

# The Reading Literacy of U.S. Fourth-Grade Students in an International Context

Results From the 2001 and 2006 Progress in International Reading  
Literacy Study (PIRLS)





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Literacy Study (PIRLS)

NOVEMBER 2007

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# Executive Summary

The Progress in International Reading Literacy Study (PIRLS) is an assessment of the reading comprehension of students in their fourth year of schooling. In 2006, PIRLS was administered to a nationally representative sample of fourth-grade students in the United States, as well as to students in 44 other jurisdictions around the world.<sup>1</sup> The PIRLS assessment measures student performance on a combined reading literacy scale and on a literary subscale and informational subscale. The literary subscale assessed performance in reading for literary experience and the informational subscale in acquiring and using information.

This report compares the performance of U.S. students with their peers around the world and also examines how the reading literacy of U.S. fourth-grade students has changed since the first administration of PIRLS in 2001. Results are presented by student background characteristics (sex and race/ethnicity) and by contextual factors that may be associated with reading proficiency (school characteristics, instructional practices and teacher preparation, and the home environment for reading).

On the combined reading literacy scale in 2006,

- Average scores for U.S. students (540) were higher than the scores for students in 22 jurisdictions;
- Average scores for U.S. students were lower than the scores for students in 10 jurisdictions;
- There were no measurable differences between average scores for U.S. students and the scores for students in 12 jurisdictions;

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<sup>1</sup>The assessment is open to countries and subnational entities. In this report, participating countries and subnational entities are both referred to as “jurisdictions.”

- The percentage of U.S. students at or above each of the four international benchmarks was higher than the international median percentage (96 versus 94 for the low international benchmark, 82 versus 76 for the intermediate international benchmark, 47 versus 41 for the high international benchmark, and 12 versus 7 for the advanced international benchmark);
- Average scores for girls were higher than average scores for boys in the United States (545 versus 535) and in all jurisdictions, with the exception of two jurisdictions, where there were no measurable differences between the sexes; and
- Average scores for White, non-Hispanic (560); Asian, non-Hispanic (567); and non-Hispanic students in the racial groups classified as other (573) (see appendix B for race/ethnicity classification) in the United States were higher than the scores for Black, non-Hispanic (503); Hispanic (518); and American Indian/Alaska Native, non-Hispanic students (468) in the United States.

Between 2001 and 2006,

- There were no measurable differences in average scores for U.S. students on the combined reading literacy scale or on the literary or informational subscales;
- Average scores on the combined reading literacy scale increased for students in 8 jurisdictions, decreased for students in 6 jurisdictions, and did not measurably differ for students in 14 jurisdictions; and
- The average number of years of experience for U.S. teachers of fourth-grade students decreased from 15 to 12 years.

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# Acknowledgments

This report reflects the contributions of many individuals. The authors wish to thank all those who assisted with PIRLS 2006, from the design stage through the creation of this report. At NCES, the project was reviewed by Larry Ogle (retired), Elois Scott (retired), and Marilyn Seastrom. Sampling and data collection were conducted by RTI International. At the PIRLS International Study Center, Pierre Foy, Eugenio Gonzalez, and Ann Kennedy offered assistance with the PIRLS data. The members of the PIRLS Technical Review Panel (noted in appendix C)

lent their time and expertise toward reviewing the project and carefully considered the content that should be included in this report. All data tables, figures, and text presented in the report were reviewed by Kevin Bromer, Martin Hahn, Alexandra Henning, David Miller, and Siri Warkentien at the Education Statistics Services Institute (ESSI). We also thank our colleagues at the American Institutes for Research (AIR) who assisted with data analyses and the preparation of the report.

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# Introduction

The Progress in International Reading Literacy Study (PIRLS) is a continuing assessment of the reading comprehension of students in their fourth year of schooling in jurisdictions around the world. PIRLS not only helps participating jurisdictions understand the literacy skills of their students but also places the literacy of young readers within an international context. Drawing comparisons between jurisdictions reveals areas of strengths as well as areas in need of improvement, offering jurisdictions insight into how the reading literacy of their students may be enhanced.

PIRLS is conducted by the International Association for the Evaluation of Educational Achievement (IEA), with national sponsors in each participating jurisdiction. In the United States, PIRLS is sponsored by the National Center for Education Statistics (NCES), in the Institute of Education Sciences in the U.S. Department of Education.

PIRLS 2006 was the second cycle of the study, which was first administered in 2001. The assessment is open to countries and subnational entities. In this report, participating countries and subnational entities are both referred to as “jurisdictions.” In 2006, forty-five jurisdictions, including the United States, participated in PIRLS (figure 1). In addition to 38 participating countries, this total includes 5 participating Canadian provinces and 2 separate samples of students that were assessed in Belgium.<sup>2</sup> The United States was one of 29 jurisdictions to participate in both the 2001 and 2006 administrations of PIRLS.

<sup>2</sup>The two major geographic and cultural regions of Belgium (Flemish and French) have separate educational systems and were each assessed in PIRLS. Throughout the report, Belgium (Flemish) and Belgium (French) are reported as separate jurisdictions.

This report summarizes the performance of U.S. fourth-grade students on the three separate scales (two literacy subscales and the combined scale) that make

**Figure 1. Jurisdictions participating in PIRLS: 2001 and 2006**



<sup>1</sup>Hong Kong, SAR, is a Special Administrative Region (SAR) of the People's Republic of China.  
 SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2001 and 2006.

up the PIRLS assessment. The analyses presented help address three questions:

- How does the reading literacy of U.S. fourth-grade students compare with the reading literacy of fourth-grade students internationally?
- How does the reading literacy of U.S. fourth-grade students vary by student background characteristics, school and classroom characteristics, and home reading environment?
- How has the reading literacy of U.S. fourth-grade students changed since 2001?

