

## 2. Attainment in PIRLS and TIMSS 2011 by gender

### Chapter outline

This chapter summarises pupils' attainment by gender, in reading, mathematics and science in Year 6 (Y6, ages 9-10) in 2011. Findings for reading are discussed first, followed by findings for mathematics then science. Outcomes for Northern Ireland are compared with those of other specific nations.

### Key findings

- Girls in Northern Ireland scored significantly<sup>1</sup> more highly than boys on PIRLS; the extent of the difference was at the international average. Better performance by girls is a characteristic of many reading assessments.
- In Northern Ireland, there were no significant gender differences in attainment for either mathematics or science.
- While Northern Ireland is not unique in this, it was noticeable that some of the high performing countries showed gender differences in their mathematics and/or science attainment.

### 2.1 Attainment by gender, PIRLS and TIMSS

Tables 2.1 to 2.3 below show the international average scale scores for each subject (reading, mathematics and science), ranked by the size of any gender difference. Outcomes for Northern Ireland are discussed for each subject in turn.

### Interpreting the data: gender differences

The PIRLS and TIMSS achievement scales have a centre point of 500 and a standard deviation of 100. The graphic shows the direction and size of any gender difference for each country. Statistically significant differences are shown in colour while non-significant differences are greyed out.

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

**Table 2.1 PIRLS 2011 gender differences, reading at ages 9-10**

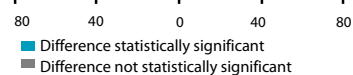
Country	Girls		Boys		Difference (absolute value)	Gender difference	
	Per cent of pupils	Average scale score	Per cent of pupils	Average scale score		Girls scored higher	Boys scored higher
Colombia	49 (1.3)	447 (4.6)	51 (1.3)	448 (4.6)	1 (3.9)		
Italy	50 (0.7)	543 (2.4)	50 (0.7)	540 (2.7)	3 (2.4)		
France	49 (0.8)	522 (3.4)	51 (0.8)	518 (2.4)	5 (2.7)		
Spain	49 (0.8)	516 (2.5)	51 (0.8)	511 (2.8)	5 (2.5)		
<sup>2†</sup> Belgium (French)	49 (0.9)	509 (3.1)	51 (0.9)	504 (3.1)	5 (2.3)		
<sup>3</sup> Israel	51 (1.6)	544 (3.1)	49 (1.6)	538 (3.4)	6 (3.4)		
Czech Republic	49 (1.2)	549 (2.5)	51 (1.2)	542 (2.5)	6 (2.6)		
<sup>†</sup> Netherlands	51 (0.7)	549 (2.1)	49 (0.7)	543 (2.2)	7 (2.0)		
Austria	49 (1.2)	533 (2.2)	51 (1.2)	525 (2.3)	8 (2.3)		
