U.S. PIRLS and ePIRLS 2016 Technical Report and User's Guide

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1. Introduction

The *U.S. PIRLS and ePIRLS 2016 Technical Report and User's Guide* provides an overview of the design and implementation of the Progress in International Reading Literacy Study (PIRLS) 2016 in the United States, along with information designed to facilitate access to the U.S. PIRLS 2016 data.

This section provides an overview of the study and its components. Subsequent chapters provide details of the sampling design (chapter 2), response rates and nonresponse bias (chapter 3), data collection operations (chapter 4), and the data files (chapter 5).

1.1 Background and Purpose of PIRLS 2016

PIRLS is an international comparative study of student performance in reading literacy at the fourth grade. PIRLS 2016 marks the fourth iteration of the study, which has been conducted every 5 years since 2001. New to the PIRLS assessment in 2016, ePIRLS provides a computer-based extension to PIRLS, assessing students' comprehension of online information. A subset of the participating PIRLS 2016 education systems participated in ePIRLS.

Internationally, the study was developed and implemented by the International Association for the Evaluation of Educational Achievement (IEA) and is designed to measure the reading knowledge and skills of fourth-grade students over time. Each country or education system is responsible for collecting its own data following detailed international requirements for target populations, sampling design, sampling size, exclusions, assessment administration, and defining participation rates. In the United States, PIRLS is conducted by the National Center for Education Statistics (NCES), part of the Institute of Education Sciences (IES) in the U.S. Department of Education. NCES contracted RTI to conduct the sampling and data collection activities for PIRLS and ePIRLS 2016.

The PIRLS assessment is designed to broadly align with the curricula of participating countries and thereby assess concepts that are presumably taught in most fourth-grade classrooms. In addition to the reading assessment, students provide background information. School administrators and reading teachers also provide contextual information about education, school, and classroom policies, which

allows for cross-national comparisons of educational contexts that may be related to student achievement.

PIRLS was first administered to students in 36 education systems in 2001.[1] In 2016, 58 education systems[2] participated in the PIRLS assessment at the fourth grade, with 16 of them also participating in ePIRLS. PIRLS (and its partner assessment ePIRLS) targets students as they have transitioned from a focus on learning to read to a focus on reading to learn. In most education systems, this point is the fourth year of formal schooling or fourth grade, with an average student age of 9.5 years. For ease of presentation, student participants are referred to as fourth-grade students in reports and findings.

A detailed description of PIRLS 2016 from an international perspective can be found in reports published by the IEA and available online at https://timssandpirls.bc.edu/pirls2016/index.html.

1.2 PIRLS 2016 U.S. Data Collection Activities and Schedule

Descriptions of data collection activities and their timing within the United States provide a foundation for researchers seeking to understand the data. These activities are summarized in exhibit 1-1 along with the timing of their implementation. The activities are described in detail in chapters 2 through 4 of this report.

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[1] The term "education system" refers to IEA member countries and benchmarking participants. IEA member "countries" may be complete, independent political entities or nonnational entities that represent a portion of a member country (e.g., England, Hong Kong). Nonnational entities that are represented by their larger country in the main results (e.g., Moscow City in Russia, Abu Dhabi in the United Arab Emirates, Ontario in Canada), or whose countries are not IEA members (Buenos Aires), are designated as "benchmarking participants."

[2] This count differs from the totals in the international results because it excludes those education systems that administered the assessments to students in grades other than grade 4. PIRLS 2016 was administered in a total of 61 education systems.

Exhibit 1-1.   Schedule for U.S. PIRLS 2016 data collection activities

Activity	2014		2015												2016							
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
OMB approval received for PIRLS 2016	■																					
School sampling	■																					
State, district, and school recruitment						■	■	■	■	■	■	■	■	■	■	■	■	■	■			
Instrumentation																						
Cultural adaptation made to items											■	■										
Production of Instruments											■	■	■	■	■							
Printing of instruments																■						
Preparing ePIRLS USB sticks															■	■						
Test administrator training																						
Within-school sampling																						
Class Listing Forms												■	■	■	■	■	■	■				
Student-Teacher Linkage Forms												■	■	■	■	■	■	■				
Student Tracking Forms															■	■	■	■	■			
Assessment sessions in schools (PIRLS)																■	■	■	■			
Assessment sessions in schools (ePIRLS)																■	■	■	■			
Data processing																						
Data receipt																■	■	■	■			
Scoring and coding																				■	■	
Data entry																				■	■	■
Cleaning and preparation of data files																				■	■	■
Submission of data files to the Data Processing Center																						■

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

1.3   Overview of the Design and Administration of PIRLS and ePIRLS 2016

The basic parameters of the design and administration of PIRLS 2016 in the United States are outlined below. A more detailed treatment is provided in subsequent chapters of this report. *Methods and Procedures in PIRLS 2016* (Martin, Mullis, and Hooper 2017) details study design and coordination activities from an international perspective.

1.3.1   Sampling

In the United States and most other education systems, the target population of students corresponded to students in grade 4. The United States used a two-stage stratified sampling design to sample the target population, with the first stage being the selection of schools and the second stage being the selection of classrooms within schools.

Schools were selected with a probability proportional to the size of their fourth-grade enrollment and from three stratification variables to make up a nationally representative sample. For each sampled school, two replacement schools were selected.

Intact[3] fourth-grade classrooms were selected within each participating school. Small classrooms were combined into what were called pseudo-classrooms so that each classroom in the sampling frame had at least 20 students. One to two classrooms (including pseudo-classrooms) were selected from each school by the within-school sampling software provided by the IEA's Data Processing Center (DPC). All students enrolled in the sampled classrooms and pseudo-classrooms were selected to participate in the study. The teacher of each selected class and the school administrator were also selected to complete a survey.

The PIRLS 2016 sample included 176 public and private schools. Replacement schools for each of the 176 selected schools were contacted about the study only if the original school refused to participate. All schools, classrooms, and students selected for PIRLS were also selected for ePIRLS.

More detail is provided in chapter 2.

1.3.2 Assessment Design

PIRLS. The assessment instruments included fourth-grade-level stories and informational texts collected from several different countries. Students are asked to engage in a full repertoire of reading skills and strategies, including retrieving and focusing on specific ideas, making simple and more complex inferences, and examining and evaluating text features. The passages were followed by open-ended and multiple-choice questions about the text.

The 2016 assessment consisted of 15 booklets and one reader.[4] The assessment was given in two 40-minute parts with a 5- to 10-minute break in between. Each of the booklets contained two parts—one block containing a literary experience passage and associated test items, and one block containing an informational passage and items—and each block occurred twice across the 15 total booklets. Each student received one booklet as part of the assessment. The entire assessment consisted of 12 blocks of passages and items, and using different booklets allowed PIRLS to report results from more assessment items than can fit in one booklet, without making the assessment longer. To provide good coverage of each skill domain, the test items developed required about 8 hours of testing time. However, testing time was limited to 80 minutes per student by clustering items in blocks and randomly

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[3] Intact or whole classes were selected from each school and all students enrolled in the selected classrooms were selected to participate in PIRLS and ePIRLS.

[4] The reader was the term designated to the 16th booklet which was different than the others in both presentation and in how the students provided responses. The reader was presented in a magazine-type format with the questions in a separate booklet. The other booklets included the passages and the questions in the same booklet.

rotating the blocks of items throughout the student test booklets (assessment booklets were randomly assigned to students within each sampled class). As a result, no student received all items (there were a total of 175 items on the 2016 assessment), but each item was answered by a representative sample of students. This is consistent with other large-scale assessments, such as the National Assessment of Educational Progress (NAEP).

A total of 12 reading passages were included in the 2016 assessment booklets used in all participating education systems. The passages comprised two that were used in PIRLS 2001, 2006, and 2011, two from 2006 and 2011, and six new passages. The use of common passages from the 2001 through the 2016 assessments allowed for the analysis of change in reading literacy over the 15-year period between administrations for countries that participated in these cycles. The passages, as well as all other study materials, were translated into the primary language or languages of instruction in each education system.

ePIRLS. The ePIRLS assessment was based on the PIRLS 2016 Assessment Framework with a focus on student performance in online reading. This computer-based assessment was designed to understand how students acquire and use information on the internet. The assessment used a simulated Internet environment which allowed students to navigate through web pages to respond to questions about the online information. Students are guided through the web pages and questions by an on-screen avatar.

Five tasks were included in the 2016 ePIRLS assessment. Each student was asked to complete two ePIRLS tasks, each taking about 40 minutes. The tasks are on topics related to science and social studies. Because this is the first administration of ePIRLS, all five tasks and its 91 items are new to the study. Two of the tasks are released to the public on the IEA website (http://timssandpirls.bc.edu/pirls2016/international-results/epirls/take-the-epirls-assessment/).

1.3.3 Test Administration

Test administration for PIRLS in the United States occurred February 16 through May 25, 2016. All students selected for PIRLS were also asked to complete ePIRLS, typically one day after the PIRLS administration. Students who missed the PIRLS session could take PIRLS while their counterparts completed ePIRLS, as no student could participate in ePIRLS without participating in PIRLS first. The administration was carried out by professional staff trained according to the international guidelines. School personnel were asked only to assist with listings of students, the identification

of space for testing in the school, and the specification of any parental consent procedures required. The Trends in International Math and Science Survey (TIMSS) & PIRLS International Study Center at Boston College monitored compliance with the standardized procedures.

1.3.4 Scoring

The PIRLS assessment items included both multiple-choice and constructed-response items. A scoring rubric (guide) was provided for every constructed-response item, and scoring procedures were specified by scoring manuals provided by the International Study Center. The national research coordinator (NRC) in each country was responsible for the scoring and coding of data in that country, following established guidelines. NRCs and, as appropriate, contractor staff attended scoring trainings conducted by the International Study Center and subsequently recruited and trained professional scorers to score constructed-response items.

1.3.5 Scaling

Total scores for reading in PIRLS, along with scores that reflect performance in specific subdomains, were estimated using item response theory (IRT) models. PIRLS 2016 had a scale for overall reading, subscales for the two purposes of reading, and two subscales for the processes of reading (combining the four processes into two subscales). Benchmark scores were also derived. IRT estimation procedures were also used to place scores from the four PIRLS assessments conducted in 2001, 2006, 2011, and 2016 on the same scale (the scale of the 2001 administration). This allowed for the calculation of trends in achievement even though the makeup of the countries participating in PIRLS changed over time. ePIRLS is reported on the same scale as PIRLS, however ePIRLS differs in that it does not have a literary scale. Details are provided in *Methods and Procedures in PIRLS 2016 (*Martin, Mullis, and Hooper 2017). The scale scores assigned to each student were estimated using a procedure described in section 1.3.6, with input from the IRT results.

1.3.6 Plausible Values

The matrix sampling approach used in the PIRLS assessments meant that no student responded to all the items. To accommodate the missing data generated by this design, during the scaling process, plausible values were estimated to characterize students participating in the assessment. Plausible values are imputed values and not test scores for individuals in the usual sense. They represent what the true performance of an individual might have been, had the student provided an answer.

They are estimated as random draws (usually five) from an empirically derived distribution of score values based on both the student's observed responses to assessment items and on the student's background variables. A more technical explanation can be found in *Methods and Procedures in PIRLS 2016 (*Martin, Mullis, and Hooper 2017). From the point of view of analysis, this means that each analysis must be repeated five times, once for each plausible value, and the results averaged.

1.3.7 Weighting

Responses from the groups of students were assigned sampling weights to adjust for the complex sample design that resulted in students having an unequal, but known, probability of selection. Additionally, an adjustment for school and student nonresponse was built into the weighting. The estimation of sampling weights was carried out by Statistics Canada. A detailed description is provided in *Methods and Procedures in PIRLS 2016 (*Martin, Mullis, and Hooper 2017). In analyses of the PIRLS data it is necessary to use sampling weights to obtain accurate population estimates.

1.4 Reporting PIRLS and ePIRLS Results

Achievement results from PIRLS are reported on a scale from 0 to 1,000, with a scale average of 500 and standard deviation of 100. Even though the education systems participating in PIRLS have changed across the assessment rounds from the first administration in 2001, comparisons between the 2016 results and prior results are still possible because the achievement scores in each of the assessments are placed on a scale that is not dependent on the list of participating education systems in any particular year. The ePIRLS results are reported on the same scale as the PIRLS reading achievement results. A more detailed explanation of the assessment's equating and scaling can be found in *Methods and Procedures in PIRLS 2016 (*Martin, Mullis, and Hooper 2017).

In addition to numerical scale results, PIRLS also includes international benchmarks. The international benchmarks provide a way to interpret the scale scores and to understand how students' proficiency in a subject varies along the assessment scale. The benchmarks for PIRLS describe four levels of student reading achievement, based on the kinds of skills and knowledge students at each score cut point would need to successfully answer the items. More information on the development of the benchmarks and the procedures used to set the score cut points can be found in *Methods and Procedures in PIRLS 2016 (*Martin, Mullis, and Hooper 2017).

1.5   U.S. International and National Data Files

PIRLS 2016 data are available in three different formats:

- The **PIRLS U.S. international data files** are available as part of the international database released by the International Study Center. The U.S.-specific PIRLS data files can be downloaded from https://timssandpirls.bc.edu/pirls2016/international-database/index.html. These data files conform to the international specifications common to the data files from all countries. However, they do not include the U.S.-specific adaptations made to a few questions in the questionnaires or the additional questions added to the school and student questionnaires, such as the question on race/ethnicity added to the student questionnaire.

- The **PIRLS U.S. national public-use data files** are available through NCES. The PIRLS U.S. national dataset can be downloaded from https://nces.ed.gov/surveys/pirls/datafiles.asp. Unlike the international files, these U.S. data files include the U.S.-specific adaptations made to questionnaire items, additional questions added to the school and student questionnaires, and some restricted variables designated by the IEA.

- The **PIRLS U.S. national restricted-use data files** are available through NCES. Access to these files may be obtained by completing a restricted-use license agreement with NCES. The restricted-use data files are provided only on CD. These data files contain supplemental link files that link PIRLS school ID numbers to the school ID numbers as they appear in the publicly available Common Core of Data (CCD) or the Private School Universe Survey (PSS). In addition, race/ethnicity is provided with all available categories and free or reduced-price lunch status is provided as a continuous variable. Because these data can reveal the identities of participating schools, the restricted-use data files are only made available to those who obtain a NCES restricted-use data license. Directions on how to obtain the license can be found at https://nces.ed.gov/pubsearch/licenses.asp.

The most comprehensive treatment of the PIRLS international data, and hence of the U.S. international data file, is provided in the various PIRLS 2016 publications produced by the IEA, particularly the *PIRLS 2016 User Guide for the International Database* (Foy 2018). This publication should be used as the primary reference. The *U.S. PIRLS and ePIRLS 2016 Technical Report and User's Guide* draws heavily on the international user's guide for much of its data file-related content. This content is supplemented with detail on those aspects of the PIRLS 2016 data that were unique to the United States.

2. Sample Design

The PIRLS 2016 sample design resembled the sample design of PIRLS 2006 in that (1) the target student population was defined as the set of all fourth-graders in the United States in both public and private schools, and (2) one or two classrooms were selected for each assessment in each sampled school. In 2011, PIRLS was administered at the same time as the TIMSS. This resulted in a higher number of sampled schools than would have otherwise been experienced in a year when PIRLS was conducted on its own. The PIRLS 2016 school sample was drawn for the United States in November 2014. The sample design followed international requirements as described in Martin, Mullis, and Hooper (2017).

The U.S. sample again used a two-stage design—a stratified systematic sample of schools with sampling probabilities proportional to size (PPS) and then classes within sampled schools. All students in sampled classrooms were selected for assessment. In 2016, all schools selected for PIRLS were also selected to participate in ePIRLS. The school sampling frame is described in section 2.1. The selection of schools in the first sampling stage is described in section 2.2 and the selection of classes and students in section 2.3.

2.1 School Sampling Frame

The school sampling frame was constructed using the 2011–12 CCD (https://nces.ed.gov/ccd/) and 2009–10 PSS (https://nces.ed.gov/surveys/pss/). These two national databases were developed by NCES and provide information about all schools in the United States.

Eligible schools in the sampling frame included schools operating in the 50 states and the District of Columbia, Department of Defense (DoD) domestic schools, and Bureau of Indian Education schools that offer fourth-grade instruction to one or more students. Schools in Puerto Rico and U.S. territories, DoD schools overseas, adult education institutions with no fourth-grade students, schools offering temporary instruction such as hospitals or treatment facilities, and non-education institutions (e.g., home schools, correspondence schools) were ineligible for the study.

Table 2-1 presents frame tabulations of the number of schools containing fourth-grade students.

Table 2-1. Number and percentage of students and schools included in the U.S. PIRLS school sampling frame, by grade span: 2016

Grade span	Students	Percent	Schools	Percent
Total	**3,989,251**	**100.0**	**69,235**	**100.0**
Grades PK/KG/1–5	1,979,349	49.6	25,917	37.4
Grades PK/KG/1–6	676,132	16.9	12,073	17.4
Grades PK/KG/1–8	472,844	11.9	15,248	22.0
Grades PK/KG/1–12	135,372	3.4	6,344	9.2
Other	725,554	18.2	9,653	13.9

NOTE: KG = kindergarten; PK = prekindergarten. The "Other" grade span includes all additional grade spans.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

2.2 School Sample Selection

The target population for schools, the units selected in the first stage of sampling, is defined as schools in the 50 United States and the District of Columbia providing instruction to one or more students in the fourth grade.

Schools were sampled using a stratified systemic sample of schools with sampling probabilities proportional to size. The measure of size used was school fourth-grade enrollment, as measured on the sampling frame. Since the sampling frame contains data from 2009–2010 for private schools and 2011–2012 for public schools this measure of size is an estimate of the size measure for 2015–2016. This method reduced the chance of selection for smaller schools, which improved cost efficiency by increasing the average number of students per sampled school. Further, if students in schools with enrollments of only a few students were selected, they would have very large sampling weights, which could yield unstable variance estimates.

The sample of 176 schools was allocated to strata in approximate proportion to the relative number of students in each stratum. High-poverty schools were oversampled by selecting 50 high-poverty schools, a slight deviation from proportional allocation to the sampling strata.

2.2.1 Frame Stratification

The school sampling frame was explicitly stratified by three categorical stratification variables:

- school control (public or private);

- Census region (Northeast, Midwest, South, West);[5] and

- poverty level (high or low).[6]

This resulted in 12 explicit strata. Within each explicit stratum, the frames were implicitly stratified (that is, sorted via hierarchical serpentine sorting) by two categorical stratification variables:

- locale (city, suburb, town, or rural); and

- minority status (above or below 15 percent of the student population).

The order of the stratification is not given due to confidentiality concerns. A third variable, Grade 4 enrollment, was also used in the serpentine sort to assist in the selection of substitute schools, described below.

2.2.2 Substitute Schools

Although efforts were made to secure the participation of all schools selected, it was anticipated at the time of sampling that not all schools would choose to participate. Therefore, as each school was selected for a sample, the two neighboring schools in the sampling frame were designated as substitute schools.

The first school following the sampled school was the first substitute, and the first school preceding it was the second substitute. If an original school refused to participate, the first substitute was then contacted. If that school also refused to participate, the second substitute was then contacted.

There were several constraints on the assignment of substitutes. One sampled school was not allowed to be a substitute for another, and a given school could not be assigned to be a substitute for more than one sampled school. Furthermore,

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[5] The Northeast region consists of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. The Midwest region consists of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. The South region consists of Alabama, Arkansas, Delaware, the District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. The West region consists of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

[6] High-poverty schools are defined as having 76 percent or more of the students eligible for free or reduced-price lunch (FRPL) and low-poverty schools have less than 76 percent of students eligible for FRPL. Private schools are all classified as low poverty because no FRPL information is available.

substitutes were required to be in the same explicit stratum as the sampled school. If the sampled school was the first or last school in the stratum, then the second school following or preceding the sampled school was identified as the substitute. If the first substitute school did not have the same implicit stratification values as the sampled school, the first and second substitute were switched. Under these rules, it was possible to identify two substitutes for each sampled school.

2.3   Selection of Classrooms and Students

The second sampling stage consisted of selecting intact fourth-grade classes within each participating school. Schools were asked to list all classes containing fourth-grade students, indicating the number of fourth-grade students in the class and whether it was a "special class" in which all or most of the students were learning disabled or classified as having limited English proficiency. Because PIRLS does not provide accommodations, classrooms were excluded from the subsequent classroom sampling if all or most of the students were learning disabled.

Classrooms with fewer than 15 students were collapsed into pseudo-classrooms so that each classroom in the school's classroom sampling frame had at least 20 students. Because classrooms were sampled with equal probability within schools, small classrooms had the same probability of selection as large classrooms; hence, pseudo-classrooms were created for the purposes of classroom sampling, in which small classrooms were joined to reach a larger student count. These pseudo-classrooms were treated as single classes in the class sampling process. Following class sampling, the pseudo-classroom combinations were dissolved, and the small classes involved retained their own identity. In this way, data on students, teachers, and classroom practices were linked in small classes in the same way as with larger classes.

An equal probability sample of one to two classrooms (including pseudoclassrooms) was identified from the classroom frame for the school. In schools where there was only one classroom, this classroom was selected with certainty. For PIRLS 2016, 12 pseudo-classrooms were created prior to classroom sampling, with 7 of these being selected in the final classroom sample. All students in sampled classrooms and pseudo-classrooms were selected for assessment.

2.4   Tabulations Within Subgroups for Frame and Sample

This section provides an overview of the fourth-grade frame and sample distribution by each of the stratification variables, showing that the PPS sampling and

stratification worked effectively: the sample percentage of schools was close to the measure-of-size percentage of the frame for all the implicit strata. The results are shown for Census region (table 2-2); poverty level (table 2-3); school control (table 2-4); locale (table 2-5); minority status (table 2-6); and Census region, poverty level, and school control (table 2-7). Each table provides the distribution of fourth-grade students (total measure of size) and schools in the sampling frame, as well as the distribution of schools in the sample.

Table 2-2. Number and percentage of students and schools included in the U.S. PIRLS school sampling frame and number and percentage of schools in the sample, by Census region: 2016

Census region	Frame				Sample	
	Number of students	Percent	Number of schools	Percent	Number of schools	Percent
Total	**3,989,251**	**100.0**	**69,235**	**100.0**	**176**	**100.0**
Northeast	646,256	16.2	11,867	17.1	29	16.5
Midwest	856,259	21.5	17,457	25.2	37	21.0
South	1,529,010	38.3	23,291	33.6	69	39.2
West	957,726	24.0	16,620	24.0	41	23.3

NOTE: For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 2-3. Number and percentage of students and schools included in the U.S. PIRLS school sampling frame and number and percentage of schools in the sample, by poverty level: 2016

Poverty level	Frame				Sample	
	Number of students	Percent	Number of schools	Percent	Number of schools	Percent
Total	**3,989,251**	**100.0**	**69,235**	**100.0**	**176**	**100.0**
High	832,265	20.9	12,411	17.9	50	28.4
Low	3,156,986	79.1	56,824	82.1	126	71.6

NOTE: For public schools, high poverty is defined as having 76 percent or more of the students eligible for free or reduced-price lunch, and low poverty is defined as having less than 76 percent eligible. Because no data were available for private schools, all private schools are categorized as low poverty.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 2-4. Number and percentage of students and schools included in the U.S. PIRLS school sampling frame and number and percentage of schools in the sample, by school control: 2016

School control	Frame				Sample	
	Number of students	Percent	Number of schools	Percent	Number of schools	Percent
Total	**3,989,251**	**100.0**	**69,235**	**100.0**	**176**	**100.0**
Private	323,482	8.1	18,105	26.2	12	6.8
Public	3,665,769	91.9	51,130	73.8	164	93.2

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 2-5. Number and percentage of students and schools included in the U.S. PIRLS school sampling frame and number and percentage of schools in the sample, by locale: 2016

Locale	Frame				Sample	
	Number of students	Percent	Number of schools	Percent	Number of schools	Percent
Total	**3,989,251**	**100.0**	**69,235**	**100.0**	**176**	**100.0**
City	1,205,700	30.2	21,021	30.4	59	33.5
Suburb	1,391,223	34.9	20,875	30.2	58	33.0
Town	441,385	11.1	7,453	10.8	21	11.9
Rural	950,943	23.8	19,886	28.7	38	21.6

NOTE: For definitions of these urbancentric locales, see https://nces.ed.gov/surveys/urbaned/definitions.asp.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 2-6. Number and percentage of students and schools included in the U.S. PIRLS school sampling frame and number and percentage of schools in the sample, by minority status: 2016

Minority status	Frame				Sample	
	Number of students	Percent	Number of schools	Percent	Number of schools	Percent
Total	**3,989,251**	**100.0**	**69,235**	**100.0**	**176**	**100.0**
Below 15 percent	911,824	22.9	21,535	31.1	35	19.9
15 percent or above	3,077,427	77.1	47,700	68.9	141	80.1

NOTE: Minority status refers to the percentage of Black, Hispanic, Asian and Pacific Islander, and American Indian and Alaska Native students. Black includes African American and Hispanic includes Latino. Racial categories exclude Hispanic origin.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 2-7. **Number and percentage of students and schools included in the U.S. PIRLS school sampling frame, by Census region, poverty level, and school control: 2016**

Census region	Poverty level	School control	Frame				Sample	
			Number of students	Percent	Number of schools	Percent	Number of schools	Percent
Total			**3,989,251**	**100.0**	**69,235**	**100.0**	**176**	**100.0**
Northeast	High	Public	122,497	3.1	1,623	2.3	8	4.5
Midwest	High	Public	146,276	3.7	2,680	3.9	9	5.1
South	High	Public	406,354	10.2	5,635	8.1	24	13.6
West	High	Public	157,138	3.9	2,473	3.6	9	5.1
Northeast	Low	Private	70,356	1.8	3,914	5.7	3	1.7
Midwest	Low	Private	86,064	2.2	4,880	7.0	3	1.7
South	Low	Private	106,130	2.7	5,760	8.3	4	2.3
West	Low	Private	60,932	1.5	3,551	5.1	2	1.1
Northeast	Low	Public	453,403	11.4	6,330	9.1	18	10.2
Midwest	Low	Public	623,919	15.6	9,897	14.3	25	14.2
South	Low	Public	1,016,526	25.5	11,896	17.2	41	23.3
West	Low	Public	739,656	18.5	10,596	15.3	30	17.0

NOTE: For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt. For public schools, high poverty is defined as having 76 percent or more of the students eligible for free or reduced-price lunch, and low poverty is defined as having less than 76 percent eligible. Because no data were available for private schools, all private schools are categorized as low poverty.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

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3. Participation Rates and Nonresponse Bias

To minimize the potential for response biases, the IEA developed participation or response rate standards that apply to all participating education systems and govern whether data are included in the PIRLS 2016 international datasets and the way in which aggregate statistics are presented in the international reports. These standards were set using composites of participation rates at the school, classroom, and student levels, and were calculated with and without the inclusion of substitute schools that were selected to replace schools refusing to participate.

The standards take the following two forms, distinguished primarily by whether meeting the school participation rate of 85 percent requires the counting of substitute schools:

Category 1: Met requirements. Education systems that met all of the following conditions were considered to have fulfilled the IEA requirements: (1) a minimum school participation rate of 85 percent, based on original sampled schools only; and (2) a minimum classroom participation rate of 95 percent, from both original and substitute schools; and (3) a minimum student participation rate of 85 percent, from both original and substitute schools.

Category 2: Met requirements after substitutes. In the case of education systems that did not meet the category 1 requirements, and as long as at least 50 percent of schools in the original sample participated, an education system's data were considered acceptable if the following requirements were met: a minimum combined school, classroom, and student participation rate of 75 percent, based on the product of the participation rates described above. That is, the product of (1), (2), and (3), as defined in the category 1 standard, must be greater than or equal to 75 percent.

Education systems satisfying the category 1 standard were included in the international tabular presentations without annotation. Those able to satisfy only the category 2 standard were included as well but were annotated to indicate their response rate status.

3.1 Exclusions

The national defined target population is described in *Methods and Procedures in PIRLS 2016* (Martin, Mullis, and Hooper 2017). All schools and students excluded from this population are referred to as the "excluded population." Exclusions could occur at the school level, with entire schools being excluded, or within schools, with specific students or entire classrooms excluded. PIRLS 2016 did not provide accommodations for students with disabilities or students who were unable to read or speak the language of the test.

3.1.1 School Exclusions

Countries could exclude schools that

- were geographically inaccessible;

- were of extremely small size;

- offered a curriculum or school structure radically different from the mainstream educational system; or

- provided instruction only to students in the excluded categories defined under "within-school exclusions," such as schools for the blind.

3.1.2 Within-School Exclusions

Countries were asked to adapt the following international within-school exclusion rules to define excluded students:

Students with intellectual disabilities. Students who, in the professional opinion of the school principal or other qualified staff members, were considered to be intellectually disabled or who had been tested psychologically as such. This included students who were emotionally or mentally unable to follow even the general instructions of the test. Students were not to be excluded solely because of poor academic performance or normal disciplinary problems.

Students with functional disabilities. Students who were permanently physically disabled in such a way that they could not perform in the PIRLS testing situation. Functionally disabled students who were able to respond were included in the testing.

Non-native-language speakers. Students who were unable to read or speak the language(s) of the test and were unable to overcome the language barrier of the test. Typically, a student who had received less than 1 year of instruction in the language(s) of the test was excluded.

3.2 PIRLS Participation Rates of U.S. Schools, Classrooms, and Students

The raw numbers on which the various participation rates were based, along with the participation rates themselves, are shown in tables 3-1 and 3-2. To explain how to interpret these participation rates, subsections 3.2.1 through 3.2.5 describe a complete interpretation of the numbers.

Table 3-1. Number of U.S. schools, classrooms, and students participating in PIRLS, and participation rates, for fourth grade: 2016

		Participation rates	
Participation status	Number	Unweighted	Weighted
Schools			
Sampled	176		
Excluded and ineligible	4		
Eligible	172		
Participating	131		
Substitutes	27		
Participating (all schools)	158	92	92
Classrooms in participating schools			
Total	708		
Excluded	18		
Eligible	690		
Sampled	215		
Participating	215	100	100
Students in participating schools			
Sampled	5,056		
Excluded	175		
Eligible	4,722		
Absent	297		
Assessed	4,425	94	94

NOTE: National Center for Education Statistics standards (Standard 1-3-8) indicate that participation rates should be calculated without including substitute schools since substitute schools do not have an independent probability of selection (Seastrom 2014). However, the participation rates shown in this table are those reported by PIRLS and do include substitute schools in the calculations.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS), 2016.

Table 3-2. Number of U.S. schools, classrooms, and students participating in ePIRLS, and participation rates, for fourth grade: 2016

Participation status	Number	Participation rates	
		Unweighted	Weighted
Schools			
Sampled	176		
Excluded and ineligible	4		
Eligible	172		
Participating	128		
Substitutes	25		
Participating (all schools)	153	89	89
Classrooms in participating schools			
Total	701		
Excluded	18		
Eligible	683		
Sampled	208		
Participating	208	100	100
Students in participating schools			
Sampled	4,884		
Excluded	175		
Eligible	4,554		
Absent	464		
Assessed	4,090	90	90

NOTE: NCES standards (Standard 1-3-8) indicate that participation rates should be calculated without including substitute schools since substitute schools do not have an independent probability of selection (Seastrom 2014). However, the participation rates shown in this table are those reported by PIRLS and do include substitute schools in the calculations.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS), 2016.

3.2.1 Interpreting School Participation Rates

Of the 176 schools sampled for PIRLS 2016 in the United States, four schools were marked ineligible because they had closed or did not have any enrolled fourth-grade students. Replacement schools are not to be used as a substitute for schools that are closed or ineligible due to lack of students in the target grade.

Of the remaining 172 schools, a total of 131 originally sampled schools participated in PIRLS 2016, for an unweighted participation rate of 76 percent. The weighted school participation rate, which accounts for nonparticipation and unequal probability of selection due to stratification, was 75 percent.

In addition to the 131 participating original schools, 27 replacement schools also participated, for a total of 158 participating schools. The weighted and unweighted school participation rates with replacement schools were 92 percent.

All schools selected for PIRLS were also asked to participate in ePIRLS. Five of the 158 participating PIRLS schools declined to also participate in ePIRLS. The weighted and unweighted school participation rates for ePIRLS in the final sample with replacement schools were 89 percent.

3.2.2 Interpreting Classroom Participation Rates

In accord with the international requirements, schools agreeing to participate were asked to list their fourth-grade reading classes as the basis for sampling at the classroom level. Schools appeared to be able to identify classes in this way without any problems. A total of 708 classrooms were identified from the 158 participating schools. Schools were then given the opportunity to identify special classes—classes containing all, or a majority of, students with intellectual or functional disabilities, or students who were non-native-language speakers. Although these classes were regarded as eligible, the students as a group were treated as excluded because, in the opinion of the school, their disabilities or language capabilities would render meaningless their performance on the assessment. A total of 18 classrooms were excluded in this way. This left a pool of 690 eligible classrooms from which a sample of 215 classrooms was drawn. All selected classrooms participated in PIRLS.

Subsequently, schools were asked to list the students in each of the 215 sampled classrooms at the fourth grade, along with the teachers who taught reading to these students. Schools were then given the opportunity to identify particular students not suited to take the test because of functional or intellectual disabilities or because they were non-native-language speakers.

3.2.3 Interpreting Student Participation Rates

A total of 5,056 students were selected to participate in PIRLS from the 158 participating schools. Of those students, a total of 175 students (less than one percent) were excluded based on the disability categories described earlier (17 were excluded due to a functional disability, 122 due to an intellectual disability, and 36 due to language issues).

Of the remaining 4,722 students in the eligible sample, some 4,425 students participated, corresponding to weighted and unweighted response rates of 94 percent. From the 153 schools that participated in ePIRLS, 4,090 students participated, for weighted and unweighted response rates of 90 percent.

3.2.4 Combined Participation Rates

The PIRLS 2016 sample met the combined school, classroom, and student weighted participation rate standard of 75 percent used by PIRLS in situations in which it was necessary to recruit substitute schools. The application of international guidelines means, however, that U.S. statistics describing fourth-grade students in PIRLS are annotated in international reports to indicate that coverage of the defined student population was less than the IEA standard of 95 percent and that participation rates were met only after substitute schools were included.

3.2.5 Teacher and Administrator Response Rates

The school administrator at each participating school and the reading teacher for each selected classroom were asked to complete a questionnaire. Of the 158 administrators asked to complete the questionnaire, 150 responded, for a weighted and unweighted response rate of 95 percent. Of the 215 teachers asked to participate, 207 responded, for a weighted and unweighted response rate of 96 percent.

3.2.6 Exclusions in the U.S. National Samples

As noted earlier, schools were given the opportunity to exclude any special classes among the total number of classes in the fourth grade. These classes were made up largely of students with functional or intellectual disabilities or students who were non-native-language speakers, as defined in section 3.1.2. Classes identified in this way were excluded from the class sampling procedure. Subsequently, schools were given the opportunity to exclude students from the sampled classes—essentially, students with functional or intellectual disabilities, or non-native-language-speaking students in the United States who had been mainstreamed.

These procedures resulted in a (weighted) student exclusion rate of 4.85 percent for PIRLS and 4.94 percent for ePIRLS. The desired exclusion rate is five percent or less.

3.3 Participation Rates for All Countries

For comparable school, classroom, and student participation rates in other nations in PIRLS, see exhibits C-2 through C-5 in appendix C of *PIRLS 2016 International Results in Reading* (Mullis et al. 2017).

3.4 Nonresponse Bias Analysis

The accuracy of survey statistics is affected by both random and nonrandom errors. Random errors reduce the precision of survey estimates, and nonrandom errors may result in bias (i.e., estimates that do not converge to the true population parameter as the sample size increases without limit) or loss of precision.

The sources of error in a survey are often dichotomized as sampling and nonsampling errors. Sampling error refers to the error that occurs because the survey is based on a sample of population members rather than the entire population. All other types of errors are nonsampling errors, including survey nonresponse (because of inability to contact sampling members, their refusal to participate in the study, etc.) and measurement errors, such as the errors that occur because the intent of survey questions was not clear to the respondent, because the respondent had insufficient knowledge to answer correctly, or because the data were not captured correctly (e.g., because of recording, editing, or data entry errors).

NCES Statistical Standard 4-4-1 states that "Any survey stage of data collection with a unit or item response rate less than 85 percent must be evaluated for the potential magnitude of nonresponse bias before the data or any analysis using the data may be released. Estimates of survey characteristics for nonrespondents and respondents are required to assess the potential nonresponse bias" (Seastrom 2014). This section describes the nonresponse bias analysis conducted for U.S. PIRLS 2016.

A school respondent is defined as a school that allowed its students to participate. The weighted response rate for the originally sampled schools was 76 percent. After including replacement schools, the response rate was 92 percent. All classes selected within schools participated. The weighted response rate for students in participating schools was 94 percent. Hence, a unit nonresponse bias analysis was conducted only at the school level.

Item response rates were computed using final analysis weights. Item response rates were above 85 percent for all school variables but one. Per NCES Standard 4-4-3, nonresponse bias analyses were conducted for this variable (Seastrom 2014).

Weighted item response rates were above 85 percent for all teacher and student variables.

