PIRLS: Trends in children's reading literacy achievement 1991-2001

Chestnut Hill, MA: International Study Center, Lynch School of Education, Boston College, 2003

PIRLS

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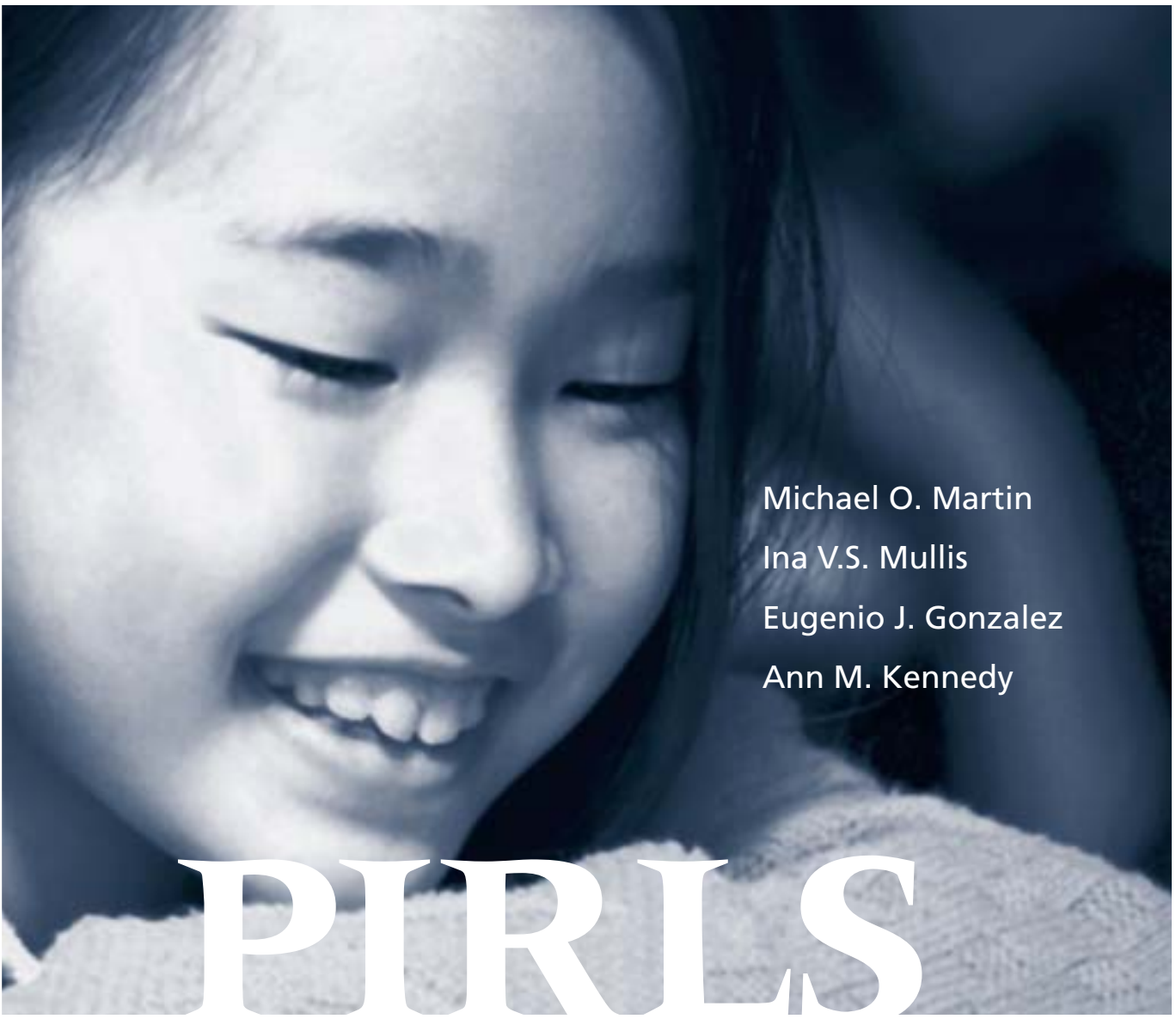

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PIRLS

Trends in Children's Reading Literacy Achievement 1991–2001

IEA's Study of Trends in Reading Literacy Achievement in Primary School in Nine Countries

International Association for the Evaluation of Educational Achievement

ISC BOSTON COLLEGE LYNCH SCHOOL OF EDUCATION International Study Center

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Executive Summary

In 2001, nine countries replicated IEA's 1991 Reading Literacy Study: Greece, Hungary, Iceland, Italy, New Zealand, Singapore, Slovenia, Sweden, and the United States. Conducted at the third or fourth grades (the grade with most nine-year-olds), the study assessed student reading in three major domains: narrative texts, expository texts, and documents. Students completed a brief questionnaire about their home and school literacy activities and instruction.

Because it was a decade after the original Reading Literacy Study, IEA also launched the Progress in International Reading Literacy Study (PIRLS) in 2001. Thirty-five countries, including the nine participants in the trend study, were involved in this newly-developed state-of-the-art reading assessment for fourth-grade students. Results from the PIRLS assessment can be found in the *PIRLS 2001 International Report*. Additional information about the countries, including the nine participating in the trend study, may be found in the *PIRLS 2001 Encyclopedia*.

The nine countries should be congratulated for participating in the trend study as well as in PIRLS. Participation in both studies enables these countries to view their 2001 levels of reading achievement through the lens of whether or not progress had been made. To obtain information about changes in reading achievement, the countries re-administered the same version of the reading literacy test and student questionnaire, as they did in 1991. They followed stringent requirements for sampling, and followed the same procedures for test administration and data collection. Rigorous attention was given to quality control throughout.

Trends in Students' Reading Literacy Achievement

- Reading literacy achievement increased significantly in Greece, Slovenia, Iceland, and Hungary between 1991 and 2001. There was no significant change in Italy, New Zealand, Singapore, and the United States. Only Sweden had a significant decrease in performance.
- For the three major domains, changes in each country's achievement in reading narrative and expository texts mirrored those overall, the exception being a decrease for the United States in the narrative domain. For documents, achievement did not change significantly in Sweden and the United States, but all the other participating countries showed improvement.

Trends in Factors and Reading Activities Having a Positive Influence on Reading Achievement

- In seven of the participating countries, 88 percent or more of students in 2001 reported always or almost always speaking the language of test at home, reflecting either no change or modest decreases from 1991. Fewer students spoke the language of the test at home in Italy (69%) and Singapore (42%).
- For participating countries, the percentages of students with more than 100 books in the home ranged from about one- to two-thirds (31 to 65%). For six of the countries – Hungary, Iceland, Italy, Slovenia, Sweden, and the United States – this represented a significant decrease (5 to 11%) from 1991.
- Seven of the nine countries had a significant decrease in the percentages of students with a daily newspaper in the home.
- Except in Iceland, students reported either no change or less reading for fun in 2001 than a decade earlier. Iceland was the only country with an increase, and the only one where the majority of students (51%) reported reading books for fun on a daily basis.

- In 2001, the percentages of students reporting borrowing library books at least weekly ranged from moderately high (57 to 66%) in New Zealand, Singapore, Slovenia, and the United States; to medium (42%) in Iceland; to relatively low (20 to 33%) in Greece, Hungary, Italy, and Sweden. These levels represented a decline for Hungary, Singapore, Slovenia, and Sweden.
- In 2001, there was considerable variation in daily textbook reading, ranging from 71 percent of the Greek students to 14 percent of the Swedish students. Despite these differences, however, the trend in each country over the past decade was toward reading textbooks less frequently.
- Reading a story book in reading or language class was at least a weekly activity for the majority of students in each country (except Hungary) in 2001. There was, however, some decrease in story book reading in Singapore, Hungary, New Zealand, Italy, Sweden, and Slovenia.
- In Iceland, Sweden, and the United States, students reported some increases in homework. Students in New Zealand reported essentially no change, and those in the remaining countries reported less homework.

Introduction

Trends in Children's Reading Literacy Achievement 1991–2001

Integral to its mission of improving education and the understanding of educational processes by conducting international comparative studies of student achievement in key school subjects, the International Association for the Evaluation of Educational Achievement (IEA) has conducted a series of large-scale surveys of student reading achievement over the past 30 years.

The first study, conducted in 1970-71 and focusing on reading comprehension in 15 countries, demonstrated that valid international comparisons of student reading were indeed feasible; and could produce valuable information to help participating countries identify strengths and weaknesses in their literacy programs.[1] Expanding on the first effort, the IEA Reading Literacy Study[2] was conducted in 1990-91 in 32 countries, assessing student reading on a wider range of reading materials and collecting data on the nature and extend of student reading, home literacy support, and school and classroom instructional factors. Twenty-seven countries participated at the primary/elementary-school level, and 31 at the lower-secondary/middle-school level. The Reading Literacy Study was, at the time, the most ambitious international study of student achievement ever attempted.

Ten years after the Reading Literacy Study, IEA launched the Progress in International Reading Literacy Study (PIRLS),[3] designed not only to provide a state-of-the-art international assessment of fourth-grade students' reading literacy achievement in 2001, but also to continue to provide data on trends in reading literacy achievement on a five-year cycle thereafter. Thirty-five countries participated in PIRLS 2001, the first cycle of PIRLS. Although built on the foundation of the 1991 study, PIRLS is a new and different study, with a new assessment framework describing the interaction between two major reading purposes (literary and informative), and a range of four comprehension processes, an innovative reading test, and newly-developed questionnaires for parents, students, teachers, and school principals.

Because the PIRLS 2001 reading test differed in a number of respects from the 1991 test, it was not possible to link the results of the two studies directly together. However, since PIRLS 2001 was scheduled to collect data on fourth-grade students ten years after the 1991 Reading Literacy Study, PIRLS countries that participated in 1991 were given the opportunity of measuring changes in reading literacy achievement over that period by re-administering the 1991 reading literacy test for primary/elementary-school students as part of the PIRLS data collection. The resulting study is known as the Trends in IEA's Reading Literacy Study.

1 Thorndike, R.L. (1973). Reading comprehension in fifteen countries: An empirical study. *International studies in evaluation: Vol. 3*. Stockholm: Almqvist & Wiksell.

2 Elley, W.B. (Ed.). (1994). *The IEA study of reading literacy: Achievement and instruction in thirty-two school systems.* Oxford, England: Elsevier Science Ltd. Although planning began in 1988, data collection took place in 1990-91, and the study is widely known as the IEA 1991 Reading Literacy Study.

3 Campbell, J.R., Kelly, D.L., Mullis, I.V.S., Martin, M.O., & Sainsbury, M. (2001). *Framework and specifications for PIRLS assessment 2001–2nd edition*. Chestnut Hill, MA: Boston College.

The 1991 reading literacy test was designed to measure reading achievement in three domains: narrative texts, expository texts, and documents; using a range of reading passages and non-continuous texts and with questions almost exclusively in multiple-choice format. The 2001 data collection also included a student questionnaire used in 1991, which asked students about home support for literacy and their reading at home and in school. The target population was the grade containing the most nine-year-olds, which was third or fourth grade in most countries.

The IEA is an independent international cooperative of national research institutions and governmental agencies, with a permanent secretariat, based in Amsterdam, The Netherlands. Its primary purpose is to conduct large-scale comparative studies of educational achievement, in order to gain a deeper understanding of the effects policies and practices have within and across systems of education.

Which Countries Participated?

Nine countries participated in the Trends in IEA's Reading Literacy Study to examine how primary/elementary-school students' achievement in reading literacy had changed since 1991. Generally, these countries performed very well in 1991 – with six of them (the United States, Sweden, Italy, New Zealand, Iceland, and Singapore) scoring above the international average for the 27 countries participating in 1991; the remaining three (Greece, Hungary, and Slovenia) scoring at about the average. Each country had been working to improve students' reading achievement and was interested in seeing how this was reflected in performances on the 1991 reading literacy test.

In participating in PIRLS 2001 and the trend study, each country designated a national center and appointed a National Research Coordinator (NRC) to implement the studies in accordance with international procedures – a considerable responsibility given the complexity of the data collection and the measurement instruments. Appendix B contains a list of the PIRLS 2001 National Research Coordinators participating in the trend study. For efficiency in sampling and operations, the two studies were conducted in parallel as

much as possible. In choosing the sample for the trend study, participants used half of the schools sampled for the PIRLS 2001 data collection – sampling an additional class from the target grade for the 1991 literacy test data collection.

For the sake of comparability across countries, all testing was conducted at the end of the school year (most often in April through June of 2001 for countries in the Northern Hemisphere). The two countries on a Southern Hemisphere school schedule (New Zealand and Singapore) tested in September and October 2001, which was the end of the school year there. To ensure comparability over time, the 2001 data collection was scheduled in each country for the same time of year, as in 1991.[4]

Conducting the Trends in IEA's Reading Literacy Study

As described in the *PIRLS Technical Report*,[5] PIRLS 2001 and the Trends in Reading Literacy Study were conducted according to the highest quality standards – with careful planning and documentation, cooperation among the participating countries, standardized procedures, and rigorous attention to quality control throughout. Countries used the same translated version of the 1991 test and student questionnaire in 2001, for example, and followed the same procedures for test administration and data collection. The stringent requirements for sampling documentation necessary to meet the PIRLS sampling standards also were applied in the trend study. Appendix A contains an overview of the procedures used.

This report summarizes performance on the IEA 1991 reading literacy test in 1991 and 2001, as well as responses to selected questions from the 1991 student questionnaire. Its purpose is to provide information on changes during that period. A more complete description of students' reading literacy achievement in 2001 is provided in the *PIRLS 2001 International Report*,[6] which describes performance on the PIRLS assessment of students from 35 countries – including the nine trend countries – as well as a wealth of information on home and school contexts.

Additional information about the countries participating in the trend study may be found in the *PIRLS 2001 Encyclopedia*,[7] a volume providing general information on the cultural, societal, and economic situation in each

4 In the 1991 study, Southern-Hemisphere countries tested in September-October 1990, before Northern-Hemisphere countries who tested in the first half of 1991. However, in PIRLS 2001, testing for Southern-Hemisphere countries followed Northern-Hemisphere testing, and so for New Zealand and Singapore the interval between data collections was eleven years.

5 Martin, M.O., Mullis, I.V.S., & Kennedy, A.M. (Eds.). (2003). *PIRLS 2001 technical report*. Chestnut Hill, MA: Boston College.

6 Mullis, I.V.S., Martin, M.O., Gonzalez, E.J., & Kennedy, A.M. (2003). *PIRLS 2001 international report: IEA's study of reading literacy achievement in primary schools in 35 countries*. Chestnut Hill, MA: Boston College.

7 Mullis, I.V.S., Martin, M.O., Kennedy, A.M., & Flaherty, C.L. (Eds.). (2002). *PIRLS 2001 encyclopedia: A reference guide to reading education in the countries participating in IEA's Progress in International Reading Literacy Study (PIRLS)*. Chestnut Hill, MA: Boston College.

country; providing a more focused perspective on the structure and organization of the educational system, as it pertains specifically to the promotion of reading literacy. Consisting of a chapter from each country, the *PIRLS 2001 Encyclopedia* describes primary/elementary schooling as it pertains to reading within each educational system – including teacher education and training, reading curricula, classroom organization and instruction, and assessment practices. As such, it is an extremely valuable companion publication to this report; providing insights and detailed information about the policies, practices, and resources within each country.

The PIRLS International Study Center at Boston College, directed by Ina V.S. Mullis and Michael O. Martin, was responsible for all aspects of the design, development, and implementation of both the PIRLS 2001 and the Trends in IEA's Reading Literacy studies – working closely with the PIRLS advisory committees, the NRCs, and partner organizations responsible for particular aspects of the study. These included the IEA Secretariat, which provided guidance in all aspects of the study and was responsible for verification of all translations produced by participating countries; Statistics Canada, which was responsible for school and student sampling activities; the National Foundation for Educational Research in England and Wales, which had major responsibility for developing the PIRLS reading assessment; the IEA Data Processing Center, responsible for processing and verifying the data from the 35 countries; and Educational Testing Service, which provided software and support for scaling the achievement data.

Funding

A project of this magnitude requires considerable financial support. IEA's major funding partners for PIRLS included the World Bank, the U.S. Department of Education through the National Center for Education Statistics, and those countries that contributed by way of fees.

Chapter 1

Trends in Reading Literacy Achievement 1991–2001

Chapter 1 summarizes changes in average reading literacy achievement of primary/elementary-school children from 1991 to 2001 for each country. Separate results for girls and boys, and changes in gender differences also are provided, as are changes in average achievement in three reading domains – narrative text, expository text, and documents.

Trends in Reading Literacy Achievement Between 1991 and 2001

Exhibit 1.1 presents the difference between average reading literacy in 1991 and in 2001 for each of the nine participating countries. Countries are shown in decreasing order of the difference, together with an indication of whether the difference is statistically significant. Also included are the distributions of reading literacy achievement for each country in 1991 and 2001, the average achievement score, the number of years of formal schooling, and the average age. The 1991 and 2001 data were placed on the same scale so that changes in reading performance between 1991 and 2001 could be readily seen.[1]

In Greece, Slovenia, Iceland, and Hungary, there was an increase in average student performance on the reading literacy test from 1991 to 2001.[2] Four countries (Italy, New Zealand, Singapore, and the United States) had no significant change, and only Sweden, one of the highest-performing countries in 1991, had a decrease in performance over the period.

Because the age at which students start school varies from country to country, the number of years of formal schooling is not the same in all countries. Students were in the fourth grade in five countries and in third grade in four countries. The same grade was tested in 1991 and in 2001 in all countries, although there were some changes in average student age. In Greece, the average age of fourth-grade students increased from 9.3 years in 1991 to 10.0 in 2001, and in Hungary the increase was from 9.3 to 9.7.

