)	21 (2.3)	497 (6.1)	2 (0.8)	~ ~	11.4 (0.12)	0.5 (0.17) ⬆
Singapore	67 (2.1)	578 (4.1)	30 (2.1)	573 (5.5)	2 (0.6)	~ ~	10.8 (0.09)	0.5 (0.13) ⬆
Canada	62 (2.3)	548 (2.1)	36 (2.2)	538 (2.7)	3 (0.8)	497 (16.8)	10.6 (0.11)	0.2 (0.17)
Poland	57 (4.3)	566 (3.1)	42 (4.3)	562 (3.1)	1 (0.5)	~ ~	10.0 (0.13)	- -
International Avg.	62 (0.5)	517 (0.5)	35 (0.5)	502 (0.8)	3 (0.2)	466 (3.6)		

This PIRLS questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in PIRLS 2011. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

A dash (-) indicates comparable data not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70% but less than 85% of the students.

Significantly higher than 2011 ⬆
Significantly lower than 2011 ⬇

Source: Exhibit 7.2, International reading report (Mullis *et al.*, 2017a).

The teacher questionnaire data showed that the vast majority of pupils in Northern Ireland attended schools that were 'Very Safe and Orderly'. This result matches the findings from TIMSS 2015 in which 85 per cent of pupils were reported in this category. Among all participating countries, only teachers in three countries (Kazakhstan, Georgia and Azerbaijan) reported a higher percentage of pupils in 'Very Safe and Orderly' schools (92, 88 and 84 per cent respectively).

Among comparator countries, teachers in England, the Republic of Ireland and New Zealand reported percentages within six points of Northern Ireland's for 'Very Safe and Orderly' schools (82, 79 and 77 per cent respectively). Canada matched the international average of 62 per cent and Poland, with 57 per cent, was the only comparator country to fall below the international average.

The international average for 'Less Than Safe and Orderly' was three per cent. Canada matched this average and the remaining comparator countries all were below it. For Northern Ireland and Poland, only one per cent of pupils attended schools that teachers rated as 'Less Than Safe and Orderly' and for England it was zero per cent.

On the 'Safe and Orderly School' scale, Northern Ireland achieved a score of 12.1, placing it in the 'Very Safe and Orderly' category overall, along with all the comparator countries. The scale score for Northern Ireland had increased significantly from 2011⁴¹. (This is in contrast to the TIMSS results, which were not significantly different from 2011.) Significantly improved scale scores for 'Safe and

⁴¹ In 2016, data for the principals' scale is only available for between 70 and 85 per cent of pupils, and therefore may not be representative of all primary school principals in Northern Ireland.

Orderly Schools' were also found for three comparator countries: England, Singapore and New Zealand.

Internationally, pupils in schools that teachers reported as being 'Very Safe and Orderly', on average, scored more highly than those in schools rated as 'Safe and Orderly', who in turn scored more highly than those in schools deemed 'Less Than Safe and Orderly'. This suggests an association between safety and orderliness and attainment⁴², but this relationship was not seen in all participating countries and the direction of causality cannot be inferred from the data.

In Northern Ireland, there did appear to be an association between attending a school that was judged to be 'Very Safe and Orderly' and higher average achievement in reading, as can be seen in Table 8.2, and this association was consistent across all seven comparator countries. However, no significance tests were conducted in the international analysis.

The full international table follows, for reference, showing data for all countries (Table 8.3).

⁴² Tests of statistical significance were not carried out in this international analysis.

Table 8.3 International tables for safe and orderly schools

As reported by teachers

Students were scored according to their teachers' degree of agreement with eight statements on the *Safe and Orderly School* scale. Students in **Very Safe and Orderly** schools had a score on the scale of at least 9.9, which corresponds to their teachers "agreeing a lot" with four of the eight qualities of a safe and orderly school and "agreeing a little" with the other four, on average. Students in **Less than Safe and Orderly** schools had a score no higher than 6.6, which corresponds to their teachers "disagreeing a little" with four of the eight qualities and "agreeing a little" with the other four, on average. All other students attended **Somewhat Safe and Orderly** schools.

Country	Very Safe and Orderly		Somewhat Safe and Orderly		Less than Safe and Orderly		Average Scale Score	Difference in Average Scale Score from 2011
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement		
Kazakhstan	92 (2.2)	536 (2.5)	8 (2.2)	537 (9.5)	0 (0.0)	~ ~	12.4 (0.10)	--
Georgia	88 (2.3)	491 (3.2)	12 (2.3)	479 (8.0)	0 (0.0)	~ ~	11.7 (0.11)	0.6 (0.17) ⬆
Azerbaijan	84 (2.7)	473 (4.7)	16 (2.7)	471 (7.9)	1 (0.4)	~ ~	11.5 (0.13)	0.2 (0.18)
Northern Ireland	83 (3.0)	567 (2.6)	16 (3.1)	547 (7.3)	1 (0.9)	~ ~	12.1 (0.14)	r 0.7 (0.19) ⬆
England	82 (2.7)	562 (2.4)	17 (2.7)	543 (4.4)	0 (0.5)	~ ~	11.5 (0.12)	0.7 (0.18) ⬆
Israel	80 (2.9)	531 (3.0)	17 (2.9)	532 (9.4)	2 (1.2)	~ ~	11.2 (0.16)	0.2 (0.22)
Norway (5)	80 (2.8)	562 (2.4)	19 (2.6)	549 (5.5)	1 (0.8)	~ ~	11.3 (0.14)	--
Qatar	80 (1.9)	444 (2.6)	19 (1.9)	432 (9.5)	1 (0.5)	~ ~	11.4 (0.09)	0.8 (0.16) ⬆
Ireland, Rep. of	79 (2.9)	570 (3.0)	19 (2.8)	555 (4.8)	2 (1.0)	~ ~	11.6 (0.15)	0.4 (0.21)
Australia	78 (3.0)	551 (2.9)	20 (3.0)	526 (5.9)	2 (0.6)	~ ~	11.4 (0.14)	r 0.4 (0.21)
Netherlands	78 (3.6)	549 (2.2)	21 (3.7)	535 (4.5)	1 (1.1)	~ ~	11.1 (0.13)	0.3 (0.20)
New Zealand	77 (2.4)	536 (2.4)	21 (2.3)	497 (6.1)	2 (0.8)	~ ~	11.4 (0.12)	0.5 (0.17) ⬆
Oman	76 (2.7)	421 (3.7)	23 (2.7)	411 (7.4)	0 (0.2)	~ ~	11.0 (0.11)	1.0 (0.14) ⬆
Spain	76 (3.1)	532 (1.8)	23 (3.0)	517 (4.0)	2 (0.8)	~ ~	11.2 (0.13)	1.7 (0.20) ⬆
Macao SAR	75 (0.1)	548 (1.2)	23 (0.1)	535 (2.2)	2 (0.0)	~ ~	10.9 (0.00)	--
Portugal	72 (3.4)	532 (2.8)	26 (3.3)	519 (3.6)	2 (0.9)	~ ~	10.9 (0.13)	1.4 (0.23) ⬆
Kuwait	71 (3.8)	398 (5.0)	29 (3.8)	387 (9.2)	0 (0.1)	~ ~	10.7 (0.16)	--
United Arab Emirates	71 (2.1)	469 (3.9)	28 (2.0)	411 (5.6)	1 (0.7)	~ ~	11.0 (0.09)	0.2 (0.12)
Bulgaria	68 (3.7)	563 (4.7)	31 (3.6)	530 (8.4)	1 (0.6)	~ ~	10.3 (0.13)	0.4 (0.19)
Saudi Arabia	68 (3.6)	439 (4.6)	29 (3.5)	414 (10.9)	3 (1.3)	385 (13.1)	10.8 (0.14)	0.7 (0.20) ⬆
Singapore	67 (2.1)	578 (4.1)	30 (2.1)	573 (5.5)	2 (0.6)	~ ~	10.8 (0.09)	0.5 (0.13) ⬆
Iran, Islamic Rep. of	66 (3.8)	433 (4.9)	30 (3.7)	417 (10.1)	4 (1.4)	425 (35.4)	10.6 (0.14)	0.4 (0.20)
Egypt	63 (4.1)	340 (7.3)	35 (4.0)	313 (10.4)	2 (1.0)	~ ~	10.5 (0.16)	--
Hong Kong SAR	63 (4.5)	571 (3.6)	36 (4.6)	565 (4.7)	1 (0.9)	~ ~	10.5 (0.17)	0.6 (0.24)
Bahrain	62 (3.2)	460 (3.2)	34 (3.2)	422 (5.2)	3 (1.4)	420 (16.2)	10.7 (0.13)	--
United States	62 (3.9)	563 (3.3)	30 (3.6)	531 (7.1)	8 (2.1)	517 (8.8)	10.3 (0.19)	0.0 (0.21)
Austria	62 (4.0)	547 (2.7)	36 (3.9)	532 (4.0)	1 (0.7)	~ ~	10.3 (0.13)	0.4 (0.18)
Canada	62 (2.3)	548 (2.1)	36 (2.2)	538 (2.7)	3 (0.8)	497 (16.8)	10.6 (0.11)	0.2 (0.17)
Lithuania	60 (3.8)	550 (2.7)	40 (3.8)	549 (4.4)	1 (0.8)	~ ~	10.2 (0.13)	0.6 (0.18) ⬆
Russian Federation	59 (3.2)	581 (3.2)	40 (3.3)	580 (4.0)	1 (0.7)	~ ~	10.2 (0.12)	0.5 (0.21)
Slovak Republic	58 (3.1)	542 (3.8)	38 (3.2)	530 (5.0)	3 (1.1)	472 (34.4)	10.0 (0.11)	0.7 (0.13) ⬆
Poland	57 (4.3)	566 (3.1)	42 (4.3)	562 (3.1)	1 (0.5)	~ ~	10.0 (0.13)	--
Denmark	56 (4.0)	554 (2.9)	40 (3.9)	539 (3.2)	4 (1.5)	546 (8.2)	10.1 (0.16)	-0.4 (0.20)
Latvia	56 (3.8)	559 (2.6)	43 (3.9)	556 (3.0)	1 (0.8)	~ ~	9.8 (0.11)	--
Czech Republic	53 (3.2)	548 (2.4)	45 (3.3)	541 (3.2)	2 (0.9)	~ ~	9.8 (0.10)	0.3 (0.16)
Chile	52 (4.4)	510 (4.4)	41 (4.4)	491 (4.1)	7 (2.5)	435 (11.3)	10.0 (0.20)	--
Hungary	51 (3.9)	563 (4.8)	46 (4.0)	548 (4.5)	3 (1.5)	497 (18.2)	9.7 (0.13)	0.0 (0.18)
Germany	48 (3.8)	554 (3.2)	48 (3.7)	524 (5.8)	4 (1.7)	461 (29.5)	9.8 (0.13)	0.2 (0.17)
Morocco	48 (3.3)	385 (5.9)	43 (3.3)	333 (5.5)	9 (1.8)	333 (7.9)	9.8 (0.15)	1.2 (0.21) ⬆
Sweden	47 (3.9)	564 (3.4)	49 (3.8)	551 (3.0)	4 (1.3)	512 (12.4)	9.9 (0.16)	0.4 (0.22)
South Africa	r 47 (3.7)	326 (8.2)	43 (3.7)	319 (8.2)	11 (1.9)	314 (13.9)	9.6 (0.16)	r 0.6 (0.20) ⬆
Chinese Taipei	46 (4.2)	554 (2.8)	52 (4.2)	563 (2.7)	2 (1.0)	~ ~	9.7 (0.15)	0.8 (0.21) ⬆
Belgium (Flemish)	45 (3.8)	533 (2.3)	52 (3.7)	521 (3.1)	3 (1.1)	488 (12.0)	9.5 (0.12)	--
Malta	44 (0.1)	459 (2.5)	47 (0.2)	449 (2.2)	9 (0.1)	436 (5.6)	9.6 (0.01)	r -0.4 (0.01) ⬇
Belgium (French)	40 (3.7)	507 (3.7)	51 (3.8)	496 (3.7)	9 (2.0)	466 (10.0)	9.2 (0.14)	0.4 (0.22)
Finland	40 (3.5)	569 (2.7)	52 (3.5)	565 (2.7)	7 (1.6)	559 (4.9)	9.4 (0.11)	0.2 (0.17)
France	40 (3.2)	521 (4.2)	57 (3.4)	507 (3.2)	4 (1.1)	482 (7.2)	9.5 (0.13)	0.1 (0.17)
Trinidad and Tobago	38 (4.1)	493 (6.6)	48 (4.0)	474 (4.8)	14 (2.4)	464 (11.7)	9.1 (0.19)	0.7 (0.27) ⬆
Slovenia	21 (3.1)	545 (4.2)	71 (3.3)	540 (2.1)	8 (1.8)	555 (5.6)	8.7 (0.13)	-0.1 (0.17)
Italy	20 (3.0)	556 (4.0)	76 (3.3)	548 (2.9)	4 (1.3)	523 (13.4)	8.8 (0.11)	0.2 (0.14)
International Avg.	62 (0.5)	517 (0.5)	35 (0.5)	502 (0.8)	3 (0.2)	466 (3.6)		

This PIRLS questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in PIRLS 2011. To provide a point of reference for country comparisons, the scale centrepoin of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

A dash (-) indicates comparable data not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70% but less than 85% of the students.

Significantly higher than 2011 ⬆

Significantly lower than 2011 ⬇

Source: Exhibit 7.2, International reading report (Mullis *et al.*, 2017a).

