

CHAPTER 14

Creating and Interpreting the PIRLS 2016 Context Questionnaire Scales

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Overview

As described in [Chapter 2: Developing the PIRLS 2016 Context Questionnaires](#), many of the PIRLS 2016 context questionnaire items were developed to be combined into scales measuring a single underlying latent construct. For reporting, the scales were constructed using item response theory (IRT) scaling methods, specifically the Rasch partial credit model. As a parallel to the PIRLS International Benchmarks of achievement, each context scale allowed students to be classified into regions corresponding to high, middle, and low values on the construct. To facilitate interpretation of the regions, the cutpoints delimiting the regions were defined in terms of combinations of response categories. For certain scales that maintained many of the same items across PIRLS 2011 and PIRLS 2016, the scales were linked to allow for trend measurement on the background construct.

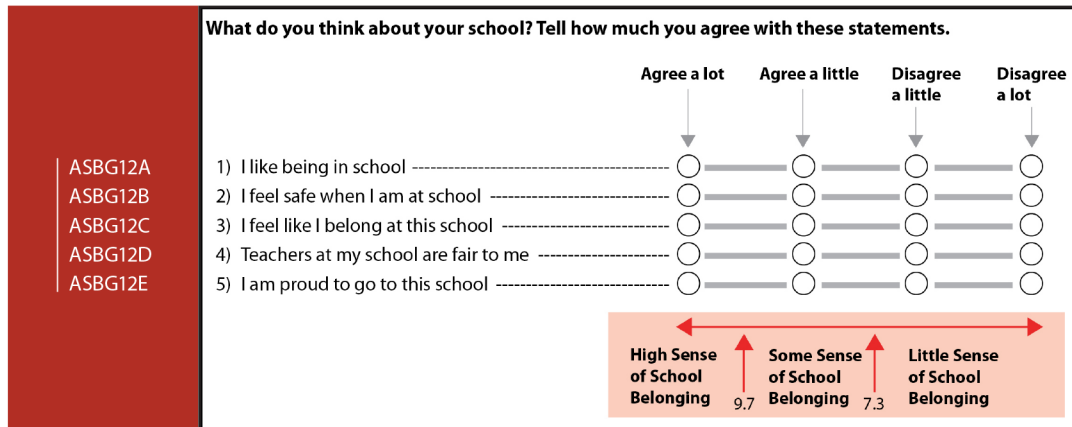
This chapter describes the procedures for constructing, interpreting, and validating scales based on responses to student, teacher, school, and home questionnaires for PIRLS and ePIRLS 2016, and then details the process for linking and reporting trend scales.

Reporting PIRLS 2016 Context Questionnaire Scales

As an example illustrating the PIRLS approach to reporting context questionnaire data, Exhibit 14.1 presents the PIRLS 2016 [Sense of School Belonging](#) scale. As the name suggests, this scale seeks to measure students' feelings towards their school and connectedness with the school community.

For each of the five statements, students were asked to indicate the degree of their agreement with the statement: agree a lot, agree a little, disagree a little, or disagree a lot. Using IRT partial credit scaling, the data from student responses were placed on a scale constructed so that the scale centerpoint of 10 was located at the mean score across all PIRLS countries. The units of the scale were chosen so that 2 scale score points corresponded to the logit standard deviation across all countries. Students with a **High Sense of School Belonging** had a scale score greater than or equal to the point (9.7) on the scale, corresponding to agreeing a lot, on average, with three of the five statements and agreeing a little with two of the statements. Students with **Little Sense of School Belonging** had a score no higher than the point (7.3) on the scale corresponding to disagreeing a little with three of the statements, on average, and agreeing a little with two of them.

Exhibit 14.1: Items in the PIRLS 2016 *Sense of School Belonging* Scale



Scaling Procedure

Partial credit IRT scaling is based on a statistical model that relates the probability that a person will choose a particular response to an item to that person's location on the underlying construct. In the PIRLS 2016 *Sense of School Belonging* scale, the underlying construct is students' feelings about their school, and students who agree in general with the five statements are assumed to have a greater sense of belonging, and students who disagree with the statements are assumed to feel less belonging.

The partial credit model (Masters, 1982) is shown below:

$$P_{x_i}(\theta_n) = \frac{e^{\sum_{j=0}^{x_i} [\theta_n - (\delta_i + \tau_{ij})]}}{\sum_{h=0}^{m_i} e^{\sum_{j=0}^h [\theta_n - (\delta_i + \tau_{ij})]}} \quad x_i = 0, 1, \dots, m_i \quad (14.1)$$

$P_{x_i}(\theta_n)$ denotes the probability that person n with location θ_n on the latent construct would choose response level x_i to item i out of the m_i possible response levels for the item. The item parameter δ_i gives the location of the item on the latent construct and τ_{ij} denotes step parameters for the response levels. For each scale, the scaling procedure involves first estimating the δ_i and τ_{ij} item parameters, and then using the model with these parameters to estimate θ_n , the score on the latent construct, for each on the n respondents. Depending on the scale, respondents may be students, parents, teachers, or school principals.

The PIRLS 2016 context questionnaire scaling was conducted using the ConQuest 2.0 software (Wu, Adams, Wilson, & Haldane, 2007).

In preparation for the context questionnaire scaling effort, the TIMSS & PIRLS International Study Center developed a system of production programs that could effectively calibrate the items on each scale using ConQuest and produce scale scores for each scale respondent. The PIRLS assessment population consisted of approximately 300,000 students, as well as their parents, teachers, and school principals. The estimation of the item parameters, a procedure also known as item calibration, was conducted on the combined data from all countries, with each country contributing equally to the calibration. This was achieved by assigning weights that sum to 500 for each country's student data. Exhibit 14.2 shows the international item parameters for the *Sense of School Belonging* scale. For each item, the delta parameter δ_i shows the estimated overall location of the item on the scale, and the tau parameters τ_{ij} show the location of the steps, expressed as deviations from delta. Also, included in the right column is the Rasch infit item statistic, which is a measure of how well the data matches the model, with values above 1.3 indicating unexpected response patterns. As can be seen in this exhibit, the data seemed to match the model well for the five items in the *Sense of School Belonging* scale.

Exhibit 14.2: Item Parameters for the PIRLS 2016 *Sense of School Belonging* Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ASBG12A	0.35879	-0.45320	-0.71326	1.16646	1.03
ASBG12B	-0.05809	-0.47509	-0.46271	0.93780	1.02
ASBG12C	0.05363	-0.33690	-0.38143	0.71833	1.00
ASBG12D	-0.20416	-0.29014	-0.40311	0.69325	1.10
ASBG12E	-0.15017	-0.09998	-0.47379	0.57377	0.95

Once the calibration was completed and international item parameters were estimated, individual scores for each respondent (students, teachers, principals, or parents) were generated using weighted maximum likelihood estimation (Warm, 1989). All cases with valid responses to at least two items on a scale were included in the calibration and scoring processes.

The scale scores produced by the weighted likelihood estimation are in the logit metric with measured values ranging from approximately -5 to $+5$. To convert to a more convenient reporting metric, a linear transformation was applied to the international distribution of logit scores to place the data from student responses on a scale constructed so that the scale centerpoint of 10 was located at the mean logit score across all TIMSS countries and 2 scale score points corresponded to the standard deviation of the logit scores across all countries. Exhibit 14.3 presents the scale transformation constants applied to the international distribution of logit scores for the *Sense of School Belonging* scale to transform them to the (10, 2) reporting metric.

This scaling approach was followed for all scales, including most of the scales in [Chapter 3](#) of the *ePIRLS 2016 International Results in Online Informational Reading* report. The exception is the *Self-Efficacy for Computer Use* scale, the results for which are shown in [Exhibit 3.5](#) of the ePIRLS report. This scale was composed of items included in the short ePIRLS questionnaire and for this reason the scaling of *Self-Efficacy for Computer Use* was only based on data from ePIRLS countries.

Exhibit 14.3: Scale Transformation Constants for the PIRLS 2016 *Sense of School Belonging* Scale

Scale Transformation Constants

$$\begin{array}{l} A = 7.558990 \\ B = 1.566579 \end{array} \quad \text{Transformed Scale Score} = 7.558990 + 1.566579 \cdot \text{Logit Scale Score}$$

To provide an approach to reporting the context questionnaire scales analogous to the PIRLS International Benchmarks for the PIRLS achievement scales, a method was developed to divide each scale into high, middle, and low regions and provide a content-referenced interpretation for these regions. For the PIRLS achievement scales, the Low, Intermediate, High, and Advanced International Benchmarks are specific reference points on the scale that can be used to monitor progress in student achievement. Using a [scale anchoring procedure](#), student performance at each Benchmark is described in terms of what students reaching that Benchmark know and can do. The percentage of students reaching each of these International Benchmarks can serve as a profile of student achievement in a country.

For the high, middle, and low regions of the context questionnaire scales, the interpretation is content-referenced to the extent that the boundaries of the regions were defined in terms of identifiable combinations of response categories. The particular response combinations that defined the regions boundaries, or cutpoints, were based on a judgment by PIRLS staff of what constituted a high or low region on each individual scale. For example, based on a consideration of the questions making up the *Sense of School Belonging* scale, it was determined that in order to be in the high region of the scale and labeled “High Sense of School Belonging,” a student would

have to agree a lot, on average, to at least three of the five statements and agree a little to the other two. Similarly, it was determined that a student who, on average, at most agreed a little with two of the statements and disagreed a little with the other three would be labeled to have “Little Sense of School Belonging.”

The scale region cutpoints were quantified by assigning a numeric value to each response category, such that each respondent’s responses to the scale’s questions could be expressed as a “raw score.” Assigning 0 to “Disagree a lot,” 1 to “Disagree a little,” 2 to “Agree a little,” and 3 to “Agree a lot,” results in raw scores on the *Sense of School Belonging* scale ranging from 0 (disagree a lot with all five statements) to 15 (agree a lot to all five). A student who agreed a lot with three statements and agreed a little with the other two would have a raw score of 13 ($3 \times 3 + 2 \times 2$). Following this approach, a student with a raw score of 13 or more would be in the “High Sense of School Belonging” region of the scale. Similarly, agreeing a little with two statements and disagreeing a little with three statements would result in a raw score of 7 ($2 \times 2 + 3 \times 1$), so that a student with a raw score less than or equal to 7 would be in the “Little Sense of School Belonging” region.

A property of a Rasch scale is that each raw score has a unique scale score associated with it. Exhibit 14.4 presents a raw score-scale score equivalence table for the *Sense of School Belonging* scale. From this table, it can be seen that a raw score of 7 corresponds to a scale score of 7.3 (rounding up) and a raw score of 13 corresponds to a scale score of 9.7 (rounding down).¹ These scale scores were the cutpoints used to divide the scale into the three regions.

Exhibit 14.4: Equivalence Table of Raw and Transformed Scale Scores for the PIRLS 2016 *Sense of School Belonging* Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.45100	
1	4.84737	
2	5.50192	
3	5.96197	
4	6.33045	
5	6.65432	
6	6.95548	
7	7.25277	7.3
8	7.54290	
9	7.85416	
10	8.19786	
11	8.59455	
12	9.08205	
13	9.73132	9.7
14	10.70304	
15	12.65139	

¹ The reason for rounding was to facilitate reporting, and it was decided that the highest cutpoint would be rounded down to ensure that those with an unrounded scale score (e.g., 9.73132 for the *Sense of School Belonging* scale) at the cutpoint were included within the highest region. For a similar reason, the lower cutpoint was rounded up.

Linking Procedures for Trend Context Questionnaire Scales

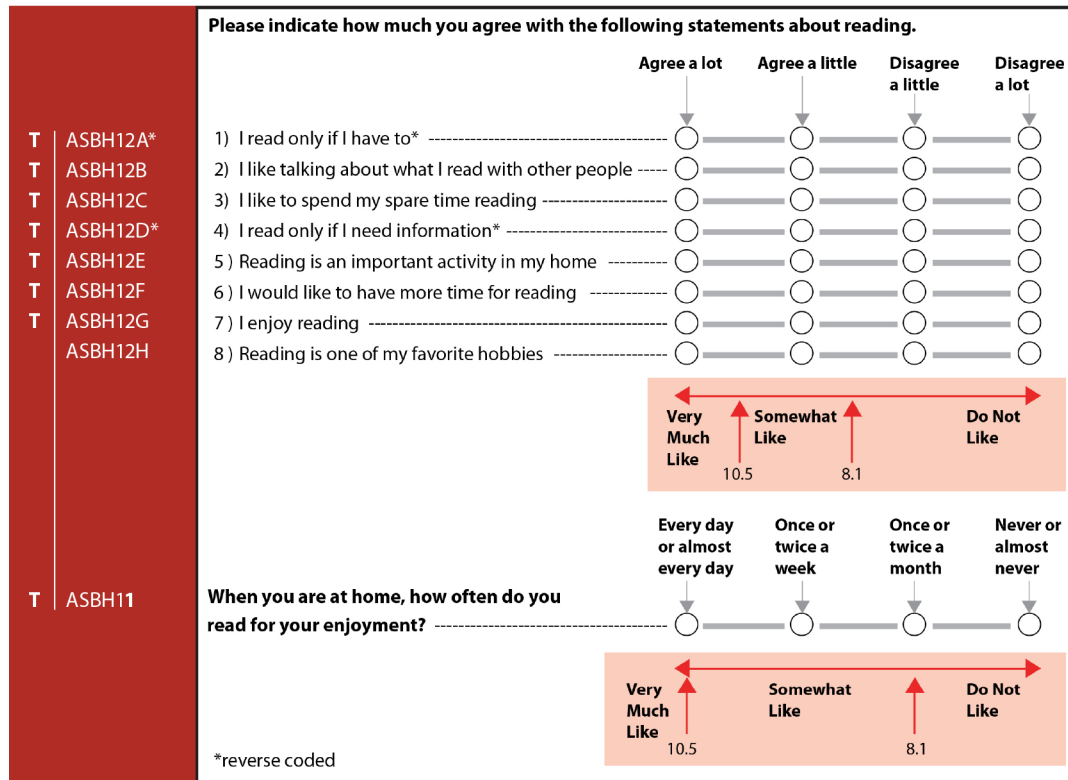
As a new initiative, trend results in the form of changes from 2011 to 2016 were reported for 8 PIRLS context questionnaire scales. For these trend scales, linking procedures were implemented to place the data from the two cycles on a common metric. This section describes the procedures for measuring trends—placing data for the PIRLS 2016 context questionnaire scales onto the PIRLS 2011 metric and validating this process.

As described in [Chapter 2](#), with each cycle of PIRLS, the questionnaires are revised to keep up with the times and to improve the measurement of the constructs. Using context questionnaire IRT scales to measure background constructs began with PIRLS 2011, and during the development phase of the PIRLS 2016 questionnaires, a conscious effort was made to increase the number of items contributing to each scale in order to enhance scale reliability and validity. The context scales used to measure trends in PIRLS 2016 have items common to both PIRLS 2011 and PIRLS 2016—also called trend items—and new items unique to PIRLS 2016.

Generally, a context questionnaire scale was considered for trend reporting in 2016 if it had a sufficient number of items in common with 2011: a minimum of five common items and more than half of the PIRLS 2016 items being common items. Before deciding to measure trend on these scales, staff at the TIMSS & PIRLS International Study Center conducted extensive analysis to examine item behavior in both cycles. For example, staff at the TIMSS & PIRLS International Study Center examined differences in parameter estimates across cycles (as shown in Exhibit 14.7). Trend was only reported on those scales that appeared to have similar measurement properties across the two cycles.

As an example, Exhibit 14.5 shows the PIRLS 2016 [Parents Like Reading](#) scale—one of the scales where trend measurement was reported. This scale measures how students’ parents feel about reading, in terms of their level of agreement with eight statements about liking reading as well as how often they read for enjoyment. Statements expressing negative sentiment were reverse coded during the scaling. Eight of the nine items were common to the PIRLS 2011 and PIRLS 2016 versions of this scale, with “T” for trend identifying these items to the left of their variable name. One new statement was added to the eight common items to improve the measure of *Parents Like Reading* for PIRLS 2016.

Exhibit 14.5: Items in the PIRLS 2016 *Parents Like Reading Trend Scale*



T Trend item—item was included in the same scale in PIRLS 2011 and was used for linking the PIRLS 2011 and PIRLS 2016 scales.

The IRT calibration and scoring methods for trend scales were the same as those used for the new context scales. The data for these nine items were calibrated across all PIRLS 2016 countries using the Rasch partial credit model, and, through this calibration, item parameters were estimated on a logit scale that was unique to the 2016 cycle. Following calibration, weighted maximum likelihood estimation was used to derive Rasch logit scale scores based on these estimated item parameters for all countries and benchmarking participants, and as such student scores were placed on this 2016 logit metric. Although similar, the PIRLS 2016 logit metric is not identical to the PIRLS 2011 logit metric, and thus the PIRLS 2016 scores needed to be transformed to the 2011 metric to allow for trend reporting.

This linking was achieved through a two-step transformation process. The first transformation—with linear constants A_1 and B_1 —placed the PIRLS 2016 logit scale scores on the PIRLS 2011 logit metric, and the second transformation—with linear constants A_2 and B_2 —transformed the PIRLS 2011 logit metric to the PIRLS achievement scale, which uses the (10, 2) metric described earlier. To increase the efficiency of this transformation process and reduce rounding errors, both transformations were combined into one calculation using the equations below to create a set of final scale transformation constants, A and B :

$$B = B_2 \cdot B_1 \quad (14.2)$$

$$A = A_2 + B_2 \cdot A_1 \quad (14.3)$$

The first set of transformation parameters, A_1 and B_1 , were obtained by applying the mean/sigma method (Kolen & Brennan, 2004) to the two sets of common item parameters: one from the current calibration of PIRLS 2016 data and the other from the previous calibration of PIRLS 2011 data. The mean and standard deviation of the estimates of the difference between item location and item step parameter, $(\delta_i - \tau_{ij})$, were first found over all common items and all categories for each calibration. The transformation parameters A_1 and B_1 were calculated based on these two sets of means and standard deviations:

$$B_1 = \frac{SD_{c11}}{SD_{c16}} \quad (14.4)$$

$$A_1 = MN_{c11} - \frac{SD_{c11}}{SD_{c16}} \cdot MN_{c16} \quad (14.5)$$

where MN_{c16} and SD_{c16} are the mean and standard deviation of the estimates of $(\delta_i - \tau_{ij})$ of all common items and categories from the current calibration on PIRLS 2016 data; MN_{c11} and SD_{c11} are the mean and standard deviation of the estimates of $(\delta_i - \tau_{ij})$ of all common items and categories from the previous calibration on PIRLS 2011 data.

The second set of transformation parameters, A_2 and B_2 , were retrieved from the scale transformations which were established in 2011 for reporting. This transformation aimed to place the resulting Rasch scores on the PIRLS (10, 2) reporting scale.

Exhibit 14.6 presents the final trend scale transformation constants applied to the PIRLS 2016 international distribution of logit scale scores for the *Parents Like Reading* trend scale to transform them to the PIRLS (10, 2) trend reporting scale.

Exhibit 14.6: Scale Transformation Constants for the PIRLS 2016 *Parents Like Reading* Trend Scale

Scale Transformation Constants

$$A = 8.166833$$

$$B = 1.409138$$

$$\text{Transformed Scale Score} = 8.166833 + 1.409138 \cdot \text{Logit Scale Score}$$

To assess the accuracy of the linking, item parameter estimates for the trend items were compared across the two cycles by examining the differences between the PIRLS 2016 item parameter estimates after being transformed to the PIRLS 2011 logit metric, and the PIRLS 2011 item parameter estimates on the 2011 logit scale. Exhibit 14.7 presents the differences between these estimates for the *Parents Like Reading* trend scale. As can be seen in the exhibit, the differences were at an acceptable level for both location and step parameters, with most deviations being less than 0.1.

Exhibit 14.7: Differences in Parameter Estimates for Common Items on the PIRLS 2011 Logit Metric, *Parents Like Reading* Trend Scale

PIRLS 2016 Variable	PIRLS 2011 Variable	Difference in delta	Difference in tau_1	Difference in tau_2	Difference in tau_3
* ASBH12A	ASBH13A	-0.05922	-0.10022	0.04004	0.06018
ASBH12B	ASBH13B	-0.03808	-0.10320	0.14129	-0.03809
ASBH12C	ASBH13C	0.04140	-0.05150	0.05081	0.00070
* ASBH12D	ASBH13D	-0.03301	-0.06083	0.04655	0.01428
ASBH12E	ASBH13E	0.03086	-0.07248	0.10420	-0.03172
ASBH12F	ASBH13F	-0.05200	-0.18557	0.17096	0.01460
ASBH12G	ASBH13G	0.03937	-0.28655	0.19478	0.09177
ASBH11	ASBH12	0.07069	-0.05021	0.16345	-0.11323

*Reverse coded

Validating the PIRLS 2016 Context Questionnaire Scales

As evidence that the context questionnaire scales provide comparable measurement across countries, reliability coefficients were computed for each scale for every country and benchmarking participant, and a principal components analysis of the scale items was conducted. Exhibit 14.8 presents the results of this analysis for the *Parents Like Reading* scale. The Cronbach's Alpha reliability coefficients generally were at an acceptable level, with all above 0.7 and many at 0.9. The exhibit also shows the percentage of variance among the scale items accounted for by the first principal component in each country. In most cases this was acceptably high, indicating that the items could be adequately represented by a single scale. The component loadings of each questionnaire item from the principal components analysis are positive and substantial, indicating a strong correlation between each item and the scale in every country.

Exhibit 14.8: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the PIRLS 2016 Parents Like Reading Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ASBH12A*	ASBH12B	ASBH12C	ASBH12D*	ASBH12E	ASBH12F	ASBH12G	ASBH12H	ASBH12I	
Australia	0.89	56	0.76	0.59	0.84	0.75	0.72	0.62	0.84	0.86	0.67	
Austria	0.90	57	0.72	0.57	0.87	0.76	0.79	0.63	0.85	0.84	0.70	
Azerbaijan	0.83	52	-	0.55	0.77	-	0.76	0.65	0.84	0.84	0.57	
Bahrain	0.81	43	0.43	0.47	0.79	0.50	0.70	0.68	0.81	0.83	0.57	
Belgium (Flemish)	0.90	57	0.75	0.50	0.87	0.75	0.75	0.67	0.88	0.86	0.70	
Belgium (French)	0.90	55	0.70	0.52	0.85	0.72	0.72	0.71	0.86	0.86	0.70	
Bulgaria	0.91	60	0.62	0.71	0.89	0.48	0.82	0.84	0.90	0.88	0.73	
Canada	0.89	54	0.73	0.56	0.84	0.73	0.70	0.64	0.84	0.85	0.69	
Chile	0.87	50	0.63	0.60	0.83	0.59	0.69	0.70	0.80	0.83	0.63	
Chinese Taipei	0.86	49	0.57	0.48	0.77	0.54	0.76	0.77	0.86	0.86	0.56	
Czech Republic	0.90	57	0.73	0.63	0.86	0.75	0.71	0.67	0.86	0.89	0.66	
Denmark	0.90	57	0.74	0.60	0.88	0.78	0.76	0.60	0.85	0.83	0.70	
Egypt	0.79	55	-0.25	0.78	0.83	-0.41	0.85	0.86	0.91	0.87	0.58	
England	-	-	-	-	-	-	-	-	-	-	-	
Finland	0.91	58	0.73	0.57	0.87	0.76	0.82	0.65	0.86	0.87	0.67	
France	0.88	51	0.69	0.53	0.82	0.70	0.65	0.60	0.82	0.84	0.71	
Georgia	0.78	43	0.24	0.56	0.81	0.26	0.68	0.75	0.85	0.81	0.61	
Germany	0.89	54	0.75	0.57	0.87	0.66	0.70	0.61	0.86	0.85	0.68	
Hong Kong SAR	0.85	48	0.46	0.52	0.78	0.41	0.75	0.78	0.87	0.87	0.61	
Hungary	0.90	56	0.70	0.60	0.84	0.71	0.74	0.74	0.83	0.86	0.65	
Iran, Islamic Rep. of	0.81	44	0.39	0.55	0.79	0.28	0.71	0.78	0.82	0.82	0.60	
Ireland	0.88	53	0.74	0.55	0.83	0.74	0.69	0.57	0.84	0.86	0.69	
Israel	0.85	47	0.65	0.50	0.81	0.65	0.68	0.57	0.79	0.84	0.62	
Italy	0.88	52	0.69	0.55	0.82	0.69	0.70	0.67	0.81	0.83	0.67	
Kazakhstan	0.72	39	0.11	0.51	0.74	0.20	0.70	0.73	0.77	0.82	0.60	
Kuwait	0.84	47	0.52	0.49	0.80	0.58	0.75	0.70	0.81	0.84	0.54	
Latvia	0.87	51	0.68	0.37	0.84	0.72	0.69	0.68	0.84	0.85	0.61	
Lithuania	0.89	54	0.68	0.56	0.85	0.65	0.75	0.70	0.85	0.86	0.64	
Macao SAR	0.83	46	0.38	0.56	0.76	0.35	0.76	0.78	0.87	0.87	0.55	
Malta	0.86	49	0.68	0.49	0.82	0.72	0.57	0.64	0.82	0.86	0.62	
Morocco	0.84	55	-0.04	0.81	0.86	-0.19	0.86	0.82	0.90	0.88	0.69	
Netherlands	0.89	56	0.81	0.54	0.87	0.76	0.61	0.55	0.87	0.87	0.74	

A dash (-) indicates comparable data not available.

*Reverse coded

Exhibit 14.8: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the PIRLS 2016 *Parents Like Reading Scale* (Continued)

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBH12A*	ASBH12B	ASBH12C	ASBH12D*	ASBH12E	ASBH12F	ASBH12G	ASBH12H	ASBH12I
New Zealand	0.89	54	0.73	0.53	0.85	0.72	0.73	0.61	0.84	0.87	0.68
Northern Ireland	0.91	59	0.82	0.66	0.86	0.80	0.71	0.58	0.82	0.88	0.75
Norway (5)	0.89	53	0.73	0.52	0.85	0.74	0.74	0.60	0.83	0.83	0.66
Oman	0.78	41	0.24	0.55	0.77	0.34	0.69	0.69	0.80	0.81	0.58
Poland	0.88	53	0.70	0.61	0.83	0.71	0.75	0.62	0.81	0.80	0.67
Portugal	0.87	50	0.68	0.55	0.80	0.67	0.72	0.64	0.79	0.84	0.61
Qatar	0.81	43	0.44	0.44	0.79	0.46	0.70	0.68	0.82	0.83	0.54
Russian Federation	0.86	49	0.61	0.51	0.82	0.64	0.65	0.68	0.83	0.85	0.61
Saudi Arabia	0.82	44	0.38	0.55	0.79	0.34	0.74	0.69	0.83	0.83	0.61
Singapore	0.85	49	0.58	0.43	0.82	0.54	0.72	0.75	0.86	0.87	0.59
Slovak Republic	0.90	57	0.74	0.62	0.87	0.71	0.72	0.68	0.87	0.89	0.68
Slovenia	0.88	53	0.74	0.54	0.85	0.63	0.70	0.69	0.87	0.83	0.59
South Africa	0.75	41	0.03	0.66	0.76	0.05	0.70	0.71	0.82	0.80	0.61
Spain	0.89	54	0.71	0.59	0.83	0.73	0.67	0.67	0.83	0.85	0.70
Sweden	0.89	55	0.78	0.58	0.88	0.77	0.68	0.56	0.85	0.82	0.67
Trinidad and Tobago	0.82	44	0.63	0.53	0.80	0.63	0.60	0.45	0.79	0.83	0.57
United Arab Emirates	0.80	42	0.41	0.49	0.78	0.41	0.72	0.68	0.81	0.82	0.53
United States	-	-	-	-	-	-	-	-	-	-	-
Benchmarking Participants											
Buenos Aires, Argentina	0.84	46	0.62	0.51	0.82	0.62	0.62	0.66	0.78	0.83	0.57
Ontario, Canada	0.88	53	0.73	0.53	0.83	0.73	0.69	0.64	0.83	0.85	0.67
Quebec, Canada	0.90	55	0.74	0.63	0.85	0.72	0.70	0.62	0.84	0.85	0.70
Denmark (3)	0.89	55	0.74	0.58	0.87	0.77	0.75	0.61	0.84	0.82	0.66
Norway (4)	0.88	53	0.72	0.53	0.85	0.73	0.75	0.60	0.83	0.83	0.63
Moscow City, Russian Fed.	0.86	49	0.65	0.47	0.82	0.69	0.67	0.63	0.83	0.83	0.61
Eng/Afr/Zulu - RSA (5)	0.78	41	0.28	0.62	0.77	0.29	0.69	0.60	0.81	0.80	0.63
Andalusia, Spain	0.89	55	0.71	0.59	0.83	0.73	0.69	0.67	0.85	0.86	0.70
Madrid, Spain	0.87	51	0.69	0.55	0.82	0.74	0.68	0.58	0.81	0.85	0.65
Abu Dhabi, UAE	0.79	41	0.39	0.50	0.78	0.37	0.73	0.66	0.81	0.82	0.49
Dubai, UAE	0.82	44	0.54	0.44	0.78	0.56	0.71	0.66	0.81	0.82	0.57

A dash (-) indicates comparable data not available.