The school nonresponse bias analysis for PIRLS was conducted for both the original sample and the final sample with replacement schools. Both samples were weighted using base weights, equal to the reciprocal of selection probabilities. For the final sample, base weights for substitute schools were set to equal the base weight of the school they replaced. These analyses describe the bias that may be present due to school nonparticipation and any mitigation of the bias due to using substitute schools. An additional analysis was conducted for the final sample to evaluate any remaining bias after the base weights were adjusted to account for nonresponding schools.

All analyses were conducted using SUDAAN software (Version 11; RTI International 2017) for analyzing data for complex surveys so that standard errors and related statistics correctly account for the sample design. The approach used for estimating standard errors was Taylor series linearization. Note that PIRLS public-use files do not contain the design variables necessary for Taylor series linearization variance estimation due to confidentiality concerns; instead, users are provided with tools for estimating standard errors using jackknife replication weights (described in section 5.11.2).

3.4.1 Methodology

The bias in an estimated mean based on respondents, $\overline{y}_R$ is the difference between the expected value of this mean and the target parameter, π, the population mean. Analysts can estimate the target parameter for variables that are observed for both respondents and nonrespondents as follows: $\hat{\pi} = (1-\eta)\overline{y}_R + \eta\overline{y}_{NR}$, where η is the weighted unit (or item) nonresponse rate. For variables that are from the frame rather than from the sample, analysts can estimate π without sampling error. They can then estimate bias as the difference between the respondent mean and the full-sample mean: $\hat{B}(\overline{y}_R) = \overline{y}_R - \hat{\pi}$. Equivalently, bias can be estimated as the difference between the mean for respondents and the mean for nonrespondents, multiplied by the weighted nonresponse rate: $\hat{B}(\overline{y}_R) = \eta(\overline{y}_R - \overline{y}_{NR})$.

Relative bias provides a measure of the magnitude of the bias relative to the sample mean and is estimated as $\widehat{RB}(\overline{y}_R) = \hat{B}(\overline{y}_R)/\hat{\pi}$. Effect size, as defined by Cohen (1988), is another measure of potential nonresponse bias. For continuous variables, it is computed as the estimated bias divided by the full-sample standard deviation: $\hat{B}(\overline{y}_R)/\hat{\sigma}_y$. For categorical variables, it is computed as $\sqrt{\Sigma_i (p_{0i} - p_{1i})^2 / p_{0i}}$, where p_{0i} is the full-sample proportion in category i, and p_{1i} is the respondent

proportion in category i. Effect sizes can be used in combination with bias and relative bias estimates and significance tests to evaluate the potential for nonresponse bias. Cohen classified an effect size as "small" when it is about 0.10, as "medium" when it is about 0.30, and as "large" when it is about 0.50.

Nonresponse bias can only be measured for variables known for both respondents and nonrespondents; hence, analyses involve variables available on the sampling frame. The extent to which the analyses accurately detect bias depends on the degree to which the school characteristics available on the frame are related to other survey items. The variables available for all schools in either the 2014–15 CCD or 2013–14 PSS that were used in the bias analysis include some of the same school characteristics used to stratify the sampling frame (described in section 2.2.1):

- school control (public or private);

- locale (city, suburb, town, or rural);

- Census region (Northeast, Midwest, South, West); and

- poverty level (high or low).

In addition, the following school characteristics were used:

- percent free or reduced-price lunch eligibility (public schools only);

- fourth-grade enrollment;

- total school enrollment; and

- percentage of students in seven race/ethnicity categories (White non-Hispanic, Black non-Hispanic, Hispanic, Asian, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, or Two or more races).

For continuous frame variables, estimates of bias, relative bias, and effect size were calculated. Bias was tested for statistical significance using t-tests. For categorical frame variables, bias and relative bias were estimated for each variable category, effect size was calculated, and chi-square tests for independence[7] between response status and frame characteristic were conducted.

The bias analyses for the original and final samples, prior to weight adjustment for nonresponse, were supplemented by logistic regressions predicting response

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[7] The Wald chi-square test, analogous to the Pearson chi-square test for nonsurvey data, was used.

propensity from the available frame variables. These were used to examine the joint relationship of the frame variables with response status. Because the race/ethnicity percentages added up to 100 percent for each school and were linearly dependent, they could not all be included in the same model, so two logistic models were run. The first included all race/ethnicity categories excluding percent White non-Hispanic; and the second also excluded percent White non-Hispanic but used the summed percentage of the other six race/ethnicity categories. For categorical predictor variables, the largest category was assigned to be the reference level.

3.4.2 School Nonresponse Bias Analysis

This section summarizes the results of the three school nonresponse bias analyses: (1) evaluation of bias due to school nonresponse in the original sample; (2) evaluation of bias due to school nonresponse after replacement schools were used; and (3) bias due to school nonresponse after accounting for replacement schools and nonresponse weight adjustments.

3.4.2.1 *Bias analysis for original sample*

This analysis evaluated the potential for bias due to school nonresponse. Out of the original sample of 172 eligible schools, 131 agreed to participate.

Tables 3-3 through 3-6 provide estimates of bias, relative bias, and effect size, as well as the *p*-values from chi-square tests of independence. Overall the differences between the eligible sample and participating sample were small to moderate. One categorical variable, Census region, had a statistically significant relationship with participation status, shown in table 3-3. Compared to the eligible sample, the participating schools included fewer schools in the Midwest and West Census regions and more in the South region. Among continuous variables, the differences between the means for the eligible and participating samples were statistically significant for percentage of Black non-Hispanic students (table 3-5) and percentage of students eligible for free and reduced-price lunch (table 3-6). The means for both variables were slightly higher among participating schools. Bias for free and reduced-price lunch is computed using the 162 eligible public schools, out of which 123 participated.

When the relationships between the frame variables and participation status were considered jointly in a logistic model, many coefficient estimates were close to zero, as seen in table 3-7 and table 3-8. The only coefficient statistically different from zero was the coefficient for the South Census region in the second model (table 3-7).

Table 3-3. **Percentage distribution of eligible and participating schools in the U.S. PIRLS original sample and nonresponse bias indicators, by selected school characteristics: 2016**

School characteristic	Sample schools		Bias	Relative bias	Chi-square p-value	Effect size
	Eligible (percent)	Participating (percent)				
School control						
Public	80.15	77.84	-2.31	-0.03	0.4063	0.06
Private	19.85	22.16	2.31	0.12		
Locale						
City	35.40	39.85	4.45	0.13	0.0787	0.15
Suburb	33.61	26.59	-7.02	-0.21		
Town	13.93	15.93	2.00	0.14		
Rural	17.06	17.63	0.57	0.03		
Census region						
Northeast	15.48	15.38	-0.11	-0.01	0.0002	0.21
Midwest	26.34	20.45	-5.89	-0.22		
South	37.94	47.32	9.38	0.25		
West	20.24	16.85	-3.39	-0.17		
Poverty level						
High	72.84	69.32	-3.52	-0.05	0.0587	0.08
Low	27.16	30.68	3.52	0.13		

NOTE: A high-poverty public school is defined as one in which 76 percent or more of the students are eligible for participation in the free or reduced-price lunch program, and low poverty is defined as having less than 76 percent eligible. All private schools are treated as low-poverty schools. For definitions of Locale, see https://nces.ed.gov/surveys/urbaned/definitions.asp. For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt. Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as the square root of the sum over categories of the squared bias estimates over full-sample means. The chi-square p-value is the result of a test for independence between participation status and the variable indicated. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-4. **Mean enrollment of eligible and participating schools in the U.S. PIRLS original sample and nonresponse bias indicators: 2016**

Enrollment level	Sample schools		Bias	Relative bias	t test p-value	Effect size
	Eligible (mean)	Participating (mean)				
Total school	431.06	426.17	4.88	0.01	0.6534	0.02
Fourth grade	65.67	63.92	1.75	0.03	0.3637	0.04

NOTE: Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The p-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA) Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-5.   Mean percentage of students in eligible and participating schools in the U.S. PIRLS original sample and nonresponse bias indicators, by race/ethnicity: 2016

Race/ethnicity	Sample schools		Bias	Relative bias	*t* test *p*-value	Effect size
	Eligible (percent)	Participating (percent)				
White, non-Hispanic	50.87	49.37	1.50	0.03	0.4125	0.05
Black, non-Hispanic	17.29	19.89	-2.60	-0.15	0.0276	0.10
Hispanic	19.94	18.25	1.68	0.08	0.2134	0.07
Asian	3.98	3.60	0.38	0.10	0.3268	0.04
American Indian or Alaska Native	1.86	2.29	-0.43	-0.23	0.1044	0.05
Native Hawaiian or Pacific Islander	0.23	0.19	0.04	0.19	0.3861	0.06
Two or more races	3.92	3.95	-0.03	-0.01	0.8838	0.01

NOTE: Black includes African American, and Hispanic includes Latino. Racial categories exclude Hispanic origin. Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The *p*-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-6.   Mean percentage of students eligible for free or reduced-price lunch, in eligible and participating public schools in the U.S. PIRLS original sample and nonresponse bias indicators: 2016

School characteristic	Sample schools		Bias	Relative bias	*t* test *p*-value	Effect size
	Eligible (percent)	Participating (percent)				
Percentage of students eligible for free or reduced-price lunch	59.33	62.63	-3.31	-0.06	0.0291	0.09

NOTE: Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The *p*-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-7.   Logistic regression model parameter estimates (with six race/ethnicity variables) using the U.S. PIRLS original sample and nonresponse bias indicators: 2016

Parameter	Parameter estimate	Standard error	*t* test for H_0: parameter = 0	*p*-value
Intercept	1.37	1.11	1.2379	0.2182
Locale: City	0.22	0.87	0.2506	0.8025
Locale: Suburb	-1.08	0.82	-1.3141	0.1913
Locale: Town	0.60	1.07	0.5602	0.5764
School control: Private	0.73	0.93	0.7837	0.4347
Poverty level: High	1.19	0.71	1.6734	0.0969
Census region: Northeast	-0.22	0.89	-0.2452	0.8067
Census region: Midwest	-1.56	0.97	-1.6098	0.1101
Census region: South	1.44	0.85	1.6811	0.0953
Total school enrollment	0.00	0.00	0.0664	0.9472
Fourth-grade enrollment	0.00	0.01	0.1309	0.8960
Percent Black, non-Hispanic	0.01	0.01	0.6120	0.5417
Percent Hispanic	-0.02	0.01	-1.8251	0.0705
Percent Asian	0.01	0.03	0.2245	0.8227
Percent American Indian or Alaska Native	0.07	0.05	1.4477	0.1503
Percent Native Hawaiian or Pacific Islander	-0.20	0.17	-1.1914	0.2359
Percent Two or more races	0.05	0.06	0.7457	0.4573

NOTE: A high-poverty public school is defined as one in which 76 percent or more of the students are eligible for participation in the free or reduced-price lunch program, and low poverty is defined as having less than 76 percent eligible. All private schools are treated as low-poverty schools. For definitions of Locale, see https://nces.ed.gov/surveys/urbaned/definitions.asp. For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt. The response variable is participation status. The largest categories for each variable were selected as the reference level. School sampling weights were used.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-8. Logistic regression model parameter estimates (with summed race/ethnicity percentages) using the U.S. PIRLS original sample and nonresponse bias indicators: 2016

Parameter	Parameter estimate	Standard error	*t* test for H$_0$: parameter = 0	*p*-value
Intercept	0.72	1.01	0.7167	0.4749
Locale: City	0.55	0.79	0.6966	0.4874
Locale: Suburb	-0.73	0.73	-1.0096	0.3147
Locale: Town	0.92	1.02	0.9011	0.3693
School control: Private	0.57	0.92	0.6258	0.5326
Poverty level: High	0.83	0.65	1.2728	0.2056
Census region: Northeast	0.49	0.70	0.7024	0.4838
Census region: Midwest	-0.57	0.65	-0.8776	0.3819
Census region: South	2.17	0.68	3.1877	0.0018
Total school enrollment	0.00	0.00	0.3086	0.7582
Fourth-grade enrollment	-0.00	0.01	-0.3954	0.6933
Summed race/ethnicity percentage	-0.01	0.01	-0.5885	0.5573

NOTE: A high-poverty public school is defined as one in which 76 percent or more of the students are eligible for participation in the free or reduced-price lunch program, and low poverty is defined as having less than 76 percent eligible. All private schools are treated as low-poverty schools. For definitions of Locale, see https://nces.ed.gov/surveys/urbaned/definitions.asp. For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt. The response variable is participation status. The largest categories for each variable were selected as the reference level. School sampling weights were used.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

3.4.2.2   *Bias analysis for final sample (with replacement schools)*

This analysis evaluated the potential for bias due to school nonresponse, after substituting nonresponding schools with replacement schools. Some replacement schools were also nonrespondents. If the first replacement school was a nonrespondent, then the second replacement school was contacted. In total, 28 first or second replacement schools participated, yielding 158 total participating schools out of 172 eligible schools.

Compared to the original sample analysis described in section 3.4.2.1, estimates of bias, relative bias, and effect size were smaller for virtually all variables in the sample with replacement schools (table 3-9 through 3-12). Census region was the only variable remaining with a statistically significant relationship with participation status. Similar to the original sample, schools in the South Census region are represented at a higher rate among participating schools than among the overall eligible schools, while schools in other regions are represented at slightly lower rates.

When the relationships between the frame variables and participation status were considered jointly in a logistic model, the results differ from the first analysis without replacement schools (tables 3-7 and 3-8). Census region no longer had any statistically significant coefficients in either model; however, in the first model

(table 3-13), the coefficient for fourth-grade enrollment was significantly different from zero, suggesting that schools with higher fourth-grade enrollment are associated with higher propensity to respond. In the second model (table 3-14), the coefficient for total school enrollment was statistically different from zero; however, the estimated coefficient is nearly indistinguishable from zero.

Table 3-9. Percentage distribution of eligible and participating schools in the U.S. PIRLS final sample, by selected school characteristics and nonresponse bias indicators: 2016

School characteristic	Sample schools		Bias	Relative bias	Chi-square *p*-value	Effect size
	Eligible (percent)	Participating (percent)				
School control						
Public	80.15	79.35	-0.80	-0.01	0.3771	0.02
Private	19.85	20.65	0.80	0.04		
Locale						
City	35.13	35.69	0.56	0.02	0.6219	0.03
Suburb	32.99	31.74	-1.25	-0.04		
Town	13.72	14.50	0.77	0.06		
Rural	18.15	18.07	-0.08	-0.00		
Census region						
Northeast	15.48	15.26	-0.22	-0.01	0.0085	0.07
Midwest	26.34	25.23	-1.11	-0.04		
South	37.94	41.29	3.35	0.09		
West	20.24	18.22	-2.02	-0.10		
Poverty level						
High	72.78	72.65	-0.12	-0.00	0.9019	0.00
Low	27.22	27.35	0.12	0.00		

NOTE: A high-poverty public school is defined as one in which 76 percent or more of the students are eligible for participation in the free or reduced-price lunch program, and low poverty is defined as having less than 76 percent eligible. All private schools are treated as low-poverty schools. For definitions of Locale, see https://nces.ed.gov/surveys/urbaned/definitions.asp. For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt. Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as the square root of the sum over categories of the squared bias estimates over full-sample means. The chi-square *p*-value is the result of a test for independence between participation status and the variable indicated. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-10. Mean enrollment of eligible and participating schools in the U.S. PIRLS final sample and nonresponse bias indicators: 2016

Enrollment level	Sample schools		Bias	Relative bias	t test p-value	Effect size
	Eligible (mean)	Participating (mean)				
Total school	431.63	429.14	2.48	0.01	0.6153	0.01
Fourth grade	64.16	64.33	-0.18	-0.00	0.8319	0.00

NOTE: Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The p-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-11. Mean percentage of students in eligible and participating schools in the U.S. PIRLS final sample and nonresponse bias indicators, by race/ethnicity: 2016

Race/ethnicity	Sample schools		Bias	Relative bias	t test p-value	Effect size
	Eligible (percent)	Participating (percent)				
White, non-Hispanic	51.58	51.84	-0.26	-0.01	0.7733	0.01
Black, non-Hispanic	17.05	17.81	-0.76	-0.04	0.1327	0.03
Hispanic	19.37	18.58	0.79	0.04	0.3026	0.03
Asian	4.10	3.64	0.46	0.11	0.1268	0.05
American Indian or Alaska Native	1.87	2.01	-0.14	-0.07	0.0922	0.02
Native Hawaiian or Pacific Islander	0.18	0.17	0.01	0.04	0.3779	0.02
Two or more races	3.88	3.84	0.04	0.01	0.6557	0.01

NOTE: Black includes African American, and Hispanic includes Latino. Racial categories exclude Hispanic origin. Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The p-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-12. Mean percentage of students eligible for free or reduced-price lunch, in eligible and participating public schools in the U.S. PIRLS final sample and nonresponse bias indicators: 2016

School characteristic	Sample schools		Bias	Relative bias	t test p-value	Effect size
	Eligible (percent)	Participating (percent)				
Percentage of students eligible for free or reduced-price lunch	58.66	59.45	-0.79	-0.01	0.3146	0.02

NOTE: Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The p-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-13. Logistic regression model parameter estimates (with six race/ethnicity variables) using the U.S. PIRLS final sample and nonresponse bias indicators: 2016

Parameter	Parameter estimate	Standard error	t test for H_0: parameter = 0	*p*-value
Intercept	2.80	1.55	1.8058	0.0734
Locale: City	0.44	1.17	0.3723	0.7103
Locale: Suburb	-0.06	0.93	-0.0666	0.9470
Locale: Town	0.83	1.35	0.6128	0.5411
School control: Private	1.29	1.68	0.7691	0.4433
Poverty level: High	0.04	1.09	0.0356	0.9717
Census region: Northeast[1]	-0.29	0.93	-0.3101	0.7570
Census region: Midwest[1]	-1.14	0.97	-1.1753	0.2422
Total school enrollment	-0.00	0.00	-1.8551	0.0660
Fourth-grade enrollment	0.03	0.01	2.3977	0.0180
Percent Black, non-Hispanic	0.02	0.03	0.8511	0.3964
Percent Hispanic	-0.02	0.02	-0.9413	0.3484
Percent Asian	-0.04	0.02	-1.8503	0.0667
Percent American Indian or Alaska Native	0.50	0.62	0.8000	0.4253
Percent Native Hawaiian or Pacific Islander	-0.24	0.36	-0.6809	0.4972
Percent Two or more races	-0.10	0.07	-1.4941	0.1378

[1] There are no nonparticipating schools in the South Census region, so the participating South schools were combined with schools in the West region.

NOTE: Black includes African American, and Hispanic includes Latino. Racial categories exclude Hispanic origin. A high-poverty public school is defined as one in which 76 percent or more of the students are eligible for participation in the free or reduced-price lunch program, and low poverty is defined as having less than 76 percent eligible. All private schools are treated as low-poverty schools. For definitions of Locale, see https://nces.ed.gov/surveys/urbaned/definitions.asp. For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt. The response variable is participation status. The largest categories for each variable were selected as the reference level. School sampling weights were used.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-14. Logistic regression model parameter estimates (with summed race/ethnicity percentages) using the U.S. PIRLS final sample and nonresponse bias indicators: 2016

Parameter	Parameter estimate	Standard error	t test for H_0: parameter = 0	p-value
Intercept	3.06	1.47	2.0812	0.0395
Locale: City	0.40	1.17	0.3392	0.7350
Locale: Suburb	-0.35	0.92	-0.3856	0.7005
Locale: Town	0.87	1.45	0.6044	0.5467
School control: Private	1.04	1.41	0.7325	0.4653
Poverty level: High	0.68	0.93	0.7270	0.4686
Census region: Northeast[1]	-0.63	0.86	-0.7408	0.4603
Census region: Midwest[1]	-1.17	0.75	-1.5558	0.1224
Total school enrollment	-0.00	0.00	-2.2069	0.0292
Fourth-grade enrollment	0.02	0.01	1.8810	0.0624
Summed race/ethnicity percentage	-0.01	0.01	-0.8650	0.3887

[1] There are no nonparticipating schools in the South Census region, so the participating South schools were combined with schools in the West region.
NOTE: A high-poverty public school is defined as one in which 76 percent or more of the students are eligible for participation in the free or reduced-price lunch program, and low poverty is defined as having less than 76 percent eligible. All private schools are treated as low-poverty schools. For definitions of Locale, see https://nces.ed.gov/surveys/urbaned/definitions.asp. For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt. The response variable is participation status. The largest categories for each variable were selected as the reference level. School sampling weights were used.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

3.4.2.3   *Bias analysis for final sample with nonresponse adjusted weights*

This analysis evaluated the potential bias due to nonresponding schools, after accounting for the use of replacement schools and nonresponse weight adjustments. The analyses conducted were the same as for the final sample before nonresponse adjustment (section 3.4.2.2), except that the participating sample was weighted by the final school analysis weights, which have been adjusted for nonresponse for the purpose of reducing nonresponse bias. The logistic regression conducted in the previous analyses is not practical using analysis weights because the weights for the nonresponding schools are zero.

The evidence of nonresponse bias prior to nonresponse adjustment was small for many variables prior to the nonresponse adjustment; hence, there was little change in the results for these variables. Most estimates of bias, relative bias, and effect size (shown in tables 3-15 through 3-18) were similar to or smaller than the estimates in the bias analysis for the final sample prior to nonresponse adjustment (tables 3-9 through 3-12); a few increased slightly in magnitude but were still quite small and not statistically significant. All effect sizes for differences between the eligible and participating schools were less than 0.05, which is generally considered quite small (Cohen 1988).

The only statistically significant result is for the chi-square test of independence for response status and Census region (table 3-15). The South and Northeast Census regions had slightly higher representation among the participating schools compared to eligible schools overall, while the Midwest and West Census regions had slightly lower representation. The category-level bias estimates and effect size for Census region were still smaller compared to the analysis for the final sample before nonresponse adjustment (table 3-9). The estimated bias, relative bias, and effect size were all smaller than they were prior to nonresponse bias adjustment.

Table 3-15. Percentage distribution of eligible and participating schools in the U.S. PIRLS nonresponse-adjusted sample, by selected categorical variables and nonresponse bias indicators: 2016

School characteristic	Sample schools		Bias	Relative bias	Chi-square *p*-value	Effect size
	Eligible (percent)	Participating (percent)				
School control						
Public	80.15	79.06	-1.09	-0.01	0.3407	0.03
Private	19.85	20.94	1.09	0.06		
Locale						
City	35.13	36.09	0.96	0.03	0.5425	0.04
Suburb	32.99	31.74	-1.26	-0.04		
Town	13.72	14.65	0.93	0.07		
Rural	18.15	17.52	-0.63	-0.03		
Census region						
Northeast	15.48	15.93	0.45	0.03	0.0097	0.02
Midwest	26.34	25.94	-0.39	-0.01		
South	37.94	38.65	0.71	0.02		
West	20.24	19.47	-0.77	-0.04		
Poverty level						
High	72.78	72.28	-0.49	-0.01	0.8845	0.01
Low	27.22	27.72	0.49	0.02		

NOTE: A high-poverty public school is defined as one in which 76 percent or more of the students are eligible for participation in the free or reduced-price lunch program, and low poverty is defined as having less than 76 percent eligible. All private schools are treated as low-poverty schools. For definitions of Locale, see https://nces.ed.gov/surveys/urbaned/definitions.asp. For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt. Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as the square root of the sum over categories of the squared bias estimates over full-sample means. The chi-square *p*-value is the result of a test for independence between participation status and the variable indicated. All calculations use school sampling weights for the full eligible sample and nonresponse-adjusted weights for the participating sample.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-16. Mean enrollment of eligible and participating schools in the U.S. PIRLS nonresponse-adjusted sample and nonresponse bias indicators: 2016

| | Sample schools | | | | | |
Enrollment level	Eligible (mean)	Participating (mean)	Bias	Relative bias	t test p-value	Effect size
Total school	431.63	426.67	4.96	0.01	0.9178	0.02
Fourth grade	64.16	63.97	0.19	0.00	0.9824	0.00

NOTE: Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The p-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights for the full eligible sample and nonresponse-adjusted weights for the participating sample.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-17. Mean percentage of students in eligible and participating schools in the U.S. PIRLS nonresponse-adjusted sample and nonresponse bias indicators, by race/ethnicity: 2016

| | Sample schools | | | | | |
Race/ethnicity	Eligible (percent)	Participating (percent)	Bias	Relative bias	t test p-value	Effect size
White, non-Hispanic	51.58	51.65	-0.07	-0.00	0.9921	0.00
Black, non-Hispanic	17.05	17.45	-0.40	-0.02	0.9478	0.02
Hispanic	19.37	18.84	0.53	0.03	0.8893	0.02
Asian	4.10	3.70	0.40	0.10	0.7815	0.05
American Indian or Alaska Native	1.87	2.23	-0.36	-0.19	0.8444	0.04
Native Hawaiian or Pacific Islander	0.18	0.18	-0.00	-0.02	0.9682	0.01
Two or more races	3.88	3.81	0.07	0.02	0.9429	0.02

NOTE: Black includes African American, and Hispanic includes Latino. Racial categories exclude Hispanic origin. Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The p-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights for the full eligible sample and nonresponse-adjusted weights for the participating sample.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-18. Mean percentage of students eligible for free or reduced-price lunch, in eligible and participating public schools in the U.S. PIRLS nonresponse-adjusted sample and nonresponse bias indicators: 2016

| | Sample schools | | | | | |
School characteristic	Eligible (percent)	Participating (percent)	Bias	Relative bias	t test p-value	Effect size
Percentage of students eligible for free or reduced-price lunch	58.66	59.59	-0.92	-0.02	0.8465	0.03

NOTE: Eligible schools are those with any fourth-grade students. Participating schools are those in which students were assessed. Bias is estimated as the difference between the participant and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The p-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights for the full eligible sample and nonresponse-adjusted weights for the participating sample.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

3.4.3 Item Nonresponse Bias

Previous iterations of PIRLS did not require item nonresponse bias analysis because all items had weighted response rates over 85 percent. For PIRLS 2016, one school questionnaire item, indicating the presence of someone to assist with homework if a dedicated place for homework was present (ACBG08B), had a response rate of 84.9 percent; hence, a nonresponse bias analysis was required for this item. Although there were 158 participating schools, only 150 returned the school questionnaire. The eight schools that participated but did not complete the survey are considered nonrespondents for all items. Because ACBG08B was not defined for the 71 schools that responded that they did not have a dedicated space for homework (ACBG08A), the questionnaire nonrespondents comprised 8 of the 11 item nonrespondents. The remaining three nonrespondents responded to only a few questions, so that nonresponse for this item was due largely to questionnaire nonresponse rather than the nature of this particular question.

The procedures used for this bias analysis were the same as those described above for the school nonresponse bias analysis. The analysis was conducted on the final sample with replacement schools using school base weights. Analysis weights were not used because item nonresponse bias analyses included unit nonrespondents, in accordance with NCES standards. None of the categorical frame variables had statistically significant relationships with item response (table 3-19). For the continuous variables (tables 3-20 to 3-22), bias estimates for percentage of Black non-Hispanic and percentage of Asian students were statistically significant. Compared to all eligible schools, participating schools had, on average, slightly higher percentage enrollment of Black non-Hispanic students and slightly lower percentage enrollment of Asian students.

Table 3-19. Percentage distribution of schools eligible for and with responses for ACBG08B in the U.S. PIRLS final sample and nonresponse bias indicators, by selected school characteristics: 2016

School characteristic	Sample schools		Bias	Relative bias	Chi-square *p*-value	Effect size
	Eligible (percent)	Responding (percent)				
School control						
Public	75.09	75.57	0.47	0.01	0.9161	0.01
Private	24.91	24.43	-0.47	-0.02		
Locale						
City	46.03	50.59	4.57	0.10	0.3829	0.14
Suburb	25.86	21.73	-4.13	-0.16		
Town	11.97	14.16	2.19	0.18		
Rural	16.15	13.52	-2.63	-0.16		
Census region						
Northeast	13.31	12.32	-0.99	-0.07	0.1185	0.19
Midwest	25.01	19.72	-5.28	-0.21		
South	40.67	49.56	8.89	0.22		
West	21.01	18.40	-2.62	-0.12		
Poverty level						
High	70.18	68.52	-1.66	-0.02	0.6260	0.04
Low	29.82	31.48	1.66	0.06		

NOTE: A high-poverty public school is defined as one in which 76 percent or more of the students are eligible for participation in the free or reduced-price lunch program, and low poverty is defined as having less than 76 percent eligible. All private schools are treated as low-poverty schools. For definitions of Locale, see https://nces.ed.gov/surveys/urbaned/definitions.asp. For definitions of Census regions, see https://www2.census.gov/geo/docs/maps-data/maps/reg_div.txt. Eligible schools are those with any fourth-grade students. Responding schools are those in which students were assessed. Bias is estimated as the difference between the respondent and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as the square root of the sum over categories of the squared bias estimates over full-sample means. The chi-square *p*-value is the result of a test for independence between respondent status and the variable indicated. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-20. Mean enrollment of schools eligible for and with responses for ACBG08B in the U.S. PIRLS final sample and nonresponse bias indicators: 2016

Enrollment level	Sample schools		Bias	Relative bias	*t* test *p*-value	Effect size
	Eligible (mean)	Responding (mean)				
Total school	426.49	436.03	-9.54	-0.02	0.5952	0.04
Fourth grade	60.95	62.34	-1.39	-0.02	0.6563	0.03

NOTE: Eligible schools are those with any fourth-grade students. Responding schools are those that responded to the item. Bias is estimated as the difference between the respondent and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The *p*-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-21. Mean percentage of students in schools eligible for and with responses for ACBG08B in the U.S. PIRLS final sample and nonresponse bias indicators, by race/ethnicity: 2016

Race/ethnicity	Sample schools		Bias	Relative bias	t test p-value	Effect size
	Eligible (percent)	Responding (percent)				
White, non-Hispanic	43.79	41.62	2.17	0.05	0.4233	0.07
Black, non-Hispanic	19.94	23.85	-3.91	-0.20	0.0273	0.14
Hispanic	23.57	24.57	-1.00	-0.04	0.5754	0.04
Asian	3.90	2.37	1.53	0.39	0.0431	0.19
American Indian or Alaska Native	2.56	2.60	-0.04	-0.01	0.9523	0.00
Native Hawaiian or Pacific Islander	0.21	0.24	-0.02	-0.11	0.3650	0.04
Two or more races	3.50	2.57	0.93	0.27	0.1223	0.22

NOTE: Black includes African American, and Hispanic includes Latino. Racial categories exclude Hispanic origin. Eligible schools are those with any fourth-grade students. Responding schools are those that responded to the item. Bias is estimated as the difference between the respondent and eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The p-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Table 3-22. Mean percentage of students eligible for free and reduced price lunch in schools eligible for and with responses for ACBG08B in the U.S. PIRLS final sample and nonresponse bias indicators: 2016

School characteristic	Sample schools		Bias	Relative bias	t test p-value	Effect size
	Eligible (percent)	Responding (percent)				
Percentage of students eligible for free or reduced-price lunch	63.49	65.82	-2.33	-0.04	0.2097	0.06

NOTE: Eligible schools are those with any fourth-grade students. Responding schools are those that responded to the item. Bias is estimated as the difference between the respondent and the eligible sample estimates. The relative bias is calculated as the estimated bias divided by the eligible sample estimate. Effect size is calculated as estimated bias divided by estimated standard deviation. The p-value reported is the result of the significance test for the difference between bias and zero. All calculations use school sampling weights.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

3.4.4 Summary

The school-level bias analysis found that some statistically significant bias estimates remained after nonresponse adjustment; however, the magnitudes of these bias estimates were quite small. Nonetheless, analysts may want to take these results into consideration when analyzing the data. Overall, the magnitudes of the estimated differences between the participating schools and the full eligible sample were smaller when replacement schools and nonresponse weight adjustments were used. One survey item had a response rate below 85 percent and required a nonresponse bias analysis. This analysis found statistically significant differences between responding and nonresponding schools for two frame variables. The extent to which the results of these bias analyses can be applied to analyses of survey items depend on the extent to which the items are correlated with the frame variables used in these analyses.

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4. Survey Operations

This chapter describes data collection and related activities for PIRLS 2016 in the United States. These activities included recruitment of schools, sampling of students within schools, development of the instruments used, field operations undertaken to administer the assessment, postassessment activities associated with scoring and data entry, and several activities associated with the preparation of the data to meet international standards.

4.1 Recruiting Districts and Schools

The established protocol for seeking the participation of schools in studies such as PIRLS, where participation is voluntary, is to (1) notify state education authorities of the intention to approach schools within their jurisdiction, (2) inform authorities at the district level that schools within their districts are being sampled, and (3) contact the sampled schools. Participation may be refused at any of these levels, so several considerations were important in this context, specifically the need to establish the value of participation; establish the timing of the assessment window in conjunction with mandatory federal, state, and local assessments; and address concerns about the burden on schools. In the case of Catholic schools, the diocese was informed, and schools were then contacted. Nonreligious affiliated private schools were contacted directly.

Recruitment activities spanned April 2015 through May 2016, as shown in exhibit 1-1 in chapter 1.

The recruitment for PIRLS 2016 benefited from increased involvement at the state level. NAEP state coordinators within each state helped to secure participation of sampled public schools in their states.

4.1.1 Contacting States

Schools from 48 states were sampled for PIRLS. The chief state school officer and state assessment director in each of the 48 states with at least one school sampled for PIRLS were contacted beginning in April 2015. State contacting materials included a letter from NCES, a study brochure, and PIRLS Frequently Asked Questions (FAQ). A copy of these materials is provided in appendix A.

A webinar was conducted for NAEP state coordinators in each state to explain the study and enlist their help to secure school participation. These NAEP state coordinators helped to secure support from their state superintendent in many instances.

4.1.2 Contacting Districts

After the states were informed, similar packages of advance materials were sent to the superintendent of each district (or diocese) containing sampled schools. A copy of the letter sent to districts is provided as exhibit A-2 in appendix A.

If the NAEP state coordinator was able to secure support from the state, the NAEP coordinator made this contact and included a letter from the state encouraging district and school participation in the study.

In each case, field staff made follow-up calls to district contacts after a few days to discuss the study and answer questions. Four school districts required a formal application process and school board approval. Several school districts had specific security requirements, such as a background check and fingerprinting, in addition to the Position of Trust clearance and fingerprints required to work on NCES studies. Where this was required, RTI complied with all district-level security requirements.

During the recruitment period, if a school district or a sampled school in a cooperating district refused to participate and was judged to be a firm refusal, a similar district package was sent out to the district of the first substitute school linked to the sampled school. A parallel procedure was adopted with the second substitute district and school in those cases where a first substitute school refused to participate.

4.1.3 Contacting Schools

After district approval was secured, schools were contacted with an initial school information packet. Private schools and some parochial schools not linked with a diocese were contacted directly. Because district approvals were received on a flow basis, the school recruitment package was also sent on a flow basis after district approval was received. A copy of the school recruitment letter is shown as exhibit A-3 in appendix A.

After a few days, a member of RTI's recruitment team contacted the school to discuss the school's participation in PIRLS. In-person visits were made in a small number of schools where efforts to secure participation proved difficult.

Nomination of school coordinator. School principals were asked to identify an individual within the school who would act as the PIRLS school coordinator. Principals, assistant principals, teachers, and guidance counselors typically served in this role. School coordinator responsibilities are described in exhibit A-5 of appendix A and included:

- providing a list of all fourth-grade classrooms using the Class Listing Form and identifying classrooms to be excluded (see exhibit 4-1);

- completing the Student Listing Form for the selected class(es) and identifying any student exclusions (see exhibit 4-2);

- coordinating the date, time, and location of the student session;

- determining the type of permission form to be distributed to students (implicit vs explicit permission), shown in exhibits A-8 and A-9 of appendix A;

- distributing permission forms to students in selected classrooms and monitoring the return of signed forms from parents;

- coordinating the distribution and completion of the administrator and teacher questionnaires (Appendix C);

- notifying and reminding teachers and students about the sessions; and

- maintaining any confidential files for one year and then destroying them.

4.1.4 Respondent Incentives

After the assessment, schools and school coordinators were paid incentives of $200 and $100, respectively. School coordinators received an additional $50 for assisting with ePIRLS. Students each received a plastic watch. Participating teachers received $20.

4.1.5 Difficulties in Gaining Cooperation

Gaining cooperation for voluntary studies has become increasingly challenging. Districts and schools had common reasons for refusing to participate, which included

- too many other high-stakes assessments for the students;

- loss of instructional time;

- burden on school staff and students; and

- limited benefit for students and schools.

To increase participation among original sample schools, a subset of refusing schools were offered an $800 incentive rather than the $200 incentive. Of the 19 schools offered the increased incentive, 11 schools agreed to participate for the increased incentive. Five schools agreed to participate in PIRLS but declined to participate in ePIRLS because it added an additional day of data collection.

4.1.6 Monitoring the Recruiting Progress

RTI used its School Contacting System (SCS) to document and monitor recruitment progress. All contacts with states, school districts, and schools are documented in the SCS. Recruiters updated status codes for each school district and school to indicate whether the school was participating, refusing, or if recruitment was still in progress. Reports were generated daily to monitor recruitment progress. NAEP state coordinators used a special template similar to the SCS to monitor the recruitment status of public schools in their states.

4.2   Sampling Students Within Schools

As previously mentioned, school coordinators were asked to provide a list of all fourth-grade classrooms and, once classrooms were selected, provide a list of students in each classroom. One to two classrooms from each participating school were selected to participate in PIRLS. This two-stage process was used to sample the students to participate in PIRLS.