8.3 Principals' views of school discipline problems

Principals were asked about the degree to which a number of discipline issues were a problem in their school. Based on their responses, pupils were categorised as attending schools with 'Hardly Any Problems', 'Minor Problems' or 'Moderate to Severe Problems' (see Figure 8.4). The results are shown in Table 8.4.

It should be noted that the data for the principals' scale is only available for between 70 and 85 per cent of pupils, and therefore may not be representative of all primary school principals in Northern Ireland. (This is shown by the 'r' in Table 8.4.)

Figure 8.4 School discipline problems (principal reports)

To what extent is each of the following a problem among Year 6 pupils in your school?

Tick one circle for each row.

	Not a problem	Minor problem	Moderate problem	Serious problem
a) Arriving late at school -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Absenteeism (i.e. unauthorised absences) -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Classroom disturbance -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Cheating -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Swearing -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Vandalism -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Theft -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Intimidation or verbal abuse among pupils (including texting, emailing, etc.) -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Physical conflicts among pupils -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j) Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.) -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Source: PIRLS 2016 School Questionnaire for Northern Ireland and Exhibit 7.1, International reading report (Mullis *et al.*, 2017a). The same statements were used in 2011.

Table 8.4 School discipline problems

As reported by principals

Students were scored according to their principals' responses concerning ten potential school problems on the *School Discipline* scale. Students in schools with **Hardly Any Problems** had a score on the scale of at least 9.9, which corresponds to their principals reporting "not a problem" for five of the ten issues and "minor problem" for the other five, on average. Students in schools with **Moderate to Severe Problems** had a score no higher than 7.7, which corresponds to their principals reporting "moderate problem" for five of the ten issues and "minor problem" for the other five, on average. All other students attended schools with **Minor Problems**.

Country	Hardly Any Problems		Minor Problems		Moderate to Severe Problems		Average Scale Score	Difference in Average Scale Score from 2011
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement		
Northern Ireland	r 85 (3.5)	566 (2.8)	15 (3.5)	557 (10.8)	0 (0.0)	~ ~	11.2 (0.12)	r 0.1 (0.17)
Ireland, Rep. of	83 (3.4)	571 (2.5)	15 (3.5)	550 (8.8)	2 (0.9)	~ ~	11.0 (0.13)	-0.1 (0.18)
England	82 (3.4)	563 (2.1)	18 (3.4)	539 (4.1)	0 (0.0)	~ ~	11.1 (0.11)	0.3 (0.18)
New Zealand	69 (3.4)	539 (3.0)	29 (3.4)	497 (6.2)	2 (1.0)	~ ~	10.6 (0.10)	0.0 (0.15)
Canada	68 (2.7)	550 (2.1)	31 (2.7)	532 (4.4)	2 (0.7)	~ ~	10.4 (0.07)	0.1 (0.10)
Singapore	67 (0.0)	580 (4.3)	33 (0.0)	569 (6.2)	0 (0.0)	~ ~	10.8 (0.00)	0.0 (0.00)
Poland	42 (4.2)	569 (3.7)	57 (4.2)	562 (3.0)	1 (0.1)	~ ~	9.7 (0.10)	- -
International Avg.	62 (0.5)	518 (0.7)	30 (0.5)	503 (0.9)	8 (0.3)	455 (2.4)		

This PIRLS questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in PIRLS 2011. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

A dash (-) indicates comparable data not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70% but less than 85% of the students.

Significantly higher than 2011 ▲

Significantly lower than 2011 ▼

Source: Exhibit 7.1, International reading report (Mullis *et al.*, 2017a).

The responses of principals who complete the questionnaire indicated that the majority of pupils in Northern Ireland (85 per cent) were taught in schools with 'Hardly Any Problems' with discipline or safety. This is well above the international average of 62 per cent. Across all participating countries, only two reported fewer problems than Northern Ireland (Hong Kong at 93 per cent and Macao at 89 per cent). The Republic of Ireland and England were within three percentage points of Northern Ireland, with principals of 83 and 82 per cent of pupils reporting 'Hardly Any Problems' with discipline or safety at school, respectively. Of the remaining comparator countries, only Poland had a majority of pupils attending schools where principals reported that there were 'Minor' rather than 'Hardly Any' problems with discipline.

No schools in Northern Ireland reported 'Moderate to Severe' problems. The international average for this category was eight per cent of pupils, and among comparator countries, the maximum proportion of pupils in this category was two per cent (in Canada, New Zealand and the Republic of Ireland).

In Northern Ireland, there was no change between 2011⁴³ and 2016 in the results for school discipline and safety, in terms of the percentages of pupils in each category ('Hardly Any', 'Minor' and 'Moderate to Severe' problems with school discipline).

⁴³ The same ten statements were used to calculate the scale in both 2011 and 2016. However, in 2011, the third category was labelled 'moderate' rather than 'moderate to severe' problems. Despite this change, comparisons can still be made because the categories were created in the same way based on identical questions.

On the 'School Discipline' scale, the average score for Northern Ireland was 11.2, putting it in fourth place internationally. This score placed Northern Ireland in the category of having 'Hardly Any Problems'; this was also the case for all the comparator countries except for Poland (which was categorised as having 'Minor Problems'). The average scale score for Northern Ireland was not statistically different from the score achieved in 2011.

On average internationally, pupils in schools with lower problem ratings for school discipline scored higher in PIRLS 2016 than those in schools with more reported problems. Northern Ireland followed this pattern: pupils in schools judged to have 'Hardly Any Problems' had higher average scores than those in schools judged to have 'Minor Problems'. However, the standard error statistics for Northern Ireland on this scale suggest that the apparent differences (shown in Table 8.5) are unlikely to be statistically significant. In addition, across countries, rankings in ratings for discipline problems did not necessarily relate directly to overall rankings of average pupil achievement.

The full international table follows, for reference, showing data for all countries (Table 8.5).

Table 8.5 School discipline problems

As reported by principals

Students were scored according to their principals' responses concerning ten potential school problems on the *School Discipline* scale. Students in schools with **Hardly Any Problems** had a score on the scale of at least 9.9, which corresponds to their principals reporting "not a problem" for five of the ten issues and "minor problem" for the other five, on average. Students in schools with **Moderate to Severe Problems** had a score no higher than 7.7, which corresponds to their principals reporting "moderate problem" for five of the ten issues and "minor problem" for the other five, on average. All other students attended schools with **Minor Problems**.

Country	Hardly Any Problems		Minor Problems		Moderate to Severe Problems		Average Scale Score	Difference in Average Scale Score from 2011
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement		
Hong Kong SAR	93 (2.2)	571 (3.0)	7 (2.2)	547 (10.1)	0 (0.0)	~ ~	11.9 (0.10)	0.5 (0.16) ▲
Macao SAR	89 (0.1)	548 (1.1)	11 (0.1)	531 (3.4)	0 (0.0)	~ ~	11.4 (0.00)	--
Northern Ireland	r 85 (3.5)	566 (2.8)	15 (3.5)	557 (10.8)	0 (0.0)	~ ~	11.2 (0.12)	r 0.1 (0.17)
Kazakhstan	85 (3.1)	538 (2.8)	10 (2.7)	520 (9.2)	5 (1.6)	537 (7.7)	11.4 (0.14)	--
Lithuania	84 (2.5)	549 (2.9)	15 (2.4)	548 (5.6)	0 (0.5)	~ ~	10.9 (0.10)	0.3 (0.15)
Ireland, Rep. of	83 (3.4)	571 (2.5)	15 (3.5)	550 (8.8)	2 (0.9)	~ ~	11.0 (0.13)	-0.1 (0.18)
England	82 (3.4)	563 (2.1)	18 (3.4)	539 (4.1)	0 (0.0)	~ ~	11.1 (0.11)	0.3 (0.18)
Finland	78 (3.3)	567 (1.9)	22 (3.3)	564 (4.9)	0 (0.0)	~ ~	10.6 (0.09)	0.3 (0.15)
Chinese Taipei	77 (3.6)	560 (2.2)	23 (3.6)	557 (4.8)	0 (0.0)	~ ~	11.1 (0.13)	-0.3 (0.18)
Georgia	77 (3.0)	490 (3.1)	11 (2.3)	492 (8.6)	12 (2.3)	479 (9.7)	10.6 (0.15)	-0.3 (0.20)
Spain	76 (2.6)	531 (1.5)	18 (2.5)	520 (3.4)	6 (1.1)	505 (16.2)	10.7 (0.12)	0.0 (0.20)
Czech Republic	75 (3.5)	545 (2.3)	23 (3.5)	539 (4.8)	1 (0.7)	~ ~	10.4 (0.10)	0.1 (0.14)
Azerbaijan	75 (3.4)	467 (5.4)	16 (2.8)	496 (7.2)	9 (2.2)	461 (7.8)	10.5 (0.15)	0.9 (0.30) ▲
United Arab Emirates	72 (2.1)	463 (4.5)	23 (2.0)	423 (6.3)	5 (1.0)	392 (10.1)	10.7 (0.08)	0.7 (0.13) ▲
Latvia	72 (4.0)	562 (2.1)	26 (4.3)	547 (4.2)	2 (1.3)	~ ~	10.5 (0.11)	--
Bahrain	70 (2.7)	454 (3.1)	20 (2.6)	429 (6.4)	10 (0.9)	424 (8.7)	10.2 (0.09)	--
Norway (5)	70 (4.4)	562 (2.7)	28 (4.3)	554 (4.2)	2 (1.1)	~ ~	10.4 (0.14)	--
Russian Federation	70 (3.0)	580 (3.0)	30 (3.0)	583 (4.0)	0 (0.0)	~ ~	10.5 (0.08)	0.2 (0.12)
New Zealand	69 (3.4)	539 (3.0)	29 (3.4)	497 (6.2)	2 (1.0)	~ ~	10.6 (0.10)	0.0 (0.15)
Bulgaria	69 (4.1)	562 (4.5)	26 (3.8)	532 (9.6)	5 (2.1)	521 (23.3)	10.4 (0.15)	-0.2 (0.21)
Canada	68 (2.7)	550 (2.1)	31 (2.7)	532 (4.4)	2 (0.7)	~ ~	10.4 (0.07)	0.1 (0.10)
Australia	67 (3.8)	556 (3.2)	29 (3.6)	525 (4.1)	4 (1.6)	475 (12.3)	10.3 (0.11)	-0.2 (0.16)
Singapore	67 (0.0)	580 (4.3)	33 (0.0)	569 (6.2)	0 (0.0)	~ ~	10.8 (0.00)	0.0 (0.00)
Slovak Republic	66 (3.7)	542 (3.0)	31 (3.8)	531 (7.5)	3 (1.5)	420 (24.7)	10.4 (0.13)	0.3 (0.18)
Qatar	65 (0.4)	443 (2.5)	28 (0.3)	450 (2.7)	7 (0.1)	403 (5.4)	10.5 (0.01)	0.4 (0.14) ▲
United States	65 (4.6)	561 (3.4)	31 (4.3)	529 (6.0)	4 (1.5)	520 (9.3)	10.4 (0.12)	0.0 (0.15)
Belgium (Flemish)	64 (3.7)	531 (2.4)	34 (3.7)	515 (4.9)	1 (0.9)	~ ~	10.5 (0.14)	--
Iran, Islamic Rep. of	63 (4.2)	443 (4.7)	30 (4.1)	406 (12.2)	7 (2.0)	390 (16.2)	10.3 (0.12)	-0.5 (0.16) ▼
Belgium (French)	63 (3.6)	503 (3.5)	33 (3.4)	495 (4.7)	5 (1.6)	461 (12.4)	10.2 (0.11)	0.1 (0.19)
Malta	62 (0.1)	459 (2.1)	34 (0.1)	441 (2.5)	5 (0.1)	446 (6.3)	10.2 (0.00)	0.0 (0.01)
Italy	59 (3.6)	550 (3.0)	28 (3.4)	547 (4.5)	12 (2.5)	543 (4.8)	9.9 (0.13)	0.3 (0.19)
Hungary	58 (4.2)	565 (3.6)	36 (4.1)	542 (5.5)	6 (1.7)	512 (9.4)	10.1 (0.12)	0.3 (0.18)
Slovenia	58 (4.0)	543 (3.1)	38 (3.7)	542 (2.9)	4 (1.9)	544 (8.6)	10.1 (0.14)	0.0 (0.18)
Portugal	57 (4.0)	534 (3.2)	38 (3.7)	523 (2.6)	6 (1.8)	501 (10.2)	10.1 (0.10)	-0.3 (0.20)
Israel	54 (3.9)	548 (5.2)	34 (3.5)	520 (6.4)	12 (2.1)	475 (9.0)	9.6 (0.16)	0.5 (0.26)
Sweden	53 (4.6)	562 (3.3)	44 (4.6)	548 (4.0)	3 (1.1)	522 (15.7)	10.1 (0.13)	0.3 (0.18)
France	52 (3.5)	519 (3.3)	41 (3.5)	508 (3.6)	7 (1.9)	484 (11.7)	9.9 (0.11)	-0.4 (0.17) ▼
Denmark	52 (3.9)	552 (3.0)	47 (3.9)	543 (3.2)	1 (0.7)	~ ~	10.1 (0.10)	-0.1 (0.14)
Chile	52 (4.5)	506 (4.3)	37 (5.0)	490 (5.6)	11 (3.2)	447 (10.4)	9.7 (0.13)	--
Saudi Arabia	51 (3.7)	455 (5.8)	25 (3.1)	416 (8.0)	24 (3.6)	393 (8.2)	9.5 (0.18)	0.2 (0.26)
Austria	51 (4.5)	548 (2.9)	45 (4.3)	536 (3.8)	4 (1.7)	509 (12.4)	9.9 (0.12)	0.3 (0.18)
Netherlands	43 (5.1)	551 (2.9)	54 (5.2)	543 (2.5)	3 (1.0)	498 (32.9)	9.6 (0.11)	r 0.5 (0.15) ▲
Germany	43 (3.8)	553 (2.8)	50 (3.7)	529 (5.1)	7 (2.0)	489 (26.2)	9.4 (0.10)	-0.2 (0.13)
Poland	42 (4.2)	569 (3.7)	57 (4.2)	562 (3.0)	1 (0.1)	~ ~	9.7 (0.10)	--
Oman	40 (2.6)	430 (5.1)	32 (2.8)	415 (5.5)	28 (2.9)	407 (6.3)	8.9 (0.15)	0.4 (0.21)
Kuwait	37 (5.0)	413 (9.5)	41 (5.3)	388 (9.8)	23 (3.5)	378 (12.0)	9.1 (0.14)	--
Trinidad and Tobago	33 (3.9)	497 (7.2)	52 (4.4)	481 (6.0)	15 (3.4)	462 (10.6)	9.2 (0.12)	-0.2 (0.17)
Egypt	19 (2.9)	356 (14.9)	39 (4.2)	336 (10.3)	42 (3.6)	314 (8.7)	7.9 (0.13)	--
South Africa	r 18 (2.6)	348 (13.7)	55 (3.7)	319 (6.4)	27 (3.6)	295 (7.9)	8.6 (0.10)	r -0.3 (0.13)
Morocco	17 (2.6)	368 (10.1)	21 (3.1)	354 (11.5)	62 (3.0)	357 (4.5)	7.4 (0.14)	0.2 (0.21)
International Avg.	62 (0.5)	518 (0.7)	30 (0.5)	503 (0.9)	8 (0.3)	455 (2.4)		

This PIRLS questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in PIRLS 2011. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

A dash (-) indicates comparable data not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70% but less than 85% of the students.