Germany	49 (0.8)	545 (2.3)	51 (0.8)	537 (2.7)	8 (2.5)		
Slovak Republic	49 (0.8)	540 (3.1)	51 (0.8)	530 (2.8)	10 (2.1)		
<sup>2</sup> United States	51 (0.5)	562 (1.9)	49 (0.5)	551 (1.7)	10 (1.8)		
<sup>2</sup> Denmark	50 (0.7)	560 (1.9)	50 (0.7)	548 (2.1)	12 (2.2)		
<sup>2</sup> Canada	49 (0.6)	555 (1.7)	51 (0.6)	542 (2.1)	12 (2.0)		
Poland	48 (0.9)	533 (2.5)	52 (0.9)	519 (2.7)	14 (3.1)		
<sup>2</sup> Azerbaijan	47 (0.9)	470 (3.6)	53 (0.9)	456 (3.5)	14 (2.3)		
<sup>2</sup> Croatia	50 (0.8)	560 (2.1)	50 (0.8)	546 (2.2)	14 (2.2)		
Sweden	49 (1.0)	549 (2.4)	51 (1.0)	535 (2.5)	14 (2.7)		
Portugal	49 (1.2)	548 (3.0)	51 (1.2)	534 (2.8)	14 (2.4)		
<sup>‡</sup> Norway	52 (1.0)	514 (2.2)	48 (1.0)	500 (2.7)	14 (3.1)		
Chinese Taipei	47 (0.6)	561 (2.1)	53 (0.6)	546 (2.1)	15 (2.1)		
Bulgaria	49 (0.9)	539 (4.5)	51 (0.9)	524 (4.3)	15 (3.5)		
Romania	48 (0.9)	510 (4.8)	52 (0.9)	495 (4.3)	15 (3.3)		
Ireland, Rep. of	49 (2.2)	559 (2.9)	51 (2.2)	544 (3.0)	15 (3.9)		
Hungary	49 (0.9)	547 (3.2)	51 (0.9)	532 (3.2)	16 (2.6)		
Slovenia	48 (0.8)	539 (2.2)	52 (0.8)	523 (2.7)	16 (3.1)		
<sup>†</sup> Northern Ireland	50 (1.2)	567 (2.5)	50 (1.2)	550 (3.2)	16 (3.4)		
<sup>3</sup> Hong Kong SAR	46 (1.2)	579 (2.3)	54 (1.2)	563 (2.5)	16 (2.2)		
Australia	49 (1.1)	536 (2.7)	51 (1.1)	519 (2.7)	17 (3.1)		
<sup>2</sup> Singapore	49 (0.6)	576 (3.5)	51 (0.6)	559 (3.6)	17 (2.6)		
Malta	49 (0.5)	486 (1.9)	51 (0.5)	468 (2.0)	18 (2.8)		
Indonesia	51 (0.9)	437 (4.5)	49 (0.9)	419 (4.3)	18 (2.3)		
<sup>1,2</sup> Lithuania	48 (0.8)	537 (2.4)	52 (0.8)	520 (2.4)	18 (2.8)		
Russian Federation	49 (1.0)	578 (2.8)	51 (1.0)	559 (3.1)	18 (2.3)		
Iran, Islamic Rep. of	49 (2.9)	467 (4.3)	51 (2.9)	448 (4.3)	20 (6.4)		
New Zealand	49 (1.0)	541 (2.2)	51 (1.0)	521 (2.7)	20 (3.1)		
Finland	49 (0.8)	578 (2.3)	51 (0.8)	558 (2.2)	21 (2.3)		
<sup>1</sup> Georgia	48 (0.9)	499 (2.7)	52 (0.9)	477 (4.0)	22 (3.0)		
<sup>†</sup> England	49 (1.0)	563 (3.0)	51 (1.0)	540 (3.1)	23 (3.0)		
United Arab Emirates	50 (1.6)	452 (3.0)	50 (1.6)	425 (3.5)	27 (4.8)		
<sup>‡</sup> Morocco	48 (0.8)	326 (4.0)	52 (0.8)	296 (4.6)	29 (3.9)		
<sup>2</sup> Qatar	47 (3.4)	441 (4.7)	53 (3.4)	411 (4.2)	30 (6.0)		
Trinidad and Tobago	49 (2.0)	487 (4.5)	51 (2.0)	456 (4.3)	31 (4.6)		
<sup>ψ</sup> Oman	49 (0.7)	411 (3.0)	51 (0.7)	371 (3.4)	40 (2.9)		
Saudi Arabia	52 (1.5)	456 (3.1)	48 (1.5)	402 (8.2)	54 (8.8)		
<b>International Avg.</b>	<b>49 (0.2)</b>	<b>520 (0.5)</b>	<b>51 (0.2)</b>	<b>504 (0.5)</b>	<b>16 (0.5)</b>		