Results and comparisons for all participating jurisdictions in PIRLS 2006, as well as technical documentation for the assessment, are available on the Internet at [www.pirls.org](http://www.pirls.org).

## Defining and measuring reading literacy

PIRLS defines reading literacy 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)

Within this context, the study examines three dimensions of reading literacy:

- processes of comprehension;<sup>3</sup>
- purposes of reading; and
- reading behaviors and attitudes.

<sup>3</sup>See Mullis et al. (2007) for results of analyses examining processes of comprehension.

The distribution of PIRLS items across the first two dimensions, processes of comprehension and purposes of reading, is shown in table 1. Both dimensions were measured through the PIRLS assessment items administered to each participating student. The third dimension, reading behaviors and attitudes, was measured through a separate background questionnaire administered to participating students.

The *processes of comprehension* dimension describes how young readers interpret and make sense of text. PIRLS assesses students' abilities to (1) focus on and retrieve explicitly stated information, (2) make straightforward inferences, (3) interpret and integrate ideas and information, and (4) examine and evaluate content, language, and textual elements.

The *purposes of reading* dimension describes the two main reasons why young students read printed materials: (1) for literary experience and (2) to acquire and use information. Fictional texts are used to measure the ability of students to read for literary experience, and nonfictional texts are used to measure their skills at acquiring and using information.

Results from the PIRLS assessment are reported on subscales that measure the two types of purposes of

**Table 1. Distribution of PIRLS items measuring processes of comprehension and purposes of reading: 2006**

Classification of items	Number of items
<b>Processes of comprehension</b>	
Total	126
Focus on and retrieve explicitly stated information	31
Make straightforward inferences	43
Interpret and integrate ideas and information	34
Examine and evaluate content, language, and textual elements	18
<b>Purposes of reading</b>	
Total	126
Literary experience	64
Acquire and use information	62

SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.

reading: reading for literary experience and reading to acquire and use information. Additionally, results are reported on a combined reading literacy scale, which captures students' overall literacy skills related to both processes of comprehension and purposes of reading. This report emphasizes results from the combined reading literacy scale because the scale summarizes student performance on the two cognitive dimensions of reading literacy in a single measure.<sup>4</sup>

The texts for the PIRLS assessment were submitted from the participating jurisdictions and reflect the kinds of printed materials read by children in those jurisdictions. All participating jurisdictions used the same texts. The passages were reviewed by the PIRLS Reading Development Group, an international advisory panel that selected texts for the assessment that reflected the jurisdictions and cultures participating in PIRLS.

## Design and administration of PIRLS 2006

PIRLS consists of two main components: (1) a literacy assessment administered to sampled fourth-grade students and (2) background questionnaires administered to students, their teachers, and the administrators in the schools in which the sampled students were enrolled.<sup>5</sup> Procedures for sampling students and administering the study were established by the IEA and then implemented in each participating jurisdiction. In the United States, the PIRLS sample was designed to be representative of all fourth-grade students in the 50 states and the District of Columbia. Quality control monitors trained by the IEA visited schools in each jurisdiction to ensure that the procedures specified by the IEA were implemented properly.

<sup>4</sup>See appendix B for more information about the items comprising the PIRLS scales.

<sup>5</sup>All jurisdictions other than the United States also administered a background questionnaire to students' parents or legal guardians.

The U.S. sample consisted of 222 schools, of which 214 were eligible (8 schools had closed and were designated as ineligible). One hundred and twenty of the original sample schools participated, for a weighted response rate of 57 percent.<sup>6</sup> An additional 63 replacement schools also participated, for a total of 183 schools, or an 86 percent weighted school response rate.<sup>7</sup> Information about the size of each fourth-grade class was collected from participating schools, and a random sample of one or two classes from each school was selected. All students from selected classrooms were asked to participate. Of the 256 classrooms sampled, 255 participated, or 99 percent. Within these classrooms, 5,442 students were eligible and 5,190 completed the assessment for a weighted student response rate of 95 percent.

A total of 10 reading passages, 4 from PIRLS 2001 and 6 developed for the 2006 administration, were included in the assessment booklets used in all participating jurisdictions. The use of common passages in the 2001 and 2006 assessments allows the analysis of changes in reading literacy over the 5-year period between administrations for jurisdictions that participated in both cycles. The passages, as well as all other study materials, were translated into the primary language or languages of instruction in each jurisdiction.

Students who participated in the assessment received a test booklet containing two passages and were asked to answer a series of multiple-choice and open-ended questions related to the passages. Student responses were scored in each jurisdiction following standardized scoring procedures outlined and monitored by the IEA. Sample responses to one of the reading passages included in the 2006 assessment are shown in appendix A.

Further information about the design and administration of PIRLS is provided in appendix B.

<sup>6</sup>All weighted response rates discussed in this report refer to final adjusted weights.

<sup>7</sup>Response rates are calculated using the formulas developed by the IEA for PIRLS. The standard NCES formula would result in a lower school response rate of approximately 63 percent.

## Reporting student results on PIRLS

Results from PIRLS are reported in two ways: (1) as average scale scores and (2) as the percentage of students reaching each of the PIRLS international benchmark levels.

### Average scale scores

PIRLS scores are reported on a scale from 0–1000 with the scale average fixed at 500 and a standard deviation of 100. The PIRLS scale average was set in 2001 and reflects the combined proficiency distribution of all students in all jurisdictions participating in 2001. To allow comparisons between 2001 and 2006, scores of students in jurisdictions that participated in both 2001 and 2006 (29 jurisdictions) were used to scale the 2006 results. The 2006 scores were linked to the 2001 scale using common items on both assessments. Once scores from the 2006 assessment were scaled to the 2001 scale, scores of students in jurisdictions that participated in 2006 but not in 2001 were placed on the PIRLS scale.