Significantly higher than 2011 ▲

Significantly lower than 2011 ▼

Source: Exhibit 7.1, International reading report (Mullis *et al.*, 2017a).

8.4 Pupil reports of bullying in school

Pupils were asked about the extent to which they had experienced a range of behaviours which were considered to demonstrate bullying at school. The questions they were asked and details of the scaling are shown in Figure 8.5 and the results for each subject are shown in Table 8.6.

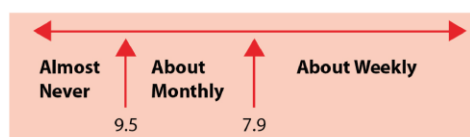
Based on their responses, pupils were categorised as being in one of three bands, which described the frequency with which they had experienced the eight bullying behaviours in their school during the last year: ‘Almost Never’, ‘About Monthly’ and ‘About Weekly’. The number of statements included in the question on pupil bullying increased from six in the 2011 survey to eight in 2016, and the wording was slightly simplified. The additional statements in 2016 asked pupils about their experience of threatening behaviour and their experience of having embarrassing information shared about them.

Figure 8.5 Pupils bullied at school (pupil reports)

This year, how often have other children from your school done any of the following things to you (including by text or the internet)?

Tick one box for each line.

	Never	A few times a year	Once or twice a month	At least once a week
a) Made fun of me or called me names	↓ <input type="checkbox"/>	↓ <input type="checkbox"/>	↓ <input type="checkbox"/>	↓ <input type="checkbox"/>
b) Left me out of their games or activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Spread lies about me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Stole something from me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Hit or hurt me (e.g. <i>shoving, hitting, kicking</i>).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Made me do things I didn't want to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Shared embarrassing information about me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Threatened me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Source: PIRLS 2016 Pupil Questionnaire for Northern Ireland and Exhibit 7.3, International reading report (Mullis *et al.*, 2017a). Statements a – f were also used in 2011, with slightly different wording.

Table 8.6 Pupils bullied at school

As reported by pupils

Students were scored according to their responses to how often they experienced eight bullying behaviours on the *Student Bullying* scale. Students bullied **Almost Never** had a score on the scale of at least 9.5, which corresponds to “never” experiencing four of the eight bullying behaviours and experiencing each of the other four behaviours “a few times a year,” on average. Students bullied **About Weekly** had a score no higher than 7.9, which corresponds to their experiencing each of four of the eight behaviours “once or twice a month” and each of the other four “a few times a year,” on average. All other students were bullied **About Monthly**.

Country	Almost Never		About Monthly		About Weekly		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Ireland, Rep. of	74 (1.1)	575 (2.3)	20 (0.9)	551 (3.8)	5 (0.5)	526 (7.6)	10.8 (0.05)
Poland	72 (1.0)	573 (2.0)	20 (0.8)	550 (3.6)	7 (0.5)	523 (6.4)	10.7 (0.04)
Northern Ireland	59 (1.3)	576 (2.6)	29 (1.0)	557 (2.9)	11 (0.8)	531 (5.7)	10.0 (0.06)
England	52 (1.2)	569 (2.3)	33 (0.9)	558 (2.5)	15 (0.7)	531 (3.8)	9.7 (0.04)
Singapore	50 (0.7)	590 (3.2)	33 (0.7)	572 (3.2)	16 (0.5)	543 (4.8)	9.6 (0.03)
Canada	50 (0.8)	554 (1.9)	33 (0.7)	539 (2.1)	16 (0.7)	521 (3.3)	9.7 (0.03)
New Zealand	40 (1.0)	541 (2.9)	36 (0.7)	525 (3.0)	24 (0.8)	494 (3.4)	9.2 (0.04)
International Avg.	57 (0.2)	521 (0.4)	29 (0.1)	507 (0.5)	14 (0.1)	482 (0.8)	

This PIRLS questionnaire scale was established in 2016 based on the combined response distribution of all countries that participated in PIRLS 2016. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

Source: Exhibit 7.3, International reading report (Mullis *et al.*, 2017a).

Pupils in Northern Ireland reported that, on average, they experienced bullying behaviours less frequently than those in most other participating countries. The average scale score for Northern Ireland on the ‘Bullying’ scale was 10.0, placing pupils in the ‘Almost Never’ bullied category overall. Fifty-nine per cent of pupils reported that they were ‘Almost Never’ bullied, while responses from 29 per cent of pupils indicated they experienced bullying ‘About Monthly’ and 11 per cent ‘About Weekly’. These figures indicate a slightly better picture than the international average, and broadly correspond with the results in TIMSS 2015 in Northern Ireland which surveyed a different sample of Year 6 children.

Among the comparator countries, two countries scored higher than Northern Ireland on this measure: 74 per cent of pupils in the Republic of Ireland and 72 per cent in Poland were categorised as ‘Almost Never’ experiencing bullying. Like Northern Ireland, these countries were placed in the ‘Almost Never’ bullied category based on their scale scores, as were England, Singapore and Canada. These last three countries, however, had percentages of pupils in the ‘Almost Never’ bullied category that were under the international average of 57 per cent. New Zealand was the only comparator country which had a scale score putting it into the category where bullying was categorised as occurring ‘About Monthly’.

In 2016, reported frequency of bullying in Northern Ireland was broadly similar to that reported by pupils in 2011, although there was a small increase in the percentage of pupils reporting they experienced bullying ‘Almost Never’ between 2011 and 2016 of two percentage points. There was an accompanying decrease in the percentage reporting experiencing bullying ‘About Weekly’ between 2011 and 2016 of three percentage points.

Internationally (on average and for all participating countries), average pupil attainment in reading tended to be higher where less bullying was reported (but causality cannot be inferred). Pupils in Northern Ireland appeared to conform to this general pattern. The standard errors shown in Table 8.6 suggest that differences in

average achievement between pupils with 'About Weekly' and 'About Monthly' experience of bullying behaviours may be statistically significant⁴⁴.

8.5 The extent to which teaching is limited by disruptive or uninterested pupils

Teachers were asked to indicate the extent to which they felt that their teaching was limited by disruptive or uninterested pupils. The results are shown in Table 8.7. Teachers' responses led to them being categorised as having their teaching limited 'Not at All', 'Some' or 'A Lot' by these factors.

Table 8.7 Teaching of reading limited by disruptive or uninterested pupils

a) Teaching of reading limited by disruptive pupils

Country	Not at All		Some		A Lot	
	% of Pupils	Average Achievement	% of Pupils	Average Achievement	% of Pupils	Average Achievement
Canada	23	555	52	543	25	533
England	52	566	42	549	5	557
Ireland, Rep. of	51	573	42	562	7	547
New Zealand	46	538	48	523	7	501
Northern Ireland	64	570	33	555	3	542
Poland	44	569	46	564	11	551
Singapore	31	598	57	567	12	566
International Average	37	530	49	520	14	506

Source: PIRLS 2016 Teacher Context Data Almanac, question ATBR05E.

⁴⁴ Tests of statistical significance were not carried out in this international analysis.

b) Teaching of reading limited by uninterested pupils

Country	Not at All		Some		A lot	
	% of Pupils	Average Achievement	% of Pupils	Average Achievement	% of Pupils	Average Achievement
Canada	21	557	68	542	11	523
England	43	566	55	553	2	552
Ireland, Rep. of	39	578	58	560	3	537
New Zealand	39	538	57	523	4	496
Northern Ireland	41	572	57	559	2	543
Poland	31	579	64	560	6	539
Singapore	22	614	68	567	10	558
International Average	28	535	60	519	12	500

Source: PIRLS 2016 Teacher Context Data Almanac, question ATBR05F.

Of the countries participating in PIRLS 2016, Northern Ireland had the greatest percentage of pupils whose teachers reported that their teaching was 'Not at All' limited by disruptive pupils (64 per cent). A third of pupils (33 per cent) in Northern Ireland had teachers who reported that teaching of reading was limited to 'Some' extent by disruptive pupils.

Teachers in Northern Ireland were more likely to report that 'uninterested pupils' limited their teaching of reading. Fifty-seven per cent reported that uninterested pupils limited teaching to 'Some' extent and two per cent 'A Lot'.

For both causes of limitations to teaching, two of the comparator countries, Singapore and Canada, reported percentages of pupils affected by these problems that were greater than the international average.

Internationally, pupil attainment tended to be lower where teachers reported high levels of impact caused by disruptive or uninterested pupils, but the direction of causality cannot be inferred from the data.

In Northern Ireland, there was an apparent difference between the average achievement scores of those pupils whose teachers are limited 'Not at All', 'Some' or 'A Lot' by either disruptive pupils or uninterested pupils. However, from the data available it is not possible to determine whether these apparent differences in achievement are statistically significant.

In 2011, the PIRLS survey found that, unlike the current survey, the majority of pupils' teachers reported that their teaching was limited by disruptive pupils to 'Some' Extent' rather than 'Not at All'. Of the responses to this question in 2011, teachers of 53 per cent of pupils indicated this, compared with the 33 per cent in 2016. Since 2011, the percentage reporting 'A Lot' of problems with disruptive pupils fell from six to three per cent.

The extent of problems caused by uninterested pupils had also reduced since 2011. In 2011, around a quarter of pupils whose teachers answered this question were in

classes where teaching of reading was 'Not at All' limited by uninterested pupils (26 per cent for Northern Ireland and 24 per cent internationally on average). In 2016, the international average had increased to 28 per cent while the percentage for Northern Ireland was much higher at 41 per cent.

8.6 Conclusion

The PIRLS 2016 survey results indicated that, in general, Northern Ireland has a good school learning environment⁴⁵. Internationally, and in Northern Ireland, PIRLS achievement scores indicate that the more stable the school learning environment, the higher the reading scores. While this relationship is indicated by the results, the direction of the causality cannot be determined.

The responses of principals in Northern Ireland placed it at the top of the table internationally in terms of the percentage of pupils at schools reported to have a 'High' or 'Very High' emphasis on academic success. The Republic of Ireland and England reported a similar, but slightly less, emphasis overall. Like principals, teachers in Northern Ireland indicated a strong emphasis on academic success, though they were less likely than principals to judge their school as having a 'Very High' emphasis on academic success. On the PIRLS 'School Emphasis on Academic Success' scale, principals' reports placed Northern Ireland at the top of the table, and its teacher reports put it in third place.

The vast majority of pupils in Northern Ireland attended schools classified as 'Very Safe and Orderly' according to their teachers' responses. This had increased significantly since the 2011 PIRLS survey. Internationally, only three other countries had higher percentages of pupils at 'Very Safe and Orderly' schools. England, the Republic of Ireland and New Zealand had similar, but slightly lower, percentages compared to Northern Ireland.

Eighty-five per cent of pupils in Northern Ireland attended school categorised by principals as having 'Hardly Any' discipline problems; the third highest proportion internationally. The Republic of Ireland and England had similar but lower percentages.

Pupil reports in Northern Ireland led them to be categorised as being 'Almost Never' bullied. This was also the case in 2011.

Pupils in Northern Ireland had teachers who reported the lowest level of disruption caused by pupils during reading lessons. According to teacher responses, nearly two-thirds of pupils were taught reading in classes that were 'Not at All' limited by disruptive pupils. Uninterested pupils were a greater problem, though 41 per cent of pupils still had teachers who reported that this did 'Not at All' limit their teaching of reading.

⁴⁵ Data for the principals' scale was only available for between 70 and 85 per cent of pupils, and therefore may not be representative of all primary school principals in Northern Ireland.

9 The curriculum and learning activities

Chapter outline

This chapter presents findings from PIRLS 2016 relating to teaching practices and the curriculum in reading in Year 6, as reported by teachers and principals. Where relevant, outcomes for Northern Ireland are compared with international averages and comparator countries.