RTI used software developed by the IEA Data Processing Center to sample classrooms. This software, WinW3S (IEA DPC 2015), provided forms generation, data entry, class sampling, student sampling, student-teacher linkages, random assignment of assessment booklets to students, production of various survey tracking forms, and printing of labels for test instruments and questionnaires. Each participating country used WinW3S to ensure standardization of these procedures.

4.2.1 Obtaining Class Lists from Schools and Class Sampling

Each school was asked to provide a list of fourth-grade classrooms at the school, including the number of students in the class and the teacher's name. A Class Listing

Form (CLF) was provided for this purpose as shown in exhibit 4-1. For most schools, it reduced the burden and expedited the process by having the school coordinator provide the class listing information to the RTI recruiter by telephone in lieu of completing and submitting the form. The RTI recruiter entered the information into WinW3S in the order in which the classes were reported on the phone.

During sampling, StatsCanada designated each school to have either one or two classes selected based on the expected enrollment at the school. This information was populated in WinW3S prior to the software being received by RTI. WinW3S generated an equal-probability sample of one to two classes (or pseudo-classes) whenever possible based on the information in the CLF.

Exhibit 4-1. Example of PIRLS fourth-grade Class Listing Form with mock data

PIRLS 2016 - Class Listing Form

Participant Country	United States
School Name	Readalot Elementary School
School ID	1234
School Coordinator Name	Mrs. Trunchbull
Phone Number	9195551212

❶	❷	❸	❹	❺	❻
Class Name	**Grade**	**Class Group**	**Number of Students**	**Class Exclusion Status**	**Name of Class Teacher or Reading / Language Teacher**
4a	4		22		Mrs. Phelps
4b	4		20		Miss Honey
4c	4		23		Mr. Trilby
4d	4		21		Miss Plimsoll

Class Group (column 3):

Class groups occur w hen students are assigned to specific classes based on their ability/prior achievement. If applicable in your country, the national center defines the groups and codes to be used to identify them. If applicable, further instructions of codes to be used can be found in the School Coordinator Manual. Leave blank, if not applicable.

Class Exclusion Status (column 5):

As a rule, all classes are to be included. Examples of class-level exclusions include classes w here all students belong to at least one of the follow ing three exclusion status categories: 1 = students w ith functional disabilities; 2 = students w ith intellectual disabilities; 3 = non-native language speakers. If all students in the excluded class do not belong to the same exclusion category, please identify the category corresponding to the majority of students. All class-level exclusions must be approved by the national center.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

4.2.2 Identifying Students and Their Teachers

Once classes were sampled for PIRLS, the Student Listing Form (SLF) was created by WinW3S for each sampled class and output in Excel format. An example SLF is provided in exhibit 4-2. The top portion of the form was prefilled by WinW3S based on the information entered from the CLF, and rows were generated to reflect the number of students reported to be in the class. Three extra records were included at the end of the list to account for any student newly enrolled since the CLF information was received. The remainder of the form was to be completed by the school for each student enrolled in the class. For most schools, the form was uploaded onto the secure study website where the school coordinator could login, retrieve it, and complete the information electronically.

Exhibit 4-2.   Example of PIRLS Student Listing Form with mock data

PIRLS 2016 - Student Listing Form

Participant Country	United States
School Name	Readalot Elementary School
School ID	1234
Class Name	Mrs. Phelps
Teacher Name	Mrs. Phelps

❶ Student Name (First Name, Last Name)	❷ Sequence Number	❸ Date of Birth MM	DD	YYYY	❹ Gender	❺ Exclusion Status
Fern Arable	1	08	29	2005	1	
Charlie Bucket	2	01	05	2006	2	
Hermione Granger	3	06	10	2005	1	
Greg Heffley	4	11	02	2005	2	
Percy Jackson	5	10	28	2005	2	
Stuart Little	6	08	18	2006	2	2
Ramona Quimby	7	07	22	2004	1	
Harry Potter	8	07	11	2006	2	
Veruca Salt	9	11	11	2005	1	
Laura Wilder	10	11	07	2005	1	
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					
21	21					
22	22					
23	23					

Gender (column 4):
1 = Female; 2 = Male

Exclusion Status (column 5):
1 = Students with functional disabilities; 2 = Students with intellectual disabilities; 3 = Non-native language speakers

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

4.2.3 Student Tracking Form (STF)

The information provided on the SLF was entered into WinW3S. Two student tracking forms (STFs) were then generated for each class, one for PIRLS (exhibit 4-3) and one for ePIRLS (exhibit 4-4). WinW3S automatically populated each student's name, ID, date of birth, sex, and booklet number. It also marked if the student was part of the reliability sample, which indicated that the student's assessment would be double scored to assess reliability (see section 4.5.2.2). A copy of the form was sent to the school coordinator to track parental permission status and to the test administrator to distribute the assessment materials and track participation status.

4.2.4 Teacher Tracking Form (TTF)

WinW3S also generated a Teacher Tracking Form (TTF). This form enabled test administrators to record the participation of teachers and to ensure that each teacher received the correct teacher questionnaire. An example of a TTF containing fictitious information is provided in exhibit 4-5.

Exhibit 4-3.   Example of PIRLS Student Tracking Form with mock data

PIRLS 2016 - Student Tracking Form

School Name:	Participant Country:				
Readalot Elementary School	United States				

	[a] School ID	[b] Class ID	[c] Class Name	[d] Grade	[e] Language of Test
	1234	123401	4A	4	English

❶ Student Name or Number	❷ Student ID	❸ Date of Birth			❹ Gender	❺ Exclusion Status	❻ PIRLS Booklet	❼ Reliability Scoring Booklet	❽ Participation Status			
									Main Session		Make-Up Session	
		MM	DD	YYYY					Achievement Session	Questionnaire Session	Achievement Session	Questionnaire Session
Fern Arable	12345601	08	29	2005	1		R					
Charlie Bucket	12345602	01	05	2006	2		11	R				
Hermione Granger	12345603	06	10	2005	1		12					
Greg Heffley	12345604	11	02	2005	2		13					
Percy Jackson	12345605	10	28	2005	2		14					
Stuart Little	12345606	08	18	2006	2		15					
Ramona Quimby	12345607	07	22	2004	1		R	R				
Harry Potter	12345608	07	11	2006	2		1					
Veruca Salt	12345609	11	11	2005	1		2					
Laura Wilder	12345610	11	07	2005	1		3					
<A>	12345611						4	R				
<A>	12345612						5					
<A>	12345613						R					

Gender (column 4): 1 = Female; 2 = Male
Exclusion Status (column 5): 1 = Students with functional disabilities;
2 = Students with intellectual disabilities; 3 = Non-native language speakers
Participation Status (column 8): C = Participated; SA = Participated with special accommodation;
A = Absent; P = No parental permission; NA = Left school permanently

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Exhibit 4-4.   Example of ePIRLS Student Tracking Form with mock data

ePIRLS 2016 - Student Tracking Form

School Name:

Readalot Elementary School

ePIRLS Participant Country:

United States

	[a] School ID	[b] Class ID	[c] Class Name	[d] Grade	[e] Language of Test
	1234	123401	4A	4	English

❶ Student Name or Number	❷ Student ID	❸ Password	❹ Date of Birth MM	DD	YYYY	❺ Gender	❻ Exclusion Status	❼ ePIRLS Task Assignment	❽ Participation Status Main Session	Make-up Session	❾ Session Number
Fern Arable	12345601	42951	08	29	2005	1		42			
Charlie Bucket	12345602	53345	01	05	2006	2		53			
Hermione Granger	12345603	15891	06	10	2005	1		15			
Greg Heffley	12345604	21475	11	02	2005	2		21			
Percy Jackson	12345605	32573	10	28	2005	2		32			
Stuart Little	12345606	43737	08	18	2006	2		43			
Ramona Quimby	12345607	54863	07	22	2004	1		54			
Harry Potter	12345608	12161	07	11	2006	2		12			
Veruca Salt	12345609	23636	11	11	2005	1		23			
Laura Wilder	12345610	34530	11	07	2005	1		34			
<A>	12345611	42690						42			
<A>	12345612	53371						53			
<A>	12345613	15562						15			

Gender (column 5): 1 = Female; 2 = Male
Exclusion Status (column 6): 1 = Students with functional disabilities;
2 = Students with intellectual disabilities; 3 = Non-native language speakers
ePIRLS Task Assignment (column 7): Identifies the two ePIRLS tasks assigned to each student
Participation Status (column 8): C = Participated; SA = Participated with special accommodation;
A = Absent; P = No parental permission; NA = Left school permanently; F = Equipment failure during the
testing session; B = Incompatible or failing equipment before the testing session began; U = USB lost or
upload failed after the testing session
Session Number (column 9): Session number, if ePIRLS is administered in more than one session due
to the number of computers available

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

Exhibit 4-5. Example of PIRLS Teacher Tracking Form with mock data

PIRLS 2016 - Teacher Tracking Form

School Name:

Readalot Elementary School

Participant Country:

United States

	[a]	[b]
	1234	4

ⓤ Teacher Name	❷ Teacher ID	❸ Link Number	❹ Selected Class ID	❺ Class (Course) Name	❻ Number of Eligible Students	❼ Questionnaire Return Status
Mrs. Phelps	123401	01	123401	Reading	22	O

Questionnaire Return Status (column 7):
N = Not returned; P = Returned paper; O = Returned online

Use additional sheets
if necessary

PIRLS 2016 - Teacher Tracking Form

TIMSS & PIRLS
International Study Center
Lynch School of Education, Boston College

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

4.3 PIRLS Instruments

All PIRLS instruments were developed by the IEA as a cooperative effort involving representatives from every country participating in the study. The instruments included a reading assessment, a student questionnaire, a school questionnaire, and teacher questionnaires to be completed by the teachers teaching reading to the students in the sampled classrooms. Most countries also participated in a home questionnaire that was completed by parents. The home questionnaire was not administered in the United States. The ePIRLS instruments included an online reading assessment and a brief student questionnaire.

PIRLS. The assessment for PIRLS consisted of 15 booklets and one reader. The reader was a glossy, magazine-like booklet that contained the reading passages with the questions in a separate booklet. Some items must remain confidential for use in coming PIRLS assessments while others have been released as restricted-use passages and items by the IEA on the TIMSS & PIRLS International Study Center website, at http://timssandpirls.bc.edu/pirls2016/international-results/wp-content/uploads/structure/PIRLS/11.-appendices/H_restricted-use-passages-questions-and-scoring-guides.pdf. The student questionnaire was bound separately from the assessment items. For each student, the assessment booklet and questionnaire were labeled with the student ID and placed in a 9x12 envelope that also contained the student ID to ensure that each student completed the correct booklets. To ensure confidentiality, no student names or school names were included on the booklet labels or the student envelope.

The school and teacher questionnaires were designed as online instruments to be completed by the school principal and teacher, respectively. The international versions of the PIRLS questionnaires are available on the TIMSS & PIRLS International Study Center website at https://timssandpirls.bc.edu/pirls2016/questionnaires/index.html. The U.S. version of the PIRLS questionnaires are provided in appendix C of this report and are available on the NCES website https://nces.ed.gov/surveys/pirls/questionnaire.asp.

ePIRLS. The ePIRLS assessment consisted of five tasks designed to measure how well students read, comprehend, and interpret online information. An infographic describing the ePIRLS assessment environment is shown in exhibit 4-6. Each student completed two tasks, designed to take about 40 minutes each. Students were assigned to the two tasks based on a rotation that was designated by the study software and built into the student login information. The online assessment was followed by a brief electronic questionnaire. ePIRLS was administered by plugging a

USB into the computer and launching the ePIRLS system. School computers were used when possible, or RTI test administrators brought laptop computers into the schools for this administration.

Exhibit 4-6. ePIRLS assessment screen

SOURCE: https://timss.bc.edu/pirls2016/downloads/P2016_ePIRLS_Brochure.pdf.

4.3.1 PIRLS Reading Assessment

The following discussion provides a summary of the rationale for and development of the PIRLS 2016 assessment. Complete detail is provided in the *Methods and Procedures in PIRLS 2016* (Martin, Mullis, and Hooper 2017), available at https://timssandpirls.bc.edu/publications/pirls/2016-methods.html.

4.3.1.1 *Assessment frameworks*

The PIRLS 2016 test development effort began with a revision of the frameworks used to guide the construction of the previous PIRLS 2011 assessments (Mullis et al. 2009). The frameworks were updated to reflect changes in the curriculum and instruction of participating countries (Mullis and Martin 2015). Extensive input from experts in reading education, assessment, and curriculum, and representatives from national educational centers around the world contributed to the final shape of the frameworks. Maintaining the ability to measure change over time was an important factor in revising the frameworks.

4.3.1.2 *Content and cognitive domains*

PIRLS 2016 assessed "purposes of reading" in two content domains, *literary experience* and *acquire and use information*. Each of the five ePIRLS tasks were designed to assess how students *acquire and use information* in an online environment. ePIRLS did not include a *literary experience* domain. Both PIRLS and ePIRLS assessed students' reading literacy "processes of comprehension" in four cognitive areas: (1) focus on and retrieve explicitly stated information; (2) make straightforward inferences; (3) interpret and integrate ideas and information; and (4) examine and evaluate content and textual elements.

4.3.1.3 *Item development*

Approximately half of the assessment items used in PIRLS 2011 were kept confidential and included in the PIRLS 2016 assessments. To replace assessment items that had been released following the 2011 assessments, education systems submitted items for review by subject-matter specialists, and additional items were written by the IEA Reading Review Committee for PIRLS, in consultation with item-writing specialists. This expert consultation ensured that the content, as explicated in the frameworks, was covered adequately. Items were reviewed by the Reading Review Committee and field-tested in most of the participating education systems. Results from the field test were used to evaluate item difficulty, how well items discriminated between high- and low-performing students, the effectiveness of distracters in multiple-choice items, scoring suitability and reliability for constructed-

response items, and evidence of bias toward or against individual countries or in favor of boys or girls.

As a result of this review in PIRLS, 117 new reading items were selected for inclusion in the international assessment. In total, 223 reading items were included in the PIRLS 2016 assessment booklets.

ePIRLS was administered for the first time in 2016. Experts from the TIMSS and PIRLS International Study Center at Boston College developed the ePIRLS content based on the TIMSS 2015 Science Framework. Storyboards for the ePIRLS tasks were thoroughly reviewed by each participating country's National Research Coordinator and the Reading Review Committee. The systems to deliver ePIRLS were developed by the IEA Data Processing Center in Hamburg, Germany. Six tasks were developed that included simulated internet web pages with multiple pages of text. A total of 112 items were included in ePIRLS.

More detail on the distribution of new and trend items in the PIRLS 2016 assessments and the development of the ePIRLS items can be found in *PIRLS 2016 Assessment Framework* (Mullis and Martin 2015).

4.3.1.4   *Assessment booklets*

The PIRLS 2016 assessment used a rotated block design to minimize burden on students. The PIRLS assessment consisted of 15 booklets and a reader that was presented in a magazine-type format, with the questions in a separate booklet. Each booklet required 80 minutes of response time. The reading items were assembled separately into 10 blocks, or clusters, of items. Each of the 16 booklets (15 booklets and a reader) contained one block of literary experience items and one block of informational items, and each block occurred twice across the 16 booklets. The 16 booklets were rotated among students with each participating student responding to only 1 booklet. Six of the 10 blocks were included in previous PIRLS assessments. The remaining 4 blocks were new for PIRLS 2016.

Like PIRLS, the ePIRLS assessment used a rotated block design to assign the five tasks to students. Each task took about 40 minutes. All the tasks were new to the study and were focused on how students acquire and use information.

4.3.2 Background Questionnaires

As in prior administrations, PIRLS 2016 included self-administered questionnaires for principals, teachers, and students. To create the questionnaires for 2011, the 2011 version of the PIRLS questionnaires were reviewed extensively by the national

research coordinators from the participating countries as well as a Questionnaire Item Review Committee (QIRC). Based on this review, the QIRC eliminated or revised some questions and added several new ones. Like the assessment items, all questionnaire items were field-tested, and the results were reviewed. As a result, some of the questionnaire items were revised prior to their inclusion in the final questionnaires. The questionnaires requested information to help provide a context for the performance scores, focusing on such topics as students' attitudes and beliefs about learning, their habits and homework, and their lives both in and outside of school; teachers' attitudes and beliefs about teaching and learning, teaching assignments, class size and organization, instructional practices, and participation in professional development activities; and principals' viewpoints on policy and budget responsibilities, curriculum and instruction issues, and student behavior, as well as descriptions of the organization of schools and courses. The preferred mode of data collection for teachers and school administrators was web-based, but paper versions were made available to students and to teachers and school administrators for nonresponse follow-up. Results from the student, teacher, and school questionnaires are available in *PIRLS 2016 International Results in Reading* (Mullis et al. 2017).

In addition to the student questionnaire for PIRLS, students who completed the ePIRLS assessment were asked to complete a brief computer-based questionnaire for ePIRLS. Questions on the ePIRLS student questionnaire provided a context for performance on the ePIRLS tasks and focused on accessibility and use of the Internet at home and at school.

4.3.3 U.S. Adaptations to the Assessment Items and Questionnaires

Source versions of all instruments (assessment booklets, questionnaires, and manuals) were prepared by the IEA in English and translated by the participating countries into the primary language or languages of instruction in each country. In addition, it was sometimes necessary to adapt the instruments to better fit language usage, even in countries that use English as the primary language of instruction. Other adaptations to fit national education characteristics were sometimes required as well. All adaptations were reviewed and approved by the IEA to ensure they did not change the substance or intent of the question or answer choices.

4.3.3.1 U.S. adaptations to the assessment items

As in previous cycles of PIRLS, the U.S. adaptations to the international instruments were minimal and designed to make the assessment more readable to U.S. students without changing the essence of the assessment item. For example, nouns with British origins were changed to their U.S. equivalent (for example, "mum" to "mom"

or "lift" to "elevator"), British English spellings were changed to American English (for example, "grey" to "gray"), mathematical terms were changed from the metric system to the imperial system (for example, "meters" to "feet").

4.3.3.2   U.S. adaptations to the school, teacher, and student questionnaires

Three types of adaptations were made to the school, teacher, and student questionnaires:

- changes designed to make question text more readable to U.S. students, similar to those made to the assessment items as described above;

- changes to response alternatives where the international response set did not adequately reflect the U.S. context; and

- additional questionnaire items included to address issues of national interest.

A detailed list of changes made to the questionnaires is provided in appendix D. Both the original text from the international version of the questionnaire and the changed text from the U.S. version are shown. Text that has been changed in the U.S. version is underlined in that version. Both international and U.S. questionnaire item numbers, or other location indicators, are provided in each instance. Where appropriate, a crosswalk between the U.S. and international versions of the set of response categories of items is provided in the "Comments" column.

4.3.4   Translation and Verification of Instruments

Each country prepared translations of the instruments according to translation guidelines established by the IEA. Since the international versions of the instruments are produced in English, the United States did not need to engage in the full-fledged translation required of many nations. However, the adaptations made to the U.S. instruments required verification by the IEA to ensure their suitability for the current cycle of PIRLS and, if trend items, their continuity with previous cycles. Further details on the translation process can be found in Martin, Mullis, and Hooper (2017).

4.3.5   Production of Assessment Booklets and Questionnaires

On receiving IEA approval of the adaptations, RTI applied the adaptations to the international questionnaires and item blocks and then assembled the final assessment booklets. Quality control procedures for this process included a review of each adaptation made to the questionnaires and item blocks as well as a full review of the assembled instruments in a final layout proof.

In mid-December 2015, electronic files were sent to the IEA Data Processing Center (DPC) for verification of the national changes and to the TIMSS & PIRLS International Study Center for layout verifications. The student, teacher, and school paper-and-pencil versions of the questionnaires were printed in nonscannable form.

A similar procedure was applied to the online school and teacher questionnaires. Adaptations were made to the online instruments using software provided by the IEA DPC. A set of output files was produced for each questionnaire, and these were uploaded to a secure sever and verified by the DPC.

4.3.5.1   Preparation and printing of paper-and-pencil Instruments

For all paper and pencil instruments, proofs of each document were reviewed against the original electronic files prior to printing. Once accuracy was certified, printing was initiated. During this process, staff checked a 10 percent sample of the printed form against the approved document to ensure that accuracy was maintained throughout the printing process.

4.3.5.2   Online questionnaires

Once verified, each questionnaire was loaded to an NCES server and thoroughly tested by RTI to ensure that responses were being captured correctly and that the instruments were functioning properly.

4.3.5.3   ePIRLS data

The collection of ePIRLS task and questionnaire data was completed via software on USB sticks. Test Administrators (TAs) inserted the USB stick into the school computer or study-provided laptop prior to the session and all data were stored on the USB stick. The TA then took the USB sticks home with them after the session and uploaded the data from each stick to the secure study server.

4.4   Field Operations

In the United States, PIRLS and ePIRLS were administered by professional staff trained according to the international guidelines. School personnel were asked only to assist with listings of students, the identification of school space for the assessment, and the specification of parental consent procedures needed for sampled students.

Forty-nine TAs were hired to work on PIRLS 2016. All had previous experience with other educational assessments in schools, and all received Position of Trust clearance based on fingerprint and background checks. TAs also signed a statement of nondisclosure indicating that they would maintain confidentiality of all survey materials and of the data collected. The TAs recruited local test administrator assistants (TAAs) to assist in the administration of the assessment because, in most schools, two separate classrooms were assessed simultaneously. TAAs were also experienced with the administration of educational assessments in schools and received a background check. They too signed confidentiality statements.

The TAs reported to one of four field supervisors who coordinated and monitored their work, and, in turn, the TAs coordinated and supervised the work of the TAAs. The field supervisors reported to the national field manager at the RTI home office.

4.4.1 Responsibilities of Field Supervisors, Test Administrators, and Test Administrator Assistants

Field supervisors had responsibility for

- participating in the PIRLS data collection training;

- tracking the TAs' receipt of assessment booklets and other materials;

- coordinating data collection activities undertaken by their assigned TAs;

- holding weekly one-on-one telephone meetings with their TAs to monitor progress and to troubleshoot any problems arising;

- ensuring that their TAs followed PIRLS procedures and guidelines; and

- reporting progress and problems in weekly conference calls with RTI home office staff and other field managers.

Test administrators had responsibility for

- attending PIRLS data collection training;

- receiving and securing assessment materials;

- training TAAs;

- preparing and assigning assessment materials for students;

- collecting the completed school and teacher questionnaires;

- conducting the assessment according to PIRLS-specified procedures;

- completing the Test Administration Form, Student Tracking Form, Teacher Tracking Form, and Student Response Rate Form;

- determining if a follow-up session was needed;

- securing, packing, and shipping all assessment materials to RTI at the conclusion of the assessment;

- recording the status of the assessment in the Field Reporting System; and

- reporting progress to their field supervisor on a regular basis.

Test administrator assistants had responsibility for

- attending the PIRLS training conducted by their TA;

- administering the assessment according to PIRLS-specified procedures;

- completing the Test Administration Form, Student Tracking Form, Teacher Tracking Form, and Student Response Rate Form; and

- consulting regularly with their TA.

4.4.2 Training

A 4-day, in-person training for TAs was held February 1–4, 2016. The attendees received the Test Administrator Manual 10 days prior to the training session and were given four paid "study hours" to become familiar with the information prior to training. The agenda for this training session is provided as exhibit B-1 in appendix B.

The training covered both PIRLS and ePIRLS administration. The first day focused on the study background, TA responsibilities, preassessment activities, and data security. The second day started with discussion about the procedures to be followed in preparing for, arriving on, and conducting the assessment day; what to do once the assessment was completed; and the appropriate methods for packing and shipping the assessment materials to RTI. The afternoon focused on introducing ePIRLS. Day 3 focused on the administration of ePIRLS, completing the study forms, and quality control procedures. The final day focused on administrative procedures and a recap of the prior days of training, followed by a certification to confirm that the TAs were prepared to conduct the session in the schools.

Field staff were assigned laptop computers to take with them for the duration of PIRLS data collection. Test administrators were also provided with an official photo ID badge to wear while representing PIRLS in the schools.

Training for TAAs was conducted as a separate exercise by their respective TAs. Approximately 2 hours was allocated for this training. Training materials consisted of a Test Administrator Assistant Manual, session scripts, and a subset of material from the TA training.

4.4.3 Assignment of Schools to Test Administrators

Test administrators were assigned a work area based on their location and availability, with most work areas relatively close to the test administrator's home address. Because sampled schools were not geographically clustered, some schools required the TA to travel. Balancing these several demands resulted in some variation in the caseload of TAs. During the assessment period, which ran from February 2016 through May 2016, some reassignment of schools and/or work areas was necessary.

4.4.4 Assessment and Related Activities

TAs engaged in a number of activities before the actual assessment. These included

- working with the school coordinator to gain the permission of parents and students, if this was required by the school;

- making arrangements with the school for the assessment sessions; and

- obtaining the materials to be used in the assessment.

4.4.4.1 Recruiting parents and students

During recruitment and scheduling contacts with schools, recruitment staff asked about district and/or school requirements for notifying parents about their child's participation or obtaining parental permission. School requirements fell into the following two categories:

- **Implied permission (passive/opt-out).** The school was required to ask parents for permission for the child to participate, but permission would be assumed unless there was a formal objection; and

- **Explicit permission (active/opt-in).** The school was required to ask parents for permission for the child to participate, and the child could not participate until the parents provided formal written approval.

A majority of schools (141) opted for implied permission, while 17 required explicit permission. Copies of both permission types are shown in exhibit A-8 and exhibit A-9.

4.4.4.2 *Organizing the assessment session at the school*

Approximately 2–4 weeks before each school's assessment date, the TA called the assigned school coordinator. Test administrators were instructed to verify previously obtained information on items such as the school's address, principal's name, assessment date, session location, requirements for entering the school, and parking arrangements, as well as the status of the within-school sampling forms for the school. The information obtained was updated and maintained in the Field Reporting System.

PIRLS. On assessment day, each TA, accompanied by a TAA, arrived at the school about an hour before the scheduled assessment with all of the materials needed for the assessment. One session box of materials was provided for each of the sampled classes. Each session box contained the estimated number of student assessment booklets required, plus three unassigned booklets to accommodate any changes in class enrollments. Upon arrival, the TA met with the school coordinator to make any updates to the Student Tracking Form that would affect the preparation of student materials (for example, the addition of new students, the withdrawal of listed students from the school or class, a change in exclusion status of a sampled student, or change in permission status).

ePIRLS. ePIRLS typically took place the day after the PIRLS administration. The TA arrived about 90 minutes before the scheduled assessment to set up the computers. School computers, computers brought in by RTI, or a combination of the two options were used for ePIRLS. The TA arrived with the USB sticks loaded with ePIRLS and launched the program on each of the computers before the students arrived. Students could only participate in ePIRLS if they had already participated in PIRLS. Students who were absent for the first session completed the PIRLS paper-and-pencil assessment instead of ePIRLS that day.

4.4.4.3 *Administering the assessment*

Assessments were administered by trained test administrators who read verbatim from a standardized script according to the instructions in the PIRLS Test

Administrator Manual. A copy of the session script is provided in appendix B. All activities for PIRLS and ePIRLS, including the timing of each component and any unusual occurrences, were recorded on the Test Administration Form provided in appendix B.

PIRLS. The script began with a brief introduction to the study. The assessment booklets, each in a security envelope, then were distributed. The students were instructed to remove their booklet from the envelope, and the general instructions and instructions for Part 1 were read. Following this, the students were instructed to begin Part 1 of the assessment. After 40 minutes, a short break was provided. After the break, the instructions for Part 2 were read and students were instructed to begin Part 2 of the assessment. After the allotted 40 minutes for this part of the assessment, students were instructed to stop work, and another break was provided. Following the break, the student questionnaire was administered; it was not time limited but was typically completed in about 30 minutes.

ePIRLS. The script began by explaining ePIRLS and walked the students through the directions for completing the tasks on the computer. Students were then given 40 minutes to complete each task, with a 5-minute break between tasks. After the allotted 40 minutes for the second task, students were given another 5-minute break before completing the 5-minute student questionnaire.

4.4.4.4 Postassessment activities

Following the assessment, test administrators instructed the students to place the booklets back in the 9x12 envelope. The students handed their envelopes to the TA, received their gift, and were dismissed. The test administrator then recorded participation codes for each session and packed the envelopes containing the student booklets and questionnaires and, if applicable, school and teacher questionnaires into the shipping box. The TA packed up the materials but kept the Student Tracking Form in their possession to key the participation information into the field reporting system. The session materials were sealed and shipped to RTI. The STFs were shredded when all information was complete for the school.

4.5 Receipt Control, Scoring, Coding, and Data Entry

As noted previously, field staff sent the completed assessments and questionnaires along with any related materials directly to RTI following the completion of the assessment session at a school. RTI then recorded the receipt of materials and keyed the paper-and-pencil questionnaire data. Assessment data were scored and coded by

Measurement Inc. prior to being keyed by RTI. Data files were then created from the data.

4.5.1 Receipt Control

PIRLS documents were received at RTI between February and May 2016. The school, student, teacher, or administrator IDs for the booklets received were recorded in RTI's receipt control system. Information recorded in the receipt control system was systematically compared to the information recorded in the field reporting system. A discrepancy report was generated daily and used to reconcile any inconsistency between the materials received and the information recorded from the student tracking form into the field reporting system.

When the return shipments were received by RTI, a manual count was made to ensure that all booklets from the original shipment were included. The assessment booklets were sorted by booklet type and prepared for delivery to Measurement Inc. for scoring. Questionnaires were submitted for data entry. Unused booklets were batched separately.

4.5.2 Scoring the Assessment Items

The PIRLS assessment items included both multiple-choice and constructed-response items. Scoring rubrics developed internationally following the field tests of the assessment items were available to guide the scoring of each constructed-response item. In the United States, the scoring of the open-ended student responses according to these rubrics was the responsibility of Measurement Inc.

4.5.2.1 Training

The national research coordinator, the U.S. scoring manager (from Measurement Inc., which conducted the scoring), and RTI International quality monitoring staff participated in the PIRLS scoring training sessions sponsored by the IEA. Materials from these sessions, along with additional materials constructed specifically for this purpose, were used to train the scoring director, scoring team leaders, and scoring team members. Scorers were hired based on their experience with similar reading scoring projects. Measurement Inc. hired 16 scorers for PIRLS, organized into two teams, each overseen by a separate scoring team leader. All teams were trained and monitored by a separate scoring director and the overall scoring manager.

Once trained, the scoring director and scoring team leaders each led a small team of scorers in reading the item prompt; reading the rubric or scoring guide aloud; reading aloud each of the anchor papers and explaining the reasoning behind the score;

allowing the scorers time to complete the practice papers; reviewing each of the practice papers; and scoring booklets. Training on and scoring of the items was completed in batches, with scorers trained on one or two passages before starting to score booklets containing those passages.

4.5.2.2   Scoring

Each team worked on all passages and items. Student booklets marked as being part of the reliability sample had their assessments scored separately by two different scorers. To reduce training fatigue and promote retention of rubric guidelines, scorers were trained on one or two passages and worked on scoring those booklets before being trained on the next set of passages.

Scoring quality was monitored continuously. Team leaders, the scoring director, and the scoring manager conducted "read-behinds" to monitor the reliability of scoring.

4.5.2.3   Cross-country scoring reliability study

In international assessments, it is also important to gather information about how reliably the scoring was conducted from country to country so that valid international comparisons can be made of students' achievement. To document the reliability of constructed-response scoring, a cross-country scoring reliability study was conducted. Responses to PIRLS items from Southern Hemisphere countries were sent to the Northern Hemisphere countries for scoring. After the scoring of the U.S. responses for a passage with their team, scorers then scored the international responses that were preloaded on desktop computers.

4.5.2.4   Trend scoring

To document the reliability of constructed-response scoring from PIRLS 2011 to PIRLS 2016, PIRLS included a trend scoring reliability study. This study estimated the degree of agreement between the 2016 scorers and the scorers from the previous assessment. It allowed scorers of the PIRLS 2016 assessment to score student responses collected in 2011. The PIRLS 2016 scorers scored a subset of student responses from the prior PIRLS instruments. Student responses were actual student responses to items collected during the PIRLS assessments in the United States.

The IEA DPC assembled a sample of student responses to be scored and distributed it to each participating education system along with the IEA Trend Scoring Reliability Software (TSRS). Only education systems participating in 2016 that also participated in PIRLS 2011 took part in the trend scoring reliability study.

4.5.3 Data Entry of Questionnaire and Assessment Responses

Student questionnaire and assessment data were entered into a data entry system provided by the DPC. For school and teacher questionnaires received as hard copy, the questionnaire data were entered directly into the online questionnaire for that school or teacher. School and teacher questionnaire data were imported into the Data Management Expert, or WinDME, provided by the IEA Data Processing Center.

4.5.4 File Creation and Consistency Checks

In a final step, the data from the assessment score files were merged with the student scanned data. Then final output files were produced for each file type. The final files were checked to ensure that the data were completeness, in compliance with codebook specifications, and in the correct format. In addition, a check was performed to verify correct linking and matching of student, teacher, and school data files. Student and teacher files were loaded in the WinDME software so that all data from the assessments and questionnaires were available in the format required by the IEA.

4.6 Data Preparation

As noted in the previous section, the data collected for PIRLS 2016 were entered into data files according to a common international format, as specified in the WinDME data entry software. The software facilitated the checking and correction of data by providing various data consistency checks.

The data files in this format were sent to the IEA DPC, where they were subjected to an extensive series of data cleaning and consistency checks. The overriding concern of these checks was to ensure that all information in the database conformed to the internationally defined data structure, national adaptations to questionnaires were reflected appropriately in the codebooks and documentation, and all variables used for international comparisons were comparable across countries.

4.6.1 International Data Cleaning Procedures

The DPC was responsible for checking the data files from each country, applying standard cleaning rules to verify the accuracy and consistency of the data, and documenting electronically any deviations from the international file structure. Queries arising during this process were addressed to national centers, and this

process was repeated as necessary to ensure that the data were consistent and comparable within and between countries.

Following this cleaning step, countries were provided national univariate and reliability statistics along with data almanacs containing international univariate statistics and item statistics. This allowed countries to examine their data with those of other participating nations. Once any problems arising from this examination were resolved, sampling weights produced by Statistics Canada and IRT-scaled student proficiency scores in mathematics and science were added to the file.

Detailed information on the entire data entry and cleaning process can be found in Martin, Mullis, and Hooper (2017).

4.6.2 Data Confidentiality Safeguards

NCES and data contractors routinely pledge confidentiality to respondents; however, over the past decade, concerns about the potential for disclosure of information about individual survey respondents have increased. These concerns are reflected in new laws enacted since the Privacy Act of 1974 to further ensure the protection of confidential data. The Education Sciences Reform Act of 2002 explicitly requires that NCES protect the confidentiality of all those responding to NCES-sponsored surveys so that no individual respondent can be identified. More specifically, NCES standard 4-2, Maintaining Confidentiality (Seastrom 2014), provides guidelines for limiting the risk of data disclosure for data released by NCES. Data disclosure occurs when an individual respondent has been identified through the use of the survey item responses and other external data sources. The procedures used to reduce the risk of data disclosure for PIRLS 2016 in accordance with the guidelines specified in NCES standard 4-2, are described below.

All students, teachers, and schools participating in PIRLS 2016 do so with the assurance that their identities will not be disclosed. Confidentiality procedures in place included the following:

- All employees with access to the data signed affidavits of data confidentiality.

- No student names were included on the questionnaires or assessment booklets.

In addition to data collected directly from schools, teachers, and students, additional information was used during the PIRLS sampling, data collection, and weighting

processes; and these variables also were considered as part of the review to determine disclosure risk levels.

The confidentiality analysis review described below used the following three-step process to reduce disclosure risk:

- determining the disclosure risk arising from existing external data;

- creating a derived variable for race; and

- swapping the data.

In this process, additional assurance is provided that individual schools, teachers, and students participating in PIRLS could not be identified through comparison with public data collections once the PIRLS data were released for public use. Although no public data collections identify students or teachers by name, three publicly available data collections do identify schools by name. These are the CCD, a detailed public school listing; the PSS, a detailed private school listing; and the Quality Education Data (QED) produced by Market Data Retrieval (MDR), a privately owned education research firm. The QED data contain a school-based file that provides demographic information for both public and private schools along with the names of the schools. Thus, there is some possibility that schools at least, and perhaps teachers and students as well, could be identified if comparisons of these datasets with the PIRLS dataset allowed the identification of schools.

Disclosure analyses were conducted to minimize the possibility that schools, teachers or students could be identified in the dataset. School matching analyses were undertaken using probabilistic matching algorithms approved by the IES Disclosure Review Board (DRB) for use in disclosure analyses. These algorithms identify schools with some potential for identification. To provide further protection, elements of the data from schools identified as "disclosure risks" in this way were perturbed using the procedures approved by the DRB. After perturbation, the data were subjected to another round of analyses to ensure that the potential for identification no longer existed.