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

Source: Exhibit 1.5, international PIRLS report

**Table 2.2 TIMSS 2011 gender differences, mathematics at ages 9-10**

Country	Girls		Boys		Difference (Absolute Value)	Gender Difference	
	Percent of Students	Average Scale Score	Percent of Students	Average Scale Score		Girls Scored Higher	Boys Scored Higher
Iran, Islamic Rep. of	49 (2.9)	431 (5.2)	51 (2.9)	431 (5.4)	0 (8.0)		
New Zealand	49 (0.8)	486 (3.3)	51 (0.8)	486 (2.8)	0 (3.1)		
† Northern Ireland	49 (1.3)	562 (3.3)	51 (1.3)	563 (3.6)	0 (3.8)		
Russian Federation	49 (1.0)	543 (3.7)	51 (1.0)	542 (4.1)	1 (2.4)		
<sup>1 2</sup> Lithuania	48 (0.8)	533 (2.6)	52 (0.8)	534 (2.9)	1 (2.6)		
Chinese Taipei	47 (0.6)	592 (2.5)	53 (0.6)	590 (2.4)	2 (2.8)		
Turkey	48 (0.6)	470 (5.2)	52 (0.6)	469 (4.8)	2 (3.8)		
Hungary	49 (1.0)	514 (3.6)	51 (1.0)	517 (3.9)	2 (3.2)		
Romania	48 (0.9)	481 (6.7)	52 (0.9)	484 (5.9)	3 (4.5)		
Japan	49 (0.5)	584 (2.0)	51 (0.5)	587 (2.5)	3 (3.0)		
England	48 (1.0)	541 (4.2)	52 (1.0)	544 (3.5)	3 (3.4)		
Ireland, Rep. of	49 (2.3)	526 (3.7)	51 (2.3)	529 (3.3)	3 (4.6)		
Armenia	47 (0.8)	454 (4.1)	53 (0.8)	451 (3.6)	3 (3.0)		
<sup>2</sup> Singapore	49 (0.6)	608 (3.6)	51 (0.6)	604 (3.5)	4 (3.0)		
Sweden	49 (1.0)	501 (2.5)	51 (1.0)	506 (2.4)	5 (2.7)		
<sup>2</sup> Kazakhstan	48 (0.8)	498 (4.4)	52 (0.8)	504 (4.8)	5 (2.6)		
<sup>2</sup> Denmark	51 (0.7)	534 (2.9)	49 (0.7)	540 (2.9)	6 (2.8)		
Australia	49 (1.0)	513 (3.3)	51 (1.0)	519 (3.6)	6 (3.8)		
Portugal	49 (1.1)	529 (4.1)	51 (1.1)	535 (3.4)	6 (3.2)		
<sup>2</sup> Serbia	48 (0.9)	513 (3.8)	52 (0.9)	519 (3.5)	6 (4.1)		
<sup>2</sup> Hong Kong SAR	46 (1.2)	598 (3.2)	54 (1.2)	604 (3.9)	6 (2.3)		
Korea, Rep. of	48 (0.4)	601 (2.1)	52 (0.4)	608 (2.2)	7 (2.0)		
<sup>2</sup> Azerbaijan	47 (0.8)	466 (6.4)	53 (0.8)	460 (5.9)	7 (3.9)		
* Morocco	48 (0.8)	338 (4.6)	52 (0.8)	331 (4.3)	7 (3.9)		
ψ Tunisia	47 (0.8)	363 (4.5)	53 (0.8)	356 (4.4)	7 (4.4)		
Malta	49 (0.5)	492 (1.6)	51 (0.5)	499 (2.1)	7 (2.5)		
‡ Norway	51 (1.1)	492 (2.8)	49 (1.1)	499 (3.5)	7 (2.8)		
Finland	49 (0.8)	542 (2.5)	51 (0.8)	549 (2.9)	7 (2.8)		
<sup>1</sup> Georgia	48 (0.9)	454 (3.2)	52 (0.9)	447 (4.9)	7 (3.9)		
Bahrain	50 (1.6)	440 (4.5)	50 (1.6)	432 (4.0)	7 (5.5)		
† Netherlands	52 (1.0)	536 (2.1)	48 (1.0)	544 (2.1)	8 (2.4)		
United Arab Emirates	50 (1.6)	438 (2.8)	50 (1.6)	430 (3.5)	8 (5.0)		
Belgium (Flemish)	50 (0.9)	545 (2.2)	50 (0.9)	553 (2.4)	8 (2.5)		
Slovak Republic	49 (0.9)	503 (4.0)	51 (0.9)	511 (3.9)	8 (2.6)		
Germany	49 (0.8)	523 (2.7)	51 (0.8)	532 (2.6)	8 (2.7)		
<sup>2</sup> United States	51 (0.5)	536 (2.1)	49 (0.5)	545 (1.9)	9 (1.7)		
Italy	50 (0.7)	503 (3.1)	50 (0.7)	512 (2.9)	9 (3.0)		
Poland	48 (0.9)	476 (2.4)	52 (0.9)	486 (2.5)	9 (2.5)		
Austria	49 (1.2)	504 (2.7)	51 (1.2)	513 (3.3)	9 (2.8)		
Chile	51 (1.4)	457 (2.7)	49 (1.4)	466 (2.8)	9 (3.3)		
Slovenia	48 (0.8)	508 (2.2)	52 (0.8)	518 (3.1)	10 (3.2)		
<sup>2</sup> Croatia	50 (0.8)	485 (2.4)	50 (0.8)	495 (2.4)	10 (2.8)		
Czech Republic	48 (1.2)	505 (2.8)	52 (1.2)	516 (2.7)	11 (2.7)		
Spain	49 (0.8)	477 (3.1)	51 (0.8)	488 (3.4)	11 (3.0)		
* Yemen	40 (2.8)	255 (7.0)	60 (2.8)	243 (7.0)	12 (7.6)		
<sup>2</sup> Qatar	47 (3.4)	420 (4.7)	53 (3.4)	407 (4.2)	13 (5.6)		
Thailand	49 (0.9)	465 (4.8)	51 (0.9)	451 (5.6)	14 (4.4)		
Saudi Arabia	52 (1.5)	418 (4.6)	48 (1.5)	402 (10.0)	16 (11.2)		
ψ Oman	49 (0.7)	398 (3.2)	51 (0.7)	372 (3.4)	26 (3.3)		
<sup>1 *</sup> Kuwait	54 (1.6)	358 (3.6)	46 (1.6)	323 (5.8)	35 (6.8)		
International Avg.	49 (0.2)	490 (0.5)	51 (0.2)	491 (0.6)			