Key findings

- In Northern Ireland, over a quarter of teaching time (27 per cent) was spent on teaching English (including reading, writing, speaking, literature and other language skills)⁴⁶. This was proportionally similar to the international average. This compares with the 23 per cent of teaching time spent on mathematics but is much greater than the four per cent for science, both reported in TIMSS 2015.
- The proportion of time spent specifically on teaching reading, including reading across the curriculum, was 14 per cent. The international average was 18 per cent.
- Of 14 identified skills and strategies for reading, seven were emphasised one grade (year group) earlier in Northern Ireland than internationally. Only two of the key skills ('Describing the Style or Structure of a Text' and 'Determining the Author's Perspective or Intention') were introduced in Year 5; the remaining 12 were introduced earlier.
- All key reading skills were taught to the vast majority of Year 6 pupils at least weekly. The two most commonly taught skills were 'Locate Information Within the Text' and 'Explain or Support Their Understanding of What They Have Read'.
- The skill that received least attention in Northern Ireland, and across most comparator countries, was to 'Determine the Author's Perspective or Intention', which was nonetheless taught at least weekly to around two-thirds of pupils in Northern Ireland.
- Teachers in Northern Ireland were most likely to report creating same-ability groups 'Always or Almost Always' to teach reading. This was also the case in England and New Zealand.
- The most common approach internationally on average (as well as in the comparator countries of Singapore, the Republic of Ireland and Canada) was to teach reading as a whole-class activity.
- The most common type of literary text that was frequently given to pupils by teachers in Northern Ireland was a 'Longer Fiction Book with Chapters'. Teachers were more likely to report using these with students at least weekly than 'Short Stories' or 'Plays'.
- The most common non-fiction text type that was frequently given to pupils by teachers in Northern Ireland was a 'Non-Fiction Subject Area Book'. Teachers were more likely to report using these with students at least weekly than 'Longer Non-Fiction Books with Chapters' or 'Non-Fiction Articles'.

⁴⁶ Referred to as 'Communication in English' in the Northern Ireland curriculum.

Interpreting the data: percentages in tables

Some of the data in this chapter is derived from teacher reports. Reported percentages refer to pupils and can usually be interpreted as the percentage of pupils whose teachers reported a particular practice or circumstance.

Year 6 pupils were sampled by class. As a result, the Year 6 teacher questionnaire would, in most cases, have been completed by the class teacher of the sampled class.

It should be noted that the data for some scales is only available for between 70 and 85 per cent of pupils and therefore may not be representative of all primary schools in Northern Ireland. This is shown by the 'r' in Tables 9.1, 9.3 and 9.4. In addition, in Table 9.1, 's' indicates that data is available for between 50 and 70 per cent of pupils.

9.1 Teaching time

Total teaching time⁴⁷ for reading, as reported by principals and teachers, was calculated using the formula shown in Figure 9.1. These calculations enabled direct comparison of teaching time between countries participating in PIRLS 2016.

Figure 9.1 Formula for calculation of teaching time

Total Instruction Hours per Year	=	Principal Reports of School Days per Year	X	Principal Reports of Instruction Hours per Day
Language Instruction Hours per Year	=	$\frac{\text{Teacher Reports of Weekly Language Instruction Hours, Including Reading, Writing, Speaking, Literature, and Other Language Skills}}{\text{Principal Reports of School Days per Week}}$	X	Principal Reports of School Days per Year
Reading Instruction Hours per Year	=	$\frac{\text{Teacher Reports of Weekly Reading Instruction Hours, Including Reading Across the Curriculum}}{\text{Principal Reports of School Days per Week}}$	X	Principal Reports of School Days per Year

Source: Adapted from Exhibit 9.1, International reading report (Mullis *et al.*, 2017a).

⁴⁷ Teaching time is referred to as 'instructional time' in the international data tables and report.

Table 9.1 shows that 27 per cent of teaching time were spent on English⁴⁸ teaching (including reading, writing, speaking, literature and other language skills) for Year 6 pupils in Northern Ireland. This is similar the finding in 2011 of 28 per cent.

Internationally in 2016, the average proportion of teaching time devoted to language teaching/instruction (including reading, writing, speaking, literature and other language skills) was also 27 per cent.

Teachers were also asked how much time they spent specifically teaching reading, including reading across the curriculum. Teachers in Northern Ireland reported that they spent an average of 14 per cent of the total number of hours available. This was lower than the international average of 18 per cent and the finding for Northern Ireland in 2011 of 16 per cent.

These figures compare with 23 per cent of teaching time for mathematics teaching and just four per cent for science teaching as reported in Northern Ireland in the TIMSS 2015 study⁴⁹. The international averages in TIMSS 2015 were 18 per cent for mathematics and nine per cent for science.

Table 9.1 Teaching time in Year 6

Reported by Principals and Teachers

Country	Total Instruction Hours per Year All Subjects	Language Instruction, Including Reading, Writing, Speaking, Literature, and Other Language Skills		Reading Instruction, Including Reading Across the Curriculum	
		Hours per Year	Percent of Total Instruction Time	Hours per Year	Percent of Total Instruction Time
Singapore	1040 (0.0)	278 (9.1)	27 (0.9)	124 (7.0)	12 (0.7)
England	r 993 (10.5)	273 (9.5)	28 (0.9)	125 (11.3)	12 (1.1)
Northern Ireland	s 958 (10.5)	s 257 (10.7)	27 (1.3)	s 137 (7.8)	14 (0.8)
Canada	952 (5.1)	r 292 (4.9)	31 (0.6)	r 206 (7.0)	22 (0.8)
New Zealand	926 (4.0)	r 340 (8.6)	37 (1.0)	r 215 (8.9)	24 (1.0)
Ireland, Rep. of	915 (0.3)	206 (5.2)	23 (0.6)	150 (7.2)	16 (0.8)
Poland	r 754 (5.4)	r 140 (1.0)	19 (0.1)	r 33 (1.7)	4 (0.2)
International Avg.	898 (1.6)	242 (1.4)	27 (0.2)	156 (1.5)	18 (0.2)

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

An "r" indicates data are available for at least 70% but less than 85% of the students. An "s" indicates data are available for at least 50% but less than 70% of the students.

Source: Exhibit 9.1, International reading report (Mullis *et al.*, 2017a).

Comparator countries differed considerably in the amount of time devoted to the teaching of language and reading. New Zealand, the country whose pupils performed least well of the comparator countries in PIRLS 2016, 37 per cent of their total teaching time per year on language teaching and 24 per cent of their total teaching time per year on reading teaching. This was higher than any comparator country. The next highest was Canada (31 per cent on language and 22 per cent on reading

⁴⁸ Communication in English in the Northern Ireland Curriculum.

⁴⁹ Based on an estimated total of 962 hours of total teaching time available.

specifically). Poland's teachers reported the fewest hours teaching time among the comparator countries, with 19 per cent spent on language teaching and only 4 per cent spent on reading specifically⁵⁰. On the PIRLS 2016 measure of reading achievement, pupils in Poland attained an average score of the same standard as pupils in Northern Ireland and the Republic of Ireland; a score which was significantly lower than Singapore's.

9.2 Emphasis in early years on reading skills and strategies

In order to investigate the teaching of early reading skills and strategies, principals were asked to report the grade at which the teaching of a range of specific skills was emphasised. The equivalent Northern Ireland year groups are shown for each grade in Table 9.2⁵¹.

Table 9.3 shows the modal grade reported in Northern Ireland and comparator countries in which each skill or strategy is emphasised for at least 50 per cent of pupils.

In PIRLS 2016, principals in Northern Ireland reported that eight of the 14 skills and strategies were emphasised by Grade 1 or earlier (Year 3 or earlier). This was in line with the international pattern except that three skills ('Locating Information Within the Text', 'Identifying the Main Idea in a Text' and 'Making Predictions About What Will Happen Next in a Text') were more often emphasised a grade later internationally, in Grade 2 (Year 4).

Four skills and strategies were emphasised most often for at least 50 per cent of the pupils in Grade 2 (Year 4) in Northern Ireland, two of which, 'Comparing Different Texts' and 'Making Generalisations and Drawing Inferences Based on a Text', were generally emphasised one grade later (in Grade 3/Year 5) internationally.

Similarly the skills, 'Describing the style or structure of a text' and 'Determining the Author's Perspective or Intention' were emphasised most often in Grade 3 (Year 5) in Northern Ireland, again a grade earlier than the international mode.

Most comparator countries followed a similar pattern of progression with regard to the grades in which each skill or strategy was emphasised. England and New Zealand tended to introduce skills at a younger age than did Northern Ireland and the other comparator countries.

⁵⁰ Data was available for only 70-85% of pupils' principals and teachers, so may not be fully representative.

⁵¹ The questionnaires were adapted for use in Northern Ireland and showed the Northern Ireland equivalent year group as in Table 9.2.

Although some similar information was gathered in 2011, the 2016 data is scaled and presented differently. As a result, direct comparisons cannot be made between the two cycles.

Table 9.2 International grade equivalents in Northern Ireland

Grade	Equivalent year group in Northern Ireland
Grade 1 or earlier	Year 3 or earlier
Grade 2	Year 4
Grade 3	Year 5
Grade 4	Year 6

Source: NFER

Table 9.3 Emphasis in early years on reading skills and strategies

Reported by Principals

Countries	Grade by Which Skill or Strategy Is Emphasized for at Least 50% of the Students (Country Median)													
	Knowing Letters of the Alphabet	Knowing Letter-Sound Relationships	Reading Words	Reading Isolated Sentences	Reading Connected Text	Locating Information Within the Text	Identifying the Main Idea of a Text	Explaining or Supporting Understanding of a Text	Comparing a Text with Personal Experience	Comparing Different Texts	Making Predictions About What Will Happen Next in a Text	Making Generalizations and Drawing Inferences Based on a Text	Describing the Style or Structure of a Text	Determining the Author's Perspective or Intention
Canada	1	1	1	1	1	1	2	2	2	2	1	2	3	3
England	1	1	1	1	1	1	1	1	1	2	1	2	2	3
Ireland, Rep. of	1	1	1	1	1	1	2	2	2	3	1	3	3	4
New Zealand	1	1	1	1	1	1	1	1	1	2	1	2	2	3
Northern Ireland	r	1	1	1	1	1	1	2	2	2	1	2	3	3
Poland	1	1	1	1	1	1	2	2	2	3	2	3	4	3
Singapore	1	1	1	1	1	1	2	2	2	3	1	3	3	4
International Mode	1	1	1	1	1	2	2	2	2	3	2	3	4	4

An "r" indicates data are available for at least 70% but less than 85% of the students.

Source: Exhibit 6.4, International reading report (Mullis *et al.*, 2017a).

9.3 Teachers' focus on specific comprehension skills and strategies

In order to assess how teachers develop pupils' reading comprehension skills, teachers were asked to specify the frequency with which pupils in their Year 6 classes were asked to practise a range of nine reading skills and strategies. These skills range from the ability to locate and retrieve information to those requiring comparisons and analysis. Table 9.4 shows how teachers responded to these questions (listing Northern Ireland and comparator countries alphabetically).

For almost all of the listed activities, the proportions of pupils in Northern Ireland whose teachers asked them to do the activity at least weekly was higher than the international average. For only one reading activity, 'Compare What They Have Read with Experiences They Have Had', did reports from Northern Ireland fall below the international average.

'Locate Information Within the Text' and 'Explain or Support Their Understanding of What They Have Read' were the aspects taught most to Year 6 pupils (99 and 98 per cent of pupils, respectively). The skills and strategies taught least in Northern Ireland were 'Determine the Author's Perspective or Intention' and 'Describe the Style or Structure of the Text' (67 and 73 per cent respectively).

Since 2011, there has been an increase in the percentage of Year 6 pupils in Northern Ireland whose teachers report weekly activities in seven of the nine skill areas. All received more teaching time, except 'Locate Information Within the Text' and 'Explain or Support Their Understanding of What They Have Read' where the percentages were the same in 2016 as in 2011.

The activity which saw the largest increase in focus since 2011 was 'Compare What They Have Read With Other Things They Have Read'. This had increased by 19 percentage points from 59 to 78 per cent. There was also a 17 percentage point increase in weekly activities to develop skills to 'Determine the Author's Perspective or Intention' between 2011 and 2016, from 50 to 67 per cent. No other comparator country had increased their reported weekly reading activities as much since 2011. The closest increase to Northern Ireland's was seen in the Republic of Ireland where, there was a 14 percentage point increase between 2011 and 2016 in pupils with teachers reporting developing the skill, 'Compare What They Have Read with Other Things They Have Read'.