An additional measure was taken to reduce further the risk of disclosure of an individual respondent. This measure is referred to as data swapping, a DRB requirement that reduces risk by modifying microdata. In data swapping, a probability sample of records is paired with other records on the file using selected characteristics, and then some identifying variables are swapped between pairs of records (see Kaufman, Seastrom, and Roey 2005). The sampling rate for PIRLS swapping was designed to protect the confidentiality of the data without affecting the

usability of the dataset. All questionnaire data (school, teacher, and student) were involved in the swapping. This method is an effective way of keeping as much valuable data as possible while protecting respondent identity. Swapping preserves the univariate frequencies, means, and variances, although it may affect multivariate relationships a little. Pre- and postswapping percentage distributions (unweighted and weighted) and correlations were reviewed to ensure data quality was maintained.

Confidentiality analyses of this kind were conducted before the U.S. data files were delivered to the DPC for cleaning and prior to the IRT scaling and estimation of sampling weights.

4.6.3 Estimation of PIRLS Student Proficiencies

All cycles of PIRLS used IRT methods to produce score scales that summarized the achievement results. With this method, the performance of a sample of students in a subject area or subarea could be summarized on a single scale or a series of scales, even when different students had been administered different items.

IRT scaling provides estimates of item parameters (for example, item difficulty and item discrimination) that define the relationship between the item and the underlying variable measured by the test. Parameters of the IRT model are estimated for each test item, with an overall scale being established as well as scales for each content area and cognitive domain specified in the assessment framework.

To allow for the calculation of trends in achievement, comparisons of scores across the PIRLS assessments conducted in 2001, 2006, and 2011 were necessary. To this end, achievement scores from all three PIRLS cycles were placed on the same scale. Details are provided in *Methods and Procedures in PIRLS 2016* (Martin, Mullis, and Hooper 2017).

4.6.3.1 Plausible values

During the scaling phase, plausible values were used to characterize scale scores for students participating in the assessment. To keep student burden to a minimum while ensuring content coverage, PIRLS administered a limited number of assessment items to each student—too few to produce accurate scale scores for each student. To account for this, PIRLS generated five possible scale scores for each student, each representing a random selection from the distribution of scale scores of students with similar backgrounds who answered the assessment items the same way.

This plausible-values methodology was used to represent what the true performance of an individual might have been, had it been observed. This is done by using a small

number of random draws from an empirically derived distribution of score values based on (1) the student's observed responses to assessment items and (2) background variables. Each random draw from the distribution is considered a representative value from the distribution of potential scale scores for all students in the sample who have similar characteristics and identical patterns of item responses. The draws from the distribution are different from one another to quantify the degree of precision (the width of the spread) in the underlying distribution of possible scale scores that could have caused the observed performances. The PIRLS plausible values function like point estimates of scale scores for many purposes, but they are unlike true point estimates in several respects. They differ from one another for any particular student, and the amount of difference quantifies the spread in the underlying distribution of possible scale scores for that student.

This approach to the estimation of scale scores ensures that the estimates of the average performance of student populations and the estimates of variability in those estimates are more accurate than those determined through traditional procedures, which estimate a single score for each student. An accessible treatment of the derivation and use of plausible values can be found in Beaton and González (1995). Details specific to PIRLS can be found in *Methods and Procedures in PIRLS 2016* (Martin, Mullis, and Hooper 2017).

4.6.3.2 *International benchmarks*

International achievement benchmarks were developed to provide a concrete interpretation of what the scores on the PIRLS reading scales mean. PIRLS used scale anchoring to summarize and describe student achievement at four points on the reading scales—*Advanced* (625), *High* (550), *Intermediate* (475), and *Low* (400). Scale anchoring involves selecting benchmarks (scale points) on the PIRLS achievement scales to be described in terms of student performance and then identifying items that students scoring at the anchor points can answer correctly. Subsequently, these items are grouped by content area within benchmarks and reviewed by reading experts. These experts focus on the content of each item and describe the kind of reading knowledge demonstrated by students answering the item correctly. The experts then provide a summary description of performance at each anchor point leading to a content-referenced interpretation of the achievement results. Detailed information on the creation of the benchmarks is provided in the "Using Scale Anchoring to Interpret the PIRLS 2016 Achievement Scales" section of *Methods and Procedures in PIRLS 2016* (Martin, Mullis, and Hooper 2017).

4.6.4 Estimation of Sampling Weights

Because of the complex sampling design used in PIRLS, students were assigned sampling weights. In general, the sampling weight assigned to a student was the inverse of the probability that the student would be selected for the sample. When responses were weighted, each contributed to the results for the total number of students represented by the individual student assessed. Weighting also adjusted for school and student nonresponse. The internationally defined weighting specifications for PIRLS required that each assessed student's sampling weight should be the product of

- the inverse of the school's probability of selection;

- an adjustment for school-level nonresponse;

- the inverse of the classroom's probability of selection; and

- an adjustment for student-level nonresponse.

Sampling weights should be used in all PIRLS analyses. A detailed description of this process is provided in *PIRLS 2016 User Guide for the International Database* (Foy 2018).

5. U.S. PIRLS and ePIRLS 2016 Data

The PIRLS 2016 international databases contain student achievement data as well as student, teacher, and school background data for 61 education systems for PIRLS 2016. These databases provide comparable data across education systems on detailed measures of student achievement in reading for PIRLS participants; information on educational practices and student outcomes; links between student achievement and background information from students, teachers, school principals, and curriculum experts; and achievement scales on a metric that is common to all cycles of PIRLS, allowing for the analysis of trends.

5.1 U.S. International, and National Data Files

The PIRLS 2016 national data for the United States exist in the following three forms:

- **U.S. international data files**, which are part of the PIRLS international database and are directly comparable to those of other nations. These files allow for comparisons of the United States with any of the other education systems participating in PIRLS in virtually all respects. These files are available from the TIMSS & PIRLS International Study Center as SAS export files or SPSS ".sav" files through https://timssandpirls.bc.edu/pirls2016/international-database/index.html. Note that these data files do not include the U.S.-specific adaptations made to a few questions in the questionnaires or the additional questions added to the school and student questionnaires, such as the question on race/ethnicity added to the student questionnaire. Furthermore, there are also restricted variables designated by IEA that are not available in the international public-use data files. Exhibit 5.1 below outlines the variables removed from the international public-use files.

Exhibit 5-1.   Variables removed from public-use version of PIRLS 2016 international database

File names	Description
ITBIRTHY	Students' year of birth from the tracking forms
ITBIRTHM	Students' month of birth from the tracking forms
ASBG02A	Students' year of birth from the student questionnaire
ASBG02B	Students' month of birth from the student questionnaire
ITDATE	PIRLS 2016 test administration date
ACBG01	Total school enrollment
ACBG02	School enrollment in the target grade
ITMODE_C	Administration mode for school context questionnaires
ITMODE_H	Administration mode for home context questionnaires
ITMODE_T	Administration mode for teacher context questionnaires

SOURCE: Foy, P. (Ed.) (2018). *PIRLS 2016 User Guide for the International Database*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College, exhibit 4-2, p. 52.

- **U.S. national public-use data files**, which include the U.S.-specific adaptations that are not part of the U.S. international data files, some of which also include restricted variables designated by the IEA. These adaptations affect only a few variables and include the clarification or addition of response options on some international items and the addition of questions to each of the questionnaires. These additional questions are described in section 5.9.2 of this report. The U.S.-specific PIRLS data files are available separately from NCES by download from https://nces.ed.gov/surveys/pirls/datafiles.asp. These national files are in ASCII format and are named as indicated in exhibit 5-2. SAS and SPSS codes for reading these data files can also be downloaded from the NCES website.[8]

Because the U.S. national files differ little from their international counterparts, the bulk of the variables describing U.S. students, teachers, and schools are as described in the *PIRLS 2016 User Guide for the International Database* (Foy 2018). These are the most comprehensive and detailed references for the PIRLS 2016 data and should be considered the primary references.

- **U.S. national restricted-use data files**, which can only be obtained by completing a restricted-use license agreement with NCES. The restricted-use data files are provided only on CD-ROM. These datasets contain the supplemental link files that link PIRLS school ID numbers to the school ID numbers as they appear in the publicly available CCD or PSS. In addition, race/ethnicity is provided with all available categories, and free or

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[8] The public-use dataset and restricted-use data CD-ROM contain a quick guide that explains how to use ASCII files with syntax files to create SPSS or SAS datasets.

reduced-price lunch is provided as a continuous variable. Because these data can reveal the identities of participating schools, the restricted-use data files are only made available to those who obtain an NCES restricted-use data license. Directions on how to obtain the license can be found at https://nces.ed.gov/pubsearch/licenses.asp.

The discussion that follows is designed to provide the following:

- a summary overview of sections of the *PIRLS 2016 User Guide for the International Database* (Foy 2018) as these relate to using the U.S. data files;

- documentation of U.S. national items that differ from their international versions in the U.S. and state files; and

- a description of U.S. national items that are unique to the U.S. national and state files.

5.2   PIRLS and ePIRLS Data Files

The following five basic types of data files are available for each education system in both the PIRLS and ePIRLS international datasets:

- achievement files containing item response data and scale scores for the PIRLS and ePIRLS assessment;

- background files with information from students, from their reading teachers in PIRLS and ePIRLS, and from the principals of their schools;

- student-teacher linkage files that contain the information needed to link data on students to that of their teachers;

- constructed-response scoring reliability files providing data on the reliability of scoring for this type of item; and

- curriculum data files that contain the responses of countries or participating education systems to the curriculum questionnaires.

The naming convention of these files can be seen in Exhibit 5-2. It should be noted that the restricted-use versions of PIRLS and ePIRLS only contain 2 files each, as only the background files from students and curriculum data files have restricted-use variables. The following discussion focuses on the first three categories of files because these are the ones most likely to be used in data analyses by most users. For

the remaining two categories of files, the reader is referred to the *PIRLS 2016 User Guide for the International Database* (Foy 2018).

Exhibit 5-2.   U.S. national PIRLS and ePIRLS data file names

Contents	File name
PIRLS 2016: Public-Use	
Student Background	P4_STUDENT16.DAT
Student Achievement	P4_ACHIEVE16.DAT
Teacher Background	P4_TEACHER16.DAT
Student-Teacher Linkage	P4_STD_TCH_LINK16.DAT
School Background	P4_SCHOOL16.DAT
ePIRLS 2016: Public-Use	
Student Background	eP4_STUDENT16.DAT
Student Achievement	eP4_ACHIEVE16.DAT
Teacher Background	eP4_TEACHER16.DAT
Student-Teacher Linkage	eP4_STD_TCH_LINK16.DAT
School Background	eP4_SCHOOL16.DAT
PIRLS 2016: Restricted-Use	
Restricted-use School Variables	P4_RESTRICTED_USE16_SCH.DAT
Restricted-use Student Variables	P4_RESTRICTED_USE16_STD.DAT
ePIRLS 2016: Restricted-Use	
Restricted-use School Variables	eP4_RESTRICTED_USE16_SCH.DAT
Restricted-use Student Variables	eP4_RESTRICTED_USE16_STD.DAT

SOURCE: U.S. Department of Education, National Center for Education Statistics, Progress in International Reading Literacy Study (PIRLS), 2016.

5.3   PIRLS and ePIRLS Achievement Data Files and Variable Names

The data files containing the IRT-scaled achievement scores for overall reading and the several reading domains are identified by the first three characters in the file name. A set of five plausible values characterizes each of these achievement scores.

For analytic convenience, these same achievement scores are also provided as an addition to the student background data files.

The achievement score variable names are based on an eight-character string defined below. In exhibit 5-3, these conventions are illustrated by reference to the first plausible value for each of the total, content domain, and cognitive domain achievement scales in PIRLS and ePIRLS.

First character of the variable name (<u>A</u>SRREA01):

- A – fourth-grade score

Second character of the variable name (A<u>S</u>RREA01):

- S – indicates that this is a student-level variable

Third character of the variable name (AS<u>R</u>REA01):

- R – PIRLS score

- E – ePIRLS score

Fourth through sixth characters of the variable name (ASR<u>REA</u>01):

- A three-character code describing the achievement scale, as shown in exhibit 5-3

Seventh and eighth characters of the variable name (ASRREA<u>01</u>):

- A two-digit number that indicates the plausible value – "01," "02," "03," "04," or "05."

For example, ASRREA01–ASRREA05 represent the plausible values for PIRLS overall reading, while ASEREA01–ASEREA05 represent the plausible values for ePIRLS overall reading. Exhibit 5-3 provides the three-digit codes identify reading scales and subscales used in PIRLS and ePIRLS.

Exhibit 5-3. Three-digit codes identifying achievement scales in PIRLS and ePIRLS

Achievement Scale	Score identifier	Examples of variable names	
		PIRLS	ePIRLS
Reading overall score	REA	ASRREA01	ASEREA01
Purposes for reading			
Literacy experience	LIT	ASRLIT01	—
Acquire and use information	INF	ASRINF01	—
Processes of comprehension			
Retrieving and straightforward inferencing	RSI	ASRRSI01	ASERSI01
Interpreting, integrating, evaluating	IIE	ASRIIE01	ASEIIE01

— Not available.
SOURCE: Foy, P. (Ed.). (2018). *PIRLS 2016 User Guide for the International Database*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

5.3.1 PIRLS and ePIRLS Benchmark Achievement Variables

The PIRLS achievement files also contain a set of variables indicating which international benchmark the students reached. For PIRLS and ePIRLS, the overall reading scales have five plausible values for each of the four benchmark levels defined (advanced, high, intermediate, low). The international benchmark variables follow the achievement score variable naming convention but substitute the letters "IBM" in the fourth through sixth positions of the variable name. Thus, ASRIBM01, ASRIBM02, ASRIBM03, ASRIBM04, and ASRIBM05 are the five benchmark variables describing the fourth-grade overall reading score. It follows that ASEIBM01, ASEIBM02, ASEIBM03, ASEIBM04, and ASEIBM05 are the five benchmark variables describing the fourth-grade overall online reading score.

5.3.2 ePIRLS Student Questionnaire Variables

The ePIRLS fourth-grade achievement file also includes additional student background variables from the ePIRLS student questionnaire pertaining to students' familiarity with computer usage.

5.4 PIRLS and ePIRLS Background Questionnaire Data Files

Student, teacher, and school files contain the responses to the questions contained in the respective background questionnaires administered in PIRLS 2016, along with a fourth file used to link the student and teacher background data appropriately when student and teacher files are merged.

5.4.1 Student Background Data Files (ASG)

The student background data files contain students' responses to questions in the student questionnaire, along with students' reading achievement scores (as plausible values). At the fourth grade, there was a single version of the student questionnaire for PIRLS and ePIRLS. The files also contain a number of identification variables, tracking variables, sampling and weighting variables, and derived variables that were used to produce some of the exhibits in the international reports.

5.4.2 Teacher Background Data Files (ATG)

Teachers of PIRLS and ePIRLS classes were administered a single teacher background questionnaire that had questions about their background and their teaching practices in the classes of sampled students. Each teacher was asked to

complete a questionnaire for each class taught that contained sampled students. The PIRLS and ePIRLS teacher background data files contain one record for each teacher and class combination. Responses to the single questionnaire administered to fourth-grade teachers of PIRLS and ePIRLS are found in the ATG files.

In all of the teacher files, each teacher has a unique identification number (IDTEACH) and a link number (IDLINK) specific to the class taught by the teacher and to which the information in the data record corresponds. The IDTEACH and IDLINK combination uniquely identifies, within an education system, a teacher teaching a specific class. For example, students linked to teachers identified by the same IDTEACH but different IDLINK are taught by the same teacher but in different classes. It is important to note that the teachers in question do not constitute a representative sample of teachers in an education system but rather are the teachers who taught a representative sample of students. To reflect this fact, for the most part, the teacher data should be analyzed only in conjunction with the student-teacher linkage data files and weighted with student sampling weights.

5.4.3 School Background Data Files (ACG)

The school background data files contain the responses of school principals to questions about school policy, resources, and environment asked in the school questionnaire. That file also contains a series of identification variables, link variables, and sampling variables. The school data files can be merged with the student data files by using the education system and school identification variables. Details of the merging procedure using the SPSS-linked IEA International Database (IDB) Analyzer or using SAS programs for PIRLS and ePIRLS are provided in the *PIRLS 2016 User Guide for the International Database* (Foy 2018).

5.4.4 Student-Teacher Linkage Data Files (AST)

The PIRLS and ePIRLS 2016 student-teacher linkage data files contain information required to link the student and teacher data files. These files contain one entry per student-teacher linkage combination in the data. For instance, if three teachers are linked to a student, there are three entries in the file corresponding to that student. The sole purpose of the student-teacher linkage data files is to link teacher-level data with student-level data to perform appropriate student-level analyses where teacher characteristics are disaggregated over students.

5.4.5 Curriculum Questionnaire Data Files

In addition to the background questionnaires, PIRLS also provides data on the curriculum of the participating education systems. For PIRLS and ePIRLS, there is a single file.

5.5 Variable Naming Convention for Background Variables

The background variable naming convention is based on a seven- or eight-character string defined below. These conventions are illustrated by reference to an item in the fourth-grade school questionnaire. This item asks principals to report the population size of the community in which the school is located.

First character of the variable name (<u>A</u>CBG05A):

- A – fourth-grade data

Second character of the variable name (A<u>C</u>BG05A):

- C – school principal

- T – teacher

- S – student

Third character of the variable name (AC<u>B</u>G05A):

- N – a national or nationally adapted background variable

- X – a new national background variable

- B – all international background variables in the questionnaire data files

- D – all international derived variables

Fourth character of the variable name (ACB<u>G</u>05A):

- G – general question

- R – question related to reading

Fifth through seventh characters of the variable name (ACBG<u>05A</u>):

- Used to represent the sequential numbering of each question

<u>Eighth character</u> of the variable name (ACBG12A<u>A</u>):

- Represents the item within a multipart question

5.5.1 Summary Indices and Derived Variables

The PIRLS and ePIRLS questionnaires often devote several questions to a single construct. In these cases, responses to the individual items were combined to create a derived variable. A PIRLS index is a special type of derived variable that assigns students to one of three levels—high, medium, or low—based on their responses to the component variables. These variables are described in detail in Supplement 3 of the *PIRLS 2016 User Guide for the International Database* (Foy 2018).

5.6 Sampling and Weighting Variables

Several sampling and weighting variables are included in the PIRLS and ePIRLS data files. They are listed and described below in conjunction with a discussion of how and when these weights are used. Because PIRLS uses a complex sampling design, sampling weights must be used to generate accurate population estimates. The sampling weights account for the sample design and any stratification or disproportional sampling of subgroups; they also include adjustments for nonresponse (see LaRoche, Joncas, and Foy 2017).

As noted, the sample of students is not a simple random sample; therefore, students in the sample do not have an equal probability of selection. Sampling weights adjust for this unequal probability and, in so doing, provide for statistical estimates reflective of the student population from which the sample was drawn. Sampling weights also include adjustments for school and student nonresponse. All PIRLS and ePIRLS analyses require the application of sampling weights. Provisions for weighting data are a standard feature of virtually all software likely to be used in analyses.

The sampling weights included in the PIRLS and ePIRLS 2016 data files are described in exhibit 5-4. (Note that teacher background data files do not have any sampling weight variables because the analysis of teacher variables requires the merging of the teacher data with the student data and the use of student sampling weight variables.)

Exhibit 5-4   PIRLS and ePIRLS sampling weight variables

Variable names	Descriptions
TOTWGT	Total student weight – sums to the national population
SENWGT	Student senate weight – sums to 500 in each education system
HOUWGT	Student house weight – sums to the student sample size in each education system
TCHWGT	Overall teacher weight
SCHWGT	School-level weight

SOURCE: Foy, P., and Drucker, K. T. (Eds.) (2013). *PIRLS 2011 User Guide for the International Database*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

The characteristics of PIRLS and ePIRLS sampling weight variables are as follows:

- TOTWGT sums to the student population size in each education system and is appropriate for "within-country"[9] analyses and cross-country analyses where the analyses are conducted country by country and compared.

- SENWGT is a transformation of TOTWGT that results in a weighted student sample size of 500 in each education system. This weight may be appropriate for cross-country analyses that require each education system to have the same number of students rather than proportionately more students from larger education systems and fewer from smaller education systems, which is the case if TOTWGT is used.

- HOUWGT, another transformation of TOTWGT, ensures that the weighted sample corresponds to the actual sample size in each education system. This can be important because TOTWGT inflates sample sizes to approximate the population size, and software systems that use the actual sample size to compute significance tests will give misleading results under these conditions.

- TOTWGT, SENWGT, and HOUWGT are designed for use in student-level analyses from all student-level files.

- TCHWGT is specifically designed for analyses that link teacher background data to student data and is also used for analyses using all teachers.

- SCHWGT is designed for use in school-level analyses where the schools are the units of analysis.

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[9] Although traditional terms with "country" are used throughout this discussion, they apply as well to all participating states and other education systems.

5.7 Structure and Design Variables in PIRLS and ePIRLS 2016 Data Files

The PIRLS and ePIRLS 2016 data files also contain unique numerical identification variables for each respondent along with sample design information.

5.7.1 Identification Variables

In all PIRLS and ePIRLS data files, identification variables are included to label countries, students, teachers, or schools. These variables also are used to link cases between the different data file types. The identification variables have the prefix "ID" and are described below.

- IDCNTRY: a five-digit country identification code based on the ISO 3166 classification.

- IDPOP: identifies the target grade; "1" for the fourth grade.

- IDGRADE: identifies the target grade of the participating students, "4."

- IDSCHOOL: a four-digit identification code that uniquely identifies the participating schools within each country but is not unique across countries.

- IDCLASS: a six-digit identification code that uniquely identifies the sampled classrooms within a country.

- IDSTUD: an eight-digit identification code that uniquely identifies each sampled student in a country.

- IDBOOK: identifies the specific assessment booklet that was administered to each student.

- IDTEACH: a six-digit identification code that uniquely identifies a teacher within a school.

- IDLINK: uniquely identifies the class for which a teacher answered a questionnaire.

5.7.2 Tracking Variables

Information about students, teachers, and schools provided by the survey tracking forms described earlier is stored in the tracking variables. These variables have the prefix "TT." ITBIRTHM, ITBIRTHY, and ITDATE are not included in the public-

use international files as mentioned in section 5.1 and are available upon request in the restricted-use files. ITLANG is included in the student achievement and student background data files.

- ITSEX: gender of each student as stated in the Student Tracking Forms.

- ITBIRTHM and ITBIRTHY: month and year of birth of each student as stated in the Student Tracking Forms.

- ITDATE: date of testing for each student.

- ITLANG: language of testing for each student.

5.8   PIRLS and ePIRLS 2016 Codebook Files

All information related to the structure of the PIRLS and ePIRLS 2016 data files, as well as the source, format, descriptive labels, and response option codes for all variables, is contained in codebook files. Each data file type in the database is accompanied by a codebook file, with the exception of the curriculum data files. These files are available from the PIRLS International Study Center website at https://timssandpirls.bc.edu/pirls2016/international-database/index.html.

5.9   U.S. National Instrumentation

As noted earlier, the U.S. national instrumentation differs from the international instrumentation in five ways:

- Minor language/expression adaptations were made to some of the instructions.

- Minor language adaptations were made to the wording of some assessment items.

- For a few questionnaire items, response alternatives were changed but in a way that allowed a crosswalk to the international response alternatives.

- Several U.S.-specific questions without international counterparts were added to the student and school questionnaires.

Otherwise, the U.S. instrumentation is exactly the same as the international instrumentation. This will become apparent in comparisons between U.S. and

international questionnaires. For standard international versions of PIRLS 2016 questionnaires, please see Supplement 1 of the *PIRLS 2016 User Guide for the International Database* (Foy 2018) PIRLS provides parallel supplements to the international user guides.

The PIRLS supplements to the *PIRLS 2016 User Guide for the International Database* are as follows:

- Supplement 1, International Version of the PIRLS 2016 Background Questionnaires and Curriculum Questionnaire, can be downloaded from the TIMSS & PIRLS International Study Center at https://timssandpirls.bc.edu/pirls2016/international-database/downloads/P16_UG_Supplement1.pdf.

- Supplement 2, the National Adaptations of International Background Questionnaires of the *PIRLS 2016 User Guide for the International Database* can be downloaded from the TIMSS & PIRLS International Study Center at https://timssandpirls.bc.edu/pirls2016/international-database/downloads/P16_UG_Supplement2.pdf.

- Supplement 3, the Variables Derived from the Student, Home, Teacher, and School Questionnaire Data of the *PIRLS 2016 User Guide for the International Database* can be downloaded from the TIMSS & PIRLS International Study Center at https://pirls.bc.edu/pirls2016/international-database/downloads/P16_UG_Supplement3.pdf.

- The U.S. versions of the PIRLS questionnaires may be downloaded from https://nces.ed.gov/surveys/pirls/questionnaire.asp. The variable names in the U.S. files are identical to those in the international files with the exception of the U.S.-specific variables added, and are included in this technical report.

5.9.1 Background Questionnaire Items With U.S. Adaptations to Response Alternatives

As the description of U.S. national adaptations in appendix D makes clear, there were a number of relatively minor changes to the wording of the international item stems and response alternatives in the questionnaires. Most of these adaptations do not require comment, as they are identical in format between the international and U.S. versions of the questionnaires (for example, they contain simple wording changes). In some cases, however, the adaptations resulted in item response formats not immediately comparable between the international and national versions of the

questionnaires. As indicated in appendix D, there are instances in which the international and U.S. versions of variables have different sets of response codes; "highest level of formal education" in the teacher questionnaire is one example.

This means that, for these items, the data will not be identical in international and U.S. versions of the data files. Using the same example, "highest level of formal education" will have six response categories in the U.S. international file and seven categories in the U.S. national file. However, as indicated in appendix D, crosswalks between international and U.S. versions of these questions allow for the conversion of the U.S. response codes to the international format.

5.9.2   U.S.-Specific Variables

U.S.-specific items were added to the student, teacher, and school questionnaires. Four questions were added to the **student questionnaires**:

1. a two-part question designed to collect the student's race/ethnicity;

2. a question that asked for language other than English spoken at home;

3. a three-part question asking about students' place of birth and parents' place of birth; and

4. a question about additional activities outside of school.

Four questions were added to the **school questionnaire**:

1. the percentage of students in the school eligible for free or reduced-price lunch;

2. the percentage of students in the school who are English language learners;

3. the average income level of the population in the school area; and

4. a specification of the type of school.

5.9.2.1   Race/ethnicity (Student Questionnaire)

Students' race/ethnicity was obtained through student responses to a two-part question in the student questionnaire. Students were asked first whether they were Hispanic or Latino and then whether they were members of the following five racial groups: (1) American Indian or Alaska Native; (2) Asian; (3) Black or African American; (4) Native Hawaiian or other Pacific Islander; or (5) White. Multiple

responses to the second of these questions were allowed.[10] A composite variable with six categories was constructed in which results are shown separately for (1) Hispanics of any race; (2) Blacks; (3) Whites; (4) Asians; and (5) multiracial. The sixth category was labeled as "Other" and consisted of the small numbers of students indicating that they were American Indian or Alaska Native and Native Hawaiian or other Pacific Islander.[11] The restricted-use student background file contains an uncollapsed version of this variable that separates out the "Other" category into the American Indian or Alaska Native and Native Hawaiian or other Pacific Islander response options.

5.9.2.2 Language other than English spoken at home (Student Questionnaire)

This item extended the international question about how often students spoke English at home by asking those who indicated that they did not always speak English if they spoke Spanish or another language at home. If another language other than Spanish was selected, they were asked to specify what language at home was spoken. Two variables were created from this national item. The first variable (ASXBG03B) is a categorical variable showing the students who selected (1) Spanish or (2) Other.[10] The second variable (ASXBG03Ba) is a string variable with all the text responses entered by the students. For the text responses, responses that were considered invalid, such as numbers, "pig Latin," and "gibberish," were removed and set to missing. This was the case for 65 text responses. Misspellings were left as is.[12]

5.9.2.3 Additional outside activities (Student Questionnaire)

The measure of outside of school activities was collected using a prompt with four yes/no questions. The prompt states, "The following questions ask about activities you do <u>outside of school</u>." The yes/no questions were as follows:

- Do you play on a sports team outside of school?

- Do you play a musical instrument outside of school?

- Are you studying something in a class outside of school?

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[10] Race/ethnicity is provided with all categories in the restricted-use dataset.

[11] Race/ethnicity is provided as a composite variable in the public-use dataset.

[12] The data suggest that some students may not have fully comprehended the instructions in the questions. Students who responded to the international item that they "always" speak English at home (ASBG03) were supposed to skip the item asking about other languages at home (ASXBG03B). However, about 15.3 percent of students who took PIRLS (677 cases) responded that they "always" speak English at home and also identified that they speak another language at home. In some cases, students specified "ENGLISH" as their other language. Therefore, results from the two variables (ASXBG03B and ASXBG03Ba) should be interpreted with caution.

- Do you belong to a club outside of school (like Girl Scouts, Cub Scouts, 4-H, or Boys and Girls Club)?

5.9.2.4 Birth country of mother/father/student (Student Questionnaire)

Students were asked about the location of their birth and about the location of their parents' or legal guardians' birth using three yes/no questions. These questions were as follows:

A. Was your mother (or stepmother or female legal guardian) born in the United States? ("United States" includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad.)

B. Was your father (or stepfather or male legal guardian) born in the United States?

C. Were you born in the United States?

5.9.2.5 Poverty level in public schools (percentage of students eligible for free or reduced-price lunch) (School Questionnaire)

The measure of poverty level in public schools was obtained from principals' responses to the school questionnaire. The question asked the principal to report, as of approximately October 2015, the percentage of students at the school eligible to receive free or reduced-price lunch through the National School Lunch Program. Responses were grouped into five categories: (1) less than 10 percent, (2) 10 to 24.9 percent, (3) 25 to 49.9 percent, (4) 50 to 74.9 percent, and (5) 75 percent or more.[13] Missing data on this variable were replaced with measures taken from the Common Core of Data (CCD). The effect of this replacement on the confidentiality of the data was examined as part of the confidentiality analyses described in section 4.6.2. The restricted-use school file contains a scale version of this variable, rather than categorical.

5.9.2.6 Limited-English proficient/English language learners (School Questionnaire)

Principals were asked to report the percentage of students with limited English proficiency or English language learners. They were provided with the following eight response categories: 0 percent; 1–5 percent; 6–10 percent; 11–25 percent; 26–50 percent; 51–75 percent; 76–90 percent; and over 90 percent.

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[13] Free or reduced-price lunch is provided as a composite variable in the public-use dataset and as a continuous variable in the restricted-use dataset.

5.9.2.7   Type of school (School Questionnaire)

Principals were asked to identify their schools using one of the following 10 response categories: (1) regular public school; (2) regular public school with magnet program;(3) magnet school or school with special program; (4) special education; (5) alternative curriculum; (6) vocational; (7) charter school; (8) independent private school; (9) religiously affiliated private school; or (10) other school.

5.9.2.8   Missing data

Data derived from the student, school, and teacher questionnaires and from the student assessments contain missing data in varying amounts. Four sources of missing data are identified:

1. <u>Not administered</u>. The respondent was not administered the actual item. He or she had no chance to read and answer the question.

2. <u>Omitted or invalid</u>. The respondent had a chance to answer the question but did not do so. This code also was used for responses that were not interpretable.

3. <u>Logically not applicable</u>. The respondent answered a preceding filter question in a way that made the following dependent questions not applicable to him or her.

4. <u>Not reached</u> (only used in the achievement files). This code indicates those items not reached by the students due to a lack of time.

SAS and SPSS control code for all the data files include the code for handling/converting missing data.

5.9.2.9   Imputation

No imputation for missing values was done. However, missing data on the measure of school poverty (proportion of students eligible for free or reduced-price lunch) reported by schools was replaced as described above.

5.10 Merging PIRLS 2016 Data Files

In preparing PIRLS and ePIRLS 2016 data for analysis, it may be necessary to merge two (or more) of the data files named in exhibit 5-4. Not every analysis will require merging of files however. For example, analyses looking at the relationship between

student background and achievement can be done using the student background file alone. However, analyses that wish to examine the relationships between school, teacher or student characteristics and student achievement will require that files be merged. Standard merging procedures as implemented in SPSS, SAS, or Stata can be applied. Examples are provided below along with illustrative SAS and SPSS code. (These various merges are facilitated for SPSS users who choose to work with the IEA International Database Analyzer [IEA IDB Analyzer] described below.)

The merging procedures illustrated below follow the same pattern as previous PIRLS studies (see Foy and Drucker 2013) and are illustrated with PIRLS fourth-grade data.

5.10.1 Merging Student and School Data

If the intent is to disaggregate school data across students, the school-level data are merged to the student file using IDSCHOOL. The disaggregated data can be analyzed at the student level using the student-level weight TOTWGT. Exhibits 5-5 and 5-6 provide examples of how to merge the student and school data using SAS and SPSS. Additional examples are provided in chapters 2 and 3 in the *PIRLS 2016 User Guide for the International Database* (Foy 2018; available at https://timssandpirls.bc.edu/pirls2016/international-database/index.html).

Exhibit 5-5.   Illustrative SAS code for merging U.S. PIRLS student and school data

```
libname aR4 "C:\PIRLS2016\Data";

data SCHOOL;
set aR4.P4_SCHOOL16;

proc sort data= SCHOOL;
by IDSCHOOL;

data STUDENT;
set aR4.P4_STUDENT16;

proc sort data= STUDENT;
by IDSCHOOL;

data aR4.MERGE1;
merge STUDENT SCHOOL;
by IDSCHOOL;
run;
```

SOURCE: International Association for the Evaluation of Education Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

This example creates a temporary SAS dataset (SCHOOL) using the permanent school dataset aR4.P4_SCHOOL16. It then sorts the school data by school ID (IDSCHOOL). A similar procedure is used for the student file (STUDENT), which

is also sorted by the school ID using the permanent student dataset aR4.P4_STUDENT16. The final dataset is a permanent dataset called aR4.MERGE1, containing the merged file from SCHOOL and STUDENT using IDSCHOOL as the merge variable.

The SPSS example shown in exhibit 5-6 works in a similar way. SPSS uses a file containing the school variables (P4_SCHOOL16.SAV) and sorts the cases by IDSCHOOL. The same procedure is used for the student dataset, P4_STUDENT16.SAV. The "match files" command merges the two files, and the final, merged output file is saved as MERGE1.SAV.

Exhibit 5-6.   Illustrative SPSS code for merging U.S. PIRLS student and school data

```
get file = "C:\PIRLS2016\Data\P4_SCHOOL16.SAV".
sort cases by IDSCHOOL.
save outfile = 'C:\PIRLS2016\Data\SCHOOL.SAV'.

get file = "C:\PIRLS2016\Data\P4_STUDENT16.SAV".
sort cases by IDSCHOOL.
save outfile = 'C:\PIRLS2016\Data\STUDENT.SAV'.

match files
/ file= 'C:\PIRLS2016\Data\STUDENT.SAV'
/ table= 'C:\PIRLS2016\Data\SCHOOL.SAV'
/ by IDSCHOOL.
save outfile = "C:\PIRLS2016\Data\MERGE1.SAV".
```

SOURCE: International Association for the Evaluation of Education Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

5.10.2 Merging Student and Teacher Data

In the United States, the student sample was based on intact classrooms. The teachers of the students selected in this way are not a sample of teachers and should be seen as the "teachers of the sampled students." To maintain this linkage, merges of teacher and student data must use the student-teacher link file (P4_STD_TCH_LINK16.DAT), which also contains the appropriate teacher sampling weights. Exhibits 5-7 and 5-8 provide illustrative code for merging the student and the mathematics teacher files in SAS and SPSS.

Exhibit 5-7.   Illustrative SAS code for merging U.S. PIRLS student and teacher data

```
libname aR4 "C:\PIRLS2016\Data";

data TEACHER;
set aR4.P4_TEACHER16;

proc sort data = TEACHER;
by IDTEACH IDLINK;

data STDTCH;
set aR4.P4_STD_TCH_LINK16;

proc sort data = STDTCH;
 by IDTEACH IDLINK;

data TEACHMRG;
merge TEACHER STDTCH;
by IDTEACH IDLINK;
if TCHWGT > 0;

proc sort data = TEACHMRG;
 by IDSTUD;

data STUDENT;
set aR4.P4_STUDENT16;

proc sort data = STUDENT;
 by IDSTUD;

data aR4.MERGE2;
merge STUDENT TEACHMRG;
by IDSTUD;
run;
```

SOURCE: International Association for the Evaluation of Education Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

In the SAS example, the program creates a temporary SAS dataset (TEACHER) using the permanent teacher file, aR4.P4_TEACHER16. It then sorts the teacher data by the teacher ID (IDTEACH) and the link ID (IDLINK). A similar procedure is used for the student-teacher link file (STDTCH), using the permanent file (aR4.P4_STD_TCH_LINK16), which is also sorted by the teacher ID and the link ID. The weight variable for teachers (TCHWGT) is used as a selection variable because teachers have been selected. The result is a merged file called aR4.TEACHMRG with disaggregated teacher data. This file is merged with the student file (STUDENT). The final dataset is a permanent dataset called aR4.MERGE2 that contains the merged file from TEACHMRG and STUDENT using IDSTUD as the merge variable.