*Reverse coded

As indicators of effective environments for learning, a positive relationship with achievement is an important aspect of validity for the PIRLS context questionnaire scales. For the *Parents Like Reading* scale, Exhibit 14.9 presents the Pearson correlation with reading achievement in PIRLS 2016 for each country, together with r -squared—the proportion of variance in reading achievement attributable to the *Parents Like Reading* scale. These figures show a moderate relationship with achievement across participating countries. Also shown is the proportion of variance in achievement attributable to differences between the regions of the *Parents Like Reading* scale. This is very similar to the proportion of variance explained by the scale as a whole, indicating that dividing the scale into regions loses little of its power to account for achievement differences.

Exhibit 14.9: Relationship Between the PIRLS 2016 *Parents Like Reading* Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r^2)	
Australia	0.24	0.06	0.05
Austria	0.30	0.09	0.08
Azerbaijan	0.11	0.01	0.01
Bahrain	0.19	0.04	0.03
Belgium (Flemish)	0.23	0.05	0.05
Belgium (French)	0.28	0.08	0.08
Bulgaria	0.41	0.17	0.16
Canada	0.21	0.04	0.04
Chile	0.23	0.05	0.05
Chinese Taipei	0.19	0.04	0.04
Czech Republic	0.28	0.08	0.07
Denmark	0.21	0.04	0.04
Egypt	0.30	0.09	0.08
England	-	-	-
Finland	0.25	0.06	0.06
France	0.25	0.06	0.05
Georgia	0.20	0.04	0.04
Germany	0.35	0.12	0.11
Hong Kong SAR	0.09	0.01	0.01
Hungary	0.35	0.12	0.11
Iran, Islamic Rep. of	0.25	0.06	0.05
Ireland	0.26	0.07	0.05
Israel	0.18	0.03	0.03
Italy	0.22	0.05	0.04
Kazakhstan	0.09	0.01	0.01
Kuwait	0.17	0.03	0.02
Latvia	0.22	0.05	0.05
Lithuania	0.24	0.06	0.05
Macao SAR	0.13	0.02	0.01
Malta	0.14	0.02	0.02
Morocco	0.24	0.06	0.05
Netherlands	0.26	0.07	0.06

A dash (-) indicates comparable data not available.

Exhibit 14.9: Relationship Between the PIRLS 2016 *Parents Like Reading* Scale and PIRLS 2016 Reading Achievement (Continued)

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
New Zealand	0.29	0.09	0.07
Northern Ireland	0.18	0.03	0.03
Norway (5)	0.25	0.06	0.05
Oman	0.20	0.04	0.03
Poland	0.21	0.05	0.04
Portugal	0.21	0.05	0.04
Qatar	0.21	0.05	0.04
Russian Federation	0.22	0.05	0.04
Saudi Arabia	0.14	0.02	0.02
Singapore	0.20	0.04	0.04
Slovak Republic	0.38	0.15	0.11
Slovenia	0.26	0.07	0.06
South Africa	0.17	0.03	0.03
Spain	0.20	0.04	0.04
Sweden	0.26	0.07	0.06
Trinidad and Tobago	0.12	0.02	0.02
United Arab Emirates	0.22	0.05	0.04
United States	-	-	-
International Median	0.22	0.05	0.04
Benchmarking Participants			
Buenos Aires, Argentina	0.24	0.06	0.06
Ontario, Canada	0.20	0.04	0.04
Quebec, Canada	0.17	0.03	0.03
Denmark (3)	0.18	0.03	0.03
Norway (4)	0.24	0.06	0.05
Moscow City, Russian Fed.	0.21	0.04	0.04
Eng/Afr/Zulu - RSA (5)	0.16	0.02	0.03
Andalusia, Spain	0.22	0.05	0.05
Madrid, Spain	0.18	0.03	0.03
Abu Dhabi, UAE	0.22	0.05	0.04
Dubai, UAE	0.23	0.05	0.05

A dash (-) indicates comparable data not available.

Item parameter estimates and item and scale statistics similar to those above are available in Appendix 14A for each of the PIRLS 2016 context questionnaire scales and in Appendix 14B for one context questionnaire scale based on responses to a brief questionnaire completed by students who participated in ePIRLS.

Reporting the PIRLS 2016 Trend Context Questionnaire Scales

Exhibit 14.10 shows an excerpt from the *Parents Like Reading* exhibit. To represent trends from 2011, the two columns to the right of the exhibit present the average scale score in 2016 for each country and the difference from the average in 2011, respectively. Up and down arrows indicate whether the trend difference is significantly higher or lower in 2016, with a 99% level of confidence.

Trend results were not reported for the percentage of students in each region. To facilitate interpretation of the region boundaries in terms of combinations of response categories, trend scales followed the same procedure as non-trend scales in setting cutpoints for classification into regions. As such, the procedure was primarily dependent on similarities in response patterns without taking into account variations in difficulty across the items that were unique to 2011 or 2016. Consequently, although the cutpoints generally are quite close across the two cycles, they are not identical and therefore it was considered most appropriate to use differences in scale score means rather than changes in the percentages in scale regions as indicators of trend.

Exhibit 14.10: Excerpt from the PIRLS 2016 *Parents Like Reading* Exhibit

Students Categorized by Parents' Reports

Students were scored on the *Parents Like Reading* scale according to their parents' responses to eight statements about reading as well as how often they read for enjoyment. Students whose parents **Very Much Like** reading had a score on the scale of at least 10.5, which corresponds to their parents "agreeing a lot" with four of the eight statements and "agreeing a little" with the other four, as well as reading for enjoyment "every day or almost every day," on average. Students whose parents **Do Not Like** reading had a score no higher than 8.1, which corresponds to their parents "disagreeing a little" with four of the eight statements and "agreeing a little" with the other four, as well as reading for enjoyment only "once or twice a month," on average. All other students had parents who **Somewhat Like** reading.

Country	Very Much Like		Somewhat Like		Do Not Like		Average Scale Score	Difference in Average Scale Score from 2011	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement			
Ireland	47 (1.1)	588 (2.9)	40 (1.0)	560 (2.9)	13 (0.7)	544 (5.2)	10.3 (0.05)	-0.4 (0.07)	▼
Netherlands	46 (1.5)	566 (2.8)	39 (1.2)	548 (3.1)	16 (0.9)	525 (4.3)	10.0 (0.05)	-0.4 (0.08)	▼
Malta	45 (0.8)	471 (2.3)	42 (0.9)	451 (2.6)	13 (0.5)	439 (3.9)	10.2 (0.03)	-0.4 (0.05)	▼
Denmark	44 (1.1)	564 (2.3)	38 (1.0)	542 (2.7)	17 (0.7)	530 (3.6)	10.1 (0.05)	-0.6 (0.06)	▼
Sweden	44 (1.1)	576 (2.9)	42 (1.1)	551 (3.0)	13 (0.8)	529 (4.4)	10.1 (0.05)	-0.8 (0.07)	▼
Azerbaijan	44 (1.3)	481 (5.1)	46 (1.1)	470 (4.4)	10 (0.9)	453 (6.8)	10.4 (0.06)	0.7 (0.08)	▲
Norway (5)	42 (1.0)	574 (2.6)	44 (0.9)	556 (2.5)	15 (0.9)	532 (3.9)	10.1 (0.05)	-	-
Trinidad and Tobago	41 (1.0)	499 (3.6)	49 (0.9)	478 (4.3)	10 (0.6)	468 (6.1)	10.2 (0.04)	-0.5 (0.06)	▼
Finland	41 (1.0)	585 (2.2)	43 (0.9)	563 (2.5)	16 (0.7)	542 (3.4)	10.0 (0.05)	-0.5 (0.07)	▼

Source: The full *Parents Like Reading* exhibit can be found within the [PIRLS 2016 International Results in Reading](#) report.

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

References

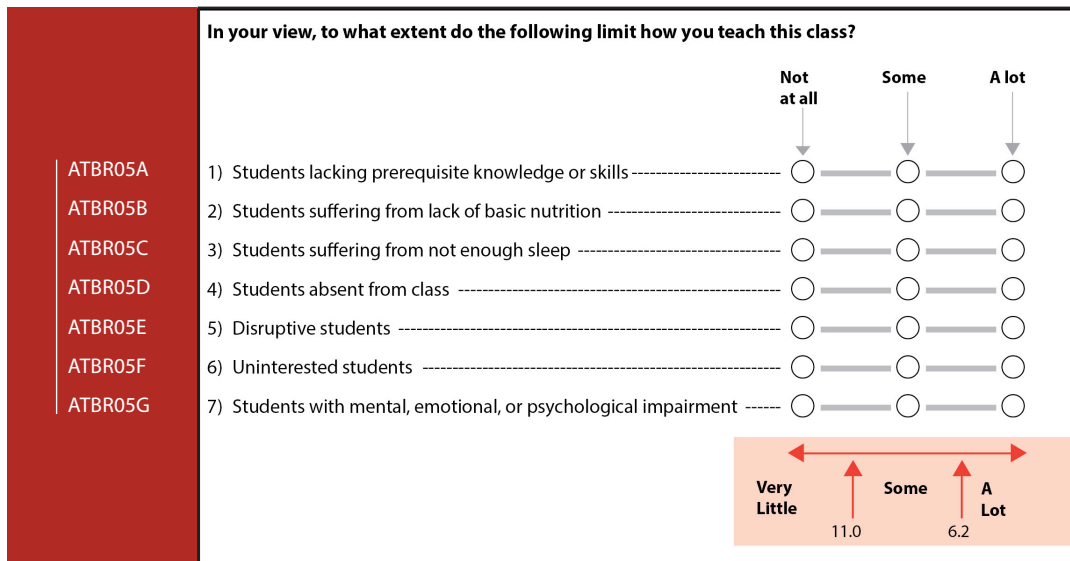
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Appendix 14A: PIRLS 2016 Context Questionnaire Scales

Classroom Instruction Limited by Student Attributes Scale

The *Classroom Instruction Limited by Student Attributes (SLI)* scale was created based on teachers' responses concerning seven attributes of students described below.

Items in the PIRLS 2016 *Classroom Instruction Limited by Student Attributes* Scale



Item Parameters for the PIRLS 2016 Classroom Instruction Limited by Student Attributes Scale

Item	delta	tau_1	tau_2	Infit
ATBR05A	0.86545	-1.95409	1.95409	1.01
ATBR05B	-1.21694	-1.05765	1.05765	1.04
ATBR05C	-0.29564	-1.60966	1.60966	0.97
ATBR05D	-0.06615	-1.48492	1.48492	1.04
ATBR05E	0.34789	-1.40914	1.40914	0.99
ATBR05F	0.48997	-1.87068	1.87068	0.91
ATBR05G	-0.12458	-1.47958	1.47958	1.05

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Scale Transformation Constants for the PIRLS 2016 Classroom Instruction Limited by Student Attributes Scale

Scale Transformation Constants	
A = 8.565173	Transformed Scale Score = 8.565173 + 1.261182 • Logit Scale Score
B = 1.261182	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Classroom Instruction Limited by Student Attributes Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.09130	
1	4.66178	
2	5.50732	
3	6.15928	6.2
4	6.73472	
5	7.28482	
6	7.84240	
7	8.42725	
8	9.04720	
9	9.68742	
10	10.33571	
11	11.00861	11.0
12	11.75725	
13	12.70534	
14	14.37342	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Classroom Instruction Limited by Student Attributes Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item						
			ATBRO5A	ATBRO5B	ATBRO5C	ATBRO5D	ATBRO5E	ATBRO5F	ATBRO5G
Australia	0.83	49	0.68	0.66	0.76	0.65	0.71	0.72	0.72
Austria	0.77	42	0.69	0.56	0.74	0.58	0.61	0.71	0.64
Azerbaijan	0.68	35	0.66	0.44	0.51	0.67	0.49	0.72	0.58
Bahrain	0.77	43	0.64	0.60	0.62	0.45	0.73	0.84	0.67
Belgium (Flemish)	0.69	35	0.63	0.47	0.62	0.54	0.64	0.70	0.53
Belgium (French)	0.72	37	0.61	0.55	0.71	0.60	0.52	0.64	0.64
Bulgaria	0.77	42	0.69	0.46	0.54	0.70	0.65	0.78	0.68
Canada	0.75	40	0.64	0.69	0.72	0.54	0.59	0.55	0.69
Chile	0.75	41	0.58	0.68	0.62	0.68	0.69	0.74	0.40
Chinese Taipei	0.63	32	0.47	0.44	0.62	0.59	0.59	0.61	0.60
Czech Republic	0.65	32	0.64	0.10	0.42	0.53	0.67	0.69	0.66
Denmark	0.76	41	0.61	0.50	0.69	0.49	0.78	0.79	0.57
Egypt	0.66	33	0.57	0.59	0.62	0.46	0.74	0.61	0.39
England	0.76	41	0.67	0.55	0.71	0.71	0.64	0.62	0.59
Finland	0.69	36	0.53	0.49	0.71	0.44	0.65	0.71	0.58
France	0.77	42	0.60	0.58	0.67	0.69	0.70	0.63	0.64
Georgia	0.80	46	0.57	0.65	0.74	0.73	0.68	0.70	0.66
Germany	0.77	43	0.67	0.61	0.67	0.67	0.66	0.62	0.67
Hong Kong SAR	0.64	32	0.63	0.39	0.45	0.58	0.55	0.70	0.60
Hungary	0.75	40	0.66	0.68	0.71	0.50	0.53	0.65	0.69
Iran, Islamic Rep. of	0.76	41	0.50	0.54	0.71	0.69	0.69	0.58	0.73
Ireland	0.77	44	0.71	0.71	0.73	0.65	0.58	0.71	0.49
Israel	0.88	57	0.68	0.71	0.77	0.84	0.77	0.80	0.71
Italy	0.61	30	0.61	0.28	0.47	0.52	0.67	0.66	0.51
Kazakhstan	0.83	50	0.54	0.62	0.69	0.72	0.79	0.79	0.77
Kuwait	0.66	34	0.63	0.54	0.46	0.61	0.66	0.71	0.36
Latvia	0.81	47	0.59	0.71	0.69	0.74	0.72	0.68	0.66
Lithuania	0.79	45	0.69	0.48	0.76	0.60	0.70	0.68	0.75
Macao SAR	0.72	38	0.72	0.28	0.55	0.63	0.70	0.60	0.71
Malta	0.85	53	0.59	0.73	0.79	0.75	0.76	0.76	0.68
Morocco	0.70	36	0.49	0.63	0.62	0.59	0.67	0.74	0.43
Netherlands	0.80	48	0.59	0.70	0.76	0.67	0.71	0.69	0.73
New Zealand	0.76	41	0.53	0.73	0.71	0.68	0.59	0.64	0.59
Northern Ireland	0.80	45	0.68	0.61	0.76	0.61	0.57	0.73	0.72
Norway (5)	0.74	40	0.61	0.57	0.66	0.58	0.66	0.67	0.66
Oman	0.80	46	0.55	0.66	0.70	0.76	0.76	0.71	0.56
Poland	0.64	33	0.61	0.57	0.55	0.63	0.53	0.71	0.39
Portugal	0.77	43	0.52	0.64	0.67	0.73	0.75	0.69	0.57
Qatar	0.71	37	0.50	0.51	0.68	0.46	0.72	0.74	0.58
Russian Federation	0.86	54	0.54	0.67	0.76	0.80	0.77	0.79	0.77
Saudi Arabia	0.68	35	0.52	0.60	0.52	0.42	0.68	0.72	0.59
Singapore	0.82	48	0.65	0.68	0.71	0.76	0.66	0.66	0.73
Slovak Republic	0.78	44	0.76	0.55	0.61	0.72	0.68	0.74	0.57
Slovenia	0.78	44	0.62	0.60	0.71	0.41	0.78	0.76	0.69
South Africa	0.72	38	0.35	0.50	0.60	0.59	0.73	0.72	0.72
Spain	0.81	46	0.68	0.62	0.77	0.69	0.69	0.69	0.64
Sweden	0.68	35	0.54	0.58	0.57	0.54	0.63	0.71	0.52
Trinidad and Tobago	0.80	44	0.66	0.62	0.67	0.72	0.64	0.71	0.63
United Arab Emirates	0.80	46	0.58	0.71	0.68	0.63	0.70	0.75	0.70
United States	0.80	45	0.66	0.63	0.71	0.62	0.70	0.70	0.66
Benchmarking Participants									
Buenos Aires, Argentina	0.86	54	0.64	0.81	0.81	0.76	0.69	0.75	0.63
Ontario, Canada	0.75	41	0.74	0.70	0.76	0.56	0.40	0.58	0.69
Quebec, Canada	0.75	41	0.53	0.69	0.74	0.52	0.72	0.46	0.73
Denmark (3)	0.77	43	0.66	0.63	0.73	0.63	0.67	0.68	0.60
Norway (4)	0.72	38	0.52	0.67	0.68	0.49	0.64	0.67	0.61
Moscow City, Russian Fed.	0.79	45	0.55	0.51	0.64	0.68	0.79	0.72	0.76
Eng/Afr/Zulu - RSA (5)	0.64	34	0.59	0.43	0.47	0.21	0.76	0.81	0.59
Andalusia, Spain	0.77	44	0.70	0.66	0.72	0.65	0.60	0.71	0.61
Madrid, Spain	0.73	39	0.72	0.54	0.75	0.63	0.59	0.53	0.60
Abu Dhabi, UAE	0.76	41	0.57	0.72	0.56	0.59	0.71	0.76	0.57
Dubai, UAE	0.82	49	0.66	0.68	0.76	0.69	0.63	0.73	0.72

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 Classroom Instruction Limited by Student Attributes Scale and PIRLS 2016 Reading Achievement

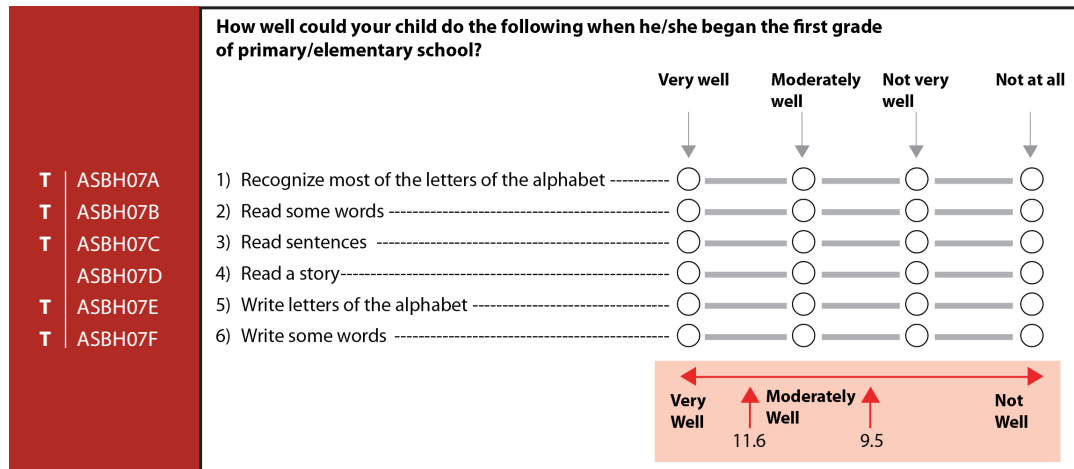
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.24	0.06	0.05
Austria	0.14	0.02	0.02
Azerbaijan	0.05	0.00	0.00
Bahrain	0.19	0.03	0.02
Belgium (Flemish)	0.21	0.04	0.03
Belgium (French)	0.24	0.06	0.03
Bulgaria	0.28	0.08	0.05
Canada	0.18	0.03	0.02
Chile	0.24	0.06	0.05
Chinese Taipei	0.03	0.00	0.00
Czech Republic	0.12	0.02	0.01
Denmark	0.10	0.01	0.01
Egypt	0.13	0.02	0.02
England	0.14	0.02	0.02
Finland	0.13	0.02	0.01
France	0.15	0.02	0.02
Georgia	0.01	0.00	0.01
Germany	0.27	0.07	0.05
Hong Kong SAR	0.15	0.02	0.02
Hungary	0.24	0.06	0.04
Iran, Islamic Rep. of	0.06	0.00	0.01
Ireland	0.21	0.05	0.02
Israel	0.27	0.07	0.07
Italy	0.03	0.00	0.00
Kazakhstan	-0.10	0.01	0.01
Kuwait	0.08	0.01	0.01
Latvia	0.01	0.00	0.01
Lithuania	0.13	0.02	0.01
Macao SAR	0.10	0.01	0.01
Malta	0.11	0.01	0.02
Morocco	0.21	0.04	0.05
Netherlands	0.18	0.03	0.04
New Zealand	0.23	0.06	0.04
Northern Ireland	0.19	0.03	0.01
Norway (5)	0.16	0.02	0.02
Oman	0.10	0.01	0.01
Poland	0.13	0.02	0.01
Portugal	0.10	0.01	0.01
Qatar	0.21	0.04	0.04
Russian Federation	0.16	0.03	0.02
Saudi Arabia	0.20	0.04	0.04
Singapore	0.37	0.13	0.11
Slovak Republic	0.26	0.07	0.09
Slovenia	0.04	0.00	0.00
South Africa	0.04	0.00	0.01
Spain	0.12	0.02	0.01
Sweden	0.11	0.01	0.01
Trinidad and Tobago	0.21	0.04	0.06
United Arab Emirates	0.35	0.12	0.09
United States	0.24	0.06	0.05
International Median	0.15	0.02	0.02
Benchmarking Participants			
Buenos Aires, Argentina	0.17	0.03	0.03
Ontario, Canada	0.20	0.04	0.03
Quebec, Canada	0.18	0.03	0.04
Denmark (3)	0.11	0.01	0.01
Norway (4)	0.07	0.00	0.00
Moscow City, Russian Fed.	0.09	0.01	0.01
Eng/Afr/Zulu - RSA (5)	0.08	0.01	0.00
Andalusia, Spain	0.19	0.04	0.03
Madrid, Spain	0.16	0.03	0.02
Abu Dhabi, UAE	0.25	0.06	0.07
Dubai, UAE	0.30	0.09	0.07

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Could Do Early Literacy Tasks When Beginning Primary School Scale

The *Could Do Early Literacy Tasks When Beginning Primary School* (ELT) scale was created based on parents' responses to how well their children could do the tasks described below when they began primary school.

Items in the PIRLS 2016 *Could Do Early Literacy Tasks When Beginning Primary School* Scale



T Trend item—item was included in the same scale in PIRLS 2011 and was used for linking the PIRLS 2011 and PIRLS 2016 scales.

Item Parameters for the PIRLS 2016 *Could Do Early Literacy Tasks When Beginning Primary School* Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ASBH07A	-1.92907	-2.74251	-0.22290	2.96541	1.23
ASBH07B	-0.25362	-2.61266	-0.23840	2.85106	0.86
ASBH07C	1.33018	-2.27105	-0.26638	2.53743	0.87
ASBH07D	2.23418	-2.17667	-0.33003	2.50670	1.13
ASBH07E	-1.28432	-3.05497	-0.09985	3.15482	1.17
ASBH07F	-0.09735	-2.74264	-0.24088	2.98352	1.04

Scale Transformation Constants for the PIRLS 2016 *Could Do Early Literacy Tasks When Beginning Primary School* Scale

Scale Transformation Constants	
A = 9.406273	Transformed Scale Score = 9.406273 + 0.729914 • Logit Scale Score
B = 0.729914	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 *Could Do Early Literacy Tasks When Beginning Primary School* Scale

Raw Score	Transformed Scale Score	Cutpoint
0	4.87072	
1	5.91978	
2	6.57986	
3	7.11898	
4	7.58223	
5	8.00017	
6	8.38767	
7	8.75301	
8	9.10285	
9	9.44462	9.5
10	9.78407	
11	10.12525	
12	10.47276	
13	10.83403	
14	11.21961	
15	11.64946	11.6
16	12.15650	
17	12.80602	
18	13.88211	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach’s Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Could Do Early Literacy Tasks When Beginning Primary School Scale

Country	Cronbach’s Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ASBH07A	ASBH07B	ASBH07C	ASBH07D	ASBH07E	ASBH07F
Australia	0.92	71	0.75	0.89	0.89	0.84	0.82	0.88
Austria	0.90	67	0.81	0.87	0.85	0.77	0.79	0.82
Azerbaijan	0.92	70	0.79	0.89	0.87	0.77	0.84	0.86
Bahrain	0.90	69	0.76	0.89	0.88	0.79	0.78	0.86
Belgium (Flemish)	0.92	71	0.78	0.89	0.88	0.83	0.82	0.85
Belgium (French)	0.89	65	0.72	0.85	0.85	0.78	0.79	0.82
Bulgaria	0.94	75	0.82	0.92	0.89	0.84	0.85	0.89
Canada	0.91	70	0.74	0.88	0.89	0.84	0.79	0.86
Chile	0.93	73	0.79	0.88	0.90	0.85	0.85	0.86
Chinese Taipei	0.91	70	0.81	0.88	0.88	0.82	0.83	0.80
Czech Republic	0.93	73	0.79	0.90	0.90	0.85	0.82	0.87
Denmark	0.91	70	0.77	0.89	0.88	0.81	0.81	0.86
Egypt	0.93	73	0.84	0.91	0.87	0.78	0.83	0.89
England	-	-	-	-	-	-	-	-
Finland	0.92	73	0.75	0.91	0.91	0.85	0.80	0.89
France	0.87	61	0.70	0.85	0.83	0.75	0.75	0.81
Georgia	0.92	71	0.79	0.89	0.89	0.78	0.84	0.87
Germany	0.89	64	0.77	0.85	0.84	0.76	0.77	0.80
Hong Kong SAR	0.90	72	0.80	0.88	0.86	-	0.85	0.83
Hungary	0.93	73	0.82	0.90	0.90	0.80	0.86	0.84
Iran, Islamic Rep. of	0.93	75	0.82	0.89	0.90	0.83	0.87	0.89
Ireland	0.93	75	0.78	0.89	0.91	0.87	0.85	0.88
Israel	0.90	69	0.72	0.88	0.88	0.82	0.80	0.86
Italy	0.91	68	0.79	0.88	0.85	0.78	0.81	0.84
Kazakhstan	0.90	66	0.73	0.85	0.87	0.80	0.79	0.83
Kuwait	0.92	72	0.80	0.89	0.88	0.82	0.83	0.87
Latvia	0.91	69	0.76	0.87	0.90	0.83	0.78	0.84
Lithuania	0.91	69	0.77	0.88	0.89	0.84	0.77	0.83
Macao SAR	0.88	62	0.77	0.85	0.86	0.70	0.80	0.75
Malta	0.91	69	0.74	0.88	0.89	0.83	0.80	0.86
Morocco	0.94	76	0.86	0.92	0.90	0.77	0.87	0.90
Netherlands	0.92	72	0.77	0.89	0.89	0.83	0.83	0.86
New Zealand	0.90	71	0.77	0.89	0.90	0.85	0.80	-
Northern Ireland	-	-	-	-	-	-	-	-
Norway (5)	0.91	70	0.79	0.89	0.88	0.79	0.82	0.86
Oman	0.90	67	0.76	0.88	0.87	0.78	0.77	0.85
Poland	0.92	72	0.79	0.89	0.89	0.83	0.83	0.87
Portugal	0.90	67	0.73	0.88	0.87	0.80	0.79	0.83
Qatar	0.90	68	0.74	0.88	0.87	0.79	0.80	0.86
Russian Federation	0.91	70	0.77	0.90	0.90	0.84	0.78	0.83
Saudi Arabia	0.91	70	0.76	0.89	0.89	0.80	0.80	0.88
Singapore	0.92	72	0.77	0.89	0.89	0.85	0.81	0.86
Slovak Republic	0.91	69	0.78	0.89	0.87	0.77	0.81	0.83
Slovenia	0.93	73	0.81	0.90	0.89	0.82	0.84	0.87
South Africa	0.88	62	0.69	0.82	0.84	0.81	0.75	0.79
Spain	0.93	73	0.81	0.89	0.90	0.85	0.84	0.86
Sweden	0.92	72	0.80	0.89	0.89	0.81	0.83	0.88
Trinidad and Tobago	0.88	63	0.68	0.84	0.86	0.82	0.75	0.80
United Arab Emirates	0.91	69	0.77	0.88	0.88	0.81	0.79	0.86
United States	-	-	-	-	-	-	-	-
Benchmarking Participants								
Buenos Aires, Argentina	0.89	66	0.75	0.86	0.86	0.80	0.78	0.81
Ontario, Canada	0.92	72	0.76	0.89	0.90	0.85	0.81	0.86
Quebec, Canada	0.90	66	0.71	0.87	0.86	0.80	0.78	0.85
Denmark (3)	0.91	68	0.77	0.89	0.88	0.80	0.77	0.86
Norway (4)	0.91	70	0.79	0.89	0.88	0.77	0.82	0.86
Moscow City, Russian Fed.	0.91	69	0.75	0.88	0.90	0.84	0.78	0.83
Eng/Afr/Zulu - RSA (5)	0.88	63	0.68	0.83	0.85	0.82	0.75	0.81
Andalusia, Spain	0.93	75	0.83	0.90	0.91	0.85	0.85	0.87
Madrid, Spain	0.92	73	0.81	0.89	0.90	0.84	0.83	0.87
Abu Dhabi, UAE	0.91	70	0.78	0.88	0.88	0.81	0.79	0.86
Dubai, UAE	0.90	68	0.74	0.87	0.87	0.82	0.79	0.84

SOURCE: IEA’s Progress in International Reading Literacy Study – PIRLS 2016

A dash (–) indicates comparable data not available.

