

PIRLS



Progress in International  
Reading Literacy Study

# *readers and reading*

National Report  
for England 2006

Liz Twist, Ian Schagen  
and Claire Hodgson

*of the*

National Foundation for  
Educational Research



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# Executive Summary

The Progress in International Reading Literacy Study (PIRLS) is a comparative study of the reading attainment of ten-year-olds. The study is on a five-yearly cycle; this is the report of the second study, conducted in 41 countries in 2006.

## Reading attainment

- Pupils in England achieved significantly above the international mean in PIRLS 2006 but significantly below some major European countries, including Italy and Germany. The three highest achieving countries in PIRLS 2006 were the Russian Federation, Hong Kong and Singapore
- In almost all countries, including England, girls achieved significantly higher mean scores than boys.
- As in 2001, there was a wide spread in the scores of the most able and the weakest readers in England.
- The performance of the three highest attaining countries in 2001, Sweden, the Netherlands and England, was significantly lower in 2006. Of the ten highest achieving countries in 2001, seven saw a fall in 2006 and three saw a rise.
- A number of countries showed a significant change in performance from 2001 to 2006. The largest changes are in the extent of the increase in overall performance in the Russian Federation, Hong Kong and Singapore.
- In England, the performance of girls has fallen slightly more than that of boys, and the performance of both is significantly lower than in 2001.
- The fall in England's performance in 2006 is evident across the ability range.

## Children and their reading

- Attitudes to reading of 10-year-old children in England are poor compared to those of children in many other countries, and have declined slightly since 2001. Girls are generally more positive than boys. In England and most other countries, there is a positive association between attitude to reading and reading attainment.
- In England, over three-quarters of children agreed with the statement 'reading is very easy for me' and girls were significantly more confident in their reading abilities than boys.
- Children in England tended to report reading for pleasure less frequently than their peers in many other countries. There is a strong association between the amount of reading for pleasure children reported and their reading achievement.

## Factors associated with reading attainment

- There were strong negative associations between social deprivation and performance on PIRLS. Performance in reading and writing at age 7 was positively associated with PIRLS reading attainment.
- The wide range in performance is a feature of other English-speaking countries and confirms a finding from PIRLS 2001.

## School contexts

- Headteachers in England reported that pupils had a high level of basic literacy skills on entry to year 1.
- In England, teachers use a variety of approaches in their teaching of reading, including the explicit teaching of comprehension strategies.
- A greater level of support is made available for the weaker readers in England than in most other countries.
- Almost three-quarters of pupils in PIRLS in England reported that they liked being in school and girls were generally more positive than boys. Children in England were less positive overall than their peers in most other countries.
- The data from pupils suggests that most types of anti-social behaviour in school occur about as frequently as the international average.
- Headteachers in England were the most positive in their perception of the safety of their schools. They were also very positive about the overall ethos of their schools.
- Teachers in PIRLS in England reported a level of job satisfaction that was around the international average, with teachers of 70 per cent of the pupils indicating that they were very satisfied with their current teaching post.

# Acknowledgements

**This survey could not have taken place without the cooperation of the pupils, their parents, teachers and headteachers in the participating schools. We are very grateful for their help.**

The authors would like to thank the following colleagues at the NFER for their invaluable work during the PIRLS survey and in the production of this report:

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# 1 Background to PIRLS 2006

## 1.1 Introduction

The Progress in International Reading Literacy Study (PIRLS) is a comparative study of the reading attainment of 10-year-olds. It is conducted under the auspices of the International Association for the Evaluation of Educational Achievement (IEA); in England, the study was undertaken by the National Foundation for Educational Research (NFER) on behalf of the Department for Children, Schools and Families (DCSF). The study is on a five-yearly cycle; this is the report of the second study, conducted in 41 countries in 2006.

## 1.2 Objectives of the study

PIRLS is designed to investigate children's reading literacy and the factors associated with its acquisition. It collects data from a sample of pupils, their teachers and headteachers, and their parents in each participating country. Trends in attainment are measured from the first survey in 2001 to the current survey, enabling countries to measure not only attainment relative to other participating countries but also to their own attainment five years earlier.

### 1.3 Countries participating in PIRLS 2006

Austria	Hong Kong*	Luxembourg	Russian Federation*
Belgium (Flemish)	Hungary*	Macedonia*	Scotland*
Belgium (French)	Iceland*	Moldova*	Singapore*
Bulgaria*	Indonesia	Morocco*	Slovak Republic*
Canada+	Iran*	Netherlands*	Slovenia*
Chinese Taipei	Israel*	New Zealand*	South Africa
Denmark	Italy*	Norway*	Spain
England*	Kuwait	Poland	Sweden*
France*	Latvia*	Qatar	Trinidad and Tobago
Georgia	Lithuania*	Romania*	United States*
Germany*			

\* Countries which also participated in PIRLS 2001

+ In PIRLS 2001, the provinces of Ontario and Quebec participated. These two provinces were joined in 2006 by Alberta, British Columbia and Nova Scotia. As in 2001, the data from these subnational jurisdictions has been placed separately in the figures in this report and it did not contribute to the calculation of the international mean.

The attainment data from all participating countries is included in chapter 2 of this report and the trend data, showing any change in performance from 2001 to 2006, is included in chapter 3 for all countries which participated in both surveys. Thereafter, the data for a subset of comparison countries is reported. This group includes participating European and OECD countries, and also the group of Pacific Rim countries in PIRLS, comprising Chinese Taipei, Hong Kong and Singapore. The Russian Federation, as a major economic and political power, is also included. As a result, data from the following countries has been removed from the figures from chapter 4 onwards, although it still contributes to the calculation of the international mean and to all the scaling: Georgia, Indonesia, Iran, Israel, Kuwait, Macedonia, Moldova, Morocco, Qatar, South Africa, and Trinidad and Tobago. All these countries had achievement in PIRLS that was significantly lower than that of England. Data for these countries is available in the international report of PIRLS 2006 (Mullis *et al.*, 2007).

### 1.4 Population tested

PIRLS assesses pupils at the end of four years of formal schooling in most countries, starting with ISCED<sup>1</sup> Level 1 (year 1 in England) and has a policy that pupils should not fall under a minimum average age of 9.5 years. In England this is year 5. The average ages of pupils tested in each country in PIRLS are shown in Figure 2.1 on page 6, and range from 9.7 years in Italy to 11.9 in South Africa. The average age of pupils tested in England was 10.3 years.

<sup>1</sup> ISCED stands for the International Standard Classification of Education developed by the UNESCO Institute for Statistics

## 1.5 Conduct of the survey

In order to establish and maintain comparability between all the participating countries, PIRLS was conducted according to a rigorous set of procedures. These specified:

- participation of a representative sample of pupils using a two-stage sampling design with probability-proportional-to-size sampling
- minimum response rates before the inclusion of replacement schools
- at least 95 per cent coverage of the target population
- comparability in instruments and questionnaires by having all translations and adaptations independently verified
- consistent implementation of the survey procedures according to the internationally-agreed standards, including random quality control visits to schools by national observers and international monitors
- multiple-marking exercises to assess scoring reliability
- rigorous data-cleaning procedures, nationally and at the Data Processing Center.

International surveys place a great emphasis on countries meeting these standards and one aspect which has proved in the past to be a particular challenge for England has been meeting the sampling requirements. In PIRLS 2006, England met all the sampling targets and is included in the figures without any additional annotation.





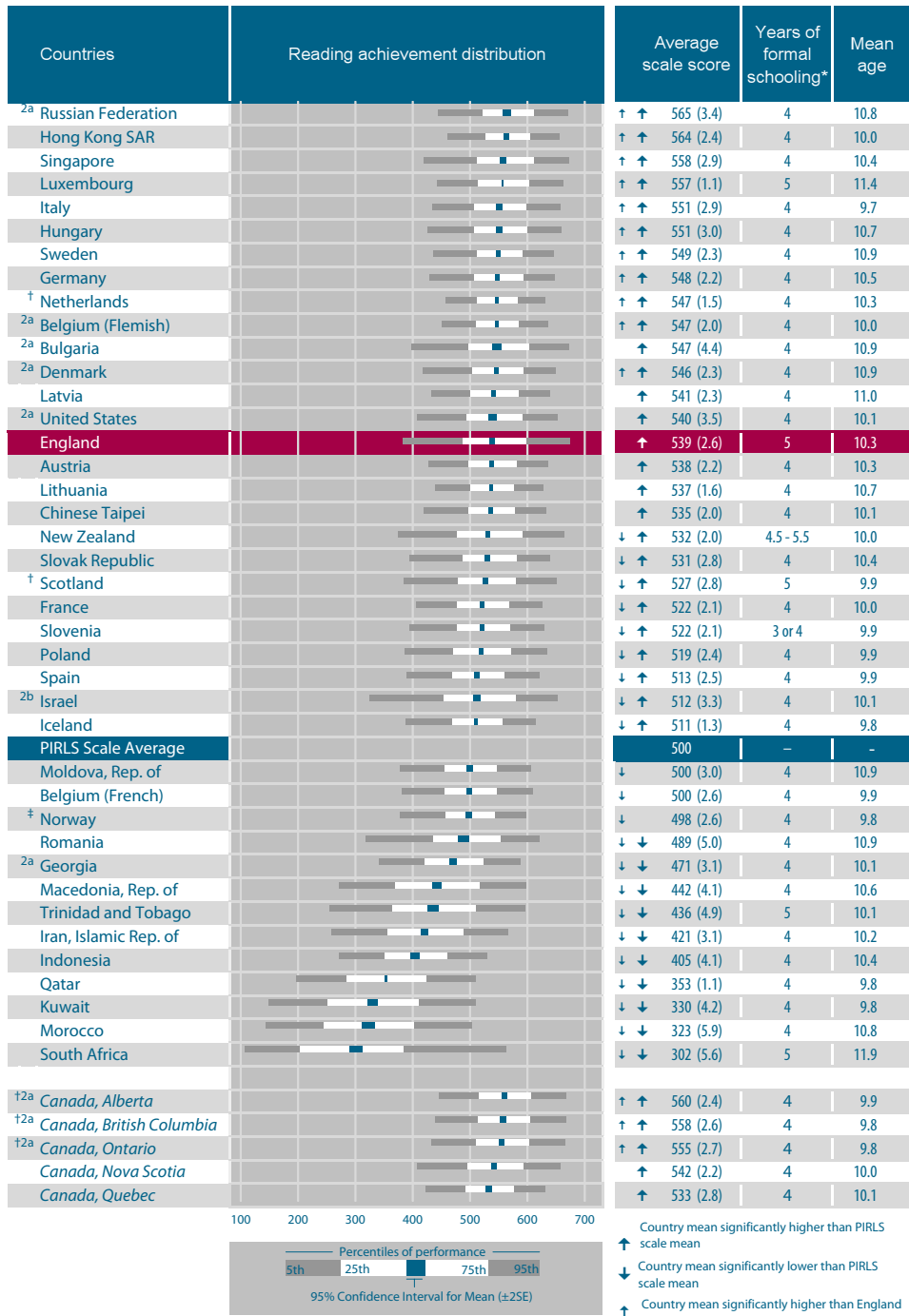
## 2 Reading Attainment in PIRLS 2006

*This chapter presents the reading achievement results for each of the 40 participating countries in PIRLS 2006, including the two education systems in Belgium and the five Canadian provinces. The performance of the whole sample is described, followed by information about the performance of boys and girls separately.*

*Information is then provided about attainment in the two different purposes for reading identified in PIRLS: reading for literary purposes and reading for informational purposes. This is followed by the results in the processes of reading comprehension and is reported for two categories: retrieving and straightforward inferencing, and interpreting, integrating and evaluating. For further information about the definition of reading literacy used in PIRLS, the purposes and processes of reading specified in the study, and the assessment instruments developed, see Appendix 2.*

- *Pupils in England achieved significantly above the international mean in PIRLS 2006 but significantly below some major European countries, including Italy and Germany.*
- *The performance of the highest achieving countries in PIRLS 2006, the Russian Federation, Hong Kong and Singapore, did not differ significantly from each other.*
- *Of the countries testing in English, Singapore had a significantly higher mean score than the other five. There was no significant difference between the scores of England and the United States, and they both had significantly higher scores than New Zealand, Scotland, and Trinidad and Tobago.*

**Figure 2.1: Distribution of Reading Achievement**



Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

\* Represents years of schooling counting from the first year of ISCED level 1.

† Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).

‡ Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).

<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).

<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

Note: International Average does not include the results from the Canadian provinces.

- *In almost all countries, including England, girls achieved significantly higher mean scores than boys overall and for each of the two reading purposes, literary and informational reading.*
- *For pupils in England, there was no significant difference in the performance on the two different reading purposes identified in PIRLS.*
- *On the processes of reading comprehension scales, pupils in England, along with those in four other English-testing countries (New Zealand, Scotland, Singapore, United States) had a higher mean score on the interpreting, integrating and evaluating scale, than on the retrieving and straightforward inferencing scale.*

## 2.1 Overall reading achievement in PIRLS 2006

Figure 2.1 shows the distributions of reading achievement in PIRLS 2006 for all the participating countries and provinces. Countries are shown in descending order of mean (average) reading achievement.

### Interpreting the data

The mean scores on the PIRLS achievement scale (with 95 per cent confidence intervals) are shown graphically as the darkened areas on the achievement distributions, and listed (together with their standard errors) in the first column in the table. The PIRLS reading achievement scale was established in PIRLS 2001 to have a mean of 500 and a standard deviation of 100 and was designed to remain constant from assessment to assessment. There is an indication beside a country's mean scale score if the average achievement is significantly higher (large up arrow) or lower (large down arrow) than the scale mean of 500. There is also a smaller arrow used to indicate if a country's mean scale score is significantly higher (small up arrow) or lower (small down arrow) than that of England.

The standard error refers to uncertainty in estimates resulting from random fluctuations in samples. The smaller the standard error, the better the sample's score is as an estimate of the population's score.

The scale score for England in PIRLS 2006 was 539. This compares to a scale score of 565 for the Russian Federation, the highest achieving country, and 302, the scale score of South Africa, the lowest achieving country. Figure 2.1 also shows the ranges in achievement: for the middle group of pupils (25th to 75th percentiles) and for the lowest and highest attainers (5th and 95th percentiles, respectively). In most countries the difference in scale points between the 5th and 95th percentiles was about 250 points, comparable to the difference in average achievement (263 points) between the highest performing country, the Russian Federation, and lowest performing country, South Africa. In England, the difference in scale points between the 5th and 95th percentiles was 290 points. Further analysis of the range of achievement within countries is included in chapter 7.

Figure 2.2 allows comparisons between the scores of the participating countries and provinces.



Figure 2.2: Multiple comparisons of Average Reading Achievement

Countries	Russian Federation Hong Kong SAR Singapore Luxembourg	Italy	Hungary Sweden Germany Netherlands Belgium (Flemish)	Bulgaria Denmark Latvia United States England	Austria Lithuania Chinese Taipei New Zealand Slovak Republic	Scotland France Slovenia Poland Spain	Israel Iceland Moldova, Rep. of Belgium (French) Norway
Russian Federation		↑	↑	↑	↑	↑	↑
Hong Kong SAR		↑	↑	↑	↑	↑	↑
Singapore		↑	↑	↑	↑	↑	↑
Luxembourg	↓		↑	↑	↑	↑	↑
Italy	↓			↑	↑	↑	↑
Hungary	↓			↑	↑	↑	↑
Sweden	↓			↑	↑	↑	↑
Germany	↓			↑	↑	↑	↑
Netherlands	↓			↑	↑	↑	↑
Belgium (Flemish)	↓			↑	↑	↑	↑
Bulgaria	↓				↑	↑	↑
Denmark	↓				↑	↑	↑
Latvia	↓					↑	↑
United States	↓					↑	↑
<b>England</b>	↓	↓	↓	↓		↑	↑
Austria	↓			↓		↑	↑
Lithuania	↓			↓		↑	↑
Chinese Taipei	↓			↓		↑	↑
New Zealand	↓			↓		↑	↑
Slovak Republic	↓			↓		↑	↑
Scotland	↓			↓		↑	↑
France	↓			↓			↑
Slovenia	↓			↓			↑
Poland	↓			↓			↑
Spain	↓			↓			↑
Israel	↓			↓			↑
Iceland	↓			↓			↑
Moldova, Rep. of	↓			↓			
Belgium (French)	↓			↓			
Norway	↓			↓			
Romania	↓			↓			
Georgia	↓			↓			
Macedonia, Rep. of	↓			↓			
Trinidad and Tobago	↓			↓			
Iran, Islamic Rep. of	↓			↓			
Indonesia	↓			↓			
Qatar	↓			↓			
Kuwait	↓			↓			
Morocco	↓			↓			
South Africa	↓			↓			
<i>Canada, Alberta</i>		↑	↑	↑	↑	↑	↑
<i>Canada, British Columbia</i>			↑	↑	↑	↑	↑
<i>Canada, Ontario</i>	↓		↑	↑	↑	↑	↑
<i>Canada, Nova Scotia</i>	↓		↓		↑	↑	↑
<i>Canada, Quebec</i>	↓		↓			↑	↑

Note: 5% of these comparisons would be statistically significant by chance alone.

Figure 2.2: Multiple comparisons of Average Reading Achievement (continued)

Romania	Georgia	Macedonia, Rep. of	Trinidad and Tobago	Iran, Islamic Rep. of	Indonesia	Qatar	Kuwait	Morocco	South Africa	Canada, Alberta	Canada, BC	Canada, Ontario	Canada, Nova Scotia	Canada, Quebec	Countries
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Russian Federation
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Hong Kong SAR
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Singapore
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Luxembourg
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Italy
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Hungary
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Sweden
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Germany
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Netherlands
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Belgium (Flemish)
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Bulgaria
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Denmark
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Latvia
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	United States
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	<b>England</b>
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Austria
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Lithuania
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Chinese Taipei
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	New Zealand
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Slovak Republic
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Scotland
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	France
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Slovenia
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Poland
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Spain
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Israel
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Iceland
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Moldova, Rep. of
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Belgium (French)
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Norway
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Romania
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓	↓	↓	Georgia
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓	↓	↓	Macedonia, Rep. of
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓	↓	↓	Trinidad and Tobago
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓	↓	↓	Iran, Islamic Rep. of
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓	↓	↓	Indonesia
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓	↓	↓	Qatar
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓	↓	↓	Kuwait
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓	↓	↓	Morocco
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓	↓	↓	South Africa
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Canada, Alberta
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Canada, British Columbia
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Canada, Ontario
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Canada, Nova Scotia
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑			↑	↑	↑	Canada, Quebec

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

Note: 5% of these comparisons would be statistically significant by chance alone.

### Interpreting the data

Figure 2.2 depicts whether or not the differences in average achievement between pairs of countries are statistically significant. Selecting a country of interest and reading across the table, an arrow pointing up indicates significantly higher performance than the comparison country listed across the top. Absence of a symbol indicates no significant difference in performance, and an arrow pointing down indicates significantly lower performance.

**Figure 2.3: Differences in Average Reading Achievement by Gender**

Countries	Girls		Boys		Difference girls higher average achievement than boys
	Per cent of pupils	Average scale score	Per cent of pupils	Average scale score	
Luxembourg	49 (0.7)	559 (1.3)	51 (0.7)	556 (1.6)	3 (2.0)
Spain	49 (1.1)	515 (2.6)	51 (1.1)	511 (3.1)	4 (2.8)
Belgium (French)	50 (0.7)	502 (2.8)	↑ 50 (0.7)	497 (2.9)	5 (2.3)
Hungary	50 (0.9)	554 (3.6)	↑ 50 (0.9)	548 (2.9)	5 (2.6)
<sup>t2a</sup> Belgium (Flemish)	50 (0.9)	550 (2.3)	↑ 50 (0.9)	544 (2.4)	6 (2.5)
Italy	48 (0.8)	555 (3.3)	↑ 52 (0.8)	548 (3.3)	7 (2.9)
<sup>†</sup> Netherlands	51 (0.8)	551 (2.0)	↑ 49 (0.8)	543 (1.6)	7 (2.2)
Germany	49 (0.7)	551 (2.5)	↑ 51 (0.7)	544 (2.5)	7 (2.6)
Austria	49 (0.7)	543 (2.3)	↑ 51 (0.7)	533 (2.6)	10 (2.3)
<sup>t2a</sup> United States	51 (0.7)	545 (3.3)	↑ 49 (0.7)	535 (4.4)	10 (3.2)
Hong Kong SAR	49 (1.3)	569 (2.5)	↑ 51 (1.3)	559 (2.8)	10 (2.5)
France	48 (0.7)	527 (2.4)	↑ 52 (0.7)	516 (2.4)	11 (2.5)
Slovak Republic	49 (0.8)	537 (2.7)	↑ 51 (0.8)	525 (3.3)	11 (2.5)
Chinese Taipei	48 (0.5)	542 (2.2)	↑ 52 (0.5)	529 (2.3)	13 (1.9)
<sup>2a</sup> Denmark	52 (0.9)	553 (2.8)	↑ 48 (0.9)	539 (2.7)	14 (3.2)
Moldova, Rep. of	50 (1.0)	507 (3.1)	↑ 50 (1.0)	493 (3.5)	14 (2.5)
Iran, Islamic Rep. of	46 (1.1)	429 (5.3)	↑ 54 (1.1)	414 (3.8)	14 (6.7)
Romania	48 (1.0)	497 (5.0)	↑ 52 (1.0)	483 (5.7)	14 (4.2)
<sup>2b</sup> Israel	48 (1.2)	520 (4.1)	↑ 52 (1.2)	506 (3.7)	15 (4.0)
<sup>2a</sup> Russian Federation	51 (0.9)	572 (3.9)	↑ 49 (0.9)	557 (3.4)	15 (2.9)
Singapore	48 (0.6)	567 (3.1)	↑ 52 (0.6)	550 (3.3)	17 (2.9)
Poland	51 (0.8)	528 (2.6)	↑ 49 (0.8)	511 (2.7)	17 (2.6)
<sup>2a</sup> Georgia	48 (1.0)	480 (3.3)	↑ 52 (1.0)	463 (3.8)	17 (3.2)
Morocco	47 (1.0)	332 (6.6)	↑ 53 (1.0)	314 (6.6)	18 (5.8)
Sweden	48 (1.1)	559 (2.6)	↑ 52 (1.1)	541 (2.6)	18 (2.5)
Lithuania	49 (0.9)	546 (2.0)	↑ 51 (0.9)	528 (2.0)	18 (2.2)
Iceland	50 (0.9)	520 (1.7)	↑ 50 (0.9)	501 (1.9)	19 (2.5)
<sup>‡</sup> Norway	49 (1.1)	508 (2.8)	↑ 51 (1.1)	489 (3.1)	19 (3.2)
<b>England</b>	<b>50 (0.9)</b>	<b>549 (3.0)</b>	<b>↑ 50 (0.9)</b>	<b>530 (2.8)</b>	<b>19 (2.7)</b>
Slovenia	48 (0.7)	532 (2.1)	↑ 52 (0.7)	512 (2.7)	19 (2.5)
Indonesia	49 (0.9)	415 (4.2)	↑ 51 (0.9)	395 (4.6)	20 (3.3)
<sup>2a</sup> Bulgaria	49 (1.0)	558 (4.4)	↑ 51 (1.0)	537 (5.0)	21 (3.8)
Macedonia, Rep. of	49 (0.7)	453 (4.4)	↑ 51 (0.7)	432 (4.4)	21 (3.5)
<sup>†</sup> Scotland	51 (0.9)	538 (3.6)	↑ 49 (0.9)	516 (3.1)	22 (3.8)
Latvia	48 (1.0)	553 (2.7)	↑ 52 (1.0)	530 (2.6)	23 (2.7)
New Zealand	49 (0.9)	544 (2.2)	↑ 51 (0.9)	520 (2.9)	24 (3.1)
Trinidad and Tobago	49 (1.7)	451 (4.9)	↑ 51 (1.7)	420 (6.0)	31 (5.6)
South Africa	52 (0.6)	319 (6.3)	↑ 48 (0.6)	283 (5.5)	36 (4.6)
Qatar	50 (0.2)	372 (1.7)	↑ 50 (0.2)	335 (1.7)	37 (2.6)
Kuwait	50 (2.0)	364 (4.7)	↑ 50 (2.0)	297 (6.2)	67 (7.5)
<b>International Average</b>	<b>49 (0.2)</b>	<b>509 (0.6)</b>	<b>↑ 51 (0.2)</b>	<b>492 (0.6)</b>	<b>17 (0.5)</b>

↑ Average significantly higher than other gender

<sup>2a</sup> Canada, Alberta	48 (0.8)	564 (2.4)	↑ 52 (0.8)	556 (2.7)	8 (1.9)
<sup>2a</sup> Canada, British Columbia	50 (0.8)	562 (2.9)	↑ 50 (0.8)	554 (3.1)	9 (3.0)
Canada, Quebec	49 (1.0)	539 (2.7)	↑ 51 (1.0)	527 (3.5)	13 (3.0)
<sup>2a</sup> Canada, Ontario	49 (1.1)	562 (3.3)	↑ 51 (1.1)	549 (3.3)	13 (3.8)
Canada, Nova Scotia	49 (0.7)	553 (2.5)	↑ 51 (0.7)	531 (2.8)	21 (3.2)

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006.

† Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).  
‡ Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).  
<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).  
<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).  
( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.  
Note: The International Average does not include the results from the Canadian provinces.

The highest achieving group of countries includes the Russian Federation, Hong Kong and Singapore. The scores of these three countries did not significantly differ from each other and were significantly higher than those of all other participating countries. England had a mean score significantly lower than the highest achieving group and also than the mean scores of Luxembourg, Italy, Hungary, Sweden, Germany, the Netherlands, Belgium (Flemish) and Denmark. England's score was not significantly different from those of Bulgaria, Latvia, the United States, Austria, Lithuania and Chinese Taipei. The scale score of England was significantly higher than the scores of New Zealand and all other participating countries.

Three of the five participating Canadian provinces had significantly higher mean scores than England and the scores of the other two were not significantly different from that of England.

### Gender differences in reading attainment

As Figure 2.3 shows, in all participating countries in PIRLS 2006, girls outperformed boys in their reading attainment, although in Luxembourg and Spain, this difference was small (three scale points and four scale points, respectively) and was not significant. The difference between boys' and girls' performance in England was, at 19 scale points, slightly greater than the international average (17 points).

## 2.2 Achievement in reading for different purposes

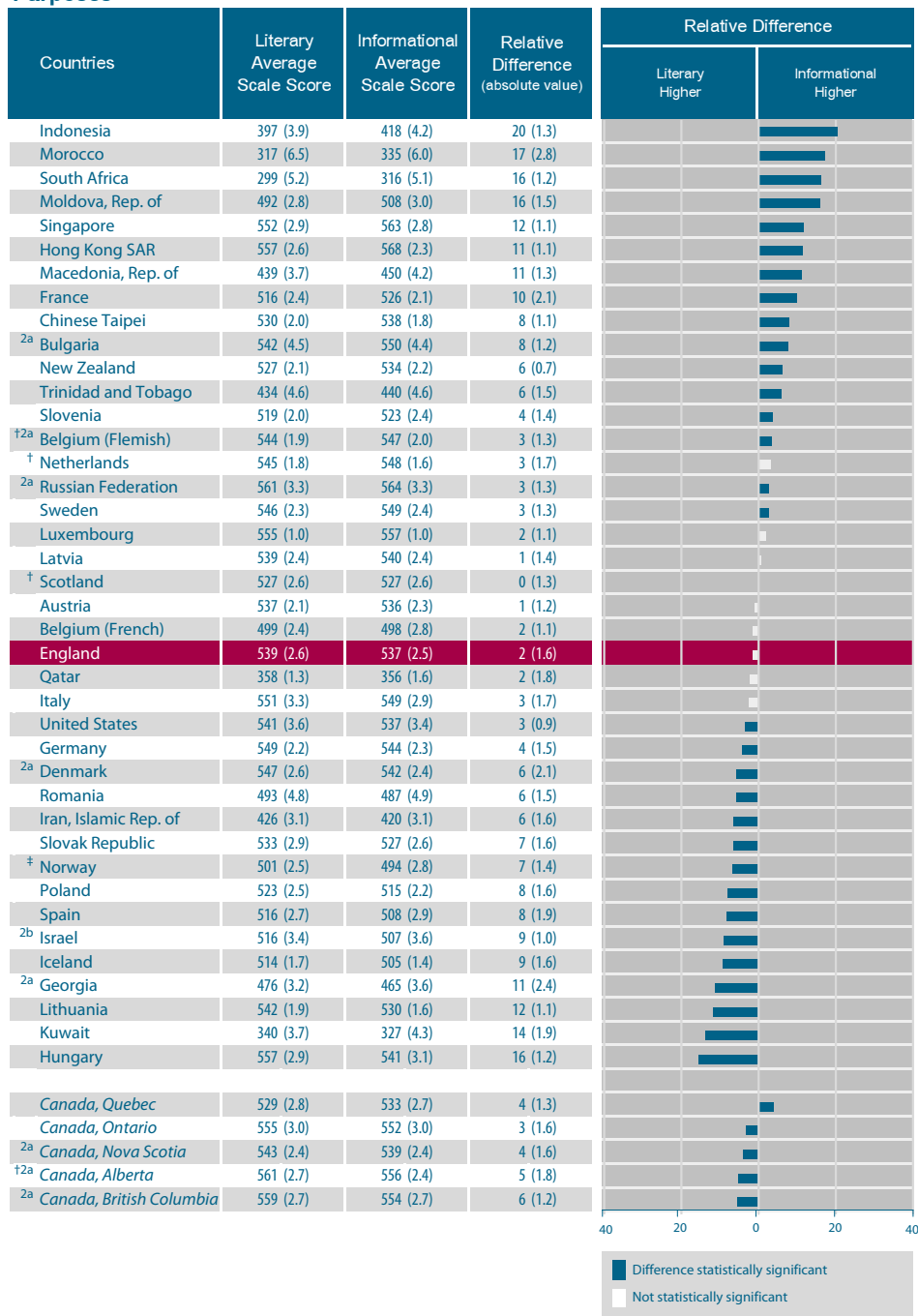
Figure 2.4 presents the average achievement of the participating countries in the two purposes for reading identified in PIRLS: reading for literary experience and reading to acquire and use information.

### Interpreting the data

It is important to note that the two numerical scale scores representing the two reading purposes are not directly comparable, since they represent different constructs, and the assessments may be of different difficulties. However, to allow comparison of the relative performance of each country for each purpose, the international average for each purpose was scaled to be 500, the same as the overall international average. This makes it possible to examine relative strengths and weaknesses of countries by comparing the relative positions of the participants on the two scales. To assist in the relative comparisons, the graph displays the differences and a dark bar indicates that the difference is statistically significant. This data may be affected by the equating method adopted (see Appendix 5).

The performance of pupils in England did not differ significantly between the two purposes for reading, although for the majority of participating countries there is a significant difference favouring one or other of the two purposes. The score of England on the scale of reading for literary purposes was 539 and the score on the scale of reading for informational purposes was two points lower at 537. Scotland's score was the same on the two scales, and for seven other countries, the difference between the scores was not significant.

**Figure 2.4: Relative Difference in Performance between Literary and Informational Purposes**



Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006.

† Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).  
 ‡ Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).  
 2a National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).  
 2b National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).  
 ( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

For the three highest achieving countries (the Russian Federation, Hong Kong and Singapore) their score on the informational scale was significantly higher than their score on the literary scale. A number of moderately high achieving countries (e.g. Hungary, Lithuania, Denmark) and four of the five Canadian provinces scored significantly more highly on the literary scale. All three of the Chinese-speaking countries in PIRLS 2006 performed better on the scale for informational reading but no clear pattern was evident in the performance of the English-speaking countries.

### Gender differences in attainment on the two reading purposes

Considering their superior performance on the assessment overall, it is not surprising to note that on average internationally girls scored significantly more highly than boys in reading for both literary and informational purposes. The international data is shown in Figure 2.5. In England girls had a mean scale score that was 22 points higher than that of boys on reading for literary purposes (international average was 17) and 16 scale points higher on reading for information (international average was also 16). In all participating countries and provinces with the sole exception of Iran, girls scored significantly more highly than boys on reading for literary purposes. A slightly more balanced picture emerges with regard to reading for information, where there is no significant difference between the scale scores of boys and girls in five countries, all of which are European (francophone Belgium, Hungary, Italy, Luxembourg and Spain).

## 2.3 Achievement in different reading processes

In addition to looking at the performance of countries on the two different scales measuring reading for different purposes, PIRLS also provides the opportunity to look at comparative differences in attainment in the different processes of reading as defined in the PIRLS reading framework (Mullis *et al.*, 2006).

### Interpreting the data

The four reading processes addressed by PIRLS are:

- focus on and retrieve explicitly stated information
- make straightforward inferences
- interpret and integrate ideas and information
- examine and evaluate content, language and textual elements.

The two text-based processes (retrieval and straightforward inferencing) were combined to form a single scale, and the other two processes more concerned with reasoning (interpreting and integrating, and examining and evaluating) were combined to form another. Participating countries' performance on these two scales, the retrieving and straightforward inferencing scale and the interpreting, integrating and evaluating scale, is reported separately.

More information on how reading is defined in PIRLS is included in Appendix 2.

**Figure 2.5: Average Achievement in Reading for Literary and Informational Purposes by Gender**

Countries	Literary			Informational		
	Girls Average Scale Score	Boys Average Scale Score	Girls Higher Average Achievement	Girls Average Scale Score	Boys Average Scale Score	Girls Higher Average Achievement
Austria	543 (2.6) ↑	531 (2.4)	11 (2.7)	540 (2.7) ↑	533 (2.6)	7 (2.6)
<sup>12a</sup> Belgium (Flemish)	547 (2.2) ↑	541 (2.3)	6 (2.4)	550 (2.4) ↑	545 (2.2)	5 (2.1)
Belgium (French)	504 (2.6) ↑	495 (2.8)	9 (2.5)	499 (3.3)	497 (3.0)	1 (3.0)
<sup>2a</sup> Bulgaria	553 (4.6) ↑	532 (5.4)	21 (4.7)	558 (4.4) ↑	542 (5.2)	16 (4.3)
Chinese Taipei	538 (2.2) ↑	523 (2.2)	15 (1.8)	543 (1.8) ↑	534 (2.3)	8 (2.0)
<sup>2a</sup> Denmark	554 (3.0) ↑	541 (3.1)	13 (3.2)	547 (2.8) ↑	536 (3.1)	11 (3.4)
<b>England</b>	<b>550 (3.1) ↑</b>	<b>528 (2.7)</b>	<b>22 (2.7)</b>	<b>545 (2.8) ↑</b>	<b>529 (2.9)</b>	<b>16 (2.6)</b>
France	523 (2.6) ↑	510 (2.7)	12 (2.4)	531 (2.7) ↑	521 (2.3)	10 (2.8)
<sup>2a</sup> Georgia	484 (3.7) ↑	470 (3.6)	14 (3.3)	474 (3.7) ↑	457 (4.4)	17 (3.8)
Germany	554 (2.4) ↑	544 (2.6)	9 (2.5)	547 (2.4) ↑	542 (2.7)	6 (2.4)
Hong Kong SAR	564 (2.6) ↑	551 (3.3)	13 (2.8)	572 (2.2) ↑	564 (2.8)	8 (2.2)
Hungary	560 (3.6) ↑	553 (2.9)	7 (2.9)	543 (3.7)	539 (3.1)	4 (2.8)
Iceland	525 (2.4) ↑	504 (1.9)	20 (2.9)	514 (1.9) ↑	497 (2.1)	17 (2.9)
Indonesia	408 (4.0) ↑	387 (4.4)	20 (3.3)	427 (4.6) ↑	409 (5.0)	18 (4.8)
Iran, Islamic Rep. of	432 (5.3)	421 (4.0)	11 (6.8)	429 (4.9) ↑	412 (3.8)	17 (6.1)
<sup>2b</sup> Israel	524 (4.0) ↑	509 (3.8)	15 (3.8)	513 (4.5) ↑	502 (4.1)	11 (4.8)
Italy	556 (3.6) ↑	548 (3.6)	8 (3.0)	551 (3.1)	547 (3.4)	5 (2.9)
Kuwait	372 (4.5) ↑	310 (5.2)	62 (6.8)	361 (6.3) ↑	292 (6.0)	68 (9.2)
Latvia	550 (3.0) ↑	529 (2.7)	21 (3.1)	553 (2.7) ↑	527 (2.7)	26 (2.8)
Lithuania	550 (2.4) ↑	533 (2.0)	17 (2.2)	539 (2.2) ↑	521 (2.0)	17 (2.6)
Luxembourg	557 (1.4) ↑	552 (1.4)	5 (2.2)	557 (1.2)	556 (1.5)	1 (1.9)
Macedonia, Rep. of	449 (4.3) ↑	429 (4.0)	20 (3.7)	460 (4.6) ↑	440 (4.4)	21 (3.4)
Moldova, Rep. of	499 (3.3) ↑	486 (3.0)	13 (2.9)	514 (3.2) ↑	502 (3.5)	13 (2.6)
Morocco	326 (6.9) ↑	310 (7.4)	17 (6.3)	344 (6.1) ↑	326 (6.9)	19 (5.1)
<sup>†</sup> Netherlands	548 (2.2) ↑	541 (2.3)	6 (2.7)	552 (1.8) ↑	543 (1.9)	9 (2.0)
New Zealand	539 (2.3) ↑	516 (2.9)	23 (3.1)	545 (2.3) ↑	522 (3.0)	23 (2.9)
<sup>‡</sup> Norway	512 (2.8) ↑	491 (2.7)	21 (2.6)	502 (3.4) ↑	486 (2.8)	16 (3.0)
Poland	532 (2.8) ↑	514 (3.0)	18 (3.0)	523 (2.3) ↑	507 (2.8)	16 (2.6)
Qatar	376 (1.8) ↑	341 (2.3)	36 (3.3)	374 (2.3) ↑	339 (2.3)	35 (3.2)
Romania	501 (4.9) ↑	485 (5.6)	16 (4.2)	494 (5.2) ↑	481 (5.4)	13 (3.8)
<sup>2a</sup> Russian Federation	568 (3.8) ↑	554 (3.3)	15 (2.5)	572 (3.5) ↑	555 (3.6)	17 (2.7)
<sup>†</sup> Scotland	538 (3.4) ↑	515 (3.0)	23 (3.9)	537 (3.6) ↑	517 (2.8)	20 (3.9)
Singapore	560 (3.2) ↑	544 (3.4)	16 (3.2)	572 (2.9) ↑	555 (3.3)	16 (2.7)
Slovak Republic	539 (2.9) ↑	527 (3.5)	12 (3.1)	532 (2.5) ↑	522 (3.3)	10 (2.7)
Slovenia	529 (2.3) ↑	511 (2.6)	18 (2.7)	533 (2.4) ↑	514 (3.2)	18 (3.2)
South Africa	318 (6.0) ↑	281 (5.3)	38 (4.3)	332 (5.8) ↑	299 (5.4)	33 (4.5)
Spain	520 (3.1) ↑	513 (3.1)	7 (3.0)	508 (3.2)	508 (3.2)	0 (2.7)
Sweden	557 (2.7) ↑	536 (2.6)	20 (2.8)	557 (2.9) ↑	541 (2.6)	15 (3.0)
Trinidad and Tobago	450 (4.9) ↑	419 (5.6)	31 (5.4)	455 (5.0) ↑	426 (5.5)	28 (5.4)
<sup>12a</sup> United States	547 (3.6) ↑	534 (4.1)	12 (2.8)	542 (3.1) ↑	532 (4.4)	9 (3.3)
International average	509 (0.6) ↑	491 (0.6)	17 (0.5)	509 (0.7) ↑	493 (0.6)	16 (0.7)
<sup>2a</sup> Canada, Alberta	567 (2.9) ↑	556 (3.0)	11 (2.2)	559 (2.5) ↑	553 (2.8)	7 (2.1)
<sup>2a</sup> Canada, British Columbia	565 (3.0) ↑	553 (3.2)	12 (3.2)	556 (3.3) ↑	551 (2.8)	6 (3.0)
Canada, Nova Scotia	552 (3.4) ↑	534 (2.6)	18 (3.7)	549 (2.8) ↑	529 (3.0)	20 (3.3)
<sup>2a</sup> Canada, Ontario	562 (3.5) ↑	549 (3.3)	12 (3.5)	558 (3.3) ↑	547 (3.9)	11 (4.0)
Canada, Quebec	536 (3.1) ↑	523 (3.4)	12 (3.5)	539 (2.7) ↑	528 (3.6)	11 (3.3)

↑ Average significantly higher than other gender

<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).

<sup>‡</sup> Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).

<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).

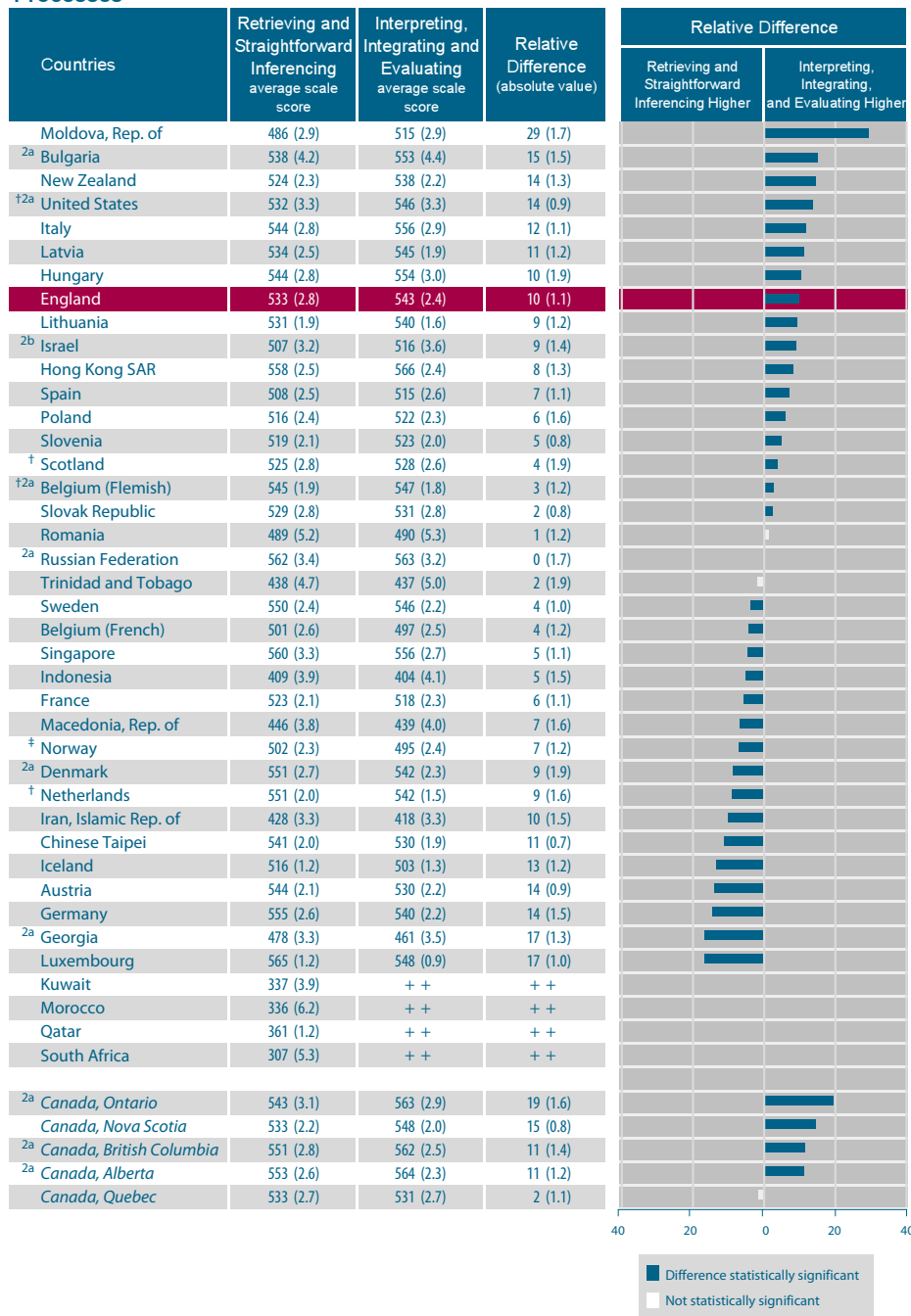
<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

Note: The International Average does not include the results from the Canadian provinces.

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006.

**Figure 2.6: Relative Differences in Performance Between Reading Comprehension Processes**



<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).  
<sup>‡</sup> Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).  
<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).  
<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).  
 ( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.  
 A plus (+) sign indicates average achievement could not be accurately estimated on the interpreting, integrating, and evaluating scale.



**Figure 2.7: Average Achievement in Reading Processes of Comprehension by Gender**

Countries	Retrieving and Straightforward Inferencing Processes			Interpreting, Integrating and Evaluating Processes		
	Girls average scale score	Boys average scale score	Girls Higher average achievement	Girls average scale score	Boys average scale score	Girls Higher average achievement
Austria	547 (2.3) ↑	541 (2.5)	6 (2.4)	536 (2.7) ↑	524 (2.4)	13 (2.6)
<sup>†2a</sup> Belgium (Flemish)	548 (2.3) ↑	542 (2.3)	6 (2.6)	550 (2.4) ↑	544 (2.0)	6 (2.5)
Belgium (French)	504 (2.8) ↑	498 (3.0)	6 (2.5)	500 (2.6) ↑	494 (2.9)	6 (2.5)
<sup>2a</sup> Bulgaria	544 (4.3) ↑	531 (5.0)	13 (4.1)	565 (4.4) ↑	540 (5.1)	25 (3.9)
Chinese Taipei	546 (2.1) ↑	536 (2.3)	10 (2.2)	537 (1.9) ↑	523 (2.2)	14 (1.9)
<sup>2a</sup> Denmark	558 (3.1) ↑	543 (3.2)	15 (3.3)	548 (2.8) ↑	536 (2.6)	12 (2.8)
<b>England</b>	<b>543 (3.5) ↑</b>	<b>524 (2.8)</b>	<b>20 (2.8)</b>	<b>552 (2.8) ↑</b>	<b>534 (2.7)</b>	<b>18 (2.5)</b>
France	529 (2.5) ↑	518 (2.5)	11 (2.7)	523 (2.6) ↑	513 (2.5)	10 (2.4)
<sup>2a</sup> Georgia	486 (3.5) ↑	471 (3.9)	15 (3.3)	471 (4.1) ↑	453 (4.1)	18 (4.1)
Germany	559 (2.8) ↑	550 (3.1)	8 (2.7)	543 (2.4) ↑	537 (2.7)	6 (2.8)
Hong Kong SAR	562 (2.5) ↑	553 (3.0)	8 (2.3)	572 (2.6) ↑	559 (2.8)	13 (2.4)
Hungary	545 (3.5)	542 (2.8)	4 (3.1)	557 (3.6)	551 (3.0)	6 (2.9)
Iceland	525 (1.7) ↑	508 (1.9)	17 (2.7)	514 (1.9) ↑	493 (1.7)	21 (2.5)
Indonesia	418 (4.0) ↑	401 (4.4)	17 (3.1)	415 (4.1) ↑	393 (4.8)	22 (3.6)
Iran, Islamic Rep. of	435 (5.4)	422 (4.0)	13 (6.7)	425 (5.5)	412 (4.2)	13 (7.1)
<sup>2b</sup> Israel	513 (3.9) ↑	502 (3.7)	11 (4.0)	523 (4.3) ↑	510 (3.7)	14 (3.7)
Italy	546 (2.9)	542 (3.4)	4 (2.8)	559 (2.9) ↑	552 (3.4)	7 (2.9)
Kuwait	368 (4.6) ↑	306 (5.2)	62 (6.6)	++	++	++
Latvia	546 (2.7) ↑	523 (3.0)	23 (3.2)	557 (2.3) ↑	534 (2.2)	24 (2.7)
Lithuania	541 (2.2) ↑	521 (2.4)	20 (2.5)	549 (2.2) ↑	532 (2.0)	17 (2.6)
Luxembourg	567 (1.9)	564 (1.5)	3 (2.3)	550 (1.4) ↑	546 (1.2)	4 (1.9)
Macedonia, Rep. of	456 (4.1) ↑	437 (4.2)	19 (3.2)	451 (4.7) ↑	428 (4.2)	23 (3.7)
Moldova, Rep. of	491 (3.0) ↑	481 (3.4)	10 (2.8)	523 (3.1) ↑	508 (3.2)	15 (2.5)
Morocco	345 (7.2) ↑	329 (6.5)	16 (5.8)	++	++	++
<sup>†</sup> Netherlands	553 (2.7)	549 (2.3)	4 (3.0)	547 (2.0) ↑	538 (1.8)	9 (2.4)
New Zealand	535 (2.4) ↑	513 (3.1)	22 (3.1)	550 (2.3) ↑	526 (2.9)	24 (2.8)
<sup>‡</sup> Norway	510 (3.1) ↑	494 (3.1)	16 (4.2)	505 (2.5) ↑	485 (2.9)	20 (2.7)
Poland	525 (2.6) ↑	507 (2.8)	18 (2.6)	529 (2.4) ↑	514 (3.0)	16 (3.0)
Qatar	377 (2.0) ↑	344 (1.6)	33 (2.7)	++	++	++
Romania	495 (5.2) ↑	483 (5.9)	13 (4.1)	498 (5.6) ↑	482 (5.9)	16 (4.6)
<sup>2a</sup> Russian Federation	570 (3.9) ↑	554 (3.4)	16 (2.5)	569 (3.8) ↑	555 (3.2)	14 (2.8)
<sup>†</sup> Scotland	537 (3.8) ↑	512 (3.0)	24 (3.8)	538 (3.3) ↑	519 (2.9)	18 (3.6)
Singapore	570 (3.6) ↑	552 (3.9)	18 (3.6)	564 (2.8) ↑	548 (3.2)	16 (2.6)
Slovak Republic	534 (2.8) ↑	524 (3.6)	10 (3.3)	538 (2.8) ↑	525 (3.4)	13 (2.9)
Slovenia	527 (2.0) ↑	511 (2.8)	16 (2.6)	534 (2.1) ↑	514 (2.4)	20 (2.4)
South Africa	322 (6.0) ↑	291 (5.4)	31 (4.4)	++	++	++
Spain	509 (2.8)	508 (2.7)	1 (2.4)	519 (2.9) ↑	512 (3.0)	7 (2.7)
Sweden	558 (2.5) ↑	544 (2.9)	14 (2.7)	557 (2.7) ↑	537 (2.5)	20 (3.0)
Trinidad and Tobago	453 (5.0) ↑	424 (5.6)	29 (5.4)	453 (5.5) ↑	421 (5.8)	32 (5.5)
<sup>†2a</sup> United States	537 (3.2) ↑	527 (4.1)	10 (3.1)	552 (3.0) ↑	540 (4.1)	12 (2.7)
International Average	508 (0.6) ↑	493 (0.6)	15 (0.6)	509 (0.6) ↑	492 (0.6)	17 (0.5)
<sup>2a</sup> Canada, Alberta	556 (2.7) ↑	550 (3.1)	6 (2.5)	570 (2.5) ↑	558 (2.8)	11 (2.5)
<sup>2a</sup> Canada, British Columbia	554 (3.0) ↑	547 (3.2)	7 (2.8)	567 (2.7) ↑	557 (3.1)	9 (3.3)
Canada, Nova Scotia	542 (3.1) ↑	525 (2.9)	17 (4.1)	559 (2.2) ↑	537 (2.6)	21 (2.7)
<sup>2a</sup> Canada, Ontario	548 (3.8) ↑	538 (3.4)	11 (3.8)	569 (3.2) ↑	556 (3.1)	13 (2.8)
Canada, Quebec	537 (2.8) ↑	528 (3.3)	9 (3.0)	539 (2.6) ↑	523 (3.3)	16 (2.8)

↑ Average significantly higher than other gender

† Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).

‡ Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).

<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).

<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

A plus (+) sign indicates average achievement could not be accurately estimated on the interpreting, integrating, and evaluating scale.