## PIRLS international benchmarks

The PIRLS international benchmarks provide a way to interpret scale scores and to understand how students' proficiency varies along the PIRLS scale. In 2001, the cutpoints for the PIRLS benchmarks were set on the basis of the distribution of students along the PIRLS scale (the top 10 percent, the upper quartile, the median, and the lower quartile). In 2006, the cutpoints were revised to be identical to the cutpoints used for the Trends in International Mathematics and Science Study (TIMSS), which is also conducted by the IEA. Information about the rationale underlying the benchmarks and the procedures used to set the cutpoints is available in Martin et al. (2007). Figure 2 describes the international benchmarks introduced for the 2006 assessment.

The skills and strategies associated with each level were developed by the PIRLS Reading Development Group, which reviewed a sample of student responses to the assessment items. Each international benchmark describes the reading skills and strategies associated with specific

**Figure 2. Description of PIRLS international benchmarks: 2006**

Benchmark	Cutpoint	Reading skills and strategies
Advanced	625	<ul style="list-style-type: none"> <li>• Interpret figurative language</li> <li>• Distinguish and interpret complex information from different parts of text</li> <li>• Integrate ideas across text to provide interpretations about characters' feelings and behaviors</li> </ul>
High	550	<ul style="list-style-type: none"> <li>• Recognize some textual features, such as figurative language and abstract messages</li> <li>• Make inferences on the basis of abstract or embedded information</li> <li>• Integrate information to recognize main ideas and provide explanations</li> </ul>
Intermediate	475	<ul style="list-style-type: none"> <li>• Identify central events, plot sequences, and relevant story details</li> <li>• Make straightforward inferences from the text</li> <li>• Begin to make connections across parts of the text</li> </ul>
Low	400	<ul style="list-style-type: none"> <li>• Retrieve explicitly stated details from literary and informational texts</li> </ul>

NOTE: Information about the procedures used to set the international benchmarks is available in the *PIRLS 2006 Technical Report* (Martin, Mullis, and Kennedy 2007).

SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.



scores on the combined reading literacy scale. For example, students with scores equal to or greater than 400 on the combined reading literacy scale met the low international benchmark. This means that these students could retrieve explicitly stated details from literary and informational texts. Students who scored at or above the cutpoint for the next benchmark (intermediate, at 475) could accomplish the reading skills and strategies associated with the low benchmark, as well as the reading skills and strategies associated with the intermediate benchmark.

## Organization of the report

This report is divided into five sections. Following this introduction, the next section compares the reading literacy of U.S. fourth-grade students with the literacy of their peers internationally and also examines changes

in literacy between 2001 and 2006. The third section on student background characteristics explores differences among U.S. students by sex and race/ethnicity. The fourth section compares the reading literacy of U.S. fourth-grade students on the basis of school characteristics. The final section examines the relationship between literacy and the home environment for reading.

All differences between or among groups discussed in this report are statistically significant at the .05 level of statistical significance. Information about the tests conducted to determine statistical significance is provided in appendix B. Supplementary tables showing all estimates and standard errors discussed in this report are available at <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008017>. More information about U.S. participation in PIRLS is available at the NCES website at <http://nces.ed.gov/surveys/pirls>.

# Reading Literacy in the United States and Internationally

Results from PIRLS 2006 reveal how the reading literacy of U.S. fourth-grade students compares with the reading literacy of students internationally, as well as how reading literacy has changed since the first administration of PIRLS in 2001. In addition to reporting average scores on the combined reading literacy scale and the literary and informational subscales, results for 2006 are shown by each of the four PIRLS international benchmarks.

## Average scores in 2006

The average score for U.S. fourth-grade students on the combined reading literacy scale (540) was higher than the PIRLS scale average (500) and also higher than the average scores for students in 22 of the 45 participating PIRLS jurisdictions (figure 3). The U.S. average was lower than the average score in 10 jurisdictions. There were no measurable differences between the U.S. average and the average scores in the 12 remaining jurisdictions.

On the literary subscale, the U.S. average (541) was higher than the PIRLS scale average (500). The U.S. average on the informational subscale (537) was also higher than the PIRLS scale average (500). On the literary subscale, U.S. students outperformed students in 23 jurisdictions. Students in 9 jurisdictions had higher

average scores on the literary subscale than students in the United States.

On the informational subscale, the U.S. average was higher than the average in 21 jurisdictions and lower than the average in 12 jurisdictions.

## Changes between 2001 and 2006

As shown in table 2, average scores for U.S. fourth-grade students on the combined reading literacy scale did not measurably differ between 2001 and 2006. Average scores for the literary and informational subscales in 2006 also did not measurably differ from the average scores in 2001.

Of the 29 jurisdictions that participated in PIRLS in both 2001 and 2006, 8 (Germany; Hong Kong, SAR; Hungary; Italy; the Russian Federation; Singapore; the Slovak Republic; and Slovenia) saw increases in their average combined reading literacy scores.<sup>8</sup> Average scores on the combined reading literacy scale declined from 2001 to 2006 in England, Lithuania, Morocco, the Netherlands, Romania, and Sweden.

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<sup>8</sup>Although Kuwait participated in 2001 and 2006, the IEA elected not to report the 2001 estimates for the country because of concerns about the quality of Kuwait's data.