The SPSS student-teacher merge in exhibit 5-8 uses a file containing the teacher variables (P4_TEACHER16.SAV) and sorts the cases by IDTEACH and IDLINK. The file is then saved as TEACHER. The same procedure is used for the student-teacher linkage dataset P4_STD_TCH_LINK16.SAV. The "match files" command merges the two files by the ID variables IDTEACH and IDLINK, and the merged output file is saved as TEACHMRG. To include the student data, the student file is selected (P4_STUDENT16.SAV), sorted by IDSTUD, and saved as STUDENT. This file is merged with TEACHMRG using IDSTUD to create the final file MERGE2.SAV containing both teacher and student variables.

Exhibit 5-8.   Illustrative SPSS code for merging U.S. PIRLS student and teacher data

```
get file = "C:\PIRLS2016\Data\P4_TEACHER16.SAV".
sort cases by IDTEACH IDLINK.
save outfile = 'C:\PIRLS2016\Data\TEACHER.SAV'.

get file = "C:\PIRLS2016\Data\P4_STD_TCH_LINK16.SAV".
select if TCHWGT > 0.
sort cases by IDTEACH IDLINK.
save outfile = 'C:\PIRLS2016\Data\STDTCH.SAV'.

match files
/ file = 'C:\PIRLS2016\Data\STDTCH.SAV'
/ table = 'C:\PIRLS2016\Data\TEACHER.SAV'
/ by IDTEACH IDLINK.
sort cases by IDSTUD.
save outfile = 'C:\PIRLS2016\Data\TEACHMRG.SAV'.

get file = "C:\PIRLS2016\Data\P4_STUDENT16.SAV".
sort cases by IDSTUD.
save outfile = 'C:\PIRLS2016\Data\STUDENT.SAV'.

match files
/ file = 'C:\PIRLS2016\Data\TEACHMRG.SAV'
/ table = 'C:\PIRLS2016\Data\STUDENT.SAV'
/ by IDSTUD.
save outfile = "C:\PIRLS2016\Data\MERGE2.SAV".
```

SOURCE: International Association for the Evaluation of Education Achievement (IEA), Progress in International Reading Literacy Study (PIRLS), 2016.

5.10.3 Merging Student, School, and Teacher Data

In merging student, teacher, and school data together to form a single dataset, the procedures from sections 5.11.1 and 5.11.2 are combined. Exhibits 5-9 and 5-10 show illustrative SAS and SPSS code designed to achieve this three-way merge. This example uses the same merging steps as with the previous school and teacher examples (MERGE1 and MERGE2), then merges the output files by the student ID,

IDSTUD, into a final file aR4.MERGEALL containing linked student, school, and teacher data at the student level.

Exhibit 5-9.   Illustrative SAS code for merging U.S. PIRLS school, teacher, and student data

```
libname aR4 "C:\PIRLS2016\Data";

data SCHOOL;
set aR4.P4_SCHOOL16;

proc sort data = SCHOOL;
by IDSCHOOL;

data STUDENT;
set aR4.P4_STUDENT16;

proc sort data = STUDENT;
by IDSCHOOL;

data MERGE1;
merge STUDENT SCHOOL;
by IDSCHOOL;

proc sort data = MERGE1;
by IDSTUD;

data TEACHER;
set aR4.P4_TEACHER16;

proc sort data = TEACHER;
by IDTEACH IDLINK;

data STDTCH;
set aR4.P4_STD_TCH_LINK16;

proc sort data = STDTCH;
by IDTEACH IDLINK;

data MERGE2;
merge STDTCH TEACHER;
by IDTEACH IDLINK;
if TCHWGT > 0;

proc sort data = MERGE2;
by IDSTUD;

data aR4.MERGEALL;
merge MERGE1 MERGE2;
by IDSTUD;
run;
```

SOURCE: International Association for the Evaluation of Education Achievement (IEA), Progress in International Reading LIteracy Study (PIRLS) 2016.

In the SPSS example shown in exhibit 5-10, the student and school data are first sorted by IDSCHOOL and then merged. The procedure followed for combining student and teacher data in exhibit 5-9 is used again. Then the saved student-school and student-teacher files are merged by IDSTUD, and a final dataset MERGEALL.SAV is saved.

Exhibit 5-10. Illustrative SPSS code for merging U.S. PIRLS school, teacher, and student data

```
get file = "C:\PIRLS2016\Data\P4_SCHOOL16.SAV".
sort cases by IDSCHOOL.
save outfile = 'C:\PIRLS2016\Data\SCHOOL.SAV'.

get file = "C:\PIRLS2016\Data\P4_STUDENT16.SAV".
sort cases by IDSCHOOL.
save outfile = 'C:\PIRLS2016\Data\STUDENT.SAV'.

match files
/ file = 'C:\PIRLS2016\Data\STUDENT.SAV'
/ table = 'C:\PIRLS2016\Data\SCHOOL.SAV'
/ by IDSCHOOL.
save outfile = "C:\ PIRLS2016\Data\MERGE1.SAV" .

get file = "C:\PIRLS2016\Data\P4_TEACHER16.SAV".
sort cases by IDTEACH IDLINK .
save outfile = 'C:\PIRLS2016\Data\TEACHER.SAV'.

get file = "C:\PIRLS2016\Data\P4_STD_TCH_LINK16.SAV".
select if TCHWGT > 0 .
sort cases by IDTEACH IDLINK.
save outfile = 'C:\ PIRLS2016\Data\STDTCH.SAV'.

match files
/ file = 'C:\PIRLS2016\Data\STDTCH.SAV'
/ table = 'C:\PIRLS2016\Data\TEACHER.SAV'
/ by IDTEACH IDLINK.
save outfile = "C:\PIRLS2016\Data\MERGE2.SAV".

Get file = "C:\PIRLS2016\Data\MERGE1.SAV".
Sort cases by IDSTUD.
save outfile = 'C:\PIRLS2016\Data\MERGE1.SAV'.

Get file = "C:\PIRLS2016\Data\MERGE2.SAV".
Sort cases by IDSTUD.
save outfile = 'C:\PIRLS2016\Data\MERGE2'.

match files
/ file = 'C:\PIRLS2016\Data\MERGE2.SAV'
/ table = 'C:\PIRLS2016\Data\MERGE1.SAV'
/ by IDSTUD.
save outfile = "C:\PIRLS2016\Data\MERGEALL.SAV".
```

SOURCE: International Association for the Evaluation of Education Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

5.10.4 Merging PIRLS 2016 Data with Restricted-Use Data

Users who have been granted a license to use the restricted-use PIRLS 2016 data will receive a restricted-use CD-ROM that contains an additional link file that provides a way to merge PIRLS data with school data from the CCD and PSS. The NCESSCH (the NCES unique public school identification code) from the PIRLS file is used to merge with NCESSCH from the CCD file. The PPIN (the private school's unique identification number) from the PIRLS file is used to merge with the PPIN from the PSS file. Illustrative SAS and SPSS code is provided in exhibits 5-11 and 5-12.

The code in question provides for a link between the PIRLS school data and the CCD/PSS data by school. Further merging to other PIRLS files (student, school, teacher) can be conducted using the IDSCHOOL for merging, as has been shown in earlier examples.

Exhibit 5-11. Illustrative SAS code for merging U.S. PIRLS school data with restricted-use (CCD and PSS) data

```
libname aR4 "C:\PIRLS2016\Data";

data SCHOOL;
set aR4.P4_RESTRICTED_USE16;

proc sort data = SCHOOL;
by NCESSCH;

data CCD;
set aR4.CCD;

proc sort data = CCD;
by NCESSCH;

data MERGE1;
merge CCD(IN=IN1) SCHOOL (IN=IN2);
by NCESSCH;
IF IN2;
run;

/* User can Merge in PSS data to the file containing CCD and PIRLS previously merged data */

Data SCHOOL2;
Set MERGE1;

proc sort data = SCHOOL2;
by PPIN;

data PSS;
set aR4.PSS;

proc sort data = PSS;
by PPIN;

data MERGE2;
merge PSS(IN=IN1) SCHOOL2 (IN=IN2);
by PPIN;
IF IN2;
run;
```

SOURCE: International Association for the Evaluation of Education Achievement (IEA), Progress in International Reading Literacy Study (PIRLS) 2016.

SPSS code designed to provide this same link between the PIRLS school data and the CCD/PSS data by school is provided in exhibit 5-12. Further merging to other PIRLS files (student, school, teacher) can be conducted using the IDSCHOOL for merging as has been shown in earlier examples.

Exhibit 5-12. Illustrative SPSS code for merging U.S. PIRLS fourth-grade school data with restricted (CCD and PSS) data

```
get file = "C:\PIRLS2016\Data\P4_RESTRICTED_USE16.SAV".
sort cases by NCESSCH.
save outfile = 'C:\PIRLS2016\Data\SCHOOL.SAV'.

get file = "C:\PIRLS2016\Data\CCD.SAV".
sort cases by NCESSCH.
save outfile = 'C:\PIRLS2016\Data\CCD.SAV'.

match files
/ file = 'C:\PIRLS2016\Data\CCD.SAV'
/ table = 'C:\PIRLS2016\Data\SCHOOL.SAV'
/ by NCESSCH.
save outfile = "C:\PIRLS2016\Data\MERGE1.SAV".

* Merge PSS to the Combined PIRLS/CCD school-level file

get file = "C:\PIRLS2016\Data\MERGE1.SAV".
sort cases by PPIN.
save outfile = 'C:\PIRLS2016\Data\SCHOOL2.SAV'.

get file = "C:\PIRLS2016\Data\PSS.SAV".
sort cases by PPIN.
save outfile = 'C:\PIRLS2016\Data\PSS.SAV'.

match files
/ file = 'C:\PIRLS2016\Data\PSS.SAV'
/ table = 'C:\PIRLS2016\Data\SCHOOL2.SAV'
/ by PPIN.
save outfile = "C:\PIRLS2016\Data\MERGE2.SAV" .
```

SOURCE: International Association for the Evaluation of Education Achievement (IEA), Progress in International Reading Literacy Study (PIRLS), 2016.

5.11 Some Notes on Analyzing the PIRLS 2016 Data

The design of PIRLS raises three special considerations for the analysis of PIRLS data. First, the assessment design necessitates the use of five *plausible values* rather than a single score for each of the various measures of mathematics, science, and reading achievement. Second, since the sampling design is not a simple random sample in which each student had an equal probability of selection, *sampling weights*

must be applied to generate unbiased estimates of population parameters. Third, the complex sampling design also means that the calculation of the *standard errors* of the various statistics generated requires special procedures.

5.11.1 Plausible Values

As noted earlier, the assessment design was based on balanced incomplete block (BIB) spiraling of assessment items to increase content-area coverage without a concomitant increase in the assessment time demanded of students. Each student completed only a subset of the total pool of assessment items, with the resulting data containing missing values for other items in the pool but not in the subset administered to the student. The trade-off for increased coverage through BIB spiraling is increased measurement error in the scores available for each student. This is accommodated through the estimation of (five) plausible values for each student rather than a single (unreliable) point estimate. Plausible values are random draws from the estimated distribution of a student's achievement. A detailed description of the PIRLS 2016 scaling can be found in *Methods and Procedures in PIRLS 2016* (Martin, Mullis, and Hooper 2017).

What this means for those analyses of PIRLS data that include achievement measures is that the analyses need to be done five times and the results averaged. For example, if one was regressing mathematics achievement on a number of family and school attributes, it would be necessary to estimate this equation five times and then average each set of five parameter estimates. It would not be legitimate to take the mean of the five plausible values in the first instance and then regress this mean on a number of family and school attributes.

5.11.2 Estimating Sampling Variance

The complex sampling design used in PIRLS 2016 complicates the task of computing standard errors. Most standard analysis software systems such as SAS and SPSS provide estimates based on the assumption of a simple random sample. Given the PIRLS sampling design, such standard errors will underestimate the true standard errors. PIRLS adopt the jackknife repeated replication (JRR) technique because it is computationally straightforward and provides approximately unbiased estimates of the sampling errors of means, totals, and percentages. The variables necessary for these JRR procedures are included as part of the PIRLS 2016 data files: JKZONE, the sampling zone (stratum) of the student's school; and JKREP, the sampling replicate (primary sampling unit) of the student's school.

There are, however, several options for estimating sampling errors that avoid the assumption of simple random sampling. The SPSS- and SAS-linked IDB Analyzer software was designed specifically by the IEA to analyze PIRLS international data files. This software is freely available from the IEA website at https://www.iea.nl ⬈.

Special-use software is also available for estimating the standard errors of statistics generated from complex sampling designs. Among the packages available are AM, available from the American Institutes for Research at http://am.air.org/about2.asp ⬈ and *SUDAAN,* available from RTI International at https://www.rti.org/sudaan ⬈. Some software packages provide for these capabilities as well.

In addition, SAS macros suitable for this purpose are available as part of the *PIRLS 2016 User Guide for the International Database* (Foy 2018). See also work by Stapleton (2006, 2008), which suggests procedures that can be used to generate appropriate standard errors for statistics generated by structural equation modeling techniques.

5.11.3 IDB Analyzer and International Data Explorer (IDE)

As described in section 5.11.2, the IDB Analyzer was developed by the IEA DPC as a plug-in for SAS and SPSS and can only be used in conjunction with SAS and SPSS. It is not a stand-alone analysis system.

The IDB Analyzer enables users to combine SPSS data files and conduct analyses using SPSS without writing programming code. The IDB Analyzer generates SPSS syntax and SAS program that takes into account information from the sampling design in the computation of statistics and their standard errors. In addition, the generated SPSS syntax and SAS program makes appropriate use of plausible values for calculating estimates of achievement scores and their standard errors, combining both sampling variance and imputation variance.

The IDB Analyzer consists of two modules—a merge module and an analysis module. The *merge module* is used to create analysis datasets by combining data files of different types and from different countries and selecting subsets of variables for analysis. The *analysis module* provides procedures for computing various statistics and their standard errors. All statistical procedures offered within the analysis module of the IDB Analyzer make appropriate use of sampling weights, and standard errors are computed using the JRR method. Percentages, means, regressions, and correlations may be specified with or without achievement scores. When achievement scores are used, the analyses are performed five times—once for each plausible value—and the results are aggregated to produce accurate estimates of achievement and standard errors that incorporate both sampling and imputation errors.

The use of the IDB Analyzer is described in detail with worked examples in chapter 2 of the *PIRLS 2016 User Guide for the International Database* (Foy 2018). Readers intending to use this user-friendly software are urged to read this user guide in detail.

In addition to IDB Analyzer for basic analysis and exploration of PIRLS data, NCES has developed a relatively simple, interactive online data-analysis tool: the International Data Explorer (IDE) can be found at https://nces.ed.gov/surveys/international/ide/. The IDE allows users to analyze all the international variables for all participating education systems and the U.S.-specific variables; however, it does not include U.S. restricted-use data. The IDE does not require SPSS or SAS for analyzing the data. It provides users with the capabilities to create statistical tables and charts of PIRLS data across countries and years on the website. This tool allows users to point and click in a self-contained module, unlike the IDB Analyzer software that must be used in conjunction with SPSS. Also, unlike the IDB Analyzer, the IDE does not provide access to data files for merging, transforming, or otherwise manipulating data. This tool reports averages for subject by selected variables and exports reports in HTML, Excel, Word, or PDF.

5.11.4 SAS Programs and Macros

The *PIRLS 2016 User Guide for the International Database* also provides assistance for those investigators who wish to conduct their analyses using SAS. The user guide includes a number of SAS programs needed to process the SAS data files, compute survey results, and carry out example analyses. These are described in detail with worked examples in chapter 3 of the user guide. Readers intending to use SAS for their analyses are urged to read this chapter in detail.

The following SAS programs and macros are available:

- P16_CONVERT.SAS and eP16_CONVERT are used to convert SAS export files into SAS data files for PIRLS and ePIRLS, respectively.

- ASASCRR4.SAS and ASACRE1.SAS are used to convert the response codes on the achievement items to their corresponding score levels for PIRLS and ePIRLS, respectively.

- P16_PL16_COMBINE.SAS combines merged PIRLS 2016 files to the PIRLS Literacy 2016 data files.

5.11.5 Special Considerations in Using the Teacher Data

The teachers in the PIRLS 2016 international databases are the teachers of nationally representative samples of students and are not representative samples of teachers in the participating countries. As a result, analyses with teacher data should be made with students as the units of analysis and reported in terms of students who are taught by teachers with a particular attribute.

When analyzing teacher data, it is first necessary to link the students to their respective teachers. The student-teacher linkage data files (AST) were created for this purpose. Because student achievement scores (plausible values), jackknife replication information, and teacher weighting variables are found in the student-teacher linkage data files, it is only necessary to merge the teacher background data files with the student-teacher linkage data files. For analyses linking teacher variables to student background variables, it is also necessary to merge the student background data files with the teacher background data files after they have been combined with the student-teacher linkage data files.

In general, to perform analyses using the teacher background data files, follow the steps below.

1. Identify the variables of interest in the teacher background data files and note any specific national adaptations to the variables.

2. Retrieve the relevant variables from the teacher background data files, including analysis variables, classification variables, identification variables (IDCNTRY, IDTEACH, and IDLINK), and any other variables used in the selection of cases.

3. Retrieve the relevant variables from the student-teacher linkage data files, including plausible values of achievement, classification variables, identification variables (IDCNTRY, IDSTUD, IDTEACH, and IDLINK), sampling (JKZONE and JKREP) and weighting (TCHWGT) variables, and any other variables used in the selection of cases.

4. Merge the teacher background data files with the student-teacher linkage data files using the variables IDCNTRY, IDTEACH, and IDLINK.

5. If student background variables also are needed, merge the student background data files with the merged student-teacher data files from the previous step using the variables IDCNTRY and IDSTUD.

5.11.6 Special Considerations in Using the School Data

In general, to perform analyses using the school background data files, follow the steps below.

1. Identify the variables of interest in the school and student background data files and note any specific national adaptations to the variables.

2. Retrieve the relevant variables from the school background data files, including analysis variables, classification variables, identification variables (IDCNTRY and IDSCHOOL), and any other variables used in the selection of cases.

3. Retrieve the relevant variables from the student background data files, including plausible values of achievement, classification variables, identification variables (IDCNTRY and IDSCHOOL), sampling (JKZONE and JKREP) and weighting (TOTWGT) variables, and any other variables used in the selection of cases.

4. Merge the school background data files with the student background data files using the variables IDCNTRY and IDSCHOOL.

References

Beaton, A.E., and González, E. (1995). *The NAEP Primer*. Chestnut Hill, MA: Boston College.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Foy, P., and Drucker, K.T. (Eds.). (2013). *PIRLS 2011 User Guide for the International Database*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

Foy, P. (Ed.). (2018). *PIRLS 2016 User Guide for the International Database*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

International Association for the Evaluation of Educational Achievement Data Processing and Research Center (IEA DPC). (2015). *WinW3S Manual*. Hamburg, Germany: IEA Data Processing Center.

Kaufman, S., Seastrom, M., and Roey, S. (2005). Do Disclosure Controls to Protect Confidentiality Degrade the Quality of the Data? *Proceedings of the Survey Methods Research Section, American Statistical Association*, 1218–1225.

LaRoche, S., Joncas, M., and Foy, P. (2017). Sample Design in PIRLS 2016. In M.O. Martin, I.V.S. Mullis, and M. Hooper (Eds.). *Methods and Procedures in PIRLS 2016* (chapter 3). Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

Martin, M.O., Mullis, I.V.S., and Hooper, M. (Eds.). (2017). *Methods and Procedures in PIRLS 2016*. Retrieved July 15, 2019, from Boston College, TIMSS & PIRLS International Study Center website at https://timssandpirls.bc.edu/publications/pirls/2016-methods.html.

Mullis, I.V.S., Kennedy, A.M., Martin, M.O., and Sainsbury, M. (2009). *PIRLS 2011: Assessment Framework and Specifications*. Chestnut Hill, MA: TIMSS and PIRLS International Study Center, Boston College.

Mullis, I.V.S., and Martin, M.O. (Eds.). (2015). *PIRLS 2016 Assessment Framework* (2nd ed.). Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

Mullis, I.V.S., Martin, M.O., Foy, P., and Hooper, M. (2017). *PIRLS 2016 International Results in Reading*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College. Retrieved July 15, 2019, from: http://timssandpirls.bc.edu/pirls2016/international-results/.

RTI International. (2017). SUDAAN Statistical Software for Analyzing Correlated Data. Research Triangle Park, NC.

Seastrom, M.M. (2014). *2012 Revision of NCES Statistical Standards* (NCES 2014-097). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Stapleton, L.M. (2006). An Assessment of Practical Solutions for Structural Equation Modeling with Complex Sample Data. *Structural Equation Modeling, 13*, 28–58.

Stapleton, L.M. (2008). Variance Estimation Using Replication Methods in Structural Equation Modeling With Complex Sample Data. *Structural Equation Modeling, 15*, 183–210.

Appendix A. PIRLS 2016 Recruitment Materials

Exhibit A-1.   PIRLS 2016 State Contacting Letter

[Date]
[Title] [Name First] [Name Last]
[Title/Department]
[State]
[Address 1]
[Address 2]
[City], [State] [Zip code]

Dear [Title] [Name Last]:

The United States is participating in an important international study in 2016: the Progress in International Reading Literacy Study (PIRLS). Since 2001, PIRLS has measured trends in reading achievement at grade 4 in countries around the world, including the United States. Results from PIRLS are used by researchers and policymakers to chart national progress against international standards and other countries around the world, informing national discussions about international competitiveness.

Some schools in your state have been randomly selected to participate in PIRLS in spring 2016. For the first time PIRLS will also include an innovative assessment of online reading called ePIRLS. Some classrooms selected to participate in PIRLS may also be asked to take part in ePIRLS. I am writing to ask your agency to support the participation of those selected schools.

PIRLS is described in more detail in the enclosed materials. In the United States, PIRLS is conducted by the National Center for Education Statistics (NCES), part of the U.S. Department of Education, and the data are being collected by RTI International. The U.S. Office of Management and Budget has approved the data collection under OMB #1850-0645. For information on the confidentiality of the data collected, please see the enclosed FAQ. While participation in this study is voluntary, your support of school participation in your state is invaluable so that the United States has a representative sample of schools across the country.

Within the next few weeks, a representative of RTI International will contact sampled school districts and schools to discuss participating in the assessment. In the meantime, if you have questions about the study, please do not hesitate to call Dr. Patricia Green at (XXX) XXX-XXXX or send an email to PIRLS@rti.org. You may also get more information about this study by contacting Dr. Sheila Thompson at NCES at (202) 502-7425 or sheila.thompson@ed.gov, or by visiting the PIRLS website at https://nces.ed.gov/surveys/PIRLS/index.asp.

Thank you for your time and support of this important international study.

Sincerely,

Sue Betka   Peggy Carr
Acting Director, Institute of Education Sciences   Acting Commissioner, NCES

cc: [State assessment director]
Enclosures

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002; 20 U.S.C. § 9543). By law, the data provided by schools, staff, and students may only be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. § 9573).

Exhibit A-2. PIRLS 2016 District Contacting Letter

[Date]
[Title] [Name First] [Name Last], [Title/Department]
[School District]
[Address 1]
[City], [State] [Zip code]

Dear [Title] [Name Last]:

The United States is participating in an important international study in 2016: the Progress in International Reading Literacy Study (PIRLS). Since 2001, PIRLS has measured trends in reading achievement at grade 4 in countries around the world, including the United States. Results from PIRLS are used by researchers and policymakers to chart national progress against international standards and other countries around the world, informing national discussions about international competitiveness.

One or more schools in your district have been randomly selected to participate in PIRLS in spring 2016. For the first time PIRLS will also include an innovative assessment of online reading called ePIRLS. Some classrooms selected to participate in PIRLS may also be asked to take part in ePIRLS. I am writing to ask your agency to support the participation of those selected schools.

Participating schools will receive $200, and each school's PIRLS school coordinator (the school staff person designated to work with PIRLS staff) will receive $100 as a thank you for his or her time and effort. The school coordinator may also receive an additional monetary token of appreciation of $50 for assistance with ePIRLS. A school administrator and selected teachers will each be asked to complete a questionnaire. Teachers will receive $20 as a thank you for completing the questionnaire. Each student who participates will receive a small gift as a token of appreciation.

PIRLS is described in more detail in the enclosed materials. In the United States, PIRLS is conducted by the National Center for Education Statistics (NCES), part of the U.S. Department of Education, and the data are being collected by RTI International. The U.S. Office of Management and Budget has approved the data collection under OMB #1850-0645. For information on the confidentiality of the data collected, please see the enclosed FAQ. While participation in this study is voluntary, your support of school participation in your district is invaluable so that the United States has a representative sample of schools across the country.

Within the next few days, a representative of RTI International will contact the following school or schools in your district that have been selected for the assessment: [LIST SAMPLED SCHOOLS HERE…].

If you have any questions about the study, please do not hesitate to call Dr. Patricia Green at (XXX) XXX-XXXX or send an email to PIRLS@rti.org. You may also get more information about this study by contacting Dr. Sheila Thompson at NCES at (202) 502-7425 or sheila.thompson@ed.gov, or by visiting the PIRLS website at https://nces.ed.gov/surveys/PIRLS/index.asp.

Thank you for your time and support of this important international study.

Sue Betka   Peggy Carr
Acting Director, Institute of Education Sciences   Acting Commissioner, NCES

Enclosures

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002; 20 U.S.C. § 9543). By law, the data provided by schools, staff, and students may only be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. § 9573).

Exhibit A-3. PIRLS 2016 School Recruitment Letter

[Date]
[Title] [Name First] [Name Last], [Title/Department]
[School District]
[Address 1]
[City], [State] [Zip code]

Dear [Title] [Name Last]:

The United States is participating in an important international study in 2016: the Progress in International Reading Literacy Study (PIRLS). Since 2001, PIRLS has measured trends in reading achievement at grade 4 in countries around the world, including the United States. Results from PIRLS are used by researchers and policymakers to chart national progress against international standards and other countries around the world, informing national discussions about international competitiveness.

Your school has been randomly selected to participate in PIRLS in spring 2016. For the first time PIRLS will also include an innovative assessment of online reading called ePIRLS. Some classrooms selected to participate in PIRLS may also be asked to take part in ePIRLS. Participating schools will receive $200, and each school's PIRLS school coordinator (the school staff person designated to work with PIRLS staff) will receive $100 as a thank you for his or her time and effort. An additional $50 will be given to the coordinator for assisting with ePIRLS. A school administrator and selected teachers will each be asked to complete a questionnaire. Teachers will receive $20 as a thank you for completing the questionnaire. Participating students will receive a small gift as a token of appreciation.

PIRLS is described in more detail in the enclosed materials. In the United States, PIRLS is conducted by the National Center for Education Statistics (NCES), part of the U.S. Department of Education, and the data are being collected by RTI International. The U.S. Office of Management and Budget has approved the data collection under OMB #1850-0645. For information on the confidentiality of the data collected, please see the enclosed FAQ. While participation in this study is voluntary, your school's participation is invaluable so that the United States has a representative sample of schools across the country.

Within the next few days, a representative of RTI International will contact you to discuss your participation. If you have any questions, please do not hesitate to call Dr. Patricia Green at (XXX) XXX-XXXX or send an email to PIRLS@rti.org. You may also get more information about this study by contacting Dr. Sheila Thompson at NCES at (202) 502-7425 or sheila.thompson@ed.gov, or by visiting the PIRLS website at https://nces.ed.gov/surveys/PIRLS/index.asp.

Your participation in the PIRLS 2016 is very important to its success. Thank you for your time and for supporting this important international study.

Sue Betka   Peggy Carr
Acting Director, Institute of Education Sciences   Acting Commissioner, NCES

Enclosures

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002; 20 U.S.C. § 9543). By law, the data provided by your school, staff, and students may only be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. § 9573).

Exhibit A-4. PIRLS 2016 School Coordinator Letter

DATE

«SCH_ENTITY_NAME»
«SCH_ADDRESS»
«sch_citystzip»

Dear «sch_coord_name»,

We are looking forward to working with you and your school this school year on the Progress in International Reading Literacy Study (PIRLS). As the designated school coordinator for PIRLS you play a critical role in assisting us with study preparations. We appreciate your assistance, particularly given the many demands on your time.

The attached document, PIRLS School Coordinator Responsibilities, will provide you with an overview of PIRLS, as well as a list of tasks and timeline needed to prepare for PIRLS data collection. The first step is to provide a list of the 4th grade classes in your school, so that we may select the classes and students who will be invited to participate. This step is critically important, and we would appreciate your help in completing this task within three weeks of receipt of this letter.

PIRLS is conducted by the U.S. Department of Education's National Center for Education Statistics (NCES) and data are collected by RTI International (RTI). A PIRLS study representative will contact you shortly to answer questions you may have and to begin discussing data collection logistics. In-school data collection is scheduled to take place during February through May 2016. The student data collection will include a reading assessment and background questionnaire. For the first time PIRLS will also include an innovative assessment of online reading called ePIRLS. Some classrooms selected to participate in PIRLS may also be asked to take part in ePIRLS.

RTI will provide a trained test administrator (TA) to conduct the student sessions and to assist with the parental permission form process. A school administrator and the teachers of selected classes will also be asked to complete a questionnaire. They will be contacted separately, and their data will be collected through a web-based application or hard-copy survey.

We sincerely appreciate your help in preparing for the session at your school and in ensuring that PIRLS is a success. Each school's participation is critical to the success of the study, and reports will not identify participating districts, schools, students, or individual staff.

If you have any questions, please contact us at RTI at (XXX) XXX-XXXX or by email at PIRLS@rti.org.

Thank you for your support of education through participating in PIRLS.

Sincerely,

Patricia Green
Project Director, Progress in International Reading Literacy Study (PIRLS)

Enclosures

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002; 20 U.S.C. § 9543). By law, the data provided by your school, staff, and students may only be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. § 9573).

Exhibit A-5. PIRLS School Coordinator Responsibilities

As the PIRLS school coordinator (SC), you play an important role in the success of the study. RTI will provide a trained test administrator (TA) to conduct the student sessions and to assist you as much as possible. But we will need to rely on you to complete certain tasks so that data collection will be successful.

Study Details

PIRLS 2016 consists of the following:

- **Student Reading Assessment and Questionnaire** – Students in selected classrooms will be administered a reading assessment and background questionnaire. Some classrooms selected to participate in PIRLS may also be asked to take part in a new, an innovative assessment of online reading called *ePIRLS*. The main assessment will take about 2 hours, and ePIRLS will take about 80 minutes. The TA from RTI will conduct the student session at your school and each participating student will receive a thank you gift.

- **School Administrator Questionnaire -** The school administrator or designee will complete a questionnaire about school characteristics, enrollment, resources, policies, and the learning environment. The questionnaire may be completed online or via hardcopy and will take about 40 minutes to complete. RTI will send information to you to distribute to the person who is designated to answer the school administrator questionnaire.

- **School Teacher Questionnaire –** Teachers of selected classrooms will complete a questionnaire regarding their teaching experience, available resources, and instructional practices. The questionnaire may be completed online or via hardcopy and will take about 40 minutes to complete. RTI will send information to you to distribute to selected teachers.

For additional information, you may visit our website at: https://xxx.xxx.xxx

Your Responsibilities

You have been asked to complete several tasks prior to the student data collection sessions that will take place in the spring of 2016. These include providing student information, working with RTI on the session logistics, assisting with parental consent form distribution and receipt, and helping to coordinate school staff surveys. We will use the PIRLS secure website to exchange information, such as class and student lists. Please visit:

https://nces.ed.gov/surveys/PIRLS/index.asp

and log-in with the following information:

    Study ID: ############
    Password: #######

Table 1 shows the activities you will be asked to perform and a timeline for these activities.

Table 1. Activities Timeline

Provide information on 4th grade classes using the Class Listing Form.	Within 3 weeks of receipt of request
Complete Student Listing Form for selected class(es)	Within one week of selection of classes
Coordinate session logistics (date, time, location, consent type)	Within 3 weeks of receipt of request
Notify teachers, selected students, and parents of the study and benefit of participating	At least 3 weeks prior to scheduled session
Distribute parental consent forms to all selected students	At least 3 weeks prior to scheduled session

Monitor return of consent forms; distribute reminder letters as needed. Collect returned, signed forms and submit to TA.	During the 3 weeks from distribution to data collection day
Run a systems check of the ePIRLS system	At least 2 weeks prior to scheduled session
Notify/remind teachers and students about the data collection sessions	One week prior and one day prior to session
Assist the TA with getting the students to the sessions and setting up the room (if necessary)	On the day of the session
Coordinate completion of the administrator and teachers' questionnaires.	Two weeks prior to the student session

Providing Student Information

We will select one or two classes per school, depending on the number of classes available at grade 4. Please submit the Class Listing Form (including all classes that account for each student in 4th grade). The CLF should be uploaded to the secure PIRLS website. The student sample will consist of all students in the selected classes. Some classrooms selected to participate in PIRLS may also be asked to take part in ePIRLS.

We will then ask you to complete the Student Listing Form for selected class(es) to provide information on the students in those classes (e.g., name, district ID, class, date of birth, gender). SLF should be uploaded to the secure PIRLS website.

Assisting with Student Session Logistics

In order to minimize disruption at the school on the day of the student data collection, it is crucial that arrangements be made in advance. These arrangements include:

- Determine the date for student data collection.

- Determine the location and time(s) of the student session(s): will the student sessions take place in the classroom or will a separate room be reserved? If there are multiple classes sampled, will the administration be conducted together or separately?

- Determine parental permission type (implied/passive or written/active). Determine the best method of distributing consent forms, tracking returned, signed forms, collecting returned forms and submitting to the PIRLS TA.

- Work with the TA to identify students with special needs.

- Notify teachers and students in selected classrooms about PIRLS, the importance of participating, and explain test day activities.

- Contact parents to encourage them to return the signed consent form (if applicable).

Parental Permission

Parental permission materials will be supplied by RTI a few weeks before the scheduled session. We can either mail them directly to parents or ask that you distribute the parent permission forms to the sampled students.

- Most schools use implied/passive permission (which means students only return a form if their parent denies permission to participate), as this option lessens the burden on school staff and results in higher participation rates. If you are using this permission type, please record parent refusals onto the student tracking form (STF) which will be provided with the permission forms.

- Some schools require written/active consent. If your school requires active

consent, parents are asked to return signed permission forms to the school coordinator. Please keep track of the return of these forms on the STF. Please make sure any returned forms have one "box" checked, a parent/guardian signature (not just a printed name) and the name of the student.

Your TA will be in contact with you to track the return of consent forms, as well as exclusion statuses for students. Reminder forms will be sent home as needed. The TA will check the permission forms on the day of the first session to make sure we do not include anyone whose parents have not granted permission. Please keep the returned parent permission forms in a locked or secure location. Your TA will fax any returned forms from your school at the end of the data collection to a secure fax machine at RTI. Please let him/her know if you need to retain copies.

Assist on Day of Student Sessions

The PIRLS TA will arrive at the school about an hour before the student session. In order to have valid results from the study, we need as many sampled students to participate as possible. We are depending on you to make certain the students and teachers are aware of the date, time, and location for their participation and to generate enthusiasm. This often makes the difference in high student participation. You may want to advertise PIRLS throughout the school and classroom or make a PA announcement about the study the day before and the day of the session to generate interest and encourage participation.

We would also like for you or a teacher to remain in the room during the session administration to help maintain order and assist as needed.

Again, the TA will need to fax any returned permission forms at the end of the session. Please assist him or her in faxing these forms.

Token of Appreciation

As a token of our appreciation for your time and energy with PIRLS, you will receive $100 after the student session has been completed and $50 for assistance with ePIRLS.

THANK YOU for your help to make PIRLS a success!! We greatly appreciate your time and assistance!

Exhibit A-6. PIRLS 2016 Administrator Questionnaire Letter

[Date]   Web Address:
[Title] [Name First] [Name Last], [Principal/Administrator]   Your Study ID:
[School]   Your Password:
[Address 1]
[City], [State] [Zip code]

Dear [Title] [Name Last]:

[School Name] is participating in an important international study in 2016: the Progress in International Reading Literacy Study (PIRLS). Since 2001, PIRLS has measured trends in reading achievement at grade 4 in countries around the world, including the United States. Results from PIRLS are used by researchers and policymakers to chart national progress against international standards and other countries around the world, informing national discussions about international competitiveness.

We are asking you to complete a 40-minute questionnaire to provide insight into the practices and resources at your school. The survey is designed to be completed by you or a staff person you designate who can provide information about the characteristics of the school, its enrollment, resources, policies, and learning environment. The questionnaire may be completed by hardcopy or online using a secure website. To access the questionnaire online, please use the web address and unique study ID and password provided on this letter. If completing the questionnaire by hardcopy, please use the enclosed business reply envelope to return the completed questionnaire to us. You may also give the completed hard copy questionnaire to the PIRLS school coordinator at your school.

In the United States, PIRLS is conducted by the National Center for Education Statistics (NCES), part of the U.S. Department of Education, and the data are being collected by RTI International. The U.S. Office of Management and Budget has approved the data collection under OMB #1850-0645. For information on the confidentiality of the data collected, please see the enclosed FAQ. While participation in this questionnaire is voluntary, your participation is invaluable.

If you have any questions, please do not hesitate to call Dr. Patricia Green at (XXX) XXX-XXXX or send an email to PIRLS@rti.org. You may also get more information about this study by visiting the PIRLS website at https://nces.ed.gov/surveys/PIRLS/index.asp. If you have questions about your rights as a study participant, you may call RTI's Office for Research Protection in Durham, North Carolina, toll-free at 1-866-214-2043.