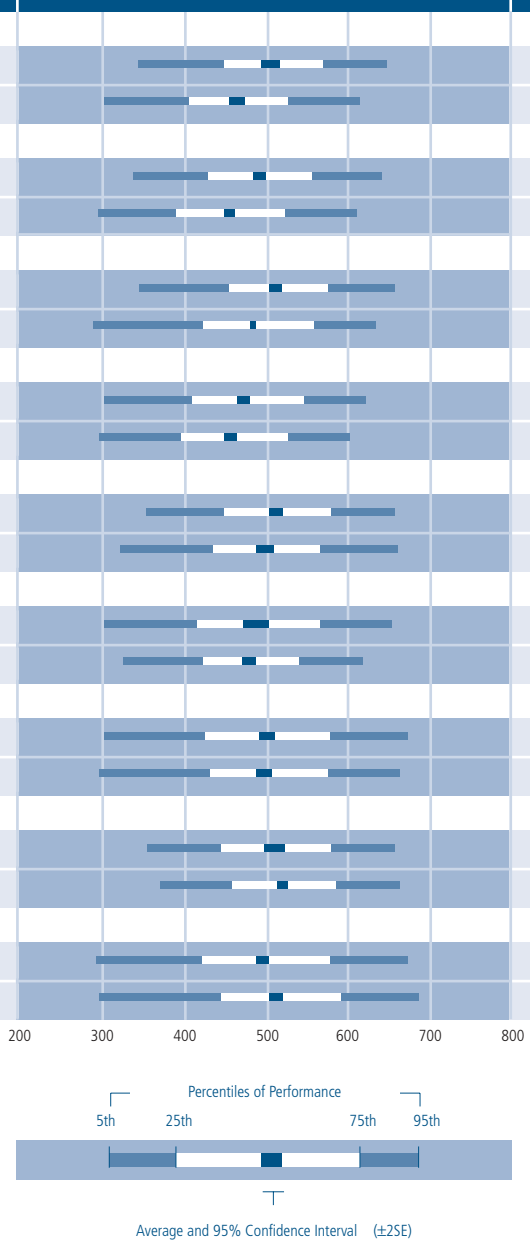
1 PIRLS used item response theory (IRT) methods to summarize the achievement results from both 1991 and 2001 on a common scale with a mean of 500 and a standard deviation of 100. The scale mean of 500 was set to the mean of the average scale scores of the 2001 data for the nine countries. IRT scaling averages students' responses in a way that accounts for differences in the difficulty of the items and allows students' performance at two points in time to be summarized on a common metric. For more detailed information, see the "IRT Scaling and Data Analysis" section of Appendix A.

2 Three of these (Greece, Slovenia, and Hungary) had average performance close to the international average for all 27 countries in 1991. See Elley, W.B. (1992). *How in the world do students read?* The Hague: International Association for the Evaluation of Educational Achievement. Please note that for Trends in IEA's Reading Literacy Study, the means for 1991 are different than those reported in Elley (1992) because the 1991 data was rescaled to be put on a common metric with the 2001 data.

Exhibit 1.1: Trends in Average Achievement in Reading Literacy

ISC RLS Trend 1991–2001

Countries	1991 to 2001 Difference	Reading Scale Score	Average Scale Score	Years of Formal Schooling	Average Age
Greece	▲ 41 (7.4)				
2001			507 (5.9)	4	10.0
1991			466 (4.5)	4	9.3
Slovenia	▲ 36 (4.9)				
2001			493 (3.7)	3	9.8
1991			458 (3.2)	3	9.7
Iceland	▲ 27 (3.7)				
2001			513 (3.5)	4	9.8
1991			486 (1.5)	4	9.8
Hungary	▲ 16 (5.6)				
2001			475 (3.9)	3	9.7
1991			459 (4.0)	3	9.3
Italy	12 (6.9)				
2001			513 (4.4)	4	9.9
1991			500 (5.4)	4	9.8
Singapore	8 (8.7)				
2001			489 (7.9)	3	9.1
1991			481 (3.6)	3	9.3
New Zealand	4 (6.8)				
2001			502 (5.3)	5	10.0
1991			498 (4.1)	5	10.0
United States	-10 (7.1)				
2001			511 (6.3)	4	10.0
1991			521 (3.2)	4	10.0
Sweden	▼ -15 (5.7)				
2001			498 (3.9)	3	9.8
1991			513 (4.2)	3	9.8



SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

Gender Differences in Trends in Reading Literacy Achievement

Exhibit 1.2 provides information on changes in primary/elementary-school children's average reading literacy between 1991 and 2001, separately for girls and boys. For Greece, Hungary, Slovenia, and Sweden, the results for boys and girls resemble the trends in reading overall, with increased scores for both in Greece and Slovenia, and decreased scores for both in Sweden. Iceland also has increased scores for both girls and boys, but with a greater gain for boys (35 points) than for girls (17 points). Iceland's overall improvement on reading appears to be due primarily to improved reading performance by boys.

Another perspective on trends in gender differences is provided in Exhibit 1.3, which shows average reading achievement for girls and boys and the difference between them in 2001, average reading achievement for girls and boys and the difference between them in 1991, and an indication of whether the change in gender difference from 1991 to 2001 was statistically significant. In 1991, girls outperformed boys in all nine countries. In 2001, however, there was still a difference favoring girls in Greece, Hungary, New Zealand, Singapore, Slovenia, Sweden, and the United States, but no significant difference in Iceland and Italy. In Iceland, the achievement difference between girls and boys decreased between 1991 (28 points) and 2001 (9 points) because of the improved performance by boys described previously. In Singapore, however, improved performance by girls led to an increase in the gender difference between 1991 and 2001 – from 16 to 29 points.

Trends in Reading Achievement on Different Text Types Between 1991 and 2001

The 1991 reading literacy test measured student reading achievement in three domains: narrative texts, expository texts, and documents. Narrative texts are continuous texts in which the writer's aim is to tell a story – whether fact or fiction. They normally follow a linear time sequence and are usually intended to entertain or involve the reader emotionally. Passages included in the test ranged from short fables to more lengthy stories of up to 1000 words.

Expository texts also are continuous, and are designed to describe, explain, or otherwise convey factual information or opinion to the reader. The test contained, for example, brief family letters and descriptions of animals. Documents consist of structured information displays presented in the form of charts, tables, maps, graphs, lists, or sets of instructions. These materials were organized in the test in such a way that students had to search, locate, and process selected facts rather than read every word of continuous text.[3] Exhibits 1.4 through 1.6 summarize changes in average student performance from 1991 to 2001 on the three text types, respectively.

Similar to their performance on the test as a whole, primary/elementary-school students in Greece, Iceland, Slovenia, and Hungary performed better, on average, on the narrative texts in 2001 than in 1991 (Exhibit 1.4). There was no significant difference in average performance in Italy, Singapore, and New Zealand over that period. Also, in line with performance on the test overall, students in Sweden had lower average performance on narrative texts in 1991 than in 2001. Although in the United States there was not a significant difference in average overall reading performance between 1991 and 2001, students performed less well on the narrative texts in 2001 (a difference of 20 points).

As shown in Exhibit 1.5, students in Greece, Iceland, Slovenia, and Hungary performed better, on average, also on the expository texts in 2001 than in 1991. Students in Sweden performed less well in 2001 than 1991, and there was no significant difference in Italy, New Zealand, Singapore, and the United States.

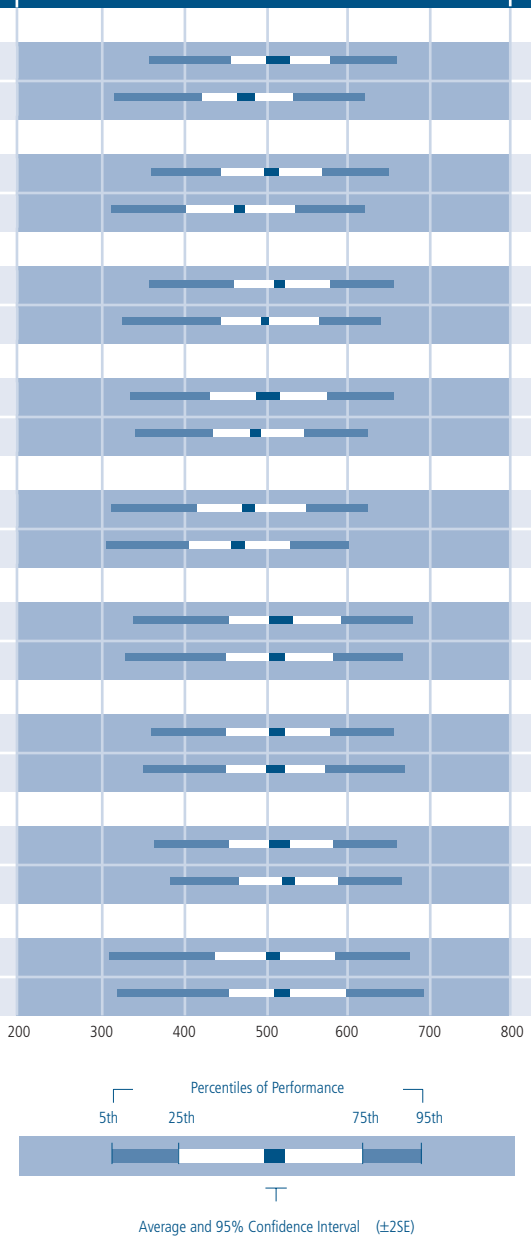
All but two countries, Sweden and the United States, showed an improvement on document text in 2001 compared to 1991. In Sweden and the United States, average student performance in 2001 and 1991 did not differ significantly.

3 Elley, W.B. (1992). *How in the world do students read?* The Hague: International Association for the Evaluation of Educational Achievement.

Exhibit 1.2: Trends in Average Reading Literacy Achievement by Gender

ISC RLS Trend 1991–2001

Girls					
Countries	1991 to 2001 Difference	Reading Scale Score	Average Scale Score	Years of Formal Schooling	Average Age
Greece	▲ 40 (9.2)				
2001			516 (7.3)	4	10.0
1991			476 (5.7)	4	9.3
Slovenia	▲ 39 (6.3)				
2001			508 (5.2)	3	9.8
1991			469 (3.5)	3	9.7
Iceland	▲ 17 (3.7)				
2001			517 (3.2)	4	9.8
1991			501 (2.1)	4	9.8
Singapore	15 (8.8)				
2001			504 (7.9)	3	9.1
1991			489 (3.9)	3	9.3
Hungary	▲ 14 (6.0)				
2001			481 (4.2)	3	9.6
1991			467 (4.4)	3	9.3
New Zealand	6 (8.7)				
2001			520 (7.0)	5	10.0
1991			514 (5.0)	5	10.0
Italy	3 (7.6)				
2001			514 (5.2)	4	9.9
1991			512 (5.6)	4	9.8
United States	-12 (7.5)				
2001			517 (6.7)	4	9.9
1991			529 (3.3)	4	9.9
Sweden	▼ -13 (6.5)				
2001			509 (4.3)	3	9.8
1991			523 (4.9)	3	9.7



SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

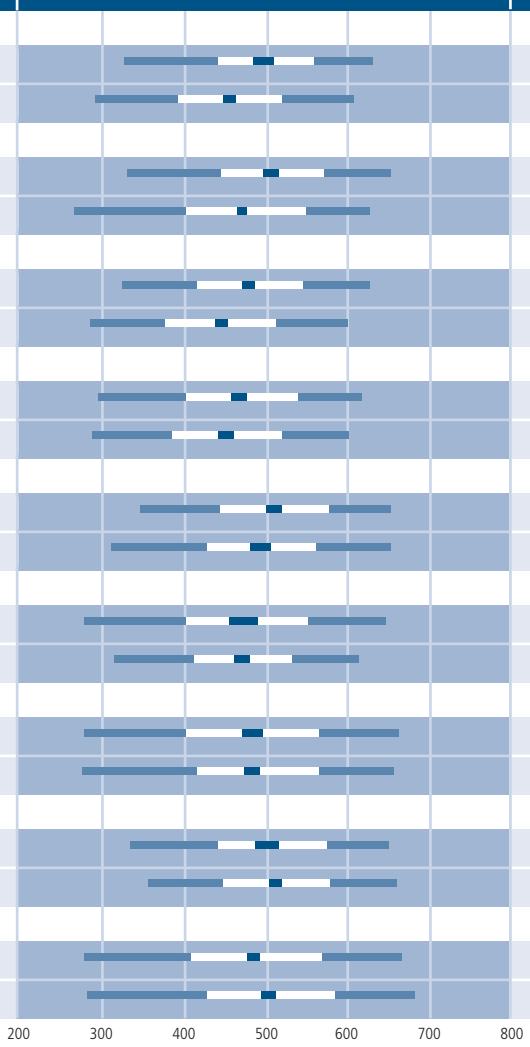
( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

Exhibit 1.2: Trends in Average Reading Literacy Achievement by Gender (Continued)

ISC RLS Trend 1991–2001

Boys

Countries	1991 to 2001 Difference	Reading Scale Score	Average Scale Score	Years of Formal Schooling	Average Age
Greece	▲ 41 (7.4)				
2001			499 (6.0)	4	10.1
1991			457 (4.4)	4	9.3
Iceland	▲ 35 (5.7)				
2001			508 (5.1)	4	9.8
1991			473 (2.6)	4	9.8
Slovenia	▲ 33 (5.6)				
2001			480 (4.1)	3	9.8
1991			447 (3.8)	3	9.7
Hungary	▲ 16 (6.3)				
2001			469 (4.2)	3	9.7
1991			453 (4.7)	3	9.4
Italy	16 (8.2)				
2001			511 (5.3)	4	9.9
1991			495 (6.4)	4	9.9
Singapore	2 (9.6)				
2001			475 (8.5)	3	9.1
1991			473 (4.5)	3	9.3
New Zealand	0 (8.6)				
2001			485 (6.6)	5	10.0
1991			485 (5.4)	5	10.0
United States	-9 (8.2)				
2001			504 (7.1)	4	10.0
1991			513 (4.0)	4	10.1
Sweden	▼ -18 (6.4)				
2001			486 (4.4)	3	9.8
1991			505 (4.8)	3	9.8



▲ 2001 country average significantly higher than 1991 average

▼ 2001 country average significantly lower than 1991 average

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

Exhibit 1.3: Trends in Gender Differences in Average Reading Achievement

ISC RLS Trend 1991–2001

Countries	2001			1991			Change in Gender Difference
	Girls Average Scale Score	Boys Average Scale Score	Difference (Absolute Value)	Girls Average Scale Score	Boys Average Scale Score	Difference (Absolute Value)	
Greece	516 (7.3) ▲	499 (6.0)	18 (6.3)	476 (5.7) ▲	457 (4.4)	19 (4.8)	○
Hungary	481 (4.2) ▲	469 (4.2)	12 (3.2)	467 (4.4) ▲	453 (4.7)	14 (4.4)	○
Iceland	517 (3.2)	508 (5.1)	9 (4.8)	501 (2.1) ▲	473 (2.6)	28 (3.6)	▼
Italy	514 (5.2)	511 (5.3)	4 (5.5)	512 (5.6) ▲	495 (6.4)	17 (5.7)	○
New Zealand	520 (7.0) ▲	485 (6.6)	35 (8.7)	514 (5.0) ▲	485 (5.4)	29 (6.3)	○
Singapore	504 (7.9) ▲	475 (8.5)	29 (4.8)	489 (3.9) ▲	473 (4.5)	16 (4.3)	▲
Slovenia	508 (5.2) ▲	480 (4.1)	28 (5.7)	469 (3.5) ▲	447 (3.8)	22 (3.7)	○
Sweden	509 (4.3) ▲	486 (4.4)	23 (4.1)	523 (4.9) ▲	505 (4.8)	18 (4.6)	○
United States	517 (6.7) ▲	504 (7.1)	14 (5.4)	529 (3.3) ▲	513 (4.0)	16 (3.4)	○

▲ Significantly higher than other gender

Increased ▲

Decreased ▼

No Change ○

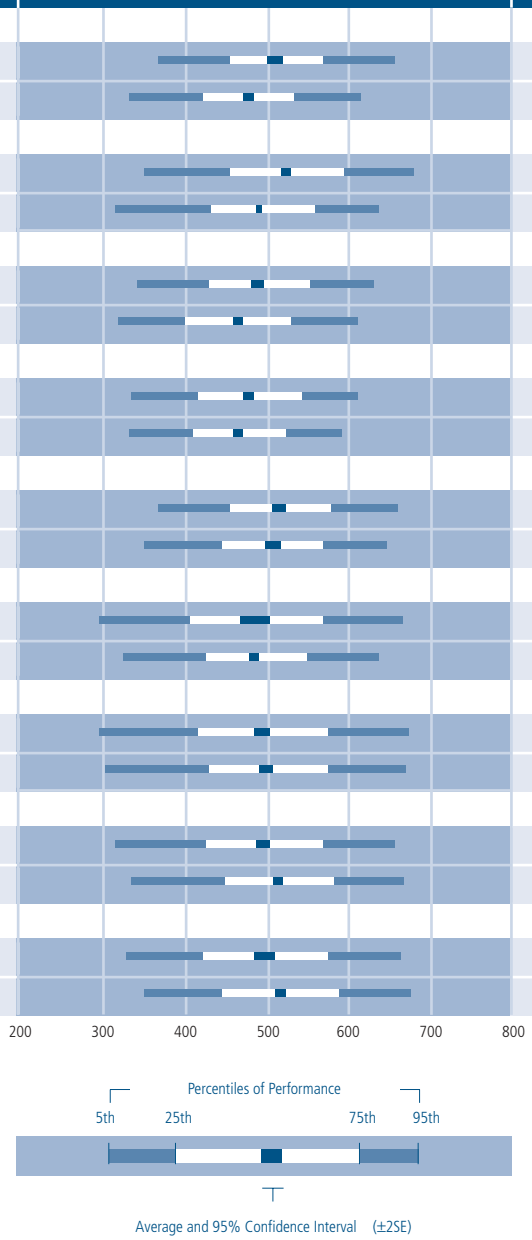
SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