Relationship Between the PIRLS 2016 *Could Do Early Literacy Tasks When Beginning Primary School* Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.22	0.05	0.04
Austria	-0.02	0.00	0.01
Azerbaijan	0.18	0.03	0.03
Bahrain	0.38	0.14	0.12
Belgium (Flemish)	-0.04	0.00	0.00
Belgium (French)	0.09	0.01	0.01
Bulgaria	0.44	0.19	0.13
Canada	0.30	0.09	0.08
Chile	0.31	0.10	0.08
Chinese Taipei	0.35	0.12	0.12
Czech Republic	0.16	0.03	0.03
Denmark	0.33	0.11	0.09
Egypt	0.42	0.18	0.17
England	-	-	-
Finland	0.40	0.16	0.13
France	0.19	0.04	0.03
Georgia	0.17	0.03	0.02
Germany	0.11	0.01	0.01
Hong Kong SAR	0.36	0.13	0.11
Hungary	0.10	0.01	0.01
Iran, Islamic Rep. of	0.19	0.04	0.02
Ireland	0.39	0.16	0.13
Israel	0.03	0.00	0.00
Italy	0.09	0.01	0.01
Kazakhstan	0.18	0.03	0.04
Kuwait	0.30	0.09	0.09
Latvia	0.37	0.13	0.12
Lithuania	0.45	0.20	0.18
Macao SAR	0.31	0.10	0.09
Malta	0.29	0.08	0.07
Morocco	0.35	0.12	0.13
Netherlands	0.17	0.03	0.03
New Zealand	0.13	0.02	0.02
Northern Ireland	-	-	-
Norway (5)	0.26	0.07	0.05
Oman	0.39	0.15	0.13
Poland	0.29	0.08	0.07
Portugal	0.14	0.02	0.02
Qatar	0.29	0.08	0.07
Russian Federation	0.35	0.12	0.11
Saudi Arabia	0.17	0.03	0.03
Singapore	0.46	0.21	0.19
Slovak Republic	0.15	0.02	0.01
Slovenia	0.26	0.07	0.07
South Africa	0.19	0.04	0.04
Spain	0.35	0.12	0.11
Sweden	0.38	0.15	0.12
Trinidad and Tobago	0.34	0.12	0.10
United Arab Emirates	0.37	0.13	0.13
United States	-	-	-
International Median	0.29	0.08	0.07
Benchmarking Participants			
Buenos Aires, Argentina	0.23	0.05	0.05
Ontario, Canada	0.34	0.12	0.10
Quebec, Canada	0.19	0.04	0.04
Denmark (3)	0.34	0.11	0.11
Norway (4)	0.31	0.10	0.07
Moscow City, Russian Fed.	0.39	0.15	0.14
Eng/Afr/Zulu - RSA (5)	0.21	0.05	0.05
Andalusia, Spain	0.33	0.11	0.09
Madrid, Spain	0.33	0.11	0.09
Abu Dhabi, UAE	0.41	0.17	0.16
Dubai, UAE	0.30	0.09	0.08

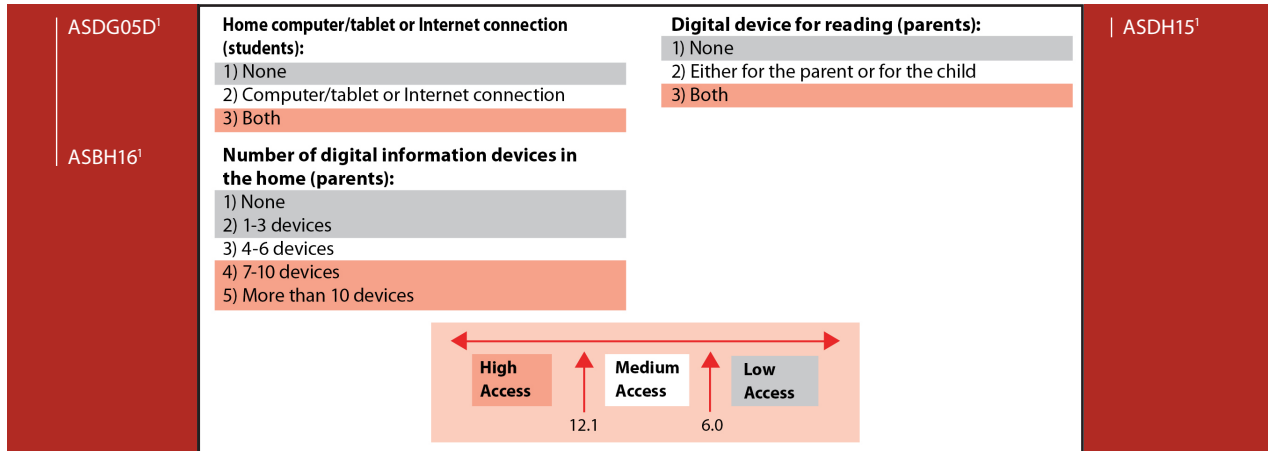
SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (–) indicates comparable data not available.

Digital Devices in the Home Scale

The *Digital Devices in the Home* (DDH) scale was created based on parents' responses concerning the availability of three resources described below.

Items in the PIRLS 2016 *Digital Devices in the Home* Scale



¹ Derived variable. For more details, see Supplement 3 of the [User Guide for the PIRLS 2016 International Database](#).

Item Parameters for the PIRLS 2016 *Digital Devices in the Home Scale*

Item	delta	tau_1	tau_2	tau_3	tau_4	Infit
ASDG05D	-1.01084	0.19104	-0.19104			0.97
ASBH16	0.78901	-2.55418	-0.25050	0.94345	1.86123	1.01
ASDH15	0.22183	0.40387	-0.40387			1.04

Scale Transformation Constants for the PIRLS 2016 *Digital Devices in the Home Scale*

Scale Transformation Constants

A = 8.607915

B = 1.618512

Transformed Scale Score = 8.607915 + 1.618512 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 *Digital Devices in the Home Scale*

Raw Score	Transformed Scale Score	Cutpoint
0	3.92341	
1	5.90375	6.0
2	6.97819	
3	7.91040	
4	8.78694	
5	9.68170	
6	10.78844	
7	12.19680	12.1
8	14.32363	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Digital Devices in the Home Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item		
			ASDQ05D	ASBH16	ASDH15
Australia	0.32	43	0.58	0.71	0.68
Austria	0.38	45	0.48	0.78	0.72
Azerbaijan	0.77	68	0.80	0.82	0.86
Bahrain	0.38	45	0.62	0.69	0.70
Belgium (Flemish)	0.25	40	0.46	0.74	0.68
Belgium (French)	0.33	44	0.60	0.72	0.66
Bulgaria	0.58	57	0.77	0.76	0.73
Canada	0.34	44	0.58	0.71	0.69
Chile	0.61	57	0.68	0.79	0.78
Chinese Taipei	0.36	44	0.60	0.69	0.70
Czech Republic	0.35	44	0.57	0.76	0.65
Denmark	0.18	39	0.49	0.70	0.66
Egypt	0.70	62	0.74	0.79	0.84
England	-	-	-	-	-
Finland	0.21	39	0.44	0.70	0.70
France	0.30	42	0.59	0.69	0.67
Georgia	0.63	58	0.75	0.77	0.76
Germany	0.41	46	0.58	0.72	0.72
Hong Kong SAR	0.27	41	0.49	0.70	0.70
Hungary	0.50	53	0.73	0.70	0.75
Iran, Islamic Rep. of	0.73	65	0.76	0.79	0.86
Ireland	0.33	43	0.49	0.73	0.72
Israel	0.31	44	0.69	0.73	0.56
Italy	0.41	47	0.64	0.73	0.68
Kazakhstan	0.65	59	0.76	0.74	0.81
Kuwait	0.31	43	0.48	0.73	0.72
Latvia	0.31	43	0.61	0.70	0.66
Lithuania	0.40	48	0.72	0.71	0.66
Macao SAR	0.32	43	0.57	0.71	0.67
Malta	0.24	40	0.54	0.70	0.65
Morocco	0.75	66	0.79	0.79	0.86
Netherlands	0.26	40	0.10	0.78	0.77
New Zealand	0.47	50	0.62	0.76	0.73
Northern Ireland	0.36	44	0.42	0.77	0.75
Norway (5)	0.19	39	0.49	0.74	0.63
Oman	0.49	50	0.65	0.71	0.76
Poland	0.29	44	0.63	0.67	0.68
Portugal	0.44	49	0.63	0.72	0.75
Qatar	0.34	45	0.65	0.64	0.72
Russian Federation	0.55	54	0.73	0.71	0.78
Saudi Arabia	0.43	47	0.63	0.72	0.71
Singapore	0.30	44	0.66	0.67	0.66
Slovak Republic	0.45	50	0.71	0.72	0.67
Slovenia	0.34	43	0.50	0.73	0.72
South Africa	0.53	51	0.53	0.80	0.78
Spain	0.42	47	0.56	0.75	0.73
Sweden	0.21	39	0.48	0.72	0.65
Trinidad and Tobago	0.58	56	0.68	0.78	0.78
United Arab Emirates	0.26	42	0.64	0.62	0.67
United States	-	-	-	-	-
Benchmarking Participants					
Buenos Aires, Argentina	0.37	45	0.59	0.75	0.67
Ontario, Canada	0.29	42	0.56	0.69	0.69
Quebec, Canada	0.29	43	0.57	0.71	0.67
Denmark (3)	0.15	37	0.34	0.74	0.67
Norway (4)	0.22	40	0.49	0.74	0.64
Moscow City, Russian Fed.	0.24	41	0.49	0.69	0.72
Eng/Afr/Zulu - RSA (5)	0.60	55	0.67	0.78	0.78
Andalusia, Spain	0.48	50	0.58	0.76	0.76
Madrid, Spain	0.43	47	0.49	0.78	0.76
Abu Dhabi, UAE	0.24	41	0.60	0.61	0.70
Dubai, UAE	0.17	39	0.66	0.63	0.60

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Relationship Between the PIRLS 2016 *Digital Devices in the Home* Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.12	0.02	0.01
Austria	0.12	0.01	0.02
Azerbaijan	0.29	0.09	0.06
Bahrain	0.20	0.04	0.02
Belgium (Flemish)	0.05	0.00	0.01
Belgium (French)	0.08	0.01	0.00
Bulgaria	0.36	0.13	0.09
Canada	0.12	0.01	0.01
Chile	0.23	0.05	0.04
Chinese Taipei	0.20	0.04	0.02
Czech Republic	0.14	0.02	0.03
Denmark	0.10	0.01	0.00
Egypt	0.36	0.13	0.09
England	-	-	-
Finland	0.14	0.02	0.02
France	0.03	0.00	0.00
Georgia	0.17	0.03	0.01
Germany	0.01	0.00	0.00
Hong Kong SAR	0.10	0.01	0.00
Hungary	0.26	0.07	0.04
Iran, Islamic Rep. of	0.32	0.10	0.07
Ireland	0.11	0.01	0.01
Israel	0.18	0.03	0.04
Italy	0.07	0.01	0.00
Kazakhstan	0.20	0.04	0.02
Kuwait	0.12	0.01	0.01
Latvia	0.16	0.03	0.02
Lithuania	0.22	0.05	0.04
Macao SAR	0.16	0.02	0.01
Malta	0.11	0.01	0.01
Morocco	0.31	0.10	0.07
Netherlands	0.08	0.01	0.00
New Zealand	0.18	0.03	0.02
Northern Ireland	0.12	0.01	0.01
Norway (5)	0.12	0.01	0.01
Oman	0.23	0.05	0.03
Poland	0.17	0.03	0.03
Portugal	0.21	0.04	0.03
Qatar	0.24	0.06	0.03
Russian Federation	0.28	0.08	0.04
Saudi Arabia	0.13	0.02	0.01
Singapore	0.27	0.07	0.05
Slovak Republic	0.33	0.11	0.11
Slovenia	0.18	0.03	0.02
South Africa	0.22	0.05	0.04
Spain	0.21	0.04	0.03
Sweden	0.13	0.02	0.01
Trinidad and Tobago	0.27	0.07	0.04
United Arab Emirates	0.18	0.03	0.01
United States	-	-	-
International Median	0.17	0.03	0.02
Benchmarking Participants			
Buenos Aires, Argentina	0.24	0.06	0.04
Ontario, Canada	0.11	0.01	0.01
Quebec, Canada	0.11	0.01	0.01
Denmark (3)	0.13	0.02	0.01
Norway (4)	0.16	0.03	0.02
Moscow City, Russian Fed.	0.15	0.02	0.01
Eng/Afr/Zulu - RSA (5)	0.37	0.14	0.08
Andalusia, Spain	0.18	0.03	0.02
Madrid, Spain	0.20	0.04	0.03
Abu Dhabi, UAE	0.19	0.04	0.02
Dubai, UAE	0.14	0.02	0.01

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Relationship Between the PIRLS 2016 *Digital Devices in the Home* Scale and ePIRLS 2016 Online Informational Reading Achievement

Country	Pearson's Correlation with ePIRLS Achievement		Variance in ePIRLS Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Canada	0.19	0.04	0.02
Chinese Taipei	0.24	0.06	0.03
Denmark	0.10	0.01	0.00
Georgia	0.16	0.03	0.01
Ireland	0.15	0.02	0.01
Israel	0.18	0.03	0.03
Italy	0.13	0.02	0.01
Norway	0.12	0.01	0.01
Portugal	0.26	0.07	0.04
Singapore	0.29	0.08	0.06
Slovenia	0.20	0.04	0.03
Sweden	0.14	0.02	0.01
United Arab Emirates	0.18	0.03	0.01
United States	-	-	-
International Median	0.18	0.03	0.01
Benchmarking Participants			
Abu Dhabi, UAE	0.20	0.04	0.02
Dubai, UAE	0.14	0.02	0.01

A dash (-) indicates comparable data not available.

Early Literacy Activities Before Beginning Primary School Scale

The *Early Literacy Activities Before Beginning Primary School* (ELA) scale was created based on parents' frequency of doing the nine activities described below.

Items in the PIRLS 2016 *Early Literacy Activities Before Beginning Primary School* Scale

		Before your child began primary/elementary school, how often did you or someone else in your home do the following activities with him or her?			
		Often	Sometimes	Never or almost never	
T	ASBH02A	1) Read books.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ASBH02B	2) Tell stories.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ASBH02C	3) Sing songs.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ASBH02D	4) Play with alphabet toys (e.g., blocks with letters of the alphabet).....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ASBH02E	5) Talk about things you had done.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ASBH02F	6) Talk about what you had read.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ASBH02G	7) Play word games.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ASBH02H	8) Write letters or words.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ASBH02I	9) Read aloud signs and labels.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Often Sometimes Never or Almost Never

10.7 6.2

T Trend item—item was included in the same scale in PIRLS 2011 and was used for linking the PIRLS 2011 and PIRLS 2016 scales.

Item Parameters for the PIRLS 2016 Early Literacy Activities Before Beginning Primary School Scale

Item	delta	tau_1	tau_2	Infit
ASBH02A	-0.43565	-1.37653	1.37653	0.96
ASBH02B	-0.21414	-1.38385	1.38385	0.97
ASBH02C	0.14115	-0.92504	0.92504	1.14
ASBH02D	0.31840	-0.99895	0.99895	1.02
ASBH02E	-0.89489	-1.18523	1.18523	1.03
ASBH02F	0.31620	-1.36183	1.36183	0.95
ASBH02G	0.54796	-1.22190	1.22190	0.95
ASBH02H	0.02688	-1.14591	1.14591	1.00
ASBH02I	0.19409	-0.98400	0.98400	1.00

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Scale Transformation Constants for the PIRLS 2016 Early Literacy Activities Before Beginning Primary School Scale

Scale Transformation Constants	
A = 8.467126	Transformed Scale Score = 8.467126 + 1.488680 • Logit Scale Score
B = 1.488680	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Early Literacy Activities Before Beginning Primary School Scale

Raw Score	Transformed Scale Score	Cutpoint
0	2.13736	
1	3.95698	
2	4.90763	
3	5.60873	
4	6.18976	6.2
5	6.70267	
6	7.17841	
7	7.62846	
8	8.06349	
9	8.49167	
10	8.91693	
11	9.34703	
12	9.78848	
13	10.25182	
14	10.74970	10.7
15	11.31055	
16	11.98750	
17	12.91216	
18	14.70318	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Early Literacy Activities Before Beginning Primary School Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBH02A	ASBH02B	ASBH02C	ASBH02D	ASBH02E	ASBH02F	ASBH02G	ASBH02H	ASBH02I
Australia	0.83	42	0.63	0.66	0.58	0.63	0.62	0.68	0.72	0.63	0.69
Austria	0.70	30	0.58	0.63	0.53	0.47	0.50	0.61	0.63	0.39	0.53
Azerbaijan	0.76	35	0.65	0.61	0.40	0.59	0.45	0.66	0.59	0.65	0.65
Bahrain	0.71	31	0.54	0.56	0.38	0.59	0.48	0.57	0.63	0.61	0.57
Belgium (Flemish)	0.75	33	0.55	0.56	0.51	0.56	0.51	0.60	0.67	0.59	0.62
Belgium (French)	0.72	31	0.57	0.56	0.44	0.60	0.47	0.55	0.67	0.58	0.56
Bulgaria	0.85	46	0.71	0.69	0.50	0.73	0.63	0.72	0.70	0.74	0.67
Canada	0.80	39	0.61	0.63	0.54	0.62	0.53	0.67	0.71	0.63	0.67
Chile	0.78	36	0.60	0.64	0.51	0.63	0.48	0.63	0.69	0.65	0.56
Chinese Taipei	0.81	40	0.69	0.69	0.58	0.60	0.57	0.64	0.67	0.58	0.67
Czech Republic	0.71	30	0.52	0.58	0.41	0.50	0.51	0.67	0.59	0.55	0.57
Denmark	0.75	33	0.56	0.58	0.50	0.56	0.46	0.67	0.66	0.59	0.58
Egypt	0.85	46	0.66	0.70	0.51	0.73	0.63	0.71	0.72	0.73	0.67
England	-	-	-	-	-	-	-	-	-	-	-
Finland	0.74	33	0.56	0.58	0.48	0.58	0.46	0.68	0.60	0.59	0.59
France	0.71	30	0.55	0.55	0.41	0.58	0.46	0.58	0.63	0.59	0.56
Georgia	0.77	37	0.66	0.59	0.42	0.67	0.46	0.61	0.65	0.64	0.69
Germany	0.69	30	0.54	0.57	0.46	0.48	0.47	0.61	0.66	0.51	0.57
Hong Kong SAR	0.78	36	0.63	0.65	0.59	0.49	0.55	0.66	0.69	0.53	0.62
Hungary	0.73	31	0.51	0.49	0.48	0.66	0.45	0.55	0.64	0.60	0.64
Iran, Islamic Rep. of	0.79	37	0.62	0.54	0.50	0.66	0.54	0.63	0.67	0.66	0.65
Ireland	0.80	38	0.58	0.63	0.54	0.59	0.52	0.65	0.68	0.66	0.68
Israel	0.76	35	0.53	0.58	0.47	0.65	0.49	0.64	0.69	0.63	0.60
Italy	0.71	30	0.54	0.57	0.41	0.61	0.41	0.59	0.61	0.58	0.58
Kazakhstan	0.70	30	0.60	0.44	0.40	0.54	0.54	0.63	0.48	0.60	0.61
Kuwait	0.72	31	0.54	0.51	0.35	0.62	0.49	0.55	0.66	0.64	0.59
Latvia	0.72	31	0.62	0.59	0.44	0.57	0.47	0.64	0.62	0.55	0.51
Lithuania	0.72	32	0.57	0.54	0.44	0.64	0.52	0.68	0.63	0.57	0.46
Macao SAR	0.78	36	0.65	0.65	0.57	0.52	0.53	0.64	0.65	0.58	0.61
Malta	0.80	38	0.66	0.65	0.52	0.59	0.53	0.69	0.67	0.60	0.64
Morocco	0.86	46	0.71	0.66	0.43	0.71	0.62	0.73	0.71	0.80	0.70
Netherlands	0.73	32	0.48	0.52	0.48	0.57	0.47	0.55	0.69	0.65	0.61
New Zealand	0.83	42	0.64	0.67	0.57	0.64	0.57	0.69	0.73	0.65	0.69
Northern Ireland	0.81	40	0.57	0.64	0.53	0.61	0.58	0.71	0.72	0.62	0.65
Norway (5)	0.76	34	0.57	0.59	0.46	0.62	0.43	0.65	0.67	0.59	0.62
Oman	0.70	31	0.59	0.55	0.24	0.57	0.46	0.58	0.62	0.62	0.63
Poland	0.76	34	0.55	0.57	0.50	0.62	0.54	0.67	0.61	0.60	0.58
Portugal	0.76	34	0.63	0.65	0.48	0.62	0.49	0.62	0.67	0.58	0.49
Qatar	0.77	35	0.60	0.59	0.49	0.60	0.52	0.62	0.64	0.64	0.63
Russian Federation	0.77	35	0.61	0.53	0.49	0.64	0.58	0.66	0.64	0.62	0.56
Saudi Arabia	0.72	32	0.59	0.60	0.22	0.60	0.51	0.61	0.65	0.65	0.57
Singapore	0.83	43	0.70	0.72	0.58	0.65	0.58	0.68	0.67	0.64	0.69
Slovak Republic	0.76	35	0.58	0.57	0.43	0.62	0.62	0.70	0.62	0.57	0.56
Slovenia	0.75	34	0.53	0.62	0.55	0.59	0.44	0.60	0.66	0.55	0.64
South Africa	0.77	36	0.64	0.51	0.46	0.64	0.52	0.64	0.65	0.66	0.66
Spain	0.75	34	0.59	0.60	0.46	0.63	0.45	0.60	0.66	0.62	0.56
Sweden	0.76	35	0.56	0.54	0.49	0.61	0.51	0.67	0.68	0.62	0.60
Trinidad and Tobago	0.78	36	0.67	0.65	0.51	0.55	0.50	0.66	0.62	0.61	0.63
United Arab Emirates	0.73	32	0.54	0.56	0.44	0.55	0.54	0.58	0.63	0.61	0.59
United States	-	-	-	-	-	-	-	-	-	-	-
Benchmarking Participants											
Buenos Aires, Argentina	0.76	34	0.62	0.62	0.49	0.66	0.46	0.58	0.67	0.62	0.52
Ontario, Canada	0.81	40	0.62	0.64	0.56	0.61	0.52	0.68	0.72	0.63	0.70
Quebec, Canada	0.76	35	0.58	0.60	0.48	0.62	0.51	0.61	0.68	0.59	0.62
Denmark (3)	0.74	33	0.56	0.59	0.50	0.55	0.47	0.67	0.65	0.55	0.56
Norway (4)	0.76	34	0.55	0.59	0.48	0.63	0.45	0.63	0.66	0.61	0.61
Moscow City, Russian Fed.	0.76	35	0.59	0.58	0.53	0.59	0.59	0.67	0.64	0.58	0.50
Eng/Afr/Zulu - RSA (5)	0.75	34	0.63	0.58	0.42	0.60	0.49	0.58	0.63	0.64	0.62
Andalusia, Spain	0.75	34	0.59	0.60	0.49	0.62	0.47	0.61	0.64	0.61	0.56
Madrid, Spain	0.73	32	0.56	0.58	0.47	0.57	0.42	0.62	0.63	0.61	0.57
Abu Dhabi, UAE	0.73	32	0.53	0.55	0.44	0.54	0.57	0.59	0.63	0.63	0.60
Dubai, UAE	0.75	33	0.60	0.59	0.45	0.57	0.52	0.61	0.63	0.60	0.61

A dash (-) indicates comparable data not available.

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 *Early Literacy Activities Before Beginning Primary School* Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.15	0.02	0.02
Austria	0.20	0.04	0.03
Azerbaijan	0.16	0.02	0.02
Bahrain	0.22	0.05	0.04
Belgium (Flemish)	0.18	0.03	0.03
Belgium (French)	0.19	0.03	0.03
Bulgaria	0.41	0.17	0.15
Canada	0.19	0.04	0.03
Chile	0.24	0.06	0.04
Chinese Taipei	0.24	0.06	0.04
Czech Republic	0.13	0.02	0.01
Denmark	0.19	0.04	0.03
Egypt	0.34	0.12	0.09
England	-	-	-
Finland	0.18	0.03	0.02
France	0.17	0.03	0.02
Georgia	0.08	0.01	0.01
Germany	0.18	0.03	0.02
Hong Kong SAR	0.08	0.01	0.00
Hungary	0.14	0.02	0.02
Iran, Islamic Rep. of	0.24	0.06	0.05
Ireland	0.27	0.07	0.06
Israel	0.16	0.02	0.02
Italy	0.15	0.02	0.01
Kazakhstan	0.10	0.01	0.00
Kuwait	0.19	0.04	0.02
Latvia	0.13	0.02	0.01
Lithuania	0.14	0.02	0.02
Macao SAR	0.10	0.01	0.01
Malta	0.19	0.04	0.03
Morocco	0.21	0.04	0.04
Netherlands	0.14	0.02	0.01
New Zealand	0.26	0.07	0.06
Northern Ireland	0.16	0.03	0.03
Norway (5)	0.18	0.03	0.03
Oman	0.25	0.06	0.04
Poland	0.12	0.01	0.01
Portugal	0.19	0.04	0.03
Qatar	0.22	0.05	0.04
Russian Federation	0.17	0.03	0.02
Saudi Arabia	0.16	0.03	0.02
Singapore	0.24	0.06	0.04
Slovak Republic	0.25	0.06	0.08
Slovenia	0.21	0.04	0.04
South Africa	0.11	0.01	0.02
Spain	0.23	0.05	0.04
Sweden	0.18	0.03	0.03
Trinidad and Tobago	0.25	0.06	0.05
United Arab Emirates	0.25	0.06	0.04
United States	-	-	-
International Median	0.19	0.03	0.03
Benchmarking Participants			
Buenos Aires, Argentina	0.26	0.07	0.05
Ontario, Canada	0.20	0.04	0.03
Quebec, Canada	0.17	0.03	0.03
Denmark (3)	0.16	0.02	0.02
Norway (4)	0.20	0.04	0.03
Moscow City, Russian Fed.	0.17	0.03	0.02
Eng/Afr/Zulu - RSA (5)	0.13	0.02	0.02
Andalusia, Spain	0.24	0.06	0.04
Madrid, Spain	0.17	0.03	0.02
Abu Dhabi, UAE	0.23	0.05	0.04
Dubai, UAE	0.27	0.07	0.05

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Home Resources for Learning Scale

The *Home Resources for Learning* (HRL) scale was created based on students' and parents' responses concerning the availability of five resources described below.