Table 9.4 Teachers development of pupils' reading comprehension skills and strategies

Reported by Teachers

Country	Percent of Students Whose Teachers Ask Them to Do the Following At Least Weekly								
	Locate Information Within the Text	Identify the Main Ideas of What They Have Read	Explain or Support Their Understanding of What They Have Read	Compare What They Have Read with Experiences They Have Had	Compare What They Have Read with Other Things They Have Read	Make Predictions About What Will Happen Next in the Text	Make Generalizations and Draw Inferences	Describe the Style or Structure of the Text	Determine the Author's Perspective or Intention
Canada	96 (0.8)	91 (1.3)	92 (1.2)	82 (1.9)	72 (1.9)	88 (1.5)	86 (1.6)	61 (2.5)	59 (2.5)
England	98 (1.3)	99 (1.0)	99 (0.2)	76 (3.3)	72 (3.6)	94 (2.3)	94 (2.2)	83 (3.4)	74 (4.0)
Ireland, Rep. of	98 (0.9)	99 (0.8)	97 (1.3)	90 (2.1)	82 (2.5)	96 (1.7)	88 (2.3)	66 (4.0)	62 (3.9)
New Zealand	98 (0.6)	96 (1.1)	95 (1.2)	87 (2.0)	76 (2.6)	94 (1.1)	90 (2.1)	70 (2.5)	66 (2.7)
Northern Ireland	99 (0.7)	96 (2.1)	98 (1.1)	78 (3.7)	78 (3.3)	93 (2.2)	86 (3.2)	73 (4.3)	67 (4.2)
Poland	100 (0.0)	100 (0.3)	99 (0.5)	97 (1.1)	87 (2.4)	65 (3.5)	98 (0.9)	86 (2.2)	87 (2.3)
Singapore	93 (1.4)	89 (1.4)	91 (1.4)	81 (2.1)	79 (2.0)	90 (1.5)	87 (1.6)	66 (2.6)	62 (2.7)
International Avg.	96 (0.2)	94 (0.2)	95 (0.2)	83 (0.4)	75 (0.4)	77 (0.4)	82 (0.4)	69 (0.4)	66 (0.4)

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

Source: Exhibit 9.2, International reading report (Mullis *et al.*, 2017a).

Amongst comparator countries, Polish teachers reported very high percentages of pupils doing each activity at least weekly. This was for all activities except 'Make Predictions About What Will Happen Next in the Text' for which, interestingly, Poland had the lowest percentage among all the comparator countries.

Singapore had the lowest proportion of pupils whose teachers reported the weekly teaching of the skills 'Locate Information Within the Text', 'Identify the Main Ideas of What They Have Read' and 'Explain or Support Their Understanding of What They Have Read' (93, 89 and 91 per cent respectively). Teacher reports on the frequency of teaching six of the nine skills fell below the international average. However, three skills were taught more frequently in Singapore than internationally, on average. These were: 'Compare What They Have Read with Other Things They Have Read', 'Make Predictions About What Will Happen Next in the Text' and 'Make Generalisations and Draw Inferences'. Each of these require higher-level thinking skills than, for example, information retrieval or basic comprehension, e.g. 'Locate Information Within the Text'.

The first three skills in the table are taught weekly across all comparator countries. The frequency of the other activities listed varies considerably, depending on the selected emphases. The last two skills in the table were generally taught less frequently across the board. This is not surprising as these are sophisticated reading skills that are more often the focus of instruction when teaching older pupils.

9.4 Classroom practices for teaching reading

Information was gathered regarding some practices used for teaching reading. This included ways in which pupils were organised for reading lessons and what types of texts teachers used with their classes.

9.4.1 Organising pupils for teaching reading

To provide insights into the organisational classroom practices for teaching reading, teachers were asked how frequently they ‘Teach Reading as a Whole-Class Activity’, ‘Create Same-Ability Groups’, ‘Create Mixed-Ability Groups’ and ‘Have Pupils Work Independently on an Assigned Plan or Goal’. Table 9.5 shows the findings from Northern Ireland and each comparator country, listed alphabetically.

Table 9.5 Organising pupils for reading lessons

Reported by Teachers

Country	Percent of Students Whose Teachers Organise Students in the Following Ways											
	Teach Reading as a Whole-Class Activity			Create Same-Ability Groups			Create Mixed-Ability Groups			Have Students Work Independently on an Assigned Plan or Goal		
	Always or Almost Always	Often or Sometimes	Never	Always or Almost Always	Often or Sometimes	Never	Always or Almost Always	Often or Sometimes	Never	Always or Almost Always	Often or Sometimes	Never
Canada	21 (1.7)	78 (1.8)	1 (0.5)	11 (1.6)	84 (1.8)	5 (1.0)	4 (0.9)	91 (1.6)	6 (1.3)	5 (1.0)	92 (1.2)	3 (0.7)
England	12 (2.7)	85 (2.7)	3 (1.3)	26 (3.3)	72 (3.3)	3 (1.2)	7 (1.9)	90 (2.3)	3 (1.2)	9 (1.9)	87 (2.4)	4 (1.5)
Ireland, Rep. of	25 (3.3)	74 (3.3)	1 (0.4)	9 (2.0)	79 (3.0)	13 (2.5)	5 (1.6)	86 (2.6)	10 (2.1)	5 (1.7)	88 (2.5)	7 (1.8)
New Zealand	r 2 (1.0)	84 (2.5)	14 (2.3)	r 43 (3.3)	55 (3.2)	2 (0.9)	r 6 (1.3)	83 (2.6)	11 (2.3)	r 14 (1.9)	82 (2.0)	3 (1.1)
Northern Ireland	r 6 (2.3)	85 (3.7)	9 (3.0)	55 (4.4)	44 (4.3)	1 (0.8)	r 1 (0.8)	87 (3.1)	12 (2.9)	r 10 (2.5)	84 (3.0)	6 (1.9)
Poland	24 (3.5)	68 (3.4)	9 (2.0)	1 (0.6)	76 (3.7)	23 (3.8)	14 (2.7)	81 (3.6)	5 (2.4)	10 (2.4)	90 (2.4)	0 (0.0)
Singapore	33 (2.8)	67 (2.9)	0 (0.2)	3 (1.0)	77 (2.0)	20 (2.1)	13 (1.9)	79 (2.3)	8 (1.4)	10 (1.4)	83 (2.0)	6 (1.3)
International Avg.	32 (0.4)	65 (0.5)	3 (0.2)	11 (0.3)	74 (0.4)	15 (0.4)	13 (0.3)	79 (0.4)	8 (0.3)	14 (0.4)	81 (0.4)	5 (0.2)

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent. An "r" indicates data are available for at least 70% but less than 85% of the students.

Source: Exhibit 9.3, International reading report (Mullis *et al.*, 2017a).

According to most teacher reports, reading was taught ‘Always or Almost Always’ in same-ability groups in Northern Ireland. This was reported by teachers of 55 per cent of pupils, a much higher proportion than the international average of 11 per cent for this practice, and higher than any of the comparator countries. Teachers of a further 44 per cent of pupils in Northern Ireland reported using same ability groups ‘Often or Sometimes’. Mixed-ability groups were used ‘Often or Sometimes’ (87 per cent); and 84 per cent of pupils worked independently ‘Often or Sometimes’ on an assigned plan or goal; this is broadly in line with the international average.

The most commonly reported practice used ‘Always or Almost Always’ internationally was ‘Teaching Reading as a Whole-Class Activity’ (32 per cent). This practice was used ‘Always or Almost Always’ by the teachers of only six per cent of pupils in Northern Ireland, although 85 per cent of pupils had teachers who reported ‘Teaching Reading as a Whole-Class Activity’ ‘Often or Sometimes’.

In the high-attaining country of Singapore, teachers reported using a range of organisational practices, as in Northern Ireland, but with more emphasis on whole-class activities. Thirty-three per cent of pupils were taught this way ‘Always or Almost

Always'; the highest of all the comparator countries. Pupils in the Republic of Ireland and Poland were also taught reading as a whole class activity 'Always or Almost Always' more than in other comparator countries (25 and 24 per cent respectively). New Zealand had the highest percentage of pupils whose teachers reported that they 'Never' taught in this way.

Teachers in New Zealand, like those in Northern Ireland, were more likely to report that they 'Create Same-Ability Groups' 'Always or Almost Always' (43 per cent). Poland and Singapore had the highest percentage of pupils with teachers reporting that they 'Never' organise students in this way, with 23 per cent and 20 per cent respectively.

Poland and Singapore, however, had the highest proportion of pupils with teachers reporting they 'Always or Almost Always' organise their classes into mixed-ability groups, (14 and 13 per cent respectively). Teachers in Northern Ireland, New Zealand and the Republic of Ireland were less likely to organise their teaching in mixed ability groups with 12, 11 and ten per cent of pupils respectively whose teachers reported 'Never' organising their classes in this way.

New Zealand had the highest proportion of pupils with teachers who reported they 'Always or Almost Always' 'Have Students Work Independently on an Assigned Plan or Goal', 14 per cent. This was followed by Northern Ireland, Poland and Singapore, each with ten per cent.

9.4.2 Teachers' use of literary texts

Table 9.6 shows how often Northern Ireland's Year 6 pupils were given different types of literary texts to read.

Sixty per cent of pupils in Northern Ireland had teachers who reported giving 'Short Stories' 'Once a Week or More' to their class. This was lower than the international average of 78 per cent. Pupils who were given 'Short Stories' more frequently had a higher average attainment score, at 570, than those who were given them 'Less than Once a week', at 555. This pattern was also repeated internationally, but among comparator countries, it was only seen in the Republic of Ireland and Singapore.

Table 9.6 Teachers give literary texts for reading lessons

Reported by Teachers

Country	Short Stories				Longer Fiction Books with Chapters				Plays			
	Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Canada	76 (1.9)	543 (2.1)	24 (1.9)	545 (4.0)	69 (2.2)	547 (2.3)	31 (2.2)	534 (2.5)	2 (0.8)	--	98 (0.8)	543 (2.0)
England	61 (3.9)	556 (2.7)	39 (3.9)	562 (3.8)	71 (3.5)	561 (2.5)	29 (3.5)	554 (4.0)	8 (2.0)	552 (7.3)	92 (2.0)	559 (2.3)
Ireland, Rep. of	88 (2.0)	567 (2.8)	12 (2.0)	565 (4.6)	76 (3.4)	564 (2.9)	24 (3.4)	575 (5.2)	1 (0.7)	--	99 (0.7)	567 (2.5)
New Zealand	77 (2.4)	525 (2.9)	23 (2.4)	532 (5.2)	62 (3.3)	528 (3.3)	38 (3.3)	523 (5.2)	16 (1.8)	484 (7.7)	84 (1.8)	535 (2.2)
Northern Ireland	60 (4.2)	570 (3.1)	40 (4.2)	555 (4.2)	90 (3.2)	562 (2.3)	10 (3.2)	581 (6.9)	4 (2.1)	570 (16.3)	96 (2.1)	564 (2.4)
Poland	96 (1.4)	564 (2.1)	4 (1.4)	585 (8.0)	22 (2.9)	564 (3.9)	78 (2.9)	565 (2.5)	3 (1.2)	551 (10.2)	97 (1.2)	565 (2.2)
Singapore	75 (2.1)	577 (3.9)	25 (2.1)	572 (5.4)	35 (2.8)	594 (5.5)	65 (2.8)	567 (3.9)	3 (0.9)	590 (13.6)	97 (0.9)	576 (3.2)
International Avg.	78 (0.4)	512 (0.5)	22 (0.4)	508 (1.2)	41 (0.4)	516 (0.9)	59 (0.4)	508 (0.6)	9 (0.3)	501 (2.0)	91 (0.3)	512 (0.4)

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.
A tilde (~) indicates insufficient data to report achievement.

Source: Exhibit 9.5, International reading report (Mullis *et al.*, 2017a).

Across the comparator countries, nearly all pupils in Poland had ‘Short Stories’ given to them to read ‘Once a Week or More’ (96 per cent). In the Republic of Ireland, 88 per cent of pupils had ‘Short Stories’ given with that frequency. Northern Ireland followed this practice the least, with 60 per cent of pupils receiving ‘Short Stories’ weekly or more often (similar to the 61 per cent in England).

A ‘Longer Fiction Book with Chapters’ was the most frequently given literary text type in Northern Ireland, where 90 per cent of the pupils had teachers who reported doing this ‘Once a Week or More’. This was nearly 50 percentage points higher than the international average. Interestingly, unlike the pattern seen with ‘Short Stories’, pupils given longer fiction books with chapters ‘Once a Week or More’ had a lower average attainment score (562) than those who gave them ‘Less than Once a Week’ (581). This was not the case internationally.

In comparator countries, Poland and Singapore had noticeably lower proportions of pupils whose teachers gave them longer fiction books with chapters ‘Once a Week or More’ (22 per cent and 35 per cent respectively). Northern Ireland had by far the highest proportion of pupils given these types of books ‘Once a Week or More’ (90 per cent) while the other comparator countries had between three-fifths and four-fifths of their pupils in this category.

Four per cent of pupils in Northern Ireland had teachers who used ‘Plays’ with their class ‘Once a Week or More’. This was lower than the international average of nine per cent. Again, as with ‘Short Stories’, the average attainment score for pupils in this category was higher than those whose teachers gave plays ‘Less than Once a Week’ in Northern Ireland, as was also seen in Singapore, but the international pattern was the opposite.

Sixteen per cent of pupils in New Zealand had teachers who reported they used plays with their class ‘Once a Week or More’. This was the highest proportion of any comparator country, followed by England with eight per cent. The Republic of Ireland and Canada were the comparator countries which had the lowest percentage of pupils who used ‘Plays’ this frequently, with one and two per cent respectively.

It is important to note that any apparent association between the frequent assignment of particular text types and pupil attainment does not imply causality.

9.4.3 Teachers' use of non-fiction texts

As with literary texts, teachers were asked how often they gave their pupils different types of non-fiction texts during reading lessons. The results are shown in Table 9.7.

The most commonly given non-fiction texts in reading lessons in Northern Ireland (69 per cent), and internationally (71 per cent), were 'Non-Fiction Subject Area Books'. Although attainment of pupils is one point greater in the 'Once a Week or More' category, standard errors suggest that this difference is unlikely to be significant.

Northern Ireland and England had similar proportions of pupils given 'Non-Fiction Subject Area Books' 'Once a Week or More', while other comparators all had higher proportions, except Singapore which was the lowest with 59 per cent.