**Figure 3. Average scores for fourth-grade students in participating PIRLS jurisdictions on combined reading literacy scale, literary subscale, and informational subscale, by jurisdiction: 2006**

Average combined reading literacy score		Average literary subscore		Average informational subscore	
Jurisdiction	score	Jurisdiction	score	Jurisdiction	score
Russian Federation	565	Canada, Alberta	561	Hong Kong, SAR <sup>1</sup>	568
Hong Kong, SAR <sup>1</sup>	564	Russian Federation	561	Russian Federation	564
Canada, Alberta	560	Canada, British Columbia	559	Singapore	563
Canada, British Columbia	558	Hong Kong, SAR <sup>1</sup>	557	Luxembourg	557
Singapore	558	Hungary	557	Canada, Alberta	556
Luxembourg	557	Canada, Ontario	555	Canada, British Columbia	554
Canada, Ontario	555	Luxembourg	555	Canada, Ontario	552
Hungary	551	Singapore	552	Bulgaria	550
Italy	551	Italy	551	Italy	549
Sweden	549	Germany	549	Sweden	549
Germany	548	Denmark	547	Netherlands <sup>2</sup>	548
Belgium (Flemish) <sup>2</sup>	547	Sweden	546	Belgium (Flemish) <sup>2</sup>	547
Bulgaria	547	Netherlands <sup>2</sup>	545	Germany	544
Netherlands <sup>2</sup>	547	Belgium (Flemish) <sup>2</sup>	544	Denmark	542
Denmark	546	Canada, Nova Scotia	543	Hungary	541
Canada, Nova Scotia	542	Bulgaria	542	Latvia	540
Latvia	541	Lithuania	542	Canada, Nova Scotia	539
<b>United States<sup>2</sup></b>	<b>540</b>	<b>United States<sup>2</sup></b>	<b>541</b>	Chinese Taipei	538
England	539	England	539	England	537
Austria	538	Latvia	539	<b>United States<sup>2</sup></b>	<b>537</b>
Lithuania	537	Austria	537	Austria	536
Chinese Taipei	535	Slovak Republic	533	New Zealand	534
Canada, Quebec	533	Chinese Taipei	530	Canada, Quebec	533
New Zealand	532	Canada, Quebec	529	Lithuania	530
Slovak Republic	531	New Zealand	527	Scotland <sup>2</sup>	527
Scotland <sup>2</sup>	527	Scotland <sup>2</sup>	527	Slovak Republic	527
France	522	Poland	523	France	526
Slovenia	522	Slovenia	519	Slovenia	523
Poland	519	France	516	Poland	515
Spain	513	Israel	516	Moldova	508
Israel	512	Spain	516	Spain	508
Iceland	511	Iceland	514	Israel	507
Belgium (French)	500	Norway <sup>3</sup>	501	Iceland	505
Moldova	500	Belgium (French)	499	Belgium (French)	498
Norway <sup>3</sup>	498	Romania	493	Norway <sup>3</sup>	494
Romania	489	Moldova	492	Romania	487
Georgia	471	Georgia	476	Georgia	465
Macedonia	442	Macedonia	439	Macedonia	450
Trinidad and Tobago	436	Trinidad and Tobago	434	Trinidad and Tobago	440
Iran	421	Iran	426	Iran	420
Indonesia	405	Indonesia	397	Indonesia	418
Qatar	353	Qatar	358	Qatar	356
Kuwait	330	Kuwait	340	Morocco	335
Morocco	323	Morocco	317	Kuwait	327
South Africa	302	South Africa	299	South Africa	316
PIRLS scale average	500	PIRLS scale average	500	PIRLS scale average	500

- Average is higher than the U.S. average
- Average is not measurably different from the U.S. average
- Average is lower than the U.S. average

<sup>1</sup>Hong Kong, SAR, is a Special Administrative Region (SAR) of the People's Republic of China.

<sup>2</sup>Met guidelines for sample participation rates only after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling.

<sup>3</sup>Did not meet guidelines for sample participation rates after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling.

NOTE: Jurisdictions are ordered on the basis of average scores, from highest to lowest. Score differences as noted between the United States and other jurisdictions are statistically significant at the .05 level of statistical significance ( $p < .05$ ).

SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.

**Table 2. Average scores for fourth-grade students in participating PIRLS jurisdictions on combined reading literacy scale, literary subscale, and informational subscale, by jurisdiction: 2001 and 2006**

Jurisdiction	Average combined reading literacy score		Average literary subscale score		Average informational subscale score	
	2001	2006	2001	2006	2001	2006
Bulgaria	550	547	550	542	551	550
Canada, Ontario	548	554	551	554	542	551*
Canada, Quebec	537	533	534	529	541	533
England	553	539*	559	539*	546	537*
France	525	522	518	516	533	526*
Germany	539	548*	537	549*	538	544*
Hong Kong, SAR <sup>1</sup>	528	564*	518	557*	537	568*
Hungary	543	551*	548	557*	537	541
Iceland	512	511	520	514*	504	505
Iran	414	421	421	426	408	420*
Israel	509	512	510	516	507	507
Italy	541	551*	543	551*	536	549*
Latvia	545	541	537	539	547	540*
Lithuania	543	537*	546	542	540	530*
Macedonia	442	442	441	439	445	450
Moldova	492	500	480	492*	505	508
Morocco	350	323*	347	317*	358	335
Netherlands <sup>2</sup>	554	547*	552	545*	553	548
New Zealand	529	532	531	527	525	534
Norway <sup>3</sup>	499	498	506	501	492	494
Romania	512	489*	512	493*	512	487*
Russian Federation	528	565*	523	561*	531	564*
Scotland <sup>2</sup>	528	527	529	527	527	527
Singapore	528	558*	528	552*	527	563*
Slovak Republic	518	531*	512	533*	522	527
Slovenia	502	522*	499	519*	503	523*
Sweden	561	549*	559	546*	559	549*
<b>United States<sup>2</sup></b>	<b>542</b>	<b>540</b>	<b>550</b>	<b>541</b>	<b>533</b>	<b>537</b>

\* $p < .05$ . Significantly different from 2001 average at the .05 level of statistical significance.