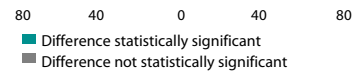
\* Average achievement not reliably measured because the percentage of students with achievement too low for estimation exceeds 25%.  
 ψ Reservations about reliability of average achievement because the percentage of students with achievement too low for estimation does not exceed 25% but See Appendix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

Source: Exhibit 1.10, international mathematics report <sup>2</sup>

<sup>2</sup> While Exhibit 1.5 gives the PIRLS international average difference, parallel information is not available in Exhibits 1.10 in the international mathematics and science reports.

**Table 2.3 TIMSS 2011 gender differences, science at ages 9-10**

Country	Girls		Boys		Difference (absolute value)	Gender difference	
	Per cent of students	Average scale score	Per cent of students	Average scale score		Girls scored higher	Boys scored higher
Australia	49 (1.0)	516 (3.1)	51 (1.0)	516 (3.7)	0 (3.9)		
Romania	48 (0.9)	505 (6.9)	52 (0.9)	506 (5.7)	0 (4.7)		
Finland	49 (0.8)	570 (2.9)	51 (0.8)	570 (3.0)	0 (3.0)		
Ireland, Rep. of	49 (2.3)	516 (4.0)	51 (2.3)	516 (4.6)	1 (5.5)		
New Zealand	49 (0.8)	496 (3.0)	51 (0.8)	497 (2.6)	1 (3.2)		
England	48 (1.0)	529 (3.3)	52 (1.0)	528 (3.3)	1 (3.1)		
<sup>1,2</sup> Lithuania	48 (0.8)	514 (2.4)	52 (0.8)	515 (3.0)	1 (2.6)		
Russian Federation	49 (1.0)	553 (3.5)	51 (1.0)	552 (3.8)	1 (2.4)		
<sup>†</sup> Northern Ireland	49 (1.3)	517 (3.2)	51 (1.3)	516 (3.2)	1 (3.8)		
<sup>2</sup> Denmark	51 (0.7)	527 (3.3)	49 (0.7)	529 (3.1)	2 (3.0)		
Iran, Islamic Rep. of	49 (2.9)	452 (5.8)	51 (2.9)	454 (5.7)	2 (8.8)		
<sup>2</sup> Serbia	48 (0.9)	514 (3.6)	52 (0.9)	517 (3.7)	3 (3.9)		
Sweden	49 (1.0)	532 (3.0)	51 (1.0)	535 (3.2)	4 (3.0)		
<sup>‡</sup> Norway	51 (1.1)	492 (2.5)	49 (1.1)	496 (3.2)	4 (3.1)		
<sup>2</sup> Singapore	49 (0.6)	581 (3.7)	51 (0.6)	585 (3.7)	4 (2.7)		
Turkey	48 (0.6)	465 (5.0)	52 (0.6)	461 (4.7)	4 (3.8)		
Hungary	49 (1.0)	532 (4.0)	51 (1.0)	537 (3.9)	5 (2.9)		
<sup>2</sup> Croatia	50 (0.8)	514 (2.5)	50 (0.8)	518 (2.5)	5 (2.7)		