Table 9.7 Teachers gave informational texts for reading teaching

Reported by Teachers

Country	Nonfiction Subject Area Books				Longer Nonfiction Books with Chapters				Nonfiction Articles			
	Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week		Once a Week or More		Less than Once a Week	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Canada	89 (1.5)	542 (2.1)	11 (1.5)	550 (4.0)	37 (2.5)	543 (3.1)	63 (2.5)	543 (2.3)	50 (2.3)	543 (2.7)	50 (2.3)	543 (2.3)
England	67 (3.3)	556 (2.3)	33 (3.3)	564 (3.9)	33 (3.5)	556 (3.7)	67 (3.5)	560 (2.8)	51 (3.5)	555 (3.0)	49 (3.5)	562 (3.4)
Ireland, Rep. of	83 (2.8)	565 (2.9)	17 (2.8)	572 (5.9)	33 (3.8)	565 (4.4)	67 (3.8)	567 (3.5)	37 (3.6)	568 (3.5)	63 (3.6)	566 (3.2)
New Zealand	83 (2.1)	527 (2.4)	17 (2.1)	526 (7.9)	38 (3.1)	523 (5.0)	62 (3.1)	528 (3.7)	65 (3.0)	527 (3.0)	35 (3.0)	526 (4.6)
Northern Ireland	69 (3.6)	564 (3.0)	31 (3.6)	563 (4.4)	37 (4.8)	556 (4.6)	63 (4.8)	569 (2.8)	34 (4.1)	572 (4.8)	66 (4.1)	560 (2.9)
Poland	86 (2.8)	565 (2.4)	14 (2.8)	561 (6.5)	21 (3.3)	568 (5.2)	79 (3.3)	564 (2.4)	20 (2.9)	555 (5.1)	80 (2.9)	567 (2.5)
Singapore	59 (2.8)	576 (4.3)	41 (2.8)	577 (5.2)	21 (2.2)	579 (6.4)	79 (2.2)	576 (3.6)	45 (2.6)	584 (4.7)	55 (2.6)	570 (4.5)
International Avg.	71 (0.4)	512 (0.5)	29 (0.4)	508 (1.0)	24 (0.4)	513 (1.0)	76 (0.4)	510 (0.5)	39 (0.5)	513 (0.8)	61 (0.5)	510 (0.6)

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

Source: Exhibit 9.6, International reading report (Mullis *et al.*, 2017a).

'Longer Non-Fiction Books with Chapters' were given to 37 per cent of Northern Ireland's pupils 'Once a Week or More', which was higher than the international average of 24 per cent. Pupils who were given longer non-fiction books 'Less than Once a Week', had a higher average attainment score than those who received them more frequently.

As with 'Longer Fiction Books with Chapters', Poland and Singapore had noticeably lower proportions of pupils whose teachers given 'Longer Non-Fiction Books' 'Once a Week or More' (each 21 per cent). All other comparator countries had proportions similar to Northern Ireland.

Finally, 34 per cent of pupils in Northern Ireland were given 'Non-Fiction Articles' 'Once a Week or More'. This was lower than the international average and, in Northern Ireland, the average attainment score of these pupils was higher than those who were reported to be receiving them 'Less than Once a Week'.

Across the comparator countries, Poland had the lowest proportion of pupils whose teachers reported giving 'Non-Fiction Articles' 'Once a Week or More' (20 per cent), and New Zealand had the highest, at 65 per cent.

As with literary texts, it is important to note that any apparent association between the frequent use of particular text types and pupil attainment does not imply causality.

9.5 Conclusion

Teachers in Northern Ireland reported that over a quarter (27 per cent) of the total available teaching time was spent on English teaching (including reading, writing, speaking, literature and other language skills) for Year 6 pupils. The international average was also 27 per cent, but the average number of hours per year was greater in Northern Ireland because of the fact that it has a greater number of teaching hours available. This compares with 23 per cent of teaching time for mathematics and four per cent for science, reported in TIMSS 2015. Among comparator countries, language teaching ranged from 19 per cent in Poland to 37 per cent in New Zealand.

In terms of specifically teaching reading, including reading across the curriculum, teachers in Northern Ireland reported spending 14 per cent of their total teaching time on this, while the international average was 18 per cent. The proportion of time devoted to teaching reading had decreased slightly, from 16 per cent, since 2011. Teachers in Poland reported only four per cent of their total teaching time devoted to reading specifically, while in New Zealand the proportion was 24 per cent.

Of 14 key reading skills and strategies, principals in Northern Ireland indicated that eight were emphasised in Year 3 or earlier, three of which were generally introduced later in other countries. Across all year groups, just under half of the skills and strategies were emphasised a year earlier in Northern Ireland than was seen internationally. Only two of the key skills ('Describing the Style or Structure of a Text' and 'Determining the Author's Perspective or Intention') were emphasised in Year 5. The remaining 12 skills were emphasised earlier.

Teachers also reported how often they taught nine skills and strategies for reading. Almost all Year 6 teachers in Northern Ireland taught pupils to 'Locate Information Within the Text' and 'Explain or Support their Understanding of What They Have Read' at least weekly, whereas only two-thirds of teachers asked their pupils to 'Determine the Author's Perspective or Intention' at least weekly. This was the reading skill emphasised least frequently in Northern Ireland and across comparator countries in general.

Since 2011, the proportion of Northern Ireland's pupils asked to 'Compare What They Have Read with other things they have read' and 'Determine the Author's Perspective or Intention' has increased substantially. No comparator country reported greater increases for any of the key skills, although teachers in the Republic of Ireland also reported an increase since 2011 in asking pupils to 'Compare What They Have Read with Other Things They Have Read'. Teachers in high-achieving Singapore reported teaching the following three skills more frequently, on average, than internationally: 'Compare What They Have Read with Other Things They Have Read', 'Make Predictions About What Will Happen Next in the Text' and 'Make Generalisations and Draw Inferences'.

Northern Ireland's teachers were most likely to report creating same-ability groups for the teaching of reading, and had a higher percentage of pupils predominantly organised in this way than any other comparator country. They also reported 'Often or Sometimes' using whole-class activities, mixed-ability groups and having pupils work independently on an assigned plan or goal. Internationally, reading was taught as a whole-class activity more often than by other organisational methods.

The most frequently used text type in Northern Ireland was 'Longer Fiction Books with Chapters'. This was used with much greater frequency than was seen internationally. Pupils whose teachers reported frequently using 'Short Stories' and 'Plays' had a higher average attainment score than those who did so less frequently.

'Non-Fiction Subject Area Books' were the predominant type of informational texts both in Northern Ireland and internationally. 'Longer Non-Fiction Books with Chapters' are used more often in Northern Ireland than internationally, whereas the proportion of pupils given 'Non-Fiction Articles' to read was lower in Northern Ireland than on average internationally.

10 Characteristics of pupils and home

Chapter outline

This chapter summarises teacher and parent reports to consider the relationship between children's home circumstances in Northern Ireland and their performance in reading in PIRLS 2016. Outcomes for Northern Ireland are compared with international averages and with comparator countries of interest where relevant.

Key findings⁵²

- In Northern Ireland, two-fifths of children reported having 'Many Resources' for learning at home. Children with access to more home resources for learning had higher average achievement in reading.
- A higher proportion of children in Northern Ireland reported having 'Many Resources' (42 per cent) compared with the comparator countries and the international average (20 per cent).
- Just under half of pupils' parents who responded (49 per cent) reported they 'Very Much Like' reading. This percentage was greater than in any comparator country. Children with parents who 'Very Much Like' reading had higher average achievement in reading.
- The teachers of the majority of pupils (67 per cent) reported that their teaching was limited, to 'Some' extent, by pupils' lack of prerequisite knowledge or skills, and teachers of a further seven per cent stated they were limited 'A Lot'. The proportion was similar to those, on average, internationally.
- Teachers of pupils in Northern Ireland were more likely to report pupils' lack of sleep as limiting their teaching than their pupils' lack of nutrition (55 per cent compared to 22 per cent respectively).
- The proportion of pupils whose teachers reported lack of sleep as a limiting factor ('Some' or 'A Lot' of the time) was slightly higher in Northern Ireland than internationally (59 per cent and 54 per cent respectively).

⁵² These results for Northern Ireland are based on data collected from less than 50 per cent of the pupils or their parents and therefore may not be considered representative of the population.

10.1 Home resources for learning

Interpreting the data: indices and scales

In order to summarise data from a questionnaire, responses to several related items are sometimes combined to form an index or scale. The respondents to the questionnaire items are grouped according to their responses, and the way in which responses have been categorised is shown for each index or scale. The data in an index or scale is often considered to be more reliable and valid than the responses to individual items.

Possessions in the home, as well as indicators of socio-economic status such as parents' education level and occupation, are associated with educational achievement (OECD, 2016). The PIRLS 2016 study acquired information about these background factors from pupils and parents. In the international data and report these are referred to as 'Home Resources for Learning'.

The 'Learning to Read Survey' asked the parents of children involved in PIRLS 2016 to report on the availability of three key home variables highly related to achievement in school:

- parents' education
- parents' occupation
- number of children's books in the home.

In addition, in the Pupil Questionnaire, children were asked about:

- the number of books in the home
- the availability of key study supports at home: their own computer, an internet connection and their own room.

Table 10.1 presents the results for the 'Home Resources for Learning' scale for Northern Ireland. The scale was created using parents' and children's reports about the variables listed above. Pupils were then categorised into three groups ('Many Resources', 'Some Resources' and 'Few Resources') according to the availability of these 'Home Resources for Learning'. (Details of how responses were categorised during analysis are given in Figure 10.1.)

It should be noted that the results for Northern Ireland are based on data collected from less than 50 per cent of the pupils or their parents and therefore may not be representative of the population.

In Northern Ireland, 42 per cent of children were in the 'Many Resources' category, 57 per cent were in the 'Some Resources' category, and one per cent were in the 'Few Resources' category. A higher proportion of children were also reported to have 'Many Resources' in Northern Ireland than on average internationally (20 per cent), mirroring the findings from 2011. Compared with the 2011 study, there was a 12 point increase in the percentage of children in Northern Ireland in the highest

category, and the average score for Northern Ireland on the 'Home Resources for Learning' scale was significantly higher in 2016 than in 2011.

Northern Ireland had a greater percentage of pupils in the 'Many Resources' category than any comparator country. The average score for Singapore on the 'Home Resources for Learning' scale was significantly higher in 2016 than in 2011. For Canada, it was significantly lower⁵³.

In Northern Ireland, there were patterns of achievement across the categories. Children who were in the 'Many Resources' category scored higher in reading than those who were in the 'Some Resources' category⁵⁴. This mirrors 2011 and is also the case on average internationally. No comparisons could be made involving the achievement of children in the 'Few Resources' categories because only one per cent of children in Northern Ireland fell into this group.

Table 10.1 Home resources for learning

Students Categorized by Parents' and Students' Reports

Students were scored according to their own and their parents' responses concerning the availability of five resources on the *Home Resources for Learning* scale. Students with **Many Resources** had a score of at least 11.8, which is the point on the scale corresponding to students reporting they had more than 100 books in the home and both of the home study supports, and parents reporting that they had more than 25 children's books in the home, that at least one parent had finished university, and that at least one parent had a professional occupation, on average. Students with **Few Resources** had a score no higher than 7.5, which is the scale point corresponding to students reporting that they had 25 or fewer books in the home and neither of the home study supports, and parents reporting that they had 10 or fewer children's books in the home, that neither parent had gone beyond upper-secondary education, and that neither parent was a small business owner or had a clerical or professional occupation, on average. All other students were assigned to the **Some Resources** category.

Country	Many Resources		Some Resources		Few Resources		Average Scale Score	Difference in Average Scale Score from 2011
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement		
Canada	r 35 (1.0)	579 (1.9)	65 (1.0)	536 (1.9)	1 (0.1)	~ ~	11.2 (0.03)	r -0.2 (0.05) ▼
Ireland, Rep. of	33 (1.4)	607 (2.5)	66 (1.4)	555 (2.2)	1 (0.3)	~ ~	11.0 (0.05)	0.2 (0.08)
Singapore	29 (0.9)	624 (3.3)	69 (0.8)	562 (3.3)	2 (0.2)	~ ~	10.9 (0.03)	0.2 (0.05) ▲
Poland	21 (0.9)	605 (3.1)	76 (1.0)	556 (2.1)	3 (0.4)	509 (10.1)	10.4 (0.05)	- -
England	- -	- -	- -	- -	- -	- -	- -	- -
Northern Ireland	x 42 (1.5)	615 (4.3)	57 (1.5)	569 (3.7)	1 (0.2)	~ ~	11.4 (0.05)	x 0.5 (0.09) ▲
New Zealand	x 39 (1.4)	581 (3.2)	60 (1.4)	522 (3.0)	2 (0.4)	~ ~	11.2 (0.05)	x 0.0 (0.07)
International Avg.	20 (0.2)	572 (0.6)	73 (0.2)	509 (0.4)	7 (0.1)	432 (1.5)		

This PIRLS questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in PIRLS 2011. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

A dash (-) indicates comparable data not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70% but less than 85% of the students. An "x" indicates data are available for less than 50% of the students—interpret with caution.