<sup>1</sup>Hong Kong, SAR, is a Special Administrative Region (SAR) of the People's Republic of China.

<sup>2</sup>Met guidelines for sample participation rates in 2006 only after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling.

<sup>3</sup>Did not meet guidelines for sample participation rates in 2006 after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling.

NOTE: The 2001 and 2006 estimates for Canada, Ontario shown in this table exclude private schools because only public schools were included in the jurisdiction's 2001 sampling frame. Although Kuwait participated in 2001 and 2006, the IEA elected not to report the 2001 estimates for the country because of concerns about the quality of Kuwait's data.

SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2001 and 2006.

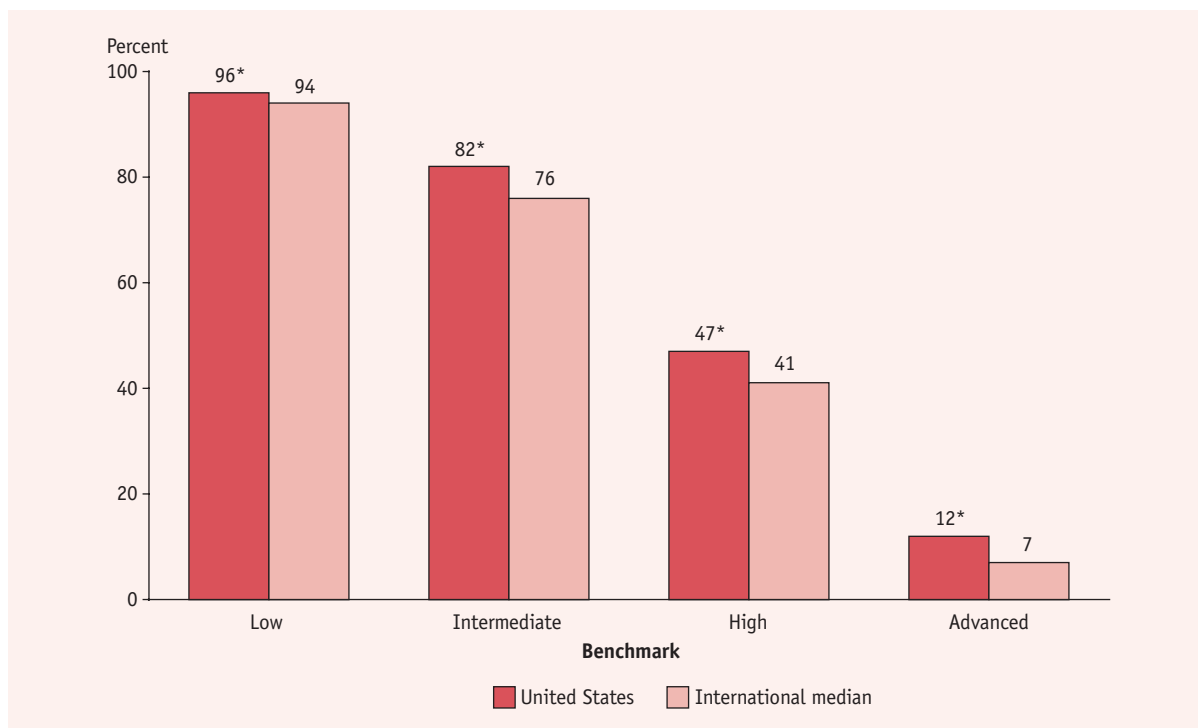
## Reading literacy by international benchmarks

Figure 4 shows the percentage of U.S. fourth-grade students reaching each of the PIRLS international benchmarks, as well as the international median percentage (the international median percentage includes the United States) of students reaching each benchmark. For the international median at each benchmark, half of the PIRLS jurisdictions have that percentage of students at or above the median and half have that percentage of students below the median. For example, the low international benchmark median of 94 percent indicates that half of the jurisdictions have 94 percent

or more of their students who met the low benchmark and half have less than 94 percent of their students who met the low benchmark.

For each of the four international benchmarks, the percentage of U.S. students who reached the benchmark was higher than the international median percentage. Ninety-six percent of U.S. fourth-grade students met the low international benchmark, indicating that they had scores on the combined reading literacy scale equal to or greater than 400. Twelve percent of U.S. students reached the advanced benchmark, with scores equal to or greater than 625 (see figure 2 for the cutpoint for each benchmark).

**Figure 4. Percentage of fourth-grade students in United States and international median who reach PIRLS international benchmarks: 2006**



\* $p < .05$ . Significantly different from international median percentage at the .05 level of statistical significance.

NOTE: The United States met guidelines for sample participation rates after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling. The international median represents all participating PIRLS jurisdictions, including the United States.

SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.

## Reading Literacy and Student Background Characteristics

To examine how reading literacy varies across students, PIRLS collects information on student background characteristics. Because many background characteristics are unique to each jurisdiction, comparisons between students in the United States and students internationally are discussed only for sex in this section. In addition to sex, information about student race and ethnicity was obtained in the United States and is also discussed in this section.

### Sex

In 2006, in all but two jurisdictions (Luxembourg and Spain), average scores for girls on the combined reading literacy scale were higher than average scores for boys (figure 5). In the United States, girls on average scored 10 points higher than boys (545 versus 535).<sup>9</sup> Internationally, the average score for girls was 17 points higher than the average score for boys.