Note: International average does not include the results from the Canadian provinces.

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006.

Figure 2.6 shows the relative difference in performance between the two reading scales in the participating countries.

There was a difference of 10 scale points between the performance of pupils in England, favouring the interpreting, integrating and evaluating scale. All of the English-speaking countries in PIRLS, with the exception of Trinidad and Tobago, had significantly higher achievement in the reasoning processes (interpreting, integrating and evaluating scale) than in the text-based processes (the retrieving and inferencing scale). It should be noted that in absolute terms, in all countries, pupils were more likely to be successful in responding to the items on the retrieving and inferencing scale.

### **Gender differences in attainment on the two reading processes scales**

Figure 2.7 shows that girls scored significantly higher than boys on the retrieval and straightforward inferencing scale in England (a difference of 20 scale points), and also on the interpreting, integrating and evaluating scale (a difference of 18 scale points). These differences are close to the international averages of 15 and 17 points respectively for the two scales. In every participating country, girls performed better than boys on both scales and the extent of the differences between the scores of boys and girls across the two scales within a country were very similar. There was a non-significant difference on the retrieving and straightforward inferencing scale between boys and girls in six countries (Hungary, Iran, Italy, Luxembourg, the Netherlands and Spain), of which five are European. On the interpreting, integrating and evaluating scale, there were just two countries (Hungary and Iran) with a non-significant difference between the scores of boys and girls.

#### **Other research evidence**

Girls consistently outperform boys in reading assessments. In the national tests in England at the end of key stage 2 (age 11), annually about eight per cent more girls than boys achieve at least the target level. A report published by the DfES (2007a) summarised data on the so-called 'gender gap'. It was reported that the gender gap was evident in English from the outcomes of the Foundation stage (age 5) through to GCSE (age 16) and that it was most evident at key stages 3 and 4 (11-16).



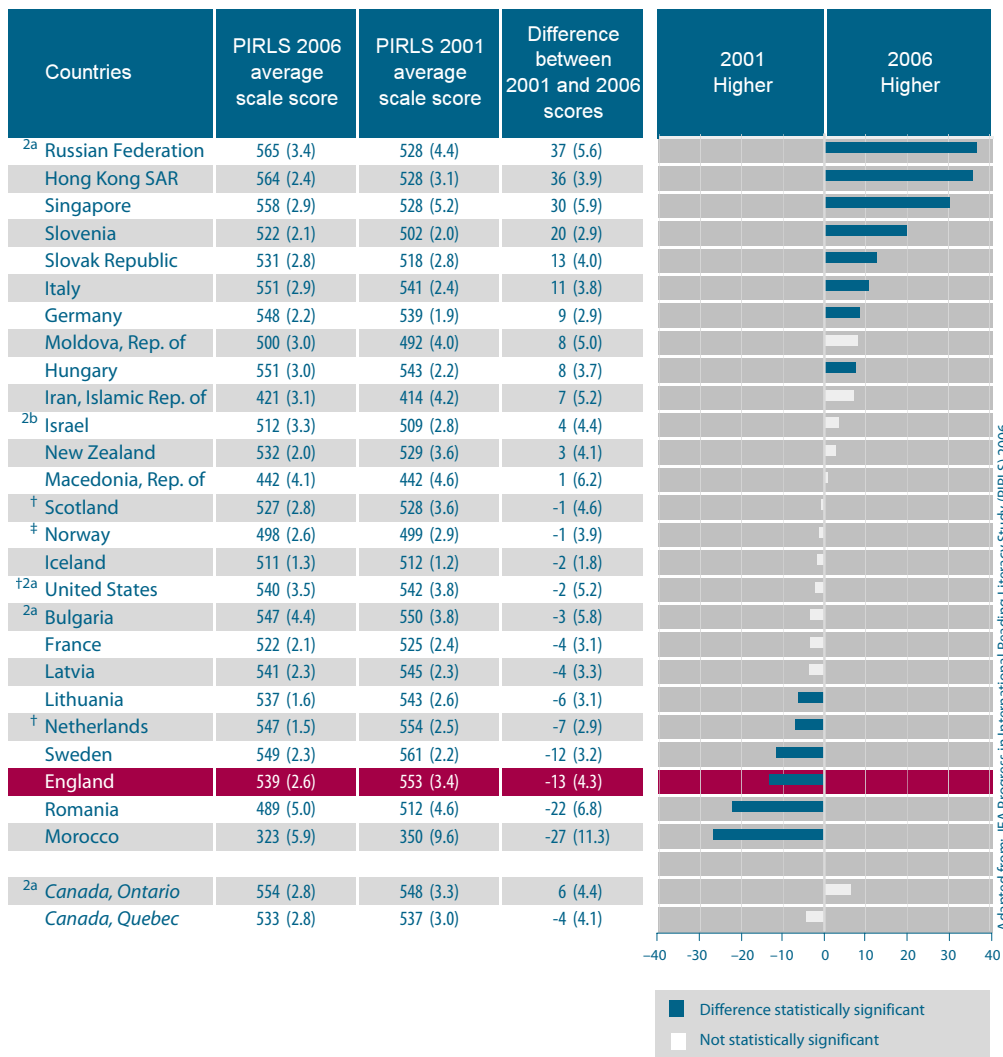


### 3 Trends in PIRLS Reading Attainment, 2001 and 2006

*This chapter compares performance on PIRLS 2006 with that on PIRLS 2001 for the 26 countries and two provinces that participated in both assessments. In order to establish a link between the surveys, four tests were common to both. Each country's performance on these items in 2006 was compared to performance on the same items in 2001. The data reported here is derived from the method of linking the surveys adopted by the IEA. There is more than one way of linking the tests and NFER's analysis has shown that the results are influenced by the particular methodology adopted. This is discussed in more detail in Appendix 5.*

- *A number of countries showed a significant change in performance from 2001 to 2006. The largest changes are in the extent of the increase in overall performance in the Russian Federation, Hong Kong and Singapore.*
- *The performance of the three highest attaining countries in 2001, Sweden, the Netherlands and England, was significantly lower in 2006. Of the ten highest achieving countries in 2001, seven saw a fall in 2006 and three saw an increase.*
- *In England, the performance of girls has fallen slightly more than that of boys, and the performance of both is significantly lower than in 2001.*

**Figure 3.1: Trends in Reading Achievement**



<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).  
<sup>‡</sup> Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).  
<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).  
<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).  
 ( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.  
 Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

- *On the basis of the international analysis, the performance of pupils in England on the reading for literary purposes scale has fallen by 20 points. On the reading for informational purposes scale, the fall is smaller at nine points.*
- *The alternative methodology for linking investigated by NFER and using data only from England indicates that the fall between 2001 and 2006 is smaller than appears in the published international report. There is essentially no change in performance on the literary linking items between 2001 and 2006, and a small fall in performance on the information items. This methodology is described in Appendix 5.*

### 3.1 Trends in overall reading attainment

This chapter contains information showing the trends in achievement since PIRLS 2001 for the 26 countries and two provinces that participated in both surveys. In Figure 3.1 countries are ordered by those showing greatest improvement, and the dark bar indicates a statistically significant difference between 2001 and 2006.

#### Interpreting the data

The PIRLS reading achievement scale was established in the 2001 study to have a mean of 500 and a standard deviation of 100. It was designed to remain constant from assessment to assessment.

The fall in the mean scale score in England, from 553 in 2001 to 539 in 2006, is one of the largest in the study. Sweden, the only country which had a significantly higher score than England in 2001, saw a fall of 12 points. The Netherlands and Bulgaria, whose overall scores did not significantly differ from that of England in 2001, also saw falls in 2006. This rather surprising finding has been the subject of some further analysis which is reported briefly below and in greater detail in Appendix 5. The mean scores of a substantial group of countries, including New Zealand, Scotland and the United States, have not changed significantly between 2001 and 2006.

As a result of an increase in the number of countries participating in PIRLS 2006, a country's ranking may be considerably lower despite no significant difference in their scale scores in the two studies. For example, in 2001, New Zealand was ranked 13th with a mean score of 529. In 2006, despite an increase of three points in the mean score to 532, New Zealand was ranked 19th.

A number of countries recorded significantly higher scores in 2006 compared to their achievement in 2001. The Russian Federation's score has increased from 528 to 565; Hong Kong and Singapore also recorded increases of at least 30 points. Within Europe, Slovenia has the largest increase (20 points) followed by the Slovak Republic, Italy and Germany with increases of 13, 11 and nine points respectively.

**Figure 3.2: Trends in Average Reading Achievement by Gender**

Countries	Girls		Boys	
	2006 average scale score	2001 to 2006 difference	2006 average scale score	2001 to 2006 difference
<sup>2a</sup> Bulgaria	558 (4.4)	-5 (5.7)	537 (5.0)	-1 (6.8)
<b>England</b>	<b>549 (3.0)</b>	<b>-14 (4.9) ↓</b>	<b>530 (2.8)</b>	<b>-11 (4.7) ↓</b>
France	527 (2.4)	-3 (3.6)	516 (2.4)	-4 (3.9)
Germany	551 (2.5)	6 (3.3)	544 (2.5)	11 (3.5) ↑
Hong Kong SAR	569 (2.5)	32 (3.9) ↑	559 (2.8)	40 (4.5) ↑
Hungary	554 (3.6)	3 (4.3)	548 (2.9)	12 (3.8) ↑
Iceland	520 (1.7)	-2 (2.5)	501 (1.9)	-2 (2.4)
Iran, Islamic Rep. of	429 (5.3)	2 (7.8)	414 (3.8)	15 (6.8) ↑
<sup>2b</sup> Israel	520 (4.1)	1 (5.3)	506 (3.7)	8 (5.2)
Italy	555 (3.3)	10 (4.2) ↑	548 (3.3)	11 (4.2) ↑
Latvia	553 (2.7)	-3 (4.1)	530 (2.6)	-4 (3.6)
Lithuania	546 (2.0)	-6 (3.5)	528 (2.0)	-7 (3.4)
Macedonia, Rep. of	453 (4.4)	1 (6.8)	432 (4.4)	1 (6.5)
Moldova, Rep. of	507 (3.1)	3 (5.6)	493 (3.5)	14 (5.3) ↑
Morocco	332 (6.6)	-29 (11.6) ↓	314 (6.6)	-27 (12.8) ↓
<sup>†</sup> Netherlands	551 (2.0)	-11 (3.4) ↓	543 (1.6)	-4 (3.2)
New Zealand	544 (2.2)	2 (5.2)	520 (2.9)	4 (5.1)
<sup>‡</sup> Norway	508 (2.8)	-3 (4.5)	489 (3.1)	0 (4.6)
Romania	497 (5.0)	-22 (6.6) ↓	483 (5.7)	-22 (8.1) ↓
<sup>2a</sup> Russian Federation	572 (3.9)	38 (5.8) ↑	557 (3.4)	35 (5.9) ↑
<sup>†</sup> Scotland	538 (3.6)	2 (5.3)	516 (3.1)	-3 (5.2)
Singapore	567 (3.1)	27 (6.1) ↑	550 (3.3)	34 (6.6) ↑
Slovak Republic	537 (2.7)	10 (4.0) ↑	525 (3.3)	15 (4.7) ↑
Slovenia	532 (2.1)	19 (3.3) ↑	512 (2.7)	22 (3.6) ↑
Sweden	559 (2.6)	-14 (3.7) ↓	541 (2.6)	-10 (3.6) ↓
<sup>†2a</sup> United States	545 (3.3)	-6 (5.0)	535 (4.4)	2 (6.6)
International Average	526 (0.7)	1 (1.0)	510 (0.7)	5 (1.1) ↑
<sup>2a</sup> Canada, Ontario	560 (3.3)	2 (5.0)	548 (3.3)	10 (4.8) ↑
Canada, Quebec	539 (2.7)	-5 (4.3)	527 (3.5)	-3 (4.7)

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

↑ 2006 average significantly higher  
 ↓ 2006 average significantly lower

<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).

<sup>‡</sup> Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).

<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).

<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

Note: International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

### Other evidence

The four countries in which there has been the greatest improvement have been subject to large-scale structural and/or curricular reform in the five years since PIRLS 2001. The Russian Federation and Slovenia have both begun programmes to increase the length of the primary phase of education.

Following education reform initiatives in 2000, the curriculum in the Russian Federation underwent significant change, reflecting efforts to improve reading in the primary grades, and new teaching practices were introduced, emphasising learning skills development and more active learning (Kovaleva and Kuznetsova, 2007). Attention is also being paid to the role of preprimary education; following a decline in the proportion of pupils being enrolled in preschool provision in the 1980s and 1990s, the preschool grade will form part of the general education structure from 2008. The pupils participating in PIRLS 2006 from the Russian Federation were six months older than those in PIRLS 2001. In addition, there has been a reduction in the number of schools located in rural areas since PIRLS 2001. In that survey, 43 per cent of pupils were in schools in rural areas (and the mean performance of pupils in these schools was lower than that of pupils in urban or suburban schools); in PIRLS 2006, 31 per cent of pupils were in rural schools (again, with lower achievement). In PIRLS 2006, the Russian Federation also reported a high level of exclusion (7.7 per cent, see Figure A4.1).

In Slovenia, there has been a gradual move, since 1999, to lower the age at which children start school. The PIRLS 2006 sample therefore consisted of equal numbers of pupils in the eight-year primary system and in the nine-year primary system. The average age of these two groups is the same (9.9 years).

A new national syllabus for English-language development has been implemented in Singapore, starting with primary grades 1 and 2 in 2001. At the same time the education system is reported to have become more decentralised (Ministry of Education, 2007). Singapore's improvement is even more notable when it is considered that the interval between the two testing phases of PIRLS 2001 and 2006 is only four years for the Southern Hemisphere countries that took part in both surveys (Singapore and New Zealand).

Curricular reform has also been evident in Hong Kong since the 2000 Education Reform Act. Before this time, the focus of teaching reading was on prescribed texts and there was a reliance on text books (Tse, 2007). The use of a wider range of reading materials is now promoted and there has been considerable investment in curriculum resources.

A national and local assessment system has been introduced in Germany, with a focus on measuring educational output. Educational standards in German and mathematics for primary schools were released in 2004 and these will be monitored through newly developed assessments at both local and national levels (Hornberg *et al.*, 2007).

## 3.2 Trends in reading attainment by gender

Figure 3.2 shows the trends in reading achievement by gender.

When the performance of boys and girls in England is considered, it is evident that there was a significant fall in performance of both sexes; the mean scale score of boys fell from 541 in 2001 to 530 in 2006 (11 points) while that of girls fell from 564 to 549 (rounded to



14 points). The difference between boys' and girls' performance in England was slightly smaller in 2006 than in the previous study, at 19 points (22 in 2001) but still greater than the international average (17 points).

There was a significant fall in the performance of both boys and girls in several other countries including Sweden. In the Netherlands, girls performed significantly less well in 2006 while for boys the fall of four scale points was not significant. Some countries, including Hong Kong, Italy, the Russian Federation and Singapore, saw significant improvements over this time in the performance of both boys and girls.

### 3.3 Trends in attainment in reading for different purposes

As described in chapter 2, the two purposes for reading identified in the PIRLS framework, reading for literary experience and reading to acquire and use information, were scaled separately. Using the same method by which the overall assessment was linked to the 2001 data, the results for each of the reading purposes could be linked back to 2001. The results of this linking are shown in Figures 3.3 and 3.4.

From Figures 3.3 and 3.4, it is evident that the greater drop in terms of performance in England is seen in the assessment of reading for literary purposes. There is a statistically significant fall of 20 points between 2001 and 2006. When reading for informational purposes is considered, the fall, while still statistically significant, is much less at nine points.

#### Interpreting the data

Gebhardt and Adams (2007) show how the equating methodology adopted on international surveys has the potential to affect trend estimates, with examples from the Programme for International Student Assessment (PISA). One of the issues discussed is whether the item parameters (i.e. difficulties) for the link items should be the same for all countries (international estimates) or vary by country (national estimates). The former approach is used in PISA and all other international studies to produce trends, but Gebhardt and Adams argue that this ignores item-by-country interactions which 'are commonly observed in cross-national studies ... and the magnitude of these interactions influences the validity of cross-country comparisons' (*op cit*, p. 307). In other words, if link item parameters are estimated for any individual country these may differ significantly from the international estimates, and this will affect the estimate of trend for that country.

To investigate England's performance using Gebhardt and Adams' preferred approach, based on linking using preliminary England data only in 2001 and 2006, we found an overall mean of 548 for 2006 (a five point fall), with a literary scale score of 559 (a one point rise) and an informational scale score of 540 (a seven point fall). None of these differences were statistically significant.

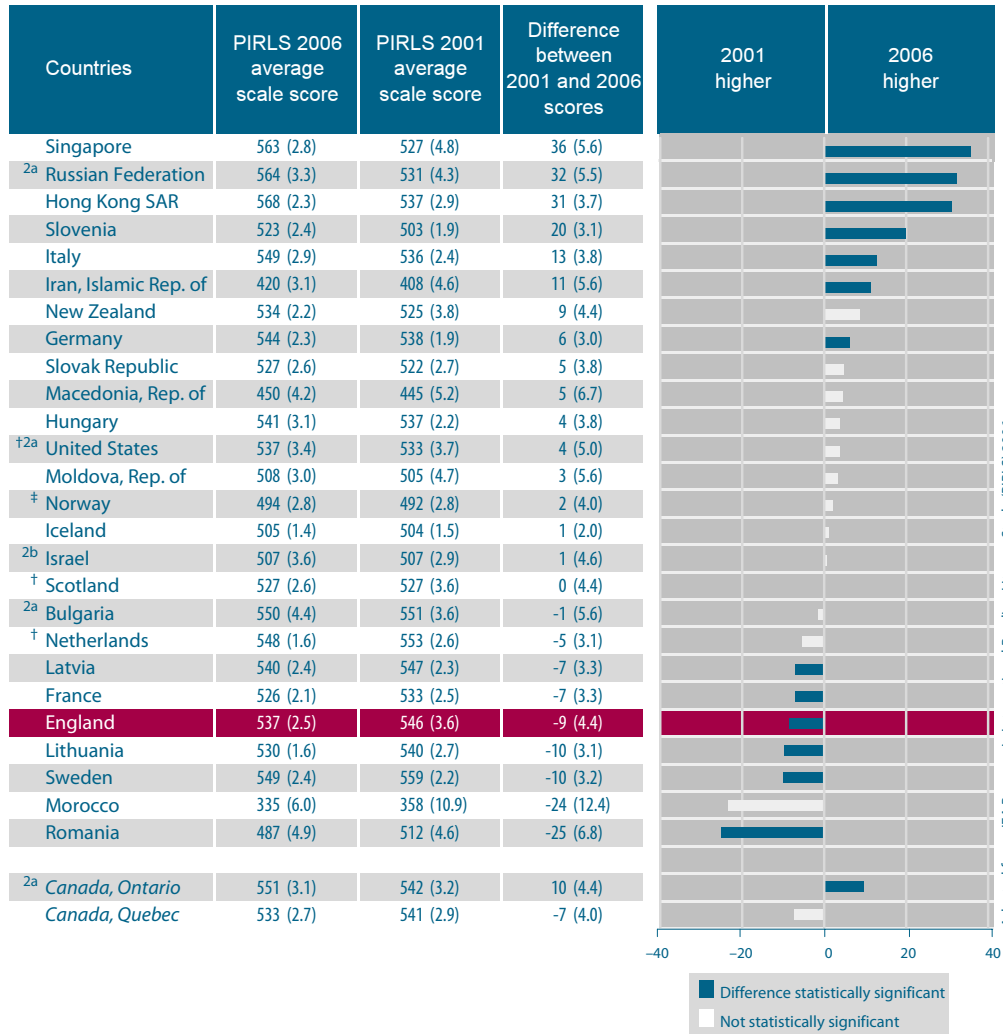
The policy implications of apparent changes in England's scale scores from 2001 should be drawn out with caution, until such times as further analysis has investigated the apparent sensitivity of these results to the equating methodology used.

Figure 3.3: Trends in Reading Achievement for Literary Purposes



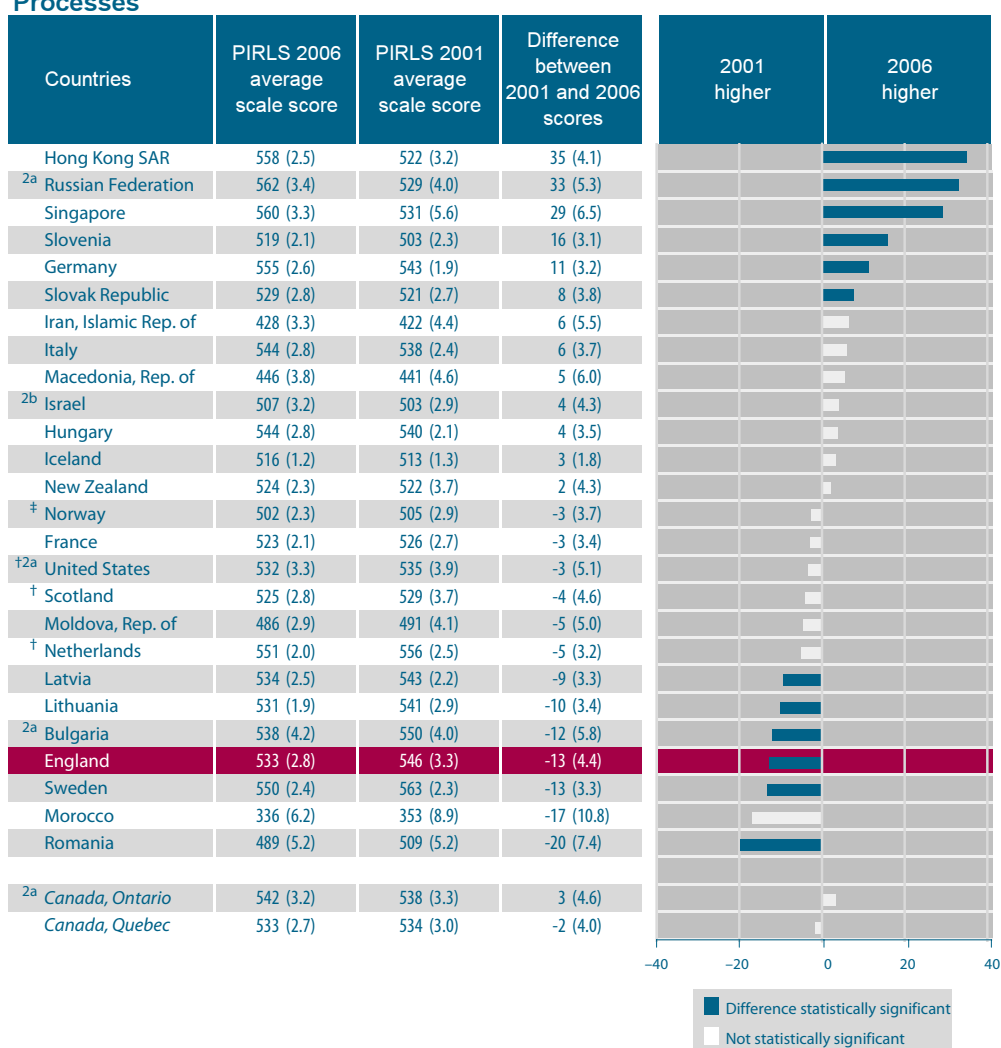
<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).  
<sup>‡</sup> Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).  
<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).  
<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).  
 ( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.  
 Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

**Figure 3.4: Trends in Reading Achievement for Informational Purposes**



<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).  
<sup>‡</sup> Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).  
<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).  
<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).  
 ( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.  
 Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

**Figure 3.5: Trends in Reading Achievement for Retrieving and Straightforward Inferencing Processes**



<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).

<sup>‡</sup> Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).

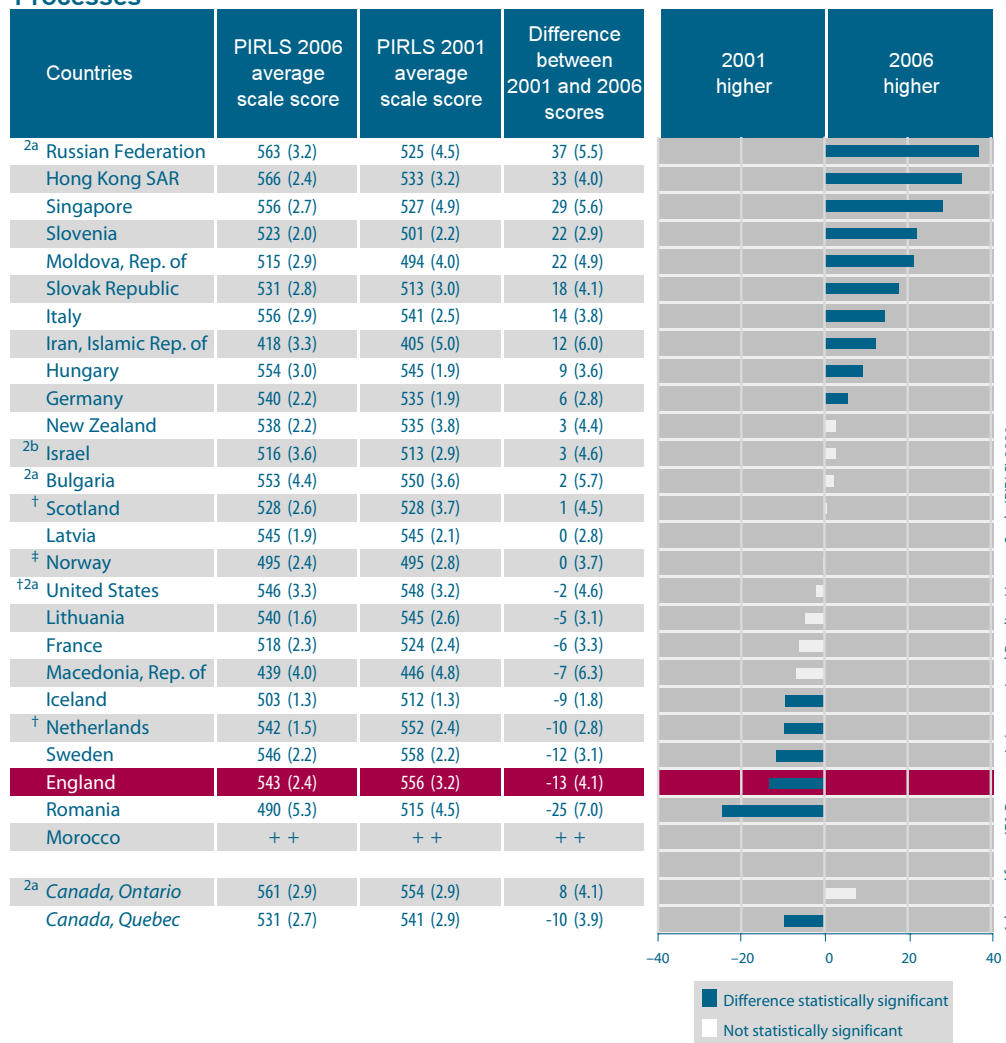
<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).

<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

**Figure 3.6: Trends in Reading Achievement for Interpreting, Integrating, and Evaluating Processes**



† Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).  
<sup>‡</sup> Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).  
<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).  
<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).  
 ( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.  
 A plus (+) sign indicates average achievement could not be accurately estimated on the interpreting, integrating, and evaluating scale.  
 Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

### 3.4 Trends in attainment in different reading processes

The two scales created to measure attainment in the different reading processes were also linked back to the 2001 data. Figures 3.5 and 3.6 show the trend in attainment in these two scales.

Figure 3.5 shows that the mean scale score for England on the retrieval and straightforward inferencing scale, at 533, is significantly lower in 2006 compared to 2001, when it was 546. A number of other countries show significant falls on this scale including Sweden, Bulgaria, Lithuania and Latvia.

Figure 3.6 shows that the fall in England's scale score on the interpreting, integrating and evaluating scale, at 13 points, is the same as on the previous scale, and represents a fall from a score of 556 in 2001 to one of 543 in 2006. The data from Sweden shows a fall of 12 points, and that of the Netherlands of 10 points.

For the other four English-testing countries which participated in both 2001 and 2006, there was no significant difference on either scale between the two surveys for New Zealand, Scotland and the United States whereas Singapore showed a significantly improved performance on both scales in 2006.





## 4 Children and their Reading

*This chapter focuses on children's attitudes to reading and their confidence in their abilities. It reports evidence about whether and what children choose to read when not in school.*

- *The survey indicates that attitudes to reading of 10-year-old children in England are poor, and have declined slightly since 2001. Girls are generally more positive than boys. In England and most other countries, there is a positive association between attitude to reading and reading attainment.*
- *Children in England had a relatively low reading confidence ranking and England had the highest proportion of pupils in the 'low confidence' category. However, over three-quarters of children agreed with the statement 'reading is very easy for me'. Ten-year-old girls in England were significantly more confident in their reading abilities than boys.*
- *Children in England tended to report reading for pleasure less frequently than their peers in many other countries. There is a strong association between the amount of reading for pleasure children reported and their reading achievement.*
- *There has been a significant fall in the proportion of children in England reading stories and novels on a daily basis. On average, girls in England read stories and novels more frequently than boys.*



## 4.1 Attitudes to reading

Children who find reading enjoyable are likely to read more than others who do not derive any enjoyment from reading. As the Assessment of Performance Unit pointed out a generation ago, ‘Of concern is not just the question whether pupils can read, but whether they do and will read’ (Gorman *et al.*, 1981, p. 53). More recently, Guthrie and Wigfield (2000, p. 404) noted that ‘as students become engaged readers, they provide themselves with self-generated learning opportunities that are equivalent to several years of education.’

In terms of developing skills, children with a positive attitude are likely to practise the reading skills they are learning at school more. In the questionnaire given to pupils, they were asked five questions relating to their attitude to reading, and they responded on a 4-point scale. These items were used to construct an index and Figure 4.1 shows data from the selected countries in 2006 and the difference from 2001.

### Interpreting the data

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

The data shows that children in England had less positive attitudes to reading than children in most other countries and that their attitudes were somewhat poorer than in 2001. Of particular concern is the 15 per cent of children in the sample for England who had the least positive attitudes, a significant increase from 2001. This is one of the highest proportions in all the participating countries in 2006.

Pupils with the most positive attitudes to reading were more likely to do well on the PIRLS reading assessments. This is a pattern observed in every participating country in 2006, and was also found in 2001. In PIRLS 2006, there was an 11-point difference in mean scale scores between children in England with the least positive attitudes to reading and those in the medium group. The difference in the scale scores between those with moderately positive attitudes and those with the most positive attitudes was even greater at 56 points.

All the countries which tested solely or predominantly in English and where trend data is available (Canada (Ontario), England, New Zealand, Scotland, Singapore and the United States), saw a decrease in the proportion of children who had the most positive attitudes to reading between 2001 and 2006; this difference was significant for all these countries with the exception of New Zealand and the United States. This pattern was also evident in the data from two other countries which achieved highly in 2001 and whose achievement scores fell significantly in 2006, the Netherlands and Sweden. In contrast, four countries reported significantly higher proportions of children with the most positive attitudes to reading in 2006 (Germany, Hong Kong, Iran, Italy) and these countries also had higher mean achievement in 2006 compared to 2001.

**Figure 4.1: Index of Pupils' Attitudes to Reading with Trends**

Countries	High Attitudes to Reading			Medium Attitudes to Reading			Low Attitudes to Reading		
	2006 per cent of pupils	Average achievement	Difference in per cent from 2001	2006 per cent of pupils	Average achievement	Difference in per cent from 2001	2006 per cent of pupils	Average achievement	Difference in per cent from 2001
Italy	64 (1.4)	565 (3.0)	8 (1.9) ↑	31 (1.2)	531 (3.4)	-7 (1.7) ↓	5 (0.5)	520 (6.1)	-1 (0.7)
Romania	60 (1.3)	513 (5.0)	0 (2.1)	36 (1.3)	462 (6.2)	-2 (2.1)	4 (0.4)	466 (9.2)	3 (0.5) ↑
Germany	58 (1.1)	569 (2.5)	8 (1.4) ↑	35 (1.0)	533 (2.5)	-6 (1.2) ↓	8 (0.4)	516 (4.1)	-2 (0.6) ↓
France	57 (0.9)	542 (2.3)	0 (1.5)	38 (0.8)	498 (2.2)	0 (1.4)	4 (0.4)	485 (5.9)	1 (0.5)
Bulgaria	57 (1.4)	567 (4.3)	-3 (2.1)	37 (1.2)	527 (5.2)	1 (1.9)	6 (0.6)	509 (9.4)	2 (0.8) ↑
Spain	56 (1.1)	528 (2.1)	◇ ◇	40 (1.0)	497 (3.1)	◇ ◇	4 (0.4)	492 (6.7)	◇ ◇
Hong Kong SAR	55 (1.1)	579 (2.3)	6 (1.6) ↑	41 (1.0)	546 (2.9)	-6 (1.5) ↓	4 (0.3)	539 (5.0)	0 (0.4)
Slovenia	52 (1.1)	542 (2.0)	-7 (1.8) ↓	40 (0.9)	501 (2.7)	5 (1.6) ↑	8 (0.5)	493 (4.4)	1 (0.8)
Chinese Taipei	52 (1.1)	553 (2.1)	◇ ◇	44 (1.0)	518 (2.5)	◇ ◇	4 (0.4)	520 (6.0)	◇ ◇
Belgium (French)	52 (1.0)	521 (2.9)	◇ ◇	42 (0.9)	479 (2.9)	◇ ◇	6 (0.4)	475 (5.1)	◇ ◇
Russian Federation	50 (1.1)	581 (3.6)	-4 (2.1)	45 (1.0)	550 (3.7)	3 (1.9)	5 (0.4)	540 (5.0)	1 (0.6)
Austria	50 (1.2)	557 (2.7)	◇ ◇	40 (1.0)	524 (2.7)	◇ ◇	10 (0.7)	510 (3.8)	◇ ◇
Hungary	50 (1.3)	571 (2.9)	0 (1.8)	39 (1.2)	532 (4.3)	-1 (1.6)	11 (0.7)	531 (3.1)	1 (1.0)
New Zealand	48 (1.0)	563 (2.3)	-3 (1.7)	44 (0.9)	507 (2.6)	4 (1.6) ↑	7 (0.4)	493 (4.7)	-1 (0.8)
Lithuania	47 (1.1)	551 (2.1)	1 (1.8)	46 (1.0)	525 (2.0)	-2 (1.7)	7 (0.4)	520 (4.2)	0 (0.7)
Norway	47 (1.3)	519 (2.4)	3 (1.7)	45 (1.2)	487 (2.9)	-3 (1.5)	8 (0.8)	469 (5.8)	-1 (1.0)
Singapore	47 (1.0)	582 (3.1)	-7 (1.6) ↓	45 (0.8)	541 (3.1)	3 (1.5) ↑	8 (0.4)	527 (4.0)	4 (0.5) ↑
Slovak Republic	46 (1.3)	553 (2.7)	2 (2.0)	46 (1.2)	514 (3.5)	-4 (1.7) ↓	9 (0.6)	511 (5.6)	2 (0.8) ↑
Sweden	45 (1.2)	571 (2.9)	-9 (1.6) ↓	44 (1.0)	535 (2.3)	5 (1.4) ↑	10 (0.6)	519 (3.5)	3 (0.8) ↑
Poland	45 (1.3)	544 (2.7)	◇ ◇	45 (1.1)	503 (2.7)	◇ ◇	10 (0.7)	494 (4.1)	◇ ◇
Iceland	44 (0.8)	533 (1.6)	-4 (1.3) ↓	49 (0.8)	496 (2.0)	3 (1.3) ↑	7 (0.4)	484 (4.4)	1 (0.6)
Scotland	42 (1.4)	558 (3.5)	-5 (1.9) ↓	44 (1.1)	511 (3.1)	2 (1.6)	14 (1.0)	491 (4.8)	3 (1.4)
<b>England</b>	<b>40 (1.4)</b>	<b>576 (3.4)</b>	<b>-4 (2.0) ↓</b>	<b>45 (1.1)</b>	<b>520 (2.7)</b>	<b>2 (1.7)</b>	<b>15 (0.8)</b>	<b>509 (3.7)</b>	<b>2 (1.1) ↑</b>
United States	40 (1.3)	566 (3.4)	-3 (1.7)	46 (1.1)	526 (3.7)	2 (1.4)	14 (0.7)	522 (3.4)	1 (1.2)
Luxembourg	40 (0.6)	581 (1.8)	◇ ◇	45 (0.6)	545 (1.5)	◇ ◇	15 (0.5)	533 (2.5)	◇ ◇
Denmark	39 (1.3)	568 (2.7)	◇ ◇	49 (1.1)	535 (2.7)	◇ ◇	12 (0.7)	525 (4.7)	◇ ◇
Netherlands	39 (1.1)	567 (2.2)	-5 (1.7) ↓	45 (0.9)	539 (1.4)	3 (1.4) ↑	16 (0.7)	524 (2.7)	2 (1.1)
Belgium (Flemish)	38 (1.2)	567 (2.2)	◇ ◇	46 (1.0)	540 (2.2)	◇ ◇	16 (0.8)	521 (2.5)	◇ ◇
Latvia	33 (1.3)	564 (3.0)	-9 (2.1) ↓	52 (1.1)	532 (2.9)	3 (1.8)	14 (0.9)	524 (3.8)	6 (1.1) ↑
<b>International Average</b>	<b>49 (0.2)</b>	<b>525 (0.5)</b>		<b>44 (0.2)</b>	<b>482 (0.6)</b>		<b>8 (0.1)</b>	<b>489 (1.0)</b>	
<i>Canada, Quebec</i>	58 (1.5)	553 (2.8)	1 (2.0)	36 (1.2)	512 (2.6)	0 (1.8)	6 (0.6)	503 (6.7)	-1 (0.9)
<i>Canada, British Columbia</i>	49 (1.0)	583 (2.5)	◇ ◇	42 (0.9)	540 (2.9)	◇ ◇	9 (0.6)	524 (4.3)	◇ ◇
<i>Canada, Alberta</i>	48 (1.1)	584 (2.4)	◇ ◇	41 (0.9)	542 (2.7)	◇ ◇	11 (0.6)	531 (3.6)	◇ ◇
<i>Canada, Ontario</i>	46 (1.4)	577 (2.8)	-6 (1.9) ↓	42 (1.0)	538 (3.4)	3 (1.7)	12 (0.9)	529 (5.2)	3 (1.0) ↑
<i>Canada, Nova Scotia</i>	46 (1.0)	569 (2.7)	◇ ◇	41 (0.9)	526 (2.5)	◇ ◇	13 (0.7)	513 (3.9)	◇ ◇

↑ Per cent in 2006 significantly higher ↓ Per cent in 2006 significantly lower

Based on pupils' agreement with the following: I read only if I have to, I like talking about books with other people, I would be happy if someone gave me a book as a present, I think reading is boring, and I enjoy reading. Average is computed on a 4-point scale: Disagree a lot = 1, Disagree a little = 2, Agree a little = 3, and Agree a lot = 4. Responses for negative statements were reverse-coded. High level indicates an average of greater than 3 to 4. Medium level indicates an average of 2 to 3. Low level indicates an average of 1 to less than 2.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

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

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

The PIRLS 2006 study confirms the within-country association between achievement and attitudes to reading. There is a much less clear association between achievement and reading attitudes between countries, with high proportions of children in some of the highest achieving countries and in some of the lowest achieving countries expressing a positive view of reading.

### Other research evidence

In the two decades before the National Curriculum assessment system was established, the Assessment of Performance Unit (APU) monitored attainment in England. In addition to this focus on national attainment, the APU also gathered evidence about pupils' attitudes to reading in 1979 (Gorman *et al.*, 1981). Few of the items in the APU survey are identical to those used in PIRLS but they give some indication of the reading attitudes of pupils a generation ago. Overall, where comparisons can be made, pupils expressed more positive attitudes in the APU survey than in PIRLS 2006.

A survey by Sainsbury (2003) collected evidence of the attitudes to reading of primary-aged pupils and looked at the change in reading attitudes since 1998 (the start of the National Literacy Strategy). She found evidence of a decline in children's enjoyment of reading since 1998. This survey was repeated in 2007 and the results showed no sign of a continued decline since 2003 (Clarkson and Sainsbury, 2007).

### Gender differences in attitudes to reading

Boys in the sample from England had significantly less positive attitudes to reading than girls. This is evident in their responses to all the component items of the index. In responding to the statement 'I enjoy reading', 83 per cent of girls agreed either 'a lot' or 'a little' whereas just 67 per cent of boys were in agreement. Similarly, in response to the statement 'Reading is boring', 73 per cent of girls disagreed, compared to 59 per cent of boys.

### Other research evidence

The greater enjoyment girls gain from reading is a well-established finding, in both surveys in England and internationally (see also the outcomes of the structural equation modelling summarised in chapter 8).

In the APU survey in 1979, there were differences in the responses of boys and girls to several items attempting to establish the respondents' attitudes to reading. There was just a small difference between girls and boys in responses to the statement 'I'm not interested in books.' Ninety per cent of boys agreed with the statement 'I like reading stories', compared to 97 per cent of girls (Gorman *et al.*, 1981).

Clark and Foster (2005) asked children and young people how much they enjoyed reading. Over half of girls (57 per cent) in the sample of primary and secondary aged pupils responded 'very much' or 'quite a lot' compared to 46 per cent of boys.

Maynard *et al.* (2007) reported a recent online survey into children's reading habits. The survey was completed by children from ages 4 to 16 in England; the responses from the sample of children in key stage 2 ( $n = 1,909$ ) are reported here. It should be noted that the key stage 1 and 2 samples combined were collected from a small number of schools ( $n = 22$ ).

Within a cluster of items which focused on the out of school activities children enjoyed, one asked children to identify their favourite activity. The 'top ten' was dominated by various sports with the most popular by a large margin, perhaps unsurprisingly, being football (selected by 16 per cent). Reading was selected by just 27 children in the sample (1.4 per cent) as their favourite out of school activity.

The researchers asked the children to identify themselves as 'enthusiastic', 'average' and 'reluctant' readers, with each label given a brief definition. The reluctant readers were defined as those who 'only read when (they) have to', a neat parallel to the PIRLS item 'I read only when I have to.' Maynard *et al.* found that 13 per cent of the key stage 2 girls and 21 per cent of the boys rated themselves as 'reluctant readers' (17 per cent overall). Taking those who 'agreed a lot' with the 'I read only when I have to' statement in PIRLS 2006, 19 per cent of girls and 28 per cent of boys would be classified as 'reluctant readers' (23 per cent overall). The higher figure in PIRLS may be explained by the fact that these children are towards the upper end of key stage 2, and Maynard *et al.*, in line with much previous research, confirmed that 'the younger children were significantly keener readers than the older respondents' (p. 73); furthermore, 26 per cent of young people in key stages 3 and 4 rated themselves as reluctant readers.

Sainsbury (2003) found evidence of a more pronounced decline in boys' enjoyment of reading since 1998. In the 2007 survey, girls remained more enthusiastic about reading than boys, but the gender gap was no wider than in 2003 (Clarkson and Sainsbury, 2007).

The concept of reading investigated in PIRLS is predominantly paper-based. Although pupils are questioned about on-screen reading, the focus is on book reading. Love and Hamston's (2003) study of adolescent male reluctant readers in Australia found that these boys had a preference for multimodal texts and read when the need arose rather than for pleasure. The authors suggest that this particular group was alienated from school reading.

## 4.2 Reading confidence

As with a positive attitude to reading, a child who approaches reading confidently is more likely to seek out opportunities to read, to read more frequently and more widely. The index of children's reading confidence is derived from four items in the Pupil questionnaire to which they responded on a 4-point scale. Figure 4.2 shows data from the selected countries in 2006 and 2001.

The index reveals that, on average, children in England expressed less confidence about their reading attainment than their peers in most other countries. When compared to the 2001 survey, a significantly higher proportion of children (seven per cent) in 2006 expressed low confidence in their reading skills, and this is the highest proportion in any participating country.

It is interesting to consider responses to the individual items which comprise the index and

**Figure 4.2: Index of Pupils' Reading Confidence with Trends**

Countries	High Reading Confidence			Medium Reading Confidence			Low Reading Confidence		
	2006 per cent of pupils	Average achievement	Difference in per cent from 2001	2006 per cent of pupils	Average achievement	Difference in per cent from 2001	2006 per cent of pupils	Average achievement	Difference in per cent from 2001
Austria	62 (0.9)	553 (2.4)	◇ ◇	36 (0.9)	517 (2.7)	◇ ◇	2 (0.3)	~ ~	◇ ◇
Sweden	62 (0.9)	569 (2.2)	-2 (1.3)	37 (0.9)	523 (3.0)	1 (1.3)	2 (0.2)	~ ~	1 (0.3)
Poland	61 (0.9)	547 (2.2)	◇ ◇	36 (0.8)	483 (3.3)	◇ ◇	2 (0.3)	~ ~	◇ ◇
Norway	61 (1.2)	518 (2.4)	5 (1.6) ↑	37 (1.2)	477 (3.5)	-5 (1.6) ↓	2 (0.3)	~ ~	0 (0.4)
Netherlands	60 (0.9)	560 (1.8)	4 (1.3) ↑	36 (0.9)	531 (2.2)	-7 (1.2) ↓	4 (0.4)	508 (5.8)	2 (0.5) ↑
Denmark	60 (0.9)	574 (2.2)	◇ ◇	38 (0.9)	511 (3.1)	◇ ◇	3 (0.3)	442 (8.9)	◇ ◇
Slovenia	58 (1.0)	545 (2.1)	0 (1.5)	40 (1.0)	491 (2.4)	-1 (1.5)	2 (0.2)	~ ~	1 (0.4)
Iceland	58 (0.8)	534 (1.5)	3 (1.2) ↑	40 (0.9)	484 (2.1)	-3 (1.2) ↓	2 (0.3)	~ ~	1 (0.4)
Germany	58 (0.9)	571 (2.4)	5 (1.2) ↑	40 (0.9)	529 (2.2)	-6 (1.2) ↓	2 (0.2)	~ ~	1 (0.3)
Bulgaria	58 (1.4)	570 (3.9)	0 (2.0)	38 (1.3)	523 (5.6)	-3 (1.9)	4 (0.6)	482 (14.2)	3 (0.7) ↑
Italy	56 (1.1)	569 (3.2)	6 (1.7) ↑	41 (1.1)	534 (2.9)	-7 (1.7) ↓	3 (0.3)	496 (9.2)	1 (0.4)
Russian Federation	53 (1.1)	584 (3.5)	15 (1.7) ↑	45 (0.9)	546 (3.8)	-15 (1.5) ↓	2 (0.3)	~ ~	0 (0.4)
United States	51 (0.8)	566 (3.5)	-6 (1.5) ↓	44 (0.8)	518 (3.9)	5 (1.4) ↑	4 (0.3)	495 (5.9)	1 (0.6)
Belgium (Flemish)	51 (1.0)	565 (2.0)	◇ ◇	44 (1.0)	532 (2.3)	◇ ◇	5 (0.4)	502 (4.3)	◇ ◇
Luxembourg	50 (0.7)	582 (1.3)	◇ ◇	46 (0.7)	535 (1.5)	◇ ◇	4 (0.3)	497 (4.5)	◇ ◇
Romania	50 (1.4)	524 (4.2)	-4 (1.9) ↓	45 (1.3)	467 (5.6)	0 (1.8)	5 (0.7)	416 (10.6)	4 (0.8) ↑
Spain	48 (1.0)	535 (2.6)	◇ ◇	50 (1.0)	495 (2.7)	◇ ◇	2 (0.2)	~ ~	◇ ◇
Hong Kong SAR	48 (0.9)	585 (1.9)	9 (1.3) ↑	50 (0.9)	545 (2.7)	-7 (1.3) ↓	2 (0.2)	~ ~	-1 (0.4)
Hungary	45 (1.3)	579 (2.7)	-2 (1.6)	51 (1.1)	531 (3.3)	1 (1.4)	4 (0.4)	495 (7.7)	2 (0.5) ↑
Chinese Taipei	45 (0.9)	560 (2.1)	◇ ◇	51 (0.9)	518 (2.2)	◇ ◇	4 (0.3)	494 (5.9)	◇ ◇
Singapore	45 (0.9)	583 (2.9)	-2 (1.4)	52 (0.8)	542 (3.0)	2 (1.3)	3 (0.2)	489 (6.4)	0 (0.4)
Latvia	43 (1.2)	567 (2.6)	9 (1.5) ↑	53 (1.2)	523 (3.0)	-9 (1.6) ↓	3 (0.4)	498 (7.0)	1 (0.5)
Slovak Republic	43 (0.9)	562 (2.4)	0 (1.6)	54 (0.9)	512 (3.3)	-2 (1.5)	4 (0.3)	459 (7.0)	2 (0.5) ↑
Scotland	43 (1.1)	556 (3.7)	-1 (1.7)	52 (1.1)	512 (2.9)	-1 (1.6)	6 (0.5)	457 (5.1)	2 (0.6) ↑
<b>England</b>	<b>42 (1.1)</b>	<b>578 (3.5)</b>	<b>-3 (1.6)</b>	<b>51 (1.1)</b>	<b>519 (2.7)</b>	<b>0 (1.6)</b>	<b>7 (0.5)</b>	<b>468 (7.0)</b>	<b>3 (0.7) ↑</b>
Lithuania	40 (0.9)	561 (2.1)	5 (1.4) ↑	57 (0.8)	523 (1.9)	-6 (1.3) ↓	3 (0.3)	493 (6.8)	1 (0.5)
Belgium (French)	38 (0.9)	526 (3.1)	◇ ◇	58 (0.8)	487 (2.7)	◇ ◇	4 (0.5)	454 (6.1)	◇ ◇
New Zealand	36 (0.8)	574 (2.2)	-9 (1.3) ↓	60 (0.8)	513 (2.4)	8 (1.3) ↑	4 (0.3)	459 (6.1)	1 (0.5)
France	36 (0.8)	549 (3.1)	3 (1.3) ↑	60 (0.9)	510 (1.9)	-4 (1.3) ↓	4 (0.3)	472 (5.1)	1 (0.4)
International Average	49 (0.2)	529 (0.5)		48 (0.2)	479 (0.6)		3 (0.1)	436 (1.9)	
<i>Canada, British Columbia</i>	54 (0.9)	584 (2.5)	◇ ◇	43 (0.9)	533 (3.0)	◇ ◇	2 (0.3)	~ ~	◇ ◇
<i>Canada, Alberta</i>	53 (0.9)	584 (2.8)	◇ ◇	44 (0.9)	538 (2.5)	◇ ◇	3 (0.3)	505 (6.6)	◇ ◇
<i>Canada, Nova Scotia</i>	52 (0.9)	572 (2.4)	◇ ◇	45 (0.9)	518 (2.3)	◇ ◇	3 (0.3)	469 (7.5)	◇ ◇
<i>Canada, Ontario</i>	51 (1.0)	579 (2.8)	-5 (1.5) ↓	46 (1.0)	533 (3.5)	4 (1.5) ↑	3 (0.3)	494 (7.8)	1 (0.5)
<i>Canada, Quebec</i>	50 (1.3)	560 (2.5)	-9 (1.8) ↓	46 (1.2)	515 (3.1)	6 (1.7) ↑	4 (0.5)	463 (6.8)	2 (0.6) ↑

↑ Per cent in 2006 significantly higher    ↓ Per cent in 2006 significantly lower

Based on pupils' responses to the following: reading is very easy for me, I do not read as well as other children in my class, when I am reading by myself I understand almost everything I read, and I read more slowly than other children in my class. Average is computed on a 4-point scale: Disagree a lot = 1, Disagree a little = 2, Agree a little = 3, and Agree a lot = 4. Responses for negative statements were reverse-coded. High indicates an average of greater than 3 to 4. Medium indicates an average of 2 to 3. Low indicates an average of 1 to less than 2. Please note that "I read more slowly than other children in my class" is a new variable added to the index in PIRLS 2006, and is not a part of the PIRLS 2001 index calculations.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

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

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

**Figure 4.3 PIRLS 2006 Pupils' Reading Confidence**

		Agree a lot	Agree a little	Disagree a lot	Disagree a little
Reading is very easy for me	England	48% (565)	39% (531)	9% (498)	4% (435)
	International mean	55% (515)	34% (494)	8% (465)	3% (436)
I do not read as well as other children in my class*	England	22% (492)	30% (531)	22% (561)	26% (575)
	International mean	18% (466)	28% (488)	23% (511)	31% (527)
When I am reading by myself, I understand almost everything I read	England	52% (562)	32% (533)	11% (500)	5% (453)
	International mean	57% (514)	30% (495)	9% (468)	4% (452)
I read more slowly than other children in my class*	England	20% (490)	25% (531)	24% (562)	31% (565)
	International mean	15% (454)	21% (484)	25% (509)	39% (524)

\*reverse coded in index

these are shown in Figure 4.3, along with the international average and the associated mean attainment.