Exhibit 1.4: Trends in Average Achievement in Narrative Reading Literacy

ISC RLS Trend 1991–2001

Countries	1991 to 2001 Difference	Average Scale Score	Years of Formal Schooling	Average Age
Greece	▲ 34 (6.0)			
2001		513 (4.8)	4	10.0
1991		479 (3.7)	4	9.3
Iceland	▲ 31 (3.8)			
2001		524 (3.3)	4	9.8
1991		493 (1.6)	4	9.8
Slovenia	▲ 25 (4.8)			
2001		490 (3.7)	3	9.8
1991		465 (3.0)	3	9.7
Hungary	▲ 12 (4.5)			
2001		479 (3.1)	3	9.7
1991		467 (3.2)	3	9.3
Italy	10 (6.2)			
2001		517 (4.1)	4	9.9
1991		507 (4.7)	4	9.8
Singapore	1 (9.3)			
2001		487 (8.6)	3	9.1
1991		486 (3.5)	3	9.3
New Zealand	-5 (6.9)			
2001		496 (5.3)	5	10.0
1991		500 (4.3)	5	10.0
Sweden	▼ -17 (4.8)			
2001		496 (3.6)	3	9.8
1991		513 (3.4)	3	9.8
United States	▼ -20 (7.7)			
2001		498 (6.8)	4	10.0
1991		518 (3.3)	4	10.0



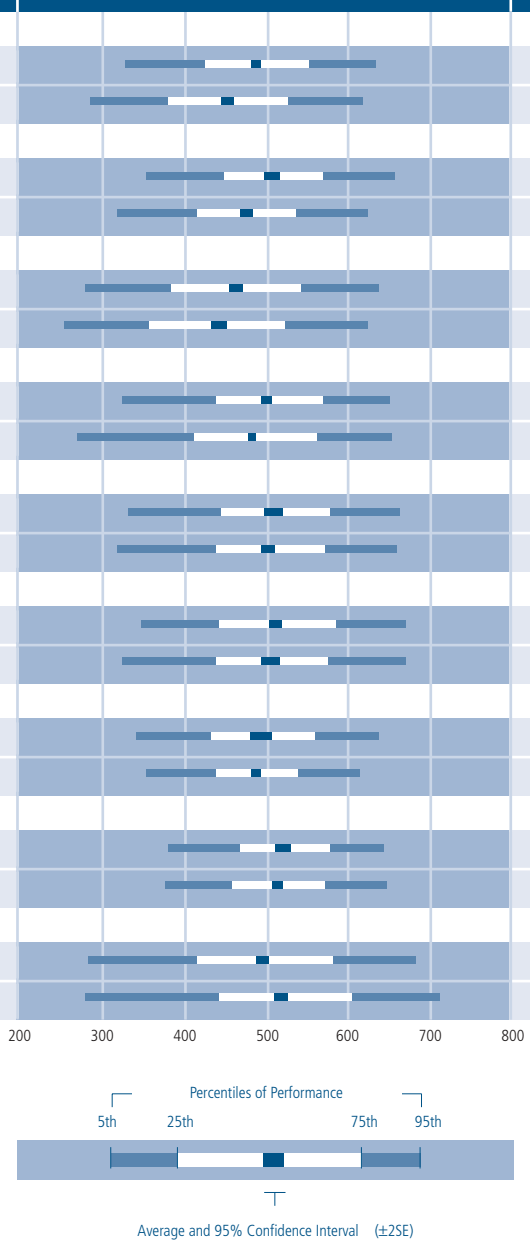
SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

Exhibit 1.5: Trends in Average Achievement in Expository Reading Literacy

ISC RLS Trend 1991–2001

Countries	1991 to 2001 Difference	Reading Scale Score	Average Scale Score	Years of Formal Schooling	Average Age
Slovenia	▲ 34 (4.9)				
2001			489 (3.3)	3	9.8
1991			455 (3.6)	3	9.7
Greece	▲ 33 (6.8)				
2001			509 (5.2)	4	10.0
1991			476 (4.3)	4	9.3
Hungary	▲ 21 (6.4)				
2001			464 (4.4)	3	9.7
1991			443 (4.8)	3	9.3
Iceland	▲ 18 (3.9)				
2001			502 (3.3)	4	9.8
1991			483 (1.9)	4	9.8
New Zealand	8 (6.5)				
2001			510 (5.3)	5	10.0
1991			502 (3.9)	5	10.0
Italy	6 (7.1)				
2001			513 (4.5)	4	9.9
1991			507 (5.5)	4	9.8
Singapore	6 (7.3)				
2001			495 (6.6)	3	9.1
1991			489 (3.1)	3	9.3
United States	5 (6.2)				
2001			521 (5.4)	4	10.0
1991			516 (3.2)	4	10.0
Sweden	▼ -23 (6.1)				
2001			496 (4.1)	3	9.8
1991			519 (4.4)	3	9.8



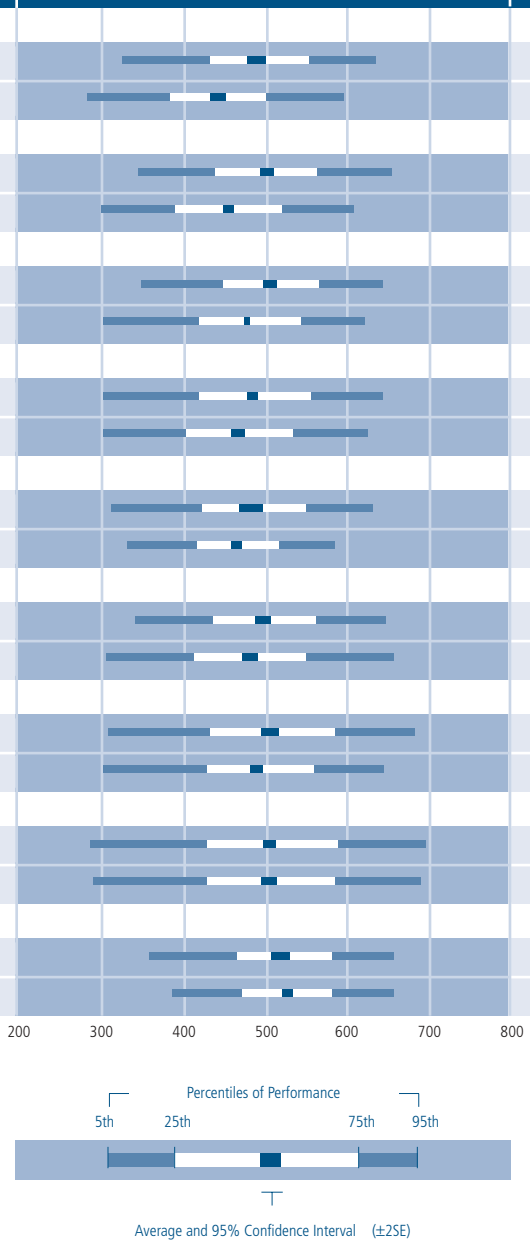
SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

Exhibit 1.6: Trends in Average Achievement in Document Reading Literacy

ISC RLS Trend 1991–2001

Countries	1991 to 2001 Difference	Reading Scale Score	Average Scale Score	Years of Formal Schooling	Average Age
Greece	▲ 48 (7.1)				
2001			490 (5.2)	4	10.0
1991			443 (4.9)	4	9.3
Slovenia	▲ 47 (4.9)				
2001			502 (3.8)	3	9.8
1991			456 (3.0)	3	9.7
Iceland	▲ 28 (4.0)				
2001			506 (3.4)	4	9.8
1991			479 (1.7)	4	9.8
Hungary	▲ 18 (5.6)				
2001			486 (3.7)	3	9.7
1991			468 (4.3)	3	9.3
Singapore	▲ 18 (7.5)				
2001			484 (6.8)	3	9.1
1991			465 (3.1)	3	9.3
Italy	▲ 17 (6.9)				
2001			499 (4.5)	4	9.9
1991			482 (5.4)	4	9.8
New Zealand	▲ 16 (6.3)				
2001			506 (5.2)	5	10.0
1991			491 (4.0)	5	10.0
Sweden	2 (6.4)				
2001			506 (4.4)	3	9.8
1991			504 (4.5)	3	9.8
United States	-7 (6.6)				
2001			520 (6.1)	4	10.0
1991			527 (3.2)	4	10.0



SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

2

Chapter 2
Home Support for Literacy

To help interpret the trends in children's reading achievement described in Chapter 1, the remaining chapters of the report present trends in several key areas often associated with differing levels of reading proficiency. In particular, this chapter describes trends in several important variables associated with a home environment supportive of encouraging literacy activities.

Language Spoken at Home

Students who speak a language (or languages) in the home that differs from the language spoken in school sometimes benefit from being multilingual. Generally, however, there is a high degree of relationship between fluency in speaking a language and the ability to read the language. Conventional wisdom, as well as numerous studies, suggest that students whose home language is that of the school will have an easier transition into reading than those who have to learn a new language while they learn to read. Students who are still developing proficiency in the language of instruction and testing can be at a serious disadvantage. The previous IEA Reading Literacy Study in 1991 found occurrences of both situations – second language students in some countries scored well below students who spoke the language of the test; and in other countries, non-native language speakers were reading almost as well the native speakers.[1]

For the countries replicating the 1991 Reading Literacy Study, Exhibit 2.1 shows changes between 1991 and 2001 in the frequency with which primary/elementary-school students spoke the language of the test at home, as well as any changes in achievement in relation to frequency. For all of these nine countries in 2001, students always or almost always speaking the language of the test at home had higher reading achievement than those speaking it only sometimes or hardly ever. With the exception of Singapore, the results show that, in most countries, the percentage of students always or almost speaking the language of the test at home either essentially stayed the same or decreased somewhat – perhaps reflecting recent immigration.

In Hungary, nearly all students (at least 98%) reported speaking Hungarian at home in both 1991 and 2001. In six of the remaining countries in 2001, most primary/elementary-school students – from 88 to 93 percent – reported always or almost always speaking the language of the test at home. For three of these countries (Greece, Slovenia, and Sweden) this represented virtually no change from 1991, but it did represent a significant decrease for the other three countries. In Iceland, New Zealand, and the United States, from 4 to 8 percent fewer students usually spoke the language of the test at home. Primarily, these students were speaking the test language only sometimes at home.

1 Elley, W. B. (1991). *How in the world do students read?* The Hague: International Association for the Evaluation of Educational Achievement.

Since the four countries with significant increases in reading achievement – Greece, Slovenia, Iceland, and Hungary – had most of their students (88 % or more) in one response category, always or almost always speaking the language of the test at home, it follows that students in that category would have higher achievement in 2001 than 1991. Similarly, Sweden's overall decline between 1991 and 2001 is reflected in the achievement decline for the 91 percent of students usually speaking the test language at home.

In Italy in 2001, 69 percent of the students reported speaking the language of test at home and 12 percent reported never or hardly ever doing so. However, this was about the same as in 1991, and there were no changes in average achievement in any category.

In Singapore, the pattern was very different. Singapore has four official languages (Malay, Mandarin Chinese, Tamil, and English[2]) – with Malay being the national language, and English the language of administration. Fundamental to Singapore's educational system is its bilingual policy, which ensures children learn both English and their mother tongue. Consistent with this policy, Singapore tested in English. That only 42 percent of the students reported always or almost always speaking the language of the test at home, however, did represent a significant increase of 14 percent compared to 1991. Across the categories for language spoken in the home, there were no changes in average achievement for Singaporean students.

2 Mullis, I.V.S., Martin, M.O., Kennedy, A.M., & Flaherty, C.L. (Eds.). (2002). *PIRLS 2001 encyclopedia: A reference guide to reading education in the countries participating in IEA's Progress in International Reading Literacy Study (PIRLS).* Chestnut Hill, MA: Boston College.

Exhibit 2.1: Trends in Frequency with Which Students Speak the Language of Test at Home

ISC RLS Trend 1991–2001

Countries	Always or Almost Always		Sometimes		Never or Hardly Ever	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	92 (1.2)	-2 (1.7)	7 (1.1)	2 (1.3)	1 (0.4)	-1 (0.7)
Hungary	98 (0.3)	1 (0.5)	1 (0.2)	0 (0.3)	1 (0.2)	0 (0.4)
Iceland	93 (0.8)	-4 (0.8) ▼	5 (0.7)	3 (0.7) ▲	2 (0.3)	1 (0.4) ▲
Italy	69 (1.7)	-4 (2.8)	19 (1.4)	4 (2.0)	12 (0.9)	1 (1.7)
New Zealand	88 (1.4)	-4 (1.7) ▼	9 (1.1)	3 (1.4) ▲	3 (0.6)	1 (0.7)
Singapore	42 (1.8)	14 (2.2) ▲	45 (1.5)	-15 (1.9) ▼	13 (0.8)	0 (1.0)
Slovenia	88 (1.7)	0 (2.0)	8 (1.4)	-1 (1.6)	3 (0.8)	1 (0.9)
Sweden	91 (1.1)	0 (1.6)	7 (0.9)	1 (1.2)	3 (0.3)	-1 (0.7)
United States	89 (1.4)	-8 (1.5) ▼	8 (1.2)	6 (1.3) ▲	3 (0.5)	2 (0.5) ▲

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

Countries	Always or Almost Always		Sometimes		Never or Hardly Ever	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	513 (5.6)	42 (7.1) ▲	456 (9.4)	39 (28.4)	~ ~	– –
Hungary	476 (3.9)	15 (5.5) ▲	~ ~	– –	~ ~	– –
Iceland	517 (3.3)	29 (3.6) ▲	473 (12.3)	– –	~ ~	– –
Italy	520 (4.4)	9 (6.9)	496 (7.9)	19 (11.7)	500 (7.7)	20 (15.1)
New Zealand	511 (4.9)	4 (6.3)	445 (16.7)	35 (19.7)	426 (20.9)	– –
Singapore	529 (8.4)	14 (9.7)	466 (7.4)	-5 (8.0)	440 (8.7)	-12 (9.9)
Slovenia	497 (3.9)	34 (5.0) ▲	466 (8.0)	41 (10.3) ▲	462 (15.4)	65 (18.7) ▲
Sweden	504 (3.7)	-17 (5.1) ▼	438 (9.1)	7 (18.7)	444 (10.7)	-22 (15.9)
United States	520 (6.0)	-2 (6.8)	452 (12.2)	-32 (14.1) ▼	443 (20.8)	– –

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

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

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

Books and Daily Newspapers at Home

An important home environment factor associated with children's positive reading outcomes is having a variety of printed materials in the home, including books and newspapers. IEA's 1991 study found positive relationships between the number of books students reported at home and achievement, with Hungary and New Zealand among the countries with the highest relationship.[3] The relationship of achievement with newspapers in the home was much lower in all countries, and often not significant.

For the countries replicating the 1991 study, Exhibit 2.2 contains primary/elementary-students' reports about trends in the number of books in the home. Similar to the previous findings, in 2001 higher reading achievement was observed for students with more books in the home (more than 50). This also agrees with findings from PIRLS, IEA's newly-developed reading assessment at the fourth grade.[4] The number of books in the home is typically a very strong variable in IEA studies, not only for reading but also for mathematics and science. IEA's ongoing trend assessments in mathematics and science (TIMSS) also found that eighth-grade students from homes with more than 100 books had higher achievement than those from homes with fewer books.[5]

In 2001, for countries participating in the repeat of IEA's 1991 Reading Literacy Study, the percentages of students with more than 100 books in the home ranged from about one- to two-thirds (31 to 65%). For six of the countries, this represented a significant decrease (5 to 11%) from 1991 – Hungary, Iceland, Italy, Slovenia, Sweden, and the United States. New Zealand also had a decrease of 4 percent that was not statistically significant. In contrast, Greece and Singapore showed increases (6 to 7%).

In examining trends in achievement in relation to the different categories of responses, one would anticipate the overall trends to be reflected in each category, everything being equal. For example, Greece had a substantial increase in reading achievement overall (41 scale-score points) that, for the most part, is reflected in each category of books in the home (from 23 to 56 scale-score points). The other three countries with significant increases overall (Slovenia, Iceland, and Hungary) also showed relatively consistent increases

3 Elley, W.B. (Ed.). (1994). *The IEA study of reading literacy: Achievement and instruction in 32 school systems*. Oxford, England: Elsevier Science Ltd.

4 Mullis, I.V.S., Martin, M.O., Gonzalez, E.J., & Kennedy, A.M. (2003). *PIRLS 2001 international report: IEA's study of reading literacy achievement in primary schools in 35 countries*. Chestnut Hill, MA: Boston College.

5 Mullis, I.V.S., Martin, M.O., Gonzalez, E.J., Gregory, K.D., Garden, R.A., O'Connor, K.M., Chrostowski, S.J., & Smith, T.A. (2000). *TIMSS 1999 international mathematics report: Findings from IEA's repeat of the Third International Mathematics and Science Study at the eighth grade*. Chestnut Hill, MA: Boston College; Martin, M.O., Mullis, I.V.S., Gonzalez, E.J., Gregory, K.D., Smith, T.A., Chrostowski, S.J., Garden, R.A., & O'Connor, K.M. (2000). *TIMSS 1999 international science report: Findings from IEA's repeat of the Third International Mathematics and Science Study at the eighth grade*. Chestnut Hill, MA: Boston College.