Items in the PIRLS 2016 *Home Resources for Learning* Scale

T ASBG04	<p>Number of books in the home (students):</p> <ol style="list-style-type: none"> 1) 0-10 2) 11-25 3) 26-100 <li style="background-color: #f4a460;">4) 101-200 5) More than 200 	<p>Number of children's books in the home (parents):</p> <ol style="list-style-type: none"> 1) 0-10 2) 11-25 <li style="background-color: #f4a460;">3) 26-50 4) 51-100 <li style="background-color: #f4a460;">5) More than 100 	T ASBH14
T ASDG05S ¹	<p>Number of home study supports (students):</p> <ol style="list-style-type: none"> 1) None 2) Internet connection or own room <li style="background-color: #f4a460;">3) Both 	<p>Highest level of education of either parent (parents):</p> <ol style="list-style-type: none"> 1) Finished some primary or lower secondary or did not go to school 2) Finished lower secondary 3) Finished upper secondary 4) Finished post-secondary education <li style="background-color: #f4a460;">5) Finished university or higher 	T ASDHEDUP ¹
T ASDHOCCP ¹	<p>Highest level of occupation of either parent (parents):</p> <ol style="list-style-type: none"> 1) Has never worked outside home for pay, general laborer, or semi-professional (skilled agricultural or fishery worker, craft or trade worker, plant or machine operator) 2) Clerical (clerk or service or sales worker) 3) Small business owner <li style="background-color: #f4a460;">4) Professional (corporate manager or senior official, professional, or technician or associate professional) 		

T Trend item—item was included in the same scale in PIRLS 2011 and was used for linking the PIRLS 2011 and PIRLS 2016 scales.

1 Derived variable. For more details, see Supplement 3 of the [User Guide for the PIRLS 2016 International Database](#).

Item Parameters for the PIRLS 2016 Home Resources for Learning Scale

Item	delta	tau_1	tau_2	tau_3	tau_4	Infit
ASBG04	0.64203	-1.31056	-0.54699	0.96645	0.89110	1.00
ASDG05S	-0.95160	-0.80498	0.80498			1.06
ASDHOCPP	0.08290	-0.31922	0.95822	-0.63900		1.02
ASBH14	0.66949	-0.85830	-0.54569	0.43193	0.97206	0.96
ASDHEDUP	-0.44282	-0.60843	-0.91684	0.99045	0.53482	0.96

Scale Transformation Constants for the PIRLS 2016 Home Resources for Learning Scale

Scale Transformation Constants	
A = 9.470169	Transformed Scale Score = 9.470169 + 1.658175 • Logit Scale Score
B = 1.658175	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Home Resources for Learning Scale

Raw Score	Transformed Scale Score	Cutpoint
0	4.03041	
1	5.88662	
2	6.79193	
3	7.44990	7.5
4	7.99030	
5	8.45482	
6	8.86479	
7	9.23157	
8	9.56865	
9	9.89060	
10	10.22039	
11	10.55954	
12	10.92762	
13	11.34044	
14	11.82688	11.8
15	12.41852	
16	13.22250	
17	14.80246	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Home Resources for Learning Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item				
			ASBG04	ASDG05	ASDH0CP	ASBH14	ASDHEDUP
Australia	0.65	42	0.66	0.31	0.76	0.69	0.73
Austria	0.73	48	0.75	0.31	0.75	0.77	0.78
Azerbaijan	0.65	42	0.62	0.54	0.71	0.61	0.73
Bahrain	0.59	38	0.54	0.22	0.73	0.67	0.77
Belgium (Flemish)	0.67	44	0.70	0.31	0.72	0.71	0.76
Belgium (French)	0.72	48	0.71	0.35	0.75	0.78	0.77
Bulgaria	0.82	58	0.77	0.44	0.82	0.82	0.87
Canada	0.61	40	0.68	0.31	0.70	0.69	0.67
Chile	0.69	45	0.57	0.39	0.79	0.70	0.81
Chinese Taipei	0.73	48	0.78	0.27	0.72	0.78	0.78
Czech Republic	0.68	45	0.73	0.12	0.74	0.76	0.76
Denmark	0.66	44	0.70	0.31	0.74	0.72	0.74
Egypt	0.62	40	0.53	0.55	0.72	0.54	0.77
England	-	-	-	-	-	-	-
Finland	0.64	42	0.69	0.18	0.72	0.70	0.75
France	0.72	47	0.73	0.42	0.70	0.77	0.76
Georgia	0.71	47	0.71	0.45	0.71	0.77	0.75
Germany	0.70	46	0.70	0.28	0.71	0.79	0.78
Hong Kong SAR	0.74	49	0.73	0.36	0.77	0.77	0.79
Hungary	0.81	58	0.81	0.31	0.83	0.83	0.87
Iran, Islamic Rep. of	0.73	48	0.70	0.59	0.67	0.71	0.78
Ireland	0.68	45	0.72	0.11	0.74	0.75	0.77
Israel	0.73	56	0.63	-	0.78	0.76	0.81
Italy	0.67	44	0.67	0.13	0.76	0.75	0.79
Kazakhstan	0.60	39	0.64	0.53	0.65	0.63	0.67
Kuwait	0.53	35	0.47	0.23	0.74	0.55	0.79
Latvia	0.68	45	0.69	0.29	0.70	0.77	0.77
Lithuania	0.74	50	0.72	0.36	0.78	0.79	0.77
Macao SAR	0.71	47	0.72	0.29	0.74	0.75	0.78
Malta	0.62	41	0.55	0.09	0.80	0.66	0.81
Morocco	0.76	50	0.71	0.60	0.75	0.68	0.78
Netherlands	0.67	44	0.68	0.16	0.78	0.69	0.79
New Zealand	0.67	44	0.67	0.36	0.72	0.72	0.76
Northern Ireland	0.68	45	0.71	0.23	0.75	0.71	0.79
Norway (5)	0.67	45	0.67	0.28	0.75	0.73	0.79
Oman	0.63	41	0.53	0.42	0.75	0.62	0.78
Poland	0.73	48	0.68	0.33	0.79	0.73	0.82
Portugal	0.73	48	0.70	0.20	0.79	0.77	0.81
Qatar	0.56	37	0.53	0.32	0.68	0.68	0.72
Russian Federation	0.64	42	0.66	0.39	0.69	0.69	0.75
Saudi Arabia	0.51	34	0.49	0.22	0.73	0.51	0.77
Singapore	0.67	44	0.70	0.29	0.72	0.72	0.77
Slovak Republic	0.77	53	0.77	0.36	0.80	0.80	0.81
Slovenia	0.69	46	0.70	0.07	0.77	0.75	0.80
South Africa	0.62	39	0.56	0.55	0.74	0.50	0.71
Spain	0.68	45	0.66	0.14	0.78	0.75	0.78
Sweden	0.69	46	0.71	0.37	0.73	0.75	0.76
Trinidad and Tobago	0.61	39	0.60	0.42	0.71	0.62	0.72
United Arab Emirates	0.58	38	0.56	0.35	0.68	0.71	0.69
United States	-	-	-	-	-	-	-
Benchmarking Participants							
Buenos Aires, Argentina	0.74	49	0.62	0.35	0.82	0.77	0.81
Ontario, Canada	0.57	37	0.64	0.33	0.68	0.67	0.66
Quebec, Canada	0.63	41	0.70	0.31	0.70	0.72	0.66
Denmark (3)	0.65	43	0.69	0.24	0.74	0.72	0.76
Norway (4)	0.66	44	0.64	0.25	0.74	0.72	0.79
Moscow City, Russian Fed.	0.59	39	0.63	0.24	0.70	0.73	0.70
Eng/Afr/Zulu - RSA (5)	0.70	45	0.64	0.56	0.75	0.60	0.76
Andalusia, Spain	0.69	46	0.67	0.11	0.77	0.75	0.81
Madrid, Spain	0.69	46	0.68	0.09	0.80	0.73	0.80
Abu Dhabi, UAE	0.54	36	0.51	0.31	0.69	0.68	0.71
Dubai, UAE	0.60	39	0.67	0.40	0.61	0.76	0.63

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Relationship Between the PIRLS 2016 Home Resources for Learning Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.41	0.17	0.12
Austria	0.49	0.24	0.13
Azerbaijan	0.31	0.10	0.06
Bahrain	0.37	0.13	0.06
Belgium (Flemish)	0.39	0.15	0.10
Belgium (French)	0.47	0.22	0.16
Bulgaria	0.56	0.31	0.23
Canada	0.35	0.12	0.09
Chile	0.34	0.11	0.05
Chinese Taipei	0.39	0.15	0.09
Czech Republic	0.44	0.20	0.14
Denmark	0.37	0.14	0.10
Egypt	0.40	0.16	0.13
England	-	-	-
Finland	0.38	0.14	0.09
France	0.42	0.18	0.11
Georgia	0.33	0.11	0.06
Germany	0.47	0.22	0.12
Hong Kong SAR	0.11	0.01	0.01
Hungary	0.55	0.31	0.22
Iran, Islamic Rep. of	0.45	0.20	0.14
Ireland	0.44	0.19	0.14
Israel	0.47	0.22	0.12
Italy	0.36	0.13	0.07
Kazakhstan	0.25	0.06	0.03
Kuwait	0.25	0.06	0.02
Latvia	0.37	0.14	0.07
Lithuania	0.45	0.20	0.11
Macao SAR	0.22	0.05	0.04
Malta	0.23	0.05	0.03
Morocco	0.34	0.12	0.08
Netherlands	0.36	0.13	0.08
New Zealand	0.42	0.18	0.13
Northern Ireland	0.38	0.14	0.10
Norway (5)	0.35	0.13	0.08
Oman	0.36	0.13	0.07
Poland	0.41	0.17	0.10
Portugal	0.37	0.14	0.09
Qatar	0.39	0.15	0.07
Russian Federation	0.39	0.15	0.07
Saudi Arabia	0.15	0.02	0.01
Singapore	0.51	0.26	0.16
Slovak Republic	0.59	0.35	0.30
Slovenia	0.44	0.19	0.11
South Africa	0.38	0.14	0.09
Spain	0.36	0.13	0.09
Sweden	0.41	0.17	0.12
Trinidad and Tobago	0.36	0.13	0.07
United Arab Emirates	0.42	0.18	0.09
United States	-	-	-
International Median	0.38	0.15	0.09
Benchmarking Participants			
Buenos Aires, Argentina	0.42	0.18	0.10
Ontario, Canada	0.33	0.11	0.09
Quebec, Canada	0.34	0.11	0.08
Denmark (3)	0.30	0.09	0.06
Norway (4)	0.35	0.13	0.10
Moscow City, Russian Fed.	0.33	0.11	0.07
Eng/Afr/Zulu - RSA (5)	0.46	0.21	0.13
Andalusia, Spain	0.40	0.16	0.09
Madrid, Spain	0.35	0.12	0.08
Abu Dhabi, UAE	0.40	0.16	0.08
Dubai, UAE	0.45	0.20	0.12

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Relationship Between the PIRLS 2016 Home Resources for Learning Scale and ePIRLS 2016 Online Informational Reading Achievement

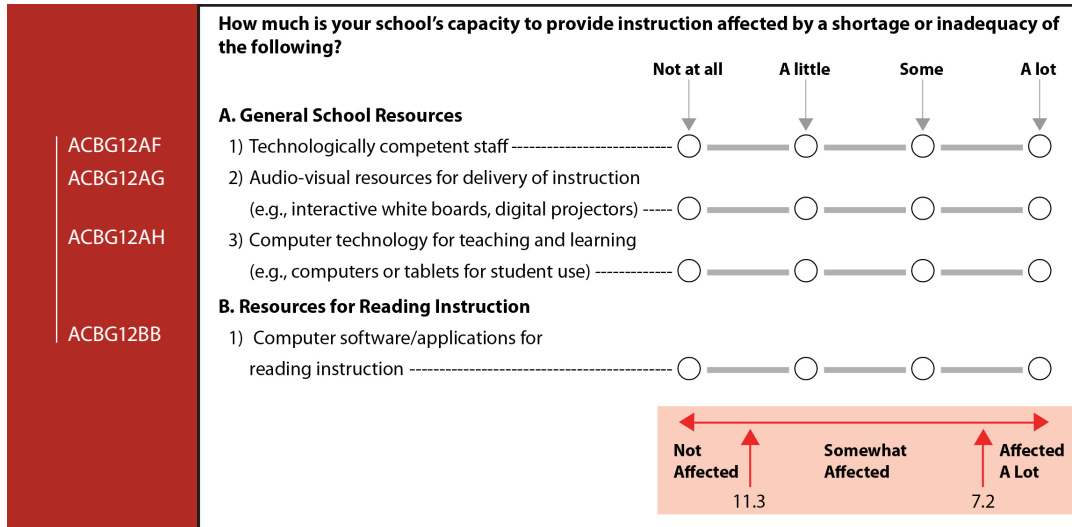
Country	Pearson's Correlation with ePIRLS Achievement		Variance in ePIRLS Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Canada	0.33	0.11	0.09
Chinese Taipei	0.35	0.13	0.08
Denmark	0.34	0.12	0.10
Georgia	0.27	0.07	0.04
Ireland	0.43	0.18	0.13
Israel	0.44	0.19	0.10
Italy	0.32	0.10	0.06
Norway	0.33	0.11	0.07
Portugal	0.37	0.14	0.09
Singapore	0.49	0.24	0.15
Slovenia	0.39	0.15	0.09
Sweden	0.41	0.17	0.12
United Arab Emirates	0.40	0.16	0.08
United States	-	-	-
International Median	0.37	0.14	0.09
Benchmarking Participants			
Abu Dhabi, UAE	0.39	0.15	0.07
Dubai, UAE	0.44	0.19	0.11

A dash (-) indicates comparable data not available.

Instruction Affected by Digital Resource Shortages Scale

The *Instruction Affected by Digital Resource Shortages* (DRS) scale was created based on principals' responses concerning four school and classroom resources described below.

Items in the PIRLS 2016 *Instruction Affected by Digital Resource Shortages* Scale



Item Parameters for the PIRLS 2016 Instruction Affected by Digital Resource Shortages Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ACBG12AF	-0.06232	-1.40083	-0.09454	1.49537	1.07
ACBG12AG	-0.14345	-1.27363	0.17090	1.10273	0.87
ACBG12AH	0.16006	-1.46129	0.04607	1.41522	0.88
ACBG12BB	0.04571	-1.73178	-0.08308	1.81486	1.14

Scale Transformation Constants for the PIRLS 2016 Instruction Affected by Digital Resource Shortages Scale

Scale Transformation Constants	
A = 9.264589	Transformed Scale Score = 9.264589 + 1.227112 • Logit Scale Score
B = 1.227112	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Instruction Affected by Digital Resource Shortages Scale

Raw Score	Transformed Scale Score	Cutpoint
0	4.82238	
1	6.34762	
2	7.16657	7.2
3	7.78270	
4	8.31408	
5	8.79730	
6	9.25885	
7	9.72012	
8	10.20216	
9	10.73577	
10	11.36104	11.3
11	12.19853	
12	13.75008	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Instruction Affected by Digital Resource Shortages Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item			
			ACBG12AF	ACBG12AG	ACBG12AH	ACBG12BB
Australia	0.85	69	0.82	0.82	0.88	0.79
Austria	0.74	57	0.60	0.81	0.85	0.74
Azerbaijan	0.76	59	0.70	0.78	0.82	0.76
Bahrain	0.87	73	0.84	0.89	0.88	0.79
Belgium (Flemish)	0.68	51	0.71	0.75	0.81	0.56
Belgium (French)	0.73	56	0.82	0.78	0.73	0.65
Bulgaria	0.69	52	0.50	0.81	0.86	0.65
Canada	0.85	68	0.82	0.85	0.88	0.76
Chile	0.72	56	0.65	0.84	0.88	0.59
Chinese Taipei	0.83	67	0.84	0.91	0.90	0.57
Czech Republic	0.69	52	0.56	0.76	0.84	0.70
Denmark	0.70	53	0.61	0.81	0.72	0.77
Egypt	0.78	61	0.66	0.82	0.81	0.82
England	0.79	62	0.76	0.84	0.84	0.70
Finland	0.76	58	0.72	0.78	0.82	0.71
France	0.72	56	0.52	0.82	0.89	0.72
Georgia	0.72	53	0.63	0.77	0.75	0.76
Germany	0.78	61	0.71	0.81	0.83	0.76
Hong Kong SAR	0.70	52	0.74	0.86	0.76	0.48
Hungary	0.67	52	0.42	0.87	0.83	0.69
Iran, Islamic Rep. of	0.77	60	0.70	0.86	0.85	0.66
Ireland	0.71	54	0.72	0.64	0.81	0.75
Israel	0.85	68	0.82	0.85	0.83	0.80
Italy	0.77	59	0.82	0.83	0.82	0.59
Kazakhstan	0.83	68	0.73	0.85	0.85	0.86
Kuwait	0.77	59	0.74	0.86	0.75	0.72
Latvia	0.75	59	0.82	0.88	0.85	0.47
Lithuania	0.77	59	0.68	0.84	0.83	0.72
Macao SAR	0.70	58	0.86	0.88	0.91	-0.07
Malta	0.80	62	0.75	0.85	0.84	0.71
Morocco	0.86	71	0.75	0.87	0.89	0.85
Netherlands	0.58	45	0.52	0.69	0.76	0.70
New Zealand	0.84	67	0.79	0.84	0.89	0.75
Northern Ireland	0.81	64	0.81	0.86	0.80	0.72
Norway (5)	0.74	56	0.69	0.79	0.79	0.73
Oman	0.81	64	0.80	0.84	0.84	0.72
Poland	0.72	55	0.69	0.83	0.86	0.56
Portugal	0.81	63	0.76	0.76	0.85	0.81
Qatar	0.94	84	0.93	0.96	0.94	0.85
Russian Federation	0.81	64	0.76	0.86	0.85	0.73
Saudi Arabia	0.78	60	0.74	0.81	0.81	0.75
Singapore	0.90	77	0.87	0.91	0.94	0.79
Slovak Republic	0.74	56	0.65	0.85	0.81	0.66
Slovenia	0.69	53	0.60	0.86	0.84	0.57
South Africa	0.88	73	0.66	0.91	0.92	0.90
Spain	0.80	63	0.78	0.84	0.86	0.69
Sweden	0.78	61	0.78	0.81	0.77	0.76
Trinidad and Tobago	0.69	52	0.41	0.70	0.87	0.83
United Arab Emirates	0.89	75	0.88	0.91	0.90	0.75
United States	0.83	67	0.84	0.82	0.85	0.75
Benchmarking Participants						
Buenos Aires, Argentina	0.82	65	0.77	0.82	0.83	0.79
Ontario, Canada	0.87	72	0.84	0.89	0.88	0.79
Quebec, Canada	0.79	61	0.78	0.74	0.87	0.73
Denmark (3)	0.70	53	0.62	0.81	0.73	0.73
Norway (4)	0.73	55	0.69	0.77	0.79	0.73
Moscow City, Russian Fed.	0.86	71	0.85	0.87	0.91	0.73
Eng/Afr/Zulu - RSA (5)	0.84	68	0.59	0.90	0.89	0.89
Andalusia, Spain	0.70	53	0.68	0.79	0.75	0.68
Madrid, Spain	0.80	63	0.76	0.80	0.87	0.76
Abu Dhabi, UAE	0.86	71	0.86	0.89	0.91	0.70
Dubai, UAE	0.92	81	0.90	0.93	0.92	0.85

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 Instruction Affected by Digital Resource Shortages Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.11	0.01	0.01
Austria	-0.01	0.00	0.00
Azerbaijan	-0.17	0.03	0.03
Bahrain	0.11	0.01	0.01
Belgium (Flemish)	-0.01	0.00	0.00
Belgium (French)	0.06	0.00	0.00
Bulgaria	0.13	0.02	0.02
Canada	0.02	0.00	0.00
Chile	0.11	0.01	0.02
Chinese Taipei	0.09	0.01	0.00
Czech Republic	-0.04	0.00	0.01
Denmark	0.05	0.00	0.00
Egypt	0.10	0.01	0.02
England	0.05	0.00	0.00
Finland	0.04	0.00	0.01
France	0.04	0.00	0.00
Georgia	0.12	0.01	0.01
Germany	0.12	0.01	0.01
Hong Kong SAR	0.11	0.01	0.01
Hungary	-0.05	0.00	0.01
Iran, Islamic Rep. of	0.13	0.02	0.02
Ireland	0.08	0.01	0.01
Israel	0.24	0.06	0.04
Italy	-0.03	0.00	0.00
Kazakhstan	0.04	0.00	0.01
Kuwait	0.02	0.00	0.01
Latvia	-0.01	0.00	0.00
Lithuania	0.05	0.00	0.00
Macao SAR	-0.13	0.02	0.02
Malta	0.05	0.00	0.00
Morocco	-0.07	0.01	0.01
Netherlands	0.06	0.00	0.00
New Zealand	0.10	0.01	0.00
Northern Ireland	-0.01	0.00	0.00
Norway (5)	0.06	0.00	0.00
Oman	0.08	0.01	0.01
Poland	0.10	0.01	0.01
Portugal	0.11	0.01	0.01
Qatar	0.24	0.06	0.05
Russian Federation	0.08	0.01	0.00
Saudi Arabia	-0.11	0.01	0.02
Singapore	-0.08	0.01	0.01
Slovak Republic	0.04	0.00	0.02
Slovenia	0.04	0.00	0.00
South Africa	-0.02	0.00	0.03
Spain	0.16	0.03	0.03
Sweden	0.12	0.01	0.02
Trinidad and Tobago	0.09	0.01	0.01
United Arab Emirates	0.26	0.07	0.07
United States	-0.06	0.00	0.01
International Median	0.06	0.01	0.01
Benchmarking Participants			
Buenos Aires, Argentina	0.10	0.01	0.01
Ontario, Canada	-0.01	0.00	0.00
Quebec, Canada	0.02	0.00	0.00
Denmark (3)	0.02	0.00	0.00
Norway (4)	0.09	0.01	0.00
Moscow City, Russian Fed.	0.01	0.00	0.00
Eng/Afr/Zulu - RSA (5)	-0.03	0.00	0.00
Andalusia, Spain	0.13	0.02	0.01
Madrid, Spain	0.07	0.00	0.00
Abu Dhabi, UAE	0.28	0.08	0.06
Dubai, UAE	0.19	0.04	0.06

SOURCE: IEA's Progress in International Reading Literacy Study - PIRLS 2016

Relationship Between the PIRLS 2016 *Instruction Affected by Digital Resource Shortages* Scale and ePIRLS 2016 Online Informational Reading Achievement

Country	Pearson's Correlation with ePIRLS Achievement		Variance in ePIRLS Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Canada	0.05	0.00	0.00
Chinese Taipei	0.06	0.00	0.00
Denmark	0.02	0.00	0.00
Georgia	0.08	0.01	0.00
Ireland	0.10	0.01	0.01
Israel	0.25	0.06	0.04
Italy	0.02	0.00	0.00
Norway	0.06	0.00	0.00
Portugal	0.12	0.01	0.02
Singapore	-0.07	0.00	0.01
Slovenia	0.04	0.00	0.00
Sweden	0.14	0.02	0.02
United Arab Emirates	0.22	0.05	0.07
United States	-0.03	0.00	0.01
International Median	0.06	0.00	0.01
Benchmarking Participants			
Abu Dhabi, UAE	0.28	0.08	0.08
Dubai, UAE	0.09	0.01	0.03

Instruction Affected by Reading Resource Shortages Scale

The *Instruction Affected by Reading Resource Shortages* (RRS) scale was created based on principals' responses concerning 12 school and classroom resources described below.

Items in the PIRLS 2016 *Instruction Affected by Reading Resource Shortages* Scale

		How much is your school's capacity to provide instruction affected by a shortage or inadequacy of the following?			
		Not at all	A little	Some	A lot
		↓ ↓ ↓ ↓			
		○ ————— ○ ————— ○ ————— ○			
	A. General School Resources				
T	ACBG12AA	1) Instructional materials (e.g., textbooks)-----○ ————— ○ ————— ○ ————— ○			
T	ACBG12AB	2) Supplies (e.g., papers, pencils, materials) -----○ ————— ○ ————— ○ ————— ○			
T	ACBG12AC	3) School buildings and grounds-----○ ————— ○ ————— ○ ————— ○			
T	ACBG12AD	4) Heating/cooling and lighting systems-----○ ————— ○ ————— ○ ————— ○			
T	ACBG12AE	5) Instructional space (e.g., classrooms) -----○ ————— ○ ————— ○ ————— ○			
T	ACBG12AF	6) Technologically competent staff -----○ ————— ○ ————— ○ ————— ○			
	ACBG12AG	7) Audio-visual resources for delivery of instruction (e.g., interactive white boards, digital projectors) -----○ ————— ○ ————— ○ ————— ○			
	ACBG12AH	8) Computer technology for teaching and learning (e.g., computers or tablets for student use) -----○ ————— ○ ————— ○ ————— ○			
		B. Resources for Reading Instruction			
T	ACBG12BA	1) Teachers with a specialization in reading -----○ ————— ○ ————— ○ ————— ○			
T	ACBG12BB	2) Computer software/applications for reading instruction -----○ ————— ○ ————— ○ ————— ○			
	ACBG12BC	3) Library resources (books, ebooks, magazines, etc.)-----○ ————— ○ ————— ○ ————— ○			
	ACBG12BD	4) Instructional materials for reading (e.g., reading series, textbooks)-----○ ————— ○ ————— ○ ————— ○			
		<div style="display: flex; justify-content: space-between; align-items: center; border: 1px solid black; padding: 5px;"> ← ↑ ↑ ↑ → </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 5px;"> Not Affected Somewhat Affected Affected A Lot </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 5px;"> 10.8 7.1 </div>			

T Trend item—item was included in the same scale in PIRLS 2011 and was used for linking the PIRLS 2011 and PIRLS 2016 scales.