Unsurprisingly, on all four items related to reading confidence, greater confidence is associated with higher attainment. Children in England expressed less confidence in their reading skills than the average internationally for all four items. There are two statements in which children compared their reading attainment to that of their peers; in these, both internationally and in England, children tended to be less confident than in the other items in which there was no explicit comparison. However, despite England's fairly poor showing in this index relative to other countries, it is still the case that over three-quarters of the pupils in the survey agreed at least to some extent with the statement 'Reading is very easy for me.'

### Other research evidence

The findings related to children's reading confidence reported for England can be compared to those reported by Clark and Foster (2005). This survey, involving 2,331 primary-aged children and 5,875 secondary-aged students, required pupils to rate their own reading proficiency on a 10-point scale. The authors suggest that the point of 1 represents 'Not a very good reader' and the point of 10 an 'Excellent reader', with 5 and 6 described as 'Average reader'. It was found that 58 per cent of primary pupils rated themselves as 8, 9 or 10 on this scale, and less than seven per cent rated their competence below 5 on the scale. On the whole, secondary-aged students had less confidence in their reading abilities.

It should be noted that whilst PIRLS is focused on 9-10 year old pupils, the data reported here from Clark and Foster's survey relates to pupils in key stages 1 and 2 (ages 5–11). Sainsbury (2003) and Clarkson and Sainsbury (2007) found that reading confidence, in contrast to a positive attitude to reading, increased with age (they surveyed pupils aged 8-9 and aged 10-11). Another factor which may have influenced the data collected by Clark and Foster is the fact that the pupils in the survey came from schools which had signed up to the government-sponsored Reading Connects initiative and so might already be engaged in activities which promote reading confidence.

Sainsbury's 2003 survey of reading attitudes and confidence among primary-aged pupils (aged 8–9 and 10–11) found that confidence had significantly increased since the previous survey in 1998. There was no significant change in this aspect of children's reading when the survey was re-run in 2007 (Clarkson and Sainsbury, 2007).

Recent small scale work by Kellett and Dar (2007) distinguished between 'public confidence' in reading and 'private confidence'. Using children as researchers, they identified the need to provide children with the opportunity to 'practise their private confidence' as a way of leading to an increase in 'public confidence' in reading. In their study, Kellett and Dar have a narrower view of reading confidence than that interpreted in PIRLS in that 'public confidence' relates to the child's feeling when asked to read aloud or to talk about their reading. Kellett and Dar suggest that children from more socio-economically advantaged backgrounds have opportunities to develop this public confidence which are not available to children from less advantaged backgrounds.

### Gender differences in reading confidence

There is a clear gender difference in the items related to reading confidence, with girls significantly more confident about their reading ability than boys. This gap is most evident in the statements in which pupils compared their own ability with that of others in their class. It is less apparent in their response to statements such as 'Reading is very easy for me', with which 84 per cent of boys and 88 per cent of girls agreed.

## 4.3 Reading habits: how frequently and what children read

There is a recognised positive and reciprocal relationship between how well children read and how much they read (see, for example, Cipielewski and Stanovich, 1992; Gorman *et al.*, 1987; Guthrie and Wigfield, 2000). Reading is an activity which benefits from practice and for many children, much of that practice takes place beyond the classroom. The PIRLS Pupil questionnaire collected data about the frequency of children's reading outside school and what types of reading they were engaging in.

Figure 4.4 shows the responses of children in England and selected countries when asked how often they read for fun outside school.

This shows that, on average, children in England reported less frequent reading for pleasure outside school than children in many other countries: just a third of children reported reading for fun on a daily basis. This is unchanged from 2001.

Figure 4.4: Children Reading for Fun Outside School with Trends

Countries	Every Day or Almost Every Day			Once or Twice a Week			Twice a Month or Less		
	2006 per cent of children	Average achievement	Difference in per cent from 2001	2006 per cent of children	Average achievement	Difference in per cent from 2001	2006 per cent of children	Average achievement	Difference in per cent from 2001
Russian Federation	58 (1.1)	570 (3.8)	0 (1.8)	28 (0.8)	559 (3.9)	-1 (1.3)	14 (0.8)	556 (3.9)	2 (1.3)
Germany	53 (0.9)	563 (2.7)	5 (1.2) ↑	24 (0.6)	545 (3.0)	0 (0.9)	24 (0.8)	525 (2.5)	-5 (1.2) ↓
Lithuania	52 (1.2)	545 (2.1)	-1 (1.9)	30 (1.0)	533 (2.2)	-1 (1.6)	17 (0.8)	520 (2.8)	2 (1.2)
France	51 (1.0)	540 (2.5)	2 (1.6)	24 (0.8)	517 (2.3)	-2 (1.2)	25 (0.9)	491 (2.7)	0 (1.3)
Belgium (French)	49 (1.1)	517 (3.0)	◇ ◇	26 (0.7)	495 (2.9)	◇ ◇	25 (0.9)	473 (3.1)	◇ ◇
Iceland	49 (0.9)	527 (1.9)	-3 (1.2) ↓	23 (0.7)	511 (2.6)	2 (1.0)	28 (0.7)	485 (2.3)	1 (1.0)
Denmark	49 (1.1)	559 (2.9)	◇ ◇	30 (0.8)	540 (2.7)	◇ ◇	21 (0.9)	528 (3.2)	◇ ◇
Bulgaria	47 (1.6)	561 (4.4)	-4 (2.3)	27 (1.0)	555 (5.0)	-2 (1.5)	26 (1.6)	520 (6.5)	5 (2.2) ↑
Austria	45 (1.1)	555 (3.0)	◇ ◇	25 (0.8)	535 (2.4)	◇ ◇	29 (1.0)	516 (2.9)	◇ ◇
Spain	45 (1.1)	525 (2.9)	◇ ◇	27 (0.7)	515 (2.5)	◇ ◇	28 (1.0)	494 (3.7)	◇ ◇
Hungary	44 (1.2)	565 (3.7)	4 (1.7) ↑	30 (0.9)	547 (3.4)	-2 (1.4)	26 (1.1)	532 (4.2)	-2 (1.5)
Poland	43 (1.3)	538 (2.5)	◇ ◇	29 (1.0)	518 (3.2)	◇ ◇	27 (1.0)	495 (3.0)	◇ ◇
New Zealand	42 (1.1)	562 (2.4)	-1 (1.8)	24 (0.7)	531 (2.5)	0 (1.1)	34 (1.0)	500 (3.0)	1 (1.6)
Belgium (Flemish)	40 (1.1)	563 (2.1)	◇ ◇	29 (0.8)	545 (2.9)	◇ ◇	31 (1.2)	529 (2.3)	◇ ◇
Slovak Republic	39 (1.0)	545 (2.9)	0 (1.5)	33 (0.9)	535 (3.2)	0 (1.3)	27 (1.1)	507 (5.4)	0 (1.6)
Italy	38 (1.3)	573 (3.3)	7 (1.7) ↑	25 (0.7)	554 (3.2)	1 (1.0)	37 (1.3)	529 (3.8)	-7 (1.7) ↓
Luxembourg	38 (0.6)	581 (1.8)	◇ ◇	27 (0.7)	551 (2.0)	◇ ◇	35 (0.5)	537 (1.5)	◇ ◇
Slovenia	37 (0.9)	543 (2.5)	-8 (1.6) ↓	33 (0.7)	519 (3.0)	4 (1.1) ↑	30 (0.9)	500 (2.6)	4 (1.5) ↑
Netherlands	36 (1.1)	566 (2.1)	0 (1.6)	22 (0.7)	550 (1.8)	2 (1.1) ↑	42 (1.1)	530 (1.8)	-2 (1.6)
Sweden	36 (1.0)	569 (2.8)	-8 (1.3) ↓	31 (0.9)	549 (3.2)	-1 (1.2)	33 (1.0)	530 (2.6)	9 (1.3) ↑
United States	35 (1.3)	561 (4.3)	1 (1.8)	22 (0.7)	550 (3.3)	0 (1.3)	43 (1.4)	521 (3.3)	-1 (1.8)
Latvia	35 (1.2)	556 (3.0)	-8 (1.7) ↓	31 (0.8)	543 (2.8)	-2 (1.2)	34 (1.2)	524 (2.6)	10 (1.7) ↑
Hong Kong SAR	35 (1.0)	575 (2.6)	14 (1.3) ↑	33 (0.9)	567 (2.7)	-5 (1.2) ↓	32 (1.0)	549 (2.8)	-8 (1.4) ↓
Norway	33 (1.1)	514 (3.4)	-5 (1.5) ↓	30 (1.0)	505 (3.2)	2 (1.3)	37 (1.2)	481 (3.1)	4 (1.7) ↑
Scotland	33 (1.1)	555 (4.4)	2 (1.6)	24 (1.0)	533 (3.1)	0 (1.3)	44 (1.5)	505 (2.7)	-2 (2.2)
<b>England</b>	<b>33 (1.2)</b>	<b>575 (4.0)</b>	<b>0 (1.8)</b>	<b>25 (0.8)</b>	<b>537 (3.5)</b>	<b>-1 (1.2)</b>	<b>42 (1.3)</b>	<b>517 (2.9)</b>	<b>1 (2.0)</b>
Singapore	27 (0.9)	587 (3.9)	-3 (1.5) ↓	26 (0.6)	564 (3.1)	3 (0.9) ↑	47 (1.0)	540 (2.7)	0 (1.5)
Romania	25 (1.3)	510 (5.5)	-3 (2.2)	26 (1.1)	502 (5.5)	-4 (1.6) ↓	50 (1.6)	478 (5.5)	7 (2.3) ↑
Chinese Taipei	24 (0.7)	553 (2.6)	◇ ◇	31 (0.8)	539 (2.6)	◇ ◇	45 (1.0)	525 (2.2)	◇ ◇
International Average	40 (0.2)	516 (0.6)		28 (0.1)	503 (0.6)		32 (0.2)	484 (0.6)	
<i>Canada, Alberta</i>	53 (0.9)	575 (2.5)	◇ ◇	23 (0.8)	555 (3.5)	◇ ◇	23 (0.9)	537 (2.7)	◇ ◇
<i>Canada, British Columbia</i>	53 (1.0)	573 (2.9)	◇ ◇	26 (0.8)	554 (2.5)	◇ ◇	21 (0.9)	531 (4.1)	◇ ◇
<i>Canada, Ontario</i>	49 (1.4)	567 (3.2)	14 (2.0) ↑	25 (1.1)	552 (3.6)	2 (1.4)	26 (1.1)	534 (4.1)	-16 (1.9) ↓
<i>Canada, Nova Scotia</i>	48 (0.9)	560 (2.6)	◇ ◇	25 (0.8)	541 (2.7)	◇ ◇	27 (0.8)	515 (3.2)	◇ ◇
<i>Canada, Quebec</i>	47 (1.3)	549 (3.0)	1 (1.9)	26 (1.0)	530 (3.8)	1 (1.4)	27 (1.2)	509 (3.2)	-3 (1.7)

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

↑ Per cent in 2006 significantly higher

↓ Per cent in 2006 significantly lower

Background data provided by pupils.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.



The most frequent reading for fun was reported by children in the highest achieving country, the Russian Federation, but there is no clear inter-country relationship between attainment and the amount of reading outside school. Children in another high achieving country, Singapore, reported less reading for pleasure outside school than children in England, and the trend for Singapore shows a significant fall since 2001, despite considerably higher achievement in PIRLS. In contrast, three countries with a significantly higher achievement score in PIRLS 2006 compared to PIRLS 2001 (Germany, Hungary and Italy) also had significantly more children reporting that they read for fun on a daily basis in 2006.

The data in Figure 4.4 also shows that for England and in almost all other countries there is a positive association between frequency of reading for pleasure and reading attainment. England has the greatest difference between the mean attainment of the children who read on a daily basis (mean scale score 575) and those who read on a weekly basis (mean scale score 537), a difference of 38 points. The second highest difference between the scale scores of children in these two groups is in the data from New Zealand.

#### Other research evidence

Hall and Coles (1999) undertook a large-scale survey of children's reading choices in England. This was intended to replicate the study by Whitehead *et al.* in the 1970s. Hall and Coles found that the amount of reading reported by children aged 10-14 was higher in 1994 than in 1971, although there was some variation by age and sex (see below).

In their large survey of the reading habits of children and young people in England, Clark and Foster (2005) included a question about how often the respondents read outside school. This is related to but slightly different from the PIRLS item which focused on 'reading for fun': children responding to this item in Clark and Foster's survey could include reading as homework or some other reading activity not perceived as 'fun'.

Clark and Foster report that 52 per cent of primary-aged children indicated that they read outside school on a daily basis. This is clearly a much larger proportion than the group in PIRLS who said they read for fun every day. Just 10 per cent of primary pupils reported 'never or almost never' reading outside school in Clark and Foster's survey; when asked about reading for fun, 28 per cent of 9-10 year-olds in PIRLS reported doing this 'never or almost never'.

In addition to the possibly different motivations for reading outside school in the two surveys, the Reading Connects initiative, with which schools in Clark and Foster's survey were involved, may have been influential in encouraging regular out of school reading.

Additional questions focused on other reading-related activities and responses to these are summarised in Figure 4.5.

The reported frequency of these activities shows little change from 2001, although there is possibly less frequent reading aloud at home. Children who either read aloud or are read to at home most frequently were also those with lower attainment. This holds both within England and also internationally. What is less clear cut is the relationship between reading

**Figure 4.5 Pupils' Reading Activities outside School (England)**

		Every day or nearly every day	Once or twice a week	Once or twice a month	Never or almost never
How often do you read aloud to someone at home?	2006	14% (507)	37% (532)	19% (566)	30% (549)
	2001	19% (525)	36% (550)	16% (579)	30% (561)
How often do you listen to someone at home read to you?	2006	12% (507)	22% (529)	23% (557)	44% (546)
	2001	12% (522)	22% (545)	19% (564)	48% (561)
How often do you talk with your family about reading?	2006	22% (528)	34% (554)	22% (552)	23% (523)
	2001	21% (529)	33% (568)	21% (570)	26% (543)
How often do you read to find out things you want to learn?	2006	29% (519)	34% (548)	23% (564)	14% (529)
	2001	30% (528)	37% (566)	23% (574)	11% (544)

for information and attainment. In addition to the question about reading to find out things, children were asked how frequently they read various types of information texts. The findings from these questions were collected in the index shown in Figure 4.6.

This index includes information about how frequently children read books that explain things, magazines, newspapers, instructions, and brochures or catalogues. Between 2001 and 2006, there was a significant increase in the proportion of children in England who claimed to 'never or almost never' read for information when not in school. In England in 2006, as in 2001, those who professed the most frequent reading of information texts tended to have lower attainment.

Children at the age of 9 or 10 are developing their reading stamina. In many cases, they are able to read and enjoy longer books with chapters, which they may leave unfinished and then continue later. Data was specifically collected about the frequency with which children were reading stories and novels and this is shown in Figure 4.7.

The proportion of children who reported that they very seldom read stories or novels outside school increased significantly between 2001 and 2006 in England. The relationship between frequency of reading stories and novels and reading attainment within a country is a positive one. However, *between* the group of comparison countries that relationship is more complex. A high proportion of children in a number of higher achieving countries reported relatively infrequent reading of stories or novels. This includes 43 per cent of children in Italy and 31 per cent in Germany reporting that they 'never or almost never' read stories or novels outside school. The countries in which high proportions of children reported frequent reading of stories and novels include both those with notably high and low mean attainment.

**Figure 4.6: Children Reading for Information Outside School with Trends**

Countries	Every Day or Almost Every Day			Once or Twice a Week		
	2006 per cent of children	Average achievement	Difference in per cent from 2001	2006 per cent of children	Average achievement	Difference in per cent from 2001
Poland	21 (0.8)	523 (2.9)	◇ ◇	46 (0.9)	522 (3.3)	◇ ◇
Slovak Republic	20 (1.0)	527 (4.2)	1 (1.3)	50 (0.9)	539 (2.5)	0 (1.4)
Hungary	19 (0.9)	533 (4.6)	0 (1.2)	50 (0.9)	552 (3.5)	4 (1.3) ↑
Russian Federation	18 (0.9)	555 (4.2)	-2 (1.4)	47 (0.7)	564 (3.7)	-1 (1.4)
Slovenia	18 (0.6)	510 (3.3)	-5 (1.3) ↓	49 (0.9)	519 (2.6)	2 (1.4)
Lithuania	18 (0.8)	530 (3.3)	-4 (1.3) ↓	53 (0.9)	538 (1.9)	1 (1.3)
Bulgaria	17 (1.1)	544 (6.7)	-10 (1.6) ↓	47 (1.5)	556 (4.5)	2 (1.9)
Romania	16 (1.0)	493 (6.1)	-3 (1.7)	49 (1.4)	500 (5.4)	1 (1.9)
Singapore	16 (0.5)	558 (3.5)	-8 (0.9) ↓	47 (0.8)	561 (3.2)	0 (1.0)
Latvia	16 (0.8)	530 (4.8)	-3 (1.3) ↓	48 (0.9)	541 (2.9)	-3 (1.7) ↓
Germany	15 (0.6)	536 (3.3)	1 (0.9)	40 (0.8)	551 (3.1)	2 (1.2) ↑
Austria	15 (0.7)	526 (3.3)	◇ ◇	43 (1.0)	540 (2.7)	◇ ◇
Spain	14 (0.8)	501 (3.6)	◇ ◇	45 (1.1)	513 (3.0)	◇ ◇
New Zealand	14 (0.6)	514 (4.5)	-1 (1.1)	43 (0.8)	534 (2.2)	1 (1.3)
United States	14 (0.6)	519 (4.5)	-4 (1.1) ↓	43 (0.9)	538 (3.5)	-1 (1.3)
Scotland	13 (0.8)	506 (5.2)	-1 (1.1)	42 (1.0)	527 (3.6)	-1 (1.5)
Belgium (French)	13 (0.7)	480 (4.6)	◇ ◇	40 (0.8)	498 (2.9)	◇ ◇
France	12 (0.7)	506 (4.0)	1 (0.9)	40 (0.8)	520 (2.2)	1 (1.2)
Hong Kong SAR	12 (0.5)	554 (4.0)	4 (0.7) ↑	43 (0.8)	569 (2.6)	0 (1.2)
Norway	11 (0.7)	485 (4.7)	0 (1.0)	38 (0.9)	499 (2.7)	0 (1.4)
Italy	11 (0.8)	539 (6.3)	-1 (1.1)	40 (0.8)	554 (3.1)	1 (1.2)
<b>England</b>	<b>10 (0.7)</b>	<b>502 (5.5)</b>	<b>-2 (1.0)</b>	<b>44 (1.0)</b>	<b>537 (2.8)</b>	<b>0 (1.5)</b>
Sweden	9 (0.7)	539 (6.0)	2 (0.8) ↑	33 (1.0)	550 (2.8)	2 (1.3)
Chinese Taipei	8 (0.4)	538 (3.6)	◇ ◇	38 (0.8)	538 (2.2)	◇ ◇
Iceland	8 (0.4)	496 (4.9)	-1 (0.7)	33 (0.8)	511 (2.0)	0 (1.1)
Denmark	6 (0.5)	526 (5.7)	◇ ◇	30 (1.0)	539 (3.1)	◇ ◇
Luxembourg	6 (0.3)	542 (4.1)	◇ ◇	33 (0.6)	555 (2.0)	◇ ◇
Belgium (Flemish)	4 (0.4)	532 (5.7)	◇ ◇	29 (1.0)	544 (2.8)	◇ ◇
Netherlands	4 (0.4)	528 (6.0)	0 (0.6)	25 (1.0)	542 (2.3)	1 (1.2)
<b>International Average</b>	<b>16 (0.1)</b>	<b>492 (0.8)</b>		<b>43 (0.2)</b>	<b>503 (0.6)</b>	
<i>Canada, Nova Scotia</i>	12 (0.6)	523 (4.5)	◇ ◇	42 (1.0)	545 (2.6)	◇ ◇
<i>Canada, Ontario</i>	11 (0.9)	532 (6.2)	-3 (1.2) ↓	40 (1.5)	554 (3.1)	-1 (1.8)
<i>Canada, Alberta</i>	10 (0.6)	543 (4.2)	◇ ◇	43 (0.9)	560 (2.7)	◇ ◇
<i>Canada, Quebec</i>	10 (0.6)	520 (3.9)	-2 (1.0) ↓	37 (1.1)	532 (3.3)	-6 (1.5) ↓
<i>Canada, British Columbia</i>	9 (0.6)	541 (5.3)	◇ ◇	39 (1.0)	557 (3.3)	◇ ◇

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

↑ Per cent in 2006 significantly higher  
 ↓ Per cent in 2006 significantly lower

continued →

Based on children's responses on how often they read to find out about things they want to learn and how often they read the following things outside of school: books that explain things, magazines, newspapers, directions or instructions, and brochures and catalogues. Average is computed on a 4-point scale: Never or almost never = 1, Once or twice a month = 2, Once or twice a week = 3, and Every day or almost every day = 4. Every day or almost every day indicates an average of greater than 3.25 to 4. Once or twice a week indicates an average of greater than 2.5 to 3.25. Once or twice a month indicates an average of greater than 1.75 to 2.5. Never or almost never indicates an average of 1 to less than 1.75.

Please note that "I read brochures and catalogues" is a new item added to the index in 2006, and is not included in the 2001 index calculations.

**Figure 4.6: Children Reading for Information Outside School with Trends (continued)**

Countries	Once or Twice a Month			Never or Almost Never		
	2006 per cent of children	Average achievement	Difference in per cent from 2001	2006 per cent of children	Average achievement	Difference in per cent from 2001
Poland	27 (0.7)	518 (3.4)	◇ ◇	6 (0.5)	508 (6.8)	◇ ◇
Slovak Republic	24 (0.8)	530 (4.3)	-2 (1.2)	6 (0.6)	492 (15.3)	1 (0.8)
Hungary	25 (0.8)	562 (3.4)	-3 (1.3) ↓	7 (0.5)	558 (6.4)	0 (0.7)
Russian Federation	28 (0.9)	572 (3.5)	1 (1.3)	7 (0.5)	570 (5.6)	2 (0.9)
Slovenia	26 (0.7)	533 (2.9)	1 (1.2)	8 (0.5)	524 (4.9)	2 (0.7) ↑
Lithuania	25 (0.8)	541 (2.4)	0 (1.4)	4 (0.4)	533 (4.7)	3 (0.4) ↑
Bulgaria	25 (1.2)	550 (4.3)	4 (1.6) ↑	11 (1.3)	521 (9.6)	4 (1.6) ↑
Romania	26 (1.1)	490 (5.5)	-3 (1.7)	9 (1.0)	444 (12.7)	5 (1.1) ↑
Singapore	28 (0.7)	561 (3.4)	4 (0.9) ↑	8 (0.3)	538 (4.4)	4 (0.4) ↑
Latvia	29 (0.9)	547 (2.9)	4 (1.7) ↑	7 (0.6)	545 (5.1)	3 (0.7) ↑
Germany	32 (0.7)	555 (2.6)	-4 (1.0) ↓	13 (0.7)	547 (3.7)	0 (1.0)
Austria	31 (0.8)	540 (2.7)	◇ ◇	12 (0.7)	543 (4.3)	◇ ◇
Spain	30 (0.9)	518 (2.7)	◇ ◇	10 (0.6)	514 (5.4)	◇ ◇
New Zealand	31 (0.6)	541 (2.7)	-4 (1.3) ↓	12 (0.7)	531 (5.2)	3 (0.9) ↑
United States	33 (1.0)	553 (4.0)	2 (1.4)	10 (0.6)	546 (5.3)	3 (0.9) ↑
Scotland	34 (1.0)	538 (3.0)	-1 (1.6)	11 (1.0)	522 (6.7)	3 (1.2) ↑
Belgium (French)	31 (0.7)	506 (3.1)	◇ ◇	16 (0.8)	510 (3.6)	◇ ◇
France	34 (0.9)	527 (3.0)	-5 (1.4) ↓	14 (0.6)	530 (3.8)	3 (0.8) ↑
Hong Kong SAR	32 (0.8)	567 (2.5)	-8 (1.1) ↓	13 (0.6)	550 (3.5)	4 (0.7) ↑
Norway	34 (0.9)	503 (3.7)	-4 (1.5) ↓	17 (0.8)	497 (3.9)	3 (1.3) ↑
Italy	36 (1.0)	554 (3.7)	-2 (1.4)	14 (0.8)	552 (4.8)	2 (1.0) ↑
<b>England</b>	<b>35 (1.1)</b>	<b>556 (3.2)</b>	<b>-2 (1.6)</b>	<b>11 (0.7)</b>	<b>537 (5.8)</b>	<b>3 (0.9) ↑</b>
Sweden	36 (0.8)	553 (2.7)	-6 (1.1) ↓	23 (1.1)	548 (3.0)	1 (1.4)
Chinese Taipei	38 (0.8)	536 (2.8)	◇ ◇	16 (0.7)	529 (3.5)	◇ ◇
Iceland	36 (0.7)	515 (2.1)	-4 (1.1) ↓	22 (0.7)	514 (2.2)	4 (0.9) ↑
Denmark	40 (0.9)	549 (2.6)	◇ ◇	25 (1.1)	557 (3.7)	◇ ◇
Luxembourg	41 (0.6)	560 (1.6)	◇ ◇	20 (0.4)	559 (2.3)	◇ ◇
Belgium (Flemish)	42 (0.8)	549 (2.3)	◇ ◇	25 (0.8)	550 (2.1)	◇ ◇
Netherlands	38 (0.9)	552 (2.1)	-5 (1.3) ↓	34 (1.2)	549 (2.2)	4 (1.5) ↑
International Average	29 (0.1)	506 (0.7)		12 (0.1)	496 (1.3)	
<i>Canada, Nova Scotia</i>	33 (0.8)	552 (2.7)	◇ ◇	13 (0.6)	533 (4.0)	◇ ◇
<i>Canada, Ontario</i>	35 (1.2)	558 (3.3)	-1 (1.6)	14 (1.0)	564 (4.5)	4 (1.1) ↑
<i>Canada, Alberta</i>	34 (0.8)	566 (2.8)	◇ ◇	13 (0.6)	565 (4.2)	◇ ◇
<i>Canada, Quebec</i>	35 (1.1)	536 (3.6)	0 (1.4)	18 (1.0)	539 (4.2)	8 (1.2) ↑
<i>Canada, British Columbia</i>	38 (0.8)	564 (3.1)	◇ ◇	14 (0.7)	561 (4.2)	◇ ◇

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

↑ Per cent in 2006 significantly higher

↓ Per cent in 2006 significantly lower

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

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

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

There are two types of texts where there appears to have been a very slight increase from 2001 in the proportion of children who claim to be reading them at least once or twice a week in England: comics and comic books, and newspapers.

In 2001, 49 per cent of children indicated that they read comics or comic books at least once or twice a week. In 2006, this figure was 52 per cent. Similarly, 33 per cent of pupils in the 2001 survey claimed to be reading newspapers at least once or twice a week; in 2006 the equivalent figure was 35 per cent. It is not possible to determine how much of this reading is of online newspapers but given that there appears to be a tendency for the amount of reading overall to be declining, even these small increases are encouraging, especially as these texts seem to be more popular with boys (Maynard *et al.*, 2007). Two-thirds of children in England indicated that they had a daily newspaper in their home, and this was positively associated with achievement.

One question was added to this part of the Pupil questionnaire in England: how frequently did children read television and film guides? Perhaps unsurprisingly, given the amount of television viewing of children of this age, this form of reading was undertaken daily by 31 per cent of children.

### Other research evidence

Maynard *et al.* (2007) asked children how frequently they read story books or fiction. Forty-three per cent of children aged 7-11 indicated that they read these texts 'often' or 'very often' and 10 per cent said 'hardly ever' or 'never'. This can be compared to 63 per cent of children in PIRLS in England who read stories or novels at least weekly outside school, and 17 per cent who 'never or almost never' did this. It seems likely that the different scales used in the two surveys led to this apparent disparity, with Maynard *et al.* having three options, the middle one of which was selected by 47 per cent of children ('sometimes') whilst PIRLS had four options.

Compared to the findings of Whitehead *et al.* (1977), Hall and Coles (1999) found an increase in the amount of periodical and magazine reading in the 25 years between the surveys; this type of reading was found to increase with age in the later survey whereas previously it had been found to decline.

Clarkson and Sainsbury (2007) investigated children's reported enjoyment of reading different types of text. They found that while the enjoyment ratings of all other texts declined between 1998 and 2007, enjoyment ratings for comics were stable and they were the most popular reading material.

Millard and Marsh (2001) suggested that comics could contribute to narrowing the gap between the conceptions of literacy in the home and the school. Related to this, Coles and Hall (2002) and Love and Hamston (2003) perceived the adults at school and also in the home as privileging print-based reading above other forms of reading, something Love and Hamston called 'a school approved form of cultural capital'. Coles and Hall argued for a greater recognition in school of children's 'vernacular reading cultures'. Hopper (2005) suggested that aspects of adolescents' reading choices, and in particular, their reading of texts other than fiction, were 'substantially under-recognised'.

Work by Wigfield and Guthrie (1997) looked at the relationship between children's motivation to read and the breadth and amount of their reading. They found that children's motivation to read (as measured by a specific questionnaire) predicted the amount and breadth of their reading when the earlier amount and breadth of reading was controlled, i.e. children who read more and a greater range of materials were more likely to continue reading more and more broadly, whereas those who read less often were less likely to increase their reading. Furthermore, the type of motivation seemed important – children with high levels of intrinsic motivation to read (for example, motivated by the desire to find out something or to become involved in a book) read much more than those with lower levels of intrinsic motivation. This difference was much greater than for differing levels of extrinsic motivation (for example, the desire for recognition or in order to gain good marks).

Cox and Guthrie (2001) investigated factors which predicted the amount of reading children undertook. They found that, when other factors such as ability were controlled, the amount of reading for enjoyment was predicted most highly by motivation. They describe motivation for reading as encompassing 'involvement, curiosity, preference for challenge, recognition and competition' (2001, p. 127). When Cox and Guthrie looked at the amount of reading for school, they found that it was predicted most highly by self-reported cognitive strategy use such as self-monitoring.

### **Gender differences in reading habits**

Girls in England reported reading aloud and listening to someone read at home more frequently than boys. This is an interesting finding in that these two activities are associated with lower reading achievement. It seems to be the case that it was the less skilled girls who were more likely to get involved in this type of activity at home. Over half of the boys in the survey in England (54 per cent) said that they read aloud at home once or twice a month or less frequently, compared to 44 per cent of girls.

Similarly, talking about their reading with friends or with family members were activities that girls reported more frequently undertaking than boys.

As previously discussed in this chapter, girls tended to report more positive attitudes to reading than boys, and also greater confidence. It is unsurprising then that there were also gender differences in the frequency of boys' and girls' reading, and in the choices they made about what they read.

There is a large and highly significant difference in the proportions of boys and girls in England who claimed to read stories or novels every day. This includes 41 per cent of girls but just 23 per cent of boys. A quarter of boys said they never read stories or novels out of school, compared to 10 per cent of girls.

There are again significant differences in the frequency with which girls and boys reported reading for information outside school. In this case the difference is predominantly in the proportions who said they 'never or almost never' did this (17 per cent of boys and 12 per cent of girls). The other frequencies are very similar between the sexes.

**Figure 4.7: Children Reading Stories or Novels Outside School with Trends**

Countries	Every Day or Almost Every Day			Once or Twice a Week		
	2006 per cent of children	Average Achievement	Difference in per cent from 2001	2006 per cent of children	Average Achievement	Difference in per cent from 2001
Russian Federation	50 (1.1)	568 (3.6)	-6 (1.9) ↓	32 (0.7)	565 (3.6)	3 (1.3) ↑
New Zealand	46 (1.1)	556 (2.3)	0 (1.9)	29 (0.8)	526 (2.6)	-1 (1.4)
Netherlands	45 (1.0)	558 (2.0)	-3 (1.5) ↓	28 (0.7)	542 (1.8)	2 (1.1) ↑
Singapore	44 (1.1)	579 (3.0)	-9 (1.6) ↓	33 (0.8)	555 (3.1)	6 (1.1) ↑
Iceland	42 (0.9)	522 (2.4)	-2 (1.1) ↓	27 (0.8)	512 (2.3)	1 (1.0)
United States	36 (1.3)	558 (4.6)	2 (2.0)	28 (0.8)	541 (3.6)	-1 (1.3)
Hungary	36 (1.2)	554 (4.6)	3 (1.5) ↑	34 (0.9)	553 (3.5)	1 (1.3)
Hong Kong SAR	36 (0.9)	575 (2.4)	16 (1.3) ↑	40 (0.8)	568 (2.6)	-5 (1.2) ↓
Scotland	35 (1.3)	555 (4.2)	-5 (1.8) ↓	29 (0.9)	525 (3.3)	-2 (1.4)
<b>England</b>	<b>33 (1.2)</b>	<b>573 (3.9)</b>	<b>-5 (1.8) ↓</b>	<b>30 (1.0)</b>	<b>535 (3.2)</b>	<b>-1 (1.4)</b>
Germany	32 (0.7)	566 (3.0)	5 (1.0) ↑	21 (0.8)	547 (3.7)	0 (1.1)
France	32 (1.0)	533 (2.9)	2 (1.5)	30 (0.8)	524 (2.3)	1 (1.2)
Belgium (Flemish)	31 (0.9)	557 (2.8)	◇ ◇	34 (0.9)	546 (2.4)	◇ ◇
Spain	31 (1.1)	511 (3.7)	◇ ◇	24 (0.8)	515 (3.0)	◇ ◇
Poland	31 (1.1)	524 (3.3)	◇ ◇	37 (1.2)	524 (3.1)	◇ ◇
Sweden	30 (0.9)	564 (3.2)	-3 (1.3) ↓	33 (0.9)	549 (3.4)	-1 (1.2)
Chinese Taipei	30 (0.8)	549 (2.7)	◇ ◇	36 (0.9)	541 (2.4)	◇ ◇
Denmark	29 (1.1)	558 (3.2)	◇ ◇	26 (0.8)	548 (3.2)	◇ ◇
Belgium (French)	28 (0.9)	509 (3.7)	◇ ◇	27 (0.8)	498 (3.5)	◇ ◇
Lithuania	28 (1.0)	542 (2.5)	1 (1.6)	30 (0.9)	538 (2.5)	-1 (1.3)
Romania	27 (1.4)	491 (6.1)	7 (1.9) ↑	34 (1.3)	497 (5.8)	-4 (1.9) ↓
Luxembourg	24 (0.6)	587 (2.6)	◇ ◇	24 (0.6)	554 (2.6)	◇ ◇
Norway	23 (1.1)	509 (3.2)	5 (1.4) ↑	24 (0.9)	501 (3.5)	-1 (1.2)
Austria	23 (0.9)	554 (3.0)	◇ ◇	23 (0.8)	541 (3.0)	◇ ◇
Bulgaria	22 (1.0)	558 (6.4)	-6 (1.6) ↓	26 (1.0)	555 (4.9)	-2 (1.5)
Italy	22 (1.2)	573 (4.4)	7 (1.4) ↑	20 (1.0)	556 (3.3)	2 (1.2)
Slovenia	21 (0.8)	536 (3.0)	-5 (1.4) ↓	29 (0.8)	520 (3.0)	2 (1.3)
Latvia	19 (0.9)	558 (4.0)	-4 (1.3) ↓	25 (1.1)	548 (3.6)	-2 (1.4)
Slovak Republic	15 (0.7)	540 (4.5)	0 (1.1)	21 (0.9)	536 (3.5)	0 (1.3)
<b>International Average</b>	<b>32 (0.2)</b>	<b>512 (0.6)</b>		<b>31 (0.2)</b>	<b>503 (0.6)</b>	
<i>Canada, British Columbia</i>	57 (1.2)	572 (2.5)	◇ ◇	26 (0.7)	552 (3.2)	◇ ◇
<i>Canada, Nova Scotia</i>	54 (1.0)	557 (2.4)	◇ ◇	26 (0.8)	534 (2.9)	◇ ◇
<i>Canada, Alberta</i>	53 (1.2)	577 (2.7)	◇ ◇	27 (0.9)	549 (3.5)	◇ ◇
<i>Canada, Ontario</i>	50 (1.7)	566 (3.2)	0 (2.0)	28 (1.4)	548 (3.0)	0 (1.7)
<i>Canada, Quebec</i>	44 (1.4)	546 (3.3)	5 (1.9) ↑	28 (0.8)	530 (3.1)	-1 (1.3)

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

↑ Per cent in 2006 significantly higher  
 ↓ Per cent in 2006 significantly lower

continued →

Background data provided by pupils.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

**Figure 4.7: Children Reading Stories or Novels Outside School with Trends (continued)**

Countries	Once or Twice a Month			Never or Almost Never		
	2006 per cent of children	Average Achievement	Difference in per cent from 2001	2006 per cent of children	Average Achievement	Difference in per cent from 2001
Russian Federation	11 (0.6)	563 (4.9)	2 (0.9) ↑	7 (0.6)	548 (5.4)	1 (0.8)
New Zealand	14 (0.6)	513 (3.9)	1 (1.0)	10 (0.6)	473 (4.2)	0 (1.0)
Netherlands	13 (0.6)	540 (2.2)	0 (0.9)	14 (0.7)	531 (3.2)	0 (1.1)
Singapore	15 (0.5)	534 (3.5)	4 (0.7) ↑	8 (0.4)	505 (4.6)	-1 (0.7)
Iceland	16 (0.6)	508 (2.8)	2 (0.8) ↑	15 (0.6)	486 (2.9)	-1 (0.8)
United States	18 (0.7)	539 (3.6)	1 (1.0)	18 (0.9)	509 (3.2)	-3 (1.3)
Hungary	20 (0.9)	553 (2.9)	-2 (1.2) ↓	10 (0.7)	535 (6.7)	-2 (1.0)
Hong Kong SAR	17 (0.7)	550 (3.3)	-6 (1.0) ↓	7 (0.5)	518 (5.0)	-5 (0.8) ↓
Scotland	18 (0.9)	521 (3.8)	3 (1.2) ↑	17 (1.2)	484 (4.8)	5 (1.5) ↑
<b>England</b>	<b>20 (0.7)</b>	<b>536 (4.2)</b>	<b>3 (1.0) ↑</b>	<b>17 (0.8)</b>	<b>492 (3.5)</b>	<b>3 (1.2) ↑</b>
Germany	16 (0.5)	550 (3.6)	1 (0.8)	31 (0.9)	535 (2.6)	-6 (1.4) ↓
France	19 (0.6)	522 (2.8)	-1 (0.9)	19 (0.9)	501 (2.9)	-2 (1.3)
Belgium (Flemish)	21 (0.8)	545 (3.0)	◇ ◇	14 (0.8)	530 (3.3)	◇ ◇
Spain	15 (0.6)	523 (3.7)	◇ ◇	29 (1.0)	508 (3.2)	◇ ◇
Poland	21 (0.8)	516 (3.7)	◇ ◇	11 (0.8)	504 (4.6)	◇ ◇
Sweden	22 (0.8)	546 (2.7)	0 (1.0)	15 (0.8)	529 (3.4)	3 (1.0) ↑
Chinese Taipei	20 (0.7)	531 (3.2)	◇ ◇	15 (0.7)	505 (3.1)	◇ ◇
Denmark	20 (0.8)	551 (3.0)	◇ ◇	25 (1.1)	529 (3.0)	◇ ◇
Belgium (French)	18 (0.7)	507 (3.3)	◇ ◇	27 (0.9)	488 (3.0)	◇ ◇
Lithuania	19 (0.7)	540 (2.6)	-1 (1.2)	23 (1.0)	528 (2.4)	1 (1.5)
Romania	23 (1.3)	503 (5.8)	-4 (1.8) ↓	16 (1.1)	463 (9.8)	2 (1.7)
Luxembourg	21 (0.5)	553 (2.4)	◇ ◇	31 (0.6)	539 (1.8)	◇ ◇
Norway	21 (0.8)	503 (5.1)	1 (1.2)	32 (1.2)	488 (3.5)	-5 (1.8) ↓
Austria	18 (0.7)	537 (3.8)	◇ ◇	37 (1.1)	528 (2.6)	◇ ◇
Bulgaria	23 (1.0)	555 (6.0)	2 (1.4)	29 (1.3)	529 (5.2)	7 (2.0) ↑
Italy	15 (0.8)	554 (4.1)	-1 (1.0)	43 (1.3)	540 (3.3)	-7 (1.7) ↓
Slovenia	23 (0.8)	522 (3.0)	4 (1.3) ↑	28 (0.9)	513 (2.5)	0 (1.7)
Latvia	21 (0.9)	544 (3.6)	1 (1.2)	36 (1.4)	526 (2.5)	6 (1.7) ↑
Slovak Republic	21 (0.7)	540 (3.7)	-1 (1.1)	43 (1.1)	522 (3.9)	1 (1.7)
International Average	18 (0.1)	500 (0.7)		19 (0.2)	479 (0.9)	
<i>Canada, British Columbia</i>	11 (0.7)	539 (4.1)	◇ ◇	6 (0.6)	511 (7.0)	◇ ◇
<i>Canada, Nova Scotia</i>	12 (0.5)	531 (3.9)	◇ ◇	8 (0.5)	497 (6.3)	◇ ◇
<i>Canada, Alberta</i>	12 (0.7)	544 (3.4)	◇ ◇	8 (0.6)	523 (4.9)	◇ ◇
<i>Canada, Ontario</i>	14 (0.9)	544 (5.1)	0 (1.1)	7 (0.7)	520 (7.5)	1 (1.0)
<i>Canada, Quebec</i>	16 (0.9)	528 (3.4)	-1 (1.3)	12 (0.9)	502 (5.1)	-4 (1.6) ↓

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

- ↑ Per cent in 2006 significantly higher
- ↓ Per cent in 2006 significantly lower



There are also significant differences between the sexes in the frequency with which they read books which explain things but it is perhaps surprising that the survey showed that girls in England still claimed to read this type of material more frequently than boys.

Magazine reading was a significantly more frequent activity among girls than boys in England, although for both sexes it evidently comprised a large part of the reading diet for some children, with 31 per cent reporting that they read magazines ‘every day or almost every day’. Slightly more children (66 per cent) reported reading magazines at least weekly than reported reading stories or novels (63 per cent).

Comics and comic books are significantly more popular among boys in England than girls, and 28 per cent of boys reported reading them every day (the figure for girls was 14 per cent). Almost a third of girls, and a fifth of boys, said they ‘never or almost never’ read comics or comic books.

Newspapers are not a major part of children’s reading at this age in England but they are more likely to be read by boys: 16 per cent of boys reported that they read newspapers every day, compared to nine per cent of girls.

In relation to reading television and film guides, the frequency of this activity was very similar for boys and girls.

### Other research evidence

Coles and Hall (2002) focused further analysis of the data they collected as part of the Children’s Reading Choices survey on the different choices made by boys and girls. When the data was analysed by age, Coles and Hall pointed out that the amount of reading reported by 10-year-olds, and also by 12-year-old girls, had increased in the period between 1971 and 1994. There was no change in the amount reported by 12-year-old boys and 14-year-old girls, and the only decline evident was in the amount of reading of 14-year-old boys.

They suggested that those who believed boys to read primarily information material were wrong and that the evidence showed that both genders had a preference for fiction.

Love and Hamston (2003) demonstrated that a specific group of boys, identified by both themselves and others as ‘reluctant readers’, frequently engaged in reading electronic texts, transitioning at speed between various modes of texts.



## 5 Children at Home

*This chapter considers the relationship between children's home circumstances and their performance on the PIRLS reading assessment.*

- *An index of deprivation was constructed, combining information provided by children concerning their material possessions with other measures of deprivation.*
- *There were strong negative associations between a pupil's measure of deprivation and his or her score on PIRLS, and also with performance in reading and writing at age 7.*
- *The amount of television viewing reported by 10-year-olds in England was largely unchanged from 2001 to 2006. The amount of time spent playing computer and video games has increased and is amongst the highest internationally.*

In PIRLS, there are two sources of evidence concerning children's literacy development before they started at school and the literacy practices in the home: the Learning to Read questionnaire and the Pupil questionnaire. The intention is that parents or carers of pupils involved in the PIRLS assessments complete a short questionnaire; unfortunately in 2006 less than 50 per cent of parents and carers of the PIRLS pupils in England returned a completed questionnaire. This means that the data for England is not included in any of the international analyses. In fact just 46 per cent of the surveys were returned, a lower response rate than in 2001 (55 per cent). When the responses to the Learning to Read questionnaire in England were reviewed, it was clear that the data was unrepresentative, provided by parents of, on average, higher attaining pupils.

## 5.1 Home reading resources

With an almost full response to the Pupil questionnaire, the data from that provides some indication about educational resources in the home, both internationally and in England. One question asked children to estimate, with the help of pictures of bookcases, how many books there were in their home, and then whether they possessed children's books of their own.

Children in England reported having among the most books at home and there was a clear association between number of books in the home and reading attainment. The group of children each reporting having more than 200 books (23 per cent) had a mean score of 573, 33 score points higher than the group (30 per cent) reporting between 26 and 100 books, and 97 points higher than the 10 per cent of children reporting the fewest books (10 or fewer). This association between the possession of books and attainment was less pronounced internationally (most countries have a narrower range in attainment) but nevertheless held for the majority of countries.

Children were also asked whether they possessed certain items; these could be seen as enhancing their opportunity to read at home. Unsurprisingly, access at home to a computer, a desk or table to study at, books of their own and a daily newspaper were all strongly associated with higher achievement in PIRLS. About the same proportion of children in England did not possess any books of their own (eight per cent) as did not have a computer at home (seven per cent). Seventy-five per cent of children in England reported having a desk or table for their use at home – just below the international average of 80 per cent and considerably lower than in most other northern and western European countries.

Other possessions children were asked about were related to their entertainment, rather than reading or studying. Almost two-thirds of children in PIRLS in England reported having their own mobile phone: this was negatively associated with achievement on the PIRLS tests. Possession of their own television (72 per cent of children from England) was also negatively associated with achievement. Conversely, having a musical instrument (66 per cent) had a positive link with achievement.

Compared to equivalent questions in 2001, a slightly higher proportion of children reported having a computer at home (93 per cent in 2006 compared with 85 per cent); a lower proportion reported having a desk or table to work at (75 per cent compared with 89 per cent); a slightly lower proportion reported having books of their own at home (92 per cent compared with 96 per cent) or having a daily newspaper (66 per cent compared with 78 per cent).

### Other research evidence

Clark and Foster (2005) reported on children's access to various resources in the home. Much of the data is congruent with that found in PIRLS 2006, including access to a desk of their own (64 per cent across the primary range, increasing to 76 per cent of secondary-aged respondents). Clark and Foster further analysed the survey data by children and young people's uptake of free school meals, one indicator of deprivation. Children and young people not receiving free school meals reported greater access to some home resources, including a computer and desk of their own.

## 5.2 The index of deprivation

Despite the disappointing number of Learning to Read questionnaires available for analysis, an investigation was undertaken with a view to constructing an index of deprivation and relating this to achievement in PIRLS. This is described in greater detail in Appendix 6 but as part of this an exploratory factor analysis was undertaken in order to identify any relationships between the various material possessions and deprivation. This factor analysis identified two factors related to material possessions and the home: one concerned consumer goods (child's ownership of a television, mobile phone and CD or DVD player) and one concerned study-related goods (desk or table, books of the child's own and musical instrument). These two factors appear to be related to deprivation in opposing ways and this is discussed further in Appendix 6.

In addition to this data derived from the Pupil questionnaire, a further source of evidence about pupils' home circumstances was the Learning to Read (home) questionnaire. Again, an exploratory factor analysis was undertaken which identified one main factor, comprising five variables which could be said to be related to a pupil's socio-economic circumstances: the number of books in the home, the number of children's books, the highest education level of the father and of the mother, and the respondent's view of how financially advantaged ('well-off') the family is.

These three factors were combined with data from the Pupil Level Annual School Census (PLASC) and the Income Deprivation Affecting Children Index (IDACI)<sup>1</sup> to produce a composite measure of deprivation.

In order to maximise the data derived from the pupil questionnaire, which had been completed by all pupils, a series of regression models were fitted to this composite measure of deprivation. This procedure enabled a measure of deprivation to be calculated for almost the entire sample for England. Correlations between this deprivation measure and the PIRLS achievement scales were calculated. In addition, because the key stage 1 attainment in reading and writing at age 7 was available for the PIRLS pupils in England, the correlation between the deprivation measure and the key stage 1 reading score and the writing score could be calculated.

There were consistent and strong negative correlations obtained between a pupil's measure of deprivation and his or her score on PIRLS overall and on each of the purposes for reading scales, literary and information. All three correlations were -0.45. The correlation between a pupil's deprivation score and score on key stage 1 reading, three years earlier, was -0.36, and between the deprivation score and the key stage 1 writing score was -0.33. This deprivation measure was also used in the multilevel modelling conducted with the PIRLS data (see Chapter 8 and Appendix 7).

### Other research evidence

There is a substantial body of work linking poverty to educational underachievement (see, for example, Machin and McNally, 2006). In Clark and Foster's (2005) analysis of reading

<sup>1</sup> *The Income Deprivation Affecting Children Index (IDACI) is calculated by the Office of the Deputy Prime Minister. It measures the proportion of children under the age of 16 in an area living in low income households.*

enjoyment by children and young people's uptake of free school meals, they found that children and young people receiving free school meals reported deriving less enjoyment from reading. The greatest difference was found in the proportions of children saying that they did not gain any enjoyment at all from reading (14 per cent of children and young people receiving free school meals, compared with 10 per cent of those not in receipt of free school meals). They also found a relationship between self-reported reading confidence and receipt of free school meals in that children and young people not in receipt of free school meals rated themselves as significantly more confident readers than those receiving free school meals. Children not receiving free school meals were also significantly more likely to report reading outside school.

Clark and Akerman (2006) focused specifically on the 'literacy achievement gap' for children from the most disadvantaged backgrounds (as determined by a self-report measure of receipt of free school meals). In a further analysis of the data of Clark and Foster (2005), they found, for example, a significant and positive relationship between reading confidence and the number of books in the home. They also found a relationship between children's possession of their own books (not simply the number of books in their home) and reading enjoyment, when receipt of free school meals was controlled: children in receipt of free school meals and with their own books reported greater enjoyment of reading than their peers in receipt of free school meals but without their own books. Similarly, in relation to reading confidence, children receiving free school meals and reporting no books of their own at home rated themselves as less confident readers than other children who received free school meals and reported having books of their own.

The work of Clark and Foster (2005) and Clark and Akerman (2006) focuses on various self-report measures of reading attitudes and does not incorporate any analysis of reading achievement. It is therefore not possible to disentangle the role of reading attainment and in particular the complex reciprocal relationships between a child's reading skill and his or her confidence in that skill, the child's motivation to read, the amount of reading undertaken and the enjoyment derived from it.

In their analysis of the data from the 2000 Programme for International Student Assessment (PISA) survey, Kirsch *et al.* (2002) recognised the causal relationship between educational underachievement and social exclusion but also suggested that engaging children and young people in reading might be one of the most effective ways of bringing about social change: '15-year-olds whose parents have the lowest occupational status but who are highly engaged in reading obtain higher average reading scores in PISA than students whose parents have high or medium occupational status but who report to be poorly engaged in reading' (Kirsch *et al.*, 2002, p. 3). In fact, all students who had high levels of reading engagement achieved reading attainment scores significantly above the international mean regardless of their family background. Conversely, students with low levels of reading motivation achieved, on average, reading scores below the international mean regardless of their family background.