Exhibit 2.2: Trends in Number of Books in the Home

ISC RLS Trend 1991–2001

Countries	More than 100 Books		51-100 Books		11-50 Books		0-10 Books	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	31 (2.1)	7 (2.5) ▲	27 (1.5)	5 (1.8) ▲	31 (1.7)	-2 (2.1)	11 (1.3)	-10 (1.9) ▼
Hungary	43 (1.6)	-6 (2.2) ▼	25 (0.7)	-2 (1.2)	20 (1.0)	3 (1.4)	12 (1.0)	5 (1.2) ▲
Iceland	58 (1.4)	-8 (1.6) ▼	26 (1.1)	5 (1.3) ▲	12 (0.8)	2 (0.9)	3 (0.6)	1 (0.6)
Italy	25 (1.5)	-5 (2.2) ▼	22 (0.9)	0 (1.6)	31 (1.6)	2 (2.2)	23 (1.4)	3 (2.0)
New Zealand	55 (2.5)	-4 (3.0)	22 (1.5)	3 (1.7)	15 (1.3)	2 (1.6)	8 (0.9)	-1 (1.2)
Singapore	42 (1.4)	6 (1.8) ▲	24 (0.9)	2 (1.1)	22 (1.0)	-3 (1.2) ▼	13 (0.9)	-6 (1.3) ▼
Slovenia	38 (1.9)	-5 (2.4) ▼	26 (1.6)	-1 (1.9)	24 (1.4)	2 (1.7)	12 (1.0)	4 (1.2) ▲
Sweden	65 (1.5)	-7 (1.9) ▼	19 (1.0)	3 (1.2) ▲	13 (0.8)	4 (1.1) ▲	3 (0.4)	1 (0.6)
United States	43 (2.2)	-11 (2.7) ▼	24 (1.2)	3 (1.4) ▲	22 (1.6)	5 (1.8) ▲	11 (1.3)	2 (1.5)

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

Countries	More than 100 Books		51-100 Books		11-50 Books		0-10 Books	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	519 (6.8)	28 (9.0) ▲	527 (7.7)	39 (9.2) ▲	495 (9.9)	23 (12.0)	473 (10.1)	56 (12.1) ▲
Hungary	507 (3.8)	22 (5.7) ▲	479 (4.3)	21 (6.7) ▲	456 (4.8)	22 (7.5) ▲	389 (6.9)	22 (10.6) ▲
Iceland	524 (3.4)	29 (3.7) ▲	513 (5.0)	27 (6.2) ▲	491 (6.8)	37 (8.8) ▲	437 (16.5)	– –
Italy	527 (7.5)	13 (9.9)	539 (6.2)	18 (8.7) ▲	509 (5.2)	-7 (10.6)	478 (6.5)	34 (9.7) ▲
New Zealand	525 (6.7)	1 (7.8)	499 (7.6)	5 (9.8)	489 (10.4)	26 (13.0) ▲	397 (12.5)	-5 (18.0)
Singapore	509 (9.1)	5 (10.2)	508 (7.6)	14 (8.5)	480 (7.6)	4 (8.1)	403 (7.0)	-26 (7.9) ▼
Slovenia	513 (4.5)	35 (6.0) ▲	498 (6.5)	36 (7.8) ▲	484 (6.9)	48 (8.2) ▲	444 (6.9)	46 (9.9) ▲
Sweden	509 (3.2)	-16 (5.1) ▼	493 (5.9)	-9 (8.4)	465 (8.7)	-5 (12.9)	422 (9.6)	– –
United States	537 (6.2)	0 (7.2)	512 (8.2)	-17 (9.0)	493 (7.7)	0 (8.8)	453 (7.1)	-10 (9.0)

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

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

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

across the categories of different numbers of books in the home. The significant decline for Swedish students was for those with the most books in the home, but the pattern also was evidenced for other categories.

Exhibit 2.3 contains the trends for students' reports about having a daily newspaper at home. Similar to the results a decade ago, there was no clear-cut relationship across countries between reading achievement and having a daily newspaper in the home – despite higher achievement in Singapore, Slovenia, and Sweden. Further, the practice of taking a daily newspaper was on the decline in almost all countries.

Seven of the nine countries taking part in the repeat of IEA's 1991 Reading Literacy Study had a significant decrease in the percentages of primary/elementary-school students with a daily newspaper in the home. In 2001, the highest percentages of "Yes" responses were reported by Sweden (85 % with a 3% decline), Iceland (73% with a 6% decline), Singapore (70% with a 8% decline), the United States (67% with a 14% decline), and New Zealand (59% with a 10% decline). With decreases of 14 and 9 percentage points, respectively, Greece and Italy had less than one-third of their students with home access to a daily newspaper. There was essentially no change in Slovenia, with about half the students reporting a daily newspaper. Hungary, the exception to the pattern of declines in having a daily newspaper, showed a significant increase of 10 percentage points since 1991 – up to 41 percent.

Exhibit 2.3: Trends in Receiving a Daily Newspaper at Home

ISC RLS Trend 1991–2001

Countries	Yes		No	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	27 (1.5)	-14 (2.0) ▼	73 (1.5)	14 (2.0) ▲
Hungary	41 (1.4)	10 (1.8) ▲	59 (1.4)	-10 (1.8) ▼
Iceland	73 (1.5)	-6 (1.6) ▼	27 (1.5)	6 (1.6) ▲
Italy	32 (1.4)	-9 (2.0) ▼	68 (1.4)	9 (2.0) ▲
New Zealand	59 (2.3)	-10 (2.7) ▼	41 (2.3)	10 (2.7) ▲
Singapore	70 (0.9)	-8 (1.2) ▼	30 (0.9)	8 (1.2) ▲
Slovenia	49 (1.8)	1 (2.3)	51 (1.8)	-1 (2.3)
Sweden	85 (1.0)	-3 (1.2) ▼	15 (1.0)	3 (1.2) ▲
United States	67 (1.8)	-14 (2.0) ▼	33 (1.8)	14 (2.0) ▲

Countries	Yes		No	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	515 (7.2)	28 (9.2) ▲	506 (6.5)	50 (7.9) ▲
Hungary	468 (5.1)	17 (7.1) ▲	481 (4.1)	16 (6.0) ▲
Iceland	518 (4.2)	28 (4.4) ▲	503 (5.1)	29 (5.9) ▲
Italy	513 (5.3)	4 (7.6)	513 (5.0)	17 (8.1) ▲
New Zealand	497 (6.2)	-10 (7.7)	513 (6.5)	29 (9.2) ▲
Singapore	496 (7.8)	9 (8.7)	476 (8.8)	13 (9.4)
Slovenia	504 (4.7)	41 (5.8) ▲	484 (4.8)	26 (5.9) ▲
Sweden	503 (3.8)	-15 (5.6) ▼	469 (6.3)	-13 (10.4)
United States	516 (6.7)	-10 (7.4)	502 (7.9)	1 (8.9)

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

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

Parents and Other People at Home Ask About Students' Reading

Parenting practices can influence literacy development in a number of ways, such as creating interactions around literacy activities and encouraging reading. The results, however, need to be interpreted with care, since students who receive the most attention at home may also be those who need it most – while the more competent readers may report fewer parental inquiries.

Trends in primary/elementary-school students' reports about how often their parents or other people at home ask about their reading are shown in Exhibit 2.4. Generally, there were no dramatic changes from 1991 to 2001 in the percentages of students in the various categories, or in the overall relationship with achievement. Overall improvements or declines in average reading achievement for the countries were reflected relatively uniformly across categories, with the highest achievement most often found for students reporting modest interaction (1 or 2 times a week).

Greek students reported the most daily interaction (66%), with virtually no change between 1991 and 2001. Much smaller percentages of children (from 16 to 31%) in the remaining 8 trend countries reported daily inquiries about their reading. Of these, the United States showed essentially no change; with 28 percent reporting daily interaction, 42 percent some degree of weekly interaction, and 30 percent never interacting about their reading with people at home. Countries showing trends toward more home interaction, in general, included New Zealand (from never to 3 or 4 times a week and daily) and Iceland (from never to 3 or 4 times a week). Countries showing decreases, in general, included Hungary (from 1 or 2 times a week to never), Italy (from daily to never), Singapore (weekly to never), and Slovenia (daily to 1 or 2 times a week). Interestingly, 8 percent fewer Swedish students reported being asked about their reading "1 or 2 times a week," but the increases split between the extremes of those reporting "nearly every day" and those reporting "never."

Exhibit 2.4: Trends in How Often Parents or Other People at Home Ask Students About What They Have Been Reading

ISC RLS Trend 1991–2001

Countries	Nearly Every Day		3 or 4 Times a Week		1 or 2 Times a Week		Never	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	66 (1.9)	-1 (2.4)	10 (1.2)	0 (1.3)	16 (1.5)	2 (1.7)	7 (0.9)	-1 (1.2)
Hungary	31 (1.2)	0 (1.6)	15 (0.7)	-1 (1.0)	31 (0.9)	-3 (1.4) ▼	23 (0.8)	4 (1.1) ▲
Iceland	18 (0.9)	0 (1.1)	14 (0.7)	4 (0.9) ▲	32 (1.2)	2 (1.4)	36 (1.3)	-6 (1.5) ▼
Italy	29 (1.6)	-5 (2.1) ▼	13 (1.0)	-2 (1.5)	30 (1.4)	2 (2.0)	28 (1.3)	5 (1.9) ▲
New Zealand	21 (1.8)	4 (2.0) ▲	14 (1.1)	3 (1.4) ▲	37 (2.3)	0 (2.6)	28 (1.7)	-8 (2.1) ▼
Singapore	19 (0.8)	0 (1.1)	12 (0.6)	-5 (0.8) ▼	30 (0.9)	-2 (1.1) ▼	39 (1.1)	7 (1.5) ▲
Slovenia	30 (1.5)	-7 (2.0) ▼	17 (1.3)	1 (1.5)	35 (1.6)	5 (2.0) ▲	18 (1.6)	2 (1.9)
Sweden	16 (0.9)	3 (1.2) ▲	9 (0.5)	0 (0.8)	37 (1.3)	-8 (1.8) ▼	38 (1.6)	4 (2.1) ▲
United States	28 (1.6)	-1 (1.9)	14 (1.6)	2 (1.7)	28 (0.8)	0 (1.0)	30 (1.6)	-1 (1.8)

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

Countries	Nearly Every Day		3 or 4 Times a Week		1 or 2 Times a Week		Never	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	510 (6.8)	40 (8.5) ▲	499 (10.6)	40 (13.7) ▲	504 (9.9)	34 (11.3) ▲	510 (14.6)	61 (18.4) ▲
Hungary	471 (4.1)	19 (6.6) ▲	467 (5.5)	13 (8.1)	484 (5.2)	17 (6.9) ▲	475 (5.5)	9 (8.2)
Iceland	491 (5.9)	24 (6.9) ▲	519 (7.1)	35 (9.0) ▲	528 (5.0)	29 (5.6) ▲	514 (4.6)	25 (5.2) ▲
Italy	517 (7.4)	14 (9.9)	507 (8.3)	16 (11.5)	521 (5.0)	7 (9.6)	503 (5.2)	10 (8.2)
New Zealand	471 (9.8)	-9 (12.2)	515 (10.0)	20 (14.4)	522 (8.8)	9 (10.2)	497 (8.0)	3 (9.5)
Singapore	488 (9.7)	6 (10.7)	468 (9.6)	-10 (10.5)	493 (8.6)	7 (9.5)	492 (7.8)	16 (8.8)
Slovenia	485 (4.5)	34 (6.4) ▲	487 (7.7)	36 (9.4) ▲	498 (5.4)	42 (6.9) ▲	506 (7.2)	16 (8.7)
Sweden	456 (5.9)	-12 (8.9)	495 (7.8)	-15 (11.1)	518 (4.6)	-8 (6.8)	496 (4.8)	-19 (7.1) ▼
United States	501 (8.2)	-5 (9.0)	514 (11.8)	-9 (12.8)	522 (6.5)	-16 (7.4) ▼	510 (6.8)	-13 (7.8)

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

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

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


3

Chapter 3
Reading Habits

Chapter 3 provides trends in several variables related to the extent to which primary/elementary-school students read voluntarily in their leisure time, and trends in how often they borrow books from the school or public library. For contrast, this chapter also includes students' reports about their television viewing.

Children's motivation for literacy learning can have a considerable impact on their reading achievement. Yet, studies in a number of countries have found that students' reading activity out of school is declining – in line with the rise of televisions, videos, and computers.[1] Students infrequently read books in their leisure time, and, even as they progress through primary and elementary school, they seem to place less value on reading.[2]

Reading Books and Magazines

In IEA's 1991 Reading Literacy Study, primary/elementary-school students were asked how often they read books and magazines for fun. Good readers reported reading more books for fun, but magazine reading was not very common (although Cyprus was among the countries reporting it most frequently), and the relationship with achievement tended to be negative.[3]

For the countries repeating the 1991 study, Exhibit 3.1 shows trends in students' reports about how often they read books for fun. In 2001, in each country, students reporting reading books for fun on a daily basis had higher reading achievement than those reporting reading books for fun only once a month or less often. In some countries, there was a direct relationship between more frequent reading of books for fun and achievement. For the most part, increases and decreases in achievement, across the different categories of students, reflected the overall trends for the countries. Nevertheless, in Italy and Singapore, the greatest gains in achievement were for the students reporting reading for fun the least often.

Except in Iceland, primary/elementary-school students reported either no change or less reading for fun in 2001 than a decade earlier. In Iceland in 2001, the majority of students (51%) reported reading books for fun on a daily basis, which represented an increase of 4 percentage points from 1991.

Greece, New Zealand, and the United States showed stability between 1991 and 2001. In 2001 in New Zealand, 44 percent of the students read books for fun daily, 29 percent weekly, and 27 percent only monthly or less. Reading books for fun was somewhat less prevalent in Greece and the United States (36 to 37% daily, 30 to 32% weekly, and 31 to 34% monthly or less).

1 Eccles, S.J., Wigfield, A., Harold, R., & Blumenfeld, P.B. (1993). Age and gender differences in children's self- and task perceptions during elementary school. *Child Development*, 64, 830-847.

2 Guthrie, J.T., & Greaney, V. (1991). Literacy Acts. In R. Barr, M.L. Kamil, P. Mosenthal, & P.D. Pearson (Eds.). *Handbook of reading research* (Vol.2). New York: Longman.

3 Elley, W.B. (Ed.). (1994). *The IEA study of reading literacy: Achievement and instruction in thirty-two school systems*. Oxford, England: Elsevier Science Ltd.

Between 1991 and 2001, reading books for fun became less popular for primary/elementary-school students in Hungary, Singapore, and Slovenia. These countries had rather substantial increases – from 12 to 16 percent – in the percentages of students reporting that they read books for fun only monthly or even less frequently. Italy and Sweden had more modest increases (3 to 4%) in the percentages of children infrequently reading books for fun.

Exhibit 3.2 contains the changes between 1991 and 2001 in primary-/elementary-school students' reports about how often they read magazines. In general, across the participating countries, the percentages of students reading magazines on a daily basis were essentially constant over the decade, remaining at a relatively low level. In 2001, children's daily magazine readership ranged from 6 percent in Italy to 16 percent in Greece and Slovenia. Four countries, however, saw significant decreases in weekly magazine reading accompanied by commensurate increases in doing such reading less frequently (only monthly or less) – Greece, Italy, Singapore, and Sweden.

Also, the relationship between reading magazines and performance on the reading literacy assessment remained negative or nonexistent. In 2001, the pattern, if anything, was curvilinear with slightly higher achievement most often observed for students reading magazines weekly. The four countries with significant improvement overall, generally, had increases across the categories of magazine reading. For Sweden, however, the 7 percent of students reporting daily magazine reading did not show a decline in their reading achievement; whereas those reading magazines less often followed the national pattern. In Italy and Singapore, significant increases in reading achievement were found in students reading magazines monthly or less often (75 to 81% of the students).