Item Parameters for the PIRLS 2016 Instruction Affected by Reading Resource Shortages Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ACBG12AA	-0.24046	-0.50371	0.08908	0.41463	0.82
ACBG12AB	-0.61342	-0.65578	0.29517	0.36061	0.80
ACBG12AC	0.08419	-0.83453	0.08039	0.75414	0.99
ACBG12AD	-0.24529	-0.51694	0.09957	0.41737	0.89
ACBG12AE	0.10860	-0.60282	-0.03207	0.63489	0.96
ACBG12AF	0.21641	-1.33100	-0.06590	1.39690	0.93
ACBG12AG	0.13549	-1.21210	0.19877	1.01333	1.01
ACBG12AH	0.42199	-1.38470	0.07125	1.31345	1.11
ACBG12BA	-0.06206	-0.90262	-0.08571	0.98833	1.16
ACBG12BB	0.31635	-1.64938	-0.05748	1.70686	1.28
ACBG12BC	0.03715	-1.42224	0.02144	1.40080	0.92
ACBG12BD	-0.15895	-1.09436	0.07055	1.02381	0.75

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Scale Transformation Constants for the PIRLS 2016 Instruction Affected by Reading Resource Shortages Scale

Scale Transformation Constants	
A = 8.945066	Transformed Scale Score = 8.945066 + 1.274387 • Logit Scale Score
B = 1.274387	

**Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS
2016 Instruction Affected by Reading Resource Shortages Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	3.54611	
1	4.98767	
2	5.67829	
3	6.14581	
4	6.50349	
5	6.79540	
6	7.04460	7.1
7	7.26319	
8	7.45917	
9	7.63803	
10	7.80296	
11	7.95892	
12	8.10685	
13	8.24846	
14	8.38527	
15	8.51855	
16	8.64954	
17	8.77923	
18	8.90734	
19	9.03876	
20	9.17049	
21	9.30484	
22	9.44284	
23	9.58565	
24	9.73450	
25	9.89005	
26	10.05541	
27	10.23239	
28	10.42394	
29	10.63402	
30	10.86810	10.8
31	11.13383	
32	11.44471	
33	11.82273	
34	12.31260	
35	13.02750	
36	14.49613	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Instruction Affected by Reading Resource Shortages Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item											
			ACBG12AA	ACBG12AB	ACBG12AC	ACBG12AD	ACBG12AE	ACBG12AF	ACBG12AG	ACBG12AH	ACBG12BA	ACBG12BB	ACBG12BC	ACBG12BD
Australia	0.93	57	0.76	0.77	0.76	0.69	0.69	0.73	0.78	0.75	0.71	0.75	0.81	0.84
Austria	0.80	33	0.45	0.44	0.64	0.33	0.62	0.48	0.66	0.69	0.32	0.69	0.66	0.67
Azerbaijan	0.91	50	0.71	0.71	0.72	0.77	0.75	0.70	0.56	0.68	0.69	0.64	0.74	0.77
Bahrain	0.96	70	0.89	0.88	0.83	0.89	0.91	0.81	0.86	0.77	0.76	0.67	0.88	0.89
Belgium (Flemish)	0.81	34	0.66	0.55	0.53	0.55	0.57	0.59	0.63	0.63	0.49	0.53	0.60	0.66
Belgium (French)	0.79	31	0.60	0.57	0.49	0.63	0.46	0.63	0.63	0.50	0.52	0.61	0.51	0.55
Bulgaria	0.82	43	0.85	0.74	0.68	0.88	0.77	0.44	0.39	0.35	0.83	-0.04	0.43	0.87
Canada	0.90	49	0.71	0.73	0.64	0.58	0.61	0.71	0.76	0.73	0.62	0.69	0.78	0.78
Chile	0.91	51	0.77	0.80	0.69	0.53	0.74	0.69	0.70	0.76	0.62	0.55	0.81	0.83
Chinese Taipei	0.94	60	0.78	0.73	0.80	0.88	0.82	0.85	0.85	0.79	0.59	0.47	0.79	0.85
Czech Republic	0.78	31	0.72	0.54	0.52	0.56	0.54	0.51	0.52	0.61	0.57	0.50	0.33	0.70
Denmark	0.85	40	0.66	0.58	0.66	0.59	0.52	0.51	0.66	0.54	0.59	0.69	0.68	0.79
Egypt	0.87	41	0.57	0.72	0.73	0.61	0.69	0.56	0.53	0.52	0.67	0.62	0.66	0.75
England	0.87	43	0.69	0.68	0.68	0.54	0.59	0.61	0.80	0.75	0.38	0.58	0.65	0.78
Finland	0.88	44	0.77	0.72	0.66	0.66	0.73	0.64	0.65	0.64	0.58	0.61	0.53	0.69
France	0.79	31	0.68	0.64	0.58	0.57	0.49	0.42	0.44	0.52	0.43	0.56	0.62	0.69
Georgia	0.88	45	0.69	0.78	0.68	0.72	0.70	0.59	0.51	0.76	0.61	0.57	0.66	0.69
Germany	0.88	43	0.70	0.70	0.62	0.45	0.61	0.67	0.65	0.65	0.61	0.69	0.71	0.73
Hong Kong SAR	0.85	38	0.54	0.51	0.74	0.67	0.80	0.72	0.67	0.58	0.53	0.38	0.55	0.62
Hungary	0.88	44	0.76	0.71	0.70	0.73	0.73	0.47	0.71	0.56	0.58	0.49	0.68	0.74
Iran, Islamic Rep. of	0.89	46	0.70	0.80	0.79	0.85	0.85	0.69	0.58	0.43	0.75	0.42	0.37	0.70
Ireland	0.85	39	0.73	0.72	0.51	0.52	0.46	0.63	0.59	0.56	0.63	0.54	0.73	0.77
Israel	0.95	64	0.87	0.85	0.79	0.87	0.73	0.86	0.69	0.66	0.84	0.72	0.79	0.87
Italy	0.85	39	0.53	0.64	0.64	0.52	0.61	0.65	0.61	0.65	0.51	0.57	0.74	0.74
Kazakhstan	0.95	65	0.85	0.76	0.81	0.89	0.84	0.85	0.68	0.65	0.84	0.77	0.86	0.87
Kuwait	0.91	51	0.81	0.81	0.59	0.82	0.80	0.76	0.65	0.67	0.58	0.50	0.70	0.77
Latvia	0.94	62	0.90	0.86	0.83	0.80	0.85	0.87	0.73	0.66	0.81	0.28	0.80	0.88
Lithuania	0.88	43	0.72	0.67	0.51	0.65	0.54	0.68	0.73	0.66	0.65	0.57	0.65	0.79
Macao SAR	0.90	51	0.80	0.69	0.69	0.79	0.78	0.85	0.76	0.81	0.14	0.00	0.87	0.74
Malta	0.92	54	0.88	0.87	0.63	0.51	0.69	0.68	0.87	0.75	0.55	0.62	0.80	0.86
Morocco	0.84	40	0.35	0.51	0.42	0.71	0.29	0.77	0.75	0.76	0.68	0.78	0.77	0.49
Netherlands	0.77	29	0.42	0.24	0.53	0.46	0.42	0.50	0.54	0.48	0.53	0.69	0.69	0.78
New Zealand	0.88	46	0.73	0.61	0.59	0.63	0.51	0.72	0.65	0.73	0.64	0.72	0.74	0.79
Northern Ireland	0.90	48	0.75	0.78	0.71	0.73	0.69	0.59	0.78	0.73	0.51	0.59	0.65	0.77
Norway (5)	0.86	40	0.67	0.62	0.62	0.62	0.67	0.62	0.63	0.58	0.57	0.71	0.59	0.64
Oman	0.94	60	0.83	0.78	0.76	0.82	0.85	0.84	0.73	0.71	0.79	0.59	0.70	0.82
Poland	0.85	40	0.68	0.71	0.60	0.57	0.66	0.56	0.65	0.73	0.61	0.43	0.65	0.67
Portugal	0.90	50	0.75	0.74	0.74	0.71	0.73	0.67	0.63	0.62	0.59	0.73	0.75	0.77
Qatar	0.98	81	0.92	0.91	0.90	0.92	0.91	0.94	0.94	0.91	0.90	0.76	0.83	0.93
Russian Federation	0.91	53	0.77	0.76	0.58	0.81	0.67	0.73	0.70	0.69	0.68	0.67	0.81	0.79
Saudi Arabia	0.86	41	0.60	-	0.69	0.68	0.72	0.77	0.58	0.59	0.72	0.58	0.43	0.66
Singapore	0.96	71	0.92	0.85	0.85	0.89	0.86	0.78	0.89	0.89	0.59	0.71	0.87	0.91
Slovak Republic	0.85	38	0.64	0.74	0.58	0.61	0.58	0.59	0.71	0.64	0.56	0.57	0.49	0.69
Slovenia	0.83	37	0.66	0.62	0.40	0.44	0.47	0.38	0.76	0.70	0.66	0.59	0.72	0.72
South Africa	0.81	38	-0.15	-0.30	0.29	0.58	0.16	0.64	0.86	0.88	0.75	0.86	0.77	0.39
Spain	0.90	48	0.73	0.73	0.69	0.72	0.79	0.65	0.72	0.65	0.58	0.48	0.69	0.80
Sweden	0.86	41	0.72	0.62	0.56	0.51	0.56	0.66	0.68	0.62	0.60	0.74	0.63	0.74
Trinidad and Tobago	0.86	39	0.54	0.43	0.67	0.65	0.64	0.52	0.59	0.60	0.67	0.65	0.73	0.75
United Arab Emirates	0.96	71	0.87	0.87	0.85	0.90	0.87	0.89	0.86	0.81	0.82	0.62	0.86	0.87
United States	0.93	56	0.80	0.82	0.80	0.76	0.74	0.74	0.73	0.67	0.58	0.70	0.81	0.82
Benchmarking Participants														
Buenos Aires, Argentina	0.90	48	0.71	0.63	0.71	0.68	0.78	0.71	0.65	0.66	0.60	0.70	0.68	0.78
Ontario, Canada	0.92	54	0.69	0.74	0.65	0.59	0.64	0.76	0.81	0.75	0.68	0.76	0.85	0.84
Quebec, Canada	0.91	51	0.81	0.81	0.68	0.63	0.76	0.64	0.63	0.70	0.64	0.70	0.87	0.77
Denmark (3)	0.84	37	0.64	0.52	0.67	0.55	0.49	0.52	0.64	0.55	0.56	0.64	0.66	0.76
Norway (4)	0.85	40	0.67	0.61	0.64	0.60	0.68	0.63	0.61	0.58	0.59	0.70	0.60	0.63
Moscow City, Russian Fed.	0.94	62	0.85	0.78	0.70	0.87	0.83	0.80	0.71	0.73	0.77	0.60	0.85	0.90
Eng/Afr/Zulu - RSA (5)	0.83	36	0.13	0.08	0.41	0.65	0.35	0.65	0.76	0.73	0.80	0.79	0.70	0.59
Andalusia, Spain	0.83	35	0.56	0.56	0.61	0.66	0.70	0.51	0.70	0.56	0.47	0.52	0.58	0.67
Madrid, Spain	0.88	45	0.70	0.71	0.63	0.62	0.60	0.70	0.69	0.71	0.60	0.65	0.69	0.71
Abu Dhabi, UAE	0.96	67	0.85	0.84	0.82	0.87	0.86	0.88	0.84	0.79	0.79	0.53	0.86	0.83
Dubai, UAE	0.98	78	0.90	0.90	0.88	0.91	0.86	0.89	0.92	0.87	0.85	0.78	0.90	0.93

A dash (-) indicates comparable data not available.

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 *Instruction Affected by Reading Resource Shortages* Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.13	0.02	0.02
Austria	0.04	0.00	0.01
Azerbaijan	-0.13	0.02	0.02
Bahrain	0.13	0.02	0.02
Belgium (Flemish)	-0.01	0.00	0.00
Belgium (French)	0.06	0.00	0.00
Bulgaria	0.15	0.02	0.02
Canada	0.00	0.00	0.00
Chile	0.12	0.01	0.02
Chinese Taipei	0.07	0.01	0.00
Czech Republic	-0.01	0.00	0.00
Denmark	0.06	0.00	0.00
Egypt	0.12	0.01	0.01
England	0.05	0.00	0.00
Finland	0.04	0.00	0.00
France	0.08	0.01	0.00
Georgia	0.11	0.01	0.01
Germany	0.12	0.01	0.02
Hong Kong SAR	0.11	0.01	0.01
Hungary	-0.01	0.00	0.00
Iran, Islamic Rep. of	0.11	0.01	0.02
Ireland	0.05	0.00	0.00
Israel	0.29	0.08	0.07
Italy	0.01	0.00	0.00
Kazakhstan	0.04	0.00	0.01
Kuwait	0.03	0.00	0.01
Latvia	-0.02	0.00	0.00
Lithuania	0.05	0.00	0.00
Macao SAR	-0.13	0.02	0.01
Malta	0.06	0.00	0.00
Morocco	-0.07	0.01	0.01
Netherlands	0.04	0.00	0.00
New Zealand	0.13	0.02	0.01
Northern Ireland	-0.01	0.00	0.00
Norway (5)	0.09	0.01	0.01
Oman	0.07	0.00	0.01
Poland	0.05	0.00	0.00
Portugal	0.15	0.02	0.01
Qatar	0.24	0.06	0.05
Russian Federation	0.09	0.01	0.00
Saudi Arabia	-0.13	0.02	0.01
Singapore	-0.06	0.00	0.01
Slovak Republic	0.01	0.00	0.00
Slovenia	0.03	0.00	0.00
South Africa	0.19	0.04	0.03
Spain	0.18	0.03	0.05
Sweden	0.13	0.02	0.02
Trinidad and Tobago	0.11	0.01	0.00
United Arab Emirates	0.28	0.08	0.09
United States	-0.04	0.00	0.02
International Median	0.06	0.01	0.01
Benchmarking Participants			
Buenos Aires, Argentina	0.19	0.03	0.03
Ontario, Canada	-0.02	0.00	0.00
Quebec, Canada	0.03	0.00	0.00
Denmark (3)	0.01	0.00	0.00
Norway (4)	0.09	0.01	0.00
Moscow City, Russian Fed.	-0.01	0.00	0.00
Eng/Afr/Zulu - RSA (5)	0.21	0.05	0.07
Andalusia, Spain	0.13	0.02	0.01
Madrid, Spain	0.08	0.01	0.01
Abu Dhabi, UAE	0.28	0.08	0.08
Dubai, UAE	0.23	0.05	0.05

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Parents Like Reading Scale

The *Parents Like Reading* (PLR) scale was created based on parents' responses to the nine items listed below.

Items in the PIRLS 2016 *Parents Like Reading* Scale

		Please indicate how much you agree with the following statements about reading.				
		Agree a lot	Agree a little	Disagree a little	Disagree a lot	
T	ASBH12A*	1) I read only if I have to*	○	○	○	○
T	ASBH12B	2) I like talking about what I read with other people	○	○	○	○
T	ASBH12C	3) I like to spend my spare time reading	○	○	○	○
T	ASBH12D*	4) I read only if I need information*	○	○	○	○
T	ASBH12E	5) Reading is an important activity in my home	○	○	○	○
T	ASBH12F	6) I would like to have more time for reading	○	○	○	○
T	ASBH12G	7) I enjoy reading	○	○	○	○
	ASBH12H	8) Reading is one of my favorite hobbies	○	○	○	○
T	ASBH11	When you are at home, how often do you read for your enjoyment?	○	○	○	○
		*reverse coded				

T Trend item—item was included in the same scale in PIRLS 2011 and was used for linking the PIRLS 2011 and PIRLS 2016 scales.

Item Parameters for the PIRLS 2016 Parents Like Reading Scale

Items	delta	tau_1	tau_2	tau_3	Infit
* ASBH12A	0.44643	-0.55854	0.31019	0.24835	1.32
ASBH12B	-0.10611	-1.00923	-0.53256	1.54179	1.24
ASBH12C	0.06094	-0.99352	-0.30069	1.29421	0.81
* ASBH12D	0.69129	-0.76655	0.16445	0.60210	1.24
ASBH12E	-0.11197	-1.34252	-0.17347	1.51599	0.98
ASBH12F	-0.56903	-0.81012	-0.19368	1.00380	1.06
ASBH12G	-0.77034	-0.57881	-0.39616	0.97497	0.72
ASBH12H	0.15110	-0.96505	-0.17289	1.13794	0.81
ASBH11	0.20769	-0.67165	-0.49178	1.16343	1.13

* Reverse coded

Scale Transformation Constants for the PIRLS 2016 Parents Like Reading Scale

Scale Transformation Constants	
A = 8.166833	Transformed Scale Score = 8.166833 + 1.409138 • Logit Scale Score
B = 1.409138	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Parents Like Reading Scale

Raw Score	Transformed Scale Score	Cutpoint
0	2.72380	
1	4.25018	
2	4.97008	
3	5.45813	
4	5.84059	
5	6.16163	
6	6.44443	
7	6.70075	
8	6.94217	
9	7.17109	
10	7.39134	
11	7.60584	
12	7.81680	
13	8.02605	8.1
14	8.23505	
15	8.44528	
16	8.65831	
17	8.87608	
18	9.10113	
19	9.33684	
20	9.58564	
21	9.85661	
22	10.15845	
23	10.50626	10.5
24	10.92449	
25	11.46501	
26	12.25570	
27	13.87824	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Parents Like Reading Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBH12A*	ASBH12B	ASBH12C	ASBH12D*	ASBH12E	ASBH12F	ASBH12G	ASBH12H	ASBH12I
Australia	0.89	56	0.76	0.59	0.84	0.75	0.72	0.62	0.84	0.86	0.67
Austria	0.90	57	0.72	0.57	0.87	0.76	0.79	0.63	0.85	0.84	0.70
Azerbaijan	0.83	52	-	0.55	0.77	-	0.76	0.65	0.84	0.84	0.57
Bahrain	0.81	43	0.43	0.47	0.79	0.50	0.70	0.68	0.81	0.83	0.57
Belgium (Flemish)	0.90	57	0.75	0.50	0.87	0.75	0.75	0.67	0.88	0.86	0.70
Belgium (French)	0.90	55	0.70	0.52	0.85	0.72	0.72	0.71	0.86	0.86	0.70
Bulgaria	0.91	60	0.62	0.71	0.89	0.48	0.82	0.84	0.90	0.88	0.73
Canada	0.89	54	0.73	0.56	0.84	0.73	0.70	0.64	0.84	0.85	0.69
Chile	0.87	50	0.63	0.60	0.83	0.59	0.69	0.70	0.80	0.83	0.63
Chinese Taipei	0.86	49	0.57	0.48	0.77	0.54	0.76	0.77	0.86	0.86	0.56
Czech Republic	0.90	57	0.73	0.63	0.86	0.75	0.71	0.67	0.86	0.89	0.66
Denmark	0.90	57	0.74	0.60	0.88	0.78	0.76	0.60	0.85	0.83	0.70
Egypt	0.79	55	-0.25	0.78	0.83	-0.41	0.85	0.86	0.91	0.87	0.58
England	-	-	-	-	-	-	-	-	-	-	-
Finland	0.91	58	0.73	0.57	0.87	0.76	0.82	0.65	0.86	0.87	0.67
France	0.88	51	0.69	0.53	0.82	0.70	0.65	0.60	0.82	0.84	0.71
Georgia	0.78	43	0.24	0.56	0.81	0.26	0.68	0.75	0.85	0.81	0.61
Germany	0.89	54	0.75	0.57	0.87	0.66	0.70	0.61	0.86	0.85	0.68
Hong Kong SAR	0.85	48	0.46	0.52	0.78	0.41	0.75	0.78	0.87	0.87	0.61
Hungary	0.90	56	0.70	0.60	0.84	0.71	0.74	0.74	0.83	0.86	0.65
Iran, Islamic Rep. of	0.81	44	0.39	0.55	0.79	0.28	0.71	0.78	0.82	0.82	0.60
Ireland	0.88	53	0.74	0.55	0.83	0.74	0.69	0.57	0.84	0.86	0.69
Israel	0.85	47	0.65	0.50	0.81	0.65	0.68	0.57	0.79	0.84	0.62
Italy	0.88	52	0.69	0.55	0.82	0.69	0.70	0.67	0.81	0.83	0.67
Kazakhstan	0.72	39	0.11	0.51	0.74	0.20	0.70	0.73	0.77	0.82	0.60
Kuwait	0.84	47	0.52	0.49	0.80	0.58	0.75	0.70	0.81	0.84	0.54
Latvia	0.87	51	0.68	0.37	0.84	0.72	0.69	0.68	0.84	0.85	0.61
Lithuania	0.89	54	0.68	0.56	0.85	0.65	0.75	0.70	0.85	0.86	0.64
Macao SAR	0.83	46	0.38	0.56	0.76	0.35	0.76	0.78	0.87	0.87	0.55
Malta	0.86	49	0.68	0.49	0.82	0.72	0.57	0.64	0.82	0.86	0.62
Morocco	0.84	55	-0.04	0.81	0.86	-0.19	0.86	0.82	0.90	0.88	0.69
Netherlands	0.89	56	0.81	0.54	0.87	0.76	0.61	0.55	0.87	0.87	0.74
New Zealand	0.89	54	0.73	0.53	0.85	0.72	0.73	0.61	0.84	0.87	0.68
Northern Ireland	0.91	59	0.82	0.66	0.86	0.80	0.71	0.58	0.82	0.88	0.75
Norway (5)	0.89	53	0.73	0.52	0.85	0.74	0.74	0.60	0.83	0.83	0.66
Oman	0.78	41	0.24	0.55	0.77	0.34	0.69	0.69	0.80	0.81	0.58
Poland	0.88	53	0.70	0.61	0.83	0.71	0.75	0.62	0.81	0.80	0.67
Portugal	0.87	50	0.68	0.55	0.80	0.67	0.72	0.64	0.79	0.84	0.61
Qatar	0.81	43	0.44	0.44	0.79	0.46	0.70	0.68	0.82	0.83	0.54
Russian Federation	0.86	49	0.61	0.51	0.82	0.64	0.65	0.68	0.83	0.85	0.61
Saudi Arabia	0.82	44	0.38	0.55	0.79	0.34	0.74	0.69	0.83	0.83	0.61
Singapore	0.85	49	0.58	0.43	0.82	0.54	0.72	0.75	0.86	0.87	0.59
Slovak Republic	0.90	57	0.74	0.62	0.87	0.71	0.72	0.68	0.87	0.89	0.68
Slovenia	0.88	53	0.74	0.54	0.85	0.63	0.70	0.69	0.87	0.83	0.59
South Africa	0.75	41	0.03	0.66	0.76	0.05	0.70	0.71	0.82	0.80	0.61
Spain	0.89	54	0.71	0.59	0.83	0.73	0.67	0.67	0.83	0.85	0.70
Sweden	0.89	55	0.78	0.58	0.88	0.77	0.68	0.56	0.85	0.82	0.67
Trinidad and Tobago	0.82	44	0.63	0.53	0.80	0.63	0.60	0.45	0.79	0.83	0.57
United Arab Emirates	0.80	42	0.41	0.49	0.78	0.41	0.72	0.68	0.81	0.82	0.53
United States	-	-	-	-	-	-	-	-	-	-	-
Benchmarking Participants											
Buenos Aires, Argentina	0.84	46	0.62	0.51	0.82	0.62	0.62	0.66	0.78	0.83	0.57
Ontario, Canada	0.88	53	0.73	0.53	0.83	0.73	0.69	0.64	0.83	0.85	0.67
Quebec, Canada	0.90	55	0.74	0.63	0.85	0.72	0.70	0.62	0.84	0.85	0.70
Denmark (3)	0.89	55	0.74	0.58	0.87	0.77	0.75	0.61	0.84	0.82	0.66
Norway (4)	0.88	53	0.72	0.53	0.85	0.73	0.75	0.60	0.83	0.83	0.63
Moscow City, Russian Fed.	0.86	49	0.65	0.47	0.82	0.69	0.67	0.63	0.83	0.83	0.61
Eng/Afr/Zulu - RSA (5)	0.78	41	0.28	0.62	0.77	0.29	0.69	0.60	0.81	0.80	0.63
Andalusia, Spain	0.89	55	0.71	0.59	0.83	0.73	0.69	0.67	0.85	0.86	0.70
Madrid, Spain	0.87	51	0.69	0.55	0.82	0.74	0.68	0.58	0.81	0.85	0.65
Abu Dhabi, UAE	0.79	41	0.39	0.50	0.78	0.37	0.73	0.66	0.81	0.82	0.49
Dubai, UAE	0.82	44	0.54	0.44	0.78	0.56	0.71	0.66	0.81	0.82	0.57

A dash (-) indicates comparable data not available.
*Reverse coded

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 Parents Like Reading Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.24	0.06	0.05
Austria	0.30	0.09	0.08
Azerbaijan	0.11	0.01	0.01
Bahrain	0.19	0.04	0.03
Belgium (Flemish)	0.23	0.05	0.05
Belgium (French)	0.28	0.08	0.08
Bulgaria	0.41	0.17	0.16
Canada	0.21	0.04	0.04
Chile	0.23	0.05	0.05
Chinese Taipei	0.19	0.04	0.04
Czech Republic	0.28	0.08	0.07
Denmark	0.21	0.04	0.04
Egypt	0.30	0.09	0.08
England	-	-	-
Finland	0.25	0.06	0.06
France	0.25	0.06	0.05
Georgia	0.20	0.04	0.04
Germany	0.35	0.12	0.11
Hong Kong SAR	0.09	0.01	0.01
Hungary	0.35	0.12	0.11
Iran, Islamic Rep. of	0.25	0.06	0.05
Ireland	0.26	0.07	0.05
Israel	0.18	0.03	0.03
Italy	0.22	0.05	0.04
Kazakhstan	0.09	0.01	0.01
Kuwait	0.17	0.03	0.02
Latvia	0.22	0.05	0.05
Lithuania	0.24	0.06	0.05
Macao SAR	0.13	0.02	0.01
Malta	0.14	0.02	0.02
Morocco	0.24	0.06	0.05
Netherlands	0.26	0.07	0.06
New Zealand	0.29	0.09	0.07
Northern Ireland	0.18	0.03	0.03
Norway (5)	0.25	0.06	0.05
Oman	0.20	0.04	0.03
Poland	0.21	0.05	0.04
Portugal	0.21	0.05	0.04
Qatar	0.21	0.05	0.04
Russian Federation	0.22	0.05	0.04
Saudi Arabia	0.14	0.02	0.02
Singapore	0.20	0.04	0.04
Slovak Republic	0.38	0.15	0.11
Slovenia	0.26	0.07	0.06
South Africa	0.17	0.03	0.03
Spain	0.20	0.04	0.04
Sweden	0.26	0.07	0.06
Trinidad and Tobago	0.12	0.02	0.02
United Arab Emirates	0.22	0.05	0.04
United States	-	-	-
International Median	0.22	0.05	0.04
Benchmarking Participants			
Buenos Aires, Argentina	0.24	0.06	0.06
Ontario, Canada	0.20	0.04	0.04
Quebec, Canada	0.17	0.03	0.03
Denmark (3)	0.18	0.03	0.03
Norway (4)	0.24	0.06	0.05
Moscow City, Russian Fed.	0.21	0.04	0.04
Eng/Afr/Zulu - RSA (5)	0.16	0.02	0.03
Andalusia, Spain	0.22	0.05	0.05
Madrid, Spain	0.18	0.03	0.03
Abu Dhabi, UAE	0.22	0.05	0.04
Dubai, UAE	0.23	0.05	0.05

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Parents' Perceptions of Their Child's School Scale

The *Parents' Perceptions of Their Child's School* (PCS) scale was created based on parents' responses to the six statements described below.

Items in the PIRLS 2016 *Parents' Perceptions of Their Child's School Scale*¹

		What do you think of your child's school?			
		Agree a lot	Agree a little	Disagree a little	Disagree a lot
ASBH09A	1) My child's school does a good job including me in my child's education -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBH09B	2) My child's school provides a safe environment -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBH09C	3) My child's school cares about my child's progress in school -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBH09D	4) My child's school does a good job informing me of his/her progress -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBH09E	5) My child's school promotes high academic standards -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBH09F	6) My child's school does a good job in helping him/her become better in reading -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Very Satisfied Somewhat Satisfied Less than Satisfied
9.5 6.3

¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories "Disagree a little" and "Disagree a lot" were combined for all variables. The scale statistics that are reported herein reflect analysis of the items following collapsing.