Portugal	49 (1.1)	519 (4.6)	51 (1.1)	524 (3.8)	5 (3.2)		
Armenia	47 (0.8)	419 (4.0)	53 (0.8)	414 (4.3)	5 (3.4)		
Japan	49 (0.5)	556 (2.7)	51 (0.5)	561 (2.1)	5 (2.8)		
Slovenia	48 (0.8)	517 (2.8)	52 (0.8)	523 (3.4)	6 (3.2)		
<sup>2</sup> Hong Kong SAR	46 (1.2)	532 (3.6)	54 (1.2)	538 (4.3)	6 (2.5)		
Poland	48 (0.9)	502 (3.0)	52 (0.9)	508 (2.9)	6 (2.8)		
Malta	49 (0.5)	443 (2.2)	51 (0.5)	449 (2.8)	6 (3.3)		
Chinese Taipei	47 (0.6)	548 (2.6)	53 (0.6)	555 (2.4)	7 (2.3)		
Italy	50 (0.7)	520 (3.2)	50 (0.7)	528 (3.0)	7 (2.9)		
Korea, Rep. of	48 (0.4)	583 (2.4)	52 (0.4)	590 (2.3)	8 (2.3)		
<sup>2</sup> Kazakhstan	48 (0.8)	490 (5.1)	52 (0.8)	498 (5.5)	8 (3.0)		
<sup>2</sup> Azerbaijan	47 (0.8)	442 (6.3)	53 (0.8)	434 (5.7)	8 (4.0)		
Slovak Republic	49 (0.9)	528 (4.3)	51 (0.9)	536 (3.6)	8 (2.7)		
<sup>1</sup> Georgia	48 (0.9)	459 (3.2)	52 (0.9)	451 (5.1)	9 (3.9)		
<sup>✳</sup> Morocco	48 (0.8)	268 (5.1)	52 (0.8)	259 (4.9)	9 (4.4)		
Spain	49 (0.8)	500 (2.8)	51 (0.8)	510 (3.7)	10 (2.8)		
Thailand	49 (0.9)	476 (5.7)	51 (0.9)	467 (6.6)	10 (5.0)		
<sup>2</sup> United States	51 (0.5)	539 (2.3)	49 (0.5)	549 (2.1)	10 (1.5)		
<sup>†</sup> Netherlands	52 (1.0)	526 (2.4)	48 (1.0)	537 (2.6)	10 (2.1)		
Belgium (Flemish)	50 (0.9)	503 (2.6)	50 (0.9)	514 (2.3)	11 (2.9)		
Chile	51 (1.4)	474 (2.8)	49 (1.4)	486 (2.8)	12 (2.9)		
Germany	49 (0.8)	522 (3.0)	51 (0.8)	534 (3.2)	12 (2.5)		
Austria	49 (1.2)	525 (2.8)	51 (1.2)	538 (3.6)	12 (2.9)		
Czech Republic	48 (1.2)	529 (2.9)	52 (1.2)	544 (2.7)	15 (2.6)		
United Arab Emirates	50 (1.6)	437 (3.4)	50 (1.6)	419 (3.8)	18 (5.3)		
Bahrain	50 (1.6)	461 (5.5)	50 (1.6)	438 (4.6)	23 (7.0)		
<sup>ψ</sup> Tunisia	47 (0.8)	359 (5.6)	53 (0.8)	334 (5.6)	25 (4.3)		
<sup>2</sup> Qatar	47 (3.4)	408 (5.1)	53 (3.4)	382 (5.7)	26 (6.5)		
<sup>✳</sup> Yemen	40 (2.8)	225 (7.3)	60 (2.8)	198 (8.8)	27 (8.0)		
Oman	49 (0.7)	394 (4.7)	51 (0.7)	360 (4.6)	34 (3.8)		
Saudi Arabia	52 (1.5)	453 (4.7)	48 (1.5)	405 (9.9)	48 (11.0)		
<sup>1,ψ</sup> Kuwait	54 (1.6)	371 (5.5)	46 (1.6)	319 (7.1)	53 (8.6)		
International Avg.	49 (0.2)	487 (0.6)	51 (0.2)	485 (0.6)			