Exhibit 3.1: Trends in Students Reading Books for Fun

ISC RLS Trend 1991–2001

Countries	Daily		Weekly		Once a Month or Less	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	37 (1.9)	-1 (2.4)	32 (2.1)	-2 (2.5)	31 (2.1)	3 (2.5)
Hungary	31 (1.2)	-15 (1.6) ▼	35 (1.0)	3 (1.4) ▲	35 (1.2)	12 (1.5) ▲
Iceland	51 (1.8)	4 (2.0) ▲	23 (1.0)	-2 (1.2)	26 (1.7)	-3 (1.8)
Italy	27 (1.5)	-5 (2.0) ▼	29 (1.3)	1 (1.9)	44 (1.6)	4 (2.4)
New Zealand	44 (2.2)	3 (2.7)	29 (1.5)	-3 (1.9)	27 (1.7)	0 (2.1)
Singapore	26 (0.9)	-9 (1.5) ▼	26 (0.9)	-7 (1.3) ▼	48 (1.1)	16 (1.6) ▲
Slovenia	36 (1.7)	-12 (2.1) ▼	32 (1.7)	-1 (2.1)	32 (2.0)	13 (2.1) ▲
Sweden	46 (0.9)	-3 (1.4) ▼	25 (0.9)	0 (1.2)	29 (1.0)	3 (1.3) ▲
United States	36 (2.5)	-2 (2.6)	30 (1.7)	-2 (1.8)	34 (2.3)	4 (2.5)

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

Countries	Daily		Weekly		Once a Month or Less	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	521 (9.0)	42 (10.4) ▲	517 (6.5)	43 (9.5) ▲	487 (7.7)	39 (10.5) ▲
Hungary	501 (5.4)	16 (6.7) ▲	479 (3.8)	25 (6.1) ▲	449 (5.0)	30 (7.4) ▲
Iceland	540 (3.6)	29 (4.0) ▲	506 (4.5)	14 (5.5) ▲	475 (4.7)	25 (5.5) ▲
Italy	517 (6.0)	10 (9.0)	517 (6.0)	0 (9.0)	509 (5.5)	19 (8.8) ▲
New Zealand	540 (6.7)	11 (8.1)	497 (7.7)	-1 (9.4)	452 (7.5)	-4 (9.9)
Singapore	507 (9.8)	7 (10.7)	483 (8.2)	5 (8.9)	483 (7.7)	20 (8.6) ▲
Slovenia	517 (5.9)	41 (7.1) ▲	497 (4.9)	45 (6.0) ▲	464 (4.3)	41 (6.5) ▲
Sweden	520 (4.3)	-11 (6.4)	492 (4.4)	-21 (7.1) ▼	468 (5.5)	-13 (7.9)
United States	531 (8.2)	-10 (9.0)	513 (6.7)	-12 (7.6)	494 (6.9)	-5 (7.8)

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

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

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

Exhibit 3.2: Trends in Students Reading Magazines

ISC RLS Trend 1991–2001

Countries	Daily		Weekly		Once a Month or Less	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	16 (1.4)	-2 (1.6)	24 (1.2)	-4 (1.8) ▼	60 (1.7)	6 (2.1) ▲
Hungary	9 (0.7)	-2 (1.0)	25 (0.9)	0 (1.3)	66 (1.1)	2 (1.6)
Iceland	7 (0.6)	-1 (0.8)	13 (0.9)	1 (1.0)	80 (1.1)	1 (1.3)
Italy	6 (0.8)	-1 (1.0)	14 (1.0)	-4 (1.6) ▼	81 (1.2)	6 (1.8) ▲
New Zealand	9 (0.8)	2 (1.1)	17 (1.5)	-2 (1.8)	74 (1.9)	0 (2.2)
Singapore	7 (0.6)	-1 (0.8)	18 (0.9)	-10 (1.1) ▼	75 (1.2)	12 (1.5) ▲
Slovenia	16 (1.4)	2 (1.8)	32 (1.4)	0 (1.9)	52 (1.9)	-2 (2.5)
Sweden	7 (0.5)	-1 (0.8)	14 (0.6)	-3 (1.1) ▼	79 (0.9)	4 (1.4) ▲
United States	9 (0.9)	-1 (1.0)	21 (1.5)	3 (1.6)	70 (1.8)	-2 (1.9)

Countries	Daily		Weekly		Once a Month or Less	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	504 (9.3)	45 (10.6) ▲	514 (8.6)	42 (11.1) ▲	510 (6.7)	41 (8.6) ▲
Hungary	479 (6.2)	33 (9.9) ▲	488 (4.4)	21 (6.9) ▲	470 (4.4)	10 (6.1)
Iceland	516 (9.7)	26 (10.8) ▲	520 (7.6)	10 (9.0)	513 (3.2)	28 (3.5) ▲
Italy	484 (11.5)	-18 (17.3)	511 (9.1)	-2 (11.5)	517 (4.3)	15 (7.2) ▲
New Zealand	475 (16.2)	-19 (19.4)	518 (8.2)	-1 (9.7)	506 (6.0)	11 (7.7)
Singapore	412 (11.8)	-45 (13.1) ▼	478 (8.8)	-8 (9.6)	499 (7.8)	17 (8.7) ▲
Slovenia	507 (7.3)	43 (9.1) ▲	511 (4.8)	50 (6.1) ▲	479 (4.5)	24 (6.0) ▲
Sweden	508 (6.8)	8 (10.5)	526 (4.8)	-16 (6.8) ▼	492 (4.1)	-17 (6.4) ▼
United States	490 (8.7)	-18 (11.0)	514 (7.7)	-20 (8.7) ▼	515 (7.4)	-8 (8.1)

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

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

Borrowing Library Books

Trends in students' reports about borrowing books from a school or public library are presented in Exhibit 3.3. Across the 27 countries in the 1991 Reading Literacy Study, those students who borrowed library books more often had higher average reading achievement.[4] For the countries repeating the study in 2001, the relationship with achievement was much less pronounced. Also, borrowing library books appears to be somewhat on the wane, although primary/elementary-school students reported considerable variation in library use among the 9 countries in the trend study.

In 2001, more than half to nearly two-thirds of students reported borrowing books at least weekly in New Zealand (61%), Singapore (57%), Slovenia (66%), and the United States (62%). In comparison, 42 percent so reported in Iceland, and only about one-fifth to one-third in Greece (31%), Hungary (26%), Italy (20%), and Sweden (33%). The 2001 levels of weekly library book borrowing represented a significant decline for Hungary (9%), Singapore (7%), Slovenia (5%), and, in particular, Sweden (24%). In Hungary and Slovenia, the declines in weekly borrowing were accompanied by increases in monthly use. (New Zealand also showed some evidence of this pattern.) In Singapore, the shift was toward never or hardly ever borrowing library books. In Sweden, the shift was somewhat to monthly borrowing (8%), but primarily to never or hardly ever (16%).

Increases in borrowing books from the library were reported by Greek and Icelandic students (7 to 8% from never to monthly). Italy, with relatively infrequent library use, and the United States, with relatively high use, showed essentially no change.

Watching Television or Video Outside of School

In today's world, children have an ever-increasing array of activities to choose from in their leisure time, with reading books and watching televisions or videos being competing choices. In the 1991 study, most countries had a negative relationship between reading achievement and level of viewing, with the United States being the only one of those participating in the trend study

4 Elley, W.B. (1992). *How in the world do students read?* The Hague: The International Association for the Evaluation of Educational Achievement.

Exhibit 3.3: Trends in Students Borrowing Books from a School or Public Library

ISC RLS Trend 1991–2001

Countries	At Least Weekly		Monthly		Never or Hardly Ever	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	31 (2.5)	0 (3.2)	25 (2.5)	8 (3.0) ▲	44 (2.6)	-8 (3.4) ▼
Hungary	26 (1.5)	-9 (2.1) ▼	35 (1.6)	6 (2.1) ▲	38 (1.9)	3 (2.7)
Iceland	42 (2.7)	-1 (2.7)	25 (1.5)	8 (1.6) ▲	33 (2.5)	-7 (2.6) ▼
Italy	20 (2.2)	3 (2.6)	18 (1.6)	-4 (2.3)	61 (2.4)	1 (3.3)
New Zealand	61 (2.2)	-4 (3.1)	18 (1.5)	4 (1.9) ▲	21 (1.6)	0 (2.2)
Singapore	57 (1.2)	-7 (1.8) ▼	15 (0.8)	2 (1.0)	28 (1.2)	6 (1.6) ▲
Slovenia	66 (2.2)	-5 (2.5) ▼	26 (1.9)	8 (2.1) ▲	9 (0.9)	-2 (1.2)
Sweden	33 (2.0)	-24 (3.1) ▼	32 (1.7)	8 (2.4) ▲	35 (1.7)	16 (2.1) ▲
United States	62 (2.5)	-2 (2.9)	12 (1.2)	-1 (1.3)	26 (2.1)	3 (2.5)

Countries	At Least Weekly		Monthly		Never or Hardly Ever	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	505 (7.5)	29 (11.4) ▲	517 (6.6)	40 (10.2) ▲	505 (7.7)	44 (8.8) ▲
Hungary	472 (4.9)	13 (7.1)	491 (5.1)	26 (7.2) ▲	464 (5.9)	7 (7.9)
Iceland	517 (3.8)	24 (4.6) ▲	534 (6.2)	30 (7.0) ▲	495 (5.5)	21 (6.0) ▲
Italy	516 (5.9)	35 (9.6) ▲	534 (8.4)	16 (12.8)	506 (5.6)	4 (8.1)
New Zealand	518 (5.9)	13 (7.2)	502 (8.7)	-22 (12.7)	463 (8.3)	-5 (11.7)
Singapore	494 (8.7)	8 (9.4)	501 (9.5)	20 (10.8)	470 (7.9)	7 (9.1)
Slovenia	499 (3.4)	36 (4.7) ▲	494 (6.9)	40 (9.1) ▲	454 (8.8)	18 (10.7)
Sweden	495 (6.4)	-22 (7.8) ▼	515 (5.0)	-8 (7.7)	483 (4.9)	-7 (8.4)
United States	515 (6.3)	-10 (7.3)	520 (11.2)	-23 (11.9)	499 (8.7)	-2 (9.6)

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

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

exhibiting the most clear-cut relationship between the two.[5] In contrast, Italy and Sweden were two of the five countries in which moderately heavy viewing was associated with higher reading performance. Possibly, Swedish students gained experience in reading through subtitles, but no such tradition exists in Italy. As shown in Exhibit 3.4, the relationship between television viewing and reading achievement was still negative in the United States in 2001, but not as strong as before. For Italy and Sweden, the positive relationship was also less evident. Students watching a moderate amount (between 1 and 3 hours) of television had the highest achievement.

Trends in primary/elementary students' reports about how many hours they watched television each day indicate that, in some countries, television may be in decline as a favorite pastime. Across the trend countries, more students reported watching television less than 1 hour per day in five countries, and fewer reported watching more than 3 hours in an equivalent number of countries.

Between 1991 and 2001, students in Iceland reported a dramatic shift – with 20 percent more reporting watching less than 1 hour of television per day, and 20 percent fewer watching more than 3 hours. Students in Hungary, New Zealand, and the United States reported a pattern similar to Iceland, but with smaller percentages. In Singapore, the percentage reporting minimal viewing (less than 1 hour) rose 11 points; but the decreases were split between watching 1 to 3 hours and watching more than 3 hours. Not all countries reported decreases, however. Students in Greece, Italy, and Sweden reported little change in their television viewing habits; even though there was significant movement away from heavy viewing in Italy (4%), and from light to moderate viewing in Sweden (3 or 4 percent).

An exception to the general trends, the elementary school students in Slovenia reported a significant shift from moderate to heavy viewing. Eight percent more students reported 3 or more hours of television viewing per day than in 1991 – up to 29 percent in 2001 – and among the highest of the trend countries. In 2001, the United States (with 38%) had the most students reporting watching more than 3 hours of television per day, followed by New Zealand (with 33%). With the exception of Slovenia, the rest of the trend countries had 20 percent or less of their students watching more than 3 hours of television per day.

5 Ibid.

Exhibit 3.4: Trends in Hours per Day Students Watch TV or Video Outside of School

ISC RLS Trend 1991–2001

Countries	Up to 1 Hour		Greater Than 1 Hour, Up to 3 Hours		More Than 3 Hours	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	39 (2.2)	-3 (2.6)	43 (2.9)	0 (3.1)	17 (1.8)	3 (2.0)
Hungary	34 (1.1)	5 (1.6) ▲	46 (1.2)	-1 (1.8)	19 (1.0)	-4 (1.4) ▼
Iceland	42 (1.4)	20 (1.5) ▲	47 (1.5)	0 (1.6)	12 (1.0)	-20 (1.1) ▼
Italy	32 (1.5)	2 (2.0)	48 (1.6)	2 (2.3)	20 (1.3)	-4 (1.9) ▼
New Zealand	29 (2.0)	6 (2.4) ▲	37 (1.4)	1 (1.8)	33 (2.2)	-6 (2.6) ▼
Singapore	43 (0.9)	11 (1.4) ▲	37 (0.8)	-5 (1.2) ▼	20 (0.9)	-6 (1.2) ▼
Slovenia	22 (1.4)	-3 (1.8)	50 (1.9)	-5 (2.2) ▼	29 (1.8)	8 (2.1) ▲
Sweden	21 (1.0)	-3 (1.5) ▼	59 (1.0)	4 (1.5) ▲	20 (1.0)	0 (1.5)
United States	23 (1.9)	7 (2.0) ▲	39 (1.4)	3 (1.7)	38 (2.3)	-10 (2.5) ▼

Countries	Up to 1 Hour		Greater Than 1 Hour, Up to 3 Hours		More Than 3 Hours	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	503 (5.2)	33 (8.4) ▲	524 (6.7)	55 (8.8) ▲	482 (11.6)	26 (13.0) ▲
Hungary	474 (4.8)	23 (6.7) ▲	487 (4.2)	14 (6.4) ▲	450 (5.8)	4 (8.1)
Iceland	513 (4.7)	39 (5.7) ▲	521 (3.6)	28 (4.0) ▲	492 (7.8)	5 (8.3)
Italy	507 (6.7)	2 (9.5)	525 (4.2)	20 (7.0) ▲	491 (6.8)	1 (12.2)
New Zealand	515 (8.1)	25 (10.3) ▲	517 (8.3)	-2 (9.6)	480 (6.8)	-7 (8.9)
Singapore	490 (7.3)	15 (8.2)	501 (8.6)	9 (9.5)	465 (10.3)	-5 (11.0)
Slovenia	485 (6.9)	33 (8.3) ▲	501 (4.4)	36 (5.7) ▲	488 (6.3)	41 (8.0) ▲
Sweden	492 (6.0)	-13 (7.8)	505 (4.2)	-16 (6.2) ▼	482 (4.8)	-23 (7.7) ▼
United States	510 (7.8)	-21 (9.0) ▼	526 (6.4)	-10 (7.4)	500 (7.1)	-10 (8.2)

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

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


4

Chapter 4
Reading in School

Chapter 4 provides more information on the theme that active, frequent reading has a positive impact on reading achievement. As well as contributing to effective participation in activities outside of school, reading forms the foundation of much in-school learning. Through reading, students can develop a depth of understanding of the content knowledge and processes associated with various subject area disciplines. Students also can gain a deeper appreciation for, and understanding of, literature.

IEA's 1991 Reading Literacy Study and its replication in 2001 asked primary/elementary-school students about reading two types of books in reading and language classes – textbooks and story books. Students also were queried about how often they used workbooks or practice exercises as part of reading and language classes, and about how much reading homework they did.

Reading Textbooks and Story Books in Reading or Language Class

Exhibit 4.1 contains trends in how often primary/elementary-school students reported reading textbooks in their reading or language classes. In 2001, there was considerable variation, across countries, in the frequency of reading textbooks. For example, the range in daily textbook reading varied from 71 percent of the Greek students to 14 percent of the Swedish students. Despite these differences, however, in each country, the trend over the past decade was toward reading textbooks less frequently.

In five countries, decreased percentages of primary/elementary-school students reported reading textbooks almost every day. Of these countries, corresponding increased percentages were observed for both weekly and monthly (or less) textbook reading in Iceland, Singapore, and the United States. For Slovenian and Swedish students, the shift was toward reading textbooks monthly or less. In Greece, the pattern was from daily and weekly use toward monthly or less; in New Zealand, from daily use toward weekly; and in Italy, from daily use toward weekly or monthly (but this shift was not statistically significant).

Another consistent pattern in 2001, across countries, was the positive relationship between reading achievement and textbook reading. primary/elementary-school students reading textbooks only monthly or less often had lower reading achievement, on average, than their classmates reading textbooks more frequently. Trends in achievement for the various categories of textbook reading generally followed the overall trends – with Greece, Iceland, and Slovenia showing increases and Sweden showing decreases. The exception was in Hungary, where – in contrast to an overall increase of 16 percent – achievement stayed essentially the same for students infrequently reading textbooks.

Exhibit 4.1: Trends in Students Reading Textbooks in Reading or Language Class

ISC RLS Trend 1991–2001

Countries	Almost Every Day		About Once a Week		About Once a Month or Less	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	71 (2.1)	-2 (3.0)	13 (1.3)	-2 (1.8)	15 (1.3)	4 (1.8) ▲
Hungary	65 (1.8)	13 (2.4) ▲	22 (1.2)	-8 (1.7) ▼	13 (0.9)	-5 (1.3) ▼
Iceland	34 (2.1)	-14 (2.3) ▼	33 (1.7)	10 (1.8) ▲	33 (1.7)	4 (1.9) ▲
Italy	51 (2.3)	-4 (3.2)	18 (1.5)	2 (2.0)	31 (2.2)	2 (2.9)
New Zealand	29 (2.6)	-6 (3.4)	23 (2.0)	5 (2.3) ▲	48 (3.3)	1 (4.1)
Singapore	48 (1.6)	-16 (2.7) ▼	29 (1.4)	5 (2.1) ▲	23 (1.2)	11 (1.6) ▲
Slovenia	35 (2.1)	-11 (3.0) ▼	37 (2.0)	3 (2.6)	28 (1.9)	8 (2.3) ▲
Sweden	14 (1.1)	-8 (2.4) ▼	38 (1.6)	-2 (2.5)	48 (1.9)	10 (3.0) ▲
United States	54 (2.7)	-11 (3.2) ▼	22 (1.7)	6 (2.1) ▲	24 (2.3)	5 (2.8) ▲

Countries	Almost Every Day		About Once a Week		About Once a Month or Less	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	517 (6.5)	43 (8.3) ▲	513 (8.3)	50 (11.6) ▲	479 (10.0)	23 (12.4)
Hungary	488 (4.5)	10 (6.1)	474 (5.6)	17 (7.5) ▲	419 (7.7)	2 (9.4)
Iceland	506 (5.0)	21 (5.6) ▲	531 (4.2)	20 (5.5) ▲	508 (5.7)	29 (6.1) ▲
Italy	515 (5.3)	7 (7.6)	522 (7.0)	20 (14.2)	505 (6.8)	5 (10.7)
New Zealand	517 (12.4)	13 (13.8)	512 (8.1)	3 (10.4)	492 (6.5)	0 (8.8)
Singapore	496 (7.7)	10 (8.6)	508 (8.7)	18 (9.9)	451 (12.1)	11 (14.5)
Slovenia	497 (5.4)	37 (6.8) ▲	508 (5.8)	47 (7.2) ▲	474 (6.2)	22 (7.9) ▲
Sweden	495 (6.9)	-19 (9.5) ▼	507 (3.8)	-16 (6.0) ▼	493 (4.4)	-12 (7.1)
United States	522 (7.2)	-7 (7.9)	524 (8.9)	-11 (10.2)	479 (9.3)	-14 (10.3)

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

As shown in Exhibit 4.2, reading story books in reading or language class was at least a weekly activity for the majority of students in each country (except Hungary) in 2001. primary/elementary-school students in a number of countries, however, reported somewhat less frequent reading of story books than a decade earlier. Students in Singapore reported the biggest change – with 11 percent fewer reporting reading story books daily, and a commensurate percentage reporting such reading only monthly or less. Reduced percentages of students in Hungary and New Zealand reported daily story book reading, and fewer reported such reading weekly in Italy and Sweden. More Swedish students reported reading story books only monthly or less, as did more Slovenian students. primary/elementary-school students in Greece, Iceland, and the United States reported very little change in reading story books compared to 1991.