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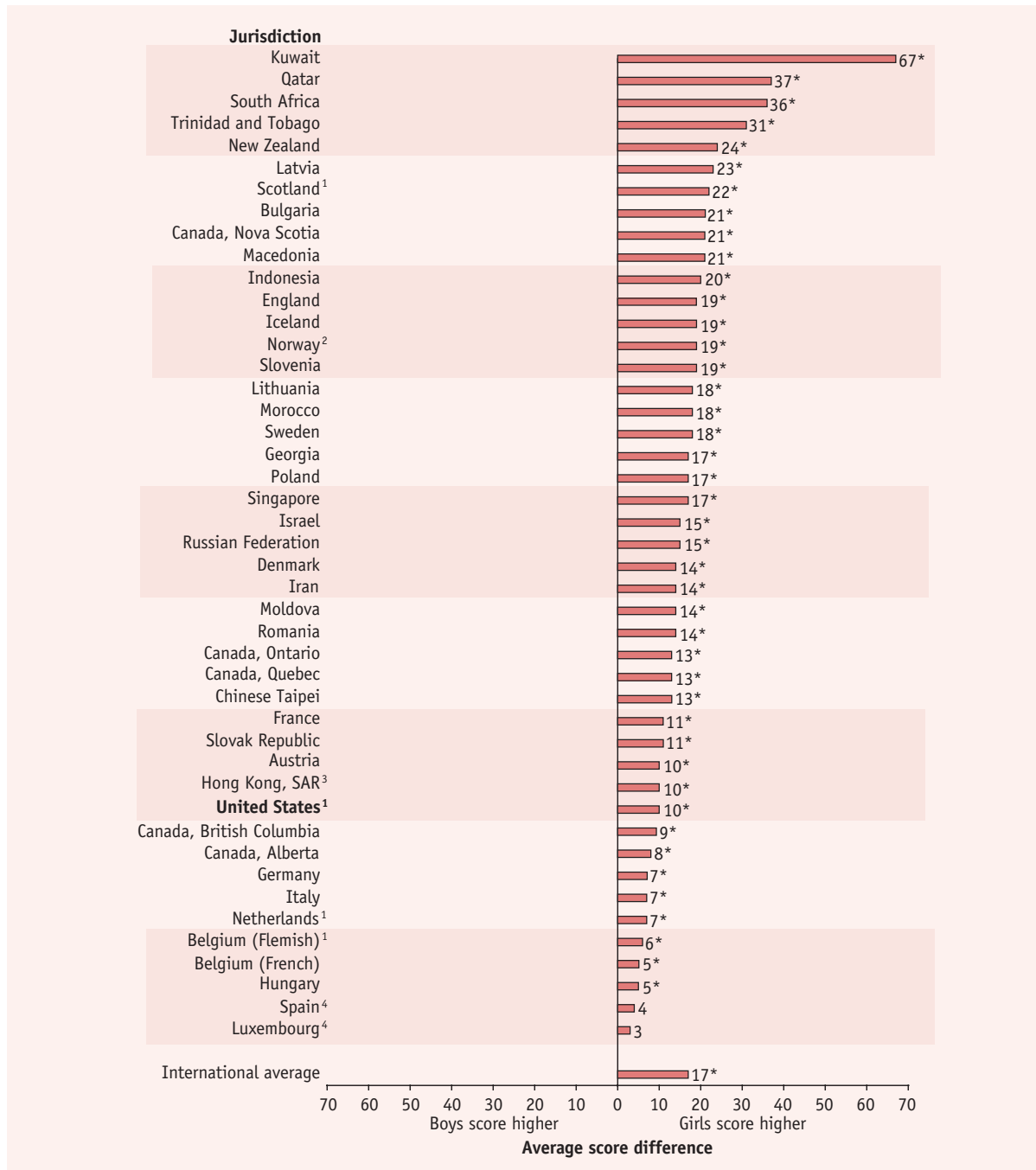
<sup>9</sup>The effect size for the difference between girls and boys on the combined reading literacy scale was .14. See appendix B for a discussion of effect sizes.

Average scores for girls were also higher than average scores for boys on the literary subscale in all jurisdictions with the exception of Iran. In all but five jurisdictions (Belgium (French), Hungary, Italy, Luxembourg, and Spain), girls had higher scores than boys on the informational subscale. In the United States, average scores for girls were 12 points higher than average scores for boys on the literary scale (547 versus 534) and 9 points higher on the informational subscale (542 versus 532).

Average scores for U.S. girls (545) and U.S. boys (535) on the combined reading literacy scale were higher than the international averages for girls (509) and boys (492). In addition, the average score for U.S. fourth-grade girls on the combined reading literacy scale was higher than the scores for girls in 20 jurisdictions. Girls in 10 jurisdictions had average scores higher than the average score for U.S. girls on the combined reading literacy scale.

The average score for U.S. boys on the combined reading literacy scale was higher than the average score for boys in 21 jurisdictions, and boys in 9 jurisdictions had average scores higher than the U.S. average.

**Figure 5. Difference in average scores between fourth-grade boys and girls in participating PIRLS jurisdictions on combined reading literacy scale, by jurisdiction: 2006**



\* $p < .05$ . Average score for girls is significantly different from the average score for boys at the .05 level of statistical significance.  
<sup>1</sup>Met guidelines for sample participation rates only after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling.  
<sup>2</sup>Did not meet guidelines for sample participation rates after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling.  
<sup>3</sup>Hong Kong, SAR, is a Special Administrative Region (SAR) of the People's Republic of China.  
<sup>4</sup>Difference in average scores between boys and girls is not statistically significant.  
 NOTE: Jurisdictions are ordered on the basis of score differences between boys and girls, from largest to smallest difference. Differences were computed using unrounded numbers.  
 SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.