Your participation in the administrator questionnaire for PIRLS 2016 is very important to its success. Thank you for your time and for supporting this important international study.

Sue Betka   Peggy Carr
Acting Director, Institute of Education Sciences   Acting Commissioner, NCES

Enclosures

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002; 20 U.S.C. § 9543). By law, the data provided by you may only be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. § 9573).

Exhibit A-7. PIRLS 2016 Teacher Questionnaire Letter

[Date]   Web Address:
[Title] [Name First] [Name Last], [Teacher]   Your Study ID:
[School]   Your Password:
[Address 1]
[City], [State] [Zip code]

Dear [Title] [Name Last]:

[School Name] is participating in an important international study in 2016: the Progress in International Reading Literacy Study (PIRLS). Since 2001, PIRLS has measured trends in reading achievement at grade 4 in countries around the world, including the United States. Results from PIRLS are used by researchers and policymakers to chart national progress against international standards and other countries around the world, informing national discussions about international competitiveness.

We are asking you to complete a 40-minute questionnaire to provide insight into your teaching experience and available resources and instructional practices at your school. You may complete the questionnaire by hardcopy or online using a secure website. To access the questionnaire online, please use the web address and unique study ID and password provided on this letter. If completing the questionnaire by hardcopy, please use the enclosed business reply envelope to return the completed questionnaire to us. You may also give the completed hard copy questionnaire to the PIRLS school coordinator at your school.

You will receive a check for $20 within a few weeks of completing the questionnaire as a token of our appreciation.

In the United States, PIRLS is conducted by the National Center for Education Statistics (NCES), part of the U.S. Department of Education, and the data are being collected by RTI International. The U.S. Office of Management and Budget has approved the data collection under OMB #1850-0645. For information on the confidentiality of the data collected, please see the enclosed FAQ. While participation in this questionnaire is voluntary, your participation is invaluable.

If you have any questions, please do not hesitate to call Dr. Patricia Green at (XXX) XXX-XXXX or send an email to PIRLS@rti.org. You may also get more information about this study by visiting the PIRLS website at https://nces.ed.gov/surveys/PIRLS/index.asp. If you have questions about your rights as a study participant, you may call RTI's Office for Research Protection in Durham, North Carolina, toll-free at 1-866-214-2043.

Your participation in the teacher questionnaire for PIRLS 2016 is very important to its success. Thank you for your time and for supporting this important international study.

Sue Betka   Peggy Carr
Acting Director, Institute of Education Sciences   Acting Commissioner, NCES

Enclosures

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002; 20 U.S.C. § 9543). By law, the data provided by you may only be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. § 9573).

Exhibit A-8. PIRLS 2016 Implicit Parent Permission

U.S. DEPARTMENT OF EDUCATION
INSTITUTE OF EDUCATION SCIENCES

NATIONAL CENTER FOR EDUCATION STATISTICS

Dear Parent or Guardian,

This letter is to inform you about an important international study of student learning being conducted in our school this spring. The Progress in International Reading Literacy Study (PIRLS) provides important information for benchmarking student performance in reading in the United States against countries around the world. Since 2001, PIRLS has measured worldwide trends in student reading skills at grade 4. The next PIRLS assessment will be in the spring of 2016.

Your child's school has accepted an invitation from the National Center for Education Statistics (NCES), part of the U.S. Department of Education, to participate in PIRLS. One 4th grade classes will take part. This is your child's class. The enclosed summary sheet provides some background information about PIRLS, explains what is involved for each student selected to participate in the study, and gives a contact phone number and email address where you can find answers to any questions you might have.

To have an accurate picture of what U.S. 4th graders can do in reading, it is important that each student selected take part in the study. In addition to answering reading questions, students will be asked to complete a brief questionnaire about themselves. For the first time PIRLS will also include an innovative assessment of online reading called ePIRLS. I urge you to support this effort by encouraging your child to take part; however, participation in this study is entirely voluntary. Previous experience suggests that students actually enjoy taking part, and participating students will receive a small gift, which we think they will like.

All of the information collected is safeguarded, as required by law. NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA, 2002; 20 U.S.C. § 9543). Under that law, the data provided by schools, staff, and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C., § 9573). Students and schools are never identified in any reports. All reported statistics refer to the United States as a whole.

If you have any objection to your child joining in the PIRLS activities, please let us know by completing the attached consent form and returning it to the school.

For more information, please visit the study website at https://nces.ed.gov/surveys/PIRLS/index.asp. You may also call the study hotline at (866) 800-9176 or send email to pirls@rti.org. Thank you for taking the time to learn about this important study.

Sincerely,

Peggy G. Carr, Ph.D.
Acting Commissioner, NCES

Enclosures:
Facts for Parents about the PIRLS 2016 Main Study
Parent/Guardian Consent Form

Progress in International Reading Literacy Study (PIRLS)

Parent/Guardian Consent Form

Your child has been asked to participate in an international study of student learning called the Progress in International Reading Literacy Study (PIRLS). Each student who participates will receive a small gift.

The student assessment will be administered by a team of researchers from RTI International, on behalf of the National Center for Education Statistics (NCES).

If you grant permission for your child to participate in PIRLS, you do not need to return this form.

If you do <u>not</u> consent to your child's participation in PIRLS, please return this form to your child's school as soon as possible.

I do not grant permission for my child, _____, to participate in the Progress in International Reading Literacy Study.

_____

(Signature of parent or guardian)

Date of signature: _____/_____/_____

PLEASE PRINT:

Student name: _____

School name: _____

FOR OFFICE USE ONLY:

Student ID: _____

«StudentFName»

«StudentID»

Exhibit A-9. PIRLS 2016 Explicit Parent Permission

U.S. DEPARTMENT OF EDUCATION
INSTITUTE OF EDUCATION SCIENCES

NATIONAL CENTER FOR EDUCATION STATISTICS

Dear Parent or Guardian,

This letter is to inform you about an important international study of student learning being conducted in our school this spring. The Progress in International Reading Literacy Study (PIRLS) provides important information for benchmarking student performance in reading in the United States against countries around the world. Since 2001, PIRLS has measured worldwide trends in student reading skills at grade 4. The next PIRLS assessment will be in the spring of 2016.

Your child's school has accepted an invitation from the National Center for Education Statistics (NCES), part of the U.S. Department of Education, to participate in PIRLS. One 4th grade class will take part. This is your child's class. The enclosed summary sheet provides some background information about PIRLS, explains what is involved for each student selected to participate in the study, and gives a contact phone number and email address where you can find answers to any questions you might have.

To have an accurate picture of what U.S. 4th graders can do in reading, it is important that each student selected take part in the study. In addition to answering reading questions, students will be asked to complete a brief questionnaire about themselves. For the first time PIRLS will also include an innovative assessment of online reading called ePIRLS. I urge you to support this effort by encouraging your child to take part; however, participation in this study is entirely voluntary. Previous experience suggests that students actually enjoy taking part, and participating students will receive a small gift, which we think they will like.

All of the information collected is safeguarded, as required by law. NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA, 2002; 20 U.S.C. § 9543). Under that law, the data provided by schools, staff, and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C., § 9573). Students and schools are never identified in any reports. All reported statistics refer to the United States as a whole.

Before we can allow your child to join in the PIRLS activities, we must have your written consent. Please let us know by completing the attached form and returning it to the school.

For more information, please visit the study website at https://surveys.nces.ed.gov/pirls/index.asp. You may also call the study hotline at (866) 800-9176 or send email to pirls@rti.org. Thank you for taking the time to learn about this important study and to consider your child's participation in it.

Sincerely,

Peggy G. Carr, Ph.D.
Acting Commissioner, NCES
Enclosures:
Facts for Parents about the PIRLS 2016 Main Study
Parent/Guardian Consent Form

Progress in International Reading Literacy Study (PIRLS)

Parent/Guardian Consent Form

Your child has been asked to participate in an international study of student learning called the Progress in International Reading Literacy Study (PIRLS). Each student who participates will receive a small gift.

The student assessment will be administered by a team of researchers from RTI International, on behalf of the National Center for Education Statistics (NCES).

Please check <u>only one option</u> below to indicate your decision about your child's participation in the study and return this form to your child's teacher as soon as possible.

☐   Yes, I grant permission for my child to participate in PIRLS.

☐   No, I do <u>not</u> grant permission for my child to participate in PIRLS.

_____

(Signature of parent or guardian)

Date of signature: _____/_____/_____

PLEASE PRINT:

Student name: _____

School name: _____

FOR OFFICE USE ONLY:

Student ID: _____

«StudentFName»

«StudentID»

Exhibit A-10. PIRLS 2016 Study Brochure

Other information collected by PIRLS

PIRLS is more than an assesment of student knowledge and skills in reading. PIRLS also considers the context in which learning occurs. Students, teachers, and schools are asked about a variety of aspects of the environments in which content is taught, learned, practiced, and applied. In this way, PIRLS provides each country with a rich source of information on the factors influencing reading achievement.

Countries that participated in PIRLS 2011

Argentina	Italy
Australia	Kuwait
Austria	Latvia
Azerbaijan	Lithuania
Bahrain	Luxembourg
Belgium	Macedonia
Belize	Malta
Botswana	Moldova
Bulgaria	Morocco
Canada	The Netherlands
Chinese Taipei	New Zealand
Colombia	Norway
Croatia	Poland
Cyprus	Portugal
Czech Republic	Qatar
Denmark	Russian Federation
Finland	Saudi Arabia
France	Singapore
Georgia	Slovak Republic
Germany	Slovenia
Hong Kong-China	South Africa
Hungary	Spain
Iceland	Sweden
Indonesia	Trinidad & Tobago
Iran	Turkey
Ireland	United Arab Emirates
Israel	United States

Results

Results from PIRLS 2016 will be available in December 2017, and examples of released PIRLS items are available at http://nces.ed.gov/surveys/pirls/released.asp.

Findings from PIRLS 2011

- The overall reading average scale score for U.S. students (556) was higher than the international PIRLS scale average, which is set to 500.

- The United States average was higher than 40 education systems and not measurably different from 7 others. Five education systems had higher averages.

- The average score for girls was higher than the average score for boys in the United States (562 vs. 551).

NCES is authorized to conduct PIRLS under the Education Sciences Reform Act of 2002 (ESRA 2002), 20 U.S. Code, § 9543. Information collected will help the U.S. Department of Education's ongoing efforts to benchmark student achievement in the United States. Participation is voluntary. By law, data collected may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S. Code, § 9573). The U.S. Office of Management and Budget has approved the data collection under OMB # 1850-0645. Individual responses will be combined with those from other participants to produce summary statistics and reports.

For questions about PIRLS 2016, contact the PIRLS Information Hotline at 1-866-800-9176 or email PIRLS@rti.org.

Progress in International Reading Literacy Study (PIRLS) 2016

What is PIRLS?

The Progress in International Reading Literacy Study (PIRLS) is an international assessment and research project designed to measure reading achievement at the fourth grade, as well as school and teacher practices related to reading instruction. PIRLS was assessed in 2001, 2006, and 2011, with the United States participating in all past assessments. In 2016, PIRLS will involve students from more than 40 countries, including the United States. For the first time PIRLS will also include an innovative assessment of online reading called ePIRLS.

PIRLS is sponsored by the International Association for the Evaluation of Educational Achievement (IEA) and conducted in the United States by the National Center for Education Statistics (NCES), part of the U.S. Department of Education.

Why is PIRLS important?

PIRLS provides a unique opportunity to compare the reading, knowledge, and skills of U.S. fourth-grade students with that of their peers in countries around the world. PIRLS complements what we learn from national assessments by identifying the strengths and weaknesses of student performance relative to students around the world. The results inform national discussions about education as well as international competitiveness.

PIRLS provides valuable benchmark information on how U.S. students compare to students around the world, allows educators and policymakers to examine other education systems for practices that could have application to the United States, and contributes to ongoing discussions of ways to improve the quality of education for all students.

Moreover, by participating in PIRLS 2016, the United States will obtain data about changes in children's reading achievement over the past 15 years, including valuable information about changes in reading instruction, how those changes relate to students' performance in reading, and about home, school, and classroom influences on reading achievement.

What type of assessment is PIRLS?

PIRLS is developed through an international consensus-building process involving input from U.S. and international experts in reading and measurement. The assessment is carefully constructed to assess a range of reading comprehension strategies for two major reading purposes using informational text and literary text. The assessment includes reading passages followed by open-ended and multiple-choice format questions about the text. The student questionnaire gathers information about the contexts in which children learn to read and children's attitudes toward reading. Examples of released PIRLS items are available at http://nces.ed.gov/surveys/pirls/released.asp.

As a new extension to PIRLS in 2016, ePIRLS — an assessment of online reading — makes it possible for education systems to understand how successful they are in preparing fourth grade students to read, comprehend, and interpret online information.

Exhibit A-11. PIRLS 2016 Main Study FAQ

Progress in International Reading Literacy Study
Frequently Asked Questions
PIRLS 2016 Main Study (Spring 2016)

What is PIRLS?

The Progress in International Reading Literacy Study (PIRLS) is an international assessment and research project designed to measure trends in reading achievement at the fourth-grade level as well as school and teacher practices related to instruction. Since 2001, PIRLS has been administered every 5 years. PIRLS 2016, the fourth study in the series, will involve students from more than 40 countries, including the United States. For the first time PIRLS will include an innovative assessment of online reading called *ePIRLS*.

Why was my school selected for participation?

Schools of varying demographics and locations were randomly selected so that the overall U.S. sample is representative of the overall U.S. school population. The random selection process is important for ensuring that a country's sample accurately reflects its schools and, therefore, can be compared fairly with samples of schools from other countries.

Will all our fourth-grade students be asked to participate?

It depends on the number of fourth-grade classrooms in the school. In schools with only one or two such classrooms, all students will be asked to participate. In schools with more than two such classrooms, only students in two randomly selected classrooms will be asked to participate. Some classrooms selected to participate in PIRLS may also be asked to take part in ePIRLS. In addition, some students with special needs or limited English proficiency may be excused from the assessment.

Who conducts the PIRLS assessment?

The entire assessment process will be conducted by trained staff from RTI International, a research organization under contract with the National Center for Education Statistics in the U.S. Department of Education. NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002; 20 U.S.C. § 9543) and approval of the U.S. Office of Management and Budget under OMB # 1850-0645.

How are the teacher and school questionnaires administered?

The teacher and school questionnaires are administered either online from a secure website or via a hardcopy form. Teacher questionnaires take about 40 minutes to complete and ask teachers questions about their experience, available resources, and instructional practices. School questionnaires take about 40 minutes to complete and ask about school practices and resources.

Do teachers need to help administer the assessment?

No, RTI International field staff will visit the school on the day of the assessment, bringing with them all the materials required. These field staff will administer the assessments to students.

When will the assessment be conducted?

The assessment will be conducted between February and May, 2016. RTI International will work with schools to identify an assessment date convenient for the school in that time period.

Where will the assessment be conducted?

The assessment will be conducted in the schools that are selected to participate.

How long does the assessment take?

The main assessment session is approximately 2 hours, including time for directions. The ePIRLS session will take 80 minutes and will include breaks between sections.

What will happen with the collected data?

The data from the assessment will be used to evaluate how the knowledge and skills of U.S. students compare to those of their peers in other participating countries. By law, the data provided by schools, staff, and students may be used only for statistical purposes and may not be disclosed or used, in identifiable form for any other purpose except as required by law (Education Science Reform Act of 2002 [ESRA 2002; 20 U.S.C. § 9573]). Reports of the findings from the assessment will not identify participating districts, schools, students, or individual staff. Individual responses will be combined with those of other participants to produce summary statistics and reports.

Are schools required by federal law to participate?

No. School participation is voluntary. However, we hope you will participate in this study so that students like those in your school are accurately and fairly represented.

What are the benefits?

The nation as a whole benefits from PIRLS by having a greater understanding of how the reading knowledge and skills of U.S. 4th graders compare with 4th graders from other countries. To thank participating schools and individuals for their time and effort we offer tokens of appreciation: schools that participate in PIRLS will receive $200 and the school coordinator (staff person designated to assist with the study) will receive $100. An additional $50 will be given to the coordinator for assisting with ePIRLS. Teachers who complete a survey will receive $20, and each student who participates will receive a small gift.

Where can I find more information about PIRLS?

Visit the PIRLS website at https://nces.ed.gov/surveys/pirls/index.asp.

For additional information about PIRLS 2016, contact the PIRLS U.S. home office at (XXX) XXX-XXXX or email PIRLS@rti.org.

Exhibit A-12. Summary of School Activities: PIRLS 2016 Main Study

Summary of School Activities: PIRLS 2016 Main Study				
Questionnaire	**November–December 2015**	**January-March 2016 Prior to assessment day**	**February-May 2016 Assessment day**	**Benefits**
Principal	▪ Designate a school coordinator	▪ Complete a brief School Questionnaire on the characteristics of the school, its enrollment, resources, policies, and learning environment (available online or hardcopy) ▪ Share the importance of participation in the study with school staff	▪ Support assessment day activities ▪ Encourage students to participate and do their best on the assessment	▪ Represent other similar U.S. schools ▪ Receive a $200 check for the school
School coordinator	▪ Select an assessment date convenient for your school	▪ Arrange the day and location for the PIRLS and ePIRLS sessions. ▪ Confirm dates and location with PIRLS assessment staff ▪ Provide class lists, student lists, and contact information for grade 4 students ▪ Notify teachers, selected students, and students' parents of the study and benefit of participating ▪ Work with assessment staff to identify students with special needs ▪ Coordinate the principal's completion of the School Questionnaire (online or hardcopy) ▪ Coordinate the teacher's completion of the Teacher Questionnaire (online or hardcopy) ▪ Collect parental consent forms where required and submit to PIRLS staff ▪ Run a systems check of the ePIRLS system	▪ Confirm space for assessment is problem-free ▪ Collect complete School and Teacher Questionnaires (if not completed online) and give to assessment staff ▪ Ensure all sampled students attend the assessment session ▪ Meet with assessment staff and provide feedback about the assessment process	▪ Receive a $100 check ▪ Receive an additional $50 for running the ePIRLS system check, and assisting with computer setup. These components may be delegated to a school IT coordinator if necessary.
Teachers of sampled classes		▪ Complete Teacher Questionnaire and return to school coordinator prior to assessment day (if not completed online)		▪ Receive a $20 check ▪ Represent the United States in preparations for the international study
Selected Students			▪ Attend the assessment session, complete the assessment and Student Questionnaire	▪ Receive a small thank-you gift ▪ Represent the United States in preparations for the international study

		Summary of School Activities: PIRLS 2016 Main Study		
Questionnaire	**November-December 2015**	**January-March 2016** **Prior to assessment day**	**February-May 2016** **Assessment day**	**Benefits**
RTI International assessment staff	▪ Work with the school to set an assessment date ▪ Help school coordinator with assessment details and logistics ▪ Protect school and student confidentiality	• Call the school coordinator to discuss assessment day location(s) and student participation • Select classroom sample and notify school of selected classes • Provide School and Teacher Questionnaires to the school coordinator for distribution	▪ Conduct assessment from start to finish ▪ Furnish all the assessment materials, pencils, and test booklets ▪ Conduct a brief debriefing interview with the school coordinator at the end of the assessment ▪ Maintain security of all materials	▪ Ensure quality and uniformity of data collected across the United States

For additional information, go to https://nces.ed.gov/surveys/pirls/index.asp.

Appendix B. Field Staff Training Materials

Contents

Exhibit B-1. Test Administrator Training Agenda

PIRLS/ePIRLS

Test Administrator Training Agenda

Day 1

Registration, Fingerprinting, Confidentiality Forms/Affidavits (120)

Module 1.0   Welcome and Introduction (15)

Break (15)

Module 1.1   Purpose and Background of PIRLS (15)

Module 1.2   Recruitment and Sample Selection (5)

Module 1.3   Overview of TA's Responsibilities (10)

Module 1.4   Permission Types and Permission Form Tracking (30)

Lunch (75)

Module 1.5   Case Assignment Materials (75)

Module 1.6   Working with School Coordinator (75)

Break (15)

Module 1.7   Test Administration Logistics (45)

Module 1.8   Test Security (15)

Day 2

Module 2.0   Day 1 Recap (15)

Module 2.1   Student Assessment (15)

Module 2.2   Student Questionnaire (5)

Module 2.3   Test Administration Mock   (120)

                    Break (15)

Module 2.4   Make-Up Days and Response Rates (60)

                    Lunch (75)

Module 2.5   Dealing with Problems (15)

Module 2.6   Staff Questionnaires (15)

Module 2.7   Contacting Parents (15)

                    Break (15)

Module 2.8   Project Laptop Setup with FTSG (60)

Module 2.9   Overview of ePIRLS (15)

Module 2.10   ePIRLS Computer Requirements (30)

Module 2.11   Testing ePIRLS (70)

Day 3

Module 3.0   Day 2 Recap (15)

Module 3.1   Setting up school computers (10)

Module 3.2   Administering ePIRLS (with demo)

                         Break (15)

Module 3.3   Setting up laptops with practice (120)

                         Lunch (75)

Module 3.4   Administering ePIRLS (with demo) cont. (75)

Module 3.5   After the ePIRLS Session   (45)

Module 3.6   Phone report to FS (15)

Module 3.7   Entering STF and TAF data in the FRS   (120)

                         Break

Module 3.8   Reviewing reports in the FRS (15)

Module 3.9   Quality control Measures (10)

Module 3.10   Certification Overview (10)

Day 4

Module 4.0   Day 3 Recap (15)

Module 4.1   Administrative Procedures (75)

Module 4.2   PIRLS/ePIRLS review/Q&A session (30)

Working Lunch/Certification setup (30)

Module 4.3   Certification   (180)

Module 4.4   Training and Evaluation Form (10)

Module 4.5   Distribution of Assignments (10)

Exhibit B-2. PIRLS Session Script

The instructions marked with the 📖 symbol and printed in **bold** font style in the administration script must be read aloud to the students word for word to ensure that the testing sessions are conducted in the same way in all countries. Although you should become familiar with these instructions before the actual testing, do not attempt to memorize them. Read these instructions exactly as they are written. Comments that are not in bold are not to be read aloud. They are instructions for you only.

To begin the testing session:

- ▱ Make sure that the Class ID is recorded at the top of the Test Administration Form. If missing, you can find it on the Student Tracking Form, Column [b].
- ▱ Make sure the students are seated quietly, with nothing on the desk except for a pen or pencil.
- ▱ Record the current time in Cell (8a) of the Test Administration Form.
- ▱ Begin reading the Administration Script.

Exhibit B-2. PIRLS Session Script—Continued

The Administration Script

  📖   **This school has been chosen to take part in an important international project to study how well children around the world can read. Different countries from all over the world are taking part in this study. While I talk to you about today's test, I would like you all to be quiet, stay at your desks, and listen carefully.**

  📖   **Now I will pass out the test packets. Do not open them until I tell you to do so. Each of you will receive one test packet. Not all packets are the same.**

  📖   **If you still have any schoolbooks or papers on your desk, please put them away. All electronic devices, such as cell phones, portable computers, photo or video cameras, must be stored away for the duration of the test administration.**

As you hand out the test packets, make sure that each student receives the packets specially prepared for him or her. Student initials and ID numbers will be printed on the id label on the packets that contain the test booklets. Test Administrators will need to match these to the names on the STF to distribute the packets. You will have made sure that the student identification code on the test booklet is the same as the corresponding code in column (2) on the Student Tracking Form ahead of time, but always ask students to look at the id label on their test booklets and verify that their initials are correct. Please make sure that all students who receive PIRLS Booklet R also receive the PIRLS Reader. Do not allow students to open the test booklets until you tell them to. Record the students' participation status in Column 8 (Achievement Session) of the Student Tracking Form. If you are administering a makeup session, then use the shaded part of Column 8 (Achievement Session).

If a student is absent, put that test packet aside. Do not give it to anyone else, since each test booklet is marked for a specific student.

If there is a student in the classroom who is not listed on the Student Tracking Form, or an originally assigned booklet is damaged, give one of the three spare booklets to this student. Make sure that the student identification code on the test booklet matches the code for the unused record in column (2) on the Student Tracking Form. Once you have matched the codes on the booklet and the Student Tracking Form, enter the name, date of birth, and gender of the additional student in columns (1), (5) and (6) on the Student Tracking Form. Then, record the student's name (or ID) on the test booklet and on the Student Questionnaire.

After the test packets are passed out and the Student Tracking Form has been completed, say the following to the students:

  📖   **Turn to the first page in the booklet that says "Directions." Please read along as I read the Directions aloud.**

Directions

  📖   *In this test, you will read stories or articles and answer questions about what you have read. You may find some parts easy and you may find some parts difficult.*

Exhibit B-2.   PIRLS Session Script—Continued

📖   *You will be asked to answer different types of questions. Some of the questions will be followed by four choices. You will choose the best answer and fill in the circle next to that answer. Example 1 shows this type of question.*

Example 1

1.   How many days are there in a week?

Ⓐ   2 days

Ⓑ   4 days

⬤   7 days

Ⓓ   10 days

📖   *The circle next to "7 days" is filled in because there are 7 days in a week.*

📖   *If you are not sure about the answer to a question, fill in the circle next to the answer you think is best, and move on to the next question.*

📖   *If you decide to change an answer to a question, draw an "X" through your first answer like the picture in your booklet. Then fill in the circle next to your new answer. Example 2 shows how to do this.*

Example 2

1.   How many days are there in a week?

✖   2 days

Ⓑ   4 days

⬤   7 days

Ⓓ   10 days

📖   **As you work through the questions, you will need to look back at the passages you have read to help you answer the questions.**

📖   *For some questions you will be asked to write your answers in the space provided in your booklet. Example 3 shows one question like this.*

Exhibit B-2. PIRLS Session Script—Continued

Example 3

3.   Where does the little boy go after he finds the book?

     ✏1   _____

              _____

   📖   *Example 3 has a pencil with a 1 next to it. This means the question is worth 1 point.* **For questions worth 1 point, you need to write a few words, or a sentence.**

   📖   *Example 4 shows a question with a pencil with a 3 next to it. This means the question is worth 3 points.* **For questions worth 2 or 3 points, you need to explain your view using what you have read in the story or article. You may write in full sentences if you wish.**

Example 4

4.   What makes the ending of the story both happy and sad? Use what you have read in the story to help you explain.

     ✏3   _____

              _____

              _____

              _____

   📖   *You will have 40 minutes to work in your test booklet and then we will take a short break. Then, you will work for another 40 minutes.*

   📖   *Do your best to answer all the questions. If you cannot answer a question, move on to the next one.*

Part One

   📖   **At the end of the first part of your booklet, you will see a STOP message. Do not continue with the rest of the booklet until you are told to do so. You can review what you just worked on until the time is up or take a book you have with you and read quietly at your desk. Do you have any questions?**

When all problems are resolved and you have the students' attention again, record the current time in Cell (8b) of the Test Administration Form. Then say:

   📖   **Turn the page and begin reading the first story in your booklet.**

Exhibit B-2.   PIRLS Session Script—Continued

Begin timing the 40 minutes for Part 1. Record the current time in Cell (9a) of the Test Administration Form.

Make sure all students begin working on the correct part of the booklet. Note that students assigned the PIRLS Reader and Booklet R should record their responses in Booklet R. They should begin by reading the first story in the PIRLS Reader. All other students should begin reading the story/article in the first section of their test booklet. These students record their answers directly in the booklet. Remember that you are not allowed to help the students with the test. While the students are working, you should move around the room to see that students are working on the correct section of their booklets.

If all students are finished at any time after 30 minutes, you may end the testing session at this time.

After 35 minutes have passed, say the following:

   📖   **You have 5 minutes left to work on this part of your booklet. Make sure you try to finish answering all of the questions in the first part of your booklet before the break.**

After the last 5 minutes have passed, say:

   📖   **Your time is up. Please close your booklets, and put your pens or pencils down. Do not write anything more. We will now take a 5 minute break.**

Record the current time in Cell (9b) of the Test Administration Form.

Break

If the room will be left unattended during the break, collect the booklets from the students one by one. Keep the booklets secure during the break time. You will then redistribute the booklets after the break just like you did at the beginning of the testing session, making sure each student receives the same test booklet he/she was working on during the first half of the testing session.

Part Two

Record the current time in Cell (10a) of the Test Administration Form.

Make sure all the students are seated. When the students are seated and quiet redistribute the test booklets, if necessary. Then, say the following:

   📖   **Does everybody have his or her test booklet?**

When all problems are resolved and you have the students' attention again, record the current time in Cell (10b) of the Test Administration Form and say:

   📖   **You are now going to work on the second part of your test booklet.**

   📖   **At the end of the second part of your booklet, you will see a STOP message. If you are finished early, you can review your work on the second part of your booklet.**

Exhibit B-2. PIRLS Session Script—Continued

📖 **Open your booklet and turn to Part 2. You may begin working.**

Begin timing the 40 minutes for the second part of the session. Record the current time in Cell (11a) of the Test Administration Form.

Make sure all students begin working on the correct part of the booklet. Students assigned the PIRLS Reader and Booklet R should be reading the second story in the PIRLS Reader. All other students should begin reading the story/article in the second section of the test booklet. Remember that you are not allowed to help the students with the test. While the students are working, you should move around the room to see that students are working on the correct section of their booklets. If a student is finished early, make sure that he or she **has a book to read.**

If all students are finished at any time after 30 minutes, you may end the testing session at this time.

After 35 minutes have passed, say the following:

📖 **You have 5 minutes left to work on this part of your booklet. Make sure you try to finish answering all of the questions in the second part of your booklet.**

After the last 5 minutes have passed, say:

📖 **Your time is up, please stop working.**

Record the current time in Cell (11b) of the Test Administration Form and say:

📖 **Now please turn to the last page of your booklet and answer the questions about how much you liked the things you read. For example, if you liked the story a lot, then fill in the circle next to the smiling face and the words "I liked it a lot."**

Make sure that all students are answering the questions on the back page of the booklet only. If they need help answering these questions, you are free to help them. Once they are finished, please say:

📖 **Thank you for your work. Please stay seated and place your booklets in your envelope**

If the Student Questionnaire is going to be administered now, say:

📖 **We will now take a 5 break. Afterwards I will ask you to answer a short questionnaire.**

Exhibit B-2. PIRLS Session Script—Continued

Administering the Student Questionnaire

The instructions marked with the 📖 symbol and printed in **bold** font style in this section must be read aloud to the students. Comments that are not in bold are not to be read aloud. They are instructions for you only.

Before you begin the questionnaire administration:

☐ *Make sure that you have the corresponding Student Tracking Form and Test Administration Form.*

☐ *Make sure all the students are in the class, are seated quietly, and have pencils to use.*

When ready, say:

📖 **Now please take out the questionnaire from your packet. Do not open the questionnaire until I tell you to do so.**

As students take out their questionnaires, make sure that each student received the questionnaire specially prepared for him or her. You can do that by asking each student to verify their initials on the questionnaire label is correct. Record the student's participation status in Column 8 (Questionnaire Session) of the Student Tracking Form. If you are administering a makeup session, then use the shaded part of Column 8 (Questionnaire Session).

If a student is absent, put that questionnaire aside. Do not give it to anyone else since each questionnaire is assigned to a specific student.

After the Student Tracking Form has been completed, say the following to the students:

📖 **Does everybody have his or her questionnaire?**

If yes, then continue. If not, find out why and proceed as described before.

📖 **The directions are printed at the beginning of your questionnaire. I will also read them to you. It is important that you follow the directions very carefully so that you understand how to mark your answers. Now open the questionnaire and turn to the first page titled "Directions."**

Make sure that the students have their questionnaires open to the Directions page before proceeding.

📖 **Please follow the directions in your questionnaire as I read them aloud.**

Directions

📖 *In this booklet, you will find questions about you and what you think. For each question, you should choose the answer you think is best.*

📖 *Let us take a few minutes to practice the kinds of questions you will answer in this booklet.*

📖 *Example 1 is one kind of question you will find in this booklet.*

Exhibit B-2. PIRLS Session Script—Continued

Make sure that all students are following along and are looking at Example 1 in their questionnaires.

Example 1 ─────────────

Do you go to school?

*Fill **one** circle only.*

Yes -- ◯

No -- ◯

    📖   **In Example 1, the question asks, "Do you go to school?" Below this question are a "Yes" and a "No." Since you all go to school, you should all fill in the circle next to "Yes."**

Give students time to fill in the circle next to "Yes" and make sure they understand how to do it. Once everyone has completed the example, move on to Example 2.

Make sure that all students are following along and are looking at Example 2 in their questionnaires.

    📖   *Example 2 is another kind of question you will find in this booklet.*

Example 2 ─────────────

How often do you do these things?

*Fill **one** circle for each line.*

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I talk with my friends	◯	◯	◯	◯
b) I play sports	◯	◯	◯	◯
c) I ride a skateboard	◯	◯	◯	◯

    📖   **This question asks "How often do you do these things?" Letter (a) says, "I talk with my friends." You are given four choices for how often you do this: Every day or almost every day; Once or twice a week; Once or twice a month; and Never or almost never.**

    📖   **Fill in the circle below your answer. For example, if you talk to your friends every day or almost every day, fill in the first circle under "Every day or almost every day."**

Exhibit B-2. PIRLS Session Script—Continued

Give students time to fill in their answers to all parts of the Example 2 question and make sure they understand how to answer this kind of question. Once everyone has completed the example, move on to Example 3.

Make sure that all students are following along and are looking at Example 3 in their questionnaires.

    📖   *Example 3 is another kind of question you will find in this booklet.*

Example 3 ━━━━━━━━━━━

What do you think? Tell how much you agree with these statements.

*Fill **one** circle for each line.*

	Agree a lot	**Agree a little**	**Disagree a little**	**Disagree a lot**
a) Watching movies is fun	○	○	○	○
b) I like eating ice cream	○	○	○	○
c) I do not like waking up early	○	○	○	○
d) I enjoy doing chores	○	○	○	○

    📖   **Example 3 says, "What do you think? Tell how much you agree with these statements." Letter (a) says, "Watching movies is fun." You are given four choices for how much you agree with the statement: Agree a lot, Agree a little, Disagree a little, or Disagree a lot.**

    📖   **Fill in the circle below your answer. For example, if you really agree a lot with that, fill in the first circle under "Agree a lot". If you really disagree a lot, fill in the circle under "Disagree a lot".**

Give students time to fill in their answers to all parts of the Example 3 question and make sure they understand how to answer this kind of question. Then continue reading the final directions:

    📖   *Read each question carefully, and pick the answer you think is best.*

    📖   *Fill in the circle next to or under your answer.*

    📖   *If you decide to change your answer, draw an "X" through your first answer, as you see in the example. Then, fill in the circle next to or under your new answer.*

    📖   *Ask for help if you do not understand something or are not sure how to answer.*

    📖   **Are there any questions before we start?**

Exhibit B-2. PIRLS Session Script—Continued

If there are questions try to answer them the best you can. If there are no more questions, then record the current time in Cell (12a) of the Test Administration Form and proceed with the administration of the questionnaire.

    📖   **Turn the page to the first question and begin answering this questionnaire. You will have 20 minutes to answer these questions.**

After 20 minutes are up, say:

    📖   **Please stop working and raise your hand if you have finished answering the questions.**

If all of the students raise their hands, say:

    📖   **Thank you very much for participating in this study. Your work will help us to learn more about our students and schools.**

    📖   **Please stay seated while I collect your questionnaires.**

If not all of the students raise their hands, allow for additional time and say:

    📖   **You will have more time to continue answering this questionnaire. If you have already finished all the questions, then you can use this time to review your answers. Once you have finished, please close your questionnaire and read quietly at your desk.**

Once all students have finished and have closed their questionnaires record the current time in Cell (12b) of the Test Administration Form. Then say:

    📖   **Thank you very much for participating in this study. Your work will help us to learn more about our students and schools.**

    📖   **Please stay seated while I collect your questionnaires.**

Collect the questionnaires and keep them secure. Check against the Student Tracking Form to make sure that you have received all of them.

Exhibit B-3. ePIRLS Session Script

Once all students are ready to begin, read the following:

  You have been chosen to take part in an important international study of how well children around the world can read online.

  First, I am going to explain the directions for using the computer to answer questions about what you have read, and then you will do two class projects that involve reading websites. Different students will be working on different projects. After your first project, there will be a short break, and then you will do your second project.

  If you still have any schoolbooks or papers on your desk, please put them away. Except for the computer you are using for ePIRLS, all electronic devices must be stored away.

  The reading projects you will be working on are already set up on your computer. Now, we are all going to work through the directions together so that you will know what to do. I will read the directions aloud while you follow along on your computer. We will go step by step, so please wait for me to tell you when to go on.

  First, please click on the "Password to Start" box. Type "1000" and click "Start" to begin.

  Is everybody looking at the screen that asks you to choose a boy or girl to represent you during the test?

If yes, then continue. If not, help students get started.

  Please click on the boy or girl to represent you during the test.

  Now, click on the "NEXT" button to continue.

  Now you are introduced to the teacher who is going to help you through your class projects. Please read along on screen as I read the introduction to the teacher aloud.

  Hi. I am the teacher who is going to help you today. You will be reading some webpages and answering questions that I will ask you. You may find some parts easy and some parts difficult.

  Now, click on the "NEXT" button to continue. Everybody should be looking at the website called Polar Bear Facts. Please read along on screen as I read the teacher directions

Exhibit B-3. ePIRLS Session Script—Continued

aloud.