Across the countries participating in the trend study, there was a negligible or inconsistent association between achievement and reading story books. Trends in achievement in relation to the categories followed the national patterns with few exceptions. In Hungary (improvement overall), achievement did not increase for students reporting reading story books daily. In Singapore, where there was a modest improvement overall (8 %), students reporting daily story book reading had a substantial increase (27%), while those reporting such reading weekly had a modest decrease (9%).

Using Workbooks or Practice Exercises in Reading or Language Class

Exhibit 4.3 contains trends in students' reports about workbook use in reading and language instruction. In 2001, there were large differences, across countries, in students' responses. At the high end, about three-fourths (76%) of the students in Hungary and 84 percent in Greece reported daily use of workbooks and practice exercises. Compared to 1991, this represented an increase for Hungary (11%) and a decrease for Greece (4%). At the low end, 24 percent of both the Icelandic and the Swedish students reported using these instructional devices on a daily basis – representing a decrease in both cases (11 and 7%, respectively). In the remaining countries, from 40 to 47 percent of the students

Exhibit 4.2: Trends in Students Reading Story Books in Reading or Language Class

ISC RLS Trend 1991–2001

Countries	Daily		Weekly		Once a Month or Less	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	32 (1.5)	1 (2.1)	30 (1.8)	-3 (2.3)	38 (2.3)	2 (3.0)
Hungary	14 (1.4)	-5 (2.2) ▼	31 (2.0)	1 (2.4)	55 (2.3)	3 (2.9)
Iceland	23 (1.6)	0 (1.7)	31 (1.8)	2 (1.9)	46 (1.7)	-2 (1.8)
Italy	28 (2.1)	3 (2.6)	23 (1.6)	-6 (2.4) ▼	50 (2.6)	3 (3.2)
New Zealand	41 (3.2)	-9 (4.0) ▼	25 (2.1)	3 (2.6)	34 (3.0)	6 (3.5)
Singapore	48 (1.7)	-11 (2.4) ▼	27 (1.0)	1 (1.6)	25 (1.2)	10 (1.4) ▲
Slovenia	20 (1.3)	-3 (1.9)	38 (1.6)	-2 (2.6)	43 (1.9)	5 (2.7) ▲
Sweden	35 (1.8)	-1 (2.5)	29 (1.2)	-6 (2.1) ▼	36 (1.5)	7 (2.1) ▲
United States	42 (2.6)	0 (2.9)	27 (1.6)	1 (2.0)	30 (2.4)	-1 (2.7)

Countries	Daily		Weekly		Once a Month or Less	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	521 (6.8)	47 (8.5) ▲	514 (7.1)	38 (10.3) ▲	498 (7.0)	38 (9.9) ▲
Hungary	453 (8.1)	-3 (11.3)	478 (5.3)	17 (7.7) ▲	481 (4.8)	18 (6.7) ▲
Iceland	516 (7.1)	21 (7.6) ▲	519 (5.4)	27 (6.4) ▲	512 (4.0)	29 (4.3) ▲
Italy	510 (7.1)	5 (11.5)	526 (6.1)	-2 (9.3)	510 (5.0)	18 (7.7) ▲
New Zealand	509 (6.5)	7 (8.7)	505 (7.6)	4 (9.9)	497 (8.7)	5 (11.2)
Singapore	519 (8.9)	27 (9.7) ▲	470 (7.1)	-9 (8.1)	451 (7.9)	12 (9.3)
Slovenia	482 (5.3)	29 (7.1) ▲	491 (4.7)	41 (6.0) ▲	500 (5.9)	30 (7.3) ▲
Sweden	507 (5.3)	-16 (7.6) ▼	504 (4.7)	-20 (6.7) ▼	486 (5.8)	-6 (7.9)
United States	512 (8.1)	-5 (9.0)	524 (6.7)	-9 (7.8)	502 (8.5)	-20 (9.6) ▼

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

Exhibit 4.3: Trends in Students Using Workbooks or Practice Exercises in Reading or Language Class

ISC RLS Trend 1991–2001

Countries	Daily		Weekly		Once a Month or Less	
	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference	Percent of Students in 2001	1991 to 2001 Difference
Greece	84 (1.8)	-4 (2.1) ▼	8 (1.0)	1 (1.3)	8 (1.5)	3 (1.6)
Hungary	76 (1.4)	11 (2.2) ▲	17 (1.2)	-7 (1.7) ▼	6 (0.6)	-4 (1.1) ▼
Iceland	24 (2.1)	-11 (2.2) ▼	28 (1.7)	7 (1.8) ▲	48 (2.3)	5 (2.4) ▲
Italy	43 (2.3)	6 (3.3)	25 (1.7)	-2 (2.7)	32 (2.1)	-3 (3.2)
New Zealand	40 (2.5)	0 (3.5)	27 (2.7)	6 (3.2)	33 (2.8)	-7 (3.7)
Singapore	45 (1.6)	-26 (2.3) ▼	30 (1.1)	11 (1.8) ▲	25 (1.2)	15 (1.4) ▲
Slovenia	47 (2.6)	3 (3.3)	29 (1.8)	-10 (2.6) ▼	24 (2.2)	7 (2.4) ▲
Sweden	24 (1.6)	-7 (2.8) ▼	33 (1.8)	-5 (2.9)	44 (2.2)	12 (3.2) ▲
United States	46 (2.9)	-3 (3.6)	28 (2.0)	2 (2.5)	27 (2.5)	1 (3.1)

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

Countries	Daily		Weekly		Once a Month or Less	
	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference	Average Achievement in 2001	1991 to 2001 Difference
Greece	515 (6.3)	41 (8.0) ▲	483 (14.4)	34 (16.3) ▲	485 (14.7)	56 (17.6) ▲
Hungary	482 (4.2)	9 (6.2)	472 (6.1)	24 (8.2) ▲	420 (8.7)	2 (10.9)
Iceland	500 (6.1)	18 (6.8) ▲	521 (5.6)	30 (6.8) ▲	519 (4.7)	25 (4.8) ▲
Italy	519 (5.8)	4 (9.8)	523 (5.3)	12 (8.9)	499 (5.9)	8 (8.3)
New Zealand	512 (5.9)	10 (8.3)	511 (10.6)	9 (12.5)	487 (7.1)	-7 (9.4)
Singapore	505 (8.8)	17 (9.6)	495 (7.9)	12 (9.3)	455 (7.8)	26 (9.4) ▲
Slovenia	496 (4.7)	34 (6.2) ▲	498 (5.4)	43 (6.7) ▲	485 (6.8)	29 (9.1) ▲
Sweden	489 (5.5)	-29 (8.4) ▼	509 (4.4)	-7 (6.9)	496 (4.6)	-12 (7.1)
United States	515 (7.6)	-5 (8.5)	526 (7.9)	-10 (9.1)	492 (8.3)	-23 (9.3) ▼

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

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

reported using workbooks daily. This reflected no change in Italy, New Zealand, Slovenia, or the United States, but a huge decrease in Singapore – 26 percentage points. In Slovenia, there was a shift from use weekly to only monthly or less.

In Greece, Iceland, and Slovenia, increases nationally in reading achievement were reflected across the categories of using workbooks and practice exercises. Hungary's achievement increase occurred primarily for students reporting weekly use of workbooks and practice exercises; and Sweden's decrease occurred primarily for students reporting daily use. In Singapore, where there were significant shifts toward less use of workbooks or practice exercises, students using them monthly or less exhibited a significant increase in achievement between 1991 and 2001.

Homework

To provide information about trends in reading homework, an index has been created based on students' responses to two questions: how often were they assigned reading homework, and how much time they spent on their reading homework. Trends in the homework index are presented in Exhibit 4.4.

Students in the high category on the index reported being assigned reading homework 3 times a week and spending more than half an hour doing it. Between 1991 and 2001, the percentages of Greek, Hungarian, and Singaporean students in the high category decreased significantly (6% to 11%), but these countries still had the greatest percentages of students in the category (from 21 to 27 %). All three countries showed increases in the medium category (Singapore, in the low category as well). Italy's 16 percent in the high category represented a decrease from 1991 (6%), which was accompanied by an increase in the low category (8%). Slovenia had a significant decrease in the high category (from 11 to 6 %). Students in New Zealand reported essentially no change in any category.

In Iceland, Sweden, and the United States, students reported some increases in homework. Icelandic students reported a modest decrease in the low category (4%), as did Swedish students (6%). Students in the United States had a significant increase in the medium category (15%), together with a comparable decrease in the low category.

Interpreting the relationship between reading achievement and amount of homework is difficult, since some teachers tend to assign homework to the better readers to give them more learning opportunities; while other teachers assign homework to the poorer readers for remediation, and because they need extra help the most. In 2001, for the countries participating in the trend study, the pattern appears to be toward students in the low category having the highest reading achievement. Between 1991 and 2001, trends in achievement in relation to homework generally followed the national trends.

Exhibit 4.4: Trends in Index of Students' Perceptions of Reading Homework (SPRH)

ISC RLS Trend 1991–2001

Countries	High SPRH			Medium SPRH			Low SPRH		
	Percent of Students in 2001	Percent of Students in 1991	1991 to 2001 Difference	Percent of Students in 2001	Percent of Students in 1991	1991 to 2001 Difference	Percent of Students in 2001	Percent of Students in 1991	1991 to 2001 Difference
Greece	21 (1.3)	31 (1.7)	-10 (2.1) ▼	73 (1.4)	65 (1.7)	8 (2.2) ▲	6 (1.0)	4 (0.8)	2 (1.2)
Hungary	24 (1.2)	30 (1.2)	-6 (1.7) ▼	72 (1.2)	65 (1.1)	7 (1.6) ▲	4 (0.4)	5 (0.6)	-1 (0.7)
Iceland	13 (1.6)	10 (0.5)	2 (1.7)	80 (1.7)	79 (0.8)	1 (1.8)	7 (0.9)	11 (0.5)	-4 (1.0) ▼
Italy	16 (1.7)	22 (1.4)	-6 (2.2) ▼	65 (1.8)	66 (1.3)	-1 (2.2)	19 (1.5)	11 (1.1)	8 (1.9) ▲
New Zealand r	19 (2.7)	18 (1.5)	1 (3.1)	60 (2.1)	61 (1.2)	-1 (2.4)	20 (2.8)	21 (1.5)	0 (3.2)
Singapore	27 (1.1)	37 (1.2)	-11 (1.7) ▼	66 (1.0)	59 (1.2)	7 (1.5) ▲	7 (0.6)	3 (0.3)	4 (0.6) ▲
Slovenia	6 (0.9)	11 (1.0)	-5 (1.3) ▼	59 (2.0)	59 (1.4)	1 (2.5)	34 (2.0)	30 (1.6)	4 (2.6)
Sweden	5 (0.5)	3 (0.4)	2 (0.6) ▲	58 (1.9)	55 (1.8)	3 (2.6)	36 (2.1)	42 (1.9)	-6 (2.8) ▼
United States	10 (1.2)	11 (0.9)	-1 (1.5)	68 (2.3)	53 (1.5)	15 (2.7) ▲	22 (2.6)	37 (1.7)	-14 (3.1) ▼

Countries	High SPRH			Medium SPRH			Low SPRH		
	Average Achievement in 2001	Average Achievement in 1991	1991 to 2001 Difference	Average Achievement in 2001	Average Achievement in 1991	1991 to 2001 Difference	Average Achievement in 2001	Average Achievement in 1991	1991 to 2001 Difference
Greece	490 (9.3)	458 (5.4)	31 (10.8) ▲	516 (6.0)	474 (4.8)	42 (7.7) ▲	503 (19.2)	441 (21.7)	62 (28.7) ▲
Hungary	463 (4.8)	458 (4.7)	6 (6.7)	480 (4.1)	461 (4.2)	18 (5.9) ▲	477 (11.7)	459 (12.8)	18 (17.3)
Iceland	535 (7.0)	493 (5.7)	42 (8.6) ▲	513 (3.3)	489 (2.1)	24 (3.7) ▲	510 (11.4)	483 (5.4)	27 (12.4) ▲
Italy	497 (7.7)	485 (8.1)	12 (11.2)	510 (5.3)	511 (5.9)	0 (7.9)	542 (6.0)	517 (7.6)	25 (9.5) ▲
New Zealand r	517 (17.2)	526 (7.7)	-9 (18.9)	496 (6.9)	493 (5.1)	3 (8.7)	490 (8.8)	489 (9.3)	1 (12.9)
Singapore	479 (7.6)	483 (4.1)	-4 (8.5)	502 (8.0)	486 (3.5)	16 (8.8)	461 (11.8)	465 (7.9)	-5 (14.4)
Slovenia	454 (11.0)	439 (8.9)	15 (14.2)	484 (4.1)	446 (4.1)	38 (5.8) ▲	516 (5.3)	486 (3.9)	30 (6.5) ▲
Sweden	492 (11.2)	471 (14.0)	20 (18.2)	494 (5.1)	505 (4.4)	-11 (6.7)	504 (5.0)	525 (4.6)	-21 (6.8) ▼
United States	493 (15.2)	514 (6.1)	-21 (16.6)	513 (7.1)	521 (4.1)	-8 (8.1)	526 (7.2)	529 (3.8)	-3 (8.2)

▲ 2001 significantly higher than 1991

▼ 2001 significantly lower than 1991

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

An "r" indicates a 70-84% student response rate. An "s" indicates a 50-69% student response rate. An "x" indicates less than 50% student response rate.


A

Appendix A

Overview of Procedures for the Trends in IEA's Reading Literacy Study

History

In 1970-71, IEA conducted its first reading study, a study of reading comprehension in 15 countries.[1] Building on the success of this initial venture into reading, IEA embarked on the 1991 Reading Literacy Study,[2] a much more ambitious venture involving extensive testing of two student populations – the grades with most nine- and fourteen-year-olds, respectively. Utilizing a wider range of testing materials than the earlier study, and incorporating detailed questionnaires for students, teachers, and principals, the reading Literacy Study collected data in 1990-91 in 32 countries (27 at the younger age level, and 31 at the older level). PIRLS, the successor to the Reading Literacy Study, was designed not only to provide a state-of-the-art assessment of fourth-grade students' reading literacy achievement in 2001, but also to supply data on a continuous five-year cycle thereafter to monitor progress in reading achievement into the future.

1 Thorndike, R.L. (1973). Reading comprehension in fifteen countries: An empirical study. *International studies in evaluation: Vol. 3*. Stockholm: Almqvist & Wiksell.

2 Elley, W.B. (Ed.). (1994). *The IEA study of reading literacy: Achievement and instruction in thirty-two school systems*. Oxford, England: Elsevier Science Ltd.

As the PIRLS work on framework development progressed, it became evident that the PIRLS reading assessment would have quite a different emphasis to the Reading Literacy Study, and that it would not be possible to compare results from the two studies directly. As an alternative that would allow countries to measure changes in the reading achievement of their students since 1991, IEA provided PIRLS countries the opportunity to re-administer the 1991 reading literacy test in 2001 – at the same time as the main PIRLS assessment. This study is known as the Trends in IEA's Reading Literacy Study.

Participants in the Trends in IEA's Reading Literacy Study

Nine of the thirty-five countries participating in the 2001 PIRLS assessment took part also in the trend study in order to examine changes between 1991 and 2001 in student reading performance – as measured by the 1991 reading literacy test (see Exhibit A.1).

The 1991 Reading Literacy Test

IEA's 1991 reading literacy test was developed through a collaborative process lasting more than two years; and involving the project steering committee, the staff of the international coordinating center at the University of Hamburg, and the national research coordinators from the participating countries.[3] The specifications for the test comprised three major domains, corresponding to three types of text presumed to cover the main varieties of reading materials encountered by young children in most countries: narrative texts, expository texts, and documents.

- Narrative texts include continuous textual materials in which the writer's aim is to tell a story – whether factual or fictional. Narrative texts normally are designed to entertain or involve the reader emotionally; are written in the past tense; and usually have people or animals as their main theme.
- Expository texts are designed to describe or explain something; they may be written in the present or past tense; and the style is typically formal and impersonal – highlighting such features as definitions, causes, classifications, functions, contrasts, and examples.

3 The description of the reading literacy test development process provided in this report was abstracted from Elley, W.B. (1995). The measurement of reading literacy: How the international tests of literacy were developed. In R.M. Wolf (Ed.), *The IEA reading literacy study: Technical report*. The Hague: International Association for the Evaluation of Educational Achievement.