### 5.3 Television viewing and computer use

In the 21st century, for children in many countries there is an abundance of choice as to how they spend their time, and reading is only one of these. In the PIRLS Pupil questionnaire, information was collected about two particular types of activities that could be seen to be in competition with reading for children's attention in many countries: television viewing and computer usage.

Figure 5.1 shows the amount of time on average children in England reported viewing television on a school day.

**Figure 5.1 Pupils' responses to 'Outside of school on a normal school day, how much time do you spend watching television?'**

		5 hours or more	3-5 hours	1-3 hours	Less than 1 hour	No time
2006	England	17% (502)	19% (542)	35% (555)	26% (548)	3% (530)
	International mean	15% (474)	16% (498)	35% (514)	28% (508)	6% (487)
2001	England	20% (522)	17% (569)	36% (569)	23% (554)	4% (487)
	International mean	12% (482)	12% (500)	33% (511)	34% (501)	9% (478)

Despite the greater availability of computer games and internet entertainment, the amount of television watching has remained very consistent between 2001 and 2006.

#### Other research evidence

Sainsbury and Schagen (2004) compared findings from a survey of children's attitudes to reading in 2003 with data obtained in 1998. Between 1998 and 2003, there was an increase in the proportion of pupils aged 8-9 and 10-11 who indicated that they preferred watching television to reading. This survey has been repeated in 2007 and in contrast, there has been a decline in the proportion of children who would rather watch television than read, falling from 60 per cent of 11 year-olds in 2003, to 54 per cent in 2007 (Clarkson and Sainsbury, 2007).

A new item was introduced in the Pupil Questionnaire in 2006. Figure 5.2 shows the amount of time on average children in England reported playing video or computer games.

**Figure 5.2 PIRLS 2006 Pupils' responses to 'Outside of school on a normal school day, how much time do you spend playing video or computer games?'**

	5 hours or more	3-5 hours	1-3 hours	Up to 1 hour	No time
England	22% (499)	15% (536)	20% (560)	32% (556)	10% (554)
International mean	15% (475)	13% (491)	21% (512)	31% (517)	21% (501)

The 37 per cent of children in England who reported playing computer or video games for more than three hours a day constitute one of the highest proportions among the participating countries, and was exceeded by the United States (44 per cent) and seven other countries, only one of which, Scotland at 38 per cent, is in the comparison group. Spending this amount of time playing computer and video games was associated with lower attainment on the PIRLS assessment, in England and most other countries.

One activity which might be seen as crossing over the computer/book divide is reading stories and articles on the internet and this was the subject of a new question introduced in 2006. Figure 5.3 shows this data for England and the international average.

**Figure 5.3 PIRLS 2006 Pupils' responses to 'Outside of school on a normal school day, how much time do you spend reading stories and articles on the internet?'**

	5 hours or more	3–5 hours	1–3 hours	Up to 1 hour	No time
England	4% (482)	6% (505)	11% (539)	34% (553)	45% (543)
International mean	6% (466)	7% (482)	11% (500)	27% (514)	48% (505)

There is a negative association between the amount of time spent reading stories and articles on the internet and reading achievement in most countries. The data in Figures 5.2 and 5.3 suggests that 9–10 year-olds were considerably more likely to use computers for playing games than for reading on the internet and that spending three or more hours doing either was associated with lower reading attainment. The data suggests that for 9–10 year-olds, reading remains largely a paper-based activity. Whilst the internet may be a means of accessing knowledge in many homes, computers are most likely to be used for playing games by children of this age.

#### Other research evidence

Research sponsored by the National Consumer Council (Nairn, Ormond and Bottomley, 2007) involved the collection of data about children's television viewing habits. Whilst the sample is small ( $n = 557$ , 9–13 year-olds) and was not intended to be representative (it included just six schools, three schools in areas ranking in the most affluent 15 per cent of areas, as determined by the Office of National Statistics' Index of Multiple Deprivation, and three in areas ranking as in the most deprived 15 per cent) it has nevertheless generated some interesting findings. All pupils completed a questionnaire in which they recorded when and how frequently they watched television. The study found that children living in more advantaged areas spent substantially less of their time watching TV or using the computer. They were also less likely to have a television in their own room (48 per cent compared to 97 per cent) or a computer (30 per cent compared to 62 per cent).

Kerawalla and Crook (2002) reported a small-scale British study that compared the use children aged 7 to 11 made of computers at home with how they were used in school. The focus of the study was largely on the types of software used in the two environments. Essentially the authors found a disjunction between children's predominant use of the home computer for game playing, with its use at school often for the production of material for display. This was despite the fact that parents frequently pointed out that they had purchased 'educational software' for use at home and three-quarters indicated that one of the factors influencing their acquisition of a computer had been in order to support their children's work at school. This study took place before high speed access to the internet was widespread and does not look in any detail at children's online computer use.



## 6 The Teachers and the Schools

*Teachers and headteachers involved in PIRLS 2006 provided information about the approach to the teaching of reading adopted in the school and in the specific classes involved in the study. Alongside the main body of questions, which give rise to international comparisons, some supplementary questions were also asked in England.*

- *In England, pupils in rural schools attained, on average, higher scores than pupils in urban or suburban schools. The relationship between school location and attainment in England is the inverse of the pattern seen internationally.*
- *Headteachers in England reported that pupils had a high level of basic literacy skills on entry to year 1, compared with other countries, despite a slight fall since 2001.*
- *Teachers of year 5 pupils in England spend slightly less time teaching reading than the average internationally. There is no clear evidence of change since 2001.*
- *A greater level of support is made available for the weaker readers in England than in most other countries.*
- *Teachers in England tend to use a variety of children's books as resources in their teaching of reading; the use of reading schemes is very variable.*
- *In England, teachers use a variety of approaches in their teaching of reading, including the explicit teaching of comprehension strategies.*

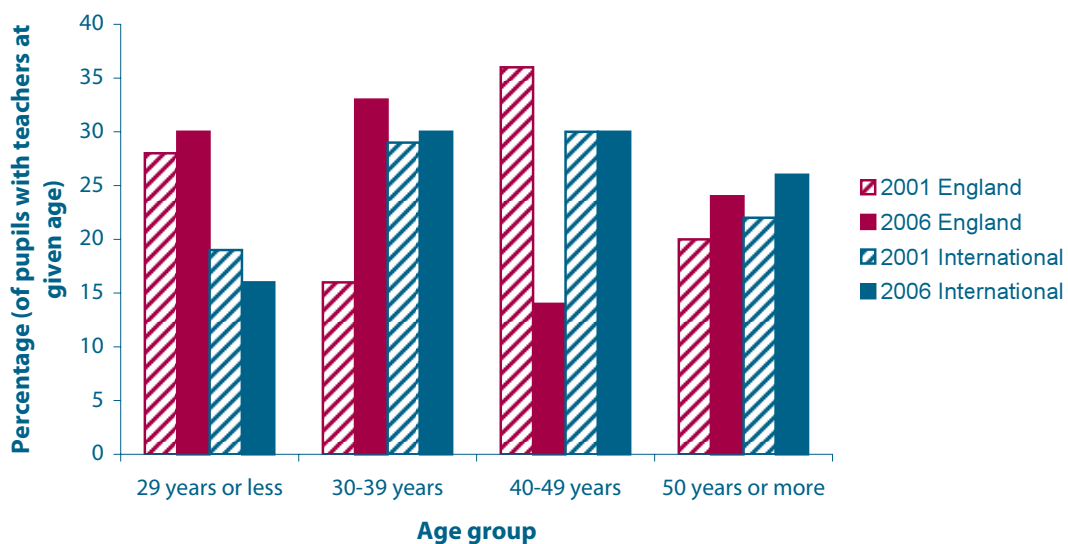


## 6.1 The teachers

The Teacher questionnaire collected background information about the teachers of the year 5 pupils taking part in the survey. The teaching profile for England is broadly similar to the international picture, but has seen some change since 2001. The proportion of pupils taught by male teachers in 2006 is greater than the international average (25 per cent compared to 17 per cent) and has also risen in comparison with 2001 (20 per cent). On average, the teachers of the pupils involved in the survey had been teaching for 12 years (compared to the international average of 17 years) and had been teaching year 5 for four years. This is very similar to the pattern observed in 2001.

Figure 6.1 shows that the proportion of teachers under the age of 30 in England is higher than the international average, which is consistent with the outcomes in 2001, but there has been a considerable rise in the proportion of teachers aged 30-39 years and a fall in the proportion of teachers aged 40-49 years between 2001 and 2006, and this shift has not been seen internationally.

**Figure 6.1** Change in Teachers' Age Profile between 2001 and 2006

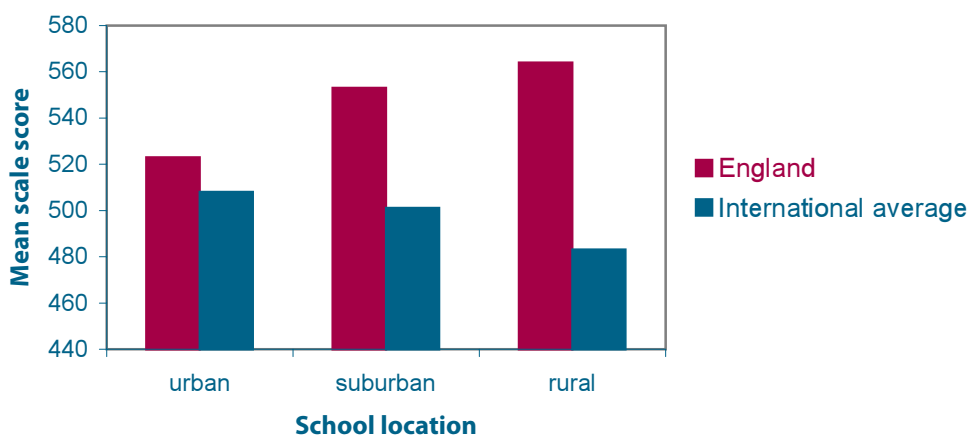


## 6.2 The schools

### School locations

Figure 6.2 shows mean achievement in PIRLS by school location, as determined by the headteacher.

This shows that in England the pattern of pupil achievement is the inverse of that seen internationally, with the average scores of pupils in rural schools being higher than the average scores of those in suburban schools, who in turn had higher average scores than pupils in urban schools. This reflects the pattern seen in 2001, with the proportions of pupils in each school type being very similar (within three per cent for each category).

**Figure 6.2 Mean Attainment by School Location**

Source: School questionnaire

Note: data for England available for 70-84% of pupils

Four other education systems (Austria, Belgium (Flemish), Belgium (French) and Sweden) also followed this pattern, with the average scores of pupils in rural schools being higher than those in urban schools, but the ranges of the differences in average achievement scores for these countries were much smaller than for England.

### Pre-school

Primary education for the majority of pupils in PIRLS countries begins between the ages of five and seven; in England pupils begin primary schooling in the school year in which they turn five. There is no clear relationship between pupil achievement and the age of starting school, with the top ten performing countries having a variety of starting ages, both intended and implemented (see the PIRLS encyclopaedia, Kennedy *et al.*, 2007).

In England, a nursery place is available free of charge to all three-year-olds whose parents want it and this has been the case since April 2006. Prior to this, provision was only made available from age four. According to national data (Department for Education and Skills, 2007b), 98 per cent of three- and four-year-olds were in early education in 2006.

### Reading readiness

The Foundation Stage is the first part of the National Curriculum in England focusing on children from age three until the end of the reception year. Following the introduction of the *Foundation Stage Profile* (Qualifications and Curriculum Authority, 2003), teachers in England have been assessing children's development in relation to the aims identified as part of the *Curriculum guidance for the foundation stage* (Qualifications and Curriculum Authority and Department for Education and Employment, 2000). This has resulted in a profile, outlining assessments and observations, for each child entering year 1. Within the six areas of learning is 'communication, language and literacy' which requires teachers to monitor a child's progress in language for communication and thinking, linking sounds and letters, reading and writing.

**Figure 6.3: Headteachers' Estimates of the Percentage of Pupils entering School Able to Perform Beginning Literacy Skills with Trends**

Countries	More than 75% begin school with skills		51-75% begin school with skills		25-50% begin school with skills		Less than 25% begin school with skills	
	Per cent of pupils	Difference in per cent from 2001	Per cent of pupils	Difference in per cent from 2001	Per cent of pupils	Difference in per cent from 2001	Per cent of pupils	Difference in per cent from 2001
Austria	0 (0.0)	◇ ◇	2 (1.2)	◇ ◇	14 (3.4)	◇ ◇	84 (3.6)	◇ ◇
Belgium (Flemish)	2 (1.2)	◇ ◇	5 (2.2)	◇ ◇	19 (3.7)	◇ ◇	73 (4.1)	◇ ◇
Belgium (French)	r 6 (2.3)	◇ ◇	20 (3.6)	◇ ◇	35 (4.7)	◇ ◇	39 (4.6)	◇ ◇
Bulgaria	7 (2.2)	2 (2.8)	19 (3.6)	8 (4.5)	32 (3.7)	6 (5.0)	42 (4.0)	-16 (5.2) ↓
Chinese Taipei	94 (2.0)	◇ ◇	5 (2.0)	◇ ◇	0 (0.0)	◇ ◇	1 (0.5)	◇ ◇
Denmark	35 (4.4)	◇ ◇	37 (4.6)	◇ ◇	21 (3.1)	◇ ◇	7 (2.3)	◇ ◇
England	s 56 (5.4)	-5 (7.6)	22 (4.3)	4 (6.2)	14 (3.3)	3 (4.6)	8 (2.8)	-1 (4.1)
France	19 (3.2)	-2 (4.8)	32 (4.0)	4 (5.6)	25 (4.1)	-9 (6.5)	23 (4.2)	6 (5.3)
Germany	2 (1.2)	1 (1.4)	2 (0.8)	1 (0.8)	24 (3.7)	16 (4.1) ↑	73 (3.7)	-19 (4.1) ↓
Hong Kong SAR	86 (3.0)	- -	14 (3.0)	- -	0 (0.0)	- -	0 (0.0)	- -
Hungary	0 (0.0)	0 (0.0)	1 (0.8)	0 (1.3)	6 (2.1)	1 (2.7)	93 (2.2)	-1 (3.0)
Iceland	r 7 (0.2)	2 (0.2) ↑	36 (0.3)	14 (0.5) ↑	43 (0.3)	4 (0.5) ↑	14 (0.3)	-21 (0.4) ↓
Italy	2 (1.2)	0 (1.6)	15 (3.2)	1 (3.9)	29 (3.6)	1 (5.2)	54 (4.4)	-2 (6.0)
Latvia	40 (4.9)	31 (5.3) ↑	33 (4.1)	2 (5.5)	20 (3.5)	-13 (5.5) ↓	7 (1.9)	-20 (4.4) ↓
Lithuania	7 (2.2)	-1 (2.8)	15 (3.4)	4 (4.4)	32 (3.9)	5 (5.5)	46 (4.0)	-9 (6.0)
<sup>1</sup> Luxembourg	- -	- -	- -	- -	- -	- -	- -	- -
Netherlands	r 2 (1.2)	0 (1.7)	10 (3.1)	5 (3.6)	27 (4.3)	10 (5.5)	61 (5.1)	-14 (6.5) ↓
New Zealand	5 (1.6)	-1 (2.4)	9 (2.3)	1 (3.1)	14 (2.6)	-7 (4.2)	72 (3.3)	7 (4.9)
Norway	3 (1.6)	3 (1.6)	10 (3.1)	3 (4.0)	49 (4.9)	11 (6.6)	38 (4.2)	-17 (6.4) ↓
Poland	r 16 (3.7)	◇ ◇	18 (3.6)	◇ ◇	13 (3.4)	◇ ◇	53 (5.3)	◇ ◇
Romania	2 (1.1)	-4 (2.3)	15 (3.3)	6 (4.1)	30 (4.3)	10 (5.3)	53 (4.5)	-12 (5.9) ↓
Russian Federation	11 (2.4)	4 (3.0)	27 (3.0)	8 (4.1)	31 (3.2)	-2 (4.8)	31 (3.3)	-10 (5.0) ↓
Scotland	r 4 (2.3)	3 (2.6)	7 (2.4)	1 (3.5)	16 (4.0)	6 (5.1)	72 (4.9)	-10 (6.4)
Singapore	70 (0.0)	7 (3.5) ↑	22 (0.0)	-5 (3.5)	6 (0.0)	-2 (2.0)	1 (0.0)	0 (0.8)
Slovak Republic	0 (0.0)	-1 (1.0)	0 (0.0)	0 (0.0)	11 (2.6)	7 (3.2) ↑	89 (2.6)	-5 (3.3)
Slovenia	0 (0.0)	-61 (4.3) ↓	7 (2.2)	-8 (3.9) ↓	27 (3.7)	13 (4.7) ↑	67 (4.1)	55 (4.8) ↑
Spain	56 (3.6)	◇ ◇	20 (3.2)	◇ ◇	14 (2.8)	◇ ◇	10 (2.3)	◇ ◇
Sweden	15 (3.3)	2 (4.5)	28 (4.1)	-6 (6.3)	42 (4.2)	6 (6.5)	15 (3.3)	-2 (5.1)
United States	65 (3.7)	17 (5.8) ↑	12 (2.6)	-10 (4.4) ↓	10 (2.5)	-4 (3.9)	13 (2.6)	-3 (4.1)
International Average	20 (0.4)		15 (0.5)		21 (0.5)		44 (0.6)	
Canada, Alberta	2 (1.3)	◇ ◇	5 (1.4)	◇ ◇	23 (3.3)	◇ ◇	70 (3.7)	◇ ◇
Canada, British Columbia	3 (1.5)	◇ ◇	7 (2.1)	◇ ◇	29 (3.4)	◇ ◇	62 (3.9)	◇ ◇
Canada, Nova Scotia	3 (1.7)	◇ ◇	7 (2.3)	◇ ◇	30 (4.0)	◇ ◇	60 (4.3)	◇ ◇
Canada, Ontario	2 (1.7)	-32 (5.1) ↓	4 (1.9)	-28 (5.4) ↓	14 (3.7)	-10 (5.8)	79 (4.2)	70 (4.8) ↑
Canada, Quebec	2 (1.5)	-15 (4.1) ↓	2 (1.3)	-11 (3.6) ↓	9 (2.8)	-17 (5.6) ↓	87 (3.5)	43 (6.4) ↑

↑ Per cent in 2006 significantly higher      ↓ Per cent in 2006 significantly lower

Based on headteachers' responses to questions about how many of the pupils in their schools can do the following when they begin the first year of formal schooling: recognise most of the letters of the alphabet, write letters of the alphabet, read some words, write some words, and read sentences. Average is computed across the five items based on a 4-point scale: Less than 25% = 1, 25-50% = 2, 51-75% = 3, and more than 75% = 4. More than 75% indicates an average response score of greater than 3.25 to 4. 51-75% indicates an average of greater than 2.5 to 3.25. 25-50% indicates an average of 1.75 to 2.5. Less than 25% indicates an average of 1 to less than 1.75.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data is available for 70-84% of the pupils. An "s" indicates data is available for 50-69% of the pupils.

A dash (-) indicates comparable data is not available.

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: Primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

<sup>1</sup> Primary schools in Luxembourg do not have headteachers.

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

In the School questionnaire, headteachers were asked how ready pupils were to begin learning in a formal setting when they began school (year 1 in England). They were asked to estimate the proportion of pupils who could do a number of different literacy skills when beginning the first year of school (ISCED Level 1). These skills included being able to: recognise most of the letters of the alphabet, read some words, read sentences, write letters of the alphabet and write some words.

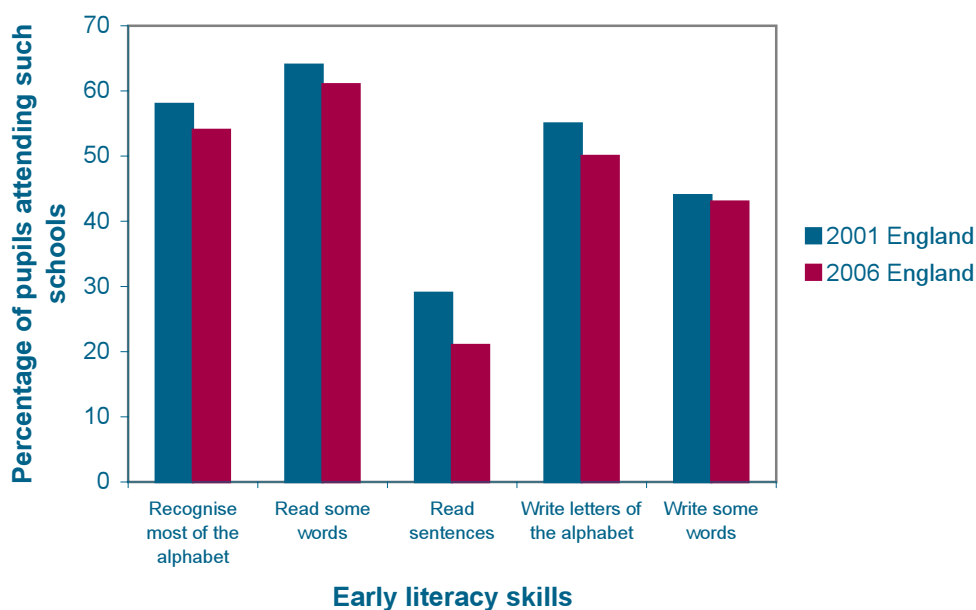
The responses given were averaged across the five literacy skills and the international data is shown in Figure 6.3.

This shows that between 2001 and 2006, in England the proportion of pupils with headteachers who considered that more than 75 per cent of pupils were entering year 1 with early literacy skills fell slightly, although this difference is not significant. In 2001, England had the second highest proportion of pupils in schools where headteachers reported early literacy skills in the highest category (61 per cent), after Singapore (63 per cent). In 2006, all three Pacific Rim countries in the study (Chinese Taipei, Hong Kong and Singapore) as well as the United States, reported a higher proportion. Spain reported very similar figures to England.

The *Foundation Stage Profile* covers all the areas identified above and those children who have achieved all the ‘early learning goals’ for linking sounds and letters, reading and writing should have competence in these areas. It is possible that headteachers based their responses to the questionnaire on information drawn from the Profile.

Figure 6.4 focuses on data for England and shows the percentage of year 5 pupils in schools where the headteacher reported more than three-quarters of pupils beginning year 1 had specific early literacy skills.

**Figure 6.4 Pupils in schools in England where Headteachers estimate more than 75 per cent begin Year 1 with Early Literacy Skills**



Compared with the results of the 2001 survey, the figures for England have declined for each category whilst the international averages have seen an increase, albeit with a different set of countries. It remains the case, however, that across all five literacy skills, the figures recorded for England were significantly higher than the corresponding international average.

Seven countries (Chinese Taipei, Denmark, Hong Kong, Latvia, Singapore, Spain and the United States) had higher percentages than England for recognising most letters of the alphabet, and all but Latvia also had higher percentages for being able to write letters of the alphabet. Only Chinese Taipei, Hong Kong, Singapore and the United States had higher percentages than England for reading some words, whilst the same countries, together with Spain, also had higher percentages than England for reading sentences.

It is interesting that Hong Kong and Singapore are amongst the highest achieving countries in the PIRLS survey and also have some of the highest percentages of pupils entering schooling with literacy skills in place. It is also notable that in Hong Kong two-thirds of pupils attended nursery for three years or more and the same is true for 57 per cent of pupils in Singapore. Of the remaining high achieving countries, there is no obvious relationship between achievement on the PIRLS reading assessment and literacy skills upon beginning school.

#### Other research evidence

Rose (2006) in the *Independent review of the teaching of early reading*, recommended that 'for most children, it is highly worthwhile and appropriate to begin a systematic programme of phonic work by the age of five, if not before for some children, the way having been paved by related activities designed, for example, to build phonological awareness' (p. 29). Rose also reported on good practice where children were actively engaged in developing their phonological awareness through a broad and language-rich curriculum and time was provided for children to 'talk with adults and each other about their experiences and feelings in ways which enlarged their vocabulary and stimulated their interest in reading'.

Rose recommended that 'high quality, systematic phonic work ... should be taught discretely. The knowledge, skills and understanding that constitute high quality phonic work should be taught as the prime approach in learning to decode (to read) and encode (to write/spell) print' and that it 'should be set within a broad and rich curriculum' (p. 70).

## 6.3 The teaching of reading

### Teaching time

Several questions in the teachers' and the headteachers' questionnaires focused on the amount of time devoted to the teaching of reading. Headteachers in England indicated that primary schools were providing on average 25 hours of teaching per week. This was a little more than the international average of 23 hours, with a range from 19 hours (the Russian Federation, Slovenia and Romania) to 30 or more hours (Indonesia, Italy and the United States).

Teachers in PIRLS were asked about the amount of time devoted to the teaching of the language of the test, and also to the teaching of reading. In England, teachers were spending 28 per cent of the weekly teaching time on English, that is, reading, writing, speaking and listening (about 7 hours). Included in this is the 13 per cent of the weekly teaching time concerned with the teaching of reading and reading activities (under 3½ hours). Internationally, with slightly fewer hours in the teaching week, teachers on average spent 30 per cent of instructional time on teaching the language of the test (just less than 7 hours), including 20 per cent of instructional time on the teaching of reading (4½ hours).

A further question asked teachers if any time was focused on the direct teaching of reading skills, and if it was, to estimate the amount of time spent in this way. Teachers of 80 per cent of pupils in the sample in England indicated that they spent time on the explicit teaching of reading skills and that this amounted, on average, to about 1¼ hours a week. This was rather less than the international average of about 2¼ hours.

When this data for England is compared with that collected in 2001, there is no evidence of any clear change in the amount of time devoted to the teaching of English, but there is some suggestion of a slight fall in the amount of time spent on reading activities. In 2001, teachers were spending almost 4 hours on both the direct teaching of reading to their class and also informal reading activities (under 3½ hours in 2006), of which about 1¾ hours, as in 2006, was for explicit teaching. The average is based on data from teachers who allocated time to the formal teaching of reading: there was an increase in the proportion of pupils whose teachers said that they did not teach reading skills and strategies in this explicit way, from 11 per cent in 2001 to 20 per cent in 2006. The question did change very slightly between 2001 and 2006 and it is possible that the changes may have affected the way in which teachers responded. However, it is worth noting that the international picture is rather mixed. Teachers of more than half of pupils in Germany and Slovenia (57 and 58 per cent respectively), for example, indicated that they did not explicitly teach reading.

Teachers were asked about how reading time is organised in the timetable. In England, 69 per cent of pupils had teachers who indicated that the pupils were involved in reading activities of some sort on a daily basis. The teachers of just under a quarter of the pupils (23 per cent) reported that reading teaching or reading activities were organised on three or four days in the week, and the remainder (teachers of nine per cent of pupils) taught reading less than three times a week. Internationally, about half the pupils in the survey (56 per cent) were undertaking reading activities of some sort every day, from 93 per cent of pupils having teachers who did this in the United States to 19 per cent in Chinese Taipei. There is no clear association between the frequency of reading teaching and achievement.

### **The effect of the Literacy Hour**

The National Literacy Strategy was introduced in 1998 and provided teachers with a framework for teaching reading and writing through the 'Literacy Hour'. This promotes whole class teaching, as well as focused small group work, and the teaching of a range of different reading skills. The framework for teaching also outlines recommended text types for each year group. Year 5, the group involved in the PIRLS survey, cover a variety of text types, including novels, stories and poetry, play-scripts, recounts and persuasive writing.

The impact of the National Literacy Strategy can be seen through the teacher responses to a number of items in the questionnaire including such areas as the reading and comprehension skills that are taught and the texts to which children are exposed.

The Government's focus on *Excellence and Enjoyment* (Department for Education and Skills, 2003) saw the introduction of a Primary National Strategy in 2003, of which the National Literacy Strategy became a part. In late 2006, the Primary framework was revised. As a result, the content has been reduced with a greater focus being placed on using assessment to personalise learning and the strategy now incorporates speaking and listening. The 2006 revision of the Primary framework for teaching will not, however, have had any impact on the pupils taking part in the 2006 PIRLS survey.

### **Class organisation for reading**

Teachers were asked to comment on the frequency with which reading is organised by different teaching methods.

Figure 6.5 presents how teachers reported they usually organised their classes for the teaching of reading or for reading activities.

Teachers in England, as in most other countries, tended to use a variety of organisational methods. A common organisational strategy in England was same-ability groups, with teachers of just over three-quarters of pupils reporting that they used this approach 'often' or 'always or almost always'. This was also a common strategy in Scotland and New Zealand, and reflects the pattern seen in 2001.

A notable feature of these results for England is the shift in the proportion of pupils taught as a whole class 'always or almost always', since 2001: a quarter of pupils in 2001 tended to have whole class reading lessons, compared to just six per cent in 2006. It is also noticeable that mixed ability grouping is less frequently used in England than in many other countries, reflected by the proportion of pupils being taught in mixed ability groups 'often' or 'always or almost always' in the international average (34 per cent) compared to the proportion of pupils in England (19 per cent). There is no clear association shown between the use of pupil groupings and attainment.

### **Support for pupils in reading**

Teachers were asked to identify how many pupils in their class were in need of additional support as they learned to read. Teachers in England indicated that 18 per cent of pupils on average were in need of support, a figure very close to the international average. As might be expected, there was a considerable range, with three countries (Hong Kong, Lithuania and Singapore) reporting less than 10 per cent of pupils needing extra help, to four countries reporting more than a quarter of pupils (Kuwait, Morocco, South Africa, and Trinidad and Tobago).

Teachers were also asked about the number of pupils who received additional support in reading (14 per cent in 2001). Teachers in England reported that, on average, 15 per cent of pupils received additional support, above the international average of 12 per cent. This

Figure 6.5: Organisation of Pupils for Reading Teaching

Countries	Percentage of pupils whose teachers reported always or almost always						
	Teaching reading as a whole-class activity	Creating same-ability groups	Creating mixed-ability groups	Using individualised instruction for reading	Having pupils work independently on an assigned plan or goal	Having pupils work independently on a goal they choose themselves	Using a variety of organisational approaches*
Austria	16 (2.3)	1 (0.6)	1 (0.6)	3 (1.1)	10 (2.1)	5 (1.5)	74 (3.1)
Belgium (Flemish)	7 (2.0)	2 (0.9)	7 (1.8)	1 (0.6)	5 (1.2)	1 (0.5)	80 (2.6)
Belgium (French)	37 (3.4)	1 (0.7)	2 (0.6)	3 (1.2)	7 (2.1)	2 (0.9)	55 (3.4)
Bulgaria	75 (3.6)	4 (1.7)	6 (1.9)	25 (2.9)	16 (2.7)	1 (0.5)	94 (1.9)
Chinese Taipei	50 (4.1)	1 (0.7)	16 (2.9)	2 (1.2)	14 (2.6)	10 (2.5)	82 (3.0)
Denmark	11 (2.3)	4 (1.2)	0 (0.3)	14 (2.2)	6 (2.2)	1 (0.5)	62 (4.1)
<b>England</b>	<b>6 (2.0)</b>	<b>27 (4.5)</b>	<b>0 (0.4)</b>	<b>4 (1.7)</b>	<b>3 (0.7)</b>	<b>0 (0.0)</b>	<b>66 (4.1)</b>
France	25 (3.5)	4 (1.1)	4 (1.5)	2 (1.0)	5 (1.4)	0 (0.2)	66 (3.2)
Germany	22 (3.0)	2 (0.7)	1 (0.7)	2 (0.8)	10 (2.3)	5 (1.5)	68 (3.5)
Hong Kong SAR	34 (3.8)	0 (0.0)	6 (2.0)	2 (1.1)	5 (1.9)	3 (1.6)	55 (4.3)
Hungary	5 (1.7)	7 (2.2)	5 (1.6)	16 (3.2)	3 (1.4)	1 (0.9)	90 (2.2)
Iceland	17 (0.3)	6 (0.3)	4 (0.1)	32 (0.3)	22 (0.3)	7 (0.3)	79 (0.3)
Italy	63 (3.4)	0 (0.3)	10 (2.2)	3 (1.3)	30 (3.0)	5 (1.7)	90 (2.3)
Latvia	48 (4.2)	2 (0.9)	8 (2.3)	4 (1.6)	3 (1.2)	1 (1.0)	90 (2.6)
Lithuania	35 (3.0)	2 (0.9)	5 (1.5)	4 (1.4)	9 (2.2)	3 (1.2)	89 (2.0)
Luxembourg	31 (0.2)	1 (0.0)	4 (0.1)	0 (0.0)	7 (0.1)	0 (0.0)	58 (0.2)
Netherlands	8 (2.0)	6 (1.3)	r 3 (1.3)	5 (1.4)	12 (2.9)	2 (1.0)	64 (4.2)
New Zealand	2 (0.6)	61 (2.7)	1 (0.6)	8 (1.5)	6 (1.4)	1 (0.3)	62 (2.9)
Norway	12 (2.2)	6 (1.7)	2 (1.3)	4 (2.2)	5 (2.0)	0 (0.0)	71 (4.0)
Poland	38 (4.3)	3 (1.3)	5 (1.4)	12 (2.4)	12 (2.3)	9 (2.4)	94 (1.8)
Romania	72 (3.4)	6 (1.9)	4 (1.5)	22 (2.8)	27 (3.8)	2 (0.7)	92 (2.2)
Russian Federation	63 (4.1)	4 (1.5)	3 (0.9)	11 (2.5)	6 (1.8)	2 (0.9)	90 (2.0)
Scotland	r 6 (2.7)	r 54 (4.5)	1 (0.6)	r 5 (2.3)	9 (3.1)	r 0 (0.0)	70 (4.6)
Singapore	29 (2.6)	3 (0.9)	7 (1.4)	1 (0.7)	5 (1.2)	2 (0.8)	62 (2.7)
Slovak Republic	40 (3.6)	1 (0.7)	3 (1.1)	14 (2.3)	15 (2.7)	1 (0.5)	87 (2.7)
Slovenia	11 (1.9)	1 (0.5)	8 (1.6)	3 (0.9)	4 (1.5)	0 (0.4)	71 (2.7)
Spain	62 (3.6)	0 (0.0)	2 (1.0)	6 (2.1)	10 (2.5)	2 (0.9)	76 (3.7)
Sweden	22 (3.2)	3 (1.2)	0 (0.3)	3 (1.1)	14 (2.7)	6 (1.6)	59 (3.8)
United States	25 (3.3)	13 (2.4)	7 (1.9)	7 (2.2)	8 (2.1)	2 (1.0)	73 (3.1)
<b>International Average</b>	<b>35 (0.5)</b>	<b>8 (0.3)</b>	<b>7 (0.3)</b>	<b>12 (0.4)</b>	<b>12 (0.4)</b>	<b>5 (0.2)</b>	<b>78 (0.5)</b>
<i>Canada, Alberta</i>	18 (3.3)	6 (1.8)	6 (1.7)	4 (1.3)	4 (1.6)	3 (1.3)	70 (3.4)
<i>Canada, British Columbia</i>	r 24 (3.8)	r 6 (1.9)	r 4 (1.7)	r 1 (0.7)	r 5 (2.1)	r 1 (0.9)	r 65 (4.1)
<i>Canada, Nova Scotia</i>	10 (2.4)	2 (1.0)	3 (1.0)	4 (1.7)	3 (1.2)	1 (0.7)	67 (3.7)
<i>Canada, Ontario</i>	18 (3.6)	5 (1.4)	5 (1.1)	5 (2.2)	5 (2.0)	0 (0.0)	72 (3.9)
<i>Canada, Quebec</i>	35 (4.5)	3 (1.5)	2 (0.7)	0 (0.2)	2 (1.3)	0 (0.2)	68 (3.8)

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

Background data provided by teachers.

\*Using a Variety of Organisational Approaches is based on the proportion of teachers who responded at least Often to at least two of the approaches.

() Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data is available for 70-84% of the pupils.

A dash (-) indicates comparable data is not available.

Note: The International Average does not include the results from the Canadian provinces.



average concealed a considerable range, from five per cent or less in three Pacific Rim countries (Chinese Taipei, Hong Kong and Singapore) and also France, to three countries where teachers reported that at least 18 per cent of pupils, on average, received additional help in reading (Indonesia, Poland and the United States).

Teachers reported that three per cent of pupils in England experienced difficulties understanding spoken English, unchanged from 2001. On average internationally, nine per cent of pupils were considered to have difficulties understanding the spoken language of the test, including more than 20 per cent in Indonesia, Kuwait and Morocco.

In all countries except Macedonia, the proportion of pupils in need of additional help exceeded the proportion receiving it. In a few countries the difference was just one or two per cent (Bulgaria, Iceland, the Netherlands and Slovenia) but in others it was at least 10 per cent (France, Latvia, Morocco, South Africa, and Trinidad and Tobago).

A further question concerned the proportion of pupils who received specific teaching because of their high levels of skill. As with support for pupils who are struggling, the international average of 10 per cent conceals a very wide range between countries. In England, teachers reported that, on average, two per cent of pupils received additional input because of their high level of reading skill. In some countries, teachers reported that a quarter or more pupils received specific teaching because of their high reading achievement (Indonesia, Macedonia, Moldova and the Slovak Republic).

Teachers were asked about the nature of the reading support provided. Almost a quarter of pupils in England were in classrooms where teachers indicated that a learning support teacher was 'always' available, an increase of 11 percentage points since 2001 and among the highest in the survey. These specialists could work in the classroom or elsewhere. A learning support teacher was available 'some of the time' for 60 per cent of the pupils in England, and teachers of just 16 per cent of pupils reported that they 'never' had access to this type of support for pupils who had difficulty with reading. This form of support appears to be much more prevalent in England than in many other countries, although at a level similar to that seen in Belgium (Flemish), the Netherlands and Spain.

Another form of reading support is that provided by learning support or classroom assistants. Just under a fifth of pupils in England 'always' had access to this support and a further three-fifths 'sometimes'. This is much greater than the international mean but very similar to that seen in 2001.

Teachers of just eight per cent of pupils in England did not have any access to reading support (16 per cent in 2001), the same as in Poland, Scotland and the United States, and the lowest in the study after Denmark, Iceland, Spain and the Canadian provinces of British Columbia, Nova Scotia and Quebec. In a number of countries, including Hong Kong and Italy, teachers reported that over 80 per cent of pupils did not have access to additional support.

### **Teaching materials**

There are a range of methods for teaching reading which can be supported through the use of different teaching materials, such as text books, reading schemes and workbooks, and teachers were asked to indicate how often they used each one. The responses to this

**Figure 6.6: Materials used by Teachers in the Teaching of Reading**

Countries	Percentage of pupils whose teacher used at least weekly						
	Reading schemes	Text books	Workbooks or Worksheets	Variety of children's books	Children's newspapers and/or magazines	Materials from other subjects	Computer software
Austria	30 (3.2)	87 (2.4)	89 (2.4)	52 (3.4)	61 (3.4)	58 (3.3)	26 (2.8)
Belgium (Flemish)	35 (4.6)	92 (1.6)	91 (2.1)	52 (3.8)	19 (3.2)	50 (3.9)	8 (2.1)
Belgium (French)	30 (3.4)	50 (3.7)	64 (4.2)	53 (3.9)	31 (2.9)	55 (3.5)	4 (1.6)
Bulgaria	95 (1.8)	100 (0.0)	99 (0.5)	60 (3.9)	18 (2.8)	57 (3.7)	4 (1.8)
Chinese Taipei	37 (4.1)	95 (1.9)	61 (4.2)	49 (4.3)	31 (3.9)	23 (3.6)	24 (3.5)
Denmark	88 (2.4)	69 (4.1)	74 (3.4)	60 (3.7)	2 (1.1)	21 (3.5)	4 (1.3)
<b>England</b>	<b>49 (4.1)</b>	<b>66 (4.2)</b>	<b>65 (4.0)</b>	<b>93 (1.7)</b>	<b>9 (2.6)</b>	<b>75 (4.1)</b>	<b>32 (4.0)</b>
France	74 (3.3)	62 (3.2)	63 (3.3)	72 (3.0)	20 (3.3)	82 (2.5)	3 (1.2)
Germany	r 20 (3.6)	83 (2.7)	92 (1.4)	42 (3.7)	8 (2.0)	68 (3.5)	15 (2.2)
Hong Kong SAR	36 (3.8)	97 (1.5)	71 (3.7)	25 (3.6)	10 (2.6)	12 (2.7)	36 (4.2)
Hungary	99 (0.8)	100 (0.0)	99 (0.8)	63 (3.7)	26 (3.5)	67 (3.6)	2 (0.7)
Iceland	80 (0.3)	96 (0.2)	86 (0.2)	83 (0.3)	5 (0.2)	82 (0.3)	12 (0.2)
Italy	47 (3.6)	99 (1.0)	92 (2.1)	54 (4.0)	16 (2.9)	52 (4.1)	5 (1.8)
Latvia	31 (3.1)	100 (0.0)	74 (2.7)	45 (3.7)	11 (2.1)	49 (4.1)	2 (1.2)
Lithuania	41 (3.6)	100 (0.0)	95 (1.8)	45 (3.5)	14 (2.3)	47 (3.7)	2 (0.9)
Luxembourg	8 (0.1)	95 (0.1)	85 (0.1)	34 (0.2)	15 (0.1)	33 (0.2)	3 (0.1)
Netherlands	r 51 (4.3)	94 (1.8)	76 (3.5)	79 (3.0)	9 (2.4)	64 (4.1)	26 (4.2)
New Zealand	94 (1.4)	20 (2.3)	65 (2.8)	78 (2.5)	18 (2.2)	61 (2.8)	18 (1.9)
Norway	76 (3.5)	98 (1.3)	90 (2.9)	84 (3.5)	7 (2.4)	82 (3.1)	20 (4.0)
Poland	95 (1.6)	100 (0.0)	97 (1.2)	36 (3.9)	6 (1.7)	43 (4.0)	3 (1.1)
Romania	92 (1.9)	100 (0.1)	91 (2.4)	66 (4.1)	24 (3.5)	57 (3.8)	1 (0.7)
Russian Federation	56 (3.7)	100 (0.0)	53 (3.6)	68 (3.1)	18 (3.3)	61 (3.5)	1 (0.8)
Scotland	95 (1.8)	81 (4.0)	82 (3.6)	80 (4.2)	5 (2.2)	60 (4.4)	20 (3.6)
Singapore	34 (2.5)	97 (1.0)	97 (1.0)	41 (2.8)	43 (2.7)	41 (3.1)	33 (2.8)
Slovak Republic	16 (2.4)	100 (0.0)	77 (3.3)	50 (3.5)	50 (3.4)	54 (3.5)	4 (1.0)
Slovenia	95 (1.5)	94 (1.6)	97 (1.4)	33 (3.3)	14 (1.8)	51 (3.3)	5 (1.4)
Spain	75 (3.9)	99 (0.9)	84 (3.2)	71 (3.9)	7 (2.0)	70 (3.7)	9 (2.4)
Sweden	52 (3.7)	82 (2.7)	71 (3.6)	89 (2.6)	16 (2.8)	77 (3.5)	10 (2.3)
United States	69 (4.1)	82 (1.8)	85 (3.0)	78 (3.2)	36 (4.1)	74 (3.2)	32 (3.8)
<b>International Average</b>	<b>60 (0.5)</b>	<b>90 (0.3)</b>	<b>82 (0.4)</b>	<b>55 (0.5)</b>	<b>22 (0.5)</b>	<b>53 (0.6)</b>	<b>11 (0.4)</b>
<i>Canada, Alberta</i>	43 (3.7)	64 (4.0)	68 (3.6)	91 (1.9)	16 (2.9)	82 (3.2)	19 (2.9)
<i>Canada, British Columbia</i>	r 47 (4.8)	r 66 (3.6)	r 65 (4.4)	r 91 (2.7)	r 13 (3.0)	r 79 (3.9)	r 15 (3.2)
<i>Canada, Nova Scotia</i>	35 (3.5)	47 (4.0)	68 (3.8)	96 (1.4)	20 (3.2)	87 (2.4)	14 (2.4)
<i>Canada, Ontario</i>	55 (4.9)	68 (4.5)	77 (4.4)	91 (2.8)	20 (4.5)	83 (4.1)	17 (3.6)
<i>Canada, Quebec</i>	45 (4.8)	89 (2.1)	82 (3.3)	70 (4.3)	14 (2.9)	69 (4.0)	4 (1.4)

Background data provided by teachers.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data is available for 70-84% of pupils.

Note: The International Average does not include the results from the Canadian provinces.

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

question are summarised in Figure 6.6 in terms of the proportion of pupils whose teachers reported using particular resources at least weekly.

Results indicate that teachers make use of a wide range of different materials over a period of time. The main resource, used 'every day or almost every day' by teachers of more than half of pupils in England, was 'a variety of children's books'. This proportion is much higher than the international average (17 per cent) but is similar to that seen for England in 2001. In 2001, Sweden had the highest incidence of daily use of a variety of children's books, with England the second highest. In 2006, teachers in England again reported one of the highest daily uses of children's books in the teaching of reading, along with teachers in Iceland, Sweden and the United States.

In contrast, teachers' reported use of other resources in England is more varied. Teachers of nearly two-fifths of pupils reported using text books to teach reading once or twice a week whilst teachers of just over one-quarter of pupils reported daily usage. These results are very different to the international average which indicates that 90 per cent of pupils use text books at least once a week. Interestingly, the teachers in the high-achieving Russian Federation indicated a very high usage of text books, with teachers of 99 per cent of pupils making daily use of them.

The use of reading schemes is more variable. Teachers of one-fifth of pupils in England reported using a reading scheme every day whilst teachers of more than one-third of pupils stated that they never used them. This is in stark contrast to the use of reading schemes in Scotland and New Zealand, where the teachers of nearly all pupils reported using them at least once a week. The frequency of use of reading schemes in England is much closer to that seen in Sweden and the Netherlands. In 2001, teachers were asked how often they used 'text books or a reading scheme', with the two different resources collapsed as one question option, so it is not possible to draw any direct comparisons between these outcomes.

Workbook or work sheet usage on at least a weekly basis is lower in England than the international average. However, the use of computers to aid reading is greater in England than the international average. Teachers of nearly one-third of pupils in England reported making use of computer software for reading teaching at least once a week compared to the international average of just 12 per cent. In 2001, the teachers of just 10 per cent of pupils used computer software at least once a week as a reading teaching resource, indicating a clear growth in computer usage between the two studies. This is further highlighted by the fact that in 2006 England, along with Hong Kong and Singapore, had the highest reported use, at least weekly, of materials drawn from the internet. Teachers of two-fifths of pupils in England reported using these materials at least once a week to support reading teaching, compared with an international average of 11 per cent, whilst in England in 2001 the figure was just 12 per cent.

Cross-curricular teaching is evidenced by the use of materials from other subjects being used to teach reading. Just over three-quarters of pupils were in classes which used materials from other subjects at least once a week, compared to the international average of just over half. These results are very similar to those seen in 2001.

**Figure 6.7: Teachers' use of Literary Texts for Reading Instruction**

Countries	Percentage of pupils whose teachers asked them to read at least weekly				Percentage of pupils whose teachers asked them to read literary texts*			
	Short stories	Longer books with chapters	Poems	Plays	At least weekly		Less than weekly	
					Per cent of pupils	Average literary achievement	Per cent of pupils	Average literary achievement
Austria	83 (2.9)	27 (3.0)	22 (2.9)	1 (0.5)	90 (1.9)	537 (2.2)	10 (1.9)	535 (9.1)
Belgium (Flemish)	57 (4.3)	29 (3.7)	20 (3.1)	0 (0.0)	70 (3.8)	543 (2.0)	30 (3.8)	545 (3.8)
Belgium (French)	59 (3.3)	16 (2.8)	8 (2.1)	2 (1.1)	67 (3.2)	499 (2.9)	33 (3.2)	500 (5.0)
Bulgaria	91 (2.3)	14 (2.8)	75 (3.2)	4 (1.5)	94 (1.9)	543 (4.9)	6 (1.9)	513 (14.4)
Chinese Taipei	61 (4.6)	15 (3.1)	15 (3.1)	1 (0.6)	67 (4.2)	530 (2.9)	33 (4.2)	532 (2.8)
Denmark	76 (3.3)	63 (3.6)	19 (3.3)	1 (0.6)	90 (2.4)	548 (2.8)	10 (2.4)	546 (6.6)
<b>England</b>	<b>55 (4.0)</b>	<b>60 (4.3)</b>	<b>20 (3.4)</b>	<b>6 (2.1)</b>	<b>75 (3.8)</b>	<b>542 (3.5)</b>	<b>25 (3.8)</b>	<b>537 (6.6)</b>
France	66 (3.6)	69 (3.2)	35 (3.6)	11 (2.4)	91 (2.2)	516 (2.6)	9 (2.2)	518 (4.7)
Germany	60 (3.4)	18 (3.0)	13 (2.8)	1 (0.4)	69 (3.4)	549 (2.5)	31 (3.4)	550 (3.2)
Hong Kong SAR	42 (4.0)	5 (1.9)	15 (3.3)	2 (1.1)	50 (4.1)	561 (3.6)	50 (4.1)	555 (3.4)
Hungary	92 (1.8)	29 (3.6)	55 (4.1)	2 (1.1)	97 (1.0)	555 (3.1)	3 (1.0)	583 (8.7)
Iceland	63 (0.4)	75 (0.3)	34 (0.4)	2 (0.1)	91 (0.2)	515 (1.6)	9 (0.2)	500 (5.9)
Italy	95 (1.4)	32 (3.8)	39 (3.9)	6 (1.7)	98 (1.0)	551 (3.3)	2 (1.0)	~ ~
Kuwait	20 (3.6)	5 (1.9)	41 (4.3)	13 (2.7)	57 (4.7)	341 (5.7)	43 (4.7)	341 (7.4)
Latvia	83 (2.8)	26 (3.1)	29 (3.2)	3 (1.3)	88 (2.4)	542 (2.4)	12 (2.4)	526 (5.6)
Lithuania	83 (2.7)	33 (3.0)	57 (3.5)	13 (2.3)	92 (2.0)	542 (2.1)	8 (2.0)	545 (6.2)
Luxembourg	68 (0.2)	21 (0.2)	4 (0.1)	3 (0.0)	77 (0.2)	556 (1.3)	23 (0.2)	552 (1.8)
Netherlands	60 (4.4)	85 (2.6)	4 (1.5)	1 (0.8)	91 (2.1)	544 (2.0)	9 (2.1)	538 (5.5)
New Zealand	55 (3.0)	66 (3.0)	43 (3.0)	24 (3.0)	85 (2.1)	528 (2.5)	15 (2.1)	539 (5.5)
Norway	73 (3.5)	83 (3.4)	25 (3.9)	2 (1.3)	95 (1.6)	501 (2.7)	5 (1.6)	496 (8.8)
Poland	84 (3.5)	24 (3.3)	85 (2.8)	3 (1.1)	97 (1.7)	524 (2.6)	3 (1.7)	511 (19.7)
Romania	88 (2.4)	21 (3.3)	68 (3.7)	9 (2.3)	93 (1.8)	493 (5.1)	7 (1.8)	504 (13.0)
Russian Federation	80 (2.1)	68 (3.7)	68 (3.8)	10 (2.1)	95 (1.7)	561 (3.4)	5 (1.7)	557 (10.8)
Scotland	63 (4.4)	77 (4.2)	14 (2.5)	2 (1.1)	89 (2.8)	526 (2.6)	11 (2.8)	524 (10.8)
Singapore	76 (2.4)	27 (2.4)	27 (2.2)	8 (1.4)	82 (1.8)	551 (3.3)	18 (1.8)	552 (6.9)
Slovak Republic	83 (2.7)	28 (2.7)	67 (3.3)	3 (1.2)	93 (1.5)	534 (2.9)	7 (1.5)	528 (12.7)
Slovenia	83 (2.5)	7 (1.7)	17 (2.7)	10 (2.2)	85 (2.4)	520 (2.2)	15 (2.4)	514 (4.5)
Spain	86 (2.8)	51 (4.4)	26 (3.4)	6 (1.9)	96 (1.5)	516 (2.8)	4 (1.5)	526 (16.6)
Sweden	51 (4.3)	97 (1.1)	3 (1.1)	2 (1.0)	99 (0.3)	546 (2.2)	1 (0.3)	~ ~
United States	70 (4.0)	74 (3.8)	20 (3.2)	3 (1.1)	92 (2.4)	540 (3.8)	8 (2.4)	534 (6.7)
International Average	70 (0.5)	36 (0.5)	36 (0.5)	8 (0.3)	84 (0.4)	501 (0.6)	16 (0.4)	493 (1.8)
<i>Canada, Alberta</i>	71 (3.9)	81 (3.0)	26 (3.5)	6 (1.6)	92 (2.4)	563 (2.6)	8 (2.4)	539 (12.6)
<i>Canada, British Columbia</i>	r 74 (3.7)	r 84 (3.4)	r 24 (3.8)	r 9 (2.7)	r 96 (1.5)	560 (3.2)	4 (1.5)	561 (11.3)
<i>Canada, Nova Scotia</i>	67 (3.9)	87 (2.2)	31 (3.5)	4 (1.5)	96 (1.3)	544 (2.7)	4 (1.3)	520 (12.3)
<i>Canada, Ontario</i>	66 (4.5)	75 (4.5)	13 (2.7)	10 (2.7)	87 (3.9)	557 (2.9)	13 (3.9)	540 (12.7)
<i>Canada, Quebec</i>	51 (4.5)	31 (3.8)	7 (2.0)	3 (1.3)	67 (3.9)	530 (3.3)	33 (3.9)	533 (4.9)

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

\*Based on teachers' responses to having pupils read the following types of text when being taught reading and/or doing reading activities: short stories, longer books with chapters, poems and plays.