📖 **You will work on two projects. During each project, you will read information from several websites.**

📖 **Look at the website on the left called "Polar Bear Facts." This website has two tabs, "Home" and "Facts." If you click on a tab, it takes you to another webpage.**

📖 *Please click on the "Facts" tab now and read about the polar bear.*

Read the following, while checking to see if students are on the web page shown in the next picture.

📖 **Everybody should be seeing three facts about polar bears on the webpage and some new instructions from the teacher. Please let's continue reading along with the teacher.**

📖 **You will be asked some questions about each webpage you read.**

📖 **A red border will show you the question you are working on.**

📖 **If it has not happened already, in a few seconds the first question will appear in the "Class Project" window. If you need help finding the "Facts" page please raise your hand.**

Exhibit B-3. ePIRLS Session Script—Continued

  Now, please let's continue reading along with the teacher.

  ⌨ **For some questions you will be asked to select your answer. Click on the circle next to your answer.**

  ⌨ **If you are not sure about the answer, click on the answer that you think is best.**

  ⌨ **Question 1 asks, "What color is a polar bear's fur?"**

  📖 *Now, please click on the answer that you think is best.*

After students have clicked on an answer, continue reading along with the teacher's comments in the pop-up box.

  ⌨ **"White" is the correct answer.**

  ⌨ **If you did not click on "White," you can change your answer by clicking on another circle.**

  ⌨ *When you have made your choice, click on the "SAVE" button to go on to the next question.*

Confirm that all students have clicked on the "SAVE" button, and then continue.

  ⌨ **For the next question, you will be asked to type your answer.**

Exhibit B-3.   ePIRLS Session Script—Continued

⌨ **Do not worry if you are not sure how to spell a word. Do the best you can.**

⌨ **Question 2 asks, "Where do polar bears live?"**

📖 *Now, type your answer in the box below the question.*

Confirm that all students are typing an answer in the open-response field, then read along with the teachers comments in the pop-up box.

⌨ *When you finish typing, click on the "SAVE" button to go on to the next question.*

When the students have clicked the "SAVE" button, continue reading along with the teacher.

⌨ **Sometimes, I will ask you to click on a link to another website. Links are in blue and underlined.** *Now, click on the following link—A Polar Bear's Year.*

📖 **Is everybody looking at a new web page, with four boxes about Fall, Winter, Spring, and Summer?**

If yes, continue reading along.

⌨ **For some webpages, you may need to scroll to see all of the information.**

⌨ *Click on the scroll bar next to the yellow arrow and drag it down to see the rest of this page.*

Exhibit B-3. ePIRLS Session Script—Continued

Confirm that all students have scrolled, and then continue.
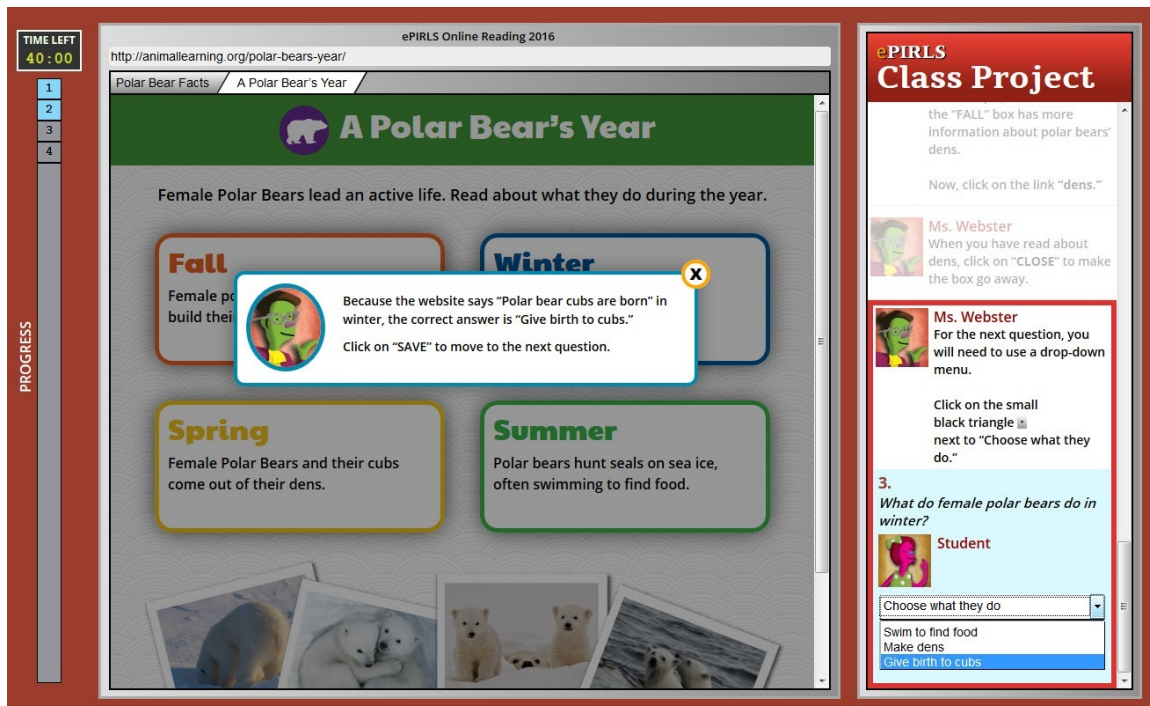
⌨ **Sometimes, a link is in the middle of a webpage.**

⌨ **For example, the "dens" link in the "FALL" box has more information about polar bears' dens.**

⌨ *Now, click on the link "dens."*

📖 **Is everybody reading about a den?**

If yes, continue.

⌨ *When you have read about dens, click on "CLOSE" to make the box go away.*

Confirm that all students have clicked on "CLOSE", and then continue.

⌨ **For the next question, you will need to use a drop-down menu.**

📖 **When the teacher asks you to use a drop-down menu, several possible answers to the question will appear or "drop down" when you click on the triangle.**

⌨ *Click on the small black triangle next to "Choose what they do."*

📖 **For this question, three answer choices drop down. Is everybody looking at the three choices?**

Exhibit B-3.   ePIRLS Session Script—Continued

If yes, continue. If no, help the students understand how to click on the triangle and make the drop-down menu appear.

⌨ **Because the website says "Polar bear cubs are born" in winter, the correct answer is "Give birth to cubs."**

⌨ *Click on "SAVE" to move to the next question.*

Confirm that all students have clicked on the "SAVE" button, and then continue.

⌨ **Sometimes I will ask you to click on the best answer from the results of a Google search.**

⌨ **Remember, click only on the link that gives your answer.**

⌨ **For Question 4, look at the Google search results, at left.**

⌨ *Click on the link that is most likely to show images of polar bears stranded on icebergs.*

Confirm that students have clicked on one of the Google search results, then read along with the teachers comments in the pop-up box.

⌨ **You should have clicked on "Polar Bears on Iceberg – Image Results." It has been loaded for you.**

Exhibit B-3.   ePIRLS Session Script—Continued

📖 *Click on "X" to make the pop-up box go away.*

📖 **Please note how the webpages you viewed appear as tabs at the top of the page. At this time, you can see tabs called "Polar Bear Facts," "A Polar Bear's Year," and "Polar Bears on Iceberg."**

Confirm that students have located the tabs of the websites at the top of the page, and then continue.

📖 **If you need to refer to any of the previously viewed websites, you can go back by clicking on its tab.**

📖 **Now, please let's continue reading along with the teacher.**

💻 **Do your best to answer each question. If you cannot answer a question, still click on SAVE to move on.**

📖 *Click on the "NEXT" button. The teacher now is going to explain very important information. So, please remember what the teacher says now.*

💻 **After you click on SAVE, you will not be able to change that answer until you reach the end of the project.**

💻 **However, when you finish the last question, you will be able to review all your answers by scrolling back up through the questions.**
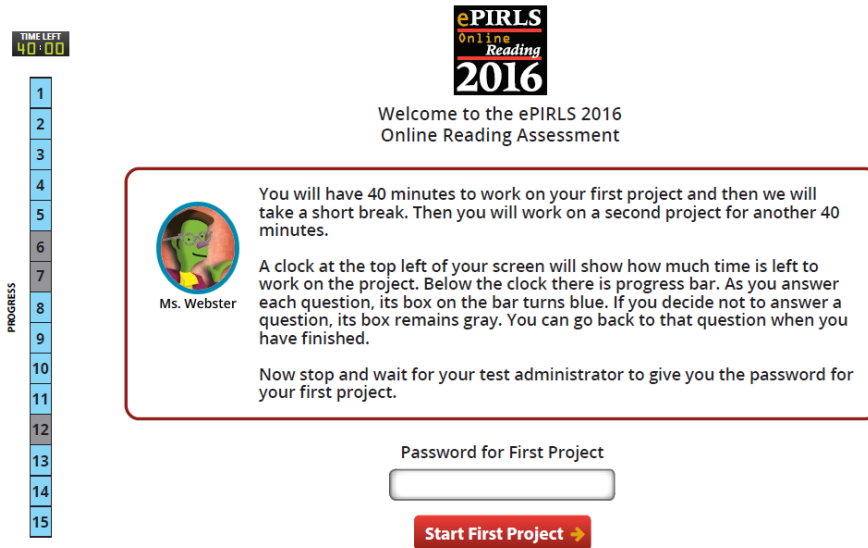
Exhibit B-3.   ePIRLS Session Script—Continued

  📖 *I have now finished explaining the directions. Please click "NEXT" and I will give you the password to start the first project. You will have 40 minutes to complete each project.*

Now, follow the script in Section 3.3.

The First Class Project

All students should now be looking at the "Password for First Project" screen, shown below.

  📖 **We will now begin work on the first project. Read each question carefully, if you are not sure about an answer to a question, give the answer you think is best and continue with the next question.**

  💻 **You will have 40 minutes to work on your first project and then we will take a short break. Then you will work on a second project for another 40 minutes.**

  💻 **A clock at the top left of your screen will show how much time is left to work on the project. Below the clock there is progress bar. As you answer each question, its box on the bar turns blue. If you decide not to answer a question, its box remains gray. You can go back to that question when you have finished.**

Make sure that everybody sees the clock in the upper left corner and the progress bar below it.

  📖 **When the clock in the top left corner shows that you have no time left, you will be automatically logged out of the project. If you finish before 40 minutes and have checked your work, you may log out yourself and read a book quietly if you have one easily accessible.**

  📖 **Do you have any questions?**

Exhibit B-3. ePIRLS Session Script—Continued

When all problems, if any, are resolved, record the current time in Cell (8b) and also in Cell (9a) of the ePIRLS Test Administration Form and say:

   📖 *The password to begin the first project is "1835." Please type the password in the box. Click "Start First Project" to start working.*

Make sure that all students are working on their first project. Remember that you are not allowed to help the students with navigating through the websites or answering the questions.

About 5 minutes before the end of the session, say:

   📖 **You have about 5 minutes left before the break.**

   📖 **If you have reached the end of the project, you may go back to any questions you have not answered. You can also check the answers of questions you have done.**

   📖 **If you have finished and logged out, please wait for the others to finish.**

After the last 5 minutes have passed, say:

   📖 **Your time is up.**

At this time, record the current time in Cell (9b) of the ePIRLS Test Administration Form.

   📖 *If you have not done it yet, please answer the question about how much you liked doing your project. For example, if you liked the project a lot, then click on the circle next to the smiling face and the words "I liked it a lot." When ready, click "Save."*

Make sure that all students have answered the question about how much they liked doing the project. If they need help answering the question, you are free to help them.

When students have saved their answer to the question about how much they liked the first project, the **Password for Second Project** screen will reappear with a box for the password for the second task.

   📖 **We will now take a 5 minute break. Please leave the computer running on the "Password for Second Project" screen.**

Because the computers will be left with the *ePIRLS Software* running, do not leave the room unattended during the break.

The Second Class Project

After the break, record the current time in Cell (10a) of the ePIRLS Test Administration Form.

Ask students to be seated at their computers. In order to make sure that each student is at the correct computer, say:

   📖 **Welcome back. Is everybody sitting at the same computer as before?**

Exhibit B-3.   ePIRLS Session Script—Continued

If yes, continue.

 📖 **You will now have 40 minutes to work on your second project.**

 📖 **After we complete the second project, I will ask you to answer the short ePIRLS Student Questionnaire about your experience with using computers.**

 📖 **If you complete the second project before time is up and have reviewed your work, you may log out of the project and answer the question about how much you liked doing the second project. Please sit quietly or read a book at your computer station.**

 📖 **Do you have any questions?**

When all problems, if any, are resolved, record the current time in Cell (10b) and also in Cell (11a) of the ePIRLS Test Administration Form. Then say:

 📖 *We will now work on the second project. The password to begin the second project is "3972." Please type in the password. Click "Start Second Project" to begin working on this project. You will have 40 minutes.*

About 5 minutes before the end of the session, say:

 📖 **You have about 5 minutes left to work on your second project.**

 📖 **If you have reached the end of the project, you may go back to any questions you have not answered. You can also check the answers to questions you have done.**

 📖 **If you have finished, please make sure to answer the question about how much you liked doing the project. When ready, click "Save." Please wait quietly for others to finish.**

After the last 5 minutes have passed, say:

 📖 **Your time is up. Please stay seated so I can give you the password for the ePIRLS Student Questionnaire.**

At this time, record the current time in Cell (11b) of the ePIRLS Test Administration Form.

Before giving students the password for the questionnaire, make sure that all students have answered the question about how much they liked doing the second project. If they need help, you are free to help them.

After students have submitted their answer to the project liking question, the **Password for Questionnaire** screen will reappear with a box to enter the password to start the questionnaire.

Exhibit B-3.   ePIRLS Session Script—Continued

ePIRLS Student Questionnaire

At this time, record the current time in Cell (12a) of the ePIRLS Test Administration Form. Then say:

   📖 ***The password to begin the ePIRLS Student Questionnaire is "6317." Please type in the password and click "Start Questionnaire." The questionnaire should take you about five minutes to complete.***

Make sure that students complete the ePIRLS Student Questionnaire. If students need help answering these questions, you are free to help them. Please note that these questions have a "back" button.

Exhibit B-3.   ePIRLS Session Script—Continued

ePIRLS 2016 Student Questionnaire

1 About how much time do you spend using a computer each day?

- Less than 30 minutes
- 30 minutes up to 1 hour
- From 1 hour up to 2 hours
- 2 hours or more

NEXT →

ePIRLS 2016 Student Questionnaire

2 About how much time do you spend each day **finding and reading information on the Internet?**

- Less than 30 minutes
- 30 minutes up to 1 hour
- From 1 hour up to 2 hours
- 2 hours or more

← BACK   NEXT →

Exhibit B-3.   ePIRLS Session Script—Continued

ePIRLS 2016 Student Questionnaire

ePIRLS 2016 Student Questionnaire

📖 **Please raise your hand when you have finished answering the questionnaire and wait quietly.**

When students have submitted their answers to the questionnaire, the "Well done!" screen will appear. When all of the students have completed the questionnaire, say:

📖 **Please do not turn off your computers or remove the USB sticks. Thank you very much for participating in this study. Your work will help us to learn more about our students and schools.**

At this time, record the current time in Cell (12b) of the ePIRLS Test Administration Form.

You may now dismiss the students.

Please answer questions 13 through 19 on the ePIRLS Test Administration Form and complete the Student Response Rate Form (see Section 3.3 in the PIRLS Test Administration Manual).

Exhibit B-4. Test Administration Form

PIRLS 2016
Test Administration Form

Class ID: [   ]

[1] School Name: [   ]

[2] Class Name: [   ]

[3] School Coordinator Name: [   ]

[4] Test Administrator Name: [   ]

[5] Test Administrator's Position:

☐ PIRLS national center staff

☐ Teacher from school but not teacher of the selected class

☐ Other, please describe [   ]

[6] Type of testing session: ☐ Regular   ☐ Make-up

[7] Date of testing: ☐ DD: Day of testing   ☐ MM: Month of testing

Year of testing: ☐ 2015   ☐ 2016

Timing of Test and Questionnaire Sessions		
Start time	**End time**	**Task**
(8a)	(8b)	
		Administrative tasks (preparation of students, reading of instructions, distribution of achievement test booklets, etc.)
(9a)	(9b)	
		Testing, first part
(10a)	(10b)	
		Preparation of students for second part
(11a)	(11b)	
		Testing, second part
(12a)	(12b)	
		Session for the Student Questionnaire (If the Student Questionnaire is administered on a different date than the test, enter the date)

Exhibit B-4. Test Administration Form—Continued

13

Were there any special circumstances or unusual events during the testing session (e.g., loud noises, students leaving or disturbing the testing session, or attempting to cheat, fire or smoke alarms, etc.)?

No ○   Yes, please explain ○

14

Did students compain about any particular problems with the testing (e.g., test too difficult, confusing, struggling with any particular item, etc.)?

No ○   Yes, please explain ○

15

Were there any problems with the testing materials (e.g., errors or omissions in the Student Tracking Forms, incorrect test booklet assignments, or insufficient booklets)?

No ○   Yes, please explain ○

16

Were there any students requiring special accommodations (e.g., students with visual or hearing impairment, dyslexia, etc.)?

No ○   Yes, please specify the accommodation(s) provided   ○

17

Did a Quality Control Monitor observe the testing session?

No ○   Yes, please explain ○

Appendix C. Questionnaires

Contents

Exhibit C-1. Student Questionnaire

Identification Label

PIRLS
2016

PROGRESS IN INTERNATIONAL READING LITERACY STUDY

Student Questionnaire

Grade 4

National Center for Education Statistics
U.S. Department of Education
550 12th St., SW, 4th floor
Washington, DC 20202

TIMSS & PIRLS
International Study Center
Lynch School of Education, Boston College

© IEA, 2015

Directions

In this booklet, you will find questions about you and what you think. For each question, you should choose the answer you think is best.

Let us take a few minutes to practice the kinds of questions you will answer in this booklet.

Example 1 is one kind of question you will find in this booklet.

Example 1

Do you go to school?

*Fill **one** circle only.*

Yes -- ◯

No -- ◯

Example 2 is another kind of question you will find in this booklet.

Example 2

How often do you do these things?

*Fill **one** circle for each line.*

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I talk with my friends	◯	◯	◯	◯
b) I play sports	◯	◯	◯	◯
c) I ride a skateboard	◯	◯	◯	◯

1 Student *Questionnaire*

Example 3 is another kind of question you will find in this booklet.

Example 3

What do you think? Tell how much you agree with these statements.

*Fill **one** circle for each line.*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) Watching movies is fun	○	○	○	○
b) I like eating ice cream	○	○	○	○
c) I do not like waking up early	○	○	○	○
d) I enjoy doing chores	○	○	○	○

- Read each question carefully, and pick the answer you think is best.

- Fill in the circle next to or under your answer.

- If you decide to change your answer, draw an ✕ through your first answer, like this: ✕.   Then, fill in the circle next to or under your new answer.

- Ask for help if you do not understand something or are not sure how to answer.

Student *Questionnaire*   2

About you

1

A. Are you a girl or a boy?

*Fill **one** circle only.*

Girl -- ○

Boy -- ○

B. Are you Hispanic or Latino?

*Fill **one** circle only.*

Yes, I am Hispanic or Latino -- ○

No, I am not Hispanic or Latino -- ○

C. Which of the following best describes you?

*Fill **one** or more circles.*

White -- ○

Black or African American -- ○

Asian -- ○

American Indian or Alaska Native -- ○

Native Hawaiian or other
Pacific Islander -- ○

3 Student *Questionnaire*

2

When were you born?

Fill the circles next to the month and year you were born.

a) Month

January -- ◯
February -- ◯
March -- ◯
April -- ◯
May -- ◯
June -- ◯
July -- ◯
August -- ◯
September -- ◯
October -- ◯
November -- ◯
December -- ◯

b) Year

2003 -- ◯
2004 -- ◯
2005 -- ◯
2006 -- ◯
2007 -- ◯
2008 -- ◯
2009 -- ◯
Other -- ◯

Student *Questionnaire* **4**

3

A. How often do you speak English at home?

*Fill **one** circle only.*

I always speak
English at home -- ◯ If ***always***, please go to question 4 ⟶

I almost always speak
English at home -- ◯

I sometimes speak English
and sometimes speak
another language at home -- ◯

I never speak English at home -- ◯

If ***almost always, sometimes, or never***, please go to question 3B ⤵

B. What language do you speak at home (other than English)?

*Fill **one** circle only.*

Spanish -- ◯

Other -- ◯ Please Specify_____

5 Student *Questionnaire*

4 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━

A. Was your mother (or stepmother or female legal guardian) born in the United States?

("United States" includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad.)

*Fill **one** circle only.*

Yes -- ○

No -- ○

I don't know -- ○

B. Was your father (or stepfather or male legal guardian) born in the United States?

*Fill **one** circle only.*

Yes -- ○

No -- ○

I don't know -- ○

C. Were you born in the United States?

*Fill **one** circle only.*

Yes -- ○

No -- ○

I don't know -- ○

Student *Questionnaire* **6**

5

About how many books are there in your home? (Do not count magazines, newspapers, or your school books.)

*Fill **one** circle only.*

None or very few (0–10 books) -- ○   This shows 10 books

Enough to fill one shelf (11–25 books) -- ○   This shows 25 books

Enough to fill one bookcase
(26–100 books) -- ○   This shows 100 books
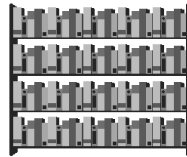
Enough to fill two bookcases
(101–200 books) -- ○   This shows 200 books
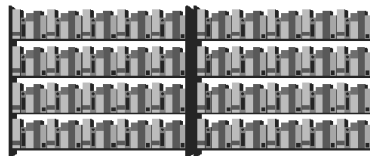
Enough to fill three or more bookcases
(more than 200) -- ○   This shows more than 200 books

6
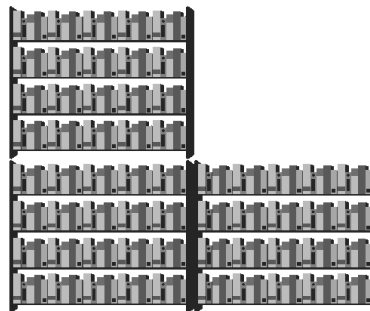
Do you have any of these things at your home?

*Fill **one** circle for each line.*

		Yes	No
a)	A computer or tablet	◯	◯
b)	Study desk/table for your use	◯	◯
c)	Your own room	◯	◯
d)	Internet connection	◯	◯
e)	Your own cell phone	◯	◯
f)	A gaming system (e.g., PlayStation®, Wii®, XBox®)	◯	◯
g)	VCR, DVD, or Blu-ray player	◯	◯

Student *Questionnaire*   8

7

About how often are you absent from school?

*Fill **one** circle only.*

Once a week -- ◯

Once every two weeks -- ◯

Once a month -- ◯

Never or almost never -- ◯

8

How often do you feel this way when you arrive at school?

*Fill **one** circle for each line.*

	Every day	Almost every day	Sometimes	Never
a) I feel tired	◯	◯	◯	◯
b) I feel hungry	◯	◯	◯	◯

9 Student *Questionnaire*

9

How often do you eat breakfast on school days?

*Fill **one** circle only.*

Every day -- ○

Most days -- ○

Sometimes -- ○

Never or almost never -- ○

10

How often do you use a computer or tablet in each of these places for schoolwork (including classroom tasks, homework, or studying outside of class)?

*Fill **one** circle for each line.*

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) At home	○	○	○	○
b) At school	○	○	○	○
c) Some other place	○	○	○	○

Student *Questionnaire* **10**

11

How much time do you spend using a computer or tablet to do these activities for your <u>schoolwork</u> on a normal school day?

*Fill **one** circle for each line.*

	No time	30 minutes or less	More than 30 minutes
a) Finding and reading information	○	○	○
b) Preparing reports and presentations	○	○	○

12

How much time do you spend each day using a computer or tablet for any of the following activities?

*Fill **one** circle for each line.*

	No time	Less than 30 minutes	30 minutes up to 1 hour	From 1 hour up to 2 hours	2 hours or more
a) Playing games	○	○	○	○	○
b) Watching videos	○	○	○	○	○
c) Chatting	○	○	○	○	○
d) Surfing the Internet	○	○	○	○	○

11 Student *Questionnaire*

Your School

13

What do you think about your school? Tell how much you agree with these statements.

*Fill **one** circle for each line.*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I like being in school	○	○	○	○
b) I feel safe when I am at school	○	○	○	○
c) I feel like I belong at this school	○	○	○	○
d) Teachers at my school are fair to me	○	○	○	○
e) I am proud to go to this school	○	○	○	○

Student *Questionnaire* **12**

14

During this year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?

*Fill **one** circle for each line.*

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

13 *Student Questionnaire*

Lessons about reading

15

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

*Fill **one** circle for each line.*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I like what I read about in school	○	○	○	○
b) My teacher gives me interesting things to read	○	○	○	○
c) I know what my teacher expects me to do	○	○	○	○
d) My teacher is easy to understand	○	○	○	○
e) I am interested in what my teacher says	○	○	○	○
f) My teacher encourages me to say what I think about what I have read	○	○	○	○
g) My teacher lets me show what I have learned	○	○	○	○
h) My teacher does a variety of things to help us learn	○	○	○	○
i) My teacher tells me how to do better when I make a mistake	○	○	○	○

Student *Questionnaire* **14**

Reading in school

16

In school, how often do these things happen?

*Fill **one** circle for each line.*

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I read silently on my own	○	○	○	○
b) I read things that I choose myself	○	○	○	○
c) My teacher asks us in class to talk about what we have read	○	○	○	○

15 Student *Questionnaire*

Using the library

17

How often do you borrow books (including ebooks) from your school or local library?

*Fill **one** circle only.*

At least once a week -- ◯

Once or twice a month -- ◯

A few times a year -- ◯

Never or almost never -- ◯

Reading outside of school

18

How much time do you spend reading <u>outside of school</u> on a normal school day?

*Fill **one** circle only.*

Less than 30 minutes -- ◯

30 minutes up to 1 hour -- ◯

From 1 hour up to 2 hours -- ◯

2 hours or more -- ◯

19

How often do you do these things <u>outside of school</u>?

*Fill **one** circle for each line.*

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I read for fun	◯	◯	◯	◯
b) I read to find out about things I want to learn	◯	◯	◯	◯

17 *Student Questionnaire*

What you think about reading

20

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

*Fill **one** circle for each line.*

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

Student *Questionnaire* **18**

21

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

*Fill **one** circle for each line.*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I usually do well in reading	○	○	○	○
b) Reading is easy for me	○	○	○	○
c) I have trouble reading stories with difficult words	○	○	○	○
d) Reading is harder for me than for many of my classmates	○	○	○	○
e) Reading is harder for me than any other subject	○	○	○	○
f) I am just not good at reading	○	○	○	○

19 Student *Questionnaire*

Activities outside of school

22

The following questions ask about activities you do <u>outside of school</u>.

*Fill **one** circle for each line.*

	Yes	No
a) Do you play on a sports team outside of school?	○	○
b) Do you often play a musical instrument outside of school?	○	○
c) Are you studying something in a class outside of school?	○	○
d) Do you belong to a club outside of school (like Girl Scouts, Cub Scouts, 4-H, or Boys and Girls Club)?	○	○

Student Questionnaire **20**

Thank You!

Thank you for filling out the questionnaire!

Exhibit C-2. School Questionnaire

Identification Label

PIRLS 2016

PROGRESS IN INTERNATIONAL READING LITERACY STUDY

School Questionnaire

Grade 4

National Center for Education Statistics
U.S. Department of Education
550 12th St., SW, 4th floor
Washington, DC 20202

TIMSS & PIRLS
International Study Center
Lynch School of Education, Boston College

© IEA, 2015

School *Questionnaire*

Your school has agreed to participate in PIRLS 2016 (Progress in International Reading Literacy Study), an educational research project sponsored by the International Association for the Evaluation of Educational Achievement (IEA). PIRLS measures trends in student achievement in reading and studies differences in national education systems in more than 50 countries in order to help improve teaching and learning worldwide.

This questionnaire is addressed to school principals and department heads who are asked to supply information about their schools. Since your school has been selected as part of a nationwide sample, your responses are very important in helping to describe primary/elementary education in the United States.

It is important that you answer each question carefully so that the information provided reflects the situation in your school as accurately as possible. Some of the questions will require that you look up school records, so you may wish to arrange for the assistance of another staff member to help provide this information.

Since PIRLS is an international study and all countries are using the same questionnaire, you may find that some of the questions seem unusual or are not entirely relevant to you or schools in the United States. Nevertheless, it is important that you do your best to answer all of the questions so comparisons can be made across countries in the study.

It is estimated that you will need approximately 30 minutes to complete this questionnaire. We appreciate the time and effort that this takes and thank you for your cooperation and contribution.

When you have completed the questionnaire, please place it in the accompanying envelope and return it to the PIRLS school coordinator.

Your responses will be combined with those from other participants to produce summary statistics and reports.

Thank you.

PIRLS 2016

School Enrollment and Characteristics

1

What is the total enrollment of students in your school as of March 1, 2016?

_____ students
Write in the number.

2

What is the total enrollment of fourth grade students in your school as of March 1, 2016?

_____ students
Write in the number.

3

Approximately what percentage of students in your school have the following backgrounds?

*Check **one** circle for each line.*

0 to 10%

11 to 25%

26 to 50%

More than 50%

a) Come from economically disadvantaged homes --------- ◯ — ◯ — ◯ — ◯

b) Come from economically affluent homes ---------------- ◯ — ◯ — ◯ — ◯

4

A. Approximately what percentage of students in your school have English as their native language?

*Check **one** circle only.*

More than 90% --- ◯

76 to 90% --- ◯

51 to 75% --- ◯

26 to 50% --- ◯

25% or less --- ◯

B. Of the students currently enrolled in your school, what percentage have been identified as limited-English proficient (LEP)/English Language Learners (ELL)?

*Check **one** circle only.*

0% --- ◯

1 to 5% --- ◯

6 to 10% --- ◯

11 to 25% --- ◯

26 to 50% --- ◯

51 to 75% --- ◯

76 to 90% --- ◯

Over 90% --- ◯

5

A. How many people live in the city, town, or area where your school is located?

*Check **one** circle only.*

More than 500,000 people --- ◯
100,001 to 500,000 people --- ◯
50,001 to 100,000 people --- ◯
30,001 to 50,000 people --- ◯
15,001 to 30,000 people --- ◯
3,001 to 15,000 people --- ◯
3,000 people or fewer --- ◯

B. Which best describes the immediate area in which your school is located?

*Check **one** circle only.*

Urban—Densely populated --- ◯
Suburban—On fringe or outskirts of urban area --- ◯
Medium size city or large town --- ◯
Small town or village --- ◯
Remote rural --- ◯

C. Which best characterizes the average income level of the population in the school's immediate area?

*Check **one** circle only.*

High --- ◯
Medium --- ◯
Low --- ◯

6

What type of school is this?

*Check **one** circle only.*

Regular public school --◯
A regular public school with a magnet program --◯
A magnet school or school with a special program emphasis (e.g., Montessori, science/math school, performing arts school, talented/gifted school, foreign language immersion school, etc.) --◯
Special education: a school that primarily serves students with disabilities --◯
Alternative: a school designed to address the needs of students, typically at risk of educational failure, which cannot be met in regular schools --◯
Vocational --◯
Charter School --◯
Private (independent) --◯
Private (religiously affiliated) --◯
Other --◯

7

Does your school provide free meals for students?

*Check **one** circle for each line.*

Yes, for all students
    Yes, for some students
        No

a) Breakfast ---------------------- ◯ --- ◯ --- ◯
b) Lunch ------------------------- ◯ --- ◯ --- ◯

8

Around the first of October 2015, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program?

_____ percentage of students
Write in the number.

Instructional Time

9

For the fourth grade students in your school:

A. How many <u>days per year</u> is your school open for instruction?

_____ days
Write in the number.

B. What is the <u>total instructional time</u>, excluding breaks, in a <u>typical day</u>?

_____ minutes
Write in the number of minutes per day.
Please convert the number of hours into minutes.

C. In one <u>calendar week</u>, how many days is the school open for instruction?

*Check **one** circle only.*

6 days --- ◯

5 1/2 days --- ◯

5 days --- ◯

4 1/2 days --- ◯

4 days --- ◯

Other --- ◯

10

A. Does your school provide a place where students can work on their schoolwork before or after school?

*Check **one** circle only.*

Yes --- ◯

No --- ◯ ⟶

(If No, go to #11)

If Yes,

B. Is someone available to assist them with their schoolwork?

*Check **one** circle only.*

Yes --- ◯

No --- ◯

Resources and Technology

11

Does your school have a school library?

*Check **one** circle only.*

Yes --- ◯

No --- ◯ ⟶

(If No, go to #12)

If Yes,

A. Approximately how many books (print) with different titles does your school library have (excluding magazines and periodicals)?

*Check **one** circle only.*

250 or fewer --- ◯

251–500 --- ◯

501–2,000 --- ◯

2,001–5,000 --- ◯

5,001–10,000 --- ◯

More than 10,000 --- ◯

B. Approximately how many titles of magazines and other periodicals (print) does your school library have?

*Check **one** circle only.*

0 --- ◯

1–5 --- ◯

6–10 --- ◯

11–30 --- ◯

31 or more --- ◯

C. Can students borrow print materials from the library to take home?

*Check **one** circle only.*

Yes --- ◯

No --- ◯

12

Does the school provide access to digital books?

*Check **one** circle only.*

Yes --- ◯

No --- ◯

13

How many computers (including tablets) does your school have for use by fourth grade students?
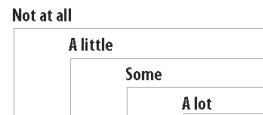
_____ computers
Write in the number.

School Emphasis on Academic Success

14

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

*Check **one** circle for each line.*

Not at all — A little — Some — A lot

A. General School Resources

a) Instructional materials (e.g., textbooks) ⃝ — ⃝ — ⃝ — ⃝

b) Supplies (e.g., papers, pencils, materials) ⃝ — ⃝ — ⃝ — ⃝

c) School buildings and grounds ⃝ — ⃝ — ⃝ — ⃝

d) Heating/cooling and lighting systems ⃝ — ⃝ — ⃝ — ⃝

e) Instructional space (e.g., classrooms) ⃝ — ⃝ — ⃝ — ⃝

f) Technologically competent staff ⃝ — ⃝ — ⃝ — ⃝

g) Audio-visual resources for delivery of instruction (e.g., interactive white boards, digital projectors) ⃝ — ⃝ — ⃝ — ⃝

h) Computer technology for teaching and learning (e.g., computers or tablets for student use) ⃝ — ⃝ — ⃝ — ⃝

i) Resources for students with disabilities ⃝ — ⃝ — ⃝ — ⃝

B. Resources for Reading Instruction

a) Teachers with a specialization in reading ⃝ — ⃝ — ⃝ — ⃝

b) Computer software/ applications for reading instruction ⃝ — ⃝ — ⃝ — ⃝

c) Library resources (books, ebooks, magazines, etc.) ⃝ — ⃝ — ⃝ — ⃝

d) Instructional materials for reading (e.g., reading series, textbooks) ⃝ — ⃝ — ⃝ — ⃝

15

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

*Check **one** circle for each line.*

Very high — High — Medium — Low — Very low

a) Teachers' understanding of the school's curricular goals ⃝ — ⃝ — ⃝ — ⃝ — ⃝

b) Teachers' degree of success in implementing the school's curriculum ⃝ — ⃝ — ⃝ — ⃝ — ⃝

c) Teachers' expectations for student achievement ⃝ — ⃝ — ⃝ — ⃝ — ⃝

d) Teachers' ability to inspire students ⃝ — ⃝ — ⃝ — ⃝ — ⃝

e) Collaboration between school leadership (including master teachers) and teachers to plan instruction ⃝ — ⃝ — ⃝ — ⃝ — ⃝

f) Parental involvement in school activities ⃝ — ⃝ — ⃝ — ⃝ — ⃝

g) Parental commitment to ensure that students are ready to learn ⃝ — ⃝ — ⃝ — ⃝ — ⃝

h) Parental expectations for student achievement ⃝ — ⃝ — ⃝ — ⃝ — ⃝

i) Parental support for student achievement ⃝ — ⃝ — ⃝ — ⃝ — ⃝

j) Students' desire to do well in school ⃝ — ⃝ — ⃝ — ⃝ — ⃝

k) Students' ability to reach school's academic goals ⃝ — ⃝ — ⃝ — ⃝ — ⃝

l) Students' respect for classmates who excel academically ⃝ — ⃝ — ⃝ — ⃝ — ⃝

School *Questionnaire*   6

School Discipline and Safety

16

To what degree is each of the following a problem among fourth grade students in your school?

*Check **one** circle for each line.*

Not a problem
  Minor problem
    Moderate problem
      Serious problem

a) Arriving late at school ⭘ — ⭘ — ⭘ — ⭘

b) Absenteeism (i.e., unjustified absences) ⭘ — ⭘ — ⭘ — ⭘

c) Classroom disturbance ⭘ — ⭘ — ⭘ — ⭘

d) Cheating ⭘ — ⭘ — ⭘ — ⭘

e) Profanity ⭘ — ⭘ — ⭘ — ⭘

f) Vandalism ⭘ — ⭘ — ⭘ — ⭘

g) Theft ⭘ — ⭘ — ⭘ — ⭘

h) Intimidation or verbal abuse among students (including texting, emailing, etc.) ⭘ — ⭘ — ⭘ — ⭘

i) Physical fights among students ⭘ — ⭘ — ⭘ — ⭘

j) Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.) ⭘ — ⭘ — ⭘ — ⭘

17

To what degree is each of the following a problem among teachers in your school?