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

Source: Exhibit 1.10, international science report

### 2.1.1 Gender differences in reading attainment, PIRLS 2011

Table 2.1 shows that, in keeping with the majority of countries taking part in PIRLS 2011, girls in Northern Ireland scored significantly more highly in reading than boys. Girls achieved an average scale score of 567, and boys had an average scale score of 550. This difference of 16 scale points (taking rounding into account) matched the

international mean difference and was equal smallest (with Hong Kong) of all Northern Ireland's identified comparator countries.

Only five countries had no significant difference between the average reading scores of boys and girls (Colombia, Italy, France, Spain and Israel). In all other participating countries, girls significantly outperformed boys in reading.

### **2.1.2 Gender differences in mathematics attainment, TIMSS 2011**

Northern Ireland is near the top of Table 2.2, with no significant gender difference in mathematics attainment in Y6. Boys in Northern Ireland scored an average of 563 for mathematics and girls an average of 562.

Of the 50 participating countries, just under half (24 countries) had a significant gender difference, all but four of which favoured boys. Northern Ireland was one of 26 countries showing no overall gender difference for mathematics at this age, including England, New Zealand, Australia, Republic of Ireland, and the high performers of Chinese Taipei, Japan and Singapore. In contrast, the high performing countries of Hong Kong, Korea and Finland had small gender differences for mathematics, favouring boys.

### **2.1.3 Gender differences in science attainment, TIMSS 2011**

Northern Ireland also had no significant gender difference in science attainment in Y6 (Table 2.3). Again, the score difference between boys and girls was one scale point (516 and 517 respectively).

Just over half of the participating countries (27 of 50) showed a significant gender difference for science. Most of these (16) favoured boys but a greater number than for mathematics (11) favoured girls).

Northern Ireland was one of 23 countries showing no overall gender difference for science at this age. The other countries included Australia, Finland, Republic of Ireland, New Zealand, England and one of the highest scorers, Singapore. More of the highest scorers had gender differences than was the case for mathematics. Hong Kong and Korea had a gender difference for science in favour of boys, just as they had for mathematics. Chinese Taipei also had a significant difference favouring boys.

## **2.2 Conclusion**

Northern Ireland's high attainment in mathematics at ages 9-10 is achieved through equally high performance from girls and boys and, although overall performance in science is weaker, once again both girls and boys contribute equally to that attainment. A gender difference exists for reading, but this is in line with the trend seen internationally.