Response options Every day or almost every day and Once or twice a week were combined as At least weekly. Response options Once or twice a month and Never or almost never were combined as Less than weekly.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data is available for 70-84% of pupils.

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

Note: The International Average does not include the results from the Canadian provinces.

### Other research evidence

In 2003, the Government launched the *Excellence and Enjoyment* strategy. This stated that part of the next steps to support literacy was 'further promoting the use of ICT as a tool for improving the teaching of literacy' (p. 28). It suggested that the review of the National Literacy Strategy carried out by Ofsted in 2002 supported this move, stating that 'the use of information and communication technology (ICT) in the teaching of literacy continues to improve steadily' (Ofsted, 2002) although the report went on to say that it 'remains limited in around one in four schools' (2002, p. 22). Interestingly, in contrast to the results of the PIRLS survey, Ofsted found that where ICT work was related to literacy 'it is generally concerned with research and non-chronological report writing' and that 'the use of computers for literacy by pupils in classrooms is mostly confined to individual work on phonics and spelling programs ...' (2002, p. 23). It should be remembered that this report was compiled in 2002 and, as technology moves very quickly, it is possible that many more changes, including the development and provision of suitable software, have occurred in the intervening years.

### Reading matter

Teachers were asked to indicate how often pupils are exposed to different types of text in class and the data is summarised in Figure 6.7.

The data shows that pupils in England have a very varied reading diet in school, although teachers tended to report rather less use of literary texts (short stories and longer narratives, poems and plays) than the average internationally and than in England in 2001. In 2006, teachers of 75 per cent of pupils reported using literary texts in the teaching of reading at least weekly; in 2001 this figure was 80 per cent. There were some slight differences in the composition of the index used in 2001 but several of the items common to both 2001 and 2006 show a fall in the proportion of pupils in England taught by teachers who use them every day. In 2001, teachers of 27 per cent of pupils reported using longer books with chapters on a daily basis compared with teachers of 20 per cent of pupils in 2006; the shift in 2006 appeared to be towards weekly use (teachers of 60 per cent of pupils reporting at least weekly use, compared to 56 per cent in 2001). Similarly, teachers of 29 per cent of pupils reported having the pupils read poems at least weekly in 2001; the equivalent figure in 2006 was 20 per cent.

In 2006, as in 2001, teachers in England reported rather less use of informational texts to support the teaching of reading with just over half (55 per cent) making at least weekly use of them. The frequency of use in England was similar to that in the Netherlands, as it was in 2001, but was less than that reported in several English-speaking countries (New Zealand, Scotland and the United States) and some European countries (for example, Germany, Italy and Sweden).

### Other resources used in the teaching of reading

Teachers were asked to indicate how often pupils read stories or texts on the computer. In 2001, just over one-fifth of pupils did so once or twice a week – a figure which had risen to nearly one-third by 2006. A further five per cent of pupils had teachers who reported that reading on-screen was a daily activity in 2006. Figure 6.8 shows a large rise in the availability of computers with internet access.

### Libraries and books in school

Over four-fifths of pupils (84 per cent) in England have a library or reading corner available in the classroom, which is somewhat higher than the international average (69 per cent) but not as high as the proportions in New Zealand, Scotland and the United States, which are all over 90 per cent. Teachers were questioned as to how many different book titles were available in the reading corner/library, and England had one of the highest mean numbers – an average of 143 different titles per classroom. This compared very favourably with the international average (71 different titles). The Canadian province of Nova Scotia reported the highest mean with an average of 274 different titles per classroom. There is a marked difference between the average number of different titles available in class between 2001 and 2006, however, with England seeing a decrease from 259. In contrast, the mean number of different titles available in class in Scotland and New Zealand has remained fairly static between the two studies. Over three-quarters of pupils (77 per cent) in England make regular, at least weekly, use of the classroom library which is considerably higher than the international average (59 per cent).

In addition to class libraries, teachers were asked about taking pupils to other libraries. This may have been interpreted as a library within the school or a public library. Teachers of more than one-fifth of pupils (22 per cent) reported that they ‘never or almost never’ used libraries beyond that in the classroom, however 62 per cent reported that this was an activity carried out at least once a week.

### Reading skills taught

Teachers were asked to consider the range of reading skills that are taught and the frequency with which each skill is covered in class. Although many basic reading skills may be covered in the early years of a pupil’s career, teachers reported that these skills are developed further in year 5 and are supplemented with other strategies. In common with the international average, in England teachers of the vast majority of pupils reported teaching new vocabulary through the texts they were reading, but systematic teaching of new vocabulary was not as common. Whilst the international average indicates that teachers of nearly half of pupils taught new vocabulary on a daily basis, teachers of less than one-fifth of pupils in England reported doing this, although teachers of just over half of all pupils did undertake this once or twice a week. The percentage of pupils being taught new vocabulary on a daily basis in Denmark, Iceland, Indonesia, the Netherlands, Norway and Sweden was lower than in England. However, in terms of proportions of pupils being taught new vocabulary at least once a week, all of these countries, with the exception of

**Figure 6.8: Headteachers' Reports of Availability of Computers for Teaching Purposes with Trends**

Countries	Percentage of pupils by number of fourth-grade* pupils per computer										
	Fewer than 5 pupils		5-10 pupils		11-20 pupils		More than 20 pupils		Pupils in schools without any computers		
	2006	Difference in per cent from 2001	2006	Difference in per cent from 2001	2006	Difference in per cent from 2001	2006	Difference in per cent from 2001	2006	Difference in per cent from 2001	
Denmark	r	97 (1.5)	◇ ◇	2 (1.2)	◇ ◇	0 (0.0)	◇ ◇	1 (0.0)	◇ ◇	1 (0.7)	◇ ◇
<b>England</b>	<b>r</b>	<b>94 (1.8)</b>	<b>35 (5.0) ↑</b>	<b>5 (1.6)</b>	<b>-19 (4.1) ↓</b>	<b>2 (0.9)</b>	<b>-11 (3.7) ↓</b>	<b>0 (0.0)</b>	<b>-5 (2.0) ↓</b>	<b>0 (0.0)</b>	<b>0 (0.0)</b>
Iceland	r	92 (0.3)	15 (0.4) ↑	5 (0.2)	-4 (0.3) ↓	1 (0.2)	-3 (0.2) ↓	2 (0.0)	-2 (0.1) ↓	0 (0.0)	-5 (0.2) ↓
Scotland	s	89 (3.6)	46 (6.2) ↑	6 (2.7)	-12 (4.8) ↓	5 (2.4)	-20 (5.2) ↓	0 (0.0)	-14 (3.1) ↓	0 (0.0)	0 (0.0)
United States		84 (3.2)	20 (4.9) ↑	11 (3.1)	-10 (4.3) ↓	4 (1.6)	-7 (3.0) ↓	0 (0.0)	-3 (1.5) ↓	1 (0.4)	1 (0.4)
Hong Kong SAR		82 (3.6)	27 (5.9) ↑	14 (3.1)	-17 (5.0) ↓	1 (1.0)	-1 (1.6)	3 (1.6)	-1 (2.3)	0 (0.0)	-9 (2.6) ↓
Singapore		81 (0.0)	14 (4.6) ↑	16 (0.0)	-9 (4.1) ↓	3 (0.0)	-2 (2.1)	0 (0.0)	-2 (1.2) ↓	0 (0.0)	0 (0.0)
Norway		79 (3.9)	21 (6.5) ↑	17 (3.5)	-3 (5.5)	0 (0.0)	-14 (3.6) ↓	2 (1.4)	-2 (2.5)	1 (0.1)	-2 (1.7)
Spain		79 (2.9)	◇ ◇	15 (2.7)	◇ ◇	3 (1.4)	◇ ◇	1 (0.7)	◇ ◇	3 (1.3)	◇ ◇
New Zealand	r	79 (2.9)	39 (5.4) ↑	16 (2.6)	-23 (5.1) ↓	5 (1.4)	-15 (4.1) ↓	1 (0.6)	-1 (1.2)	0 (0.0)	0 (0.0)
Slovak Republic	r	75 (3.6)	72 (3.8) ↑	23 (3.6)	6 (5.2)	1 (0.7)	-10 (3.1) ↓	2 (1.0)	-2 (1.9)	0 (0.0)	-66 (4.3) ↓
Slovenia		72 (4.3)	29 (5.7) ↑	14 (3.0)	-25 (5.1) ↓	7 (2.4)	5 (2.6) ↑	7 (2.1)	3 (2.7)	1 (0.7)	-13 (3.0) ↓
Netherlands	r	63 (4.5)	24 (6.7) ↑	26 (4.5)	-12 (7.0)	10 (3.1)	-10 (5.2) ↓	1 (0.0)	-3 (2.0)	1 (0.1)	1 (0.1)
Bulgaria	r	61 (3.7)	56 (4.2) ↑	29 (3.9)	18 (4.9) ↑	3 (1.5)	-10 (3.3) ↓	3 (1.0)	-7 (3.0) ↓	4 (1.6)	-58 (5.0) ↓
Belgium (Flemish)		61 (4.8)	◇ ◇	26 (4.4)	◇ ◇	11 (3.0)	◇ ◇	2 (1.1)	◇ ◇	0 (0.0)	◇ ◇
France		59 (5.0)	29 (6.6) ↑	26 (4.7)	-3 (6.5)	6 (2.3)	-7 (4.4)	4 (1.9)	-10 (4.1) ↓	5 (2.1)	-10 (4.0) ↓
Hungary		57 (4.3)	25 (5.7) ↑	19 (3.9)	-4 (5.2)	3 (1.3)	2 (1.7)	4 (1.6)	1 (2.2)	17 (3.5)	-23 (5.3) ↓
Belgium (French)	r	48 (4.6)	◇ ◇	30 (4.1)	◇ ◇	5 (2.1)	◇ ◇	6 (2.2)	◇ ◇	11 (3.0)	◇ ◇
Sweden		46 (4.9)	15 (6.5) ↑	39 (5.1)	4 (7.0)	11 (3.0)	-18 (5.5) ↓	2 (1.0)	-3 (2.4)	2 (1.1)	2 (1.1)
Lithuania	r	43 (4.3)	19 (5.9) ↑	27 (4.0)	-2 (5.8)	14 (2.9)	0 (4.4)	8 (2.5)	2 (3.4)	9 (2.3)	-18 (4.9) ↓
Italy		42 (4.2)	28 (4.7) ↑	44 (4.3)	13 (5.5) ↑	9 (2.6)	-18 (4.2) ↓	4 (1.8)	-17 (3.3) ↓	1 (0.8)	-7 (1.7) ↓
Latvia	r	42 (3.9)	22 (4.9) ↑	17 (3.1)	-3 (5.1)	3 (1.5)	-3 (3.0)	4 (1.8)	1 (2.4)	34 (4.3)	-18 (6.0) ↓
Romania	r	41 (4.8)	36 (5.3) ↑	28 (3.9)	15 (5.5) ↑	8 (3.3)	-8 (4.8)	2 (1.4)	-13 (3.8) ↓	20 (3.3)	-30 (5.5) ↓
Russian Federation		40 (3.5)	36 (4.2) ↑	28 (2.8)	24 (3.2) ↑	4 (1.5)	3 (1.7)	2 (1.0)	2 (1.0) ↑	26 (3.4)	-65 (4.3) ↓
Germany		39 (3.1)	26 (4.2) ↑	40 (3.5)	17 (5.0) ↑	14 (2.8)	-3 (4.5)	8 (1.8)	-21 (3.9) ↓	1 (0.4)	-19 (3.3) ↓
Chinese Taipei		38 (3.2)	◇ ◇	48 (4.0)	◇ ◇	9 (2.1)	◇ ◇	5 (1.9)	◇ ◇	0 (0.0)	◇ ◇
Poland		35 (4.4)	◇ ◇	24 (3.4)	◇ ◇	12 (2.5)	◇ ◇	7 (2.3)	◇ ◇	22 (4.0)	◇ ◇
Austria		30 (4.2)	◇ ◇	33 (4.0)	◇ ◇	23 (3.9)	◇ ◇	14 (3.2)	◇ ◇	1 (0.6)	◇ ◇
<sup>1</sup> Luxembourg		--	--	--	--	--	--	--	--	--	--
International Average		53 (0.6)		21 (0.5)		6 (0.3)		4 (0.3)		16 (0.4)	
Canada, Alberta	r	100 (0.0)	◇ ◇	0 (0.0)	◇ ◇	0 (0.0)	◇ ◇	0 (0.0)	◇ ◇	0 (0.0)	◇ ◇
Canada, British Columbia	r	95 (2.0)	◇ ◇	4 (1.7)	◇ ◇	1 (0.0)	◇ ◇	0 (0.0)	◇ ◇	1 (0.7)	◇ ◇
Canada, Ontario	r	95 (2.4)	13 (5.0) ↑	4 (2.2)	-7 (4.2)	1 (0.1)	-4 (2.2)	0 (0.0)	-2 (0.1) ↓	0 (0.0)	0 (0.0)
Canada, Quebec	r	80 (4.5)	15 (6.4) ↑	17 (4.2)	-4 (5.6)	2 (1.0)	-10 (3.6) ↓	1 (0.1)	0 (1.1)	0 (0.0)	-1 (0.8)
Canada, Nova Scotia		74 (3.7)	◇ ◇	21 (3.2)	◇ ◇	5 (2.0)	◇ ◇	0 (0.0)	◇ ◇	0 (0.0)	◇ ◇

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

↑ Per cent in 2006 significantly higher      ↓ Per cent in 2006 significantly lower

Background data provided by schools.

\* Fourth grade in most countries.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data is available for 70-84% of pupils. An "s" indicates data is available for 50-69% of pupils.

A dash (-) indicates comparable data are not available.

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

<sup>1</sup> Primary schools in Luxembourg do not have headteachers.

Iceland and Denmark (where it was lower) and with the addition of Scotland, are about the same as in England. There was no clear association between the frequency of teaching new vocabulary and achievement within England or internationally. In terms of being helped to understand new vocabulary in texts they are reading (contextualised vocabulary), in England more than half of all pupils were being taught in this way on a daily basis, with just over 95 per cent of pupils being helped to understand new vocabulary at least once a week. This is similar to the international picture and especially to the teaching patterns reported in Hong Kong, New Zealand, Scotland, Singapore, Sweden and the Canadian provinces.

Interestingly, teachers of nearly three-quarters of pupils in England reported teaching decoding strategies at least once a week, compared to the international average of less than 60 per cent. Similarly, it continues to be the case that greater emphasis is placed on teaching or modelling different reading strategies by teachers in England than is demonstrated by the international average, which is probably as a result of the pedagogy espoused by the Primary National Strategy. Nearly two-thirds of pupils were taught a range of reading skills at least once a week, unchanged since 2001, compared to the international average of 48 per cent.

### **Developing comprehension skills**

Methods of assessing pupils' comprehension of a text are various, and teachers were asked to indicate the frequency with which different methods were employed.

'Literacy Hour' practices, such as the use of modelling, and oral questioning being more prevalent than written questioning, are reflected in the findings. The explicit teaching of various reading strategies is evident in England with New Zealand, Scotland and the United States showing a similar pattern.

Providing written responses to comprehension questions was done once or twice a week by just over half of pupils in England, which is comparable with the international average. Just seven per cent of pupils provided written responses to reading comprehension questions on a daily basis, the second lowest proportion of pupils after Belgium (French) (six per cent). Teachers in Scotland and Sweden also reported spending relatively small proportions of time on this method of teaching. In contrast, oral questioning to ascertain comprehension was more commonplace with more than half of pupils in England doing this type of activity daily and a further 42 per cent doing oral questioning once or twice a week – this may be as a result of the emphasis on oral questioning in the framework for teaching. The development of prediction skills in order to work out what will happen next in a text is a routine feature of reading teaching in England. Teachers of a third of pupils reported teaching these skills every day and just over half of pupils are taught to make predictions about the texts they are reading once or twice a week. Both of these proportions are higher than the international averages (20 per cent and 41 per cent respectively). Other specific reading skills of 'making generalisations and inferences based on what has been read' and 'commenting on the style and structure of the text' were also given high prominence in classrooms in England. Learning the skills and strategies



for making generalisations and inferences was done on an ‘at least weekly’ basis by nearly 90 per cent of pupils, compared with the international average of 71 per cent. Teachers indicated that learning the skills to describe the style or structure of a text was also covered on a weekly basis by nearly three-quarters of pupils in England, with nearly a quarter of pupils doing this activity once or twice a month.

One change that has occurred between 2001 and 2006 is the increased use of pupil talk. In 2001, two-thirds of teachers reported that pupils talked with each other at least once a week about what they had read, whilst in 2006 this figure had risen to over 80 per cent. This may reflect the impact of assessment for learning and the growing practice of response partners.

### Other research evidence

Research by Allan *et al.* (2005) highlighted the value of pupil talk when discussing what has been read. Their small-scale study indicated that there are many cognitive benefits of talk, stating that it allowed pupils to ‘go over the story ... (and) achieve a fuller reading of the text’ and that discussion allowed pupils to ‘bring up anything that puzzled them and ... emerge with a more confident grasp of the text’s meanings’ (p. 17). Allan *et al.* further reported that pupil talk increased pleasure in reading because they enjoyed ‘recalling events and favourite moments’ and ‘gaining access to a friend’s *different* response’ (p. 18).

The value of sharing book talk is also highlighted in the Ofsted review of inspection evidence of English over a five year period in which it reported that schools ‘might benefit from providing more opportunities for pupils to talk about and share books in small groups’ (Ofsted, 2005, p. 24).

### Reading aloud and reading silently

One question in their questionnaire asked teachers to consider how often they carried out certain reading practices, notably reading aloud (either by the teacher or the pupil) and asking pupils to read silently to themselves. There was very little change in response to these questions between 2001 and 2006. A large proportion of pupils (70 per cent) were read to aloud on a daily basis, 12 per cent more than the international average. Teachers of almost all pupils in the sample from England indicated that they read aloud to their class at least weekly, perhaps indicating the importance placed on this practice, as evidenced by its inclusion in the Literacy Strategy framework for teaching. In the framework, pupils are also encouraged to read aloud to the class. Teachers of 87 per cent of pupils reported that pupils read aloud to the rest of the class at least once a week. The majority of teachers further indicated that pupils were encouraged to read along silently whilst one pupil read aloud.

Evidence from PIRLS Teacher questionnaire data suggests that teachers in England value the practice of silent reading in year 5. It occurred at least once a week for more than 95 per cent of pupils in England. Nearly two-thirds of pupils read silently in class on a daily basis – which is more frequently than the international average (59 per cent). There is a

positive association between achievement and the frequency of reading silently, with those pupils reading silently every day scoring more highly on average than pupils who do so less frequently.

Within this series of questions about reading activities, teachers were asked to consider how often pupils were allowed to read books of their own choosing. In England, teachers of 64 per cent of pupils indicated that pupils read their own choice of book every day, unchanged since 2001, and considerably more than the international average of 28 per cent. There was no clear association with achievement within England or internationally.

Further analysis of these two pieces of data, relating to silent reading and reading books of pupils' own choice, is interesting. On a daily basis, teachers of two-thirds of pupils asked them to read silently on their own every day or almost every day, and teachers of the same proportion of pupils also gave them the chance to read a book of their own choosing every day. Analysis of these responses further indicates that just over half of all teachers allowed pupils to do both with 54 per cent of teachers giving pupils the opportunity, one might reasonably deduce, to read a book of their own choosing silently every day.

### Other research evidence

Benefits of reading aloud to children are reported by Collins (2005) as:

- giving children a chance to experience texts above their own individual reading ability
- allowing children to hear a teacher model reading for them
- allowing for discussion to occur and the meaning of the text to be explored
- increasing children's acquisition of new vocabulary.

Inspection evidence from Ofsted (2005) also highlighted the importance of an emphasis on spoken language, with the experience of being read to being prevalent in 'many of the most effective schools' (2005, p. 21). However, they also reported that teachers are less certain about some reading activities – such as sharing and reading stories, allowing time for silent independent reading and reading novels to the whole class – and whether or not they are still considered good practice.

### Guided reading

A question was included in the Teacher questionnaire for England that was specifically concerned with guided reading. Teachers were asked about their use of targeted groups for guided reading – a strategy promoted in the Literacy Hour. Responses indicated that teachers of half of all pupils did guided reading on a daily basis and a further third of pupils had guided group reading sessions at least once a week.

### Other research evidence

As part of its review of the first four years of the National Literacy Strategy (1998–2002), Ofsted (2002) discovered that the implementation of guided reading was variable and recommended that there should be further guidance for all teachers on teaching guided reading. It was reported that when the strategy was introduced, the teaching of guided reading was ‘often poor’ (p. 11) suggesting that this was because many teachers did not fully understand what their role should be.

The review highlighted that ‘guided reading ... is the best opportunity for most pupils to improve their reading through direct teaching which focuses on their individual needs’ and they did report that improvements were seen in the following years. Ofsted indicated that the ‘teaching of comprehension in the successful guided reading sessions is good’ (p. 11), further explaining that teachers were ‘extend(ing) pupils’ vocabulary well and mak(ing) good use of opportunities to reinforce decoding skills when pupils encounter difficult words’ (p. 12).

### Homework

Both teachers and pupils were asked in their questionnaires about reading homework. Just over one quarter of pupils (27 per cent) indicated that they were given reading homework at least three times a week whilst teachers of two-fifths of pupils indicated that they set reading homework at least three times a week. These proportions are somewhat different to the international picture in which 55 per cent of pupils (and teachers of 56 per cent of pupils) reported having reading homework at least three times a week.

There was a closer agreement between pupils’ and teachers’ reporting of ‘never’ having reading homework. Twelve per cent of pupils reported that they never had reading homework whilst teachers of 11 per cent of pupils indicated that they did not assign reading for homework, although it is important to bear in mind that these may not be the same pupils and teachers. The international average indicates that reading homework is ‘never’ set for eight per cent of pupils. Since the previous study, there has been an increase in the proportion of teachers not setting reading homework. In England in 2001, teachers of just four per cent of pupils indicated that they did not set reading homework and seven per cent of pupils reported the same information.

According to the Pupil questionnaires, the proportion of pupils being given reading homework every day has fallen from 26 per cent in 2001 to 17 per cent in 2006. According to data from the Teacher questionnaire, however, the decrease is just two percentage points (from 27 to 25 per cent).

Teachers were further asked how long they expected pupils to spend on any reading homework that they set. Teachers of half of the pupils indicated that they expected pupils to spend between 16 and 30 minutes on reading whilst 28 per cent expected pupils to spend 15 minutes or less. Only a small proportion (11 per cent) expected pupils to spend more than half an hour on reading homework.

Pupils were also asked how long they actually spent on reading homework and the contrast in results is interesting. Approximately half of pupils indicated that they spent half an hour or less, which tallies well with teacher expectations. However, 28 per cent of pupils indicated that they spent between half an hour and an hour on reading homework and 11 per cent of pupils reported spending in excess of an hour on reading at home. The association with achievement is also interesting. Pupils spending more than an hour on reading homework had the lowest average achievement score, perhaps indicating that it is the struggling readers who spend the longest time on reading. Pupils spending between 30 and 60 minutes on reading, however, had the highest mean score.

One-fifth of pupils reported that they never needed help with their reading homework, but for those pupils requiring assistance, the majority (53 per cent) reported asking for help from parents or grandparents. Just less than ten per cent sought help from siblings and about four per cent asked for help from teachers or tutors.

### Book talk

Questions were included in the Teacher and Pupil questionnaires used in England that were specifically concerned with discussion between teacher and pupil about what has been read. Teachers were asked to indicate how often they asked pupils to talk to them about their reading, whilst pupils were asked how often they talked to their teacher or another adult about what they had read (Figure 6.9). Whilst comparison of the outcomes is interesting, it is worth considering that teachers may report doing something with a group of pupils whilst pupils may not report it happening if it does not directly involve them. This may have led to the disparity of responses.

**Figure 6.9 Teachers' and Pupils' Reports of Reading Discussions**

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
TQ – After pupils have read something, how often do you ask them to talk to you about their reading?	25%	48%	23%	4%
PQ – After you have read something in class, how often do you talk to your teacher or another adult about what you have read?	12%	27%	27%	34%

*Data: Teacher questionnaire and Pupil questionnaire*

Whilst teachers of nearly three-quarters of pupils felt that they spoke to pupils about their reading at least once a week, less than half of the pupils were of the same opinion. Perhaps most interesting is the difference in the pupils' perception of 'never or almost never' being spoken to about what has been read, with more than a third of pupils reporting that they rarely spoke to an adult about what they read in class. There is no clear association between the frequency of reading discussions and achievement.

### Teacher–Pupil response agreement

A number of questions were identified which appear in the Pupil questionnaire (PQ) and the Teacher questionnaire (TQ) and which asked, essentially, for the same information (for example, PQ: In school how often do these things happen – I read aloud to the whole class? / TQ: When you teach reading with the pupils, how often do you do the following – Ask pupils to read aloud to the whole class?).

An analysis was carried out to ascertain the level of agreement between what teachers said about the activities carried out in class and what pupils said they did in class. As might be anticipated, there was generally a low correlation between many of these responses. As discussed above, this is most likely to be due to the fact that the perceptions of these two groups of people are very different: teachers have an overview of the whole class and what they do over a period of time, whilst pupils may be more concerned with their own involvement in a particular activity and within a particular timescale: they may not, for example, consider the involvement of their peers. The teacher may ask *one* pupil to read aloud to class every day, but if it is not that particular pupil completing the questionnaire then the pupil information may be different from that provided by the teacher. In practice, just two per cent of pupils indicated that they read aloud to the whole class every day compared with nearly half of all teachers reporting that they asked pupils to read aloud to the class every day.

Another possible reason for this apparent mismatch of data between pupil and teacher views may be due to pupil perceptions of when things are taught, perhaps only considering that reading is done as part of the Literacy Hour even though the teacher may indicate that reading occurs at different points in the school day. Possible evidence of this is shown through responses to the questions asking how often pupils are asked to answer questions verbally about what they have read. Just 11 per cent of pupils reported this as a daily activity compared with more than half of teachers indicating that they use oral questioning on a daily basis.



## 7 The School Climate

*The questionnaires provided information about children's views of school, with the increasing recognition of the importance of finding out what children think about various aspects of their school lives. They also covered teachers' and headteachers' perceptions of the teaching and learning environment of the school.*

- *Almost three-quarters of pupils in PIRLS in England reported that they liked being in school and girls were generally more positive than boys. They were, though, less positive overall than their peers in most other countries.*
- *Several questions were asked about anti-social behaviour such as bullying and theft. Based on the children's responses, it seems that the frequency of most types of anti-social behaviour is at about the international average level, with the exception of injury in school, which is more frequent.*
- *Headteachers in England were the most positive in their perception of the safety of their schools. They were also very positive about the overall ethos of their schools.*
- *Teachers in PIRLS in England reported a level of job satisfaction that was around the international average, with teachers of 70 per cent of the pupils indicating that they were very satisfied with their current teaching post.*

**Figure 7.1: Index of Pupil Perception of Safety in School**

Countries	High pupil safety in school		Medium pupil safety in school		Low pupil safety in school	
	Per cent of pupils	Average Achievement	Per cent of pupils	Average Achievement	Per cent of pupils	Average Achievement
Norway	72 (1.4)	505 (2.1)	27 (1.3)	488 (3.8)	1 (0.3)	~ ~
Sweden	70 (1.4)	558 (2.4)	29 (1.3)	533 (3.2)	2 (0.3)	~ ~
Denmark	68 (1.5)	553 (2.4)	31 (1.4)	535 (3.3)	1 (0.2)	~ ~
Bulgaria	65 (1.8)	558 (4.4)	34 (1.7)	531 (5.4)	2 (0.3)	~ ~
Poland	65 (1.3)	527 (2.8)	33 (1.2)	508 (3.1)	2 (0.3)	~ ~
Russian Federation	63 (1.5)	569 (4.0)	36 (1.5)	558 (3.5)	1 (0.2)	~ ~
Slovenia	61 (1.5)	528 (2.3)	37 (1.4)	511 (2.5)	2 (0.2)	~ ~
Italy	57 (1.8)	560 (3.4)	42 (1.7)	543 (3.6)	2 (0.2)	~ ~
Romania	54 (2.1)	493 (6.2)	44 (2.0)	490 (5.1)	2 (0.2)	~ ~
Iceland	54 (0.8)	518 (1.7)	42 (0.7)	504 (1.9)	4 (0.3)	504 (7.1)
Germany	51 (1.2)	566 (2.3)	45 (1.1)	540 (2.5)	4 (0.3)	514 (6.5)
Lithuania	49 (1.3)	545 (2.1)	48 (1.3)	529 (2.0)	4 (0.3)	532 (4.5)
Slovak Republic	49 (1.4)	540 (3.6)	47 (1.3)	523 (3.3)	4 (0.4)	523 (5.6)
Austria	48 (1.3)	547 (2.7)	47 (1.0)	531 (2.5)	5 (0.4)	528 (4.5)
United States	48 (1.6)	557 (3.0)	49 (1.4)	528 (3.8)	3 (0.4)	505 (8.6)
Netherlands	46 (1.5)	555 (1.9)	50 (1.2)	542 (2.2)	5 (0.5)	532 (6.0)
Luxembourg	46 (0.7)	567 (1.4)	50 (0.7)	550 (1.5)	4 (0.2)	536 (6.0)
Latvia	45 (1.6)	550 (3.0)	51 (1.5)	536 (2.7)	5 (0.5)	522 (5.3)
Spain	44 (1.5)	522 (2.7)	53 (1.4)	509 (2.8)	3 (0.4)	489 (7.9)
Scotland	43 (1.6)	540 (3.3)	53 (1.4)	519 (3.4)	4 (0.4)	497 (10.2)
Belgium (Flemish)	43 (1.3)	556 (2.0)	52 (1.1)	542 (2.1)	5 (0.5)	521 (5.6)
Hong Kong SAR	42 (1.3)	573 (2.6)	53 (1.2)	558 (2.5)	5 (0.5)	544 (5.7)
Hungary	41 (1.3)	567 (3.5)	54 (1.2)	541 (3.1)	5 (0.4)	537 (6.3)
France	40 (1.6)	534 (2.3)	55 (1.4)	515 (2.4)	5 (0.5)	502 (5.9)
Singapore	38 (0.9)	575 (3.5)	58 (0.8)	549 (2.9)	4 (0.3)	545 (6.3)
New Zealand	37 (1.1)	551 (2.8)	58 (0.9)	523 (2.2)	4 (0.4)	516 (6.9)
<b>England</b>	<b>37 (1.6)</b>	<b>564 (3.7)</b>	<b>58 (1.5)</b>	<b>529 (3.0)</b>	<b>5 (0.4)</b>	<b>504 (6.0)</b>
Belgium (French)	34 (1.2)	512 (3.3)	59 (1.1)	495 (2.7)	6 (0.5)	490 (5.4)
Chinese Taipei	26 (1.3)	551 (3.0)	66 (1.2)	531 (2.0)	8 (0.6)	525 (4.5)
<b>International Average</b>	<b>47 (0.2)</b>	<b>512 (0.7)</b>	<b>50 (0.2)</b>	<b>494 (0.6)</b>	<b>3 (0.1)</b>	<b>487 (1.5)</b>
<i>Canada, British Columbia</i>	50 (1.4)	569 (2.9)	47 (1.3)	551 (3.0)	3 (0.4)	540 (9.1)
<i>Canada, Quebec</i>	49 (1.7)	546 (3.1)	48 (1.5)	526 (3.0)	4 (0.4)	510 (7.9)
<i>Canada, Nova Scotia</i>	46 (1.4)	559 (2.3)	50 (1.2)	534 (2.5)	4 (0.3)	521 (6.3)
<i>Canada, Alberta</i>	45 (1.4)	576 (2.6)	52 (1.3)	551 (2.7)	3 (0.3)	535 (6.7)
<i>Canada, Ontario</i>	39 (1.6)	569 (2.9)	57 (1.4)	550 (2.9)	4 (0.4)	515 (8.9)

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006.

Based on pupils' agreement with the statement "I feel safe when I am at school" and incidents of stealing, bullying and injury happening to the pupil or someone in their class in the last month. High level indicates pupils agree a little or a lot with feeling safe at school, had one or fewer incidents happen to them, and had one or fewer incidents happen to someone in their class in the last month. Low level indicates that pupils disagree a little or a lot with feeling safe at school, had two or more incidents happen to them, and had two or more incidents happen to someone in their class in the last month. Medium level includes all other combinations of responses.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

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

Note: The International Average does not include the results from the Canadian provinces.

## 7.1 Children's feelings about school

A section of the PIRLS Pupil questionnaire focused on pupils' feelings about school. One question asked pupils if they liked being in school. Whilst 70 per cent of pupils in the PIRLS sample for England responded positively to this statement, this was one of the smallest proportions of all participating countries, although greater than in Scotland where it was 65 per cent. There was a significant difference between the responses of boys and girls in England to this question: just 63 per cent of boys were in agreement compared with 78 per cent of girls. It is of some concern that 20 per cent of boys in the sample from England 'disagreed a lot' with the statement, as did nine per cent of girls. On average, these 15 per cent of pupils were the lowest attaining, but overall the relationship with attainment for this particular item is complex. In England and internationally, pupils who 'agreed a little' or 'disagreed a little' with the statement 'I like being in school' tended to have the highest attainment.

Another question asked pupils to agree or disagree with the statement 'I think that teachers in my school care about me.' Eighty-five per cent of the pupils in the sample in England agreed with it, which is around the international average, but again there was a significant difference between the responses of boys and girls with 81 per cent of boys agreeing with the statement and 90 per cent of girls. More positive views were associated with higher achievement.

When asked about their views of support available from their peers, 74 per cent of pupils in England believed that 'children in my school care about each other' and 78 per cent agreed that 'children in my school help each other with their work.' These proportions are broadly in line with the international average. In England, girls perceived significantly greater support than boys.

A group of questions in the Pupil questionnaire looked at pupils' perceptions of safety in school. The data from these was used to produce an index (Figure 7.1).

This shows that fewer children in England perceive school to be a safe place than in most other countries.

Most pupils (84 per cent) in England agreed with the statement 'I feel safe in school', although this included significantly fewer of the boys (81 per cent) than the girls (88 per cent). Overall this proportion is close to the international average. Responses to statements about bullying and theft in school are also close to the international average. When asked whether instances of bullying had occurred in the past month, concerning themselves ('I was bullied by another pupil') or someone else ('someone in my class was bullied by another pupil'), 30 per cent of pupils identified bullying as affecting them directly and 52 per cent as affecting someone in their class (53 per cent of boys and 50 per cent of girls).

Responses to two questions have particularly influenced England's position in the index of pupil perceptions of safety in school. Pupils in England appear to identify being injured by another pupil or someone in their class being injured as a more frequent occurrence than in most other countries. The proportion of pupils in England agreeing that someone in their class had been injured by another pupil (59 per cent) is the second highest in the survey,



after Spain and equal to Trinidad and Tobago, and the proportion agreeing that they had been injured (39 per cent) is among the highest, with Spain the highest at 44 per cent. Perhaps unsurprisingly, boys were significantly more likely to indicate that they themselves had been injured (43 per cent compared to 35 per cent of girls) but there was no significant difference in the responses of the sexes to the proportion of their class being injured.

On average within most countries including England, there was a positive association between school safety and average reading achievement. Internationally, pupils at the high level of the school safety index had average achievement of 512 points, compared to 494 for pupils at the medium level and 487 at the low level. Amongst the comparator group of countries, there is no association between a country's overall achievement on PIRLS and the proportion of pupils who fall into the category of having a 'high perception of school safety'.

Pupils' perceptions of their safety in school in England are in sharp contrast to those of their headteachers (see below).

### Other research evidence

Data concerning 11–15 year-old pupils' feelings about school has been collected by the Health Behaviour in School-Aged Children: WHO Collaborative Cross-National Study (HBSC) and data is available from a survey conducted in 2001/02 (Morgan *et al.*, 2006). Several of the items in the PIRLS questionnaire would be termed indicators of 'school social support' in the HBSC analysis. These include PIRLS items such as 'I think that teachers in my school care about me', 'Children in my school care about each other' and 'Children in my school help each other with their work.' The HBSC study with older students found a clear gender difference in students' perceptions of support from their peers – 72 per cent of girls compared with 54 per cent of boys thought that support was available from their peers. Overall, this perception of support reduced with increased age. PIRLS found a significant gender difference in similar items but not to this extent. Morgan *et al.* (2006) also note the relationship between a perceived low level of support from teachers and parents at school and self-reported health and well-being, particularly happiness.

Bullying in school has been the subject of attention in recent years: the Education and Skills Select Committee held an inquiry into bullying and published its findings in 2007 (G.B. Parliament. House of Commons. Education and Skills Select Committee, 2007). The Report of the Committee recognised the lack of a research base because of schools' reluctance to record incidents of 'bullying', despite a statutory duty to do so. The definition of bullying adopted by the (then) Department for Education and Skills would not necessarily include the same instances of injury as those recorded by pupils in the PIRLS Pupil questionnaire. For example, bullying behaviour as identified by the DfES must be intentionally harmful or intended to cause harm. When asked about incidents in which injury has been sustained, as the PIRLS questionnaire does, pupils were not distinguishing between accidental and intentional injury.

The questions in PIRLS dealing with school safety are fairly simplistic, and there is no questioning intended to reveal pupils' views about how bullying is dealt with in school, for example. However, the data concerning incidence is not too different from that reported to the Select Committee by Michele Elliott, Director of Kidscape (G.B. Parliament. House of Commons. Education and Skills Select Committee, 2007, p. 51).

Some interesting international comparative data has been collected by the HBSC study referred to above. In this international study, students aged 11, 13 and 15 reported frequency of bullying instances (what was meant by the term 'bullying' was defined in the questionnaire). Clear evidence was obtained (in data from England and also Scotland) that bullying decreased with age. In England, whilst one in three students reported having been bullied at least once in the past two months, it was 40 per cent of 11 year-olds, 37 per cent of 13 year-olds and 25 per cent of 15 year-olds (Morgan *et al.*, 2006). There was no significant difference between the sexes in the prevalence of bullying. When international data is considered, England is around the middle of a table of 35 countries in Europe and North America that took part in the survey in terms of reported instances of being bullied at least twice in the past two months (Todd *et al.*, 2004). The figures for England are broadly similar to those of Germany, France and the United States. They are higher than those for Wales, and considerably higher than those reported for Scotland and Ireland.

## 7.2 Headteachers' views

### Perspectives on school safety

Figure 7.2 provides information about headteachers' perspectives on school safety. The items included in this index are related to, but not the same as, those in the Pupil questionnaire discussed above, as the intention was to investigate the extent to which headteachers viewed certain aspects of pupil behaviour as problematic in their particular school.

Headteachers in England were the most positive in the whole study about the safety of pupils in the school environment, with headteachers of 90 per cent of pupils in the most positive category, compared to an international average of 60 per cent. Headteachers in Scotland were also positive about the safety of the school environment, with one of the highest proportions (85 per cent) in the most positive group. In the United States, 77 per cent of school principals were in this group, perhaps belying the impression given by the news media. In all the questions that comprise the index, headteachers in England reported fewer problems than the average internationally. In particular, headteachers of at least three-quarters of pupils reported that cheating, vandalism and theft were 'not a problem' in their schools.

The disparity between headteachers' perspectives and those of pupils must be considered. The questions do have different focuses, with headteachers expected to consider the behaviour of pupils in the school as a whole, whereas the pupils were expected to focus on the frequency of the occurrence of specific incidents in the past month. Nevertheless, when the comparative position is considered, there is a marked disjunction between the perceptions of headteachers and those of their pupils.

### Perspectives on the school climate

A further series of questions looked at the perceptions headteachers have about the climate of the school. These focused on teachers' job satisfaction and expectations of pupils, parental support and pupils' attitudes to school. The data is summarised in an index (Figure 7.3).

**Figure 7.2: Index of Headteachers' Perception of School Safety with Trends**

Countries	High headteacher perception of school safety			Medium headteacher perception of school safety			Low headteacher perception of school safety		
	2006 per cent of pupils	Average Achievement	Difference in per cent from 2001	2006 per cent of pupils	Average Achievement	Difference in per cent from 2001	2006 per cent of pupils	Average Achievement	Difference in per cent from 2001
<b>England</b>	<b>90 (1.9)</b>	<b>547 (3.0)</b>	<b>- -</b>	<b>9 (2.1)</b>	<b>496 (5.6)</b>	<b>- -</b>	<b>1 (0.0)</b>	<b>~ ~</b>	<b>- -</b>
Hong Kong SAR	88 (2.9)	564 (2.4)	-1 (4.4)	11 (2.8)	572 (7.4)	0 (4.3)	1 (0.0)	~ ~	1 (0.0)
Chinese Taipei	85 (3.0)	535 (2.3)	◇ ◇	14 (2.9)	536 (4.3)	◇ ◇	1 (0.0)	~ ~	◇ ◇
Scotland	r 85 (4.1)	531 (3.7)	11 (6.0)	15 (4.1)	517 (10.7)	-11 (6.0)	0 (0.0)	~ ~	0 (0.0)
Belgium (Flemish)	84 (3.4)	547 (2.1)	◇ ◇	16 (3.4)	545 (6.2)	◇ ◇	0 (0.0)	~ ~	◇ ◇
Russian Federation	83 (2.5)	564 (3.7)	-9 (3.2) ↓	17 (2.5)	570 (8.0)	10 (3.1) ↑	0 (0.0)	~ ~	-1 (0.6)
Spain	79 (3.2)	517 (2.6)	◇ ◇	17 (2.9)	500 (7.0)	◇ ◇	5 (1.7)	492 (21.3)	◇ ◇
Singapore	77 (0.0)	558 (3.0)	-7 (3.3) ↓	23 (0.0)	559 (7.4)	7 (3.3) ↑	0 (0.0)	~ ~	0 (0.0)
New Zealand	77 (2.8)	541 (2.4)	12 (4.8) ↑	23 (2.9)	507 (7.1)	-11 (4.8) ↓	1 (0.5)	~ ~	0 (0.5)
United States	77 (3.7)	545 (3.7)	6 (5.4)	22 (3.0)	525 (5.7)	-6 (5.2)	1 (0.0)	~ ~	1 (0.0)
Italy	76 (3.6)	553 (3.1)	13 (5.3) ↑	14 (3.0)	556 (10.1)	-11 (4.6) ↓	11 (2.2)	535 (10.6)	-2 (3.1)
France	72 (3.5)	529 (2.5)	-2 (5.3)	27 (3.5)	505 (5.2)	1 (5.4)	2 (1.1)	~ ~	0 (1.6)
Denmark	71 (3.8)	549 (2.8)	◇ ◇	29 (3.8)	543 (4.2)	◇ ◇	1 (0.0)	~ ~	◇ ◇
Austria	67 (3.7)	541 (2.8)	◇ ◇	31 (3.7)	533 (4.4)	◇ ◇	2 (1.1)	~ ~	◇ ◇
Belgium (French)	65 (4.7)	507 (3.5)	◇ ◇	30 (4.5)	491 (5.5)	◇ ◇	5 (1.9)	465 (7.4)	◇ ◇
Sweden	64 (3.8)	550 (2.6)	7 (5.9)	35 (3.9)	547 (3.9)	-7 (6.0)	1 (0.8)	~ ~	0 (1.1)
Iceland	r 62 (0.3)	514 (1.6)	9 (0.5) ↑	38 (0.3)	509 (2.2)	-9 (0.5) ↓	0 (0.0)	~ ~	-1 (0.0)
Norway	61 (4.8)	498 (3.2)	1 (6.8)	39 (4.8)	498 (4.2)	0 (6.8)	0 (0.0)	~ ~	-1 (0.7)
Lithuania	57 (4.1)	536 (2.3)	-7 (5.8)	43 (4.0)	538 (3.1)	7 (5.7)	1 (0.0)	~ ~	0 (0.0)
Bulgaria	55 (4.4)	553 (5.9)	-6 (5.8)	40 (4.4)	537 (6.9)	4 (5.8)	5 (1.7)	556 (17.5)	1 (2.4)
Romania	51 (4.3)	486 (7.5)	-36 (5.1) ↓	36 (4.2)	489 (7.4)	24 (4.9) ↑	14 (3.0)	505 (12.9)	12 (3.1) ↑
Germany	50 (3.0)	557 (2.7)	11 (4.8) ↑	49 (3.2)	542 (3.2)	-10 (4.8) ↓	1 (0.7)	~ ~	-1 (1.4)
Slovenia	47 (3.8)	521 (2.8)	-1 (5.3)	51 (3.9)	522 (3.5)	-1 (5.3)	2 (1.2)	~ ~	2 (1.2)
Latvia	47 (3.8)	548 (3.6)	-20 (5.7) ↓	48 (3.9)	534 (3.9)	19 (5.8) ↑	5 (1.9)	538 (9.4)	2 (2.5)
Poland	40 (4.4)	517 (4.1)	◇ ◇	59 (4.3)	521 (3.0)	◇ ◇	1 (0.6)	~ ~	◇ ◇
Slovak Republic	37 (3.9)	531 (6.0)	10 (5.3)	57 (4.1)	530 (3.3)	-9 (5.6)	6 (2.1)	534 (6.6)	-1 (3.2)
Netherlands	r 33 (4.3)	547 (2.9)	10 (6.0)	65 (4.4)	547 (2.3)	-9 (6.0)	1 (0.1)	~ ~	0 (1.2)
Hungary	33 (4.0)	554 (5.9)	-5 (5.4)	66 (4.1)	550 (3.8)	6 (5.5)	1 (0.0)	~ ~	-1 (0.9)
<sup>1</sup> Luxembourg	- -	- -	- -	- -	- -	- -	- -	- -	- -
<b>International Average</b>	<b>60 (0.6)</b>	<b>503 (0.8)</b>		<b>32 (0.6)</b>	<b>495 (1.1)</b>		<b>7 (0.3)</b>	<b>442 (3.0)</b>	
<i>Canada, British Columbia</i>	79 (3.5)	563 (2.7)	◇ ◇	21 (3.4)	542 (6.0)	◇ ◇	1 (0.7)	~ ~	◇ ◇
<i>Canada, Nova Scotia</i>	75 (3.4)	544 (2.6)	◇ ◇	25 (3.4)	536 (4.4)	◇ ◇	0 (0.0)	~ ~	◇ ◇
<i>Canada, Alberta</i>	72 (4.0)	563 (2.7)	◇ ◇	28 (4.0)	554 (5.1)	◇ ◇	0 (0.0)	~ ~	◇ ◇
<i>Canada, Quebec</i>	69 (4.5)	538 (3.4)	14 (7.0) ↑	29 (4.4)	521 (4.6)	-14 (6.9) ↓	2 (1.3)	~ ~	0 (1.8)
<i>Canada, Ontario</i>	68 (5.3)	555 (3.6)	12 (7.2)	31 (5.3)	553 (3.6)	-12 (7.1)	1 (0.0)	~ ~	-1 (1.2)

↑ Per cent in 2006 significantly higher      ↓ Per cent in 2006 significantly lower

Based on headteachers' responses about the degree each was a school problem: classroom disturbances, cheating, swearing, vandalism, theft, intimidation or verbal abuse of other pupils, and physical conflicts among pupils. Average is computed on a 4-point scale; Serious problem = 1, Moderate problem = 2, Minor problem = 3, Not a problem = 4. High level indicates an average of greater than 3 to 4. Medium level indicates an average of 2 to 3. Low level indicates an average of 1 to less than 2.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data is available for 70-84% of pupils. A dash (-) indicates comparable data is not available. A tilde (~) indicates insufficient data to report achievement.

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

<sup>1</sup> Primary schools in Luxembourg do not have headteachers.