Item Parameters for the PIRLS 2016 Parents' Perceptions of Their Child's School Scale

Item	delta	tau_1	tau_2	Infit
ASBH09A	0.08775	-1.64719	1.64719	1.02
ASBH09B	-0.56014	-1.57499	1.57499	1.22
ASBH09C	-0.46209	-1.61352	1.61352	0.82
ASBH09D	0.03829	-1.40332	1.40332	0.96
ASBH09E	0.90366	-1.57716	1.57716	1.14
ASBH09F	-0.00747	-1.46353	1.46353	1.00

Scale Transformation Constants for the PIRLS 2016 Parents' Perceptions of Their Child's School Scale

Scale Transformation Constants	
A = 7.908785	Transformed Scale Score = 7.908785 + 1.026352 • Logit Scale Score
B = 1.026352	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Parents' Perceptions of Their Child's School Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.57843	
1	4.89714	
2	5.63616	
3	6.23689	6.3
4	6.79025	
5	7.34568	
6	7.91434	
7	8.47752	
8	9.02158	
9	9.57101	9.5
10	10.16827	
11	10.92169	
12	12.26356	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Parents' Perceptions of Their Child's School Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ASBHU9A	ASBHU9B	ASBHU9C	ASBHU9D	ASBHU9E	ASBHU9F
Australia	0.88	63	0.83	0.60	0.87	0.84	0.80	0.80
Austria	0.86	59	0.79	0.62	0.83	0.83	0.75	0.78
Azerbaijan	0.83	55	0.68	0.76	0.80	0.72	0.72	0.75
Bahrain	0.87	60	0.77	0.70	0.82	0.79	0.80	0.76
Belgium (Flemish)	0.85	58	0.81	0.68	0.84	0.85	0.63	0.73
Belgium (French)	0.87	60	0.79	0.72	0.84	0.82	0.70	0.77
Bulgaria	0.87	62	0.75	0.75	0.83	0.80	0.80	0.79
Canada	0.88	62	0.82	0.61	0.85	0.84	0.80	0.78
Chile	0.89	64	0.80	0.72	0.86	0.84	0.79	0.79
Chinese Taipei	0.88	63	0.78	0.77	0.88	0.87	0.67	0.78
Czech Republic	0.85	58	0.72	0.62	0.83	0.81	0.77	0.78
Denmark	0.89	64	0.80	0.71	0.85	0.85	0.82	0.78
Egypt	0.87	62	0.79	0.75	0.83	0.80	0.75	0.79
England	-	-	-	-	-	-	-	-
Finland	0.82	53	0.74	0.64	0.83	0.76	0.63	0.73
France	0.88	63	0.79	0.72	0.85	0.82	0.80	0.78
Georgia	0.84	56	0.71	0.64	0.82	0.76	0.79	0.77
Germany	0.87	60	0.82	0.64	0.83	0.82	0.76	0.76
Hong Kong SAR	0.85	57	0.80	0.62	0.83	0.83	0.66	0.77
Hungary	0.86	58	0.78	0.66	0.81	0.80	0.75	0.78
Iran, Islamic Rep. of	0.83	55	0.73	0.68	0.80	0.79	0.66	0.77
Ireland	0.85	58	0.79	0.59	0.82	0.82	0.76	0.76
Israel	0.89	64	0.81	0.68	0.85	0.84	0.80	0.81
Italy	0.84	57	0.75	0.59	0.81	0.80	0.78	0.76
Kazakhstan	0.80	51	0.72	0.61	0.79	0.67	0.72	0.75
Kuwait	0.89	65	0.78	0.75	0.86	0.82	0.82	0.81
Latvia	0.84	55	0.64	0.66	0.83	0.71	0.83	0.78
Lithuania	0.81	52	0.69	0.69	0.81	0.73	0.67	0.73
Macao SAR	0.85	57	0.77	0.65	0.81	0.81	0.73	0.75
Malta	0.75	46	0.59	0.62	0.77	0.70	0.72	0.66
Morocco	0.82	53	0.74	0.68	0.80	0.72	0.65	0.79
Netherlands	0.83	56	0.80	0.67	0.85	0.84	0.53	0.74
New Zealand	0.88	62	0.82	0.62	0.85	0.83	0.79	0.81
Northern Ireland	0.86	61	0.83	0.63	0.85	0.81	0.77	0.77
Norway (5)	0.86	59	0.78	0.63	0.84	0.82	0.77	0.77
Oman	0.85	57	0.77	0.66	0.81	0.76	0.76	0.76
Poland	0.87	61	0.74	0.74	0.85	0.75	0.82	0.79
Portugal	0.85	59	0.79	0.66	0.84	0.77	0.77	0.76
Qatar	0.89	64	0.79	0.71	0.86	0.81	0.81	0.81
Russian Federation	0.86	59	0.63	0.71	0.83	0.75	0.85	0.83
Saudi Arabia	0.86	61	0.78	0.71	0.83	0.79	0.73	0.81
Singapore	0.86	60	0.79	0.66	0.84	0.81	0.76	0.76
Slovak Republic	0.87	61	0.73	0.66	0.85	0.81	0.83	0.80
Slovenia	0.84	56	0.69	0.68	0.82	0.82	0.72	0.76
South Africa	0.83	54	0.68	0.67	0.75	0.76	0.74	0.78
Spain	0.85	58	0.77	0.68	0.83	0.81	0.72	0.76
Sweden	0.90	67	0.81	0.74	0.87	0.83	0.84	0.80
Trinidad and Tobago	0.87	61	0.81	0.63	0.85	0.79	0.79	0.78
United Arab Emirates	0.89	64	0.80	0.70	0.85	0.83	0.83	0.79
United States	-	-	-	-	-	-	-	-
Benchmarking Participants								
Buenos Aires, Argentina	0.82	53	0.74	0.58	0.82	0.75	0.74	0.74
Ontario, Canada	0.88	62	0.82	0.59	0.85	0.83	0.82	0.78
Quebec, Canada	0.87	60	0.80	0.65	0.84	0.83	0.76	0.76
Denmark (3)	0.88	63	0.82	0.68	0.84	0.86	0.81	0.76
Norway (4)	0.86	60	0.79	0.65	0.83	0.81	0.79	0.75
Moscow City, Russian Fed.	0.84	56	0.54	0.69	0.82	0.73	0.85	0.82
Eng/Afr/Zulu - RSA (5)	0.84	56	0.74	0.64	0.79	0.78	0.77	0.77
Andalusia, Spain	0.85	59	0.78	0.67	0.83	0.80	0.72	0.78
Madrid, Spain	0.86	59	0.80	0.65	0.84	0.81	0.70	0.77
Abu Dhabi, UAE	0.90	67	0.80	0.72	0.87	0.85	0.85	0.80
Dubai, UAE	0.87	61	0.79	0.64	0.85	0.81	0.80	0.77

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Relationship Between the PIRLS 2016 Parents' Perceptions of Their Child's School Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.02	0.00	0.00
Austria	-0.03	0.00	0.00
Azerbaijan	0.12	0.01	0.01
Bahrain	0.19	0.04	0.04
Belgium (Flemish)	-0.06	0.00	0.00
Belgium (French)	0.00	0.00	0.00
Bulgaria	-0.06	0.00	0.00
Canada	0.01	0.00	0.00
Chile	0.03	0.00	0.00
Chinese Taipei	-0.06	0.00	0.00
Czech Republic	-0.11	0.01	0.01
Denmark	0.07	0.01	0.01
Egypt	0.08	0.01	0.01
England	-	-	-
Finland	-0.02	0.00	0.00
France	-0.01	0.00	0.00
Georgia	0.01	0.00	0.00
Germany	0.06	0.00	0.01
Hong Kong SAR	0.11	0.01	0.01
Hungary	-0.01	0.00	0.00
Iran, Islamic Rep. of	-0.01	0.00	0.00
Ireland	0.01	0.00	0.00
Israel	-0.13	0.02	0.01
Italy	0.03	0.00	0.00
Kazakhstan	-0.02	0.00	0.00
Kuwait	0.12	0.02	0.01
Latvia	-0.04	0.00	0.00
Lithuania	0.02	0.00	0.00
Macao SAR	0.12	0.01	0.01
Malta	0.08	0.01	0.00
Morocco	0.23	0.05	0.04
Netherlands	0.06	0.00	0.01
New Zealand	0.02	0.00	0.00
Northern Ireland	0.07	0.00	0.01
Norway (5)	0.07	0.01	0.01
Oman	0.12	0.01	0.02
Poland	-0.06	0.00	0.00
Portugal	0.02	0.00	0.00
Qatar	0.13	0.02	0.02
Russian Federation	-0.02	0.00	0.00
Saudi Arabia	0.12	0.01	0.02
Singapore	0.06	0.00	0.00
Slovak Republic	-0.08	0.01	0.00
Slovenia	-0.08	0.01	0.01
South Africa	0.13	0.02	0.02
Spain	0.02	0.00	0.00
Sweden	0.05	0.00	0.01
Trinidad and Tobago	0.15	0.02	0.01
United Arab Emirates	0.17	0.03	0.03
United States	-	-	-
International Median	0.02	0.00	0.00
Benchmarking Participants			
Buenos Aires, Argentina	-0.02	0.00	0.00
Ontario, Canada	0.01	0.00	0.00
Quebec, Canada	-0.05	0.00	0.01
Denmark (3)	0.07	0.00	0.01
Norway (4)	-0.01	0.00	0.00
Moscow City, Russian Fed.	-0.03	0.00	0.00
Eng/Afr/Zulu - RSA (5)	0.12	0.02	0.01
Andalusia, Spain	-0.04	0.00	0.00
Madrid, Spain	0.04	0.00	0.00
Abu Dhabi, UAE	0.15	0.02	0.03
Dubai, UAE	0.18	0.03	0.03

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Safe and Orderly School Scale

The *Safe and Orderly School* (SOS) scale was created based on teachers' degree of agreement with the eight statements described below.

Items in the PIRLS 2016 *Safe and Orderly School* Scale¹

		Agree a lot	Agree a little	Disagree a little	Disagree a lot
T ATBG08A T ATBG08B T ATBG08C T ATBG08D T ATBG08E ATBG08F ATBG08G ATBG08H	1) This school is located in a safe neighborhood -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	2) I feel safe at this school -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	3) This school's security policies and practices are sufficient -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	4) The students behave in an orderly manner -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	5) The students are respectful of the teachers -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	6) The students respect school property -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	7) This school has clear rules about student conduct ----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	8) This school's rules are enforced in a fair and consistent manner -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Very Safe and Orderly 9.9 Somewhat Safe and Orderly 6.6 Less than Safe and Orderly

¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories "Disagree a little" and "Disagree a lot" were combined for all variables. The scale statistics that are reported herein reflect analysis of the items following collapsing.

T Trend item—item was included in the same scale in PIRLS 2011 and was used for linking the PIRLS 2011 and PIRLS 2016 scales.

Item Parameters for the PIRLS 2016 Safe and Orderly School Scale

Item	delta	tau_1	tau_2	Infit
ATBG08A	-0.33477	-0.95246	0.95246	1.44
ATBG08B	-1.33999	-1.18806	1.18806	1.00
ATBG08C	-0.43632	-1.32751	1.32751	1.11
ATBG08D	0.99788	-1.94721	1.94721	0.86
ATBG08E	0.46648	-1.96220	1.96220	0.88
ATBG08F	1.16567	-1.93026	1.93026	0.90
ATBG08G	-0.61716	-1.39812	1.39812	1.05
ATBG08H	0.09821	-1.55388	1.55388	1.06

Scale Transformation Constants for the PIRLS 2016 Safe and Orderly School Scale

Scale Transformation Constants	
A = 8.265816	Transformed Scale Score = 8.265816 + 1.015430 • Logit Scale Score
B = 1.015430	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Safe and Orderly School Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.68014	
1	4.94412	
2	5.61774	
3	6.12515	
4	6.55836	6.6
5	6.95570	
6	7.33778	
7	7.71926	
8	8.10772	
9	8.51407	
10	8.94594	
11	9.41153	
12	9.92288	9.9
13	10.49280	
14	11.14276	
15	11.94193	
16	13.31150	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Safe and Orderly School Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item							
			ATB6008A	ATB6008B	ATB6008C	ATB6008D	ATB6008E	ATB6008F	ATB6008G	ATB6008H
Australia	0.88	55	0.65	0.69	0.63	0.84	0.84	0.83	0.64	0.77
Austria	0.82	45	0.56	0.67	0.61	0.73	0.77	0.71	0.62	0.70
Azerbaijan	0.72	36	0.40	0.39	0.60	0.68	0.58	0.67	0.67	0.72
Bahrain	0.89	56	0.60	0.61	0.68	0.84	0.84	0.82	0.81	0.75
Belgium (Flemish)	0.83	46	0.61	0.52	0.62	0.74	0.74	0.73	0.73	0.68
Belgium (French)	0.85	50	0.65	0.65	0.66	0.81	0.76	0.76	0.62	0.71
Bulgaria	0.84	48	0.48	0.70	0.74	0.81	0.73	0.73	0.64	0.63
Canada	0.88	55	0.55	0.63	0.69	0.82	0.83	0.80	0.77	0.80
Chile	0.88	56	0.69	0.73	0.72	0.78	0.83	0.75	0.69	0.77
Chinese Taipei	0.86	51	0.53	0.71	0.77	0.78	0.79	0.73	0.71	0.64
Czech Republic	0.83	46	0.52	0.64	0.65	0.74	0.76	0.70	0.72	0.68
Denmark	0.86	51	0.65	0.47	0.68	0.83	0.77	0.80	0.71	0.74
Egypt	0.85	48	0.50	0.58	0.72	0.71	0.69	0.78	0.76	0.75
England	0.77	42	0.50	0.51	0.44	0.84	0.81	0.77	0.53	0.62
Finland	0.88	54	0.56	0.71	0.62	0.82	0.80	0.82	0.72	0.80
France	0.85	49	0.73	0.70	0.69	0.74	0.75	0.73	0.58	0.65
Georgia	0.71	33	0.48	0.55	0.64	0.65	0.64	0.68	0.47	0.46
Germany	0.84	49	0.71	0.57	0.49	0.80	0.78	0.79	0.66	0.71
Hong Kong SAR	0.84	48	0.54	0.67	0.63	0.70	0.77	0.76	0.76	0.70
Hungary	0.84	48	0.46	0.70	0.76	0.76	0.71	0.76	0.64	0.71
Iran, Islamic Rep. of	0.84	48	0.65	0.62	0.70	0.70	0.69	0.66	0.75	0.75
Ireland	0.86	52	0.46	0.61	0.70	0.85	0.84	0.72	0.74	0.76
Israel	0.88	55	0.62	0.71	0.70	0.83	0.75	0.73	0.78	0.81
Italy	0.84	48	0.62	0.70	0.66	0.71	0.70	0.75	0.70	0.68
Kazakhstan	0.74	39	0.59	0.44	0.61	0.66	0.71	0.69	0.69	0.55
Kuwait	0.81	44	0.20	0.43	0.46	0.79	0.85	0.79	0.69	0.81
Latvia	0.78	40	0.44	0.55	0.60	0.74	0.69	0.65	0.66	0.70
Lithuania	0.82	44	0.44	0.74	0.69	0.65	0.67	0.74	0.59	0.77
Macao SAR	0.84	48	0.56	0.58	0.58	0.78	0.77	0.75	0.76	0.68
Malta	0.88	54	0.47	0.69	0.78	0.82	0.80	0.81	0.69	0.77
Morocco	0.89	57	0.73	0.78	0.79	0.73	0.75	0.78	0.76	0.74
Netherlands	0.80	43	0.44	0.58	0.55	0.83	0.77	0.74	0.48	0.73
New Zealand	0.87	54	0.70	0.73	0.67	0.81	0.81	0.69	0.71	0.75
Northern Ireland	0.84	48	0.48	0.32	0.64	0.87	0.76	0.80	0.75	0.76
Norway (5)	0.83	46	0.45	0.48	0.58	0.77	0.79	0.77	0.76	0.70
Oman	0.82	45	0.51	0.53	0.68	0.73	0.71	0.68	0.70	0.76
Poland	0.80	43	0.39	0.54	0.48	0.79	0.81	0.74	0.67	0.70
Portugal	0.86	52	0.53	0.68	0.63	0.80	0.79	0.75	0.75	0.76
Qatar	0.83	48	0.43	0.52	0.60	0.75	0.79	0.82	0.78	0.74
Russian Federation	0.83	46	0.56	0.66	0.62	0.76	0.76	0.77	0.53	0.75
Saudi Arabia	0.84	48	0.52	0.62	0.68	0.77	0.70	0.78	0.73	0.72
Singapore	0.87	53	0.51	0.60	0.63	0.82	0.83	0.82	0.76	0.81
Slovak Republic	0.86	51	0.52	0.72	0.66	0.80	0.78	0.74	0.74	0.75
Slovenia	0.88	55	0.62	0.76	0.77	0.73	0.80	0.74	0.73	0.75
South Africa	0.87	54	0.66	0.78	0.66	0.83	0.81	0.78	0.61	0.69
Spain	0.86	52	0.57	0.65	0.71	0.79	0.82	0.80	0.64	0.75
Sweden	0.86	52	0.54	0.69	0.69	0.81	0.86	0.80	0.56	0.77
Trinidad and Tobago	0.89	57	0.68	0.77	0.76	0.86	0.85	0.84	0.57	0.69
United Arab Emirates	0.87	53	0.39	0.55	0.61	0.80	0.84	0.84	0.80	0.83
United States	0.90	58	0.71	0.72	0.76	0.84	0.85	0.88	0.64	0.67
Benchmarking Participants										
Buenos Aires, Argentina	0.87	54	0.51	0.76	0.72	0.79	0.78	0.80	0.72	0.74
Ontario, Canada	0.89	58	0.55	0.64	0.71	0.85	0.84	0.80	0.79	0.84
Quebec, Canada	0.82	45	0.53	0.49	0.61	0.78	0.77	0.73	0.70	0.70
Denmark (3)	0.83	45	0.41	0.33	0.54	0.83	0.81	0.79	0.72	0.76
Norway (4)	0.82	45	0.49	0.48	0.58	0.77	0.73	0.77	0.66	0.80
Moscow City, Russian Fed.	0.84	48	0.63	0.69	0.69	0.68	0.75	0.75	0.57	0.76
Eng/Afr/Zulu - RSA (5)	0.88	56	0.67	0.60	0.80	0.87	0.79	0.81	0.67	0.74
Andalusia, Spain	0.87	54	0.70	0.76	0.69	0.78	0.78	0.79	0.60	0.74
Madrid, Spain	0.85	49	0.61	0.65	0.74	0.82	0.78	0.82	0.51	0.62
Abu Dhabi, UAE	0.85	49	0.41	0.52	0.50	0.81	0.81	0.83	0.79	0.79
Dubai, UAE	0.87	54	0.41	0.51	0.65	0.83	0.85	0.85	0.78	0.83

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 *Safe and Orderly School* Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.21	0.04	0.02
Austria	0.10	0.01	0.01
Azerbaijan	0.08	0.01	0.00
Bahrain	0.24	0.06	0.04
Belgium (Flemish)	0.14	0.02	0.02
Belgium (French)	0.17	0.03	0.03
Bulgaria	0.23	0.05	0.05
Canada	0.09	0.01	0.01
Chile	0.20	0.04	0.06
Chinese Taipei	-0.03	0.00	0.01
Czech Republic	0.09	0.01	0.02
Denmark	0.09	0.01	0.01
Egypt	0.10	0.01	0.01
England	0.11	0.01	0.02
Finland	0.03	0.00	0.00
France	0.13	0.02	0.02
Georgia	0.08	0.01	0.00
Germany	0.25	0.06	0.07
Hong Kong SAR	0.04	0.00	0.00
Hungary	0.16	0.02	0.03
Iran, Islamic Rep. of	0.08	0.01	0.00
Ireland	0.11	0.01	0.01
Israel	0.06	0.00	0.01
Italy	0.09	0.01	0.01
Kazakhstan	-0.02	0.00	0.00
Kuwait	0.13	0.02	0.00
Latvia	0.04	0.00	0.00
Lithuania	0.09	0.01	0.03
Macao SAR	0.10	0.01	0.01
Malta	0.08	0.01	0.01
Morocco	0.26	0.07	0.06
Netherlands	0.18	0.03	0.04
New Zealand	0.21	0.05	0.04
Northern Ireland	0.09	0.01	0.01
Norway (5)	0.08	0.01	0.01
Oman	0.10	0.01	0.00
Poland	-0.04	0.00	0.00
Portugal	0.13	0.02	0.01
Qatar	0.07	0.00	0.00
Russian Federation	0.04	0.00	0.00
Saudi Arabia	0.17	0.03	0.02
Singapore	0.08	0.01	0.00
Slovak Republic	0.13	0.02	0.03
Slovenia	-0.01	0.00	0.00
South Africa	0.00	0.00	0.00
Spain	0.16	0.02	0.01
Sweden	0.16	0.03	0.03
Trinidad and Tobago	0.12	0.02	0.01
United Arab Emirates	0.26	0.07	0.06
United States	0.23	0.05	0.05
International Median	0.10	0.01	0.01
Benchmarking Participants			
Buenos Aires, Argentina	0.20	0.04	0.04
Ontario, Canada	0.11	0.01	0.02
Quebec, Canada	0.01	0.00	0.00
Denmark (3)	0.06	0.00	0.00
Norway (4)	0.01	0.00	0.00
Moscow City, Russian Fed.	0.02	0.00	0.00
Eng/Afr/Zulu - RSA (5)	0.03	0.00	0.01
Andalusia, Spain	0.22	0.05	0.04
Madrid, Spain	0.14	0.02	0.01
Abu Dhabi, UAE	0.19	0.04	0.03
Dubai, UAE	0.26	0.07	0.06

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

School Discipline Scale

The *School Discipline* (DAS) scale was created based on principals' responses concerning the ten potential school problems described below.

Items in the PIRLS 2016 *School Discipline* Scale

		To what degree is each of the following a problem among fourth grade students in your school?				
		Not a problem	Minor problem	Moderate problem	Serious problem	
T	ACBG14A	1) Arriving late at school -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ACBG14B	2) Absenteeism (i.e., unjustified absences) -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ACBG14C	3) Classroom disturbance -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ACBG14D	4) Cheating -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ACBG14E	5) Profanity -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ACBG14F	6) Vandalism -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ACBG14G	7) Theft -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ACBG14H	8) Intimidation or verbal abuse among students (including texting, emailing, etc.) -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ACBG14I	9) Physical fights among students -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	ACBG14J	10) Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.) -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

T Trend item—item was included in the same scale in PIRLS 2011 and was used for linking the PIRLS 2011 and PIRLS 2016 scales.

Item Parameters for the PIRLS 2016 School Discipline Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ACBG14A	-0.12195	-2.34683	-0.42737	2.77420	1.24
ACBG14B	0.12937	-1.53131	-0.45652	1.98783	1.16
ACBG14C	0.91425	-2.22837	-0.27536	2.50373	1.02
ACBG14D	-0.39571	-1.01520	-0.90302	1.91822	1.08
ACBG14E	0.57429	-1.73047	-0.41827	2.14874	0.91
ACBG14F	-0.35555	-0.41221	-0.73370	1.14591	0.75
ACBG14G	-0.55939	0.41486	-1.38128	0.96642	0.84
ACBG14H	0.25527	-1.55859	-0.58526	2.14385	0.93
ACBG14I	0.33890	-1.63156	-0.63374	2.26530	0.84
ACBG14J	-0.77948	-0.03064	-0.67247	0.70311	0.86

Scale Transformation Constants for the PIRLS 2016 School Discipline Scale

Scale Transformation Constants	
A = 7.915470	Transformed Scale Score = 7.915470 + 0.941833 • Logit Scale Score
B = 0.941833	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 School Discipline Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.78131	
1	4.85875	
2	5.36727	
3	5.70447	
4	5.96046	
5	6.16894	
6	6.34794	
7	6.50757	
8	6.65426	
9	6.79253	
10	6.92445	
11	7.05592	
12	7.18729	
13	7.32077	
14	7.45855	
15	7.60360	7.7
16	7.75631	
17	7.92096	
18	8.09978	
19	8.29514	
20	8.51076	
21	8.74775	
22	9.00813	
23	9.29258	
24	9.60146	
25	9.93429	9.9
26	10.29556	
27	10.69797	
28	11.17296	
29	11.80710	
30	12.98539	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 School Discipline Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Components Loadings for Each Item									
			ACBG1A	ACBG1B	ACBG1C	ACBG1D	ACBG1E	ACBG1F	ACBG1G	ACBG1H	ACBG1I	ACBG1J
Australia	0.88	51	0.58	0.59	0.72	0.63	0.84	0.75	0.76	0.77	0.76	0.73
Austria	0.86	45	0.48	0.56	0.76	0.62	0.83	0.77	0.63	0.70	0.74	0.53
Azerbaijan	0.95	70	0.50	0.73	0.86	0.80	0.84	0.93	0.92	0.88	0.87	0.94
Bahrain	0.96	74	0.74	0.82	0.78	0.90	0.87	0.91	0.91	0.88	0.84	0.92
Belgium (Flemish)	0.86	46	0.51	0.58	0.72	0.68	0.77	0.74	0.61	0.72	0.74	0.68
Belgium (French)	0.85	43	0.51	0.64	0.54	0.55	0.73	0.65	0.69	0.79	0.78	0.65
Bulgaria	0.93	64	0.64	0.80	0.81	0.82	0.73	0.81	0.85	0.82	0.84	0.86
Canada	0.88	50	0.62	0.61	0.71	0.64	0.77	0.74	0.74	0.74	0.77	0.69
Chile	0.92	59	0.57	0.60	0.73	0.65	0.83	0.87	0.86	0.86	0.82	0.79
Chinese Taipei	0.88	50	0.61	0.63	0.68	0.68	0.82	0.74	0.76	0.77	0.74	0.59
Czech Republic	0.83	41	0.48	0.49	0.64	0.69	0.75	0.66	0.65	0.73	0.56	0.67
Denmark	0.82	40	0.59	0.53	0.70	0.45	0.77	0.58	0.49	0.79	0.77	0.54
Egypt	0.93	61	0.61	0.63	0.75	0.80	0.86	0.85	0.86	0.85	0.75	0.79
England	0.77	34	0.67	0.67	0.63	0.14	0.71	0.48	0.36	0.67	0.74	0.51
Finland	0.79	35	0.57	0.54	0.71	0.40	0.76	0.56	0.53	0.64	0.62	0.47
France	0.90	53	0.66	0.65	0.68	0.49	0.78	0.79	0.80	0.82	0.80	0.77
Georgia	0.97	76	0.64	0.80	0.90	0.69	0.93	0.95	0.95	0.94	0.91	0.95
Germany	0.89	50	0.62	0.67	0.73	0.60	0.73	0.76	0.66	0.78	0.82	0.63
Hong Kong SAR	0.80	37	0.50	0.57	0.65	0.59	0.73	0.68	0.73	0.61	0.67	0.21
Hungary	0.90	53	0.72	0.69	0.79	0.71	0.77	0.81	0.55	0.72	0.80	0.67
Iran, Islamic Rep. of	0.91	57	0.66	0.60	0.72	0.76	0.85	0.82	0.83	0.82	0.78	0.69
Ireland	0.85	46	0.59	0.60	0.70	0.53	0.70	0.68	0.61	0.74	0.82	0.73
Israel	0.96	72	0.71	0.82	0.76	0.89	0.80	0.94	0.89	0.86	0.89	0.92
Italy	0.94	66	0.61	0.75	0.64	0.73	0.69	0.92	0.92	0.92	0.91	0.91
Kazakhstan	0.95	70	0.79	0.80	0.80	0.58	0.83	0.93	0.92	0.88	0.89	0.88
Kuwait	0.91	58	0.49	0.58	0.71	0.79	0.84	0.86	0.84	0.81	0.87	0.76
Latvia	0.83	42	0.63	0.59	0.82	0.37	0.68	0.74	0.64	0.64	0.69	0.56
Lithuania	0.79	36	0.52	0.48	0.69	0.58	0.70	0.60	0.61	0.64	0.61	0.49
Macao SAR	0.73	31	0.72	0.47	0.65	0.28	0.70	0.28	0.76	0.45	0.72	0.03
Malta	0.93	61	0.56	0.77	0.61	0.82	0.83	0.85	0.85	0.86	0.80	0.82
Morocco	0.95	68	0.63	0.74	0.84	0.86	0.90	0.90	0.88	0.86	0.84	0.75
Netherlands	0.85	43	0.39	0.46	0.78	0.59	0.82	0.75	0.54	0.80	0.79	0.43
New Zealand	0.88	49	0.64	0.66	0.63	0.52	0.77	0.75	0.75	0.75	0.79	0.74
Northern Ireland	0.74	34	0.30	0.47	0.76	0.55	0.77	0.53	0.53	0.63	0.62	0.48
Norway (5)	0.85	45	0.60	0.67	0.68	0.65	0.72	0.69	0.49	0.70	0.68	0.77
Oman	0.96	74	0.73	0.81	0.83	0.93	0.89	0.91	0.92	0.90	0.76	0.89
Poland	0.81	38	0.50	0.54	0.57	0.63	0.73	0.65	0.57	0.65	0.71	0.55
Portugal	0.89	53	0.49	0.67	0.77	0.67	0.75	0.79	0.76	0.77	0.77	0.81
Qatar	0.92	61	0.62	0.68	0.73	0.85	0.82	0.82	0.79	0.81	0.80	0.85
Russian Federation	0.77	33	0.60	0.62	0.64	0.60	0.58	0.53	0.60	0.56	0.59	0.35
Saudi Arabia	0.95	70	0.53	0.73	0.81	0.88	0.90	0.90	0.91	0.91	0.88	0.84
Singapore	0.89	50	0.75	0.72	0.76	0.64	0.78	0.67	0.72	0.71	0.82	0.46
Slovak Republic	0.89	51	0.65	0.74	0.70	0.67	0.76	0.80	0.67	0.65	0.75	0.74
Slovenia	0.90	54	0.61	0.67	0.73	0.76	0.77	0.83	0.80	0.76	0.76	0.64
South Africa	0.90	51	0.67	0.72	0.69	0.67	0.72	0.79	0.78	0.72	0.75	0.65
Spain	0.94	69	0.67	0.84	0.77	0.80	0.76	0.91	0.92	0.87	0.86	0.89
Sweden	0.85	44	0.50	0.63	0.76	0.47	0.72	0.78	0.55	0.72	0.76	0.68
Trinidad and Tobago	0.90	54	0.58	0.68	0.58	0.67	0.82	0.85	0.85	0.79	0.83	0.62
United Arab Emirates	0.93	64	0.66	0.68	0.69	0.86	0.84	0.89	0.86	0.82	0.81	0.87
United States	0.87	47	0.59	0.65	0.69	0.61	0.78	0.70	0.68	0.71	0.78	0.66
Benchmarking Participants												
Buenos Aires, Argentina	0.86	49	0.46	0.58	0.65	0.69	0.75	0.80	0.79	0.73	0.77	0.69
Ontario, Canada	0.91	57	0.69	0.68	0.74	0.71	0.79	0.79	0.78	0.81	0.81	0.72
Quebec, Canada	0.83	43	0.58	0.58	0.73	0.35	0.74	0.74	0.72	0.69	0.74	0.58
Denmark (3)	0.84	43	0.60	0.55	0.68	0.51	0.78	0.67	0.49	0.77	0.75	0.65
Norway (4)	0.87	47	0.54	0.46	0.77	0.49	0.79	0.78	0.69	0.73	0.70	0.80
Moscow City, Russian Fed.	0.75	31	0.57	0.56	0.56	0.58	0.67	0.67	0.57	0.47	0.54	0.20
Eng/Afr/Zulu - RSA (5)	0.91	56	0.69	0.72	0.74	0.73	0.77	0.80	0.82	0.78	0.75	0.69
Andalusia, Spain	0.95	70	0.72	0.85	0.70	0.80	0.79	0.93	0.92	0.87	0.84	0.90
Madrid, Spain	0.88	55	0.48	0.51	0.71	0.80	0.74	0.84	0.81	0.77	0.81	0.82
Abu Dhabi, UAE	0.93	63	0.67	0.68	0.71	0.82	0.79	0.88	0.86	0.86	0.79	0.88
Dubai, UAE	0.94	67	0.56	0.73	0.72	0.89	0.87	0.89	0.87	0.85	0.82	0.89