Exhibit A.1: Countries Participating in the Trends in IEA's Reading Literacy Study

ISC RLS Trend 1991–2001

Country	Country's Name for Grade Tested	Years of Formal Schooling	Average Age of Students Tested in 2001
Greece	4	4	10.0
Hungary	3	3	9.7
Iceland	4	4	9.8
Italy	4	4	9.9
New Zealand	Year 5 [1]	4	10.0
Singapore	Primary 3	3	9.1
Slovenia	3	3	9.8
Sweden	3	3	9.8
United States	4	4	10.0

SOURCE: IEA Progress in International Reading Literacy Study (PIRLS) 2001.

Exhibit A.2: Blueprint of Items by Domain for the 1991 Reading Literacy Test

Domain	Verbatim	Paraphrase	Inference	Locate Information	Locate and Process	Total
Narrative text	1	11	10	–	–	22
Expository text	7	9	5	–	–	21
Documents	–	–	–	11	12	23
Total Items	8	20	15	11	12	66

SOURCE: IEA Progress in International Reading Literacy Study (PIRLS) 2001.

1 The official nomenclature used in New Zealand since 1996 refers to students' years of schooling rather than a class/grade level. Year 5 students were at a class level equivalent to Grade 4.

- Documents refer to such things as forms, charts, labels, graphs, recipes, labels, maps, directories, and sets of instructions. Students usually are required to skim the text to identify its structure, and use that to locate required information.

Exhibit A.2 shows the blueprint for the test, with items classified by text type, and by the various skills or activities students were assumed to use in responding to each item. The narrative text had four passages with 22 items; the expository text had five passages with 21 items; and there were six documents with 23 items. Of the 66 items, eight required a verbatim response (i.e., the answer resided in the text in much the same wording as in the question). Twenty items required students to paraphrase or recognize the answer in the text in different wording from that of the question; 15 items required students to go beyond the information given and make an inference in arriving at the correct answer. In the documents, 11 items required students merely to locate a fact or figure, while a further 12 asked them to locate and process (count, compare, or infer). Of the items in total, four required the student to write a word or phrase; two required an extended written response;[4] and the remainder (60) were in multiple-choice format (with four options for each item).

The test consisted of two student booklets, and was administered in two sessions of 35 and 40 minutes, respectively. The beginning of the first booklet contained a short word recognition test (40 items to be completed in 90 seconds). In keeping with 1991 data-collection procedures, the word recognition test was administered also in 2001, but the results were not included in the analysis of the trend study data.

The selection of the assessment passages, and the development of the items and scoring guides, were the result of an intensive process of collaboration, piloting, and review. In selecting the passages for the reading literacy test, every effort was made to minimize cultural bias. Potential stimulus passages and items were collected from as many countries as possible, and the final selection was based, in part, on the national and cultural representation of the entire set. Everything possible was done to ensure that the items did not exhibit bias towards or against particular countries. Draft passages and

4 The two extended response items were administered in 1991 but not scored or included in students' results. The same procedure was followed in 2001.

items were subjected to full-scale field testing before the instruments for the main data collection were finalized.

Student Questionnaire

The student questionnaire[5] asked students about their home circumstances; it included questions about their possessions in the home, home literacy resources, home literacy interactions, out-of-school activities, and beliefs about reading. Students also were asked about their voluntary reading habits, and about their in-school reading habits.

Translation of Tests and Questionnaires

The reading literacy instruments were prepared in English, then translated by national centers into the local language of instruction. Countries were provided with explicit guidelines for translation and cultural adaptation, which required independent translations by two expert translators familiar with age-appropriate linguistic demands. An extensive series of statistical checks were conducted after the testing, to detect items not performing comparably across countries or over time.

Sample Implementation and Participation Rates

IEA's 1991 Reading Literacy Study targeted primary/elementary-level students enrolled in the grade containing the largest proportion of 9-year-old students at the time of testing – generally the third or fourth grade in each country.[6] To maintain comparability, the same population was targeted by the trend study for testing in 2001.[7] Exhibit A.3 shows any differences in coverage between the international and national desired populations.

Selecting valid and efficient samples is critical to the quality and success of international comparative studies such as PIRLS or the trend study. The accuracy of the survey results depends on the quality of the sampling information available when planning the sample, and on the care with which the sampling activities are conducted. The sampling for the trend study was conducted in parallel with the PIRLS 2001 sampling. NRCs worked on all phases

5 The 1991 Reading Literacy Study included extensive questionnaires for students, teachers, and school principals. Only the student questionnaire was administered in the 2001 data collection.

6 Ross, K.N. (1995). Sample design procedures for the international study of reading literacy. In R.M. Wolf (Ed.), *The IEA reading literacy study: technical report*. The Hague: International Association for the Evaluation of Educational Achievement.

7 See Foy, P., & Joncas, M. (2003). PIRLS sampling design. In M.O. Martin, I.V.S. Mullis, & A.M. Kennedy (Eds.), *PIRLS 2001 technical report*. Chestnut Hill, MA: Boston College.

of sampling in conjunction with staff from Statistics Canada. NRCs were trained in how to select the school and student samples, and in how to use the sampling software provided by the IEA Data Processing Center. In consultation with the PIRLS 2001 sampling referee (Keith Rust, Westat, Inc.), staff from Statistics Canada reviewed all aspects of sampling for the trend study – including the national sampling plans, sampling data, sampling frames, and sample selection. The sampling documentation was used by the International Study Center (in consultation with Statistics Canada and the sampling referee) to evaluate the quality of the samples.

The basic PIRLS 2001 sampling design was a two-stage stratified cluster sample, with a sample of schools as the first stage and a sample from the classrooms from the target grade in those schools as the second stage. For efficiency of sampling, the trend study adopted the same basic design; and it worked from the same sample of schools. For PIRLS, most countries sampled 150 schools and one intact classroom from each school, although some countries selected larger samples.[8] The school sample for the trend study consisted of half the schools (every other school) sampled for the PIRLS data collection. From each of these schools, an additional classroom was sampled from the target grade for use in the trend data collection.

Exhibits A.4 and A.5 present achieved sample sizes for schools and students, respectively. Exhibit A.6 shows the participation rates for schools, students, and overall, both with and without the use of replacement schools. For analysis and reporting, students' questionnaire data, along with questionnaire data from their parents, teachers, and school principals were all linked to the students' achievement data.

8 For further detail, see Joncas, M. (2003). PIRLS sampling weights and participation rates. In M.O. Martin, I.V.S. Mullis, & A.M. Kennedy (Eds.), *PIRLS 2001 technical report*. Chestnut Hill, MA: Boston College.

Exhibit A.3: Population Coverage and Exclusions – Trends in IEA's Reading Literacy Study

ISC RLS Trend 1991–2001

Country	International Desired Population Coverage	National Desired Population		
		School-Level Exclusions	Within-Sample Exclusions	Overall Exclusions
Greece	100%	2.0%	4.0%	6.0%
Hungary	100%	1.8%	0.0%	1.8%
Iceland	100%	1.8%	2.0%	3.8%
Italy	100%	0.0%	3.4%	3.4%
New Zealand [1]	100%	1.6%	1.3%	2.9%
Singapore	100%	1.3%	0.0%	1.3%
Slovenia	100%	0.0%	0.9%	0.9%
Sweden	100%	2.5%	2.2%	4.7%
United States	100%	0.6%	3.9%	4.5%

SOURCE: IEA Progress in International Reading Literacy Study (PIRLS) 2001.

Exhibit A.4: School Participation Rates and Sample Sizes – Trends in IEA's Reading Literacy Study

ISC RLS Trend 1991–2001

Country	School Participation Before Replacement (Weighted Percentage)	School Participation After Replacement (Weighted Percentage)	Number of Schools in Original Sample	Number of Eligible Schools in Original Sample	Number of Schools in Original Sample That Participated	Total Number of Schools That Participated
Greece	73%	79%	85	85	63	68
Hungary	98%	98%	220	220	216	216
Iceland	93%	93%	70	70	65	65
Italy	89%	100%	92	92	81	92
New Zealand	90%	98%	75	75	67	73
Singapore	100%	100%	98	98	98	98
Slovenia	100%	100%	75	75	75	75
Sweden	96%	100%	150	150	142	148
United States	58%	85%	100	100	54	85

SOURCE: IEA Progress in International Reading Literacy Study (PIRLS) 2001.

1 The Maori school stratum was not part of the study.

Exhibit A.5: Student Participation Rates and Sample Sizes – Trends in IEA's Reading Literacy Study

ISC RLS Trend 1991–2001

Country	Within School Student Participation (Weighted Percentage)	Number of Sampled Students in Participating Schools	Number of Students Withdrawn from Class/School	Number of Students Excluded	Number of Students Eligible	Number of Students Absent	Number of Students Assessed
Greece	97%	1195	0	47	1148	39	1109
Hungary	97%	4859	20	0	4839	132	4707
Iceland	86%	2137	14	44	2079	282	1797
Italy	97%	1697	6	56	1635	45	1590
New Zealand [1]	95%	1308	43	19	1246	58	1188
Singapore	98%	3729	46	0	3683	82	3601
Slovenia	95%	1577	0	2	1575	73	1502
Sweden	96%	5706	33	118	5555	194	5361
United States	95%	1980	20	40	1920	94	1826

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

Exhibit A.6: School and Student Participation Rates (Weighted) – Trends in IEA's Reading Literacy Study

ISC RLS Trend 1991–2001

Country	School Participation Before Replacement	School Participation After Replacement	Student Participation	Overall Participation Before Replacement	Overall Participation After Replacement
Greece	73%	79%	97%	70%	77%
Hungary	98%	98%	97%	96%	96%
Iceland	93%	93%	87%	80%	80%
Italy	89%	100%	97%	86%	97%
New Zealand [1]	90%	98%	95%	85%	93%
Singapore	100%	100%	98%	98%	98%
Slovenia	100%	100%	95%	95%	95%
Sweden	96%	100%	97%	93%	97%
United States	58%	85%	95%	55%	81%

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

1 The Maori school stratum was not part of the study.

Data Collection

Each participating country was responsible for carrying out all aspects of the data collection, using standardized procedures developed for the study. Training manuals were created for school coordinators and test administrators that explained procedures for receipt and distribution of materials, as well as for the activities related to the testing sessions. These manuals covered procedures for test security; standardized the scripts used to regulate directions and timing, rules for answering students' questions, and steps ensuring that identification on the test booklets and questionnaires corresponded to the information on the forms used to track students. Countries also were expected to conduct quality control visits to a sample of the trend study schools, as part of their national quality control program for PIRLS.

Test Reliability

Exhibit A.7 displays the reading test Cronbach's alpha reliability coefficient for the reading literacy test in 1991 and 2001 for each country. Reliabilities were acceptably high in all countries, ranging from 0.91 to 0.95.

Data Processing

To ensure the availability of comparable, high-quality data for the trend study analysis, the study implemented rigorous quality control in creating the international database.[9] Manuals and software were prepared for countries to use in creating and checking their data files, so that the information would be in a standardized international format before being forwarded to the IEA Data Processing Center in Hamburg for inclusion in the international database. Upon arrival at the Data Processing Center, the data underwent an exhaustive cleaning process. This involved several iterative steps and procedures designed to identify, document, and correct deviations from the international instruments, file structures, and coding schemes. The process also emphasized consistency of information within national data sets and appropriate linking among the student achievement and questionnaire data files.

9 These steps are detailed in Itzlinger, U., & Schwippert, K. (2003). Creating and checking the PIRLS database. In M.O. Martin, I.V.S. Mullis, & A.M. Kennedy (Eds.), *PIRLS 2001 technical report*. Chestnut Hill, MA: Boston College.

Exhibit A.7: Cronbach's Alpha Reliability Coefficient – Trends in IEA's Reading Literacy Study

ISC RLS Trend 1991–2001

Countries	Reliability Coefficient	
	1991	2001
Greece	0.92	0.92
Hungary	0.93	0.93
Iceland	0.94	0.92
Italy	0.93	0.92
New Zealand	0.94	0.94
Singapore	0.91	0.93
Slovenia	0.93	0.92
Sweden	0.95	0.94
United States	0.91	0.92
International Median	0.93	0.92

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

Throughout the process, the data were checked and double-checked by the IEA Data Processing Center, the International Study Center, and the national centers. The national centers were contacted regularly, and were given several opportunities to review the data for their countries. In conjunction with the IEA Data Processing Center, the International Study Center reviewed item statistics for each cognitive item in each country to identify poorly performing items. In general, the items exhibited very good psychometric properties in all countries, although one or two items in a few countries had properties in the 2001 data different from in 1991, and were, therefore, eliminated from the trend analysis.[10]

IRT Scaling and Data Analysis

The general approach to reporting the achievement data from the PIRLS and the trend study was based primarily on item response theory (IRT) scaling methods.[11] Student reading achievement in PIRLS was summarized using a family of 2-parameter and 3-parameter IRT models for dichotomously-scored items (right or wrong), and generalized partial credit models for items with two or three available score points. The IRT scaling method produces a score by averaging the responses of each student to the items that he or she took in a way that takes into account the difficulty and discriminating power of each item. The 3-parameter IRT methodology used with PIRLS also was applied in scaling the trend study data, placing the data from both 1991 and 2001 on the same scale so that changes in students' average reading achievement over the ten-year period could be described accurately. The PIRLS methodology was used partly for consistency with the PIRLS approach, but mainly because it was judged to provide the most accurate estimates of change in student reading achievement.

By combining the data from 1991 and 2001 in a single analysis, the IRT approach provides a common scale on which performance can be compared over time, as well as across countries. In addition to providing a basis for estimating mean achievement, scale scores permit estimates of how students within countries vary, and provide information on percentiles of performance. To provide a basis for comparison, the average of the scale scores

10 See Mullis, I.V.S., Martin, M.O., & Kennedy, A.M. (2003). Reviewing the PIRLS item statistics. In M.O. Martin, I.V.S. Mullis, & A.M. Kennedy (Eds.), *PIRLS 2001 technical report*. Chestnut Hill, MA: Boston College. Appendix C of the technical report contains a list of items eliminated from the scaling.

11 For a detailed description of the PIRLS scaling, see Gonzalez, E.J. (2003). Scaling the PIRLS reading assessment data. In M.O. Martin, I.V.S. Mullis, & A.M. Kennedy (Eds.), *PIRLS 2001 technical report*. Chestnut Hill, MA: Boston College.

for the 2001 data, across countries, was set to 500, and the standard deviation to 100. Since the countries varied in size, each country was weighted to contribute equally to the mean and standard deviation of the scale. Results from 1991 were then placed on this scale also, so that changes in student performance between 1991 and 2001 would be readily apparent. Four separate scales were constructed for the trend study: one for each of the narrative, expository, and documents domains, and one for reading achievement overall.

To allow more accurate estimation of summary statistics for student subpopulations, the PIRLS and trend study scaling made use of plausible-value technology, whereby five separate estimates of each student's score were generated on each scale, based on the student's responses to the items in the student's booklet and the student's background characteristics. The five score estimates are known as "plausible values," and the variability between them encapsulates the uncertainty inherent in the score estimation process.

Estimating Sampling Error

Because the statistics presented in this report are estimates of national performance based on samples of students, rather than on the values that could be calculated if every student in every country had answered every question, it is important to have measures for the degree of uncertainty of the estimates. The jackknife procedure was used to estimate the standard error associated with each statistic presented in this report.[12] The jackknife standard errors also include an error component due to variation between the five plausible values generated for each student. The use of confidence intervals, based on the standard errors, provides a way to make inferences about the population means and proportions in a manner reflecting the uncertainty associated with the sample estimates. An estimated sample statistic plus or minus two standard errors represents a 95 percent confidence interval for the corresponding population result.

12 Procedures for computing jackknifed standard errors are presented in Gonzalez, E.J., & Kennedy, A.M. (2003). Statistical analysis and reporting of the PIRLS data. In M.O. Martin, I.V.S. Mullis, & A.M. Kennedy (Eds.), *PIRLS 2001 technical report*. Chestnut Hill, MA: Boston College.