Figure 7.3: Index of Headteachers' Perception of School Climate with Trends

Countries	High perception of school climate			Medium perception of school climate			Low perception of school climate		
	2006 per cent of pupils	Average achievement	Difference in per cent from 2001	2006 per cent of pupils	Average achievement	Difference in per cent from 2001	2006 per cent of pupils	Average achievement	Difference in per cent from 2001
Iceland	81 (0.3)	512 (1.5)	5 (0.4) ↑	19 (0.3)	510 (2.7)	-5 (0.4) ↓	0 (0.0)	~ ~	0 (0.0)
Scotland	74 (4.0)	534 (4.0)	11 (6.3)	26 (4.0)	512 (6.0)	-11 (6.3)	0 (0.0)	~ ~	0 (0.0)
New Zealand	71 (3.1)	541 (2.5)	8 (5.1)	29 (3.1)	512 (5.6)	-8 (5.1)	0 (0.0)	~ ~	0 (0.0)
United States	70 (3.9)	549 (3.4)	8 (6.3)	30 (3.9)	520 (5.5)	-7 (6.3)	0 (0.0)	~ ~	-1 (0.7)
<b>England</b>	<b>70 (3.7)</b>	<b>551 (4.1)</b>	<b>- -</b>	<b>30 (3.7)</b>	<b>521 (5.7)</b>	<b>- -</b>	<b>0 (0.0)</b>	<b>~ ~</b>	<b>- -</b>
Chinese Taipei	67 (3.9)	536 (2.5)	◇ ◇	33 (3.9)	533 (3.8)	◇ ◇	0 (0.0)	~ ~	◇ ◇
Singapore	66 (0.0)	562 (3.5)	6 (3.8)	34 (0.0)	552 (5.8)	-6 (3.8)	0 (0.0)	~ ~	0 (0.0)
Belgium (French)	66 (4.7)	506 (3.6)	◇ ◇	34 (4.7)	489 (5.1)	◇ ◇	1 (0.0)	~ ~	◇ ◇
Sweden	59 (4.4)	553 (2.8)	3 (6.8)	41 (4.4)	543 (3.5)	-3 (6.8)	0 (0.0)	~ ~	0 (0.0)
Norway	51 (5.1)	500 (3.6)	-21 (6.2) ↓	49 (5.1)	495 (3.6)	21 (6.2) ↑	0 (0.0)	~ ~	0 (0.0)
Denmark	48 (4.4)	555 (3.3)	◇ ◇	52 (4.4)	539 (3.6)	◇ ◇	0 (0.0)	~ ~	◇ ◇
Austria	45 (4.3)	545 (3.0)	◇ ◇	54 (4.4)	534 (3.2)	◇ ◇	1 (0.0)	~ ~	◇ ◇
Hong Kong SAR	42 (3.8)	566 (3.6)	-5 (6.0)	57 (3.7)	563 (2.8)	4 (5.9)	1 (0.7)	~ ~	1 (0.7)
Spain	32 (4.2)	532 (3.6)	◇ ◇	67 (4.0)	505 (3.5)	◇ ◇	2 (1.3)	~ ~	◇ ◇
Italy	32 (3.8)	561 (5.5)	12 (4.7) ↑	68 (3.8)	547 (3.4)	-12 (4.7) ↓	0 (0.0)	~ ~	-1 (0.0)
France	30 (4.0)	534 (3.5)	-11 (6.3)	69 (4.2)	517 (3.0)	11 (6.4)	1 (1.1)	~ ~	0 (1.6)
Germany	28 (3.1)	557 (3.2)	5 (4.9)	71 (3.1)	546 (2.7)	-6 (4.9)	1 (0.2)	~ ~	1 (0.2)
Slovenia	27 (3.6)	521 (4.4)	3 (5.2)	72 (3.7)	522 (2.4)	-4 (5.2)	1 (0.0)	~ ~	1 (0.0)
Belgium (Flemish)	26 (4.0)	553 (3.1)	◇ ◇	74 (4.0)	544 (2.5)	◇ ◇	0 (0.0)	~ ~	◇ ◇
Netherlands	24 (4.0)	544 (4.2)	3 (5.9)	76 (4.0)	548 (2.4)	-3 (5.9)	0 (0.0)	~ ~	0 (0.0)
Russian Federation	22 (2.8)	577 (5.9)	2 (4.1)	78 (2.8)	561 (3.6)	-2 (4.1)	0 (0.0)	~ ~	0 (0.0)
Romania	21 (3.9)	510 (9.6)	-12 (5.8) ↓	74 (3.9)	491 (4.6)	7 (5.8)	5 (2.2)	382 (16.3)	5 (2.2) ↑
Poland	16 (3.2)	522 (5.9)	◇ ◇	84 (3.2)	519 (2.6)	◇ ◇	0 (0.0)	~ ~	◇ ◇
Bulgaria	15 (2.9)	563 (8.3)	0 (4.1)	80 (3.5)	547 (4.9)	6 (5.0)	5 (1.9)	509 (23.1)	-7 (3.3) ↓
Hungary	11 (2.0)	573 (9.7)	-8 (3.8) ↓	88 (2.3)	549 (3.0)	8 (4.1)	1 (1.4)	~ ~	1 (1.5)
Lithuania	10 (2.6)	547 (6.8)	-2 (3.9)	90 (2.7)	536 (1.7)	2 (4.0)	1 (0.7)	~ ~	1 (0.7)
Latvia	9 (2.4)	562 (8.4)	0 (3.3)	91 (2.5)	539 (2.6)	0 (3.5)	1 (0.7)	~ ~	-1 (1.1)
Slovak Republic	6 (1.8)	548 (9.4)	-4 (3.3)	91 (2.2)	532 (2.9)	4 (3.7)	3 (1.4)	468 (40.8)	1 (1.9)
<sup>1</sup> Luxembourg	- -	- -	- -	- -	- -	- -	- -	- -	- -
International Average	37 (0.6)	513 (1.1)		62 (0.6)	493 (0.7)		1 (0.1)	~ ~	
<i>Canada, Alberta</i>	70 (3.5)	569 (2.6)	◇ ◇	30 (3.5)	540 (5.3)	◇ ◇	0 (0.0)	~ ~	◇ ◇
<i>Canada, Nova Scotia</i>	67 (3.8)	547 (2.5)	◇ ◇	33 (3.8)	531 (4.5)	◇ ◇	0 (0.0)	~ ~	◇ ◇
<i>Canada, British Columbia</i>	62 (4.5)	566 (3.1)	◇ ◇	37 (4.5)	547 (4.7)	◇ ◇	1 (0.0)	~ ~	◇ ◇
<i>Canada, Ontario</i>	50 (5.5)	558 (3.8)	-6 (7.4)	50 (5.5)	550 (3.7)	6 (7.3)	0 (0.0)	~ ~	-1 (0.7)
<i>Canada, Quebec</i>	46 (4.8)	543 (3.9)	-14 (6.3) ↓	54 (4.8)	526 (3.8)	14 (6.3) ↑	0 (0.0)	~ ~	0 (0.1)

↑ Per cent in 2006 significantly higher ↓ Per cent in 2006 significantly lower

Based on headteachers' characterisation in their school: teachers' job satisfaction, teachers' expectations for pupil achievement, parental support for pupil achievement, pupils' regard for school property, pupils' desire to do well in school, and pupils' regard for each other's welfare. Average is computed on a 5-point scale: Very low = 1, Low = 2, Medium = 3, High = 4, and Very High = 5. Responses for each activity were averaged across each headteacher. High level indicates an average of greater than 3.67 to 5. Medium level indicates an average of 2.33 to 3.67. Low level indicates an average of 1 to less than 2.33.

"Pupils' regard for each other's welfare" was added to the index in PIRLS 2006 and is not included in the 2001 index calculations.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data is available for 70-84% of pupils.

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

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

<sup>1</sup> Primary schools in Luxembourg do not have headteachers.

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

Headteachers' perceptions in England, along with their peers in the English-speaking countries of New Zealand, Scotland and the United States, were very positive, with headteachers of at least 70 per cent of pupils in the highest category. Headteachers in general had a positive perception of the climate in which they worked.

When responses to the items relating to job satisfaction from the headteachers' and the teachers' questionnaires are compared, there was broad agreement but with some suggestion that headteachers in England rated the satisfaction of teachers in their schools as slightly higher than the international average whereas data from teachers suggested that their job satisfaction, and the satisfaction they thought their colleagues derived, was similar to the average for all countries.

At the item level, headteachers in England were particularly positive about the motivation of the pupils in their school. In response to an item asking headteachers to rate 'pupils' desire to do well in school', headteachers of 22 per cent of pupils rated this as 'very high' and a further 59 per cent as 'high'. This can be compared with the international averages of 12 per cent and 46 per cent.

A further cluster of items asked headteachers whether human or material resource shortages were impacting on the quality of education they could provide. Figure 7.4 shows that headteachers in England were less likely to experience resource shortages that impacted on the quality of education than headteachers in many other countries.

### 7.3 Teachers' career satisfaction

Teachers responded to a series of questions concerning their feelings about their occupation; these were related to their morale and that of their colleagues and generally explored their perceptions of life as a primary teacher.

Figure 7.5 shows responses to these questions from teachers in England involved in PIRLS. Figure 7.6 is an index comprising these items and sorted in order of the country where teachers were judged to be expressing the most positive views.

Responses from teachers in England broadly mirror the international averages, although individual items show some disparities. Teachers seem to be satisfied with their professional life in general: teachers of 87 per cent of pupils in England agreed with the statement 'I am content with my profession as a teacher' (rounded to 97 per cent internationally). However, this is the lowest of all countries, leaving teachers of 13 per cent of pupils indicating some discontent. The United States has the next highest proportion of pupils whose teachers expressed dissatisfaction at just under 10 per cent. It is also notable that the four per cent of pupils with teachers who 'disagree a lot' with the statement is the highest in the study, with only Scotland showing a similar finding at three per cent. There are 14 countries where more than 98 per cent of pupils were taught by teachers who were content with their profession; these include Austria, the Netherlands, the Russian Federation and Spain.

**Figure 7.4: Index of Availability of School Resources with Trends**

Countries	High availability			Medium availability			Low availability		
	2006 Per cent of pupils	Average achievement	Difference in per cent from 2001	2006 Per cent of pupils	Average achievement	Difference in per cent from 2001	2006 Per cent of pupils	Average achievement	Difference in per cent from 2001
Netherlands	r 93 (2.5)	546 (1.8)	11 (4.6) ↑	7 (2.5)	552 (9.8)	-10 (4.5) ↓	0 (0.0)	~ ~	-1 (0.0)
Scotland	r 88 (3.3)	528 (3.8)	11 (5.3) ↑	11 (3.1)	525 (8.4)	-12 (5.2) ↓	1 (0.0)	~ ~	1 (0.0)
Denmark	86 (2.9)	546 (2.6)	◇ ◇	14 (2.9)	551 (7.3)	◇ ◇	0 (0.0)	~ ~	◇ ◇
Belgium (Flemish)	86 (2.9)	546 (2.2)	◇ ◇	13 (2.9)	554 (4.9)	◇ ◇	2 (1.1)	~ ~	◇ ◇
New Zealand	86 (2.5)	533 (2.2)	1 (4.1)	13 (2.3)	533 (7.8)	-3 (4.0)	2 (0.8)	~ ~	2 (0.8) ↑
Iceland	r 85 (0.3)	513 (1.4)	4 (0.4) ↑	15 (0.3)	502 (3.3)	-3 (0.4) ↓	0 (0.0)	~ ~	-2 (0.0) ↓
Sweden	82 (3.7)	549 (2.8)	5 (5.2)	15 (3.5)	552 (3.8)	-3 (4.8)	3 (1.5)	540 (11.5)	-2 (2.6)
Slovenia	r 81 (3.2)	520 (2.3)	18 (5.7) ↑	16 (2.9)	529 (5.8)	-19 (5.4) ↓	2 (1.3)	~ ~	2 (1.3)
United States	81 (2.8)	543 (4.1)	4 (4.5)	18 (3.1)	520 (6.1)	-5 (4.7)	2 (0.9)	~ ~	1 (1.0)
<b>England</b>	<b>81 (3.8)</b>	<b>543 (3.4)</b>	<b>- -</b>	<b>19 (3.8)</b>	<b>537 (7.9)</b>	<b>- -</b>	<b>0 (0.0)</b>	<b>~ ~</b>	<b>- -</b>
Austria	80 (3.4)	541 (2.3)	◇ ◇	20 (3.4)	531 (6.1)	◇ ◇	0 (0.0)	~ ~	◇ ◇
Norway	79 (3.5)	500 (3.2)	12 (6.0) ↑	21 (3.5)	491 (4.4)	-8 (5.9)	0 (0.0)	~ ~	-4 (1.4) ↓
Singapore	73 (0.0)	560 (3.2)	1 (3.4)	12 (0.0)	553 (11.1)	-6 (2.9) ↓	15 (0.0)	555 (7.3)	5 (2.7)
Poland	72 (4.0)	520 (2.9)	◇ ◇	27 (4.0)	520 (4.2)	◇ ◇	2 (1.0)	~ ~	◇ ◇
Germany	71 (3.2)	553 (2.4)	3 (4.6)	27 (3.2)	535 (4.5)	-4 (4.6)	1 (1.0)	~ ~	1 (1.0)
Hungary	71 (4.4)	553 (4.0)	8 (5.7)	15 (3.2)	539 (6.3)	-13 (4.5) ↓	14 (3.0)	548 (7.7)	5 (3.9)
Slovak Republic	65 (3.8)	532 (3.8)	34 (5.3) ↑	33 (3.8)	530 (5.0)	-32 (5.3) ↓	2 (1.2)	~ ~	-2 (2.0)
Spain	64 (4.3)	518 (2.9)	◇ ◇	25 (3.7)	501 (7.3)	◇ ◇	11 (2.7)	513 (9.0)	◇ ◇
France	60 (4.1)	526 (2.8)	-12 (6.3)	39 (4.1)	516 (4.0)	12 (6.3)	1 (0.0)	~ ~	0 (0.0)
Italy	56 (4.2)	552 (4.1)	20 (5.5) ↑	42 (4.2)	551 (4.2)	-16 (5.7) ↓	3 (1.5)	524 (18.9)	-4 (2.5)
Lithuania	49 (4.5)	538 (2.6)	28 (5.6) ↑	40 (4.1)	537 (3.0)	-25 (5.6) ↓	11 (2.8)	534 (6.7)	-3 (4.0)
Latvia	49 (4.1)	544 (2.7)	-3 (5.7)	34 (3.9)	539 (5.0)	-7 (5.9)	17 (2.9)	540 (7.7)	9 (3.7) ↑
Romania	48 (4.4)	509 (6.1)	19 (6.1) ↑	40 (4.7)	469 (8.6)	-16 (6.4) ↓	12 (2.9)	473 (8.8)	-4 (4.4)
Belgium (French)	42 (4.4)	504 (5.6)	◇ ◇	52 (4.2)	500 (3.9)	◇ ◇	6 (2.4)	480 (8.8)	◇ ◇
Bulgaria	38 (4.6)	547 (8.1)	11 (5.9)	44 (4.9)	546 (6.1)	-4 (6.3)	18 (3.5)	548 (11.0)	-6 (4.7)
Chinese Taipei	30 (3.7)	537 (3.4)	◇ ◇	35 (4.2)	535 (3.6)	◇ ◇	34 (3.8)	535 (3.4)	◇ ◇
Russian Federation	14 (2.7)	582 (6.0)	-9 (3.4) ↓	22 (2.2)	560 (7.0)	-19 (4.4) ↓	64 (3.5)	562 (3.8)	27 (5.1) ↑
Hong Kong SAR	4 (1.6)	564 (11.9)	1 (2.1)	56 (4.1)	565 (3.0)	-12 (5.8) ↓	40 (4.2)	562 (3.9)	11 (6.0)
<sup>1</sup> Luxembourg	- -	- -	- -	- -	- -	- -	- -	- -	- -
International Average	52 (0.5)	505 (1.0)		32 (0.6)	496 (1.1)		15 (0.4)	476 (2.2)	
<i>Canada, British Columbia</i>	82 (3.2)	556 (3.1)	◇ ◇	17 (3.1)	563 (4.9)	◇ ◇	1 (0.0)	~ ~	◇ ◇
<i>Canada, Alberta</i>	78 (3.6)	562 (2.6)	◇ ◇	20 (3.4)	554 (6.4)	◇ ◇	2 (1.2)	~ ~	◇ ◇
<i>Canada, Ontario</i>	76 (5.0)	556 (3.0)	14 (6.7) ↑	20 (4.5)	548 (6.7)	-14 (6.2) ↓	4 (2.3)	562 (14.8)	0 (3.0)
<i>Canada, Nova Scotia</i>	75 (3.5)	542 (2.7)	◇ ◇	23 (3.5)	541 (4.5)	◇ ◇	2 (1.1)	~ ~	◇ ◇
<i>Canada, Quebec</i>	73 (3.9)	537 (3.0)	-11 (5.4) ↓	24 (3.6)	526 (7.2)	8 (5.1)	3 (1.7)	520 (14.4)	3 (1.7)

↑ Per cent in 2006 significantly higher ↓ Per cent in 2006 significantly lower

Based on headteachers' responses to how much the school's capacity to provide instruction is affected by a shortage or inadequacy of the following: qualified teaching staff, teachers with a specialisation in reading, second language teachers, instructional materials, supplies (e.g. paper, pencils), school buildings and grounds, heating/cooling and lighting systems, instructional space (e.g. classrooms), special equipment for physically disabled pupils, computers for instructional purposes, computer software for instructional purposes, computer support staff, library books and audio-visual resources. Average is computed on a 4-point scale: A lot=1, Some=2; A little=3, and Not at all=4. Responses for each activity were averaged across each principal. High level indicates an average of greater than 3 to 4. Medium level indicates an average of 2 to 3. Low level indicates an average of 1 to less than 2. "Second language teachers" was added to the PIRLS 2006 index and is not included in the 2001 index calculations. "Teachers with a specialisation in reading" was worded as "teachers qualified to teach reading" in 2001.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data is available for 70-84% of pupils.

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

A diamond (◇) indicates the country did not participate in the 2001 assessment.

Note: The International Average does not include the results from the Canadian provinces.

Trend note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

<sup>1</sup> Primary schools in Luxembourg do not have headteachers.

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

**Figure 7.5 Teacher Career Satisfaction (percentage of pupils)**

		Agree a lot	Agree a little	Disagree a little	Disagree a lot
I am content with my profession as a teacher	England	59%	28%	9%	4%
	International mean	68%	28%	3%	1%
I am satisfied with being a teacher at this school	England	70%	25%	4%	1%
	International mean	69%	28%	3%	1%
I would describe the teachers at this school as a satisfied group	England	54%	35%	9%	3%
	International mean	42%	47%	9%	2%
I had more enthusiasm when I began teaching than I have now.*	England	21%	28%	18%	33%
	International mean	25%	25%	24%	26%
I do important work as a teacher.	England	94%	5%	–	1%
	International mean	84%	15%	2%	1%

\*Reverse coded

The proportion of teachers who are content rises in England when it is related to the particular school in which they are working: teachers of 95 per cent of pupils in England (97 per cent internationally) agreed that they were satisfied with their role in their school.

Figure 7.6 shows the international comparison when responses to these five items are compiled in an index. Teachers in Scandinavian countries tended to express the greatest career satisfaction. In England, teachers of two-thirds of pupils were in the ‘high satisfaction’ group, whereas this figure rose to nearly three-quarters in Scotland and the United States.

### Other research evidence

The General Teaching Council for England commissions an annual survey of teachers. In common with previous surveys, the 2006 survey found that primary teachers tended to give more positive responses to the survey as a whole than their colleagues in secondary schools (Hutchings *et al.*, 2006). Powney *et al.* (2003) conducted a piece of research into teachers’ career progression which included a series of questions about teachers’ job satisfaction. They found that three-quarters of the respondents were at least ‘fairly satisfied’, and just one in ten expressed some dissatisfaction in their current post – very similar to data obtained in PIRLS 2006. Powney *et al.* also found that teachers did not enter teaching with a clear career path, but rather they became teachers with an expectation of a satisfying career. The research reported here suggests that on the whole this expectation is being met.

**Figure 7.6: Index of Teacher Career Satisfaction**

Countries	High teacher career satisfaction		Medium teacher career satisfaction		Low teacher career satisfaction	
	Per cent of pupils	Average achievement	Per cent of pupils	Average achievement	Per cent of pupils	Average achievement
Norway	84 (2.7)	497 (3.0)	15 (2.8)	504 (5.5)	0 (0.4)	~ ~
Denmark	78 (3.1)	547 (2.8)	20 (3.1)	543 (4.2)	2 (0.9)	~ ~
Iceland	77 (0.2)	507 (1.4)	23 (0.2)	520 (2.5)	1 (0.1)	~ ~
Scotland	73 (3.4)	522 (3.8)	23 (3.0)	531 (4.7)	4 (1.6)	532 (6.9)
United States	73 (3.3)	542 (4.1)	24 (3.6)	532 (4.3)	3 (1.3)	544 (16.3)
Lithuania	73 (3.1)	537 (2.1)	27 (3.1)	538 (3.5)	0 (0.0)	~ ~
Luxembourg	72 (0.2)	559 (1.2)	25 (0.2)	550 (1.9)	2 (0.1)	~ ~
Netherlands	71 (3.4)	548 (1.9)	27 (3.6)	542 (3.5)	2 (1.0)	~ ~
Austria	70 (3.0)	538 (2.5)	30 (3.2)	540 (4.1)	1 (0.6)	~ ~
New Zealand	69 (2.4)	533 (2.8)	29 (2.5)	536 (4.0)	2 (0.7)	~ ~
Russian Federation	67 (3.3)	568 (3.9)	32 (3.3)	558 (6.7)	1 (0.8)	~ ~
Germany	67 (3.3)	546 (2.9)	31 (3.0)	549 (3.4)	2 (1.4)	~ ~
<b>England</b>	<b>66 (3.4)</b>	<b>550 (3.6)</b>	<b>27 (3.1)</b>	<b>518 (6.0)</b>	<b>7 (2.4)</b>	<b>533 (13.6)</b>
Belgium (French)	64 (3.4)	503 (3.6)	35 (3.4)	495 (4.7)	1 (0.3)	~ ~
Belgium (Flemish)	64 (3.5)	549 (2.3)	35 (3.7)	544 (3.2)	2 (1.1)	~ ~
Romania	63 (4.0)	495 (5.6)	36 (3.9)	480 (8.2)	1 (0.4)	~ ~
Spain	63 (4.0)	512 (3.6)	36 (3.9)	515 (4.3)	1 (0.6)	~ ~
Slovenia	62 (3.0)	521 (2.8)	36 (2.8)	523 (2.8)	2 (0.7)	~ ~
Sweden	60 (4.5)	549 (3.0)	38 (4.5)	546 (3.6)	2 (0.4)	~ ~
Poland	58 (3.8)	520 (3.2)	41 (3.8)	519 (3.6)	0 (0.0)	~ ~
Latvia	57 (4.4)	541 (2.9)	40 (4.3)	541 (4.4)	2 (1.1)	~ ~
Slovak Republic	57 (3.6)	534 (3.7)	41 (3.5)	529 (4.5)	2 (0.7)	~ ~
Singapore	55 (2.9)	555 (4.3)	40 (3.0)	564 (4.1)	5 (1.0)	549 (12.0)
Hungary	55 (4.3)	554 (4.5)	42 (4.2)	547 (4.3)	3 (1.3)	542 (19.7)
France	54 (3.4)	525 (2.7)	44 (3.5)	517 (3.5)	2 (1.1)	~ ~
Italy	52 (3.9)	554 (4.5)	44 (3.9)	550 (3.7)	3 (1.4)	531 (14.9)
Chinese Taipei	44 (4.1)	539 (3.2)	54 (4.1)	533 (2.5)	2 (1.2)	~ ~
Bulgaria	42 (4.1)	557 (6.7)	55 (4.1)	542 (6.0)	3 (1.2)	515 (13.2)
Hong Kong SAR	32 (4.4)	560 (4.4)	66 (4.4)	566 (2.9)	2 (1.1)	~ ~
<b>International Average</b>	<b>64 (0.5)</b>	<b>502 (0.7)</b>	<b>34 (0.5)</b>	<b>498 (1.0)</b>	<b>2 (0.2)</b>	<b>~ ~</b>
<i>Canada, Nova Scotia</i>	82 (2.9)	543 (2.6)	17 (2.8)	541 (5.2)	1 (0.7)	~ ~
<i>Canada, Ontario</i>	80 (4.0)	556 (3.0)	17 (3.8)	548 (5.7)	2 (1.4)	~ ~
<i>Canada, British Columbia</i>	76 (3.5)	562 (3.1)	21 (3.2)	552 (7.6)	3 (1.7)	563 (8.1)
<i>Canada, Alberta</i>	74 (3.2)	563 (2.7)	24 (3.1)	553 (4.4)	2 (1.0)	~ ~
<i>Canada, Quebec</i>	65 (4.0)	538 (3.3)	32 (4.1)	527 (4.9)	2 (1.1)	~ ~

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006.

Based on teachers' agreement with the following: I am content with my profession as a teacher, I am satisfied with being a teacher at this school, I would describe the teachers at this school as a satisfied group, I had more enthusiasm when I began teaching than I have now, and I do important work as a teacher. Average is computed across the five items based on a 4-point scale: Disagree a lot = 1, Disagree a little = 2, Agree a little = 3, Agree a lot = 4. Responses for negative statements were reverse coded. High level indicates an average of 3 to 4. Medium level indicates an average of 2 to less than 3. Low level indicates an average of 1 to less than 2.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data is available for 70-84% of pupils.

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

Note: The International Average does not include the results from the Canadian provinces.







## 8 Other Factors associated with Reading Achievement

*This chapter focuses on investigations into the factors which may influence reading attainment in England. Whilst the analysis of the range in performance compares performance in England with that in selected other countries, the multilevel and structural equation modelling focus solely on attainment in England.*

- *There is again evidence of a wide range in performance in England, with a large gap between the most able and the weakest readers.*
- *This wide range in performance is a feature of other English-speaking countries and confirms a finding from PIRLS 2001.*
- *The fall in England's reading performance in 2006 is evident across the ability range.*
- *The modelling shows that prior attainment at age 7 had a large influence on attainment in PIRLS.*
- *There was also a strong association between pupils' reading confidence and enjoyment and their attainment on PIRLS. When attainment was controlled high levels of deprivation were associated with lower levels of confidence in and enjoyment of reading.*
- *Children's possession of educational resources at home was associated with higher achievement. Conversely, the possession of certain electronic goods was associated with lower achievement.*

## 8.1 Range in performance

The data in PIRLS 2006 confirms one of the key findings from the 2001 survey: England has one of the largest ranges in achievement. This is shown in Figure 2.1 in the length of the horizontal bars.

### Proportions of pupils meeting the International Benchmarks

Figure 8.1 shows the percentage of pupils reaching the International Benchmarks in PIRLS 2006 for the subset of participating countries and provinces.

#### Interpreting the data

To provide descriptions of achievement on the scale in relation to performance on the questions asked, PIRLS uses four points on the scale as International Benchmarks. At each of these benchmarks, pupils demonstrate particular reading skills and strategies on the PIRLS assessments. Appendix 3 provides illustrative items and examples of answers typically provided by pupils during PIRLS.

The Advanced International Benchmark is a scale score of 625, the High International Benchmark is 550, the Intermediate International Benchmark is 475, and the Low International Benchmark is 400. These complement the benchmarks in TIMSS but are not the same as those in PIRLS 2001, which were based on percentiles.

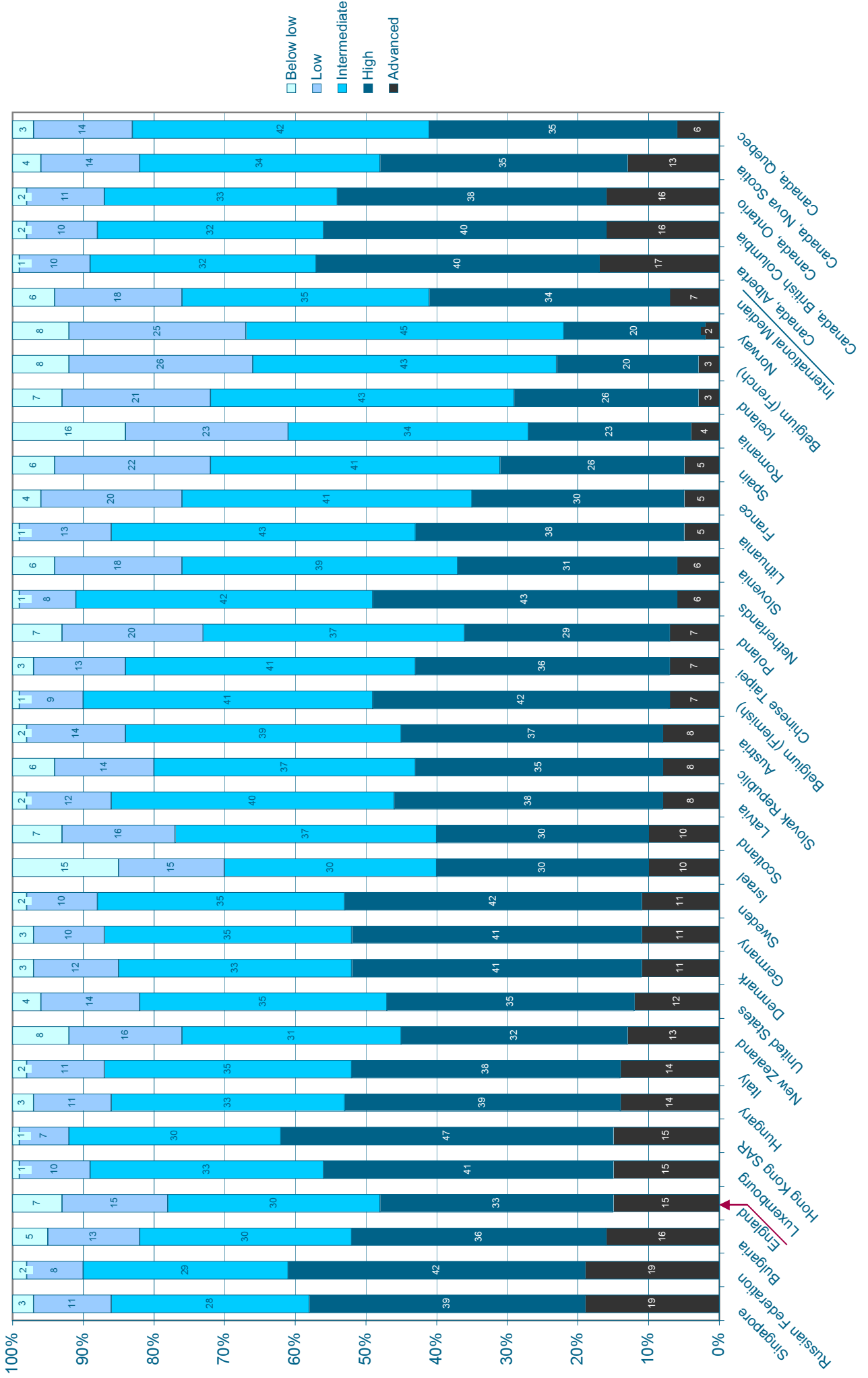
Figure 8.1 is ordered by the proportion of pupils reaching the highest or Advanced International Benchmark. Only Singapore, the Russian Federation and Bulgaria, along with three Canadian provinces, had more pupils at this benchmark than England. All the countries testing in English, with the exception of Trinidad and Tobago, had at least 10 per cent of pupils reaching the highest benchmark, against the international median of seven per cent.

In contrast, England had a higher proportion of pupils who failed to reach the lowest benchmark (7 per cent) than most other countries in the comparison group. Poland and Scotland had the same proportion below the lowest benchmark, Belgium (French), New Zealand and Norway had eight per cent below this benchmark, and Romania was an outlier at 16 per cent. All other countries in the comparison group had fewer pupils in this lowest achieving group.

#### Interpreting the data

As a point of reference, Figure 8.1 provides the medians for each of the International Benchmarks. Half of all the participating countries will have a percentage above the median percentage and half below. The median percentage of pupils reaching the Advanced International Benchmark was seven per cent. For pupils reaching the High Benchmark, the median was 42 per cent and for the Intermediate International Benchmark, it was 77 per cent. The median for the Low International Benchmark was 94 per cent. That is, 22 countries and provinces had more than 94 per cent of their pupils reaching the low level. Several countries (Flemish Belgium, Hong Kong, Lithuania, Luxembourg and the Netherlands) had 99 per cent of pupils reaching the low benchmark. England was below the median of all participating countries for the proportion of pupils reaching this lowest benchmark.

Figure 8.1: Percentages reaching International Benchmarks



**Figure 8.2: Trends in Percentages of Pupils reaching the PIRLS 2006 International Benchmarks of Reading Achievement in 2001 and 2006**

Countries	Advanced International Benchmark (625)		High International Benchmark (550)		Intermediate International Benchmark (475)		Low International Benchmark (400)	
	2006 Per cent of pupils	2001 Per cent of pupils	2006 Per cent of pupils	2001 Per cent of pupils	2006 Per cent of pupils	2001 Per cent of pupils	2006 Per cent of pupils	2001 Per cent of pupils
Singapore	19 (1.4) ↑	12 (1.4)	58 (1.7) ↑	45 (2.4)	86 (1.0) ↑	76 (2.0)	97 (0.4) ↑	90 (1.4)
<sup>2a</sup> Russian Federation	19 (1.5) ↑	5 (0.9)	61 (2.0) ↑	39 (2.3)	90 (1.1) ↑	80 (1.9)	98 (0.5)	96 (1.2)
<sup>2a</sup> Bulgaria	16 (1.4)	17 (1.2)	52 (2.3)	54 (1.9)	82 (1.8)	83 (1.6)	95 (1.0)	95 (0.9)
<b>England</b>	<b>15 (0.9) ↓</b>	<b>20 (1.4)</b>	<b>48 (1.3) ↓</b>	<b>54 (1.7)</b>	<b>78 (1.1) ↓</b>	<b>82 (1.2)</b>	<b>93 (0.7)</b>	<b>94 (0.7)</b>
Hong Kong SAR	15 (1.0) ↑	5 (0.6)	62 (1.6) ↑	39 (1.9)	92 (0.8) ↑	81 (1.5)	99 (0.2) ↑	97 (0.6)
Hungary	14 (0.9) ↑	10 (0.9)	53 (1.8)	49 (1.8)	86 (1.4)	85 (1.0)	97 (0.5)	98 (0.3)
Italy	14 (1.4)	11 (0.9)	52 (1.8) ↑	48 (1.4)	87 (1.3) ↑	83 (1.2)	98 (0.4) ↑	97 (0.6)
New Zealand	13 (0.7)	14 (1.2)	45 (1.0)	45 (1.6)	76 (1.0)	74 (1.4)	92 (0.6)	90 (1.0)
<sup>12a</sup> United States	12 (1.2)	15 (1.1)	47 (2.0)	50 (2.0)	82 (1.4)	80 (1.7)	96 (0.6) ↑	94 (0.7)
Germany	11 (0.9) ↑	9 (0.6)	52 (1.6) ↑	47 (1.3)	87 (0.8) ↑	83 (0.9)	97 (0.3)	97 (0.4)
Sweden	11 (0.9) ↓	15 (1.0)	53 (1.5) ↓	59 (1.4)	88 (1.0) ↓	90 (0.8)	98 (0.4)	98 (0.3)
<sup>2b</sup> Israel	10 (1.0)	9 (0.7)	40 (1.3)	36 (1.2)	70 (1.3)	67 (1.2)	85 (1.2)	87 (1.0)
<sup>†</sup> Scotland	10 (0.8)	11 (0.9)	40 (1.4)	42 (1.9)	77 (1.4)	75 (1.5)	93 (0.8)	92 (0.9)
Latvia	8 (0.8)	9 (0.9)	46 (1.5)	49 (2.0)	86 (1.2)	87 (0.9)	98 (0.4)	99 (0.4)
Slovak Republic	8 (0.6) ↑	5 (0.8)	43 (1.5) ↑	34 (1.7)	80 (1.3) ↑	76 (1.5)	94 (0.9)	94 (0.8)
<sup>†</sup> Netherlands	6 (0.5) ↓	10 (0.9)	49 (1.2) ↓	54 (1.8)	91 (0.8)	92 (1.0)	99 (0.2)	99 (0.3)
Slovenia	6 (0.6) ↑	3 (0.4)	37 (1.2) ↑	25 (1.1)	76 (1.1) ↑	67 (1.2)	94 (0.5) ↑	91 (0.6)
Lithuania	5 (0.8) ↓	9 (1.0)	43 (1.3) ↓	48 (1.8)	86 (0.9)	85 (1.2)	99 (0.3)	98 (0.4)
France	5 (0.6)	7 (0.8)	35 (1.2)	37 (1.4)	76 (1.2)	77 (1.2)	96 (0.4)	95 (0.6)
Romania	4 (0.5) ↓	9 (1.2)	27 (1.6) ↓	35 (2.2)	61 (2.2) ↓	69 (2.0)	84 (1.8) ↓	88 (1.3)
Iceland	3 (0.4) ↓	6 (0.5)	29 (1.1) ↓	32 (0.9)	72 (0.8)	71 (1.1)	93 (0.8)	92 (0.6)
Moldova, Rep. of	3 (0.4)	3 (0.7)	23 (1.5)	22 (2.1)	67 (1.9) ↑	61 (2.1)	91 (0.9)	88 (1.2)
Macedonia, Rep. of	2 (0.4)	2 (0.3)	15 (1.1)	15 (1.1)	40 (1.7)	41 (1.9)	66 (1.6)	67 (2.1)
<sup>‡</sup> Norway	2 (0.3) ↓	4 (0.8)	22 (1.1) ↓	28 (1.5)	67 (1.6)	65 (1.6)	92 (0.8) ↑	88 (0.9)
Iran, Islamic Rep. of	1 (0.2)	0 (0.2)	8 (0.7)	7 (0.8)	30 (1.3)	28 (1.8)	60 (1.6)	56 (2.0)
Morocco	0 (0.0)	1 (0.9)	1 (0.4)	4 (1.6)	9 (1.2)	14 (2.6)	26 (2.0)	33 (3.4)
International Average	9 (0.2) ↑	8 (0.2)	40 (0.3) ↑	38 (0.3)	74 (0.3) ↑	72 (0.3)	90 (0.2) ↑	89 (0.2)
<sup>2a</sup> Canada, Ontario	15 (1.2)	15 (1.2)	54 (2.0)	50 (1.8)	87 (1.1) ↑	84 (1.3)	98 (0.5) ↑	96 (0.6)
Canada, Quebec	6 (0.8)	8 (0.7)	41 (1.9)	43 (2.0)	83 (1.3)	84 (1.5)	97 (0.4)	98 (0.4)

↑ 2006 percentage significantly higher

↓ 2006 percentage significantly lower

<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included (see Figure A4.2).

<sup>‡</sup> Nearly satisfying guidelines for sample participation rates after replacement schools were included (see Figure A4.2).

<sup>2a</sup> National Defined Population covers less than 95% of National Desired Population (see Figure A4.1).

<sup>2b</sup> National Defined Population covers less than 80% of National Desired Population (see Figure A4.1).

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

Note: The International Average does not include the results from the Canadian provinces.

Trend Note: The primary education systems of the Russian Federation and Slovenia underwent structural changes. Data for Canada, Ontario includes only public schools.

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006.

Figure 8.2 shows the proportions meeting the International Benchmarks in 2001 and the change to 2006. The PIRLS 2001 data was rescaled to the 2006 benchmarks in order to be able to measure the trend. Since pupils reaching a particular benchmark also reached lower benchmarks, the percentages shown in Figure 8.2 are cumulative.

Figure 8.2 provides an interesting insight into the apparent fall in the performance of pupils in England. This suggests that there is not only a smaller proportion of pupils reaching the highest (Advanced) benchmark (a significant fall from 20 per cent to 15 per cent), but there are significantly smaller proportions of pupils in the middle of the distribution reaching the High and Intermediate International Benchmarks. Although not a significant change from 2001, one per cent more pupils failed to meet the lowest benchmark (up from six to seven per cent in 2006). Sweden and the Netherlands also demonstrated a similar pattern. Conversely, Singapore showed significant increases in the proportions of pupils reaching each benchmark, showing that the overall improvement in Singapore's scale score was reflected in improvements across the full range of ability.

Of the 26 countries and two provinces for which there is trend data, seven showed a significant increase in the proportion meeting the Advanced International Benchmark and an equal number showed a decrease. Similarly, seven countries showed a significant increase in the proportion of pupils meeting the High International Benchmark, and seven showed a significant decrease. Eight countries recorded significantly higher proportions of pupils reaching the Intermediate International Benchmark, with three, including England, recording a significantly lower proportion. Six countries had significantly more pupils reaching the lowest benchmark in 2006 compared to in 2001, and just one, Romania, had a significantly lower proportion.

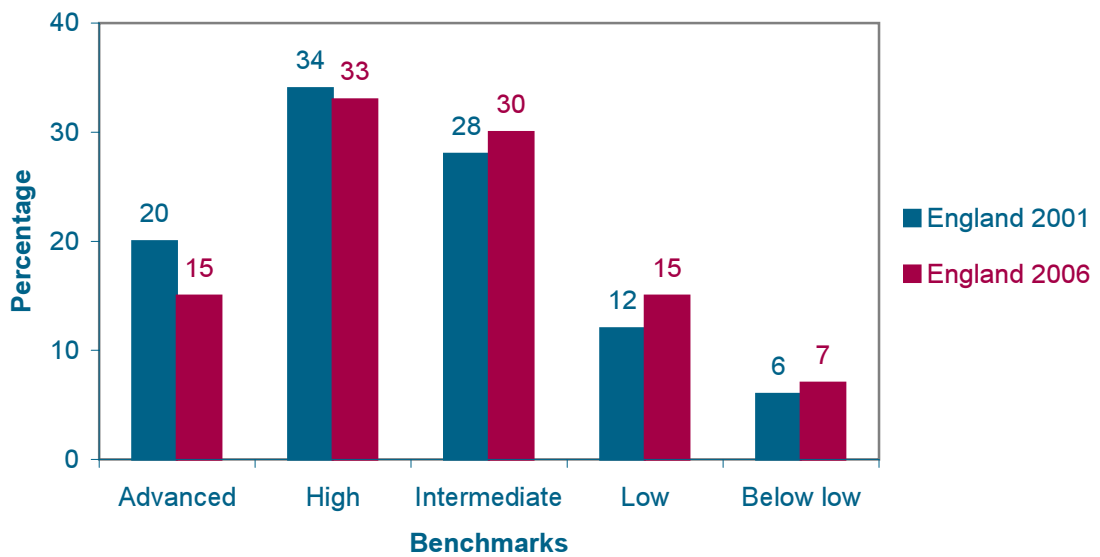
The proportions of pupils in England reaching each International Benchmark is illustrated in Figure 8.3.

This is a particularly relevant finding in relation to the overall fall in England's attainment. It suggests that it is lower achievement among the better readers that has contributed most to the overall fall rather than the small increase in the proportion of weaker readers.

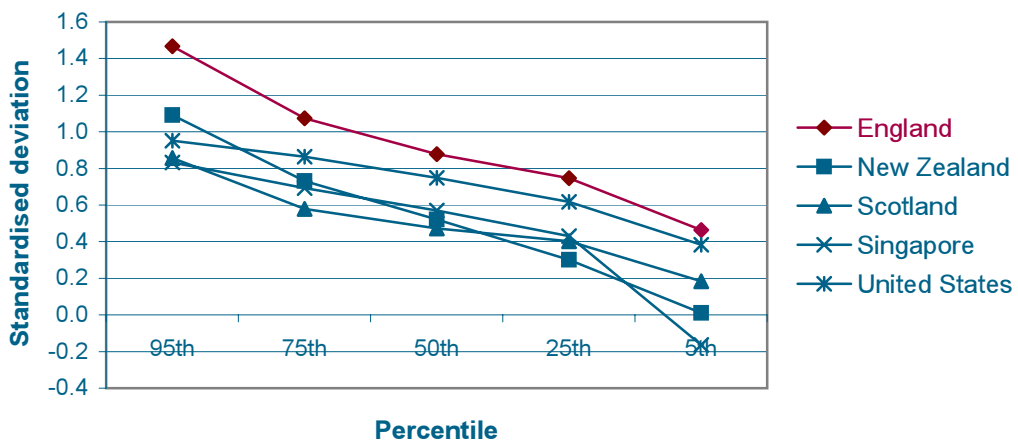
With one or two notable exceptions, a wide range of performance tends to be associated with lower achievement. This can be seen in the performance of countries such as South Africa (454 scale points between mean score of pupils at 5th and 95th percentile), Kuwait (range of 362 scale points), Morocco (359 scale points), Trinidad and Tobago (340 scale points), Israel (328 scale points) and Macedonia (327 scale points). As in 2001, there is a very high negative correlation (-0.91) between a country's score at the 5th percentile and the range from the 5th to the 95th percentiles, and a high negative correlation (-0.54) between the score at the 95th percentile and the range.

In the 2001 survey, further analysis by NFER revealed that a wide range in achievement was evident in the data from all the countries testing in English and that this was in contrast to the data from some European countries. The same analysis has been completed for the 2006 data and this is shown in Figures 8.4, 8.5, 8.6 and 8.7.

**Figure 8.3 Proportions of pupils in England reaching International Benchmarks**



**Figure 8.4 PIRLS 2001 Standardised deviation from average of all countries for countries testing in English**

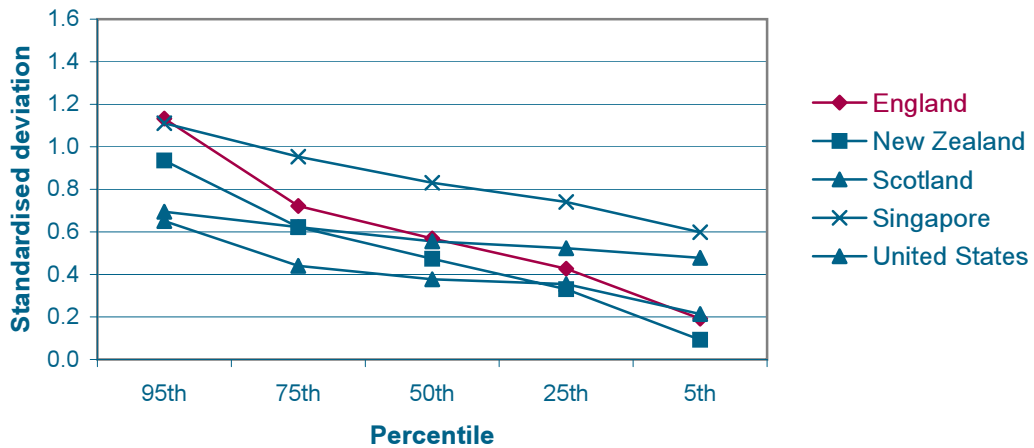


### Interpreting the data

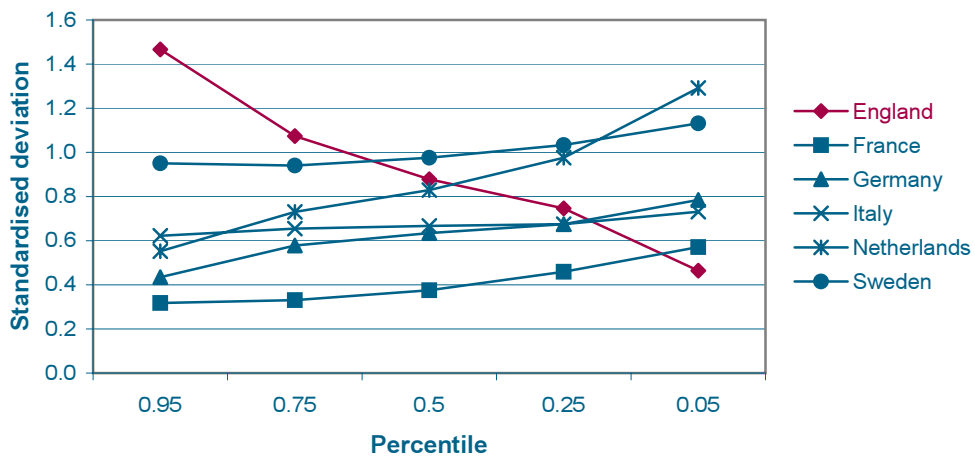
For this purpose, standardised results have been calculated separately for each of the percentiles shown. This has been done by finding the mean and standard deviation in achievement scores at each percentile for all the countries, then expressing each country's score as a proportion of the standard deviation above (positive figures) or below (negative) the international mean.

It is clear from Figures 8.4 and 8.5 that the pattern observed in the 2001 study, that of English-testing countries' relatively high performance at the upper percentiles with a decline in standing, relative to other countries, as achievement falls, is maintained among English-testing countries in 2006. The striking progress made by Singapore since 2001, as shown in Figure 8.2, is also evident when Figures 8.4 and 8.5 are compared.

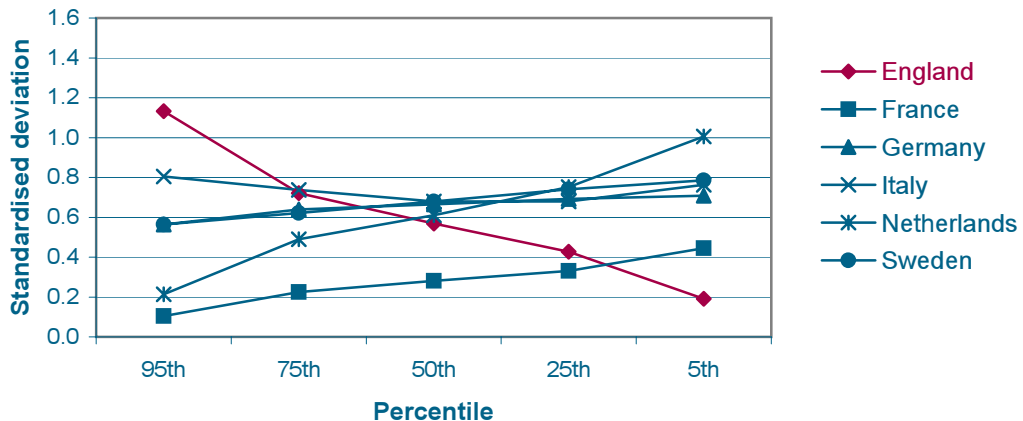
**Figure 8.5 PIRLS 2006 Standardised deviation from average of all countries for countries testing in English**



**Figure 8.6 PIRLS 2001 Standardised deviation from average of all countries for selected European countries**



**Figure 8.7 PIRLS 2006 Standardised deviation from average of all countries for selected European countries**





There is again consistency in the pattern of performance of countries in 2001 and 2006 when Figures 8.6 and 8.7 are compared. Comparing performance in 2001 and 2006, four of the selected European countries, Germany, France, Italy and Sweden, maintained a broadly consistent position across the range, that is, their standardised deviation from the mean of all countries did not change much from the 95th to the 5th percentile, although increasing slightly at the lower percentiles i.e. the weaker pupils in those countries did slightly better relative to the weaker pupils in other countries. The pattern of performance seen in 2001 was repeated by the Netherlands in 2006, when the most able readers were not much better than the average for all countries but the weakest readers were amongst the best, in fact second only to Hong Kong.

In contrast, Figures 8.6 and 8.7 show that the lowest achieving pupils in England were clearly much weaker than those in the other European countries in the figures and the highest achieving readers were better than the best in the other countries.

The greatest contrast to the performance of England is that of the Netherlands, again repeating what was found in 2001. Showing remarkable consistency, given the passage of time and a different comparator group of countries, the Netherlands again had the narrowest range of achievement between the 95th and 5th percentiles (174 scale points). In contrast, England had one of the widest at 290 scale points, equal to that of New Zealand, and exactly the same as in 2001.

In 2001 we speculated as to the reason for these patterns in achievement, considering curricula and pedagogic reasons, social factors related to inclusion and cohesiveness, and the nature of the languages tested. With the endorsement of the 2001 findings in 2006, further work has been done exploring the patterns of achievement across the range of the different language groupings in PIRLS (forthcoming). This analysis suggests that the only other country which demonstrates a similar pattern of achievement to that of the English-speaking countries, and England in particular, is Bulgaria.

## 8.2 Multilevel model

Multilevel modelling is a statistical technique that attempts to take into account ('control for') factors ('background variables') that might influence what is being measured, in this case, reading attainment. In this analysis, the aim was to explore how much these variables affected pupils' achievement scores. More technical information about the statistical analysis undertaken and the results derived from this is contained in Appendix 7; in this section the summary results are reported.

The analysis looked at factors affecting the five outcomes measurable on PIRLS:

- overall reading achievement
- reading for literary experience
- reading to acquire and use information

- attainment on the retrieving and straightforward inferencing scale
- attainment on the interpreting, integrating and evaluating scale.

Also included in the analysis was a sixth outcome: achievement on the key stage 2 reading test as a mark out of 50. This test was taken when the PIRLS sample were in year 6, one year after the PIRLS assessment.

Several scales were developed following principal factor analysis of the teacher and headteacher questionnaire data. The analysis is not described in detail here but the items included in each factor are specified in Appendix 7. The three scales derived from the Teacher questionnaire could be summarised as dealing with the following classroom activities:

- teaching reading strategies and vocabulary
- teacher and pupils reading aloud
- pupils reading silently and reading own choice material.

From the School (headteacher) questionnaire, six scales emerged in the factor analysis. Three of these were associated with the context and environment of the school:

- disadvantage and other problems
- proportions with early literacy skills on entry to year 1
- shortages and inadequacies of human and material resources.

A further three concerned school practices:

- curricular emphasis on early literary skills
- curricular emphasis on early advanced reading skills
- family programmes and support.

These various scales were included in the multilevel model. The deprivation index, discussed in chapter 5 above, was also included in the model.

In order to establish the relative strength of the relationships between the different factors and the outcomes, the results have been presented in a way which shows how much difference each factor makes to the expected pupil scores in each case, when all other variables are controlled. The quasi-effect sizes from the multilevel model have been coded as follows:

	small	medium	large
Positive relationships – associated with higher attainment	↑ 1% to 10%	↑↑ 11% to 20%	↑↑↑ more than +20%
Negative relationships – associated with lower attainment	↓ -1% to -10%	↓↓ -11% to -20%	↓↓↓ less than -20%

Figure 8.8 shows the factors which are statistically significant at the five per cent level and the extent of the impact of each factor on the different outcomes.