## Race/ethnicity

In 2006, average scores for U.S. students on the combined reading literacy scale and the two literacy subscales measurably differed on the basis of the race and ethnicity of students (table 3). On the combined reading literacy scale, average scores for White, non-Hispanic (560); Asian, non-Hispanic (567); and non-Hispanic students in the racial groups classified as other (573) (see appendix B for race/ethnicity classification) were higher than the scores for Black, non-Hispanic (503); Hispanic (518); and American

Indian/Alaska Native, non-Hispanic students (468).<sup>10</sup> For non-Hispanic students, there were no measurable differences in average scores on the combined reading literacy scale among students in the White, Asian, and other groups. Hispanic students had higher average scores than Black, non-Hispanic students and American Indian/Alaska Native, non-Hispanic students. Average scores for Black students were lower than the scores for all other non-Hispanic groups, with the exception of American Indian/Alaska Native students.

<sup>10</sup>The effect size for the difference between White, non-Hispanic students and Black, non-Hispanic students was .83. The effect size between White, non-Hispanic students and Hispanic students was .61. See appendix B for a discussion of effect sizes.

**Table 3. Average scores for U.S. fourth-grade students on combined reading literacy scale, literary subscale, and informational subscale, by race/ethnicity: 2006**

Scale and race/ethnicity <sup>1</sup>	2006
<b>Combined reading literacy scale</b>	
White, non-Hispanic	560
Black, non-Hispanic	503
Hispanic	518
Asian, non-Hispanic	567
American Indian/Alaska Native, non-Hispanic	468
Other, non-Hispanic	573
<b>Literary subscale</b>	
White, non-Hispanic	562
Black, non-Hispanic	501
Hispanic	517
Asian, non-Hispanic	569
American Indian/Alaska Native, non-Hispanic	468
Other, non-Hispanic	567
<b>Informational subscale</b>	
White, non-Hispanic	555
Black, non-Hispanic	505
Hispanic	517
Asian, non-Hispanic	561
American Indian/Alaska Native, non-Hispanic	472
Other, non-Hispanic	571

<sup>1</sup>The Other, non-Hispanic category includes Pacific Islander students and non-Hispanic students who identified multiple races. Students who identified themselves as being of Hispanic origin were classified as Hispanic, regardless of their race.

NOTE: Estimates for race/ethnicity in 2001 are not shown because the classification of racial/ethnic categories and procedures for collecting data on race/ethnicity changed between 2001 and 2006. The United States met guidelines for sample participation rates after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling.

SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.



## Reading Literacy and School and Classroom Characteristics

Reading literacy may differ across students along a variety of factors, including characteristics of the schools and classrooms that students attend. To help examine the relationship between school and classroom characteristics and reading literacy, PIRLS collected information from school administrators and teachers in the United States on different aspects of their schools and classrooms.

Note that these data, as with all data presented in this report, are used to describe relationships between variables. These data are not intended, nor can they be used in this context, to imply causality.

### Control of school

Among U.S. students in 2006, the average score for students in private schools (561) was higher than the average score for students in public schools (538) for the combined reading literacy scale.<sup>11</sup> Average scores for students in both U.S. public and private schools were higher than the PIRLS scale average (500) for the combined scale and the two subscales.

### School poverty level

In the United States, the poverty level of a school was measured by asking school administrators to estimate the percentage of students in their schools who were eligible for free or reduced-price lunch (see appendix

B for a discussion of the relationship between poverty levels and the National School Lunch Program). Of U.S. students in public schools, 2 percent were enrolled in schools with no students eligible for free or reduced-price lunch, 87 percent were in schools with some students eligible for free or reduced-price lunch, and 11 percent were in schools with all students eligible for free or reduced-price lunch.

Among U.S. students in public schools, the average score on the combined reading literacy scale for students in schools with no students eligible for free or reduced-price lunch was 93 points higher than the average score for students in schools in which all students were eligible (figure 6). The average score for students in schools with some students eligible for free or reduced-price lunch was also higher than the average score for students in schools in which all students were eligible for free or reduced-price lunch.<sup>12</sup>

### Instructional practices related to reading

According to reports from school administrators, 95 percent of U.S. students attended schools with informal initiatives to encourage reading. The percentage of U.S. students in schools with informal initiatives was 15 percentage points higher than the international average (80 percent) and also higher than the percentage of students in such schools in 30 other jurisdictions.

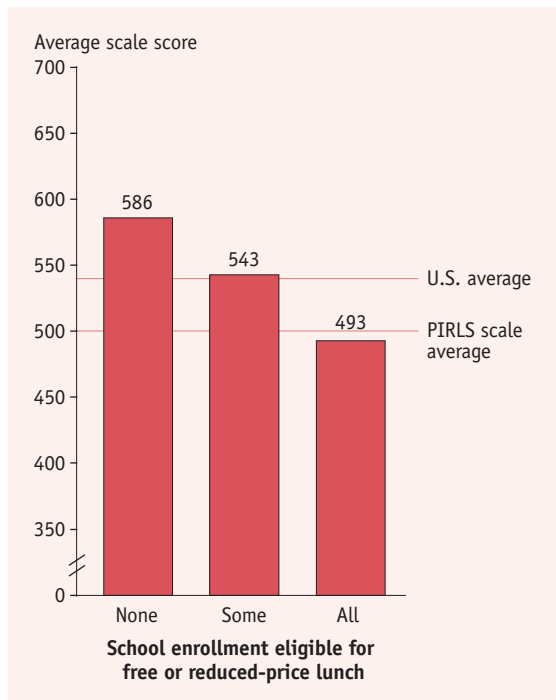
<sup>11</sup>The effect size for the difference between public and private schools was .33. See appendix B for a discussion of effect sizes.

<sup>12</sup>The effect size for the difference between the some and all categories of free or reduced-price lunch participation was .70. See appendix B for a discussion of effect sizes.