B

Appendix B

Percentiles and Standard Deviations of Reading Achievement

Exhibit B.1: Percentiles of Achievement in Reading Overall

ISC RLS Trend 1991–2001

2001					
Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Greece	346 (21.8)	451 (6.1)	512 (6.4)	569 (5.5)	648 (7.5)
Hungary	305 (5.7)	410 (4.5)	481 (4.8)	546 (3.8)	622 (3.7)
Iceland	346 (15.3)	455 (5.1)	521 (4.8)	578 (2.2)	656 (5.2)
Italy	355 (9.2)	450 (5.0)	517 (4.5)	578 (5.4)	657 (4.4)
New Zealand	305 (15.3)	428 (7.1)	513 (6.3)	579 (6.6)	672 (8.1)
Singapore	305 (11.1)	418 (10.8)	493 (8.9)	565 (9.8)	653 (8.5)
Slovenia	339 (9.3)	432 (4.6)	495 (4.6)	557 (5.0)	641 (9.3)
Sweden	294 (3.7)	424 (4.2)	506 (4.0)	578 (2.4)	673 (4.1)
United States	354 (19.9)	448 (6.1)	514 (5.7)	579 (6.2)	656 (6.2)

1991					
Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Greece	305 (9.3)	408 (5.5)	472 (4.9)	527 (2.7)	614 (13.0)
Hungary	297 (8.5)	397 (5.9)	464 (5.0)	526 (3.3)	603 (3.4)
Iceland	291 (9.2)	425 (3.0)	497 (1.8)	558 (2.4)	635 (3.2)
Italy	324 (10.6)	438 (7.2)	505 (5.4)	566 (5.9)	660 (9.2)
New Zealand	296 (9.1)	434 (5.8)	507 (3.8)	575 (3.4)	664 (3.3)
Singapore	327 (4.6)	425 (3.6)	485 (3.0)	540 (3.5)	620 (5.9)
Slovenia	297 (7.3)	391 (5.2)	459 (3.4)	525 (4.4)	612 (3.9)
Sweden	297 (15.2)	445 (4.4)	524 (4.1)	592 (4.5)	687 (4.7)
United States	371 (4.9)	459 (3.8)	524 (3.3)	585 (3.6)	663 (3.4)

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

Exhibit B.2: Percentiles of Achievement in Narrative Reading

ISC RLS Trend 1991–2001

2001					
Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Greece	369 (6.9)	455 (4.6)	514 (5.4)	571 (5.5)	656 (7.2)
Hungary	337 (4.8)	418 (3.9)	484 (4.2)	542 (2.8)	611 (4.1)
Iceland	352 (5.6)	457 (6.2)	529 (4.9)	594 (5.0)	681 (9.4)
Italy	370 (10.2)	455 (5.7)	519 (5.4)	580 (3.7)	659 (10.9)
New Zealand	296 (1.7)	418 (7.0)	504 (6.2)	578 (6.0)	672 (10.0)
Singapore	296 (7.2)	408 (8.6)	491 (11.5)	570 (11.1)	667 (8.2)
Slovenia	342 (5.8)	429 (3.3)	491 (3.2)	553 (6.1)	632 (5.2)
Sweden	317 (9.7)	425 (5.4)	503 (4.5)	570 (3.8)	656 (3.4)
United States	329 (10.6)	425 (7.7)	496 (5.9)	575 (7.6)	665 (9.4)

1991					
Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Greece	335 (8.8)	423 (5.7)	481 (2.7)	535 (2.8)	616 (10.6)
Hungary	332 (4.2)	410 (3.5)	473 (4.4)	525 (2.5)	591 (5.2)
Iceland	317 (4.2)	432 (4.6)	503 (2.9)	560 (2.2)	639 (2.7)
Italy	352 (7.5)	447 (5.2)	512 (4.3)	570 (3.1)	648 (7.1)
New Zealand	305 (13.2)	431 (5.3)	506 (4.2)	577 (5.7)	672 (4.8)
Singapore	325 (4.3)	426 (3.7)	490 (3.0)	549 (4.0)	638 (6.2)
Slovenia	319 (4.7)	401 (3.4)	464 (4.0)	529 (3.5)	613 (3.8)
Sweden	338 (7.1)	451 (3.8)	521 (4.6)	582 (2.8)	666 (7.3)
United States	351 (3.8)	447 (3.2)	520 (4.8)	589 (3.4)	678 (2.4)

SOURCE: IEA Progress in International Reading Literacy Study (PIRLS) 2001.

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

Exhibit B.3: Percentiles of Achievement in Expository Reading

ISC RLS Trend 1991–2001

2001					
Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Greece	356 (9.1)	450 (4.6)	510 (5.9)	570 (3.9)	657 (14.3)
Hungary	281 (9.0)	386 (5.5)	470 (6.5)	543 (4.9)	638 (3.5)
Iceland	327 (6.5)	441 (5.3)	508 (3.5)	569 (4.6)	651 (3.6)
Italy	349 (8.2)	444 (6.0)	516 (4.7)	585 (5.0)	669 (6.9)
New Zealand	334 (19.4)	446 (8.5)	518 (6.0)	580 (9.3)	665 (10.2)
Singapore	341 (9.3)	434 (5.8)	499 (10.2)	560 (8.7)	639 (8.6)
Slovenia	330 (11.5)	426 (4.8)	492 (3.9)	554 (3.2)	634 (4.3)
Sweden	283 (8.5)	416 (8.0)	506 (4.4)	582 (3.7)	682 (5.8)
United States	383 (8.9)	469 (7.8)	523 (5.3)	578 (3.9)	646 (5.7)

1991					
Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Greece	320 (6.3)	416 (4.8)	479 (4.6)	537 (3.9)	626 (14.0)
Hungary	254 (9.0)	358 (5.5)	450 (6.2)	525 (5.3)	625 (7.0)
Iceland	271 (4.7)	413 (3.1)	497 (3.5)	563 (2.8)	655 (8.6)
Italy	328 (11.4)	441 (8.1)	510 (4.9)	578 (5.9)	670 (7.7)
New Zealand	320 (17.3)	440 (4.4)	508 (4.9)	573 (3.7)	660 (6.2)
Singapore	357 (4.7)	440 (2.6)	492 (3.2)	541 (4.1)	614 (4.3)
Slovenia	287 (7.9)	383 (6.1)	458 (3.9)	526 (3.3)	619 (8.3)
Sweden	281 (5.4)	443 (7.2)	533 (4.3)	607 (6.0)	712 (7.6)
United States	378 (7.2)	460 (3.3)	517 (3.7)	573 (2.8)	648 (4.3)

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

Exhibit B.4: Percentiles of Achievement in Document Reading

ISC RLS Trend 1991–2001

2001					
Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Greece	328 (9.9)	433 (6.5)	495 (7.9)	552 (5.9)	634 (8.3)
Hungary	303 (7.0)	422 (4.6)	493 (3.1)	557 (2.0)	643 (2.8)
Iceland	350 (6.4)	450 (5.5)	510 (3.9)	567 (6.0)	644 (5.9)
Italy	342 (7.4)	436 (6.8)	502 (4.5)	563 (7.4)	648 (4.0)
New Zealand	309 (10.6)	435 (9.3)	511 (7.7)	585 (5.1)	682 (10.5)
Singapore	313 (11.8)	423 (7.5)	489 (6.2)	551 (10.5)	631 (6.2)
Slovenia	348 (12.8)	441 (4.7)	502 (2.7)	564 (4.7)	655 (5.8)
Sweden	286 (10.9)	429 (6.9)	513 (4.2)	589 (6.2)	697 (5.5)
United States	359 (6.3)	465 (10.2)	525 (6.4)	582 (5.0)	659 (10.8)

1991					
Countries	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
Greece	283 (7.1)	384 (5.4)	443 (4.6)	502 (5.0)	596 (13.5)
Hungary	305 (7.4)	404 (5.5)	468 (4.9)	534 (5.8)	624 (7.9)
Iceland	305 (5.6)	422 (2.1)	486 (3.0)	545 (2.4)	622 (5.5)
Italy	308 (9.0)	414 (10.0)	481 (4.3)	549 (9.3)	656 (15.3)
New Zealand	303 (14.9)	431 (3.4)	498 (4.6)	560 (4.9)	645 (6.2)
Singapore	334 (3.4)	418 (3.6)	467 (2.4)	516 (4.2)	587 (5.5)
Slovenia	302 (4.6)	392 (4.0)	455 (4.2)	520 (3.6)	610 (5.0)
Sweden	290 (10.1)	430 (5.0)	511 (5.0)	586 (3.1)	689 (9.0)
United States	388 (2.9)	472 (4.0)	529 (3.7)	584 (3.2)	657 (4.6)

SOURCE: IEA Progress in International Reading Literacy Study (PIRLS) 2001.

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

Exhibit B.5: Standard Deviations of Achievement in Reading Overall

ISC RLS Trend 1991–2001

2001						
Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Greece	507 (5.9)	91 (2.6)	516 (7.3)	90 (3.7)	499 (6.0)	91 (3.6)
Hungary	475 (3.9)	97 (2.1)	481 (4.2)	95 (2.8)	469 (4.2)	98 (2.3)
Iceland	513 (3.5)	94 (1.9)	517 (3.2)	91 (2.9)	508 (5.1)	96 (2.1)
Italy	513 (4.4)	92 (2.4)	514 (5.2)	90 (3.1)	511 (5.3)	93 (2.7)
New Zealand	502 (5.3)	111 (3.0)	520 (7.0)	105 (4.2)	485 (6.6)	115 (3.6)
Singapore	489 (7.9)	106 (3.2)	504 (7.9)	100 (3.3)	475 (8.5)	109 (3.9)
Slovenia	493 (3.7)	91 (2.0)	508 (5.2)	88 (2.6)	480 (4.1)	93 (3.0)
Sweden	498 (3.9)	115 (1.9)	509 (4.3)	111 (3.0)	486 (4.4)	118 (2.0)
United States	511 (6.3)	94 (3.1)	517 (6.7)	91 (3.7)	504 (7.1)	96 (3.8)

1991						
Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Greece	466 (4.5)	96 (4.2)	476 (5.7)	95 (5.5)	457 (4.4)	97 (3.9)
Hungary	459 (4.0)	93 (1.7)	467 (4.4)	90 (2.6)	453 (4.7)	96 (2.2)
Iceland	486 (1.5)	104 (1.3)	501 (2.1)	96 (1.8)	473 (2.6)	109 (2.0)
Italy	500 (5.4)	101 (3.7)	512 (5.6)	96 (5.1)	495 (6.4)	101 (3.7)
New Zealand	498 (4.1)	110 (2.7)	514 (5.0)	101 (3.2)	485 (5.4)	115 (3.3)
Singapore	481 (3.6)	88 (1.7)	489 (3.9)	85 (2.6)	473 (4.5)	90 (1.7)
Slovenia	458 (3.2)	96 (1.9)	469 (3.5)	95 (2.3)	447 (3.8)	96 (2.4)
Sweden	513 (4.2)	116 (2.5)	523 (4.9)	113 (2.8)	505 (4.8)	119 (3.2)
United States	521 (3.2)	90 (1.5)	529 (3.3)	86 (1.9)	513 (4.0)	93 (1.8)

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

Exhibit B.6: Standard Deviations of Achievement in Narrative Reading

ISC RLS Trend 1991–2001

2001						
Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Greece	513 (4.8)	88 (3.1)	526 (6.3)	89 (4.5)	501 (5.1)	85 (3.3)
Hungary	479 (3.1)	85 (1.9)	489 (3.6)	84 (2.6)	469 (3.4)	85 (1.9)
Iceland	524 (3.3)	100 (2.3)	531 (3.3)	98 (4.1)	517 (5.2)	102 (2.2)
Italy	517 (4.1)	88 (2.7)	522 (4.5)	88 (2.7)	512 (5.3)	89 (3.7)
New Zealand	496 (5.3)	114 (3.1)	518 (7.0)	108 (4.2)	474 (6.5)	116 (4.0)
Singapore	487 (8.6)	113 (3.5)	507 (8.8)	109 (3.7)	469 (8.9)	114 (4.0)
Slovenia	490 (3.7)	88 (1.9)	506 (4.8)	86 (2.5)	476 (4.1)	88 (2.7)
Sweden	496 (3.6)	104 (1.7)	511 (3.7)	100 (2.1)	482 (4.5)	105 (2.1)
United States	498 (6.8)	105 (3.6)	510 (7.4)	104 (4.8)	486 (7.5)	104 (3.8)

1991						
Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Greece	479 (3.7)	87 (3.2)	492 (4.5)	84 (3.8)	467 (3.9)	87 (3.2)
Hungary	467 (3.2)	81 (1.5)	477 (3.7)	77 (2.1)	458 (4.0)	83 (2.0)
Iceland	493 (1.6)	98 (1.6)	509 (2.1)	91 (1.7)	478 (2.6)	102 (2.1)
Italy	507 (4.7)	91 (2.7)	520 (5.0)	87 (3.8)	500 (5.5)	91 (2.8)
New Zealand	500 (4.3)	111 (2.9)	521 (5.1)	104 (2.5)	483 (5.5)	113 (4.1)
Singapore	486 (3.5)	94 (1.9)	502 (4.1)	91 (2.9)	472 (4.5)	95 (1.7)
Slovenia	465 (3.0)	90 (1.7)	478 (3.4)	89 (1.9)	453 (3.5)	89 (2.2)
Sweden	513 (3.4)	100 (2.2)	527 (3.9)	97 (2.1)	501 (4.0)	101 (3.0)
United States	518 (3.3)	101 (1.4)	531 (3.5)	98 (1.9)	505 (4.1)	102 (2.1)

SOURCE: IEA Progress in International Reading Literacy Study (PIRLS) 2001.

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

Exhibit B.7: Standard Deviations of Achievement in Expository Reading

ISC RLS Trend 1991–2001

2001						
Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Greece	509 (5.2)	91 (3.1)	517 (7.0)	90 (4.5)	502 (5.6)	91 (4.2)
Hungary	464 (4.4)	111 (2.0)	467 (4.9)	110 (2.5)	462 (4.7)	111 (2.6)
Iceland	502 (3.3)	97 (2.2)	508 (3.2)	95 (3.8)	495 (5.0)	99 (2.3)
Italy	513 (4.5)	99 (2.7)	513 (5.4)	97 (3.4)	514 (5.6)	100 (3.1)
New Zealand	510 (5.3)	101 (3.1)	524 (7.0)	96 (3.7)	497 (6.6)	104 (3.9)
Singapore	495 (6.6)	91 (2.7)	505 (6.8)	87 (2.8)	487 (6.9)	93 (3.2)
Slovenia	489 (3.3)	92 (2.0)	502 (5.3)	90 (2.8)	477 (3.7)	92 (2.7)
Sweden	496 (4.1)	121 (2.6)	505 (4.6)	118 (3.1)	488 (4.9)	124 (3.0)
United States	521 (5.4)	80 (2.8)	527 (6.0)	79 (3.1)	514 (6.2)	81 (3.7)

1991						
Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Greece	476 (4.3)	95 (3.8)	483 (5.2)	94 (4.8)	471 (4.6)	96 (3.7)
Hungary	443 (4.8)	115 (2.2)	452 (5.1)	111 (2.9)	436 (5.8)	118 (2.8)
Iceland	483 (1.9)	116 (1.8)	500 (2.7)	108 (2.3)	469 (3.5)	121 (2.5)
Italy	507 (5.5)	103 (3.2)	518 (6.3)	98 (4.1)	502 (6.2)	104 (3.4)
New Zealand	502 (3.9)	102 (2.6)	515 (4.9)	96 (3.0)	492 (5.2)	106 (3.5)
Singapore	489 (3.1)	78 (1.5)	494 (3.5)	76 (2.3)	485 (3.8)	79 (1.5)
Slovenia	455 (3.6)	101 (2.4)	466 (3.9)	100 (2.8)	445 (4.4)	101 (2.7)
Sweden	519 (4.4)	130 (2.4)	528 (5.1)	126 (2.8)	511 (5.4)	132 (3.0)
United States	516 (3.2)	82 (1.4)	521 (3.4)	80 (1.8)	511 (3.8)	84 (1.7)

SOURCE: Trends in IEA's Reading Literacy Study 1991–2001

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

Exhibit B.8: Standard Deviations of Achievement in Document Reading

ISC RLS Trend 1991–2001

2001						
Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Greece	490 (5.2)	92 (2.7)	491 (6.6)	92 (4.6)	490 (5.6)	92 (3.6)
Hungary	486 (3.7)	102 (1.9)	487 (4.1)	99 (2.5)	485 (4.2)	105 (2.0)
Iceland	506 (3.4)	89 (1.7)	507 (2.8)	86 (2.8)	505 (4.9)	91 (2.2)
Italy	499 (4.5)	93 (2.4)	496 (5.1)	90 (3.0)	501 (5.5)	95 (3.2)
New Zealand	506 (5.2)	113 (3.3)	520 (7.3)	106 (5.2)	493 (6.5)	118 (3.7)
Singapore	484 (6.8)	96 (2.9)	495 (6.8)	89 (3.1)	473 (7.3)	101 (3.5)
Slovenia	502 (3.8)	92 (2.5)	512 (4.8)	87 (2.7)	493 (5.1)	95 (3.7)
Sweden	506 (4.4)	122 (2.2)	512 (5.2)	117 (3.3)	501 (4.8)	127 (2.5)
United States	520 (6.1)	90 (3.1)	518 (6.5)	87 (3.3)	521 (7.2)	94 (4.7)

1991						
Countries	Overall		Girls		Boys	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Greece	443 (4.9)	95 (4.1)	448 (5.9)	93 (5.5)	438 (5.1)	97 (4.1)
Hungary	468 (4.3)	97 (2.8)	469 (4.9)	93 (3.2)	467 (4.9)	100 (2.9)
Iceland	479 (1.7)	96 (1.3)	486 (2.1)	88 (1.8)	472 (2.9)	101 (1.9)
Italy	482 (5.4)	104 (4.1)	488 (6.1)	101 (5.4)	481 (6.8)	105 (4.1)
New Zealand	491 (4.0)	102 (3.0)	499 (4.7)	95 (3.7)	484 (5.5)	108 (3.6)
Singapore	465 (3.1)	76 (1.5)	467 (3.4)	73 (2.2)	464 (3.7)	79 (1.6)
Slovenia	456 (3.0)	94 (1.7)	462 (3.5)	91 (2.3)	450 (3.6)	96 (2.2)
Sweden	504 (4.5)	120 (2.9)	507 (5.1)	117 (3.2)	502 (5.3)	123 (4.0)
United States	527 (3.2)	82 (1.2)	529 (3.4)	78 (1.7)	526 (3.8)	85 (1.7)

SOURCE: IEA Progress in International Reading Literacy Study (PIRLS) 2001.

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


C

Appendix C
Acknowledgements

The Trends in IEA's Reading Literacy Study was conducted in conjunction with the Progress in International Reading Literacy Study (PIRLS), under the auspices of the IEA. The studies were directed by Ina V.S. Mullis and Michael O. Martin, and managed centrally by the staff of the PIRLS International Study Center at Boston College, Lynch School of Education. In replicating IEA's 1991 Reading Literacy Study, the PIRLS International Study Center worked closely with organizations that were responsible for particular aspects of the study and representatives of the nine participating countries. Each participating country was responsible for funding national project costs and implementing the study in accordance with the international procedures. Statistics Canada worked with countries to ensure that the international sampling procedures were followed; adapted the international design to national conditions; documented the national samples; and computed sampling weights. The IEA Data Processing Center was responsible for processing and verifying the data from the nine countries, and for constructing the international database.

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