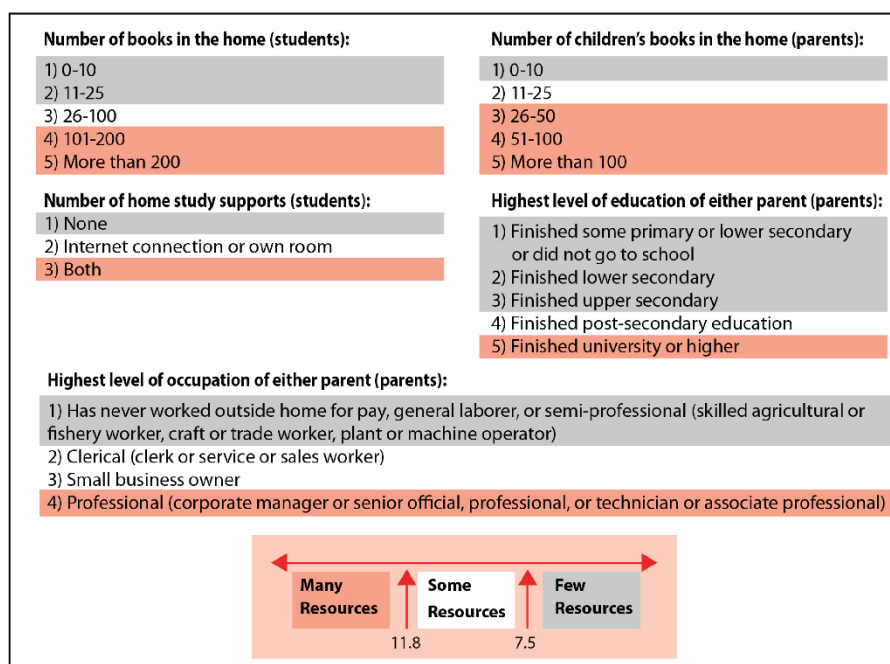
▲ Significantly higher than 2011
▼ Significantly lower than 2011

Source: Exhibit 4.1, International reading report (Mullis *et al.*, 2017a).

⁵³ The 'Learning to Read' parental questionnaire was not administered in England so no comparable data is available.

⁵⁴ The differences in achievement have not been tested for statistical significance in the international analysis but, based on the size of the standard errors, are likely to be significant.

Figure 10.1 The ‘Home Resources for Learning’ scale



Source: Exhibit 4.1, International reading report (Mullis *et al.*, 2017a).

10.2 Parental attitudes towards reading

Research evidence suggests that the importance parents place on education and how they convey this to their children when discussing future goals can be associated with educational achievement (Mullis and Martin, 2015). In PIRLS 2016, parents’ attitudes to reading were measured by their responses to eight statements about reading, as well as how often they read for enjoyment. (The statements are provided in Figure 10.2.) The international analysis uses the parents’ responses to create the ‘Parents Like Reading’ scale. It categorises children into one of three bands: those whose parents ‘Very Much Like’, ‘Somewhat Like’ or ‘Do Not Like’ reading. (Details of how pupils were assigned to each band are also provided in Figure 10.2.)

It should be noted that the results for Northern Ireland are based on data collected from less than 50 per cent of the pupils or their parents and therefore may not be representative of the population.

In Northern Ireland, 49 per cent of pupils whose parents completed the questionnaire were categorised as having parents who ‘Very Much Like’ reading. A further 36 per cent were categorised as having parents who ‘Somewhat Like’ reading. Fifteen per cent had parents who ‘Do Not Like’ reading; a six percentage point increase on the 2011 results of nine per cent. Northern Ireland had the highest percentage of pupils with parents who ‘Very Much Like’ reading among the comparator countries. Singapore was notable as the only comparator country that was lower than the international average for the percentage of pupils whose parents said they ‘Very Much Like’ reading.

Compared with the findings from 2011, pupils in Northern Ireland had a significantly lower average score on the 'Parents Like Reading' scale in 2016. This was also the case for the four comparator countries for which the comparison was possible.

Across all countries, there were patterns of achievement across the categories. Children whose parents 'Very Much Like' reading scored higher in reading than those in the 'Somewhat Like' category and this pattern was the same for the 'Somewhat Like' versus 'Do Not Like' reading groups⁵⁵.

Table 10.2 Parental attitude towards reading

Students Categorized by Parents' Reports

Students were scored on the *Parents Like Reading* scale according to their parents' responses to eight statements about reading as well as how often they read for enjoyment. Students whose parents **Very Much Like** reading had a score on the scale of at least 10.5, which corresponds to their parents "agreeing a lot" with four of the eight statements and "agreeing a little" with the other four, as well as reading for enjoyment "every day or almost every day," on average. Students whose parents **Do Not Like** reading had a score no higher than 8.1, which corresponds to their parents "disagreeing a little" with four of the eight statements and "agreeing a little" with the other four, as well as reading for enjoyment only "once or twice a month," on average. All other students had parents who **Somewhat Like** reading.

Country	Very Much Like		Somewhat Like		Do Not Like		Average Scale Score	Difference in Average Scale Score from 2011
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement		
Ireland, Rep. of	47 (1.1)	588 (2.9)	40 (1.0)	560 (2.9)	13 (0.7)	544 (5.2)	10.3 (0.05)	-0.4 (0.07) ▼
Canada	r 40 (0.8)	566 (2.1)	46 (0.7)	540 (2.5)	15 (0.5)	531 (3.3)	10.0 (0.03)	r -0.5 (0.05) ▼
Poland	35 (0.8)	581 (2.9)	50 (0.8)	561 (2.3)	14 (0.8)	540 (4.3)	9.9 (0.04)	- -
Singapore	25 (0.6)	603 (3.3)	57 (0.7)	572 (3.2)	18 (0.6)	561 (4.0)	9.4 (0.02)	-0.3 (0.03) ▼
England	- -	- -	- -	- -	- -	- -	- -	- -
Northern Ireland	x 49 (1.5)	602 (3.9)	36 (1.5)	577 (5.1)	15 (1.0)	568 (6.0)	10.3 (0.07)	x -0.4 (0.08) ▼
New Zealand	x 47 (1.6)	567 (3.0)	40 (1.5)	524 (4.0)	13 (0.7)	511 (6.2)	10.3 (0.06)	x -0.6 (0.07) ▼
International Avg.	32 (0.1)	535 (0.5)	51 (0.1)	508 (0.5)	17 (0.1)	488 (0.8)		

This PIRLS questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in PIRLS 2011. To provide a point of reference for country comparisons, the scale centrepoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

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

A dash (-) indicates comparable data not available.

An "r" indicates data are available for at least 70% but less than 85% of the students.

An "x" indicates data are available for less than 50% of the students—interpret with caution.

Significantly higher than 2011 ▲

Significantly lower than 2011 ▼

Source: Exhibit 4.4, International reading report (Mullis et al., 2017a).

⁵⁵ The differences in achievement have not been tested for statistical significance in the international analysis but, based on the size of the standard errors, are likely to be significant.

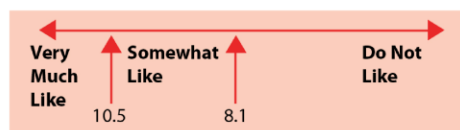
Figure 10.2 Parental attitude towards reading

Please indicate how much you agree with the following statements about reading.

Tick **one** circle for each row.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I read only if I have to*	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I like talking to other people about what I read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I like to spend my spare time reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) I read only if I need information*	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Reading is an important activity in my home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) I would like to have more time for reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) I enjoy reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Reading is one of my favourite hobbies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* reverse coded



When you are at home, how often do you read for your enjoyment? -----

Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

A horizontal scale with arrows at both ends. Below the scale, 'Very Much Like' is aligned with 10.5 and 'Somewhat Like' is aligned with 8.1. 'Do Not Like' is positioned at the right end of the scale.

Source: Exhibit 4.4, International reading report (Mullis *et al.*, 2017a).

10.3 Pupil level factors that limit teaching

Interpreting the data: percentages in tables

Some of the data in this chapter is derived from teacher reports. Reported percentages refer to pupils and can usually be interpreted as the percentage of pupils whose teachers reported a particular practice or circumstance.

Year 6 pupils were sampled by class. As a result, the Year 6 Teacher Questionnaire would, in most cases, have been completed by the class teacher of the sampled class.

Teachers were asked to report the extent to which a number of pupil level factors limited their teaching. The questions to which teachers responded are shown in Figure 10.3. This section focuses on the first three items in this set, teachers' perceptions of pupils' lack of prerequisite knowledge or skills, pupils' lack of basic nutrition, and pupils' lack of sleep.

Figure 10.3 Limitations on teaching

In your view, to what extent do the following limit how you teach this class?

*Tick **one** circle for each row.*

	Not at all	Some	A lot
a) Pupils lacking prerequisite knowledge or skills -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Pupils suffering from lack of basic nutrition -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Pupils suffering from insufficient sleep -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Pupils absent from class -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Disruptive pupils -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Uninterested pupils -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Pupils with mental, emotional or psychological impairment -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Lack of support for using information technology -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Source: PIRLS 2016 Teacher Questionnaire for Northern Ireland.

10.3.1 Pupils lacking prerequisite knowledge or skills

Table 10.3 shows that, in Northern Ireland, just over a quarter of pupils were taught by teachers who reported that their teaching was ‘Not at All’ limited by pupils’ lack of skills or knowledge (26 per cent). Two-thirds of pupils were taught by teachers who reported that their teaching was limited to ‘Some’ extent by pupils lacking prerequisite skills or knowledge (67 per cent) and only seven per cent by teachers who said ‘A Lot’ (much lower than the international average of 15 per cent).

Table 10.3 Year 6 teaching limited by pupils lacking prerequisite knowledge or skills

Country	Percentage of pupils in classrooms where teachers reported teaching is limited by pupils lacking prerequisite knowledge or skills					
	Not at All		Some		A Lot	
	%	Mean score	%	Mean score	%	Mean score
Canada	16	562	66	545	18	521
England	17	574	73	558	10	533
Ireland, Rep. of	33	583	60	561	7	530
New Zealand	24	554	64	526	12	487
Northern Ireland	26	584	67	559	7	538
Poland	22	572	65	564	13	555
Singapore	24	621	63	571	14	524
International Average	22	541	64	521	15	497

Source: 2016 Teacher Context Data Almanac, question ATBR05A.

In all of the comparator countries, the majority of pupils were taught by teachers who reported that their teaching was limited to ‘Some’ extent by pupils’ lack of skills or knowledge. Among the comparator countries, only the Republic of Ireland had a greater percentage (33 per cent) than Northern Ireland (26 per cent) of pupils with teachers saying they were ‘Not at All’ limited by these factors. Of the comparator countries, Canada reported the greatest percentage of pupils whose teachers were limited ‘A Lot’ by their pupils’ lack of prerequisite skills or knowledge (18 per cent).

Compared with 2011, the percentage of pupils in Northern Ireland whose teachers reported that their teaching was ‘Not at All’ limited by pupils’ lack of skills had increased (from 19 to 26 per cent). Of the comparator countries, Poland showed the greatest change since 2011 on this measure (from eight to 22 per cent).

In Northern Ireland, and internationally, there appears to be an association between attainment and teachers’ reports of limitations based on pupils’ lack of prerequisite

knowledge or skills⁵⁶. That is, within countries, pupils whose teachers reported that their teaching was limited ‘A Lot’ had a lower average achievement than those whose teaching was limited to ‘Some’ extent or ‘Not at All’. For Northern Ireland, the comparator countries and the international average, it is also the case that the mean score of pupils whose teachers reported that teaching was limited ‘A Lot’ by pupils lacking prerequisite knowledge was lower than those for whom it was reported that teaching was limited to ‘Some’ extent.

10.3.2 Pupils suffering from a lack of basic nutrition or a lack of sleep

Just under a quarter of pupils in Northern Ireland (24 per cent) had teachers who reported that their teaching was limited (‘Some’ or ‘A Lot’) by pupils’ lack of basic nutrition. This proportion has decreased since 2011 for Northern Ireland (by seven percentage points).

The international average, at 29 per cent, was higher than the percentage for Northern Ireland. Internationally, this figure has decreased by 16 percentage points since 2011 (from 45 per cent).

In 2016, two comparator countries (New Zealand and Canada) were above the international average in terms of the percentage of pupils whose teachers reported that their teaching was limited by pupils’ lack of basic nutrition.

All comparator countries had lower levels of limitation than they did in 2011, except Singapore (which had a one percentage point increase).

Table 10.4 Year 6 teaching limited by pupils’ lack of basic nutrition

Country	Percentage of pupils in classrooms where teachers reported teaching is limited by pupils lacking basic nutrition					
	Not at All		Some		A Lot	
	%	Mean score	%	Mean score	%	Mean score
Canada	62	552	35	530	3	514
England	79	563	20	542	1	468
Ireland, Rep. of	84	573	16	535	0	493
New Zealand	69	540	29	500	2	514
Northern Ireland	76	569	22	545	2	580
Poland	97	565	3	569	0	551
Singapore	80	587	17	535	3	525
International Average	71	529	25	504	4	490

Source: 2016 Teacher Context Data Almanac, question ATBR05B.

⁵⁶ The differences in achievement have not been tested for statistical significance in the international analysis.

Lack of sleep was more likely to be reported as a problem by teachers in Northern Ireland than a lack of nutrition. Fifty-five per cent of pupils' teachers reported that their teaching was limited to 'Some' extent by their pupils' lack of sleep, and a further four per cent that it was limited 'A Lot'. A similar situation was found internationally, on average, with most pupils' teachers reporting that their teaching was limited ('Some' or 'A lot') because their pupils were not getting enough sleep. The only comparator country in which this was not the case was Poland, where the majority of pupils' teachers reported that lack of sleep among pupils was 'Not at All' a limitation to teaching.

The proportion of pupils whose teachers reported that their teaching was limited by pupils' lack of sleep had decreased since 2011 for Northern Ireland (down ten percentage points from 69 per cent). Internationally, this figure was also down (11 percentage points on average, from 65 per cent). It had decreased across all comparator countries except Singapore (which saw an increase of four percentage points from 46 per cent).