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 School Discipline Scale and PIRLS 2016 Reading Achievement

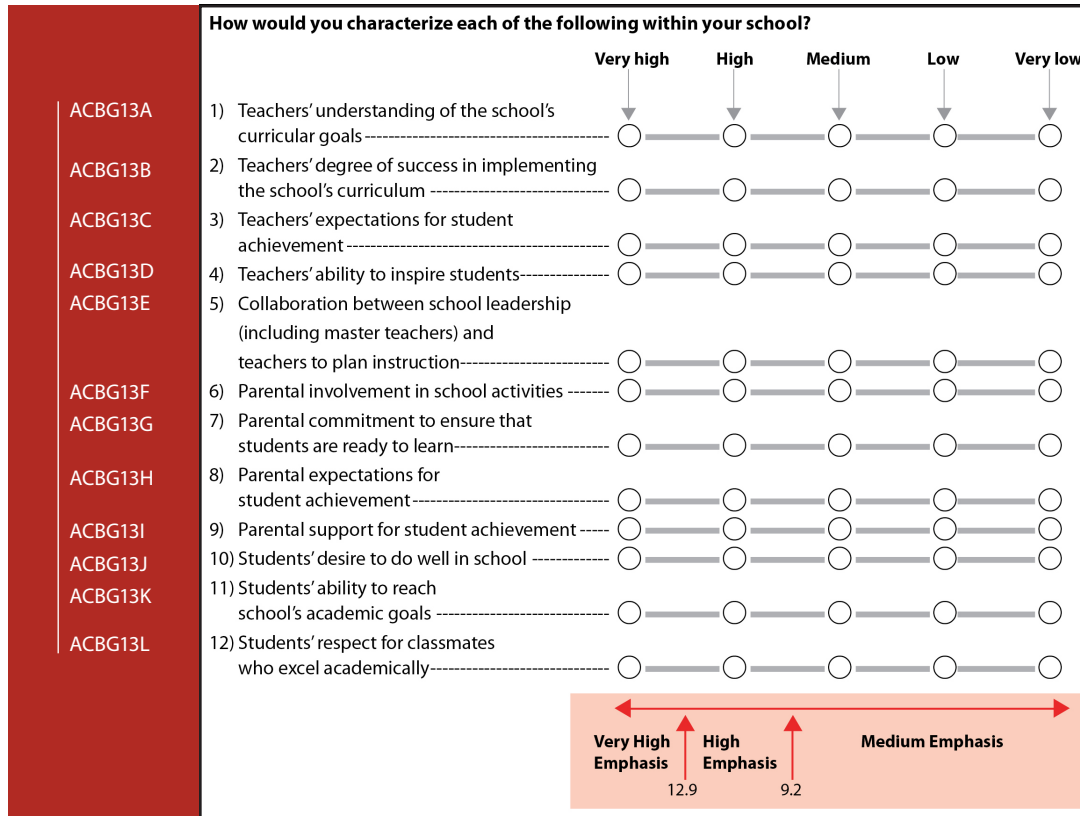
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.24	0.06	0.05
Austria	0.10	0.01	0.02
Azerbaijan	-0.06	0.00	0.01
Bahrain	0.18	0.03	0.02
Belgium (Flemish)	0.17	0.03	0.02
Belgium (French)	0.12	0.01	0.02
Bulgaria	0.13	0.02	0.02
Canada	0.16	0.03	0.02
Chile	0.20	0.04	0.05
Chinese Taipei	0.03	0.00	0.00
Czech Republic	0.04	0.00	0.00
Denmark	0.08	0.01	0.01
Egypt	0.13	0.02	0.01
England	0.15	0.02	0.01
Finland	0.06	0.00	0.00
France	0.10	0.01	0.01
Georgia	0.07	0.01	0.00
Germany	0.26	0.07	0.09
Hong Kong SAR	0.17	0.03	0.01
Hungary	0.25	0.06	0.04
Iran, Islamic Rep. of	0.22	0.05	0.05
Ireland	0.12	0.01	0.03
Israel	0.24	0.06	0.07
Italy	0.09	0.01	0.00
Kazakhstan	0.01	0.00	0.01
Kuwait	0.12	0.02	0.02
Latvia	0.08	0.01	0.01
Lithuania	0.04	0.00	0.00
Macao SAR	0.02	0.00	0.01
Malta	0.09	0.01	0.01
Morocco	0.04	0.00	0.00
Netherlands	0.12	0.01	0.02
New Zealand	0.23	0.05	0.06
Northern Ireland	0.14	0.02	0.00
Norway (5)	0.08	0.01	0.01
Oman	0.09	0.01	0.01
Poland	0.07	0.01	0.00
Portugal	0.17	0.03	0.02
Qatar	0.06	0.00	0.01
Russian Federation	0.03	0.00	0.00
Saudi Arabia	0.36	0.13	0.10
Singapore	0.12	0.01	0.01
Slovak Republic	0.16	0.03	0.08
Slovenia	0.01	0.00	0.00
South Africa	0.17	0.03	0.02
Spain	0.16	0.02	0.02
Sweden	0.13	0.02	0.02
Trinidad and Tobago	0.10	0.01	0.01
United Arab Emirates	0.24	0.06	0.03
United States	0.22	0.05	0.03
International Median	0.12	0.01	0.01
Benchmarking Participants			
Buenos Aires, Argentina	0.11	0.01	0.02
Ontario, Canada	0.16	0.03	0.03
Quebec, Canada	0.15	0.02	0.01
Denmark (3)	0.05	0.00	0.01
Norway (4)	0.06	0.00	0.00
Moscow City, Russian Fed.	-0.04	0.00	0.00
Eng/Afr/Zulu - RSA (5)	0.12	0.01	0.01
Andalusia, Spain	0.08	0.01	0.01
Madrid, Spain	0.11	0.01	0.02
Abu Dhabi, UAE	0.14	0.02	0.01
Dubai, UAE	0.26	0.07	0.04

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

School Emphasis on Academic Success – Principals’ Reports Scale

The *School Emphasis on Academic Success – Principals’ Reports* (EAS) scale was created based on principals’ responses characterizing the 12 aspects of school climate described below.

Items in the PIRLS 2016 *School Emphasis on Academic Success – Principals’ Reports* Scale¹



¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories “Low” and “Very low” were combined for all variables. The scale statistics that are reported herein reflect analysis of the items following collapsing.

Item Parameters for the PIRLS 2016 School Emphasis on Academic Success - Principals' Reports Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ACBG13A	-1.31219	-3.35435	-0.01880	3.37315	1.07
ACBG13B	-0.96099	-3.90556	0.19733	3.70823	0.96
ACBG13C	-0.82391	-3.49024	0.00835	3.48189	0.89
ACBG13D	-0.59035	-3.43001	0.05756	3.37245	0.99
ACBG13E	-0.68959	-2.63930	-0.22702	2.86632	1.20
ACBG13F	1.15412	-2.48630	0.08282	2.40348	1.17
ACBG13G	1.42236	-2.80818	0.13531	2.67287	0.85
ACBG13H	0.00207	-2.69019	-0.24463	2.93482	1.09
ACBG13I	1.29200	-2.95076	0.10280	2.84796	0.91
ACBG13J	0.16604	-3.49673	0.03249	3.46424	0.87
ACBG13K	0.50539	-4.02618	0.21215	3.81403	0.87
ACBG13L	-0.16495	-3.14717	-0.20095	3.34812	1.14

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Scale Transformation Constants for the PIRLS 2016 School Emphasis on Academic Success - Principals' Reports Scale

Scale Transformation Constants	
A = 9.088617	Transformed Scale Score = 9.088617 + 1.147876 • Logit Scale Score
B = 1.147876	

**Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS
2016 School Emphasis on Academic Success - Principals' Reports Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	1.06095	
1	2.49562	
2	3.26563	
3	3.84274	
4	4.33403	
5	4.77520	
6	5.18627	
7	5.57770	
8	5.95426	
9	6.31720	
10	6.66619	
11	7.00120	
12	7.32360	
13	7.63552	
14	7.93995	
15	8.24014	
16	8.53923	
17	8.83993	
18	9.14415	9.2
19	9.45276	
20	9.76546	
21	10.08096	
22	10.39737	
23	10.71295	
24	11.02647	
25	11.33774	
26	11.64774	
27	11.95831	
28	12.27223	
29	12.59338	
30	12.92713	12.9
31	13.28181	
32	13.66669	
33	14.10420	
34	14.63433	
35	15.35698	
36	16.74931	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 School Emphasis on Academic Success - Principals' Reports Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item											
			ACBG13A	ACBG13B	ACBG13C	ACBG13D	ACBG13E	ACBG13F	ACBG13G	ACBG13H	ACBG13I	ACBG13J	ACBG13K	ACBG13L
Australia	0.93	56	0.75	0.78	0.78	0.68	0.63	0.61	0.81	0.77	0.82	0.80	0.80	0.72
Austria	0.83	37	0.43	0.60	0.73	0.34	0.27	0.66	0.82	0.63	0.78	0.62	0.71	0.41
Azerbaijan	0.89	46	0.74	0.75	0.68	0.72	0.72	0.68	0.72	0.62	0.64	0.62	0.61	0.57
Bahrain	0.91	51	0.67	0.76	0.79	0.81	0.64	0.66	0.68	0.64	0.73	0.77	0.81	0.58
Belgium (Flemish)	0.83	36	0.41	0.52	0.47	0.41	0.34	0.67	0.82	0.65	0.81	0.58	0.68	0.64
Belgium (French)	0.84	38	0.52	0.61	0.49	0.55	0.41	0.66	0.77	0.65	0.77	0.68	0.70	0.53
Bulgaria	0.90	50	0.49	0.73	0.71	0.69	0.54	0.78	0.78	0.63	0.84	0.75	0.80	0.65
Canada	0.88	45	0.54	0.67	0.69	0.64	0.50	0.68	0.73	0.72	0.77	0.71	0.70	0.60
Chile	0.92	54	0.71	0.72	0.80	0.76	0.72	0.73	0.74	0.78	0.75	0.78	0.70	0.65
Chinese Taipei	0.89	46	0.58	0.52	0.74	0.73	0.57	0.61	0.72	0.68	0.68	0.80	0.81	0.64
Czech Republic	0.85	38	0.54	0.58	0.59	0.61	0.60	0.53	0.71	0.57	0.63	0.74	0.73	0.52
Denmark	0.91	50	0.73	0.68	0.75	0.61	0.54	0.55	0.82	0.72	0.71	0.83	0.74	0.75
Egypt	0.91	50	0.66	0.66	0.68	0.59	0.65	0.70	0.77	0.75	0.74	0.74	0.79	0.70
England	0.90	47	0.64	0.72	0.65	0.71	0.65	0.66	0.77	0.75	0.74	0.67	0.72	0.51
Finland	0.89	46	0.58	0.61	0.73	0.72	0.57	0.58	0.77	0.74	0.71	0.71	0.71	0.63
France	0.85	39	0.40	0.61	0.56	0.58	0.48	0.63	0.70	0.66	0.72	0.77	0.74	0.59
Georgia	0.87	41	0.68	0.69	0.66	0.66	0.61	0.61	0.68	0.65	0.71	0.61	0.53	0.54
Germany	0.84	38	0.52	0.60	0.66	0.49	0.40	0.63	0.78	0.58	0.73	0.64	0.70	0.55
Hong Kong SAR	0.87	42	0.64	0.66	0.62	0.65	0.62	0.65	0.67	0.61	0.68	0.71	0.73	0.47
Hungary	0.88	45	0.43	0.68	0.61	0.71	0.39	0.69	0.81	0.72	0.81	0.72	0.68	0.66
Iran, Islamic Rep. of	0.91	50	0.67	0.71	0.65	0.70	0.58	0.73	0.81	0.68	0.79	0.78	0.69	0.67
Ireland	0.89	47	0.58	0.62	0.75	0.63	0.40	0.58	0.82	0.81	0.81	0.81	0.72	0.54
Israel	0.86	41	0.71	0.71	0.69	0.67	0.66	0.50	0.66	0.60	0.67	0.69	0.60	0.46
Italy	0.86	40	0.63	0.69	0.55	0.77	0.70	0.51	0.64	0.52	0.62	0.71	0.59	0.56
Kazakhstan	0.90	49	0.56	0.66	0.67	0.74	0.69	0.67	0.79	0.64	0.77	0.71	0.77	0.66
Kuwait	0.92	54	0.71	0.74	0.78	0.77	0.61	0.66	0.76	0.70	0.65	0.82	0.81	0.74
Latvia	0.86	40	0.53	0.68	0.57	0.65	0.55	0.76	0.70	0.48	0.71	0.71	0.70	0.43
Lithuania	0.89	45	0.64	0.67	0.68	0.75	0.68	0.67	0.73	0.53	0.70	0.67	0.67	0.62
Macao SAR	0.79	32	0.51	0.61	0.60	0.71	0.40	0.49	0.70	0.55	0.52	0.71	0.50	0.41
Malta	0.88	44	0.63	0.74	0.71	0.65	0.59	0.61	0.71	0.73	0.73	0.66	0.67	0.47
Morocco	0.90	48	0.68	0.73	0.75	0.69	0.70	0.67	0.76	0.63	0.72	0.65	0.71	0.62
Netherlands	0.85	38	0.53	0.62	0.72	0.77	0.58	0.43	0.58	0.57	0.54	0.71	0.62	0.63
New Zealand	0.91	50	0.71	0.75	0.78	0.68	0.64	0.67	0.72	0.67	0.76	0.70	0.76	0.63
Northern Ireland	0.90	49	0.59	0.73	0.75	0.73	0.74	0.52	0.66	0.65	0.71	0.78	0.78	0.67
Norway (5)	0.90	49	0.67	0.79	0.74	0.71	0.63	0.72	0.76	0.66	0.74	0.58	0.74	0.62
Oman	0.88	44	0.62	0.66	0.69	0.71	0.63	0.61	0.76	0.64	0.69	0.69	0.68	0.59
Poland	0.87	42	0.60	0.66	0.47	0.67	0.57	0.65	0.77	0.70	0.71	0.67	0.66	0.57
Portugal	0.89	46	0.55	0.68	0.69	0.63	0.59	0.73	0.71	0.72	0.77	0.75	0.69	0.59
Qatar	0.89	47	0.64	0.69	0.75	0.74	0.60	0.68	0.79	0.63	0.71	0.62	0.71	0.61
Russian Federation	0.87	41	0.58	0.73	0.70	0.70	0.56	0.63	0.64	0.47	0.74	0.65	0.72	0.55
Saudi Arabia	0.92	53	0.68	0.74	0.68	0.75	0.74	0.68	0.75	0.71	0.76	0.80	0.75	0.71
Singapore	0.93	56	0.67	0.74	0.79	0.74	0.61	0.69	0.84	0.80	0.78	0.81	0.79	0.66
Slovak Republic	0.86	41	0.52	0.67	0.63	0.61	0.64	0.64	0.71	0.58	0.67	0.71	0.72	0.52
Slovenia	0.85	38	0.60	0.64	0.54	0.73	0.66	0.57	0.66	0.36	0.64	0.63	0.68	0.61
South Africa	0.90	49	0.62	0.58	0.67	0.65	0.69	0.70	0.75	0.64	0.77	0.77	0.80	0.69
Spain	0.90	48	0.61	0.74	0.77	0.64	0.57	0.67	0.80	0.78	0.79	0.67	0.66	0.54
Sweden	0.91	52	0.58	0.67	0.76	0.74	0.60	0.69	0.79	0.83	0.77	0.81	0.70	0.65
Trinidad and Tobago	0.90	49	0.57	0.63	0.67	0.65	0.58	0.77	0.79	0.64	0.76	0.79	0.79	0.68
United Arab Emirates	0.92	53	0.72	0.76	0.78	0.75	0.67	0.67	0.74	0.69	0.76	0.74	0.76	0.62
United States	0.93	56	0.67	0.73	0.72	0.77	0.59	0.76	0.82	0.81	0.81	0.81	0.79	0.69
Benchmarking Participants														
Buenos Aires, Argentina	0.90	50	0.69	0.78	0.66	0.63	0.58	0.71	0.81	0.73	0.80	0.76	0.76	0.50
Ontario, Canada	0.88	45	0.54	0.68	0.74	0.67	0.42	0.63	0.69	0.77	0.76	0.77	0.71	0.58
Quebec, Canada	0.88	43	0.68	0.69	0.58	0.70	0.64	0.73	0.70	0.65	0.75	0.55	0.61	0.55
Denmark (3)	0.90	50	0.73	0.67	0.75	0.61	0.54	0.56	0.82	0.72	0.73	0.83	0.73	0.73
Norway (4)	0.90	49	0.66	0.79	0.74	0.73	0.63	0.73	0.76	0.66	0.74	0.58	0.74	0.62
Moscow City, Russian Fed.	0.84	37	0.66	0.76	0.62	0.73	0.66	0.49	0.63	0.25	0.65	0.57	0.63	0.44
Eng/Afr/Zulu - RSA (5)	0.90	48	0.46	0.56	0.69	0.71	0.67	0.70	0.80	0.61	0.80	0.79	0.76	0.71
Andalusia, Spain	0.88	44	0.58	0.75	0.74	0.61	0.60	0.72	0.75	0.77	0.75	0.62	0.61	0.39
Madrid, Spain	0.91	52	0.61	0.69	0.76	0.67	0.61	0.73	0.83	0.84	0.83	0.71	0.75	0.62
Abu Dhabi, UAE	0.89	46	0.74	0.76	0.80	0.77	0.61	0.54	0.66	0.56	0.64	0.72	0.69	0.59
Dubai, UAE	0.93	57	0.73	0.76	0.83	0.78	0.72	0.74	0.72	0.74	0.77	0.76	0.79	0.69

SOURCE: IEA's Progress in International Reading Literacy Study - PIRLS 2016

Relationship Between the PIRLS 2016 School Emphasis on Academic Success - Principals' Reports Scale and PIRLS 2016 Reading Achievement

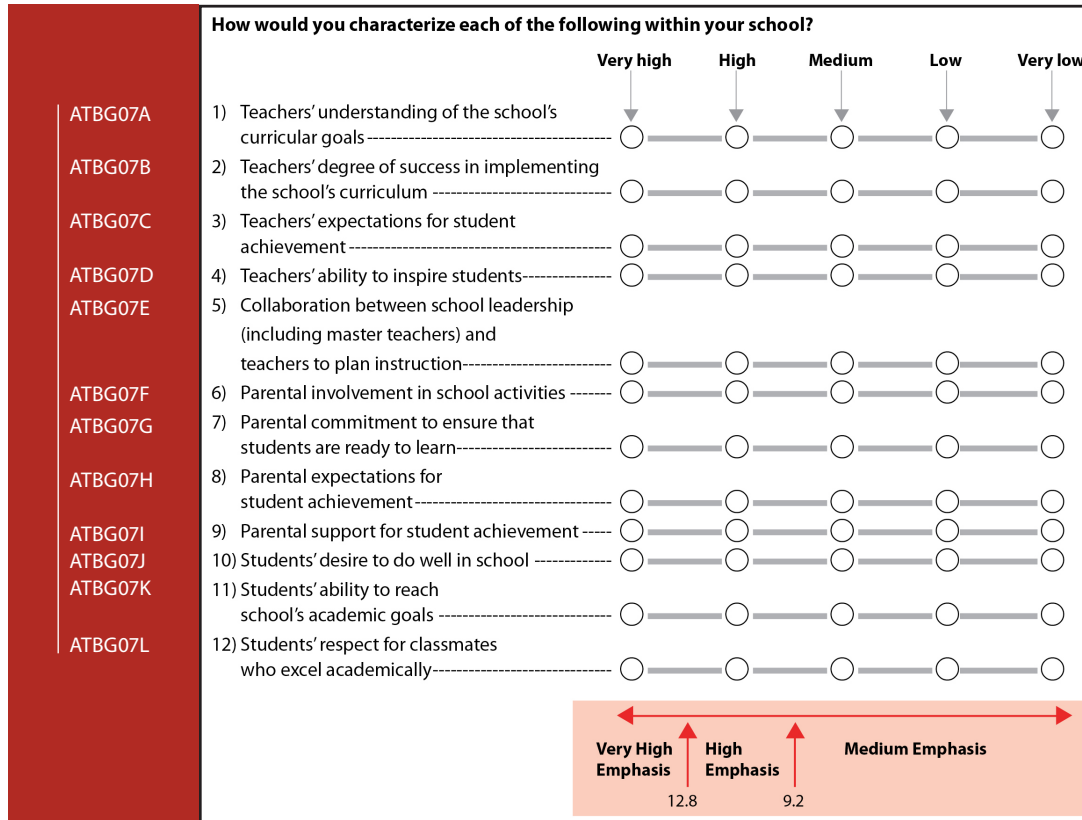
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.24	0.06	0.06
Austria	0.22	0.05	0.04
Azerbaijan	-0.04	0.00	0.02
Bahrain	0.29	0.08	0.06
Belgium (Flemish)	0.15	0.02	0.02
Belgium (French)	0.26	0.07	0.05
Bulgaria	0.35	0.12	0.08
Canada	0.20	0.04	0.04
Chile	0.22	0.05	0.03
Chinese Taipei	0.13	0.02	0.01
Czech Republic	0.12	0.01	0.00
Denmark	0.13	0.02	0.02
Egypt	0.22	0.05	0.03
England	0.18	0.03	0.02
Finland	0.09	0.01	0.01
France	0.05	0.00	0.00
Georgia	0.07	0.01	0.00
Germany	0.31	0.10	0.08
Hong Kong SAR	0.15	0.02	0.00
Hungary	0.29	0.09	0.04
Iran, Islamic Rep. of	0.21	0.04	0.03
Ireland	0.17	0.03	0.04
Israel	0.12	0.01	0.02
Italy	0.02	0.00	0.01
Kazakhstan	0.09	0.01	0.01
Kuwait	0.23	0.05	0.04
Latvia	0.16	0.03	0.02
Lithuania	0.26	0.07	0.07
Macao SAR	0.16	0.02	0.02
Malta	0.06	0.00	0.00
Morocco	0.34	0.11	0.12
Netherlands	0.12	0.01	0.01
New Zealand	0.18	0.03	0.03
Northern Ireland	0.10	0.01	0.00
Norway (5)	0.16	0.02	0.02
Oman	0.25	0.06	0.05
Poland	0.14	0.02	0.01
Portugal	0.26	0.07	0.05
Qatar	0.15	0.02	0.03
Russian Federation	0.18	0.03	0.04
Saudi Arabia	0.26	0.07	0.05
Singapore	0.19	0.04	0.03
Slovak Republic	0.30	0.09	0.04
Slovenia	0.08	0.01	0.00
South Africa	0.11	0.01	0.03
Spain	0.17	0.03	0.02
Sweden	0.20	0.04	0.03
Trinidad and Tobago	0.27	0.07	0.05
United Arab Emirates	0.30	0.09	0.08
United States	0.19	0.03	0.03
International Median	0.18	0.03	0.03
Benchmarking Participants			
Buenos Aires, Argentina	0.23	0.05	0.06
Ontario, Canada	0.17	0.03	0.03
Quebec, Canada	0.17	0.03	0.02
Denmark (3)	0.08	0.01	0.01
Norway (4)	0.11	0.01	0.01
Moscow City, Russian Fed.	0.09	0.01	0.02
Eng/Afr/Zulu - RSA (5)	0.19	0.04	0.03
Andalusia, Spain	0.20	0.04	0.02
Madrid, Spain	0.21	0.05	0.05
Abu Dhabi, UAE	0.20	0.04	0.04
Dubai, UAE	0.38	0.14	0.11

SOURCE: IEA's Progress in International Reading Literacy Study - PIRLS 2016

School Emphasis on Academic Success – Teachers’ Reports Scale

The *School Emphasis on Academic Success – Teachers’ Reports* (EAS) scale was created based on teachers’ responses characterizing the 12 aspects of school climate described below.

Items in the PIRLS 2016 *School Emphasis on Academic Success – Teachers’ Reports Scale*¹



¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories “Low” and “Very low” were combined for all variables. The scale statistics that are reported herein reflect analysis of the items following collapsing.