**Figure 8.8 Summary of Results for Achievement Scores from Multilevel Modelling**

Variable	Overall attainment	Literary attainment	Information attainment	Retrieving and straight-forward inferencing	Interpreting, integrating and evaluating	KS2 reading score
PIRLS attainment score						↑↑↑
KS1 reading score	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑
KS1 writing score	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑
<b>Pupil characteristics</b>						
Gender (male = 1, female = 2)						↓
Term of birth	↓					
Black ethnic groups						
Asian ethnic groups						
Other ethnic groups						
Unknown ethnicity						
Special educational need	↓↓	↓↓	↓↓	↓↓	↓↓	↓
Other language spoken at home	↓	↓	↓	↓	↓	
English not normally used at home						
Born outside UK	↓↓		↓↓	↓↓↓	↓↓	
Possessions: consumer electronics	↓	↓	↓	↓	↓	
Possessions: desk, books, musical instrument	↑	↑	↑	↑↑	↑↑	↑
Composite deprivation measure	↓	↓↓	↓	↓↓	↓↓	↓
<b>From teacher questionnaire: classroom activities</b>						
Teaching reading strategies and vocabulary						
Teacher and pupils reading aloud						
Pupils' reading: silently, own choice material				↑		
<b>Teacher characteristics</b>						
Extent of teaching experience						

**Figure 8.8 Summary of Results for Achievement Scores from Multilevel Modelling (continued)**

Variable	Overall attainment	Literary attainment	Information attainment	Retrieving and straight-forward inferencing	Interpreting, integrating and evaluating	KS2 reading score
<b>From headteacher questionnaire: school context and environment</b>						
1: Disadvantage and other problems	↓	↓	↓	↓	↓ ↓	↓
2: Proportion with early literacy skills on entry to year 1	↑	↑	↑	↑	↑	
3: Shortages and inadequacies of human and material resources						
<b>From headteacher questionnaire: school policies</b>						
1: Curricular emphasis on early literacy skills	↑	↑	↑	↑	↑	
2: Curricular emphasis on early advanced reading skills						
3: Family programmes and support						

The data in Figure 8.8 shows that there was no overall difference between the performance in PIRLS of boys and girls once prior attainment at key stage 1 (age 7) and other factors have been taken into account. Term of birth was related to attainment only for the overall measure, and not significantly for any of the others. The analysis suggest that younger pupils performed slightly better than expected.

In terms of prior attainment, perhaps unsurprisingly key stage 1 achievements in both reading and writing were significantly related to PIRLS attainment. Being on the special needs register and having English as an additional language were both negatively related to attainment for all outcomes; being born outside the UK was negatively related to attainment overall and in three outcomes.

The composite deprivation measure was negatively related to attainment as was one of its components, the possession of consumer electronics (children’s own mobile phone, television, DVD/CD player); conversely, possession of more study-related goods (children’s books, desk, musical instrument) was positively related to attainment.

A teacher factor found to be significantly related to attainment was the scale concerning how frequently pupils read silently in class and had time to read books of their own choosing, with greater frequency being positively related to attainment on the reading process scale of retrieval and straightforward inferencing.

The school context and environment factor measured the headteachers' perceptions of pupil disadvantage and school problems. A greater perception of disadvantage and other problems such as concerns about behaviour was negatively related to all outcomes, while the factor measuring proportion of pupils with early literacy skills at the start of year 1 was positively related. The school policy factor concerned with an early emphasis in the curriculum on basic literacy skills was positively related to all outcomes whereas an early emphasis on more advanced skills was not.

The outcomes shown in Figure 8.8 also show the extent of some of the influences on key stage 2 reading attainment at age 11. There was a strong relationship between attainment on the PIRLS measures and at key stage 2; this continued the strong relationship with attainment at key stage 1 (age 7). When the PIRLS attainment and other factors, including key stage 1 attainment are controlled, girls tended to have slightly lower scores at key stage 2 than boys. This suggests that the gap between the performance of boys and girls is reduced slightly during the last year of primary school.

The possession of consumer electronics was not significantly related to key stage 2 score, but the possession of study-related goods was positively related. Similarly, the composite deprivation measure was negatively related to key stage 2 reading score.

Pupils' special educational needs (SEN) stage was negatively related to their key stage 2 score. The school context and environment factor measuring disadvantage and school problems was negatively related to pupils' reading attainment at end of key stage 2.

Three scales derived from an exploratory factor analysis of the Pupil questionnaire data were included as outcomes in the model:

- reading activities (reading outside school and classroom reading activities)
- reading enjoyment and reading confidence
- reading alternative media (non-book reading including computer-based reading) and television viewing.

The items from the Pupil questionnaire that are included in each of these scales are detailed in Appendix 7. They are similar to those derived from the 2001 data.

**Figure 8.9 Summary of Results for Pupil Questionnaire Scales Related to Reading Attainment**

Variable	PIRLS reading purposes			PIRLS reading processes		KS2 reading score
	Overall attainment	Literary attainment	Information attainment	Retrieving and straight-forward inferencing	Interpreting, integrating and evaluating	
Reading activities in and out of school	↓↓	↓↓	↓↓	↓↓↓	↓↓↓	↓↓
Reading enjoyment and confidence	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑↑	↑↑
Alternative media	↓	↓	↓	↓↓	↓	

Figure 8.9 shows that, when other factors significantly related to attainment are controlled, the reading enjoyment and confidence factor was positively related to attainment, while reading activities and use of other media were negatively related. These are very similar findings to those from the analysis on the 2001 data.

In order to investigate these pupil factors as outcomes in their own right, models were run to predict each with all the background factors included. These results are shown in Figure 8.10.

**Figure 8.10 Summary of Results of Multilevel Modelling for Pupil Questionnaire Scales as Outcomes**

Variable	Reading activities in and out of school	Reading enjoyment and confidence	Non-book reading and TV viewing
<b>Pupil characteristics</b>			
Gender (male = 1, female = 2)	↑ ↑ ↑	↑ ↑ ↑	↓ ↓
Term of birth			
Black ethnic groups			↑ ↑ ↑
Asian ethnic groups			
Other ethnic groups			
Unknown ethnicity			↓
Special educational need			↓
Other language spoken	↑ ↑	↑	↑ ↑ ↑
English not normally used at home			↓ ↓
Born outside UK	↑ ↑ ↑		
KS1 reading score	↓ ↓	↑ ↑ ↑	↓
KS1 writing score			
Possessions: consumer electronics		↓	↑ ↑ ↑
Possessions: desk, books, musical instrument	↑ ↑ ↑	↑ ↑	↑ ↑
Composite deprivation measure	↓ ↓ ↓	↓ ↓ ↓	
<b>From teacher questionnaire: classroom activities</b>			
Teaching reading strategies and vocabulary	↑		
Teacher and pupils reading aloud			
Pupils' reading: silently, own choice material		↑	
<b>Teacher characteristics</b>			
Average teaching years			

**Figure 8.10 Summary of Results of Multilevel Modelling for Pupil Questionnaire Scales as Outcomes (continued)**

Variable	Reading activities in and out of school	Reading enjoyment and confidence	Non-book reading and TV viewing
<b>From headteacher questionnaire: school context and environment</b>			
1: Disadvantage and other problems			↑
2: Proportion with early literacy skills on entry to year 1	↓	↓	
3: Shortages and inadequacies of human and material resources			
<b>From headteacher questionnaire: school policies</b>			
1: Curricular emphasis on early literary skills			
2: Curricular emphasis on early advanced reading skills		↑	
3: Family programmes and support			↑

The analysis summarised in Figure 8.10 indicates that girls were more likely to undertake reading activities inside and outside school than boys, and to gain greater enjoyment from reading and have higher confidence. Conversely, boys were more likely to report reading comic books, newspapers and magazines, to read on the computer and to watch television. Children achieving higher scores in their key stage 1 reading assessment were more likely to have greater reading enjoyment and reading confidence, to read for fun outside school more often, but to undertake fewer reading activities inside and outside school and to do less non-book reading.

Children’s possession of consumer electronics was negatively related to their reading enjoyment and confidence, but positively related to television viewing, reading on the computer, and to non-book reading. All three scales were positively related to the possession of study-related goods.

The analysis showed that pupils of a black ethnic background were more likely to undertake non-book reading, including on the computer, whereas pupils with special educational needs were less likely to do this.

Pupils with English as an additional language were likely to have higher scores on all three scales, and pupils who did not normally use English at home were less likely to undertake non-book reading. Pupils born outside the UK tended to do more reading activities in and out of school.

In school, pupils whose teachers more frequently taught reading strategies and vocabulary tended to do more reading activities in and out of school. Pupils whose teachers scheduled more frequent silent reading and more frequent opportunities for pupils to read material of their own choosing tended to have higher reading enjoyment scores.

Pupils in schools where the headteachers estimated higher levels of disadvantage and reported more behaviour problems tended to engage in more non-book reading.

Pupils in schools in which headteachers reported higher proportions of children starting year 1 with early literacy skills tended to do fewer reading activities in and out of school, and also to have lower enjoyment and confidence in their reading.

Pupils in schools where advanced reading skills were taught earlier tended to have higher reading enjoyment and confidence.

Pupils in schools which offered support for families, for example in the form of adult literacy classes, tended to read more non-book material, including on the computer.

All the results from the multilevel analysis are based on a ‘value-added’ analysis, in that they control for prior attainment at key stage 1 and are thus more likely to give insights into progress during key stage 2 and its relationship to other factors than an analysis of attainment alone. However, none of these results should necessarily be interpreted as implying a causal connection between activities or other factors and outcomes.

### 8.3 Structural equation model

Increasingly powerful programs for statistical analysis provide the opportunity to explore the PIRLS data in innovative and informative ways. This opportunity is enhanced by the fact that for most of England’s pupils the following information is available:

- reading ability measure derived from their performance on the PIRLS test in year 5
- questionnaire information about reading confidence, enjoyment and activities
- prior attainment information from key stage 1 reading test results.

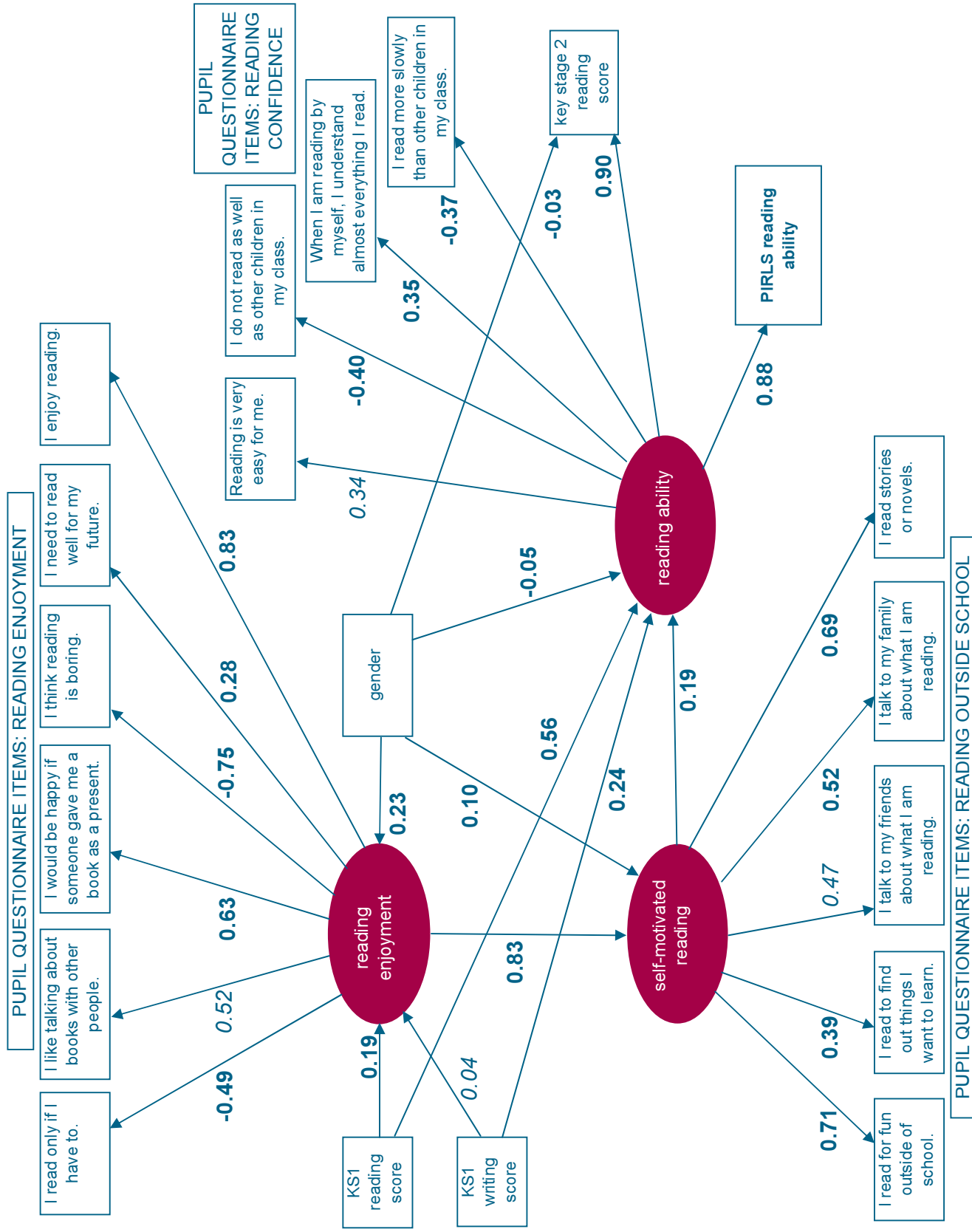
Because there is data on each pupil on a number of factors, it is possible to explore relationships and connections which are more complex than the simple ones possible in regression or multilevel modelling – this is the main strength of structural equation modelling (SEM). In SEM it is assumed there are unmeasured ‘latent’ variables plus a set of observed variables, which can relate to each other according to the theoretical assumptions which are built into the model. Included in this section is an exploration of this technique with the PIRLS data.

In this model it is assumed there are three latent variables: reading ability, reading enjoyment and what has been termed ‘self-motivated reading’. These latent variables are linked to observed data from the testing and the Pupil questionnaire: pupils’ score on the PIRLS reading assessment and various questionnaire items concerned with reading enjoyment, and reading undertaken outside school. A link is also made to prior attainment in the form of pupils’ key stage 1 attainment, and to reading attainment at the end of key stage 2. The results of this model are shown graphically in Figure 8.11.

- *Reading ability* is linked to the overall PIRLS reading attainment, plus the responses to items in the Pupil questionnaire concerning reading confidence.



Figure 8.11: Exploratory Structural Equation Model using PIRLS 2006 Data



- *Reading enjoyment* is linked to responses to items in the Pupil questionnaire on this theme.
- In addition, both latent variables are linked to pupils' prior attainment (key stage 1 reading score and key stage 1 writing score) and to their key stage 2 reading scores.
- *Self-motivated reading* is associated with responses to items in the Pupil questionnaire concerned with the reading and reading activities children undertake when not in school.

### Interpreting the data

The output from the analysis program Mplus when this model is fitted to the data is best displayed as a 'path diagram', which shows these linkages plus the estimated strength of the relationships, expressed as a dimensionless quantity between -1 and +1 (equivalent to a correlation). Ovals represent latent variables, while rectangles are observed variables. Figures in italics are non-significant relationships.

The results imply that reading enjoyment is measured by the questionnaire items related to this, although not significantly by one item ('I like talking about books with other people') and negatively, as would be expected, for a further item ('I think reading is boring'). Reading ability is strongly related to the outcome of the PIRLS tests, but also to the questionnaire items related to reading confidence. The latent variable of reading enjoyment also relates to key stage 1 reading level, though not to the key stage 1 writing level. Reading ability in 2006 is related significantly to both key stage 1 reading and writing attainment. The relationship between the two latent variables, reading enjoyment and reading ability, is also significant and positive, before the third latent variable is added to the model.

When this additional latent variable, relating to reading activities that children undertake out of the classroom, termed in this analysis 'self-motivated reading', is added to the analysis, then the path analysis changes. This is the model shown in Figure 8.11. The link between reading enjoyment and reading ability is now via self-motivated reading. The association between reading enjoyment and self-motivated reading is very strong. Three questionnaire items in particular contribute to this latent variable: reading for fun, reading stories and novels, and talking to family about reading. There is a slight positive association with gender, indicating that girls undertake more reading activities, when other variables are controlled, than boys. Similarly, the positive link between gender and reading enjoyment suggests that girls gain greater enjoyment from reading than boys, again when other variables are controlled.

In order to investigate whether the relationships between the variables were the same for boys and girls, a model was run which enabled these relationships to be different. In fact, no substantive differences were found, implying that the relationships were generally the same for both boys and girls.

The analyses included here should be seen as starting points, giving an indication of the potential of the data set.



# Appendix 1 International development of PIRLS materials and conduct of the survey

## A1.1 Members of the international consortium

PIRLS is conducted under the auspices of the International Association for the Evaluation of Educational Achievement (IEA). The International Study Center (ISC), located at Boston College in Boston, United States, was responsible for the overall design, development and implementation of PIRLS 2006. This included establishing the procedures, overseeing instrument development, conducting training and carrying out quality assurance measures. An international report of the results of PIRLS 2006 has been produced by the ISC (Mullis *et al.*, 2007).

The IEA Data Processing Center (DPC) in Hamburg, Germany was responsible for processing and verifying the data from all of the countries, and constructing the international database.

The Special Surveys Methods Group of Statistics Canada in Ottawa, Canada, was responsible for all sampling activities in PIRLS, including developing the sampling procedures and documentation, and assisting participants in adapting the PIRLS sampling design to local conditions. The independent sampling referee was from Westat in the United States.

The PIRLS reading literacy tests were developed over a two-year period, from 2004 to 2006. A considerable number of reading passages were submitted by the National Research Coordinators and discussed at a series of international meetings. At these meetings, workshops were convened and the NRCs wrote questions on those passages which were accepted by the group. The process was iterative and the emerging materials were reviewed by both NRCs and by the Reading Development Group before they were prepared for the field trial in summer 2005 in which 38 countries participated. In order to measure trends in reading attainment between 2001 and 2006, four reading assessment blocks were used in both assessments.

The questionnaires used in the 2001 survey were reviewed by both the NRCs and the Questionnaire Development Group and some revisions were made. The questionnaires were also included in the field trial.

## A1.2 PIRLS in England

The Department for Education and Skills (now the Department for Children, Schools and Families) commissioned the National Foundation for Educational Research (NFER) to carry out PIRLS 2006 in England. The NFER undertook all contact with sampled schools, the adaptation of the instruments and manuals for use in England, the training of test administrators, the marking of the survey instruments, the data capture and the production of this report. Additional analyses included in this report were conducted by the NFER.

## Target population

The target population for PIRLS 2001 was defined as:

*All students enrolled in the upper of the two adjacent grades that contain the largest proportion of 9-year-olds at the time of testing.*

The target population for PIRLS 2006 was redefined as:

*The target grade should be the grade that represents four years of schooling, counting from the first year of ISCED Level 1.<sup>1</sup>*

This age group was targeted because at this point in children's development they have learned to read and are now starting to read to learn. It is also the age of pupils assessed in the IEA TIMSS (Trends in International Mathematics and Science Study).

For most of the participating countries, the target population is the fourth grade. In England, the PIRLS 2001 definition led to year 5 pupils being assessed, due to an earlier entry into compulsory schooling. This is also the case for New Zealand and Scotland. On average, pupils were aged between 10 and 11 years. The average age of pupils in England was 10.3 years. The pupils with the lowest average age were those in Italy (9.7 years) and the pupils in South Africa (11.9 years) and Luxembourg (11.4 years) were on average the oldest. More detail about defining the population to be sampled is included in Appendix 4.

## Survey procedures

The survey was conducted between 2 May and 16 June 2006. Once schools had agreed to participate and had nominated a contact person, the test administration date was finalised.

Test administrators were appointed by the NFER and followed the procedure as detailed in the Test Administrator Manual. This was adapted for use in England from the manual produced by the International Study Center.

The questionnaires due to be completed by the headteacher and the class teacher were sent in advance to the school contacts. These were then collected on the day of testing by the test administrator and returned to the NFER with the test materials.

Prior to the scheduled testing date, the NFER sent the Learning to Read (home) questionnaires to the schools with the request that they be distributed to the pupils due to complete the PIRLS assessments. A pre-paid envelope was included with each questionnaire and they were returned directly to the NFER.

The survey required two timetabled sessions in schools, both on the same day. The first was for the administration of the reading tests and the second was for the completion of the pupil questionnaires. Materials were kept secure and test administrators took the booklets into schools and returned them to the NFER.

The marking of the constructed response questions in the tests was carried out by markers trained by NFER staff who had attended the international marker training conference.

<sup>1</sup> *ISCED stands for the International Standard Classification of Education developed by the UNESCO Institute for Statistics*

## A1.3 Assessment design

In order to ensure that the assessment material provided valid and reliable measures of reading literacy and yet were manageable for 9–10 year-olds, a matrix sampling technique was used. This enabled all assessment instruments to be linked so that ultimately performance of all pupils could be placed on a single scale using item response theory methods, but meant that each participating pupil took just a part of the whole assessment.

The material was divided into assessment ‘blocks’, each of 40 minutes. Each block consisted of a passage of up to 1,000 words and its associated items. There were five blocks containing literary texts and five containing information texts. Further information about the passages and the items is contained in Appendix 2. The blocks were combined into 13 different test booklets with two blocks in each booklet. One booklet was a colour ‘reader’; this was a separate stimulus booklet containing two reading passages and with the test items in an accompanying response booklet.

All participating pupils were randomly allocated an assessment booklet and all materials had unique identifiers.

## A1.4 Quality control

### Monitoring visits

In order to monitor the quality of the data-collection exercise, two forms of monitoring were introduced. International quality control monitors observed the test administration in a random selection of 15 schools. These monitors were trained by the International Study Center. In addition, national observers, trained by the national centre, observed test administration in a further 10 per cent of schools, randomly selected. The international and national monitors provided comprehensive reports on their visits to the ISC and the national centre respectively.

### Reliability marking

In order to establish marking reliability, a random sample of 200 responses to each of the constructed response items was independently marked by two markers. The percentage agreement between the two markers provides a measure of the reliability of the marking process. The first marker marked on sheets rather than in the pupil booklets and the second marker recorded decisions in the booklets, as for the rest of the marking. The average exact agreement was 98 per cent on constructed response items in England (international average 93 per cent), with a range of exact agreement from 93 per cent to 100 per cent (internationally from 82 per cent to 99 per cent). The average exact agreement ranged from 81 per cent in Spain to 99 per cent in Moldova, the Netherlands, Romania and the Russian Federation. On the trend items, the average exact agreement was 89 per cent in England and was 90 per cent internationally. It ranged from 81 per cent in Macedonia to 96 per cent in Israel.



## Appendix 2 The PIRLS reading assessments

### A2.1 The construct of reading in PIRLS

One of the central features, and strengths, of IEA surveys, is the explicit definition of the constructs being assessed. PIRLS 2006 adopted the following definition of reading literacy:









*For PIRLS, reading literacy is defined as the ability to understand and use those written language forms required by society and/or valued by the individual. Young readers can construct meaning from a variety of texts. They read to learn, to participate in communities of readers in school and everyday life, and for enjoyment.*  
(Mullis *et al.*, 2006)

This definition, in which reading is seen as a constructive and interactive process, is intended to embrace multi-modal forms of reading, as well as traditional print forms. At this stage in PIRLS, however, all assessments are undertaken in the conventional way using paper-based texts.

#### The structure of the PIRLS assessment

PIRLS identifies two purposes for reading and four comprehension processes. The underlying structure of the PIRLS assessment is shown in Figure A2.1. This also shows the percentages of the tests devoted to each element.

**Figure A2.1 Structure of the PIRLS assessment**

Processes of reading comprehension	Purposes for reading		
	Literary experience 50%	Acquire and use information 50%	
Focus on and retrieve explicitly stated information			20%
Make straightforward inferences			30%
Interpret and integrate ideas and information			30%
Examine and evaluate content, language and textual elements			20%

Each assessment block (or test) is attributed to one of the two purposes; with ten blocks altogether, five texts are literary pieces and five are informational. Within each assessment block, each question is attributed to one of the four processes and the overall balance is as shown in Figure A2.1.

The relationship between the PIRLS comprehension processes and the English National Curriculum assessment focuses is shown in Figure A3.11 in Appendix 3.



The texts selected for use in PIRLS 2006 were submitted by representatives of the participating countries and scrutinised by the group of reading experts convened for PIRLS 2006 and also by the National Research Coordinators at various meetings. Once a shortlist of texts had been selected, items were produced by the National Research Coordinators and other representatives of the participating countries at item writing workshops led by the International Study Center. These items were subsequently reviewed by the reading expert group. This led to six literary passages and associated items, and six information passages and items being field tested in 2005.

Following the analysis of the field test data, three literary and three informational passages were selected for the main survey. These were combined with the four blocks retained from the 2001 survey, which served as a means of linking the two surveys (see Appendix 5).

Figure A2.2 shows the proportion of different types of items (multiple-choice and constructed response) in the assessment blocks, and the total number of marks (items range from between one and three marks each), by the two reading purposes.

**Figure A2.2 Distribution of PIRLS 2006 Items by Reading Purpose**

Reading purpose	Total number of items	Number of multiple-choice items	Number of constructed-response items	Total number of marks
Literary experience	64	34	30	85
Acquire and use information	62	30	32	82
Total	126	64	62	167

Figure A2.3 provides a breakdown of the different item types and the mark allocation by the four reading processes.

**Figure A2.3 Distribution of PIRLS 2006 Items by Reading Process**

Reading process	Percentage of items	Total number of items	Number of multiple-choice items	Number of constructed-response items	Total number of marks
Focus on and retrieve explicitly stated information and ideas	22	31	19	12	36
Make straight-forward inferences	28	43	29	14	47
Interpret and integrate ideas and information	37	34	6	28	61
Examine and evaluate content, language, and textual elements	14	18	10	8	23
Total	100	126	64	62	167

## Appendix 3 Achievement at the International Benchmarks

The approach to reading literacy adopted in PIRLS 2006 has been described in Appendix 2 and in greater detail in relation to the 2001 survey in Twist *et al.* (2003). As in 2001, in order to aid interpretation of the results of the survey, a process known as scale anchoring was undertaken. This describes the reading literacy skills of pupils related to different scores on the assessment, known as international benchmarks. In 2006, a different set of benchmarks was adopted. These describe the performance of pupils internationally at four points on the scale and also complement those adopted in the Trends in Mathematics and Science Study (TIMSS). The Advanced International Benchmark is set at a scale score of 625, the High International Benchmark is 550, the Intermediate International Benchmark is 475 and the Low International Benchmark is 400.

### A3.1 Performance demonstrated at the international benchmarks

The benchmark descriptions are presented separately for the two reading purposes, and start with the greatest level of competence: the Advanced International Benchmark. For each benchmark, there is a description of the comprehension skills and strategies demonstrated by the pupils on PIRLS 2006, as well as example items (literary and informational) with the results for England and the international mean.

#### Interpreting the data

To develop descriptions of achievement at the PIRLS 2006 international benchmarks the TIMSS and PIRLS International Study Center conducted a scale anchoring analysis. The scale anchoring data provided a basis for describing pupils' performance at different points on the reading achievement scale in terms of the types of texts they were asked to read, the types of items they were able to answer successfully, and the quality of their answers (for multi-mark constructed-response questions). In addition to the data analysis component to identify items that discriminated between successive points on the scale, the process also involved a judgmental component in which the PIRLS 2006 committee of reading experts examined the content of the texts and items and generalised to describe pupils' comprehension skills and strategies.

For the scale anchoring data analysis, the pupils' achievement results from all the participating countries and provinces were pooled, so that the benchmark descriptions refer to all pupils achieving at that level. Thus, in determining performance in relation to the benchmarks, it does not matter what country or province a pupil is from, only how he or she performed in the test. Considering pupils' reading achievement scale scores, criteria were applied to identify the sets of items that pupils reaching each international benchmark were likely to answer correctly and that those pupils at the next lower benchmark were unlikely to answer correctly.

For example, a multiple-choice item anchored at the Advanced International Benchmark if at least 65 per cent of pupils scoring at 625 answered the item correctly and less than 50 per cent of pupils scoring at the High International Benchmark (550) answered correctly. Similarly, a multiple-choice item anchored at the High International Benchmark if at least 65 per cent of pupils scoring at 550 answered the item correctly and less than 50 per cent of pupils scoring at the Intermediate International Benchmark (475) answered it correctly, and so on, for each successively lower benchmark. Since constructed-response questions nearly eliminate guessing, the criterion for the constructed-response items was simply 50 per cent at the particular benchmark, and, for multi-mark items, the analysis differentiated between partial-credit and full-credit responses.

The sets of items identified by the scale anchoring analysis represented the accomplishments of pupils reaching each successively higher benchmark, and were used by the PIRLS 2006 group of reading experts to develop the benchmark descriptions. For each benchmark, the experts developed a short description for each anchor item that characterised the reading skills and strategies demonstrated by pupils answering it successfully (and for multi-mark constructed-response questions, according to whether pupils answered partially or fully).

Pupils reaching a particular benchmark demonstrated the comprehension skills and strategies characterising that benchmark as well as the competencies of pupils at any lower benchmarks.

### **Achievement at the PIRLS 2006 Advanced International Benchmark**

Pupils' reading literacy skills at this benchmark are characterised as follows:

When reading literary texts, pupils can:

- integrate ideas across a text to provide interpretations of a character's traits, intentions and feelings, and provide full text-based support
- interpret figurative language
- begin to examine and evaluate story structure.

When reading information texts, pupils can:

- distinguish and interpret complex information from different parts of text and provide full text-based support
- understand the function of organisational features
- integrate information across a text to sequence activities and fully justify preferences.

Figure A3.1 is an example of a literary item at the Advanced International Benchmark and illustrates a response gaining the maximum three marks. In order to gain three marks, pupils had to demonstrate extensive comprehension by integrating ideas from across the text to fully support an interpretation of why the clay's feelings changed during the story. It was a difficult item, with just over a quarter of pupils internationally gaining full credit, and fewer than half of the pupils in any country gaining full credit. Internationally, and in England, girls found this a much more accessible item than boys.

Figure A3.1 PIRLS 2006 Advanced International Benchmark – literary example



Purpose: reading for literary experience	
Process: interpret and integrate ideas and information	
<p>10. Describe the different feelings the clay had at the beginning and the end of the story. Explain why his feelings changed.</p> <p> in the beginning, the lump of clay felt lost hope, as nobody has picked him up from the bin. At the <del>end</del><sup>end</sup>, the lump of clay was proud as it was made into a cup.</p>	
England: 36%	International average: 27%
Highest percentage correct: Sweden 47%	

Figure A3.2 illustrates a response to a two-mark item about woodlice (pill bugs was translated in the version used in England). There were two types of answer that could gain full marks. Pupils had either to explain the necessity of the picture to know how to make the box, to know where to put things in the box, or to know what the box should look like or to show an understanding that it is the visual image of the box that makes it possible to make one the same way.

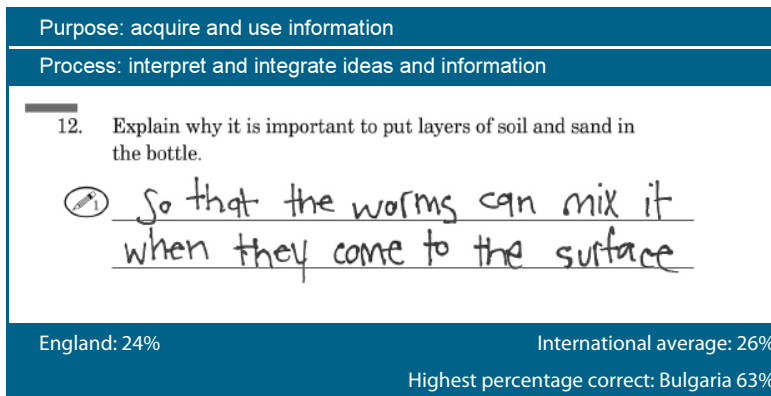
Figure A3.2 PIRLS 2006 Advanced International Benchmark – informational example

Purpose: acquire and use information	
Process: examine and evaluate content, language and textual elements	
<p>7. Look at the picture for Study Pill Bugs. How does the picture help you to know what to do in the experiment?</p> <p> it helps you understand because it has arrows and theres lines in different places to tell you where to put everything</p>	
England: 41%	International average: 21%
Highest percentage correct: Canada (Ontario) 48%	

The response shown in Figure A3.2 gained both marks available but again it proved a difficult item, with fewer than half pupils in all countries gaining full marks. Pupils in England, with 41 per cent gaining maximum marks, were therefore relatively successful, and girls in England were considerably more successful than boys.

The one-mark item shown in Figure A3.3 is notable because pupils in England, along with pupils in all other countries testing in English, scored below the international mean. In order to gain a mark, responses needed to show an understanding that the effect of the tunnelling (the mixing of the soil and sand) would be visible because of the layers of soil and sand.

**Figure A3.3 PIRLS 2006 Advanced International Benchmark – informational example**



**Achievement at the PIRLS 2006 High International Benchmark**

When reading literary texts, pupils can:

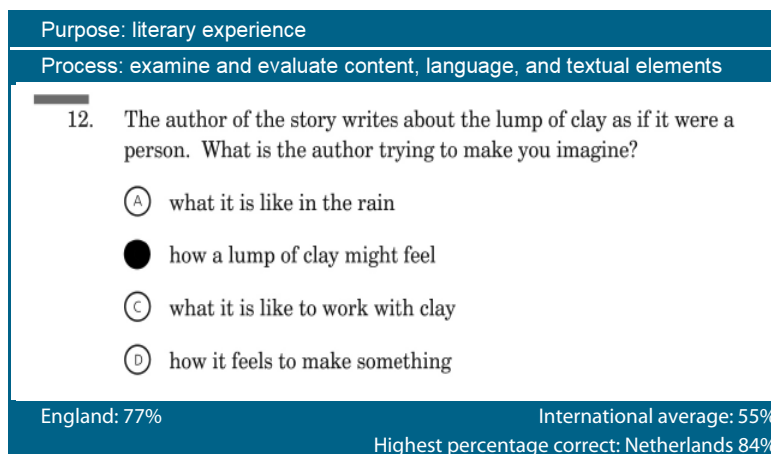
- locate relevant episodes and distinguish significant details embedded across the text
- make inferences to explain relationships between intentions, actions, events and feelings, and give text-based support
- recognise the use of some textual features (e.g. figurative language, an abstract message)
- begin to interpret and integrate story events and character actions across the text.

When reading information texts, pupils can:

- recognise and use a variety of organisational features to locate and distinguish relevant information
- make inferences based on abstract or embedded information
- integrate information across a text to recognise main ideas and provide explanations
- compare and evaluate parts of a text to give a preference and a reason for it
- begin to understand textual elements, such as simple metaphors and author’s point of view.

Figure A3.4 is an example of a literary item at the High International Benchmark.


**Figure A3.4 PIRLS 2006 High International Benchmark – literary example**



The item shown in Figure A3.4 is a multiple-choice item based on the narrative text *A Little Lump of Clay*, which requires pupils to recognise the idea of personification. Pupils in England found this a reasonably easy item, with over three-quarters gaining the mark. The most common incorrect choice of the multiple-choice options was option D (11 per cent), and boys in England were slightly more successful on this item than girls (79 per cent for boys compared to 75 per cent for girls).

The response required in the one-mark item shown in Figure A3.5 proved moderately difficult for pupils in England. To gain the mark, they had to integrate information within the section about the woodlice project, make an inference about the point of the experiment and write their answer. Just over 60 per cent of the pupils in England could do this successfully, 63 per cent of boys and 60 per cent of girls.

**Figure A3.5 PIRLS 2006 High International Benchmark – informational example**

Purpose: acquire and use information	
Process: interpret and integrate ideas and information	
<p>9. In Step 3 of the pill bugs project, what do you think will happen if you move the damp leaves to the left corner of the box?</p> <p> They will sense the food and find it.</p>	
England: 61%	International average: 55%
Highest percentage correct: Singapore 83%	

### Achievement at the PIRLS 2006 Intermediate International Benchmark

When reading literary texts, pupils can

- identify central events, plot sequences and relevant story details
- make straightforward inferences about the attributes, feelings and motivations of main characters
- begin to make connections across parts of the text.

When reading information texts, pupils can

- locate and reproduce one or two pieces of information from within the text
- make straightforward inferences to provide information from a single part of the text
- use subheadings, textboxes and illustrations to locate parts of the text.




The item shown in Figure A3.6 required pupils to sequence the events in a fantasy story *An Unbelievable Night*. About two-thirds of the pupils surveyed could do this successfully, and significantly more in England.

**Figure A3.6 PIRLS 2006 Intermediate International Benchmark – literary example**

Purpose: literary experience	
Process: make straightforward inferences	
<p>5. Put the following sentences in the order in which they happened in the story.</p> <p>The first one has been done for you.</p> <p><u>2</u> Anina saw the crocodile.</p> <p><u>4</u> The crocodile ate two flamingos.</p> <p><u>5</u> Anina tried to explain the broken door to her parents.</p> <p><u>1</u> Anina started to walk to the bathroom.</p> <p><u>3</u> Anina ran to the bedroom and slammed the door.</p>	
England: 73%	International average: 67%
Highest percentage correct: Russian Federation 84%	

The item illustrated in Figure A3.7 required pupils to make inferences and then provide three pieces of information about how penguins keep warm. Pupils at the intermediate level provided two pieces of information and thereby gained two of the three marks available. Almost three-quarters of pupils in England gained two marks on this item and girls were more successful than boys.

**Figure A3.7 PIRLS 2006 Intermediate International Benchmark – informational example**

Purpose: acquire and use information	
Process: make straightforward inferences	
<p>7. Give <b>three</b> ways penguins are able to keep warm in Antarctica.</p> <p> 1. <u>They have many feathers which overlap</u></p> <p> 2. <u>and a thick layer of fat</u></p> <p> 3. _____</p>	
England: 74%	International average: 67%
Highest percentage correct: Russian Federation 92%	

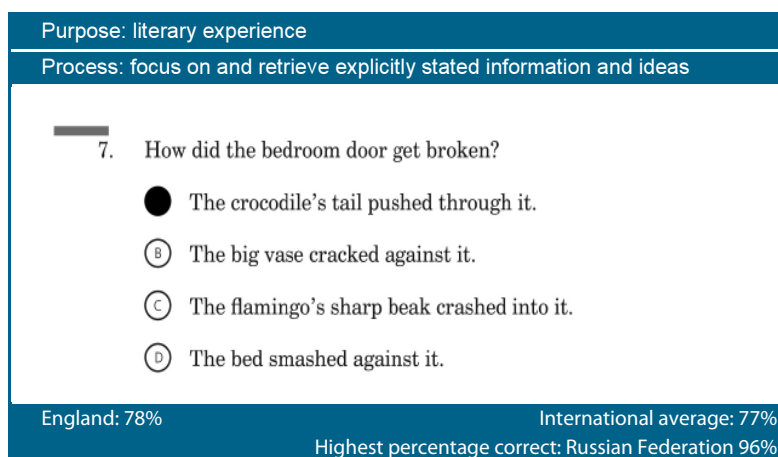
**Achievement at the PIRLS 2006 Low International Benchmark**

When reading literary texts, pupils can

- recognise an explicitly stated detail
- locate a specified part of the story and make an inference clearly suggested by the text.

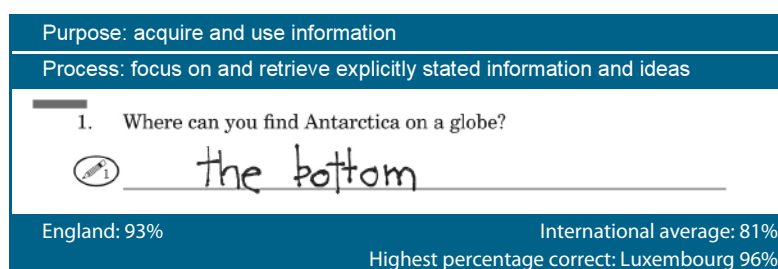
When reading information texts, pupils can

- locate and reproduce explicitly stated information that is readily accessible, for example, at the beginning of the text or in a clearly defined section
- begin to provide a straightforward inference clearly suggested by the text.

**Figure A3.8 PIRLS 2006 Low International Benchmark – literary example**

The item illustrated in Figure A3.8 proved a relatively easy multiple-choice item. Over three-quarters of pupils in England gained the mark, not significantly different from the international mean, and boys were more successful than girls (81 per cent against 76 per cent). Almost all pupils in the Russian Federation (96 per cent) gave the correct response. The most common incorrect response in England was the fourth option, which 12 per cent of pupils selected. This is a plausible but erroneous response which fails to recognise the fantasy aspects of the story.

Figure A3.9 shows an item requiring a very short response – the single word ‘bottom’ would gain the mark in that it shows the ability to retrieve the information about the location of Antarctica on a globe. This item proved relatively easy for pupils in England.

**Figure A3.9 PIRLS 2006 Low International Benchmark – informational example**

Complete answers to the item shown in Figure A3.10 gained two marks. This is a further item on the information text *Antarctica* and pupils at this benchmark gave one text-based reason, of the two required for full credit. Internationally, 78 per cent of pupils gave at least one reason (89 per cent in England), and 55 per cent gave just one reason (61 per cent in England).



**Figure A3.10 PIRLS 2006 Low International Benchmark – informational example**

Purpose: acquire and use information

Process: interpret and integrate ideas and information

4. Think about what the article says about Antarctica. Give **two** reasons why most people who visit Antarctica choose **not** to go there between April and September.

1. the temperature can  
be as cold as -89°C.

2. \_\_\_\_\_

\_\_\_\_\_

England: 61% (one mark only)      International average: 55%  
Highest percentage correct: Belgium (Flemish) 70%

**Other research evidence**

One aspect of the PIRLS reading assessments that is apparent in the preceding section is the variety of item formats employed. About 50 per cent of the items are in a multiple-choice format; all the rest require a constructed response. Occasionally this may be in the form of a table to be completed or events to be sequenced. More typically, pupils must write a short phrase or several sentences. There is a considerable body of research evidence looking at the impact of different item formats in reading assessments. In a recent review, Campbell (2005) suggested that not only was there evidence that multiple-choice and constructed response items appeared to assess the same constructs, but that there were advantages and disadvantages of the differing item types: 'a combination of carefully crafted multiple-choice and constructed response questions may be the most valid approach to assessing reading comprehension' (Campbell, 2005, p. 365).

**A3.2 PIRLS and the National Curriculum**

Pupils participating in PIRLS 2006 in England will have been taught reading literacy in accordance with the programmes of study of the National Curriculum. It can also be expected that they have experienced teaching in line with the framework for teaching of the Primary National Strategy. For a detailed comparison of the PIRLS reading framework and the National Curriculum, see the national report for England for PIRLS 2001 (Twist *et al.*, 2003). In this, it was concluded that the range of texts in the PIRLS assessments was narrower than that outlined in the National Curriculum: primarily due to the requirements of translation, PIRLS does not include poetry. Neither the 2001 nor the 2006 assessments included a playscript for example; the 2006 survey did not include myth or legend, or a newspaper article.

The PIRLS reading processes have been described in Appendix 2. Figure A3.11 shows the PIRLS reading processes mapped against the assessment focuses for reading, the means of describing the reading skills being assessed in specific questions in National Curriculum tests in England.

**Figure A3.11 PIRLS processes and National Curriculum assessment focuses**

PIRLS processes of comprehension	National Curriculum assessment focuses
Focus on and retrieve explicitly stated information and ideas	Assessment focus 2: understand, describe, select or retrieve information, events or ideas from texts and use quotation and reference to text
Make straightforward inferences	Assessment focus 3: deduce, infer or interpret information, events or ideas from texts
Interpret and integrate ideas and information	Assessment focus 3: deduce, infer or interpret information, events or ideas from texts
Examine and evaluate content, language textual elements	Assessment focus 4: identify and comment on the structure and organisation of texts, including grammatical and presentational features at text level Assessment focus 5: explain and comment on writers' use of language, including grammatical and literary features at word and sentence level Assessment focus 6: identify and comment on writers' purposes and viewpoints and the effect of the text on the reader Assessment focus 7: relate texts to their social, cultural and historical contexts and literary traditions

The PIRLS pupils in England took their key stage 2 reading tests the following year when they were in year 6. A review of the items included in the key stage 2 test *On Dangerous Ground* serves to highlight the similarities in the approach to reading assessment taken by PIRLS and that used in England's national assessments and also some of the differences. The end of key stage 2 reading test used in 2007 explored the eruption of Vesuvius in AD 79, including an information text about volcanoes, Pliny the Younger's account of the eruption, and information about tourism in Pompeii today, including advertisements for several local attractions.

A series of items in the key stage 2 tests required pupils to retrieve explicitly stated information in the text (assessment focus 2). In *On Dangerous Ground*, the first three items had a multiple-choice format and required the demonstration of pupils' ability to retrieve information about volcanoes. These were relatively easy, with at least two-thirds of pupils gaining level 3 on the test as a whole getting them correct.

The biggest single group of questions in the key stage 2 test in 2007, as in other years, was those assessing pupils' ability to make inferences (assessment focus 3). One of these required pupils to sequence the main events in Pliny's uncle's journey:

Look again at Pliny's account of his uncle's journey.

The events are described below, but they are in the wrong order.

Number each event to show the correct order. The first one has been done for you.

ordered the launching of ships

1 received letter from Rectina

came close to land

refused to listen to advice

journeyed into danger zone

This item was worth two marks: one mark was awarded for correctly numbering two or three stages, and two marks for all the stages correctly numbered. Overall, about 50 per

cent of pupils gained both marks; few pupils getting level 3 overall managed to gain both marks (15 per cent got two marks, 31 per cent got one mark). Thirty-six per cent of those gaining level 4 overall gained both marks, and a further 33 per cent gave a partially correct answer. Of the group of pupils gaining the highest level on the test, level 5, 68 per cent gained both marks and 22 per cent gained one mark. This item proved more demanding for the target group than the similar PIRLS sequencing item shown above (Figure A3.6).

Other questions were described as requiring complex inference and these tended to require pupils to draw on their understanding of several aspects of one or more of the texts in the reading booklet, analogous to the PIRLS process of *interpreting and integrating ideas and information*, and required pupils to construct an answer in their own words. In one of these, worth a maximum of three marks, pupils were asked to decide whether Pliny's uncle was a brave or a foolish leader and to justify their answer. Over half (54 per cent) of the pupils who obtained level 5 on the whole test scored two of the three marks, and a further 31 per cent obtained maximum marks. Those pupils who obtained level 4 tended to score one (46 per cent) or two (36 per cent) marks with just six per cent gaining full marks. Those who were awarded level 3 found this item difficult, with 44 per cent gaining one mark, and just 10 per cent gaining two or three.

The key stage 2 tests include several other assessment focuses, which are related to the PIRLS process of *examining and evaluating content, language and textual elements*. These may interrogate pupils' understanding of the structure of the text or its purpose. An example of an item of this type in PIRLS is shown in Figure A3.4 above, when pupils have to recognise the effect the author is trying to create and is not unlike items seen in the key stage 2 tests. Although the PIRLS item focuses on a narrative text, it has some similarities with one of the questions in 2007 which was based on advertisements. Pupils were asked to match descriptions of the language used in three of the advertisements to the particular advertisement in the text.

Here are some brief descriptions of the advertisements on pages 10 and 11.  
Draw lines to match each advertisement to its description.

attracts the reader's attention with questions	Mountain railway
uses verbs at the beginning of lines to invite the reader	Bay of Naples Museum
uses formal language to explain what the reader can learn	Lucio's walking tours

Almost two-thirds of pupils taking the key stage 2 test in 2007 gained a mark on this item, including 23 per cent of those who were awarded level 3 on the test, 46 per cent of those gaining level 4, and 84 per cent of those gaining level 5.

This outlines the similarities between the PIRLS tests and those used at the end of primary education in England. The two main differences are the much higher proportion of multiple-choice questions in PIRLS (38 per cent in PIRLS 2006, 10–20 per cent in key stage 2), and the lack of any questions which focus on the writer's language choices, for obvious reasons when the tests are translated into multiple languages.

# Appendix 4 Sampling in PIRLS 2006

## A4.1 Principles

### Defining the population

The target population for PIRLS 2006 (the ‘international desired target population’) was defined as:

*The PIRLS 2006 target population is defined as all students enrolled in the grade that represents four years of schooling, counting from the first year of ISCED Level 1, providing the mean age at the time of testing is at least 9.5 years. For most countries, the target grade should be the fourth grade, or its national equivalent.*

In order to meet the requirement of a mean age at testing of at least 9.5 years, the target population in England was year 5 and this year group was therefore described as the ‘national desired population’. The ‘national defined population’ was the sampling frame for the first stage of sampling. In England, as in most other countries, special schools and very small schools were excluded from the nationally defined population. These amounted to 1.6 per cent of the target population. These exclusions were approved by Statistics Canada which drew the national sample for England. Exclusions at this level ranged from 17.5 per cent in Israel and 6.8 per cent in the Russian Federation, to 0.1 per cent in Italy.

### Within-school exclusions

Each country had to define its own within-school exclusions. These were limited to pupils for whom the PIRLS tests were inappropriate and the definition adopted by England was that recommended by the International Study Center (terminology adapted for use in England) and is shown below. Within-school exclusions amounted to 0.9 per cent of the sample in PIRLS 2006 in England, and ranged from 6.8 per cent in Ontario, Canada and 6.1 per cent in Israel, to none in seven countries.

#### Guidance on within-school exclusions from PIRLS 2006 in England

In a very small number of cases, a pupil may need to be withdrawn from testing. ... It is vital to ensure that only pupils meeting the conditions for exclusions are excluded from selection. Pupils whose parents do not permit them to participate will not be assigned an exclusion code. *In case of doubt the pupil should always be included.* An adult can act as a scribe for a pupil. In this case, they should be an adult known to the pupil and they should clearly understand that they must record exactly what the pupil says and not give any prompts.

**Pupils with a physical impairment.** These are pupils who are permanently physically disabled in such a way that they cannot perform in the PIRLS testing situation. Physically impaired pupils who can respond should be included in the testing.

**Pupils with a significant learning difficulty.** These are pupils who are considered in the professional opinion of the headteacher or by other qualified staff members to have a significant learning difficulty or who have been psychologically tested as such. This includes pupils who are emotionally or psychologically unable to follow even the general instructions of the test. Pupils should not be excluded solely because of poor academic performance or normal disciplinary problems. It should be noted that the exclusion of pupils with dyslexia is not acceptable.

**Pupils with English as an additional language.** These are pupils who are actually unable to read or speak the language of the test and would be unable to overcome the language barrier in the test situation. Typically, a pupil who has received less than one year of instruction in the language of the test may be considered for exclusion.

Further information about each country's internationally and nationally defined populations, including school-level and within-sample exclusions is shown in Figure A4.1.

### Sample design and stratification

PIRLS 2006 used a three-stage stratified cluster sample design.

*The first-stage sampling units* consist of individual schools. Schools are selected with probabilities proportional to their size (PPS); size being the estimated number of pupils enrolled in the target year group. The comprehensive national list of all eligible schools is called the school sampling frame.

Prior to sampling, schools in the sampling frame can be assigned to a predetermined number of strata. This stratification may be explicit, implicit or both. There are essentially three reasons for stratifying:

- to produce reliable estimates for sub-national domains
- to improve the sampling efficiency, thereby improving the reliability of national estimates
- to ensure different parts of the population are appropriately represented in the sample.

Schools are sampled using a PPS systematic sampling method. As the schools are sampled, replacement schools are simultaneously identified should they be needed to replace non-participating sampled schools.

### Interpreting the data

Explicit stratification: this is the construction of separate sampling frames for each stratification variable. In England, there was explicit stratification by school size (large/small) ensuring disproportionate allocation of the school sample across the two strata with schools in the 'small schools' stratum sampled with equal probabilities.