In Northern Ireland, and internationally, there appears to be an association between attainment and teachers' reports of limitations based on pupils' lack of sleep or nutrition⁵⁷. That is, within countries, pupils whose teachers reported that their teaching was limited 'A Lot' had a lower average achievement than those whose teaching was limited to 'Some' extent or 'Not at All'.

Table 10.5 Year 6 teaching limited by pupils' lack of sleep

Country	Percentage of pupils in classrooms where teachers reported teaching is limited by pupils lack of sleep					
	Not at All		Some		A Lot	
	%	Mean score	%	Mean score	%	Mean score
Canada	31	554	61	540	9	527
England	35	567	58	556	6	526
Ireland, Rep. of	46	576	51	561	3	524
New Zealand	35	542	61	521	4	514
Northern Ireland	41	578	55	557	4	531
Poland	69	567	31	559	1	547
Singapore	50	594	45	558	5	562
International Average	46	529	47	517	7	506

Source: 2016 Teacher Context Data Almanac, question ATBR05C.

⁵⁷ The differences in achievement have not been tested for statistical significance in the international analysis.

10.4 Conclusion

A higher proportion of children in Northern Ireland were reported to have ‘Many’ home resources for learning than on average internationally. This had increased since 2011, with 42 per cent of children in Northern Ireland falling into this category. The international average was 20 per cent. The vast majority of the remaining children in the PIRLS survey were categorised as coming from homes with ‘Some’ resources for learning. The proportion of pupils in the ‘Many Resources’ category in Northern Ireland was higher than in the comparator countries.

Since 2011, the proportion of pupils in Northern Ireland categorised as having ‘Many Resources’ had increased significantly from 30 to 42 per cent. Like Northern Ireland, Singapore also had a significantly better outcome on this measure than in 2011.

Patterns of achievement indicate that the greater the level of home resources for learning, the greater the average attainment level of the pupils.

In Northern Ireland, 49 per cent of pupils were categorised as having parents who ‘Very Much Like’ reading. This was higher than the international average (32 per cent) and the percentages for the comparator countries. Compared with 2011, in 2016 Northern Ireland and the comparator countries each had significantly lower average scores on the ‘Parents Like Reading’ scale. Patterns of achievement indicated that the more parents liked reading, the greater the average attainment level achieved by their children.

In Northern Ireland, two-thirds of pupils were taught by teachers who reported that their teaching was limited to some extent by pupils lacking prerequisite skills or knowledge. A quarter of pupils’ teachers indicated they were not at all affected by this issue. Among the comparator countries, only the Republic of Ireland had a greater percentage for ‘Not at All’ affected than Northern Ireland.

Pupils lacking sleep had less of a negative impact on teaching reading than pupils’ lack of prerequisite knowledge. In Northern Ireland, 55 per cent of pupils were taught by teachers who said their teaching was limited to ‘Some’ extent by pupils’ lack of sleep while 41 per cent indicated that teaching was ‘Not at All’ limited by this. A lack of basic nutrition limited teaching of reading to ‘Some’ extent for 22 per cent of pupils’ teachers with just over three-quarters of pupils’ teachers (76 per cent) reporting that teaching was ‘Not at All’ limited by this problem.

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Appendix A

Progress in International Reading Study (PIRLS) 2016: Overview

A.1 PIRLS 2016: Introduction

The PIRLS 2016 survey is the fourth in the IEA's⁵⁸ series of comparative international surveys of reading achievement. PIRLS is administered on a five-yearly cycle, so the 2016 survey in Northern Ireland updated the picture of performance from 2011. (Earlier cycles of PIRLS took place in 2006 and 2001 but Northern Ireland did not participate.) The next PIRLS cycle is planned for 2021.

A brief description of the survey is given below.

A.2 PIRLS 2016 participants

PIRLS 2016 involved a total of 61 participants. Fifty countries and 11 benchmarking participants⁵⁹ took part at the target grade: ages 9-10 years (Year 6 in Northern Ireland).⁶⁰

Table A.1 below gives the list of participants in PIRLS 2016, and indicates the previous cycles in which each participant was involved.

PIRLS 2016 participants are varied, ranging from highly developed countries or regions through to developing ones. Their education systems also vary, differing, for example, in the age at which children start school. More information about the education system in each participating country and region can be found in the PIRLS Encyclopedia (Mullis *et al.*, 2017b).

⁵⁸ International Association for the Evaluation of Educational Achievement (IEA): <http://www.iea.nl/>

⁵⁹ Countries participating in PIRLS follow guidelines and strict sampling targets to provide samples that are nationally representative. 'Benchmarking participants' are regional entities which follow the same guidelines and targets to provide samples that are representative at regional level.

⁶⁰ In 2016, Norway assessed at fifth grade in order to obtain better comparisons with Sweden and Finland but also collected benchmark data at Grade 4 (as in previous cycles) so that trends could be analysed.

Table A.1 Countries Participating in PIRLS 2016 and in Earlier PIRLS Assessments

Country	2016	2011	2006	2001
Australia	●	●		
Austria	●	●	●	
Azerbaijan	●	●		
Bahrain	●			
Belgium (Flemish)	●		●	
Belgium (French)	●	●	●	
Bulgaria	●	●	●	●
Canada	●	●		
Chile	●			
Chinese Taipei	●	●	●	
Czech Republic	●	●		●
Denmark	●	●	●	
Egypt	●			
England	●	●	●	●
Finland	●	●		
France	●	●	●	●
Georgia	●	●	●	
Germany	●	●	●	●
Hong Kong SAR	●	●	●	●
Hungary	●	●	●	●
Iran, Islamic Rep. of	●	●	●	●
Ireland, Rep. of	●	●		
Israel	●	●	○	○
Italy	●	●	●	●
Kazakhstan	●			
Kuwait	●	○	○	○
Latvia	●		●	●
Lithuania	●	●	●	●
Macao SAR	●			
Malta	●	●		
Morocco	●	●	○	○
Netherlands	●	●	●	●
New Zealand	●	●	●	●
Northern Ireland	●	●		
Norway (5)	●			
Oman	●	●		
Poland	●	○	○	
Portugal	●	●		
Qatar	●	●	○	
Russian Federation	●	●	●	●
Saudi Arabia	●	●		
Singapore	●	●	●	●
Slovak Republic	●	●	●	●
Slovenia	●	●	●	●
South Africa	●	●	○	
Spain	●	●	●	
Sweden	●	●	●	●
Trinidad and Tobago	●	●	●	
United Arab Emirates	●	●		
United States	●	●	●	●

● Indicates participation in that testing cycle.

○ Indicates participation but data not comparable for measuring trends to 2016, primarily due to countries improving translations or increasing population coverage.

Source: Exhibit A.1, International reading report (Mullis *et al.*, 2017a)

A.3 PIRLS 2016 in the UK

The countries which comprise the United Kingdom are regarded separately by the IEA and, of the four, Northern Ireland and England chose to participate in the PIRLS 2016 survey. The 2016 cycle represented Northern Ireland's second PIRLS participation, so comparisons can be made with the 2011 cycle where appropriate. England has participated in all PIRLS cycles, so comparisons can be made with all earlier cycles where appropriate.

The PIRLS 2011 survey in Northern Ireland was administered by NFER. Outcomes from the 2011 cycle of PIRLS internationally and in the UK are available through the NFER website: www.nfer.ac.uk/pirls.

A.4 PIRLS 2016 sampling strategy

The PIRLS samples are drawn based on internationally specified criteria, and are designed to be representative of the national population of pupils in the target age group (or regional population, for benchmarking participants). Each participant is therefore expected to provide a sampling pool that covers all or almost all of the target national population. Where exclusions are considered necessary, these must be within set limits.

Exclusions may be for a variety of reasons, including:

- geographical (e.g. remote and/or very small schools may be excluded at sampling stage)
- linguistic (e.g. participants may exclude some language groups at sampling stage if they opt to translate the assessment into majority languages only and not all languages spoken within the country/region)
- special educational needs (e.g. special schools teaching pupils who cannot access the assessment may be excluded at sampling stage, or individual pupils who cannot access the assessment may be excluded at the administration stage).

The guidance for the PIRLS survey stipulates that no more than five per cent of the population in total should be excluded across all stages of the survey. See the technical report (Martin *et al.*, 2017) and Appendix C of the international reading report (Mullis *et al.*, 2017a) for more information.

Each participating country has a 'main sample' and two matched 'replacement samples' which are used if the main sample schools decline to participate. The main sample is designed to be nationally representative of pupils in the target age group and so the sampling criteria ('stratifiers') for each country are designed to address

key characteristics of the nation's school system.⁶¹ Each main sample school is then assigned a 'first replacement' school and a 'second replacement' school, both of which share the same key sampling characteristics as the main sample school. This ensures that, if the main sample school declines to participate, its first replacement school can be used instead and the sample will still be nationally representative. If the first replacement school also declines to participate, the second replacement school will be invited to participate and, again, the sample will remain nationally representative. If the second replacement school declines to participate, then the country cannot include any other school, to avoid skewing the sample.

Classes of pupils of the target age are then randomly sampled within the participating schools and 95 per cent of these classes are expected to take part. Within each sampled class, at least 85 per cent of pupils are expected to take part. Samples are inspected and, if they meet the sampling criteria, accepted by the IEA's sampling referee.

In order to meet the stringent PIRLS participation targets, countries are expected to achieve participation of:

- at least 85 per cent of their main sample schools; OR
- at least 85 per cent of sampled schools of which at least 50 per cent must be from the main sample and the remainder matched replacement schools; OR
- a combined pupil / school rate of at least 75 per cent.

Participants achieving at least 85 per cent of the main sample schools or a combined pupil / school figure of at least 75 per cent are deemed to have met the sampling requirements fully. Those achieving at least 85 per cent with the use of replacement schools are deemed to have achieved a sample that is suitably representative at national level, but are 'annotated' in the international report, to indicate that replacement schools were used.

A.5 Northern Ireland's PIRLS 2016 samples

Northern Ireland's sampling strategy

The PIRLS sample for Northern Ireland was drawn (simultaneously with the TIMSS 2015 sample) by Statistics Canada, assisted by the NFER Research and Statistics teams. The sample was stratified by region and deprivation level. Schools were recruited by the NFER Research and Products Operations team. Once a school had agreed to participate, one or more Year 6 class was randomly sampled, using the IEA's within-school sampling software. This selected the number of classes

⁶¹ Schools are sampled using systematic, random sampling with probability proportional to their measures of size.

automatically. Pupils in the sampled classes were required to complete the PIRLS assessment in English.

Northern Ireland's sample

The sample in Northern Ireland met the stringent sampling standards described above. Of 154 schools sampled⁶², a total of 134 primary schools took part (130 main sample schools and 4 replacement schools: 88 per cent after replacement). Class participation was 100 per cent and pupil participation 96 per cent (see Table A.2). Overall, participation was 81 per cent before replacement (84 after), therefore exceeding the combined target of at least 75 per cent of pupils and schools.

Overall, exclusions for Northern Ireland were just 3.0 per cent.

Internationally, participation rates (after replacement) ranged from 79 per cent in Hong Kong SAR to 99 per cent in Iran, Kazakhstan and Morocco. The highest exclusion rate was 24.9 per cent in Israel (this included 21.0 per cent at school level), followed by Singapore⁶³ (11.1 per cent), Hong Kong SAR⁶⁴ (10.1 per cent) and Denmark⁶⁵ (9.8 per cent). The lowest exclusion rates were seen in Oman (0.6 per cent) and Chinese Taipei (0.9 per cent).

The average age of participating pupils in Northern Ireland was 10.4 years. The average ages of pupils in the target grade within countries ranged from 9.7 (in Malta) to 10.9 years in Latvia.

⁶² One of these schools turned out to be ineligible, as it had no pupils at the target age group.

⁶³ National defined population covers less than 90% of National target population (but at least 77%).

⁶⁴ National defined population covers less than 90% to 95% of National target population.

⁶⁵ National defined population covers less than 90% to 95% of National target population.

Table A.2 Sample information for Northern Ireland

The information in this table is taken from the international report. The source of each element within the reports is indicated.

Country	Number of Schools in Original Sample	Number of Eligible Schools in Original Sample	Number of Schools in Original Sample that Participated	Number of Replacement Schools that Participated	Total Number of Schools that Participated
Northern Ireland	154	153	130	4	134

Source: Exhibit C.2, International reading report (Mullis *et al.*, 2017a)

Country	Within-school Student Participation (Weighted Percentage)	Number of Sampled Students in Participating Schools	Number of Students Withdrawn from Class/School	Number of Students Excluded	Number of Eligible Students	Number of Students Absent	Number of Students Assessed
Northern Ireland	96%	3,920	27	20	3,873	180	3,693

Students attending a sampled class at the time the sample was chosen but leaving the class before the assessment was administered were classified as “withdrawn.”
 Students with a disability or language barrier that prevented them from participating in the assessment were classified as “excluded.”
 Students not present when the assessment was administered, and not subsequently assessed in a make-up session, were classified as “absent.”

Source: Exhibit C.3, International reading report (Mullis *et al.*, 2017a).

Country	School Participation		Class Participation	Student Participation	Overall Participation	
	Before Replacement	After Replacement			Before Replacement	After Replacement
Northern Ireland	84%	88%	100%	96%	81%	84%

Source: Exhibit C.4, International reading report (Mullis *et al.*, 2017a).

Country	International Target Population		Exclusions from National Target Population		
	Coverage	Notes on Coverage	School-level Exclusions	Within-sample Exclusions	Overall Exclusions
Northern Ireland	100%		2.6%	0.4%	3.0%

Source: Exhibit C.1, International reading report (Mullis *et al.*, 2017a).

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