As indicated in figure 7, the percentage of students in the United States with teachers who reported teaching reading for more than 6 hours per week (68 percent) was higher than the international average (25 percent). Moreover, the percentage of students in the United States receiving more than 6 hours of instruction per week was higher than the percentage of students receiving the same amount of instruction in all participating PIRLS jurisdictions.

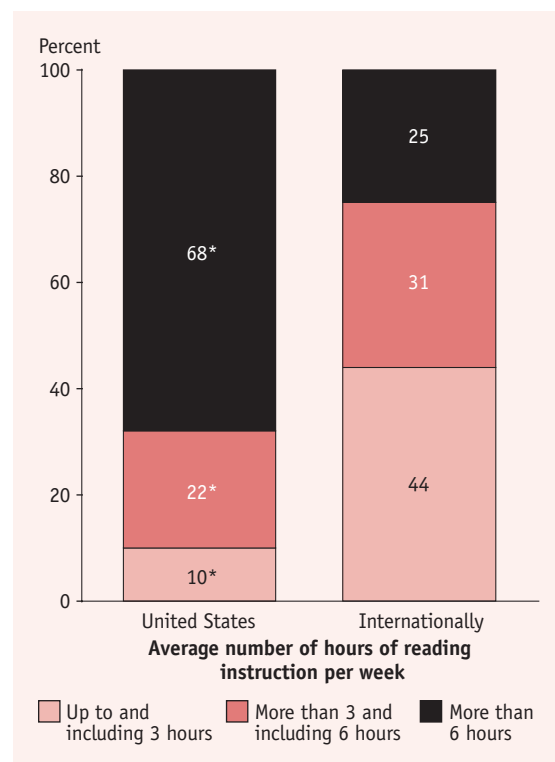
Although the amount of reading instruction may vary across students and schools, average scores for U.S. students on the combined reading literacy scale did not measurably differ by the amount of reading instruction received.

**Figure 6. Average scores for U.S. fourth-grade students in public schools on combined reading literacy scale, by school enrollment eligible for free or reduced-price lunch: 2006**



NOTE: Results based on information collected from school administrators. The PIRLS scale average represents all participating PIRLS jurisdictions, including the United States. The United States met guidelines for sample participation rates after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling.  
SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.

**Figure 7. Percentage distribution of fourth-grade students in United States and internationally receiving reading instruction each week, by average number of hours spent on reading instruction each week: 2006**



\* $p < .05$ . Significantly different from international percentage at the .05 level of statistical significance.  
NOTE: Results based on information collected from teachers. The United States met guidelines for sample participation rates after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling. Detail may not sum to totals because of rounding.  
SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.

## Teacher preparation and experience

Teachers of sampled U.S. students reported whether they were certified to teach and the number of years they had been teaching. Nearly all U.S. fourth-grade students (99 percent) were taught by certified teachers; the U.S. percentage was higher than the international average (97 percent). Nineteen jurisdictions reported that 100 percent of their fourth-grade students were taught by certified teachers.

On average, U.S. fourth-grade teachers had fewer years of teaching experience (12 years) than the international average (17 years). The U.S. average was lower than the average years of teaching experience in 35 of the participating PIRLS jurisdictions. Average teaching experience was lower in the United States not only relative to most other participating jurisdictions but also relative to the last administration of PIRLS: Between 2001 and 2006, the average years of experience for fourth-grade teachers in the United States decreased from 15 to 12 years.

## Home Environment for Reading

Students in all participating PIRLS jurisdictions, including the United States, were asked to answer a variety of questions related to their home environment for reading. Students reported the types of materials they read outside of school, as well as the frequency with which they read these materials.

### Reading activities outside of school

As indicated in table 4, students in the United States were more likely to read stories or novels every day or almost every day (36 percent) than to read for information every day or almost every day (14 percent). The percentage of U.S. students who read stories or novels every day or almost every day was 4 percentage points

higher than the international average. However, the frequency with which U.S. students read for information every day or almost every day was 2 percentage points lower than the international average.

The average score on the combined reading literacy scale for U.S. students who read stories or novels every day or almost every day (558) was higher than the average score for students who read stories or novels once or twice a week (541), once or twice a month (539), and never or almost never (509). In contrast, the average score for students who read for information every day or almost every day (519) was lower than the average score for students who read for information once or twice a week (538), once or twice a month (553), and never or almost never (546).

**Table 4. Percentage distribution of fourth-grade students in United States and internationally who read stories or novels or read for information, by frequency of reading outside of school: 2006**

Frequency and type of reading	United States	Internationally
<b>Stories or novels</b>		
Every day/almost every day	36*	32
Once or twice a week	28*	31
Once or twice a month	18	18
Never/almost never	18	19
<b>Information</b>		
Every day/almost every day	14*	16
Once or twice a week	43	43
Once or twice a month	33*	29
Never/almost never	10*	12

\* $p < .05$ . Significantly different from international percentage at the .05 level of statistical significance.

NOTE: The United States met guidelines for sample participation rates after replacement schools were included. See appendix B for more information about participation rates and the use of replacement schools in sampling. Detail may not sum to totals because of rounding.  
SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.

The higher performance of U.S. students who read for information less frequently relative to U.S. students who read for information more frequently was also observed internationally. The international average on the combined reading literacy scale for students who read for information once or twice a week was 503, the average for students who read for information once or twice a month was 506, and the average for students who read for information never or almost never was 496. In contrast, the international average

on the combined reading literacy scale for students who read for information every day or almost every day was 492.<sup>13</sup>

Note that these data, as with all data presented in this report, are used to describe relationships between variables. These data are not intended, nor can they be used in this context, to imply causality.

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<sup>13</sup>Estimates and standard errors for international comparisons are available in Mullis et al. (2007).

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