*Check **one** circle for each line.*

Not a problem
  Minor problem
    Moderate problem
      Serious problem

a) Arriving late or leaving early ⭘ — ⭘ — ⭘ — ⭘

b) Absenteeism ⭘ — ⭘ — ⭘ — ⭘

c) Failure to complete the curriculum ⭘ — ⭘ — ⭘ — ⭘

Students' Literacy Readiness

18

About how many of the students in your school can do the following when they begin the first grade of primary/elementary school?

*Check **one** circle for each line.*

Less than 25%
  25–50%
    51–75%
      More than 75%

a) Recognize most of the letters of the alphabet ⭘ — ⭘ — ⭘ — ⭘

b) Read some words ⭘ — ⭘ — ⭘ — ⭘

c) Read sentences ⭘ — ⭘ — ⭘ — ⭘

d) Read a story ⭘ — ⭘ — ⭘ — ⭘

e) Write letters of the alphabet ⭘ — ⭘ — ⭘ — ⭘

f) Write some words ⭘ — ⭘ — ⭘ — ⭘

Reading in Your School

19

At which grade do the following reading skills and strategies first receive a major emphasis in instruction in your school?

Check one circle for each line.

First grade or earlier
Second grade
Third grade
Fourth grade
Not in these grades

a) Knowing letters of the alphabet ⚪—⚪—⚪—⚪—⚪

b) Knowing letter-sound relationships ⚪—⚪—⚪—⚪—⚪

c) Reading words ⚪—⚪—⚪—⚪—⚪

d) Reading isolated sentences ⚪—⚪—⚪—⚪—⚪

e) Reading connected text ⚪—⚪—⚪—⚪—⚪

f) Locating information within the text ⚪—⚪—⚪—⚪—⚪

g) Identifying the main idea of a text ⚪—⚪—⚪—⚪—⚪

h) Explaining or supporting understanding of a text ⚪—⚪—⚪—⚪—⚪

i) Comparing a text with personal experience ⚪—⚪—⚪—⚪—⚪

j) Comparing different texts ⚪—⚪—⚪—⚪—⚪

k) Making predictions about what will happen next in a text ⚪—⚪—⚪—⚪—⚪

l) Making generalizations and drawing inferences based on a text ⚪—⚪—⚪—⚪—⚪

m) Describing the style or structure of a text ⚪—⚪—⚪—⚪—⚪

n) Determining the author's perspective or intention ⚪—⚪—⚪—⚪—⚪

Principal Experience and Education

20

By the end of this school year, how many years will you have been a principal altogether?

_____ years
Please round to the nearest whole number.

21

By the end of this school year, how many years will you have been a principal at this school?

_____ years
Please round to the nearest whole number.

22

What is the highest level of formal education you have completed?

Check one circle only.

Did not complete a 4-year college or university degree (i.e., Bachelor's degree) ---⚪

Completed a 4-year college or university degree (i.e., Bachelor's degree) ---⚪

Completed a Master's degree, postgraduate certificate program (e.g., teaching), or professional degree (e.g., law, medicine, dentistry) ---⚪

Completed a doctorate (Ph.D. or Ed.D.) ---⚪

23

Do you hold any of the following professional qualifications in educational leadership?

Check one circle for each line.

Yes No

a) Certificate or license ⚪—⚪

b) A Master's degree, postgraduate certificate program (e.g., teaching), or professional degree (e.g., law, medicine, dentistry) ⚪—⚪

c) A doctorate (Ph.D. or Ed.D.) ⚪—⚪

School *Questionnaire* 8

Thank You

Thank you for the thought, time, and effort you have put into completing this questionnaire.

Exhibit C-3. Teacher Questionnaire

Identification Label

PIRLS 2016

PROGRESS IN INTERNATIONAL READING LITERACY STUDY

Teacher Questionnaire

Grade 4

National Center for Education Statistics
U.S. Department of Education
550 12th St., SW, 4th floor
Washington, DC 20202

TIMSS & PIRLS
International Study Center
Lynch School of Education, Boston College

© IEA, 2015

**

Teacher *Questionnaire*

Your school has agreed to participate in PIRLS 2016 (Progress in International Reading Literacy Study), an educational research project sponsored by the International Association for the Evaluation of Educational Achievement (IEA). PIRLS measures trends in student achievement in reading and studies differences in national education systems in more than 50 countries in order to help improve teaching and learning worldwide.

This questionnaire is addressed to teachers of fourth grade students, and seeks information about teachers' academic and professional backgrounds, classroom resources, instructional practices, and attitudes toward teaching. Since your class has been selected as part of a nationwide sample, your responses are very important in helping to describe primary/elementary education in the United States.

Some of the questions in the questionnaire refer to the "**PIRLS class**" or "**this class**." This is the class that is identified on the front of this booklet, and which will be tested as part of PIRLS in your school. If you teach some but not all of the students in the PIRLS class, please think only of the students that you teach when answering these class-specific questions. It is important that you answer each question carefully so that the information that you provide reflects your situation as accurately as possible.

Since PIRLS is an international study and all countries are using the same questionnaire, you may find that some of the questions seem unusual or are not entirely relevant to you or schools in the United States. Nevertheless, it is important that you do your best to answer all of the questions so comparisons can be made across countries in the study.

It is estimated that you will need approximately 35 minutes to complete this questionnaire. We appreciate the time and effort that this takes and thank you for your cooperation and contribution.

When you have completed the questionnaire, please place it in the accompanying envelope and return it to the PIRLS school coordinator.

Your responses will be combined with those from other participants to produce summary statistics and reports.

Thank you.

PIRLS 2016

About You

1

By the end of this school year, how many years will you have been teaching altogether?

_____ years
Please **round** to the nearest whole number.

2

Are you female or male?

Check **one** circle only.

Female --- ◯

Male --- ◯

3

How old are you?

Check **one** circle only.

Under 25 --- ◯

25–29 --- ◯

30–39 --- ◯

40–49 --- ◯

50–59 --- ◯

60 or more --- ◯

4

What is the **highest** level of formal education you have completed?

Check **one** circle only.

Did not complete high school --- ◯

Completed high school --- ◯

Completed a 2-year college
or university degree
(i.e., Associate's degree) --- ◯

Completed a 4-year college or
university degree
(i.e., Bachelor's degree) --- ◯

Completed a Master's degree,
postgraduate certificate program
(e.g., teaching), or professional
degree (e.g., law, medicine, dentistry) --- ◯

Completed a doctorate
(Ph.D. or Ed.D) --- ◯

5

A. During your college or university education, what was your <u>major or main</u> area(s) of study?

Check **one** circle for each line.

	Yes	No
a) Education—Primary/Elementary	◯	◯
b) Education—Secondary	◯	◯
c) English	◯	◯
d) Other	◯	◯

B. As part of your formal education and/or training, to what extent did you study the following areas?

Check **one** circle for each line.

	Not at all	Overview or introduction to topic	It was an area of emphasis
a) English	◯	◯	◯
b) Literature	◯	◯	◯
c) Pedagogy/teaching reading	◯	◯	◯
d) Educational psychology	◯	◯	◯
e) Remedial reading	◯	◯	◯
f) Reading theory	◯	◯	◯
g) Special education	◯	◯	◯
h) Second language learning	◯	◯	◯
i) Assessment methods in reading	◯	◯	◯
j) Early childhood education	◯	◯	◯

Teacher *Questionnaire*   2

School Emphasis on Academic Success

6

In the past two years, how many hours in total have you spent in <u>formal</u> professional development (e.g., workshops, seminars, lesson studies, etc.) that dealt directly with <u>reading or teaching reading</u> (e.g., reading theory, instructional methods)?

*Check **one** circle only.*

None --- ◯
Less than 6 hours --- ◯
6–15 hours --- ◯
16–35 hours --- ◯
More than 35 hours --- ◯

7

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

*Check **one** circle for each line.*

Very high
  High
    Medium
      Low
        Very low

a) Teachers' understanding of the school's curricular goals --- ◯ — ◯ — ◯ — ◯ — ◯

b) Teachers' degree of success in implementing the school's curriculum -------- ◯ — ◯ — ◯ — ◯ — ◯

c) Teachers' expectations for student achievement ------ ◯ — ◯ — ◯ — ◯ — ◯

d) Teachers' ability to inspire students ---------------- ◯ — ◯ — ◯ — ◯ — ◯

e) Collaboration between school leadership (including master teachers) and teachers to plan instruction ---------------- ◯ — ◯ — ◯ — ◯ — ◯

f) Parental involvement in school activities ------------- ◯ — ◯ — ◯ — ◯ — ◯

g) Parental commitment to ensure that students are ready to learn ----------------- ◯ — ◯ — ◯ — ◯ — ◯

h) Parental expectations for student achievement ---------- ◯ — ◯ — ◯ — ◯ — ◯

i) Parental support for student achievement ---------- ◯ — ◯ — ◯ — ◯ — ◯

j) Students' desire to do well in school ----------------- ◯ — ◯ — ◯ — ◯ — ◯

k) Students' ability to reach school's academic goals ------- ◯ — ◯ — ◯ — ◯ — ◯

l) Students' respect for classmates who excel academically ------------------- ◯ — ◯ — ◯ — ◯ — ◯

3   **Teacher** *Questionnaire*

School Environment

8

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

*Check **one** circle for each line.*

Agree a lot
Agree a little
Disagree a little
Disagree a lot

a) This school is located in a safe neighborhood ---------- ◯ — ◯ — ◯ — ◯

b) I feel safe at this school -------- ◯ — ◯ — ◯ — ◯

c) This school's security policies and practices are sufficient ---- ◯ — ◯ — ◯ — ◯

d) The students behave in an orderly manner --------------- ◯ — ◯ — ◯ — ◯

e) The students are respectful of the teachers ---------------- ◯ — ◯ — ◯ — ◯

f) The students respect school property ---------------- ◯ — ◯ — ◯ — ◯

g) This school has clear rules about student conduct -------- ◯ — ◯ — ◯ — ◯

h) This school's rules are enforced in a fair and consistent manner ------------ ◯ — ◯ — ◯ — ◯

About Being a Teacher

9

How often do you have the following types of interactions with other teachers?

*Check **one** circle for each line.*

Very often
Often
Sometimes
Never or almost never

a) Share what I have learned about my teaching experiences ---------- ◯ — ◯ — ◯ — ◯

b) Observe another classroom to learn more about teaching - ◯ — ◯ — ◯ — ◯

c) Work together to improve how to teach a particular topic ---------------- ◯ — ◯ — ◯ — ◯

d) Work with teachers from other schools on the curriculum -------------------- ◯ — ◯ — ◯ — ◯

e) Work with teachers from other grades to ensure continuity in learning --------- ◯ — ◯ — ◯ — ◯

10

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

*Check **one** circle for each line.*

Very often
Often
Sometimes
Never or almost never

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

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

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

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

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

Teacher Questionnaire 4 ■

About Teaching Reading to the PIRLS Class

11

A. How many students are in this class?

_____ students
Write in the number.

B. How many of the students in #11A are in fourth grade?

_____ fourth grade students
Write in the number.

12

How many fourth grade students experience difficulties understanding spoken English?

_____ students in this class
Write in the number.

13

A. How many students need remedial instruction in reading?

_____ fourth grade students in this class
Write in the number.

B. How many of the students in #13A receive remedial instruction in reading?

_____ students
Write in the number.

14

How many students in the class are advanced readers?

_____ fourth grade students in this class
Write in the number.

15

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

*Check **one** circle for each line.*

Not at all
Some
A lot

a) Students lacking prerequisite knowledge or skills ----------- ◯ — ◯ — ◯

b) Students suffering from lack of basic nutrition ---------- ◯ — ◯ — ◯

c) Students suffering from not enough sleep -------------- ◯ — ◯ — ◯

d) Students absent from class ---- ◯ — ◯ — ◯

e) Disruptive students ------------ ◯ — ◯ — ◯

f) Uninterested students --------- ◯ — ◯ — ◯

g) Students with mental, emotional, or psychological impairment -------------------- ◯ — ◯ — ◯

h) Lack of support for using information technology ------- ◯ — ◯ — ◯

5   **Teacher** *Questionnaire*

16

In a typical week, how much time do you spend on English language instruction and/or activities with the students?

Include instruction or activities in reading, writing, speaking, literature, and other language skills.

_____ minutes per week
Write in the number of minutes per week.
Please convert the number of hours into minutes.

17

Regardless of whether or not you have formally scheduled time for reading instruction, in a typical week about how much time do you spend on reading instruction and/or activities with the students?

Include things you do across curriculum areas and during formally scheduled time for reading instruction.

_____ minutes per week
Write in the number of minutes per week.
Please convert the number of hours into minutes.

18

When you have reading instruction and/or do reading activities, how often do you organize students in the following ways?

*Check **one** circle for each line.*

Always or almost always
   Often
      Sometimes
         Never

a) I teach reading as a whole-class activity ----------- ○ — ○ — ○ — ○

b) I create same-ability groups -- ○ — ○ — ○ — ○

c) I create mixed-ability groups -- ○ — ○ — ○ — ○

d) I use individualized instruction for reading --------- ○ — ○ — ○ — ○

e) Students work independently on an assigned plan or goal --- ○ — ○ — ○ — ○

About Teaching Reading to the PIRLS Class

19

When you have reading instruction and/or do reading activities with the students, how often do you have the students read the following types of text (in print or digitally)?

*Check **one** circle for each line.*

Every day or almost every day
Once or twice a week
Once or twice a month
Never or almost never

A. Literary Reading Materials

a) Short stories (e.g., fables, fairy tales, action stories, science fiction, detective stories) ------ ○ — ○ — ○ — ○

b) Longer fiction books with chapters ---------------------- ○ — ○ — ○ — ○

c) Plays ------------------------ ○ — ○ — ○ — ○

B. Informational Reading Materials

a) Nonfiction subject area books or textbooks ----------- ○ — ○ — ○ — ○

b) Longer nonfiction books with chapters ---------------------- ○ — ○ — ○ — ○

c) Nonfiction articles that describe and explain about things, people, events, or how things work (e.g., newspaper articles, brochures)--------------------- ○ — ○ — ○ — ○

20

When you have reading instruction and/or do reading activities with the students, how often do you do the following?

*Check **one** circle for each line.*

Every day or almost every day
Once or twice a week
Once or twice a month
Never or almost never

a) Read aloud to students -------- ○ — ○ — ○ — ○

b) Ask students to read aloud --- ○ — ○ — ○ — ○

c) Ask students to read silently on their own ------------------ ○ — ○ — ○ — ○

d) Teach students strategies for decoding sounds and words -- ○ — ○ — ○ — ○

e) Teach students new vocabulary systematically ----- ○ — ○ — ○ — ○

f) Teach students how to summarize the main ideas ---- ○ — ○ — ○ — ○

g) Teach or model skimming or scanning strategies --------- ○ — ○ — ○ — ○

21

How often do you do the following in teaching reading to this class?

*Check **one** circle for each line.*

Every or almost every lesson
About half the lessons
Some lessons
Never

a) Provide reading materials that match the students' interests ------------- ◯ — ◯ — ◯ — ◯

b) Provide materials that are appropriate for the reading levels of individual students --- ◯ — ◯ — ◯ — ◯

c) Link new content to students' prior knowledge ----- ◯ — ◯ — ◯ — ◯

d) Encourage students to develop their understandings of the text --------------------- ◯ — ◯ — ◯ — ◯

e) Encourage student discussions of texts ----------------------- ◯ — ◯ — ◯ — ◯

f) Encourage students to challenge the opinion expressed in the text ---------- ◯ — ◯ — ◯ — ◯

g) Use multiple perspectives (among students and texts) to enrich understanding ------- ◯ — ◯ — ◯ — ◯

h) Give students time to read books of their own choosing -- ◯ — ◯ — ◯ — ◯

i) Give individualized feedback to each student --------------- ◯ — ◯ — ◯ — ◯

22

How often do you ask the students to do the following things to help develop reading comprehension skills or strategies?

*Check **one** circle for each line.*

Every day or almost every day
Once or twice a week
Once or twice a month
Never or almost never

a) Locate information within the text ----------------------- ◯ — ◯ — ◯ — ◯

b) Identify the main ideas of what they have read -------- ◯ — ◯ — ◯ — ◯

c) Explain or support their understanding of what they have read --------------------- ◯ — ◯ — ◯ — ◯

d) Compare what they have read with experiences they have had --------------------- ◯ — ◯ — ◯ — ◯

e) Compare what they have read with other things they have read --------------------- ◯ — ◯ — ◯ — ◯

f) Make predictions about what will happen next in the text they are reading ---------- ◯ — ◯ — ◯ — ◯

g) Make generalizations and draw inferences based on what they have read ----------- ◯ — ◯ — ◯ — ◯

h) Describe the style or structure of the text they have read --------------------- ◯ — ◯ — ◯ — ◯

i) Determine the author's perspective or intention ------- ◯ — ◯ — ◯ — ◯

Computer and Library Resources

23

After students have read something, how often do you ask them to do the following?

*Check **one** circle for each line.*

Every day or almost every day
Once or twice a week
Once or twice a month
Never or almost never
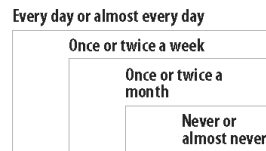
a) Write something about or in response to what they have read ---------------------- ◯ — ◯ — ◯ — ◯

b) Answer oral questions about or orally summarize what they have read ---------- ◯ — ◯ — ◯ — ◯

c) Talk with each other about what they have read ---------- ◯ — ◯ — ◯ — ◯

d) Take a written quiz or test about what they have read ---- ◯ — ◯ — ◯ — ◯

24

A. Do the students in this class have computers (including tablets) available to use for their <u>reading</u> lessons?

*Check **one** circle only.*

Yes --- ◯

No --- ◯ ⟶

(If No, go to #25)

If Yes,

B. What access do the students have to computers?

*Check **one** circle for each line.*

Yes
No

a) Each student has a computer ------------------ ◯ — ◯

b) The class has computers that students can share --------------------------------------- ◯ — ◯

c) The school has computers that the class can use sometimes ----------------------------- ◯ — ◯

C. How often do you do the following computer activities during reading lessons?

*Check **one** circle for each line.*

Every day or almost every day
Once or twice a week
Once or twice a month
Never or almost never
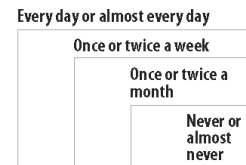
a) Ask students to read digital texts ------------------- ◯ — ◯ — ◯ — ◯

b) Teach students strategies for reading digital texts ------- ◯ — ◯ — ◯ — ◯

c) Teach students to be critical when reading on the Internet ------------------ ◯ — ◯ — ◯ — ◯

d) Ask students to look up information (e.g., facts, definitions, etc.) -------------- ◯ — ◯ — ◯ — ◯

e) Ask students to research a particular topic or problem -------------------- ◯ — ◯ — ◯ — ◯

f) Ask students to write stories or other texts ---------- ◯ — ◯ — ◯ — ◯

25

A. Do you have a library or reading corner <u>in your classroom</u>?

*Check **one** circle only.*

Yes --- ◯

No --- ◯ ➜

(If No, go to #26)

If Yes,

B. About how many books are in your classroom library?

*Check **one** circle only.*

0–25 --- ◯

26–50 --- ◯

51–100 --- ◯

More than 100 --- ◯

C. About how many magazines with different titles are in your classroom library?

*Check **one** circle only.*

0 --- ◯

1–2 --- ◯

3–5 --- ◯

More than 5 --- ◯

D. How often do you give the students in your class time to use the classroom library or reading corner?

*Check **one** circle only.*

Every day or almost every day --- ◯

Once or twice a week --- ◯

Once or twice a month --- ◯

Never or almost never --- ◯

E. Can the students borrow books from the classroom library or reading corner to take home?

*Check **one** circle only.*

Yes --- ◯

No --- ◯

26

How often do you take or send the students to a library other than your classroom library?

*Check **one** circle only.*

At least once or twice a week --- ◯

Once or twice a month --- ◯

A few times a year --- ◯

Never or almost never --- ◯

Teacher *Questionnaire*   10 ■

Reading Homework

27

How often do you assign reading as part of homework (for any subject)?

*Check **one** circle only.*

I do not assign reading for homework --- ◯ ⟶ **(Go to #30)**

Less than once a week --- ◯

1 or 2 times a week --- ◯

3 or 4 times a week --- ◯

Every day --- ◯

28

In general, how much time do you expect students to spend on homework involving <u>reading</u> (for any subject) each time you assign it?

*Check **one** circle only.*

15 minutes or less --- ◯

16–30 minutes --- ◯

31–60 minutes --- ◯

More than 60 minutes --- ◯

29

How often do you do the following with the reading homework assignments for this class?

*Check **one** circle for each line.*

	Always or almost always	Sometimes	Never or almost never
a) Correct assignments and give feedback to students	◯	◯	◯
b) Discuss the homework in class	◯	◯	◯
c) Monitor whether or not the homework was completed	◯	◯	◯

Reading Difficulties

30

Are the following resources <u>available</u> to you to work with students who have difficulty with reading?

*Check **one** circle for each line.*

	Always	Sometimes	Never
a) A specialized professional (e.g., reading specialist, speech therapist)	◯	◯	◯
b) A teacher-aide	◯	◯	◯
c) An adult/parent volunteer	◯	◯	◯

31

What do you usually do if a student begins to fall behind in reading?

*Check **one** circle for each line.*

	Yes	No
a) I have the student work with a specialized professional (e.g., reading specialist, speech therapist)	◯	◯
b) I wait to see if performance improves with maturation	◯	◯
c) I spend more time working on reading individually with that student	◯	◯
d) I ask the parents to help the student with reading	◯	◯
e) I recommend that the student be enrolled in a special reading program	◯	◯

Assessing Reading

32

How much emphasis do you place on the following sources to monitor students' progress in reading?

*Check **one** circle for each line.*

Major emphasis
    Some emphasis
        Little or no emphasis

a) Assessment of students' ongoing work ------------------ ◯ — ◯ — ◯

b) Classroom tests (for example, teacher-made or textbook tests) ------------- ◯ — ◯ — ◯

c) State or district achievement tests ------------ ◯ — ◯ — ◯

Thank You

Thank you for the thought, time, and effort you have put into completing this questionnaire.

Exhibit C-4. ePIRLS Student Questionnaire

ePIRLS 2016 Student Survey

1 About how much time do you spend using a computer each day?

○ Less than 30 minutes

○ From 30 minutes to 1 hour

○ From 1 hour to 2 hours

○ 2 hours or more

NEXT →

ePIRLS 2016 Student Survey

2 About how much time do you spend each day **finding and reading information on the Internet?**

○ Less than 30 minutes

○ From 30 minutes to 1 hour

○ From 1 hour to 2 hours

○ 2 hours or more

← BACK   NEXT →

ePIRLS 2016 Student Survey

3 How much do you agree with these statements?

Click on one button for each row.

		Agree a lot	Agree a little	Disagree a little	Disagree a lot
a)	I am good at using a computer	○	○	○	○
b)	I am good at typing	○	○	○	○
c)	It is easy for me to find information on the Internet	○	○	○	○

← BACK   NEXT →
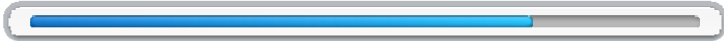
ePIRLS 2016 Student Survey

4 Who mainly taught you the following things?

Click on one button for each row.

		I mainly taught myself	My teachers	My family	My friends	I have never learned this
a)	Using a computer	○	○	○	○	○
b)	Typing	○	○	○	○	○
c)	Finding information on the Internet	○	○	○	○	○

← BACK   NEXT →

ePIRLS 2016 Student Survey

Click the **BACK** button to review your answers.
Click the **SUBMIT** button to finish the survey.

← BACK   SUBMIT

Exhibit C-5. Curriculum Questionnaire

Double click on the image to open the full document.

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PIRLS 2016

PIRLS 2016 Curriculum Questionnaire

ePIRLS online Reading 2016

PIRLS Literacy 2016

TIMSS & PIRLS International Study Center
Lynch School of Education, Boston College

Appendix D. National Adaptation Forms

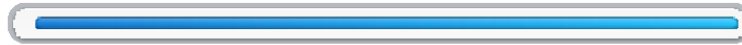| Questionnaire	International Item Number	Item	National Item Number	Item	Recoding Instructions
		National Adaptations to PIRLS Questions			
	2016 International Version		2016 U.S. Adapted Version		
	School Questionnaire Adaptations				
School	ScQ-01	What is the total enrollment of students in your school as of <first day of month PIRLS testing begins, 2016>? *Write in the number.* _____ students	1	What is the total enrollment of students in your school as of March 1, 2016? *Write in the number.* _____ students	
School	ScQ-02	What is the total enrollment of <fourth grade> students in your school as of <first day of month PIRLS testing begins, 2016>? *Write in the number.* _____ students	2	What is the total enrollment of fourth grade students in your school as of March 1, 2016? *Write in the number.* _____ students	
School	ScQ-04	Approximately what percentage of students in your school have <language of test> as their native language? *Check one circle only.* 1. More than 90% 2. 76 to 90% 3. 51 to 75% 4. 26 to 50% 5. 25% or less	4A	Approximately what percentage of students in your school have English as their native language? *Check one circle only.* 1. More than 90% 2. 76 to 90% 3. 51 to 75% 4. 26 to 50% 5. 25% or less	
School	ScQ-07	For the <fourth grade> students in your school:	9	For the fourth grade students in your school:	
School	ScQ-08A	Does your school provide a place where students can work on their schoolwork before or after school? *Check one circle only.* 1. Yes 2. No (If No, go to #9)	10A	Does your school provide a place where students can work on their schoolwork before or after school? *Check one circle only.* 1. Yes 2. No (If No, go to #11)	

| Questionnaire | 2016 International Version | | 2016 U.S. Adapted Version | | |
	International Item Number	Item	National Item Number	Item	Recoding Instructions
		National Adaptations to PIRLS Questions			
School	ScQ-09	**Does your school have a school library?** *Check one circle only.* **1. Yes** **2. No** **(If No, go to #10)**	11	**Does your school have a school library?** *Check one circle only.* **1. Yes** **2. No** **(If No, go to #12)**	
School	ScQ-11	**How many computers (including tablets) does your school have for use by <fourth grade> students?** *Write in the number.* **_____ computers**	13	**How many computers (including tablets) does your school have for use by fourth grade students?** *Write in the number.* **_____ computers**	
School	ScQ-14	**To what degree is each of the following a problem among <fourth grade> students in your school?** *Check one circle for each line.* **1. Not a problem** **2. Minor problem** **3. Moderate problem** **4. Serious problem**	16	**To what degree is each of the following a problem among fourth grade students in your school?** *Check one circle for each line.* **1. Not a problem** **2. Minor problem** **3. Moderate problem** **4. Serious problem**	
School	ScQ-16	**About how many of the students in your school can do the following when they begin the <first grade> of primary/elementary school?** *Check one circle for each line.* **1. Less than 25%** **2. 25–50%** **3. 51–75%** **4. More than 75%**	18	**About how many of the students in your school can do the following when they begin the first grade of primary/elementary school?** *Check one circle for each line.* **1. Less than 25%** **2. 25–50%** **3. 51–75%** **4. More than 75%**	

Questionnaire	National Adaptations to PIRLS Questions					
	2016 International Version			2016 U.S. Adapted Version		
	International Item Number	Item	National Item Number	Item		Recoding Instructions
School	ScQ-17	**At which grade do the following reading skills and strategies <u>first</u> receive a <u>major emphasis</u> in instruction in your school?** *Check **one** circle for each line.* 1. \<First grade> or earlier 2. \<Second grade> 3. \<Third grade> 4. \<Fourth grade> 5. Not in these grades	19	**At which grade do the following reading skills and strategies <u>first</u> receive a <u>major emphasis</u> in instruction in your school?** *Check **one** circle for each line.* 1. First grade or earlier 2. Second grade 3. Third grade 4. Fourth grade 5. Not in these grades		
School	ScQ-20	**What is the highest level of formal education you have completed?** *Check **one** circle only.* 1. Did not complete \<Bachelor's or equivalent level—ISCED Level 6> 2. \<Bachelor's or equivalent level—ISCED Level 6> 3. \<Master's or equivalent level—ISCED Level 7> 4. \<Doctor or equivalent level—ISCED Level 8>	22	**What is the highest level of formal education you have completed?** *Check **one** circle only.* 1. Did not complete a 4-year college or university degree (i.e., Bachelor's degree) 2. Completed a 4-year college or university degree (i.e., Bachelor's degree) 3. Completed a Master's degree, postgraduate certificate program (e.g., teaching), or professional degree (e.g., law, medicine, dentistry) 4. Completed a doctorate (Ph.D. or Ed.D.)		
School	ScQ-21b	\<Master's or equivalent level—ISCED Level 7>	23b	A Master's degree, postgraduate certificate program (e.g., teaching), or professional degree (e.g., law, medicine, dentistry)		
School	ScQ-21c	\<Doctor or equivalent level—ISCED Level 8>	23c	A doctorate (Ph.D. or Ed.D.)		
School			**U.S. Specific Questions Added**			
School			4B	**Of the students currently enrolled in your school, what percentage have been identified as limited-English proficient (LEP)/English Language Learners (ELL)?** *Check **one** circle only* 1. 0% 2. 1 to 5% 3. 6 to 10% 4. 11 to 25% 5. 26 to 50% 6. 51 to 75% 7. 76 to 90% 8. Over 90%		

Questionnaire	International Item Number	Item	National Item Number	Item	Recoding Instructions
			National Adaptations to PIRLS Questions		
	2016 International Version		2016 U.S. Adapted Version		
School			5C	**Which best characterizes the average income level of the population in the school's immediate area?** *Check **one** circle only.* 1. High 2. Medium 3. Low	
School			6	**What type of school is this?** *Check **one** circle only.* 1. Regular public school 2. A regular public school with a magnet program 3. A magnet school or school with a special program emphasis (e.g., Montessori, science/math school, performing arts school, talented/gifted school, foreign language immersion school, etc.) 4. Special education: a school that primarily serves students with disabilities 5. Alternative: a school designed to address the needs of students, typically at risk of educational failure, which cannot be met in regular schools 6. Vocational 7. Charter School 8. Private (independent) 9. Private (religiously affiliated) 10. Other	
School			8	**Around the first of October 2015, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program?** *Write in the number.* ____percentage of students	

	National Adaptations to PIRLS Questions				
	2016 International Version		2016 U.S. Adapted Version		
Questionnaire	International Item Number	Item	National Item Number	Item	Recoding Instructions
Teacher Questionnaire Adaptations					
Teacher	TQG-04	What is the <u>highest</u> level of formal education you have completed? *Check **one** circle only.* 1. Did not complete <Upper secondary education—ISCED Level 3> 2. <Upper secondary education—ISCED Level 3> 3. <Post-secondary, non-tertiary education—ISCED Level 4> 4. <Short-cycle tertiary education—ISCED Level 5> 5. <Bachelor's or equivalent level—ISCED Level 6> 6. <Master's or equivalent level—ISCED Level 7> 7. <Doctor or equivalent level—ISCED Level 8>	4	What is the <u>highest</u> level of formal education you have completed? *Check **one** circle only.* 1. Did not complete high school 2. Completed high school 3. Completed a 2-year college or university degree (i.e., Associate's degree) 4. Completed a 4-year college or university degree (i.e., Bachelor's degree) 5. Completed a Master's degree, postgraduate certificate program (e.g., teaching), or professional degree (e.g., law, medicine, dentistry) 6. Completed a doctorate (Ph.D. or Ed.D)	Int -> Nat 1 -> 1 2 -> 2 4 -> 3 5 -> 4 6 -> 5 7 -> 6 International Category 3 (ISCED Level 4) is not administered
Teacher	TQG-05A	**During your <post-secondary> education, what was your <u>major or main</u> area(s) of study?** ***Check one circle for each line.*** **1. Yes** **2. No**	5A	**During your college or university education, what was your <u>major or main</u> area(s) of study?** ***Check one circle for each line.*** **1. Yes** **2. No**	
	TQG-05Ac	<language of test>	5Ac	English	
	TQG-05Ba	<language of test>	5Ba	English	
Teacher	TQR-01B	**How many of the students in #R1A are in <fourth grade>?** ***Write in the number.*** **_____ <fourth grade> students**	11B	**How many of the students in #11A are in fourth grade?** ***Write in the number.*** **_____ fourth grade students**	
Teacher	TQR-02	**How many <fourth grade> students experience difficulties understanding spoken <language of test>?** ***Write in the number.*** **_____ students in this class**	12	**How many fourth grade students experience difficulties understanding spoken English?** ***Write in the number.*** **_____ students in this class**	

Questionnaire	International Item Number	Item	National Item Number	Item	Recoding Instructions
		National Adaptations to PIRLS Questions			
	2016 International Version		2016 U.S. Adapted Version		
Teacher	TQR-03A	**How many students need <remedial> instruction in <u>reading</u>?** *Write in the number.* **_____ <fourth grade> students in this class**	13A	**How many students need remedial instruction in <u>reading</u>?** *Write in the number.* **_____ fourth grade students in this class**	
Teacher	TQR-03B	**How many of the students in #R3A <u>receive</u> <remedial> instruction in <u>reading</u>?** *Write in the number.* **_____ students**	13B	**How many of the students in #13A <u>receive</u> remedial instruction in <u>reading</u>?** *Write in the number.* **_____ students**	
Teacher	TQR-04	**How many students in the class are advanced readers?** *Write in the number.* _____ <fourth grade> students in this class	14	**How many students in the class are advanced readers?** *Write in the number.* _____ fourth grade students in this class	
Teacher	TQR-06	**In a typical week, how much time do you spend on <language of test> language instruction and/or activities with the students?** *Include instruction or activities in reading, writing, speaking, literature, and other language skills.* *Write in the number of minutes per week. Please convert the number of hours into minutes.* **_____ minutes per week**	16	**In a typical week, how much time do you spend on English language instruction and/or activities with the students?** *Include instruction or activities in reading, writing, speaking, literature, and other language skills.* *Write in the number of minutes per week. Please convert the number of hours into minutes.* **_____ minutes per week**	
Teacher	TQR-22c	National or regional achievement tests	32C	State or district achievement tests	
Student Questionnaire Adaptations					
Student	SQG-03	**How often do you speak <language of test> at home?** *Fill one circle only.* **1. I always speak <language of test> at home** **2. I almost always speak <language of test> at home** **3. I sometimes speak <language of test> and sometimes speak another language at home** **4. I never speak <language of test> at home**	3A	**How often do you speak English at home?** *Fill one circle only.* **1. I always speak English at home** **2. I almost always speak English at home** **3. I sometimes speak English and sometimes speak another language at home** **4. I never speak English at home** If always, please go to question 4 If almost always, Sometimes, or Never, please go to question 3B	

Questionnaire	2016 International Version		2016 U.S. Adapted Version		
	International Item Number	Item	National Item Number	Item	Recoding Instructions
Student	SQG-05	**Do you have any of these things at your home?** *Fill **one** circle for each line.* 1. Yes 2. No	6	**Do you have any of these things at your home?** *Fill **one** circle for each line.* 1. Yes 2. No	
		<country-specific indicator of wealth>	6E	Your own cell phone	
Student		<country-specific indicator of wealth>	6F	A gaming system (e.g., PlayStation®, Wii®, XBox®)	
Student		<country-specific indicator of wealth>	6G	VCR, DVD, or Blu-ray player	
Student			**U.S. Specific Questions Added**		
Student			1B	**Are you Hispanic or Latino?** *Fill **one** circle only.* 1. Yes, I am Hispanic or Latino 2. No, I am not Hispanic or Latino	
Student			1C	**Which of the following best describes you?** *Fill **one** or **more** circles.* 1. White 2. Black or African American 3. Asian 4. American Indian or Alaska Native 5. Native Hawaiian or other Pacific Islander	
Student			3B	**What language do you speak at home (other than English)?** *Fill **one** circle only.* 1. Spanish 2. Other, Please Specify _____	
Student			4A	**Was your mother (or stepmother or female legal guardian) born in the United States?** ("United States" includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad. *Fill **one** circle only.* 1. Yes 2. No 3. I don't know	

National Adaptations to PIRLS Questions

| Questionnaire | National Adaptations to PIRLS Questions | | | | |
| | 2016 International Version | | 2016 U.S. Adapted Version | | |
	International Item Number	Item	National Item Number	Item	Recoding Instructions
Student			4B	**Was your father (or stepfather or male legal guardian) born in the United States?** *Fill **one** circle only.* 1. Yes 2. No 3. I don't know	
Student			4C	**Were you born in the United States?** *Fill **one** circle only.* 1. Yes 2. No 3. I don't know	
Student			22	**The following questions ask about activities you do <u>outside of school</u>.** *Fill **one** circle for each line.* 1. Yes 2. No	
Student			22A	Do you play on a sports team outside of school?	
Student			22B	Do you often play a musical instrument outside of school?	
Student			22C	Are you studying something in a class outside of school?	
Student			22D	Do you belong to a club outside of school (like Girl Scouts, Cub Scouts, 4-H, or Boys and Girls Club)?	