Implicit stratification: this requires a single school sampling frame but sorts the schools in this frame by a set of stratification variables. It is intended to ensure proportional sample allocation. In England, the implicit stratification variables were school type (primary, junior, middle and independent) and school performance (2003 key stage 2 performance, six levels), giving 24 strata.

Figure A4.1: Coverage of PIRLS Target Population

Countries	International desired population		National desired population		
	Country coverage	Notes on coverage	School-level exclusions	Within-sample exclusions	Overall exclusions
Austria	100%		1.4%	3.8%	5.1%
Belgium (Flemish)	100%		6.1%	1.1%	7.1%
Belgium (French)	100%		3.7%	0.3%	3.9%
Bulgaria	100%		2.2%	4.3%	6.4%
Chinese Taipei	100%		1.8%	1.1%	2.9%
Denmark	100%		0.5%	5.7%	6.2%
<b>England</b>	<b>100%</b>		<b>1.6%</b>	<b>0.9%</b>	<b>2.4%</b>
France	100%		3.4%	0.4%	3.8%
Georgia	80%	Students taught in Georgian	2.4%	5.0%	7.3%
Germany	100%		0.4%	0.3%	0.7%
Hong Kong SAR	100%		3.0%	0.9%	3.9%
Hungary	100%		2.3%	1.4%	3.7%
Iceland	100%		1.3%	2.5%	3.8%
Indonesia	100%		3.2%	0.0%	3.2%
Iran, Islamic Rep. of	100%		2.9%	0.9%	3.8%
Israel	100%		17.5%	6.1%	22.5%
Italy	100%		0.0%	5.2%	5.3%
Kuwait	100%		0.3%	0.0%	0.3%
Latvia	100%		4.3%	0.5%	4.7%
Lithuania	93%	Students taught in Lithuanian	0.9%	4.2%	5.1%
Luxembourg	100%		0.9%	3.0%	3.9%
Macedonia, Rep. of	100%		4.6%	0.3%	4.9%
Moldova, Rep. of	91%	Moldova less Predniestrian - Moldovan Republic	0.6%	0.0%	0.6%
Morocco	100%		1.1%	0.0%	1.1%
Netherlands	100%		3.5%	0.1%	3.6%
New Zealand	100%		1.4%	3.9%	5.3%
Norway	100%		1.0%	2.8%	3.8%
Poland	100%		0.9%	4.2%	5.1%
Qatar	100%		0.7%	0.7%	1.4%
Romania	100%		2.4%	0.0%	2.4%
Russian Federation	100%		6.8%	1.0%	7.7%
Scotland	100%		1.4%	0.9%	2.3%
Singapore	100%		0.9%	0.0%	0.9%
Slovak Republic	100%		1.8%	1.9%	3.6%
Slovenia	100%		0.2%	0.5%	0.8%
South Africa	100%		4.2%	0.1%	4.3%
Spain	100%		1.3%	4.0%	5.3%
Sweden	100%		2.4%	1.5%	3.9%
Trinidad and Tobago	100%		0.7%	0.0%	0.7%
United States	100%		3.2%	2.8%	5.9%
<i>Canada, Alberta</i>	100%		2.0%	5.2%	7.1%
<i>Canada, British Columbia</i>	100%		2.2%	5.5%	7.6%
<i>Canada, Nova Scotia</i>	100%		0.2%	3.8%	4.0%
<i>Canada, Ontario</i>	100%		1.6%	6.8%	8.3%
<i>Canada, Quebec</i>	100%		2.4%	1.2%	3.6%

Adapted from: IEA Progress in International Reading Literacy Study (PIRLS) 2006

**Figure A4.2: Participation Rates (weighted)**

Countries	School participation		Classroom participation	Student participation	Overall participation	
	Before replacement	After replacement			Before replacement	After replacement
Austria	100%	100%	99%	98%	97%	97%
Belgium (Flemish)	68%	92%	100%	99%	67%	91%
Belgium (French)	85%	100%	100%	95%	81%	95%
Bulgaria	88%	97%	100%	97%	85%	94%
Chinese Taipei	98%	100%	100%	99%	97%	99%
Denmark	89%	99%	100%	97%	86%	96%
<b>England</b>	<b>86%</b>	<b>99%</b>	<b>100%</b>	<b>93%</b>	<b>80%</b>	<b>92%</b>
France	94%	97%	100%	98%	92%	95%
Georgia	94%	100%	100%	98%	93%	98%
Germany	97%	99%	100%	93%	90%	92%
Hong Kong SAR	91%	100%	100%	97%	89%	97%
Hungary	99%	100%	100%	97%	96%	97%
Iceland	99%	99%	100%	91%	90%	90%
Indonesia	99%	100%	100%	98%	97%	98%
Iran, Islamic Rep. of	100%	100%	100%	99%	99%	99%
Israel	98%	100%	100%	93%	91%	93%
Italy	90%	100%	100%	97%	88%	97%
Kuwait	99%	99%	99%	89%	88%	88%
Latvia	97%	98%	100%	94%	90%	92%
Lithuania	99%	100%	100%	92%	90%	92%
Luxembourg	100%	100%	100%	99%	99%	99%
Macedonia, Rep. of	100%	100%	100%	96%	96%	96%
Moldova, Rep. of	98%	100%	100%	95%	93%	95%
Morocco	98%	99%	100%	95%	93%	94%
Netherlands	69%	93%	100%	97%	67%	90%
New Zealand	92%	99%	100%	96%	88%	95%
Norway	67%	82%	100%	87%	58%	71%
Poland	99%	100%	100%	95%	94%	95%
Qatar	100%	100%	100%	94%	94%	94%
Romania	99%	99%	100%	98%	97%	97%
Russian Federation	100%	100%	100%	97%	97%	97%
Scotland	69%	87%	100%	94%	65%	81%
Singapore	100%	100%	100%	95%	95%	95%
Slovak Republic	93%	98%	100%	96%	89%	94%
Slovenia	93%	97%	100%	96%	90%	93%
South Africa	94%	96%	100%	92%	86%	88%
Spain	98%	100%	100%	97%	95%	97%
Sweden	100%	100%	100%	96%	96%	96%
Trinidad and Tobago	99%	99%	100%	95%	94%	94%
United States	57%	86%	100%	95%	54%	82%
<i>Canada, Alberta</i>	100%	100%	100%	96%	96%	96%
<i>Canada, British Columbia</i>	98%	99%	100%	95%	93%	94%
<i>Canada, Nova Scotia</i>	99%	100%	100%	96%	96%	96%
<i>Canada, Ontario</i>	88%	90%	100%	97%	85%	87%
<i>Canada, Quebec</i>	96%	96%	100%	84%	81%	81%

*The second-stage sampling units* are classrooms within sampled schools. Within each sampled school, a list of eligible classrooms from the target year group is prepared. A single eligible classroom per target year group is randomly selected from each participating school.

*The third-stage sampling units* are pupils within sampled classrooms. Generally, all pupils in a sampled classroom are selected for the assessment.

## A4.2 Participation and response rates

For the first time in an international survey, England met the sampling requirements without the inclusion of replacement schools. The achieved coverage of the nationally defined population in England was 97.4 per cent (the international target was 95 per cent). Participation rates for all countries are shown in Figure A4.2. Only nine countries achieved higher participation rates.

A total of 4,036 pupils in 148 schools in England participated in PIRLS 2006. Response rates for England are specified in Figure A4.3. This figure shows the achieved response rates to each of the four questionnaires.

**Figure A4.3** England's response rates

	Percentage of pupils with any available data
Pupil questionnaire	100
Teacher questionnaire	91
School questionnaire	83
Learning to Read (home) questionnaire	46

## A4.3 Representativeness of the achieved sample

There are several ways in which the representativeness of the achieved sample in England in PIRLS 2006 can be ascertained. The focus can be on pupil attainment or the context of the school. The following tables illustrate both approaches to scrutinising the representativeness of the sample.

At pupil level, it is possible to compare attainment on the end of key stage 2 tests of the pupils involved in PIRLS and which they took one year after the PIRLS survey, with the national distribution of attainment. National Curriculum results were available for 85 per cent of the PIRLS sample. This comparison is illustrated in Figure A4.4.



**Figure A4.4 National Curriculum levels achieved by PIRLS sample in key stage 2 English test in 2007 compared to national distribution**

NC level	English		Reading		Writing	
	PIRLS	National	PIRLS	National	PIRLS	National
Below 3	1.7%	2.1%	2.9%	4.1%	1.8%	1.1%
Level 3	14.8%	13.7%	9.2%	9.3%	30.7%	28.4%
Level 4	49.9%	49.5%	38.0%	37.1%	49.6%	50.5%
Level 5	33.5%	34.7%	49.9%	49.5%	17.9%	20.0%
<i>n</i>	3415		3418		3416	

*Recalculated from DCSF data sets (Department for Children, Schools and Families, 2007)*

The distributions in Figure A4.4 have been adjusted in order to take into account the pupils who do not take the key stage 2 tests because they are working below the level of the test and/or unable to access the tests, and also those who were excluded from the PIRLS tests. The national distributions are provisional figures, judged by the DCSF to be within one per cent of the final distributions (which will be available after this report has been published).

**Figure A4.5 PIRLS 2006 England Sample Representation**

	Schools			Pupils		
	Sample		Population	Sample		Population
	Number	%	%	Number	%	%
<b>School type</b>						
Primary/Combined	102	69	79	2561	63	69
Junior	29	20	10	939	23	19
Middle	9	6	2	407	10	6
Independent	8	5	8	132	3	6
<b>Size of year group</b>						
1-30	30	20	43	570	14	22
31-60	71	48	40	1765	44	45
61-90	31	21	12	973	24	22
91+	16	11	4	731	18	11
<b>Region</b>						
North	45	30	31	1150	28	28
Midlands	43	29	31	1175	29	31
South	60	41	38	1714	42	40
<b>KS2 test results 2003</b>						
Bottom 20%	27	18	17	669	17	17
Next from bottom	29	20	17	838	21	19
Middle 20%	35	24	17	978	24	19
Next from top	28	19	19	803	20	20
Top 20%	29	20	21	751	19	20
Not available	0	0	9	0	0	6
<b>Percentage eligible for Free School Meals 2004</b>						
Lowest 20%	17	11	19	353	9	14
2nd lowest 20%	36	24	21	1043	26	21
Middle 20%	33	22	20	981	24	22
2nd highest 20%	32	22	20	893	22	22
Highest 20%	30	20	20	769	19	21
<b>Total</b>	<b>148</b>	<b>100</b>	<b>100</b>	<b>4039</b>	<b>100</b>	<b>100</b>

Since percentages are rounded to the nearest integer, they may not always sum to 100.

Figure A4.4 shows a very good match between the national population and the PIRLS sample. When the PIRLS pupils' attainment in English in the key stage 2 tests is considered, the achieved sample does not differ significantly from the national distribution. There is a small significant difference between the distribution of levels achieved in reading and in writing of the PIRLS pupils when compared with the national distribution. The distribution of levels attained in reading is very slightly skewed towards the upper end of achievement and in writing towards the lower end.

An alternative approach to considering representativeness is to review the achieved sample of schools and pupils against the information available on the Register of Schools.

The data contained in Figure A4.5 shows a very good match of the achieved PIRLS sample in England against the national data at both pupil and school level, given that the sample of schools is drawn with probability proportional to size.



# Appendix 5 An Investigation into Changes in England's PIRLS Results 2001 to 2006

## A5.1 Introduction

There appears to have been a significant reduction in England's results in PIRLS between 2001 and 2006, not only in relative terms (which could be explained by other countries improving) but also in absolute terms. The same has happened to the two other highest achieving countries in 2001 – Sweden and the Netherlands. This has prompted an investigation into the way in which results have been linked between the two surveys, to examine whether this may be an artefact of the linking process. Analysis has focused on the data for England in 2001 and 2006 and uses preliminary data for the 2006 survey. This work will continue and initial outcomes and tentative conclusions only are reported here.

As this investigation was being undertaken, a relevant paper by two members of the PISA team was published (Gebhardt and Adams, 2007) which discusses how the equating methodology adopted affects trend estimates. PISA is another international survey using a similar method for linking surveys. The paper and its relevance to the current investigation is discussed further at the end of this section.

## A5.2 England's results

Figure A5.1 summarises the results for 2001 with preliminary results for 2006 for England, using the IEA data.

**Figure A5.1 England's results in 2001 and 2006 (IEA measures)**

Scale	2001		2006		Difference
	Mean	Standard deviation	Mean	Standard deviation	
Literary	558.1	88.5	540.3	83.8	-17.8
Information	546.8	77.9	538.6	78.8	-8.2
Overall	553.0	82.8	540.1	82.4	-12.9

*(Results weighted to allow for sample non-response)*

Of the ten blocks of items, only four were common to the 2001 and 2006 tests, so any changes must be based on linking via these item blocks. Total item scores on these blocks for England have been compared, in order to see if the pattern of performance on these items corresponds to the results presented above. These values are shown in Figure A5.2.

These simple comparisons suggest a different picture from that shown by the scaled measures. Changes in scores on the literary items seem to be roughly in balance in terms of common items, whereas the biggest change in scaled score is for the literary outcomes. The opposite is true for information – a larger decline than for literary (especially in Block A) matched by a lower decline in scaled scores.

**Figure A5.2 England’s results in 2001 and 2006 (common item blocks)**

Block (purpose)	2001		2006		Difference
	Mean	Standard deviation	Mean	Standard deviation	
C (literary)	10.2	4.3	10.5	4.3	+0.3
F (literary)	11.6	3.6	11.1	3.6	-0.5
A (information)	11.9	3.1	10.9	3.3	-1.0
L (information)	9.3	4.0	8.9	4.0	-0.4

*(Results weighted to allow for sample non-response)*

On the surface this is a puzzling result, which required further investigation. The first stage of this has been an attempt to link England’s results in 2001 and 2006 using a two-parameter IRT model via the common items.

**IRT equating results (England only) – joint calibration**

Data from all items and all pupils in England in 2001 and 2006 was combined into a single data set, including the common items and those specific to each year (174 in total). A total of 7,369 cases were included in the analysis. A two-parameter IRT model was fitted to the dataset using the program PARSCALE, and the fit of the model to the item data was seen to be good. From this model, pupil ability values were estimated, and these were rescaled so that the 2001 results (weighted) gave the same mean and standard deviation as those produced by the IEA.

A similar process was undertaken for literary and information items separately (89 and 85 items), in order to replicate the performance measures for these aspects of reading. Results were scaled in a similar way to match the 2001 IEA figures, and the full set of comparisons is shown in Figure A5.3.

**Figure A5.3 England’s results in 2001 and 2006 (linked via two-parameter model for England only)**

Scale	2001		2006		Difference
	Mean	Standard deviation	Mean	Standard deviation	
Literary	558.1	88.5	558.7	90.1	+0.6
Information	546.8	77.9	540.0	79.3	-6.8
Overall	553.0	82.8	547.6	84.5	-5.4

*(Results weighted to allow for sample non-response)*

A simple multilevel analysis of these scaled scores has shown that none of the differences between 2001 and 2006 are statistically significant, once the clustering of pupils within schools and the corresponding design effect has been taken into account.

These results correspond more closely to the simple analysis presented in Figure A5.2, but are strikingly at variance with Figure A5.1. It is not immediately obvious why there should be this difference between the results obtained by linking just England’s 2001 and 2006 data from the results IEA obtain linking the years using all countries’ data.

A possible explanation could relate to improved performance by a number of countries between 2001 and 2006, which could affect the item parameters and hence scores when linking using all countries.

### IRT equating results (England only) – calibration based on 2001

Because the above results gave a different picture from those reported by IEA, the calibration using England data only was repeated using an alternative methodology. In principle, there are a number of ways in which linking across years using common items can be carried out, including:

1. Form a single model spanning both years, with common items parameters estimated from both years' data (as above).
2. Fit a model for the first year's data only, and use the common item parameters from this model as fixed values for the model fitting the later year's data.
3. As (2), but fix common item parameters based on the later year's data.

It seems likely that IEA may have used the second method in their analysis, so this was applied to the England data. A two-parameter model was fitted to the 2001 data, and common item parameters in the model for the 2006 data were fixed to have the same values. Final ability values were again rescaled to have the same mean and variance in 2001 as for the IEA results. Figure A5.4 shows the results of this calibration exercise.

**Figure A5.4** England's results in 2001 and 2006 (linked via two-parameter model for England only, common items fixed for 2001)

Scale	2001		2006		Difference
	Mean	Standard deviation	Mean	Standard deviation	
Literary	558.1	88.5	558.1	88.0	0.0
Information	546.8	77.9	529.6	77.3	-17.2
Overall	553.0	82.8	543.1	84.0	-9.9

*(Results weighted to allow for sample non-response)*

Comparison of these results with those reported in Figure A5.3, based on the same data, shows a clear difference related to the linking methodology. This is particularly the case for the information items, whose apparent decline has more than doubled. The change in literary scores (approximately zero) is fairly consistent, but overall scores decline by roughly twice the amount shown in the previous analysis. This decline in overall scores is not quite statistically significant when design effects are taken into account, although the decline in information scores is significant.

In terms of the most appropriate methodology for this kind of linking, there is still some debate. It seems, a priori, that the first methodology should be superior as it uses all the information in both rounds of testing to fix item parameters. However, if the philosophical standpoint is that standards established in the first round are being transferred to the second round, then perhaps the second methodology is to be preferred.

### Tentative conclusions

The exercise of linking 2001 and 2006 data for England only via a two-parameter IRT model and common items has shown the following:

- Results on literary items are very comparable between 2001 and 2006.
- Results on a few information items seem to have fallen between 2001 and 2006, leading to an overall slight reduction in information scores.
- None of the changes in overall or literary scores between 2001 and 2006 are significant when design effects are accounted for using multilevel modelling.
- However, when a linking method which calibrates against 2001 item parameters is used, there is an apparently significant decline in information scores.
- Results, especially for information, are sensitive to the linking methodology.

Possible explanations for the discrepancies between the above findings and those produced by IEA include:

- Linking performance across years via common items with countries some of whose results have increased significantly may adversely affect the apparent scores of countries such as England which did well in 2001.
- IEA results are based on ‘plausible values’ which take background factors into account, whereas the results repeated here are based purely on test performance.

## A5.3 Summary of the Gebhardt and Adams paper

The authors illustrate their paper with data from PISA 2000 and 2003 on reading and science, but their discussion and conclusions could apply to the estimation of trends from any international survey. They begin by considering what they refer to as the ‘original’ trend estimate for a given country. As with all trend estimates, it is crucially based on the link items which are common to the surveys in both years.

The first issue discussed is whether the item parameters (i.e. difficulties) for the link items should be the same for all countries (international estimates) or vary by country (national estimates). The former approach is used in PISA and all other international studies to produce trends, and fulfils the aim of measuring all pupils on the same scale, regardless of their country. However, the authors argue that this ignores item-by-country interactions which ‘are commonly observed in cross-national studies ... and the magnitude of these interactions influences the validity of cross-country comparisons’ (*op cit*, p. 307). In other words, estimated link item parameters for any individual country may differ significantly from the international estimates, and this will affect the estimate of trend for that country.

The second issue they discuss is how the scales for the two studies are linked. Given the use of IRT methods in all such studies, it is important to have item difficulty values for these link items. These can be estimated in three ways:

1. based on data for the earlier study, and fixed for the later study

2. based on data for the later study, and fixed for the earlier study
3. based on combined data for both studies.

Method 2 above is apparently used for PISA; both methods 1 and 2 are described as ‘linear transformations’ but in the paper they argue for the use of method 3, which they describe as ‘joint calibration’. It has the advantage that item parameters are estimated more precisely based on the full data, and the underlying pupil ability values (which are used to derive trends) are estimated directly.

The third issue discussed by Gebhardt and Adams is the contrast between trends estimated as a simple difference between (weighted) means at the two time points, and trends estimated taking into account differences between the two samples in background factors which may be related to attainment. The former, unadjusted, trends are called ‘marginal’ by the authors and the latter, adjusted, trends ‘conditional’. Most of the paper is concerned with investigating differences in national trends on a country-by-country basis between marginal and conditional estimates. For this work the authors use national item parameter estimates and joint calibration.

### **Relationship to England’s results for PIRLS 2006**

The investigation of the apparent decline in England’s PIRLS scores based on ‘original’ trends described in the first part of this section considers the first two issues raised by Gebhardt and Adams. The third issue above has not yet been considered, though in principle it could be addressed by setting up a joint model of England’s data in 2001 and 2006, with background factors, and looking for significant coefficients related to the survey year.

These results described above bear out Gebhardt and Adams’ conclusions that there are significant effects due to the choice of equating methodology, in particular related to the use of international rather than national parameter estimates.

## **A5.4 Conclusions**

There is a great deal of consensus between the work of Gebhardt and Adams on PISA data and the more limited investigation of PIRLS described here. There is no one single equating methodology which both links countries and produces robust estimates of change over time. It may be that to do the latter in an informative way for individual countries a national parameter estimation system needs to be used, as here for PIRLS data for England. All analyses in this area are model-based – it is critical to ensure the right model is selected to answer the question posed.





## Appendix 6 Deriving a measure of deprivation

International comparative surveys offer an opportunity for additional secondary analyses of detailed and complex data sets. One area that was considered important was that of the impact of deprivation on reading attainment in PIRLS and more widely. This analysis combines background data from two national data sets: PLASC (Pupil Level Annual School Census) and IDACI (Income Deprivation Affecting Children Index). In addition, attainment data for the PIRLS 2006 sample from their key stage 1 assessments (reading and writing) is combined with attainment data from the PIRLS' reading assessments, their key stage 2 reading assessments (taken in 2007), and background data from the Pupil questionnaire and the Learning to Read (home) questionnaire.

### Stage 1

Pupil data on attainment, information from the Pupil questionnaire and national data (key stage 1 results and PLASC) have all been combined. Within this merged data there are a number of indicators related to deprivation:

- number of books in the home (Pupil questionnaire)
- possession of other goods (Pupil questionnaire)
- IDACI indicator from PLASC, based on postcode
- indicator of eligibility for free school meals from PLASC.

The list of possessions referred to above is quite wide-ranging and it was not clear that all were related to deprivation in the same way. In order to reduce the dimensionality of this part of the data, exploratory factor analysis was undertaken. This seemed to indicate two main factors, with loadings as shown in Figure A6.1 below.

**Figure A6.1 Factor Loadings for Possessions**

Possessions	Factor 1	Factor 2
Computer	0.03	0.26
Study desk/table for own use	0.04	<b>0.44</b>
Books of own	-0.01	<b>0.38</b>
Daily newspaper	0.03	0.28
Own bedroom	0.21	0.25
Own mobile phone	<b>0.44</b>	-0.01
Own TV	<b>0.79</b>	-0.05
Musical instrument	0.02	<b>0.44</b>
Own CD/DVD player	<b>0.50</b>	0.13
Satellite, digital or cable TV	0.21	0.23

- Values in bold show loadings greater than 0.3 – this reveals three main possessions for each factor. As a result of this exploratory factor analysis, two additional variables were created:
- *Possessions 1*: Number of items on the first list (children’s possession of their own mobile phone, TV, CD/DVD player) – labelled as number of consumer electronic goods
  - *Possessions 2*: Number of items on the second list (desk, books, musical instrument) – labelled as number of study-related goods.

The extent and manner to which these two variables were related to deprivation was of interest.

**Stage 2**

More information on family background, including deprivation, is available from the Learning to Read (home) questionnaire, although not all parents responded to this and there is evidence that responses were biased towards less deprived families. Within this questionnaire, the following items were related to deprivation:

- number of books in the home
- number of children’s books in the home
- highest level of education completed by father/mother
- employment situation of father/mother
- respondent’s perception of how well-off family is financially.

In addition there was a question on the father’s/mother’s occupation, but the relationship between these codes and deprivation may not be straightforward.

The Learning to Read questionnaire data was matched to the pupil data, and 1,890 pupils (46 per cent of the total) were found to have matched data. The relationship between the ‘books in the home’ question on both questionnaires was interesting. The correlation was 0.48 between the items on the two instruments, but Cohen’s Kappa measure of exact agreement was only 0.22. Although 40 per cent of cases agreed exactly on the number of books, there were some extreme cases. Six pupils claimed to have more than 200 books while their parents said zero to 10; contrariwise, eight pupils said they had zero to 10 books while their parent claimed over 200.

**Stage 3**

**Figure A6.2 Factor Loadings for Deprivation Measure**

Item	Factor 1
Number of books in the home	<b>0.69</b>
Number of children’s books	<b>0.55</b>
Highest level of education – father	<b>0.64</b>
Highest level of education – mother	<b>0.69</b>
Employment situation – father	-0.19
Employment situation – mother	-0.10
How well-off family is	<b>-0.42</b>

The next step was to use the relevant items on the Learning to Read (home) questionnaire to derive a single measure of deprivation, again using exploratory factor analysis. Factor loadings for this are shown in Figure A6.2 with loadings greater than 0.3 shown in bold.

Factor scores were produced for all cases with full data, and these were normalised to have a mean of 100 and standard deviation of 15 within this data (and such that higher values implied greater deprivation). The next step was to translate this composite measure into one that could be used with most cases within the pupil data, not just the subset with full Learning to Read questionnaire data. A set of regression models were fitted, to predict the above deprivation measure from pupil deprivation variables. The first model used all pupil variables (books in the home, two sets of possessions, IDACI and free school meals). The second regression omitted the free school meals indicator, while the third also omitted the IDACI measure. The fourth model omitted everything except IDACI and free school meals, while the fifth model used IDACI only. Regression coefficients are given in Figure A6.3.

**Figure A6.3 Regression Coefficients to Predict Deprivation Measure**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	109.35	110.02	114.74	95.86	95.62
Books in home (Pupil questionnaire)	-3.76	-3.90	-4.26		
Consumer electronic goods (Possessions 1)	3.83	3.81	4.17		
Study-related goods (Possessions 2)	-2.62	-2.75	-3.36		
IDACI code	18.25	21.35		29.35	33.43
Free school meal eligibility	5.65			6.83	

In this way, deprivation measures could be defined for 4,031 out of 4,039 pupils. The mean of the regressed values was 104.1 with a standard deviation of 8.9 – different from the nominal means of 100 and standard deviation of 15 for the derivation on the home questionnaire. This illustrates again the bias in the sample who completed the Learning to Read questionnaire. Values were renormalised to mean 100, standard deviation 15, for the full pupil data. Correlations between this deprivation measure and the main outcomes and prior attainment values are given below in Figure A6.4.

**Figure A6.4 Correlations with Deprivation Measure**

Performance measure	Correlation
Average plausible value (overall)	-0.45
Average plausible value (information)	-0.45
Average plausible value (literary)	-0.45
KS1 reading score	-0.36
KS1 writing score	-0.33



# Appendix 7 Multilevel analysis of PIRLS 2006 to investigate the relationships between background factors and reading attainment and attitudes

## A7.1 Development of pupil, teacher and school scales

The first step in the modelling was to analyse the Pupil, Teacher and School questionnaire data for England in order to develop a set of scales which could be used in the subsequent analyses.

### Pupil scales

An exploratory factor analysis was carried out. This produced a plausible solution with three factors, similar to those derived for the 2001 data (see Schagen, 2004a). Three scales were then produced by rescaling the items to a new metric ('never' = 0, 'every day' = 30; or 'disagree a lot' = -20, 'agree a lot' = 20). For each factor, an attitude scale score was calculated as a mean of the constituent item responses. Although simple, this approach has the advantage that it is possible to compare each scale's mean value with the other scales, and hence evaluate the relative strength of feeling about each.

Figure A7.1 shows the scales developed and the items on which they were based.

**Figure A7.1 Composition of National Pupil Scales**

Description of scale	Items included in scale
Reading activities in and out of school	<i>How often do you do these things outside of school?</i>
	I read aloud to someone at home.
	I listen to someone at home read aloud to me.
	I talk to my friends about what I am reading.
	I talk to my family about what I am reading.
	I read for fun outside of school.
	I read to find out things I want to learn.
	<i>How often do you do read these things outside of school?</i>
	I read stories or novels.
	I read books that explain things.
	I read directions or instructions.
	I read brochures and catalogues.
	<i>In school, how often do these things happen?</i>
	I read aloud to a small group of children in my class.
	<i>After you have read something in class, how often do you do these things?</i>
I answer questions in a workbook or on a worksheet about what I have read.	
I write something about what I have read.	
I answer questions about what I have read.	
I talk to other children about what I have read.	

**Figure A7.1 Composition of National Pupil Scales (continued)**

Description of scale	Items included in scale
Reading activities in and out of school (continued)	<p><i>How often do you use the Internet to do these things?</i></p> <p>Look up information for school.</p> <p><i>What do you think about reading?</i></p> <p>I like talking about books with other people.</p> <p>I would be happy if someone gave me a book as a present.</p> <p>I enjoy reading.</p>
Reading enjoyment and confidence	<p><i>How often do you do these things outside of school?</i></p> <p>I read for fun outside of school.</p> <p><i>How often do you do read these things outside of school?</i></p> <p>I read stories or novels.</p> <p><i>In school, how often do these things happen?</i></p> <p>I read silently on my own.</p> <p>I read books that I choose myself.</p> <p><i>What do you think about reading?</i></p> <p>I read only if I have to.</p> <p>I like talking about books with other people.</p> <p>I would be happy if someone gave me a book as a present.</p> <p>I think reading is boring.</p> <p>I enjoy reading.</p> <p><i>How well do you read?</i></p> <p>Reading is very easy for me.</p> <p>I do not read as well as other children in my class.</p> <p>When I am reading by myself, I understand almost everything I read.</p> <p>I read more slowly than other children in my class.</p>
Alternative media (non-book reading and TV viewing)	<p><i>How often do you do these things outside of school?</i></p> <p>I read comic books or comics.</p> <p>I read magazines.</p> <p>I read newspapers.</p> <p>I read brochures and catalogues.</p> <p><i>About how much time do you spend doing the following things outside of school on a normal school day?</i></p> <p>Watching television (including video or DVD).</p> <p>Playing video or computer games.</p> <p>Reading stories and articles on the internet.</p> <p><i>How often do you use a computer in each of these places?</i></p> <p>I use a computer at home.</p> <p>I use a computer somewhere else.</p> <p><i>How often do you use the internet to do these things?</i></p> <p>Look up things about sport.</p> <p>Find out about music.</p> <p>Find out about other activities and interests.</p> <p>Chat, e-mail or instant message with friends.</p>

Figure A7.2 shows the mean values of the scales derived from the factor analysis, their reliability indices and the correlations with the overall standardised test score. The reliability value (based on Cronbach's alpha) is an indicator of the extent to which the

items which make up each scale are mutually correlated, and hence measuring essentially the same construct. Values close to 1.0 are perfect, and values around 0 would imply no mutual relationship. The reliability index tends to increase with more items in the scale. Taking this into account, it seems that most of the scales have acceptable levels of reliability.

**Figure A7.2 Characteristics of National Pupil Scales**

Description of scale	Mean value	Number of items	Reliability of scale	Correlation with score
Reading activities in and out of school	11.99	19	0.83	0.04
Reading enjoyment and confidence	9.86	13	0.81	0.50
Alternative media (non-book reading and TV viewing)	14.74	13	0.74	-0.19

The three pupil scales described in Figures A7.1 and A7.2 differ considerably in their relationship to reading attainment on the PIRLS assessments. There is a strong positive association between the reading enjoyment and confidence scale and reading attainment. Using alternative media (which includes non-book reading, using the internet and television viewing) has a negative association with attainment. Finally there is no association evident between pupils' reading activities in and out of school and their reading attainment.

### Teacher scales

A principal factor analysis of the Teacher questionnaire identified three scales related to the frequency with which teachers undertook various approaches to the teaching of reading, including explicit teaching. The main factor loadings are set out in Figure A7.3.

**Figure A7.3 National Teacher Factor Loadings**

When you teach reading and/or do reading activities with the pupils, how often do you do the following?	Factor 1	Factor 2	Factor 3
Read aloud to the class.		0.41	
Ask pupils to read aloud to the whole class.		0.69	
Ask pupils to read aloud in small groups or pairs.		0.40	
Ask pupils to read silently on their own.			0.67
Ask pupils to read along silently while other pupils read aloud.		0.54	
Give pupils time to read books of their own choosing.			0.78
Teach or model for pupils different reading strategies (e.g. skimming / scanning, self-monitoring).	0.51		
Teach pupils strategies for decoding sounds and words.	0.67		
Teach pupils new vocabulary systematically.	0.60		
Help pupils understand new vocabulary in texts they are reading.	0.52		
<b>Percentage of variance explained</b>	<b>14.89</b>	<b>12.36</b>	<b>11.64</b>



The three teacher factors identified related to reading strategies and activities were described as follows:

Factor 1: Reading strategies and teaching vocabulary

Factor 2: Teacher / pupils reading aloud

Factor 3: Pupils reading silently, own choice books.

### School scales

Factor analysis of the School questionnaire, completed by the headteacher, identified a total of six scales, three related to school context and environment and three to school policies. Factor loadings for these scales are shown in Figures A7.4 and A7.5.

**Figure A7.4 National School Environment Factor Loadings**

Description	Factor 1	Factor 2	Factor 3
<i>How would you characterise the area in which your school is located?</i>			
Urban location		0.38	
<i>For the year 5 pupils in your school, about how many pupils receive free or reduced price lunch?</i>	0.40		
<i>Approximately what percentage of pupils in your school:</i>			
Come from economically disadvantaged homes?	0.49	-0.48	
Come from affluent homes?	-0.52		
Do not speak English as their first language?		-0.56	
Receive some teaching at school in their home language (other than English)?		-0.35	
<i>Approximately how many of the pupils in your school can do the following when they begin year 1?</i>			
Recognise most of the letters of the alphabet		0.80	
Read some words		0.85	
Read sentences		0.77	
Write letters of the alphabet		0.85	
Write some words		0.82	
<i>How much is your school's capacity to provide teaching affected by a shortage or inadequacy of the following?</i>			
Qualified teaching staff			
Teachers with a specialisation in reading			0.33
Teachers of children with English as an additional language	0.35		
Teaching materials			0.69
Supplies			0.49
School buildings and grounds			0.59
Heating/cooling and lighting systems			0.62
Teaching space			0.69
Special equipment for physically disabled pupils			0.42
Computers for teaching purposes			0.61

**Figure A7.4 National School Environment Factor Loadings (continued)**

Description	Factor 1	Factor 2	Factor 3
Computer software for teaching purposes			0.67
Computer support staff			0.59
Library books			0.63
Audio-visual resources			0.68
<i>Approximately what percentage of pupils in your school have parents or guardians who do each of the following?</i>			
Volunteer regularly to help in the classroom or another part of the school			
Attend parent-teacher meetings			
Attend cultural, sporting or social events at the school		0.36	
<i>How would you characterise each of the following within your school?</i>			
Teachers' job satisfaction	-0.54		-0.34
Teachers' expectations for pupil achievement	-0.59		
Parental support for pupil achievement	-0.73		
Pupils' regard for school property	-0.63		
Pupils' desire to do well in school	-0.60		
Pupils' regard for each other's welfare	-0.59		
<i>To what degree is each of the following a problem in your school?</i>			
Pupil lateness	0.51	-0.35	
Pupil absenteeism	0.58	-0.43	
Classroom disturbance	0.75		
Cheating	0.38		
Swearing	0.72		
Vandalism	0.54		
Theft	0.39		
Intimidation or verbal abuse between pupils	0.77		
Physical conflicts between pupils	0.74		
Drug abuse			
Carrying weapons			
Racism	0.62		
<b>Percentage of variance explained</b>	<b>15.76</b>	<b>11.17</b>	<b>10.67</b>

Three school context and environment factors were identified as follows:

Factor 1: Disadvantage and other problems

Factor 2: Literacy skills on entry to year 1

Factor 3: Shortages and inadequacies of human and material resources.

**Figure A7.5 National School Policy Factor Loadings**

Description	Factor 1	Factor 2	Factor 3
<i>Does your school offer extended teaching time (beyond the prescribed minimum)?</i>			
<i>Compared with other areas of the curriculum, how much emphasis does your school place on teaching the following language and literacy skills to pupils in years 1 to 5?</i>			
Reading			
Writing			
Speaking and listening			
School has statement of reading curriculum			
School has informal reading initiatives			
School has CPD programmes for teaching reading			0.34
School has its own guidelines for co-ordination of teaching reading			
<i>How does your school use the following materials when teaching reading to pupils in year 5 and below? (basis for teaching / supplement / not used / varies by teacher/year group)</i>			
Reading schemes			
Textbooks			
Variety of children's books			
Materials from different curricular areas			
Children's newspaper and/or magazines			0.34
Computer programs that help to teach pupils to read			
<i>In which year group do the following reading skills and strategies first receive a major emphasis?</i>			
Knowing letters of the alphabet	0.91		
Knowing letter-sound relationships	0.98		
Reading words	0.98		
Reading isolated sentences	0.88		
Reading connected text	0.86	0.33	
Identifying the main idea of text	0.64	0.62	
Explaining or supporting understanding of text	0.46	0.74	
Comparing text with personal experience	0.38	0.77	
Comparing different texts		0.83	
Making predictions about what will happen next in text	0.41	0.76	
Making generalisations and inferences based on text		0.80	
Describing style and structure of text		0.81	
<i>Does your school make provision for the teaching of reading in home languages ... ?</i>			0.32
<i>Does your school have a school library?</i>			
<i>What is the total number of computers that can be used for educational purposes by year 5 pupils?</i>	-0.43		

**Figure A7.5 National School Policy Factor Loadings (continued)**

Description	Factor 1	Factor 2	Factor 3
<i>Does your school provide teachers with the following facilities?</i>			
Workspace in the classroom			
Shared workspace for several teachers			
A separate workspace for each teacher			
<i>Are any of the following programmes and services available at your school site for the children and families in your school?</i>			
Adult literacy programme for English speakers			0.60
Adult literacy programme for non-English speakers			0.50
Parent education programmes			0.65
Health or social services			0.44
<i>How often is each of the following provided by your school for year 5 pupils and/or their families?</i>			
Parent-teacher meetings			
Letters, calendars, newsletters, etc. sent home to provide parents with information about the school			
Written reports of child's performance sent home			
Events to school to which parents are invited			
Policy on cooperation among teachers			0.35
<i>About how often do the teachers in your school have formally scheduled time to meet to share or develop teaching materials or approaches?</i>			
			0.39
<b>Percentage of variance explained</b>	<b>14.07</b>	<b>10.91</b>	<b>5.90</b>

Three school policy factors were identified as follows:

Factor 1: Early basic reading skills

Factor 2: Early advanced reading skills

Factor 3: Family programmes and support.

## A7.2 Identification of the variables

The PIRLS data for England was analysed in relation to available background factors, as well as to prior attainment as measured by performance at the end of key stage 1 (aged 7). In addition, performance on the key stage 2 tests, specifically the reading test, taken the year after the PIRLS assessment, has been matched for the majority of PIRLS pupils and some analysis carried out on this.

The PIRLS outcomes analysed were based on a calibration of England's item data to link back to the 2001 results, plus two average 'plausible values' which measure attainment on the two different reading process scales. No weighting was carried out, as the focus was on the relationships within the sample data. Outcomes studied were:

- overall attainment on the PIRLS assessment
- attainment on the Literary scale
- attainment on the Information scale
- attainment on the ‘retrieving and straightforward inferencing’ scale
- attainment on the ‘interpreting, integrating and evaluating’ scale.

In addition, attainment on the key stage 2 reading test was included as an outcome – specifically, the score (out of 50) on the reading test in 2007.

The three scales derived from the Pupil questionnaire and described above were included as outcomes in the modelling:

- reading activities in and out of school
- reading enjoyment and confidence
- alternative media (non-book reading and TV viewing).

Background data derived from the Teacher and School questionnaires was combined with data from PLASC and the Schools database. A generic deprivation measure was defined based on the Pupil and Learning to Read (home) questionnaires, as well as data on PLASC, and values of this were estimated for all cases (see section 5.2 and Appendix 6 for more details). A full list of variables included in the modelling is given in Figure A7.6.

**Figure A7.6 Variables available for Analysis**

**Description**

- School
- Class / teaching group
- Pupil
- Key stage 2 reading score
- Key stage 2 writing score
- Key stage 2 English total score (reading and writing combined)
- PIRLS reading ability
- PIRLS reading ability (literary)
- PIRLS reading ability (informational)
- Average plausible values – retrieving and straightforward inferencing
- Average plausible values – interpreting, integrating and evaluating
- Gender (male = 1, female = 2)
- Key stage 1 reading score
- Key stage 1 writing score
- Possessions: consumer electronics (child’s own TV, mobile phone, CD/DVD player)
- Possessions: study-related goods (desk, child’s own books, musical instrument)
- Composite deprivation measure
- Black ethnic groups

**Figure A7.6 Variables available for Analysis (continued)**

Description
Asian ethnic groups
Other ethnic groups
Unknown ethnicity
Stage of SEN (from PLASC)
Other language spoken in addition to English
English not normally used at home
Place of birth outside UK
Term of birth
Pupil factor 1: Reading activities in and out of school
Pupil factor 2: Reading enjoyment and confidence
Pupil factor 3: Alternative media (non-book reading and TV viewing)
Teacher factor 1: Teaching reading strategies and vocabulary
Teacher factor 2: Teacher/pupils reading aloud
Teacher factor 3: Pupils reading silently, own choice books
Teacher background: Average teaching experience in years
School context and environment 1: Disadvantage and other problems
School context and environment 2: Literacy skills on entry to year 1
School context and environment 3: Shortages and inadequacies of human and material resources
School policy factor 1: Early basic reading skills
School policy factor 2: Early advanced reading skills
School policy factor 3: Family programmes and support
Constant

The research issues to be explored included:

- What are the relationships between pupil and school characteristics and pupil outcomes and attitudes?
- What are the relationships between reading attainment and pupil attitudes and activities?

### A7.3 The structure of the multilevel model

Multilevel modelling (see Goldstein, 2003) is a development of regression analysis which takes account of data which is grouped into similar clusters at different levels. For example, individual pupils are grouped into classes, and those classes are grouped within schools. There may be more in common between pupils within the same class than with other classes, and there may be elements of similarity between different classes in the same school. Multilevel modelling allows us to take account of this hierarchical structure of the data and produce more accurate predictions, as well as estimates of the differences between pupils, between classes, and between schools.

The model was set up with three levels: school, class and pupil. Variables which were clearly not significant in a particular model were deleted, but in some cases borderline significant variables were retained. In order to show the relative strength of the relationships between different factors and the outcomes, ‘quasi-effect sizes’ have been used (see Schagen, 2004b): these enable the presentation of the results of complex models in a way which shows how much difference each factor makes to the expected pupil scores in each case. Figure A7.7 shows quasi-effect sizes for all six outcomes, for background factors which are statistically significant at the five per cent level. A quasi-effect size shows the expected change in the outcome score which might be attributed to the relevant background factor, controlling for other factors, as a percentage of the standard deviation in the outcome associated with one standard deviation change in the background factor. Thus a value of 100 is equivalent to a correlation of 1.0, and negative values show negative associations.

**Figure A7.7 Outcomes from the Multilevel Analysis as Significant Quasi-effect Sizes**

Variable	Overall attainment	Literary attainment	Informational attainment	Retrieving and straight-forward inferencing	Interpreting integrating and evaluating	Key stage 2 reading score
PIRLS attainment score						76
KS1 reading score	59	57	58	55	56	37
KS1 writing score	31	24	29	30	30	9
<b>Pupil characteristics</b>						
Gender (male = 1, female = 2)						-6
Term of birth	-3					
Black ethnic groups						
Asian ethnic groups						
Other ethnic groups						
Unknown ethnicity						
Stage of SEN (from PLASC)	-15	-17	-15	-15	-16	-8
Other language spoken at home	-6	-9	-7	-9	-5	
English not normally used						
Born outside UK	-13		-11	-22	-17	
Possessions: consumer electronics	-10	-8	-9	-10	-9	
Possessions: desk, books, musical instrument	9	9	9	11	12	3
Composite deprivation measure	-9	-11	-7	-14	-11	-7

**Figure A7.7 Outcomes from the Multilevel Analysis as Significant Quasi-effect Sizes (continued)**

Variable	Overall attainment	Literary attainment	Informational attainment	Retrieving and straight-forward inferencing	Interpreting and evaluating	Key stage 2 reading score
<b>From teacher questionnaire: classroom activities</b>						
Teaching reading strategies and vocabulary						
Teacher and pupils reading aloud						
Pupils' reading: silently, own choice books					5	
<b>Teacher characteristics</b>						
Extent of teaching experience						
<b>From headteacher questionnaire: school context and environment</b>						
1: Disadvantage and other problems	-8	-8	-9	-8	-12	-8
2: Early literacy skills on entry to year	8	8	7	7	9	
3: Shortages and inadequacies of human and material resources						
<b>From headteacher questionnaire: school policies</b>						
1: Curricular emphasis on early literacy skills	6	6	8	6	9	
2: Curricular emphasis on early advanced reading skills						
3: Family programmes and support						

Based on Figure A7.7, the following main conclusions may be drawn from the analysis, related to the five PIRLS outcomes analysed:

- Prior attainment measures at key stage 1 in both reading and writing were significantly related to PIRLS attainment.
- There was no overall difference between boys and girls once prior attainment at key stage 1 and other factors have been taken into account.
- Term of birth was related to attainment only for the overall measure, and not significantly for any of the others. Younger pupils performed slightly better than expected.
- Having a special educational need and having English as an additional language were both negatively related to attainment for all outcomes.
- Being born outside the UK was negatively related to attainment in three outcomes.
- The possession of consumer electronics was negatively related to attainment, while possession of more study-related goods was positively related.



- The composite deprivation measure was negatively related to attainment.
- The only teacher factor in this analysis found to be significantly related to attainment was the scale for pupils reading silently and their own choice books, which was positively related to the reading process attainment scale of retrieval and straightforward inferencing.
- The school environment factor measuring disadvantage and school problems was negatively related to all outcomes, while the context and environment factor measuring early literacy skills at the start of year 1 was positively related.
- The school policy factor measuring curricular emphasis on the early introduction of basic reading skills was positively related to all outcomes.

For key stage 2 reading score the following conclusions may be drawn:

- PIRLS reading attainment was strongly related to key stage 2 score, and also to prior attainment at key stage 1.
- Controlling for PIRLS score and other factors, including prior attainment, girls tended to have slightly lower scores than boys.
- SEN stage was negatively related to key stage 2 score, and those with unknown SEN tended to have higher scores.
- The school context and environment factor measuring disadvantage and school problems was negatively related to key stage 2 score.
- The possession of consumer electronics was not significantly related to key stage 2 score, but the possession of study-related goods was positively related.
- The composite deprivation measure was negatively related to key stage 2 score.

In order to investigate the relationships between reading attainment and the three factors derived from the Pupil questionnaire, these were included in turn in the final model for the former. Figure A7.8 shows the quasi-effect sizes for each of these, when controlling for other significant factors which are related to attainment.

**Figure A7.8 Quasi-effect Sizes for Pupil Questionnaire scales related to Reading Attainment, controlling for other factors**

Variable	Overall attainment	PIRLS reading purposes		PIRLS reading processes		Key stage 2 reading score
		Literary attainment	Informational attainment	Retrieving and straight-forward inferencing	Interpreting integrating and evaluating	
Reading activities in and out of school	-19	-20	-17	-28	-22	-11
Reading enjoyment and confidence	37	36	36	48	45	18
Alternative media (non-book reading and TV viewing)	-10	-8	-10	-11	-7	

It seems that the second factor, reading enjoyment and confidence, was positively related to attainment, while reading activities in and out of school, and use of alternative media were negatively related.

Finally, in order to investigate these pupil factors as outcomes in their own right, models were run to predict each with all the background factors included. These results are shown in Figure A7.9.

From the data in Figure A7.9, the following conclusions can be drawn:

- Girls were more likely than boys to engage in more reading activities in and out of school and have higher levels of reading enjoyment and confidence, while boys were more likely to use alternative media.
- Pupils of a black ethnic background were more likely to use alternative media.
- Pupils with SEN were less likely to use alternative media.
- Pupils with English as an additional language were likely to have higher scores on all three scales.
- Pupils who did not normally use English at home were less likely to use alternative media.
- Pupils born outside the UK tended to do more reading activities in and out of school.
- Those with higher key stage 1 reading scores were more likely to have higher enjoyment and confidence in their reading, but do fewer reading activities in and out of school and be less likely to use alternative media.
- The possession of consumer electronics (child's own television, mobile phone and CD/DVD player) was negatively related to reading enjoyment, but positively to the use of alternative media.
- All three scales were positively related to the possession of study-related goods.
- Pupils whose teachers emphasised reading strategies and vocabulary learning tended to do more reading activities in and out of school.
- Pupils whose teachers emphasised reading silently and pupils reading books of their own choice tended to have higher reading enjoyment and confidence scores.
- Pupils in schools with high levels of disadvantage and other problems tended to use alternative media more.
- Pupils in schools which reported higher levels of early literacy skills on entry to year 1 tended to do fewer reading activities in and out of school and also to have lower enjoyment and confidence.
- Pupils in schools with emphasis in the curriculum on earlier advanced reading skills tended to have higher enjoyment and confidence.
- Pupils in schools which emphasised family programmes and collaboration tended to use more alternative media.

**Figure A7.9 Quasi-effect sizes for Pupil questionnaire scales as Outcomes**

Variable	Reading activities in and out of school	Reading enjoyment and confidence	Alternative media: non-book reading and TV viewing
<b>Pupil characteristics</b>			
Gender (male = 1, female = 2)	43	33	-20
Term of birth			
Black ethnic groups			35
Asian ethnic groups			
Other ethnic groups			
Unknown ethnicity			
Stage of SEN (from PLASC)			-6
Missing SEN			
Other language spoken at home	15	8	30
English not normally used at home			-17
Born outside UK	23		
KS1 reading score	-11	39	-10
KS1 writing score			
Possessions: consumer electronics		-6	32
Possessions: desk, books, instrument	27	20	19
Composite deprivation measure	-21	-26	
<b>From teacher questionnaire: classroom activities</b>			
Teaching reading strategies and vocabulary	10		
Teacher and pupils reading aloud			
Pupils reading: silently, own choice material		7	
<b>Teacher characteristics</b>			
Average teaching years			
<b>From headteacher questionnaire: school context and environment</b>			
1: Disadvantage and other problems			9
2: Early literacy skills on entry to year 1	-10	-9	
3: Shortages and inadequacies of human and material resources			
<b>From headteacher questionnaire: school policies</b>			
1: Curricular emphasis on early literacy skills			
2: Curricular emphasis on early advanced reading skills		8	
3: Family programmes and support			9

All the above results are based on a 'value-added' analysis, in that they control for prior attainment at key stage 1 and are thus more likely to give insights into progress during key stage 2 and its relationship to other factors than an analysis of attainment can alone. However, none of these results should necessarily be interpreted as implying a causal connection between activities or other factors and outcomes.



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## Readers and reading – the PIRLS 2006 national report for England

- How do children aged 9 to 10 fare in reading when compared to other countries?
- And what are their feelings about reading?

Conducted every five years, the Progress in International Reading Literacy Study (PIRLS) is an international study of children's reading ability and attitudes. PIRLS is the largest and most rigorous study ever undertaken of young children's reading skills, conducted under the auspices of the International Association for the Evaluation of Educational Achievement. Measuring trends over time and collecting information about reading literacy policies and teaching practices, the survey for 2006 was conducted in 41 countries.

This report presents the wide-ranging results of PIRLS 2006 for England, including:

- reading achievement of 10 year olds in England compared to the achievement of 10 year olds five years ago
- reading achievement of this group compared to similar groups in other countries
- children's attitudes to reading, and their confidence in their abilities
- information about what children choose to read outside school, and how often they read
- the relationship between home circumstances and children's performance in PIRLS
- gender differences
- approaches to the teaching of reading in schools, including the effect of literacy hour
- children's views of school
- teachers and headteachers' perceptions of the teaching and learning environment in schools
- an analysis of the factors that may influence reading attainment in England.

This is important reading for policy makers, teachers, local authority staff and all those interested in improving children's reading ability and attitudes in England.