Item Parameters for the PIRLS 2016 School Emphasis on Academic Success - Teachers' Reports Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ATBG07A	-1.32583	-2.86202	-0.08581	2.94783	1.08
ATBG07B	-0.93336	-3.25924	0.00909	3.25015	0.97
ATBG07C	-0.90529	-3.15010	-0.01642	3.16652	1.05
ATBG07D	-0.95737	-3.07196	-0.05710	3.12906	1.00
ATBG07E	-0.12321	-1.65307	-0.24929	1.90236	1.33
ATBG07F	0.99236	-2.17211	0.07001	2.10210	1.04
ATBG07G	1.25870	-2.51430	0.14423	2.37007	0.85
ATBG07H	0.10750	-2.38394	-0.24263	2.62657	1.05
ATBG07I	1.12745	-2.70509	0.13541	2.56968	0.86
ATBG07J	0.20474	-2.87243	-0.04754	2.91997	0.91
ATBG07K	0.68915	-3.39428	0.15216	3.24212	0.85
ATBG07L	-0.13484	-2.38835	-0.40389	2.79224	1.12

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Scale Transformation Constants for the PIRLS 2016 School Emphasis on Academic Success - Teachers' Reports Scale

Scale Transformation Constants	
A = 9.085861	Transformed Scale Score = 9.085861 + 1.287929 • Logit Scale Score
B = 1.287929	

**Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS
2016 School Emphasis on Academic Success - Teachers' Reports Scale**

Raw Score	Transformed Scale Score	Cutpoint
1	2.31036	
2	3.17847	
3	3.83356	
4	4.38451	
5	4.87013	
6	5.30628	
7	5.70360	
8	6.06975	
9	6.41275	
10	6.73719	
11	7.04747	
12	7.34668	
13	7.64101	
14	7.93095	
15	8.22006	
16	8.51056	
17	8.80401	
18	9.10134	9.2
19	9.40263	
20	9.70726	
21	10.01421	
22	10.32239	
23	10.63104	
24	10.93982	
25	11.24966	
26	11.56193	
27	11.87884	
28	12.20341	
29	12.53973	
30	12.89347	12.8
31	13.27297	
32	13.69227	
33	14.16929	
34	14.75380	
35	15.55747	
36	17.11436	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 School Emphasis on Academic Success - Teachers' Reports Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item											
			ATB607A	ATB607B	ATB607C	ATB607D	ATB607E	ATB607F	ATB607G	ATB607H	ATB607I	ATB607J	ATB607K	ATB607L
Australia	0.90	48	0.56	0.63	0.70	0.56	0.44	0.69	0.84	0.79	0.80	0.77	0.76	0.67
Austria	0.82	36	0.40	0.59	0.55	0.48	0.45	0.72	0.81	0.56	0.76	0.63	0.72	0.34
Azerbaijan	0.86	39	0.58	0.66	0.63	0.60	0.66	0.71	0.70	0.63	0.66	0.48	0.66	0.50
Bahrain	0.91	52	0.56	0.68	0.73	0.71	0.61	0.76	0.80	0.72	0.82	0.73	0.79	0.71
Belgium (Flemish)	0.79	31	0.36	0.47	0.59	0.48	0.55	0.50	0.74	0.51	0.74	0.56	0.65	0.42
Belgium (French)	0.82	36	0.45	0.50	0.48	0.49	0.39	0.63	0.75	0.60	0.75	0.70	0.74	0.56
Bulgaria	0.91	49	0.52	0.65	0.73	0.65	0.63	0.74	0.78	0.70	0.78	0.76	0.78	0.60
Canada	0.88	45	0.54	0.60	0.65	0.63	0.48	0.68	0.80	0.72	0.80	0.73	0.77	0.53
Chile	0.77	32	-0.20	-0.21	-0.24	-0.18	-0.18	0.66	0.84	0.74	0.78	0.70	0.69	0.59
Chinese Taipei	0.83	35	0.51	0.42	0.48	0.52	0.48	0.67	0.77	0.65	0.72	0.69	0.63	0.45
Czech Republic	0.86	41	0.58	0.70	0.65	0.61	0.57	0.63	0.66	0.57	0.67	0.68	0.74	0.56
Denmark	0.87	41	0.60	0.55	0.66	0.52	0.51	0.67	0.77	0.56	0.77	0.72	0.70	0.60
Egypt	0.90	48	0.62	0.67	0.63	0.57	0.62	0.74	0.82	0.74	0.79	0.74	0.78	0.57
England	0.89	47	0.62	0.63	0.62	0.59	0.55	0.68	0.82	0.75	0.77	0.73	0.78	0.63
Finland	0.82	35	0.39	0.42	0.63	0.56	0.40	0.64	0.67	0.70	0.73	0.69	0.64	0.50
France	0.83	38	0.34	0.59	0.47	0.42	0.37	0.68	0.83	0.64	0.80	0.73	0.76	0.46
Georgia	0.88	43	0.66	0.70	0.62	0.55	0.63	0.69	0.73	0.61	0.81	0.69	0.58	0.57
Germany	0.83	36	0.41	0.53	0.57	0.54	0.43	0.61	0.79	0.62	0.79	0.61	0.73	0.47
Hong Kong SAR	0.87	42	0.52	0.56	0.51	0.63	0.54	0.70	0.71	0.68	0.74	0.78	0.77	0.57
Hungary	0.91	50	0.57	0.69	0.67	0.64	0.42	0.75	0.83	0.76	0.80	0.76	0.77	0.72
Iran, Islamic Rep. of	0.91	49	0.72	0.73	0.60	0.73	0.71	0.78	0.78	0.63	0.76	0.70	0.71	0.54
Ireland	0.90	48	0.47	0.64	0.74	0.60	0.49	0.69	0.84	0.78	0.85	0.80	0.74	0.55
Israel	0.89	47	0.70	0.74	0.65	0.61	0.64	0.55	0.67	0.68	0.74	0.78	0.76	0.67
Italy	0.88	44	0.69	0.66	0.71	0.72	0.69	0.64	0.78	0.45	0.73	0.64	0.69	0.49
Kazakhstan	0.90	47	0.59	0.70	0.67	0.69	0.66	0.60	0.70	0.68	0.74	0.69	0.79	0.72
Kuwait	0.91	51	0.64	0.66	0.68	0.74	0.66	0.69	0.83	0.63	0.77	0.77	0.81	0.69
Latvia	0.86	40	0.67	0.71	0.55	0.67	0.72	0.64	0.66	0.45	0.70	0.58	0.65	0.46
Lithuania	0.83	36	0.48	0.69	0.68	0.62	0.49	0.55	0.69	0.73	0.64	0.55	0.61	0.40
Macao SAR	0.90	49	0.62	0.73	0.67	0.76	0.74	0.70	0.71	0.70	0.70	0.71	0.75	0.63
Malta	0.85	40	0.61	0.64	0.64	0.59	0.44	0.42	0.66	0.73	0.73	0.73	0.71	0.58
Morocco	0.91	50	0.58	0.66	0.67	0.70	0.70	0.72	0.79	0.70	0.74	0.74	0.81	0.65
Netherlands	0.78	30	0.32	0.38	0.54	0.51	0.39	0.52	0.69	0.62	0.75	0.61	0.63	0.47
New Zealand	0.89	47	0.61	0.64	0.65	0.56	0.56	0.73	0.77	0.70	0.79	0.73	0.75	0.68
Northern Ireland	0.88	44	0.71	0.74	0.68	0.57	0.61	0.64	0.67	0.54	0.67	0.78	0.76	0.54
Norway (5)	0.87	42	0.49	0.67	0.60	0.60	0.56	0.68	0.78	0.63	0.75	0.73	0.70	0.55
Oman	0.91	49	0.61	0.64	0.73	0.62	0.62	0.75	0.79	0.75	0.75	0.72	0.73	0.69
Poland	0.89	47	0.47	0.62	0.65	0.59	0.65	0.73	0.80	0.64	0.81	0.73	0.75	0.67
Portugal	0.90	48	0.64	0.71	0.72	0.64	0.57	0.75	0.80	0.76	0.80	0.70	0.71	0.48
Qatar	0.89	47	0.66	0.70	0.71	0.74	0.60	0.68	0.73	0.58	0.69	0.70	0.77	0.62
Russian Federation	0.86	41	0.66	0.69	0.60	0.65	0.49	0.70	0.73	0.48	0.71	0.68	0.69	0.51
Saudi Arabia	0.91	51	0.69	0.69	0.51	0.76	0.61	0.73	0.79	0.74	0.81	0.72	0.77	0.69
Singapore	0.90	48	0.62	0.64	0.63	0.67	0.60	0.70	0.82	0.66	0.77	0.76	0.78	0.62
Slovak Republic	0.88	44	0.56	0.64	0.65	0.59	0.54	0.69	0.74	0.59	0.75	0.75	0.78	0.62
Slovenia	0.78	30	0.57	0.62	0.54	0.64	0.66	0.55	0.60	0.36	0.52	0.38	0.57	0.46
South Africa	0.92	50	0.53	0.63	0.60	0.59	0.54	0.76	0.80	0.74	0.84	0.81	0.83	0.74
Spain	0.87	42	0.54	0.66	0.64	0.53	0.50	0.71	0.82	0.76	0.76	0.63	0.67	0.51
Sweden	0.85	40	0.46	0.51	0.63	0.62	0.50	0.71	0.77	0.72	0.75	0.74	0.62	0.44
Trinidad and Tobago	0.91	52	0.53	0.63	0.64	0.69	0.67	0.79	0.85	0.72	0.84	0.80	0.76	0.64
United Arab Emirates	0.91	52	0.67	0.70	0.69	0.71	0.66	0.72	0.80	0.67	0.81	0.77	0.81	0.64
United States	0.89	47	0.41	0.58	0.55	0.59	0.45	0.78	0.86	0.82	0.84	0.72	0.73	0.69
Benchmarking Participants														
Buenos Aires, Argentina	0.89	46	0.46	0.65	0.60	0.59	0.58	0.74	0.82	0.74	0.79	0.73	0.80	0.52
Ontario, Canada	0.90	50	0.57	0.67	0.67	0.69	0.46	0.73	0.82	0.78	0.84	0.75	0.84	0.59
Quebec, Canada	0.82	35	0.48	0.49	0.66	0.47	0.39	0.59	0.77	0.69	0.77	0.65	0.68	0.28
Denmark (3)	0.88	44	0.55	0.62	0.65	0.52	0.50	0.64	0.75	0.74	0.78	0.79	0.75	0.59
Norway (4)	0.88	44	0.63	0.73	0.60	0.68	0.56	0.60	0.70	0.69	0.77	0.66	0.70	0.61
Moscow City, Russian Fed.	0.81	34	0.57	0.55	0.67	0.49	0.59	0.64	0.61	0.45	0.64	0.61	0.71	0.36
Eng/Afr/Zulu - RSA (5)	0.92	52	0.60	0.64	0.56	0.69	0.64	0.85	0.85	0.51	0.86	0.84	0.76	0.75
Andalusia, Spain	0.90	48	0.55	0.77	0.71	0.54	0.54	0.71	0.86	0.79	0.83	0.69	0.71	0.51
Madrid, Spain	0.87	45	0.55	0.61	0.76	0.51	0.29	0.78	0.82	0.77	0.82	0.70	0.73	0.53
Abu Dhabi, UAE	0.91	53	0.73	0.74	0.72	0.71	0.64	0.66	0.79	0.68	0.85	0.80	0.80	0.57
Dubai, UAE	0.94	59	0.73	0.75	0.77	0.75	0.68	0.81	0.81	0.67	0.83	0.81	0.84	0.71

SOURCE: IEA's Progress in International Reading Literacy Study - PIRLS 2016

Relationship Between the PIRLS 2016 School Emphasis on Academic Success - Teachers' Reports Scale and PIRLS 2016 Reading Achievement

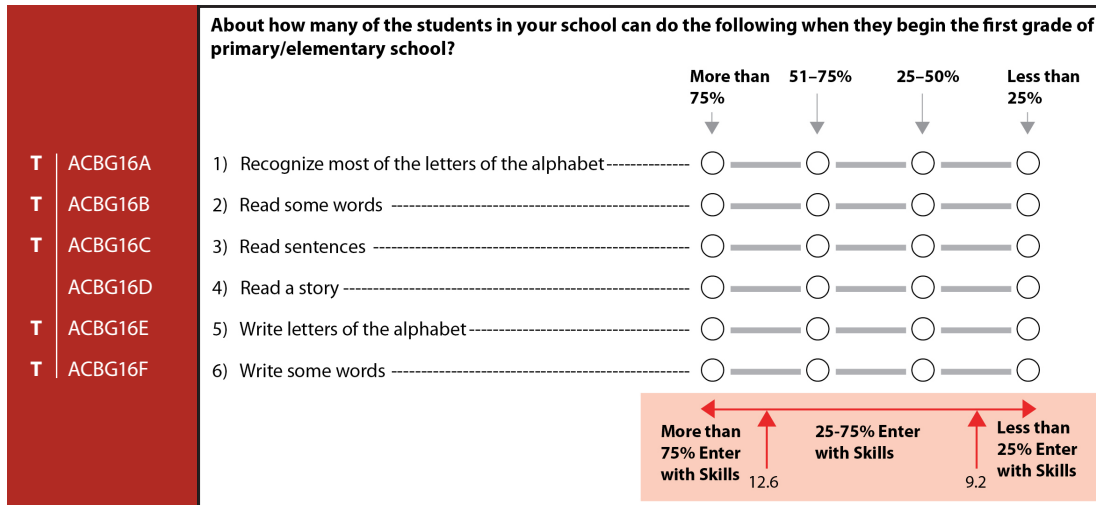
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.25	0.06	0.05
Austria	0.22	0.05	0.04
Azerbaijan	0.12	0.01	0.01
Bahrain	0.25	0.06	0.05
Belgium (Flemish)	0.16	0.03	0.01
Belgium (French)	0.24	0.06	0.05
Bulgaria	0.34	0.11	0.08
Canada	0.12	0.01	0.01
Chile	-0.01	0.00	0.00
Chinese Taipei	0.05	0.00	0.00
Czech Republic	0.11	0.01	0.01
Denmark	0.11	0.01	0.01
Egypt	0.25	0.06	0.04
England	0.09	0.01	0.01
Finland	0.09	0.01	0.01
France	0.14	0.02	0.02
Georgia	0.13	0.02	0.01
Germany	0.31	0.10	0.08
Hong Kong SAR	0.03	0.00	0.00
Hungary	0.31	0.09	0.06
Iran, Islamic Rep. of	0.11	0.01	0.01
Ireland	0.19	0.03	0.03
Israel	0.12	0.01	0.01
Italy	0.04	0.00	0.00
Kazakhstan	-0.02	0.00	0.00
Kuwait	0.10	0.01	0.01
Latvia	0.13	0.02	0.01
Lithuania	0.19	0.04	0.03
Macao SAR	0.10	0.01	0.02
Malta	0.13	0.02	0.02
Morocco	0.29	0.09	0.09
Netherlands	0.12	0.01	0.01
New Zealand	0.17	0.03	0.03
Northern Ireland	0.11	0.01	0.01
Norway (5)	0.15	0.02	0.02
Oman	0.14	0.02	0.02
Poland	0.06	0.00	0.00
Portugal	0.17	0.03	0.02
Qatar	0.08	0.01	0.01
Russian Federation	0.16	0.03	0.04
Saudi Arabia	0.21	0.04	0.04
Singapore	0.21	0.05	0.04
Slovak Republic	0.27	0.07	0.04
Slovenia	0.04	0.00	0.00
South Africa	0.03	0.00	0.00
Spain	0.13	0.02	0.02
Sweden	0.14	0.02	0.01
Trinidad and Tobago	0.19	0.03	0.04
United Arab Emirates	0.23	0.05	0.05
United States	0.23	0.05	0.06
International Median	0.14	0.02	0.02
Benchmarking Participants			
Buenos Aires, Argentina	0.20	0.04	0.04
Ontario, Canada	0.14	0.02	0.02
Quebec, Canada	0.13	0.02	0.01
Denmark (3)	0.13	0.02	0.01
Norway (4)	0.10	0.01	0.01
Moscow City, Russian Fed.	0.12	0.01	0.02
Eng/Afr/Zulu - RSA (5)	0.05	0.00	0.01
Andalusia, Spain	0.19	0.04	0.03
Madrid, Spain	0.19	0.04	0.03
Abu Dhabi, UAE	0.16	0.02	0.03
Dubai, UAE	0.26	0.07	0.05

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Schools Where Students Enter the Primary Grades with Early Literacy Skills Scale

The *Schools Where Students Enter the Primary Grades with Early Literacy Skills* (ELS) scale was created based on principals' responses about the percentage of children in the school who began first grade with the six key skills described below.

Items in the PIRLS 2016 *Schools Where Students Enter the Primary Grades with Early Literacy Skills* Scale



T Trend item—item was included in the same scale in PIRLS 2011 and was used for linking the PIRLS 2011 and PIRLS 2016 scales.

Item Parameters for the PIRLS 2016 Schools Where Students Enter the Primary Grades with Early Literacy Skills Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ACBG16A	-1.78233	-1.97973	0.20099	1.77874	1.50
ACBG16B	-0.57140	-2.07581	0.12065	1.95516	0.90
ACBG16C	1.30316	-1.75400	-0.13912	1.89312	0.93
ACBG16D	2.41057	-1.45499	-0.37070	1.82569	1.19
ACBG16E	-1.31646	-2.29289	0.42674	1.86615	1.31
ACBG16F	-0.04354	-1.97416	0.16291	1.81125	1.08

Scale Transformation Constants for the PIRLS 2016 Schools Where Students Enter the Primary Grades with Early Literacy Skills Scale

Scale Transformation Constants

A = 10.926395

B = 0.700871

Transformed Scale Score = 10.926395 + 0.700871 • Logit Scale Score

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Schools Where Students Enter the Primary Grades with Early Literacy Skills Scale

Raw Score	Transformed Scale Score	Cutpoint
0	7.11411	
1	8.08353	
2	8.66466	
3	9.13106	9.2
4	9.52767	
5	9.87200	
6	10.17733	
7	10.45638	
8	10.71757	
9	10.96860	
10	11.21588	
11	11.46487	
12	11.72126	
13	11.99312	
14	12.29199	
15	12.64157	12.6
16	13.08630	
17	13.70842	
18	14.76593	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Schools Where Students Enter the Primary Grades with Early Literacy Skills Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ACBG16A	ACBG16B	ACBG16C	ACBG16D	ACBG16E	ACBG16F
Australia	0.94	77	0.87	0.92	0.91	0.77	0.89	0.90
Austria	0.94	78	0.90	0.88	0.94	0.91	0.77	0.88
Azerbaijan	0.95	79	0.84	0.92	0.92	0.83	0.91	0.90
Bahrain	0.94	77	0.82	0.94	0.91	0.73	0.89	0.94
Belgium (Flemish)	0.86	62	0.73	0.83	0.82	0.82	0.69	0.82
Belgium (French)	0.83	53	0.74	0.86	0.68	0.50	0.76	0.78
Bulgaria	0.92	72	0.80	0.91	0.91	0.78	0.82	0.87
Canada	0.93	75	0.83	0.92	0.88	0.77	0.88	0.90
Chile	0.96	84	0.89	0.94	0.93	0.88	0.91	0.93
Chinese Taipei	0.94	78	0.84	0.93	0.92	0.89	0.88	0.85
Czech Republic	0.78	51	0.77	0.73	0.57	0.51	0.85	0.80
Denmark	0.88	64	0.83	0.88	0.82	0.69	0.77	0.79
Egypt	0.93	74	0.89	0.92	0.88	0.63	0.90	0.92
England	0.97	86	0.93	0.95	0.93	0.85	0.94	0.95
Finland	0.86	59	0.67	0.83	0.88	0.74	0.66	0.79
France	0.82	54	0.71	0.79	0.72	0.61	0.75	0.81
Georgia	0.95	80	0.83	0.90	0.94	0.86	0.91	0.94
Germany	0.78	52	0.76	0.83	0.62	0.52	0.76	0.78
Hong Kong SAR	0.95	80	0.88	0.93	0.94	0.91	0.88	0.81
Hungary	0.92	75	0.88	0.92	0.93	0.76	0.80	0.91
Iran, Islamic Rep. of	0.95	81	0.86	0.94	0.94	0.83	0.89	0.93
Ireland	0.87	70	0.78	0.86	0.87	0.65	0.92	0.91
Israel	0.91	70	0.73	0.89	0.88	0.83	0.81	0.88
Italy	0.92	72	0.79	0.90	0.88	0.78	0.85	0.89
Kazakhstan	0.90	68	0.76	0.88	0.90	0.82	0.78	0.81
Kuwait	0.95	81	0.86	0.94	0.94	0.81	0.91	0.93
Latvia	0.90	68	0.68	0.87	0.90	0.82	0.84	0.84
Lithuania	0.89	65	0.71	0.88	0.87	0.76	0.77	0.84
Macao SAR	0.93	76	0.85	0.85	0.92	0.83	0.91	0.86
Malta	0.90	69	0.74	0.90	0.88	0.73	0.82	0.88
Morocco	0.95	82	0.92	0.96	0.91	0.75	0.94	0.94
Netherlands	0.86	61	0.66	0.86	0.81	0.68	0.80	0.84
New Zealand	0.93	79	0.85	0.93	0.92	0.85	0.89	-
Northern Ireland	0.96	86	0.94	0.97	0.96	0.77	0.93	0.96
Norway (5)	0.86	61	0.82	0.87	0.78	0.54	0.81	0.81
Oman	0.90	68	0.73	0.91	0.88	0.68	0.82	0.90
Poland	0.93	75	0.80	0.90	0.92	0.74	0.90	0.91
Portugal	0.92	74	0.82	0.92	0.89	0.85	0.79	0.87
Qatar	0.96	84	0.87	0.95	0.93	0.85	0.92	0.95
Russian Federation	0.91	69	0.73	0.87	0.89	0.84	0.78	0.83
Saudi Arabia	0.93	74	0.83	0.93	0.92	0.66	0.86	0.92
Singapore	0.95	82	0.89	0.96	0.91	0.84	0.93	0.91
Slovak Republic	0.84	58	0.85	0.86	0.70	0.56	0.82	0.73
Slovenia	0.86	61	0.78	0.89	0.75	0.61	0.80	0.83
South Africa	0.93	75	0.76	0.88	0.90	0.86	0.88	0.91
Spain	0.90	70	0.82	0.90	0.88	0.74	0.79	0.88
Sweden	0.88	63	0.76	0.84	0.88	0.73	0.70	0.84
Trinidad and Tobago	0.92	72	0.81	0.90	0.87	0.74	0.87	0.88
United Arab Emirates	0.95	81	0.89	0.96	0.92	0.77	0.91	0.94
United States	0.97	87	0.91	0.96	0.94	0.89	0.95	0.95
Benchmarking Participants								
Buenos Aires, Argentina	0.90	66	0.81	0.90	0.83	0.62	0.83	0.84
Ontario, Canada	0.94	78	0.88	0.92	0.88	0.81	0.88	0.92
Quebec, Canada	0.89	65	0.78	0.91	0.82	0.58	0.86	0.86
Denmark (3)	0.88	63	0.82	0.88	0.82	0.69	0.77	0.78
Norway (4)	0.86	60	0.82	0.87	0.78	0.51	0.81	0.81
Moscow City, Russian Fed.	0.88	63	0.78	0.89	0.85	0.78	0.68	0.74
Eng/Afr/Zulu - RSA (5)	0.92	73	0.73	0.87	0.90	0.86	0.87	0.88
Andalusia, Spain	0.89	69	0.83	0.87	0.88	0.75	0.79	0.88
Madrid, Spain	0.81	58	0.73	0.82	0.85	0.77	0.66	0.73
Abu Dhabi, UAE	0.95	80	0.90	0.95	0.91	0.76	0.90	0.94
Dubai, UAE	0.95	81	0.90	0.96	0.92	0.74	0.93	0.95

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Relationship Between the PIRLS 2016 Schools Where Students Enter the Primary Grades with Early Literacy Skills Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.12	0.01	0.01
Austria	0.12	0.01	0.01
Azerbaijan	0.08	0.01	0.00
Bahrain	0.19	0.04	0.03
Belgium (Flemish)	0.05	0.00	0.00
Belgium (French)	0.12	0.01	0.02
Bulgaria	0.32	0.10	0.10
Canada	0.16	0.03	0.04
Chile	0.26	0.07	0.07
Chinese Taipei	0.05	0.00	0.02
Czech Republic	0.09	0.01	0.00
Denmark	0.09	0.01	0.01
Egypt	0.11	0.01	0.01
England	0.10	0.01	0.01
Finland	0.05	0.00	0.00
France	0.07	0.00	0.02
Georgia	0.07	0.00	0.00
Germany	0.17	0.03	0.01
Hong Kong SAR	0.09	0.01	0.02
Hungary	0.09	0.01	0.01
Iran, Islamic Rep. of	-0.06	0.00	0.01
Ireland	0.08	0.01	0.00
Israel	0.07	0.00	0.04
Italy	0.04	0.00	0.00
Kazakhstan	0.10	0.01	0.01
Kuwait	0.12	0.01	0.01
Latvia	0.08	0.01	0.01
Lithuania	0.15	0.02	0.01
Macao SAR	0.01	0.00	0.01
Malta	0.02	0.00	0.00
Morocco	0.26	0.07	0.06
Netherlands	0.07	0.00	0.01
New Zealand	0.17	0.03	0.05
Northern Ireland	0.12	0.01	0.02
Norway (5)	0.04	0.00	0.00
Oman	0.11	0.01	0.02
Poland	-0.02	0.00	0.00
Portugal	0.06	0.00	0.01
Qatar	0.20	0.04	0.04
Russian Federation	0.23	0.05	0.04
Saudi Arabia	0.01	0.00	0.01
Singapore	0.09	0.01	0.02
Slovak Republic	0.18	0.03	0.01
Slovenia	0.07	0.00	0.00
South Africa	-0.02	0.00	0.00
Spain	0.15	0.02	0.02
Sweden	0.18	0.03	0.02
Trinidad and Tobago	0.26	0.07	0.04
United Arab Emirates	0.34	0.12	0.11
United States	0.19	0.04	0.03
International Median	0.09	0.01	0.01
Benchmarking Participants			
Buenos Aires, Argentina	0.27	0.07	0.06
Ontario, Canada	0.15	0.02	0.01
Quebec, Canada	0.07	0.01	0.00
Denmark (3)	0.06	0.00	0.00
Norway (4)	0.09	0.01	0.01
Moscow City, Russian Fed.	0.18	0.03	0.03
Eng/Afr/Zulu - RSA (5)	0.07	0.00	0.03
Andalusia, Spain	0.14	0.02	0.02
Madrid, Spain	0.14	0.02	0.02
Abu Dhabi, UAE	0.26	0.07	0.06
Dubai, UAE	0.32	0.10	0.09

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Student Bullying Scale

The *Student Bullying* (SB) scale was created based on students' responses to how often they experienced the eight bullying behaviors described below.

Items in the PIRLS 2016 *Student Bullying* Scale

During this school year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?

	Never	A few times a year	Once or twice a month	At least once a week
ASBG13A 1) Made fun of me or called me names-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBG13B 2) Left me out of their games or activities-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBG13C 3) Spread lies about me-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBG13D 4) Stole something from me-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBG13E 5) Hit or hurt me (e.g., shoving, hitting, kicking)-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBG13F 6) Made me do things I didn't want to do-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBG13G 7) Shared embarrassing information about me-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBG13H 8) Threatened me-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Almost Never About Monthly About Weekly

9.5 7.9

Item Parameters for the PIRLS 2016 Student Bullying Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ASBG13A	0.47927	0.27533	-0.38571	0.11038	1.05
ASBG13B	0.28864	-0.00106	-0.07440	0.07546	1.16
ASBG13C	0.17327	0.02052	-0.09847	0.07795	0.96
ASBG13D	-0.31380	0.27095	-0.16042	-0.11053	1.12
ASBG13E	0.17865	0.00530	-0.18154	0.17624	1.02
ASBG13F	-0.30137	0.21016	0.06970	-0.27986	0.99
ASBG13G	-0.19155	0.16906	-0.08285	-0.08621	0.94
ASBG13H	-0.31311	0.37439	0.00776	-0.38215	0.94

Scale Transformation Constants for the PIRLS 2016 Student Bullying Scale

Scale Transformation Constants	
A = 7.902851	Transformed Scale Score = 7.902851 + 1.812747 • Logit Scale Score
B = 1.812747	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Student Bullying Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.27794	
1	4.83400	
2	5.48907	
3	5.91604	
4	6.24033	
5	6.50472	
6	6.74041	
7	6.95212	
8	7.14715	
9	7.33106	
10	7.50803	
11	7.68141	
12	7.84988	7.9
13	8.02779	
14	8.20567	
15	8.39019	
16	8.58463	
17	8.79311	
18	9.02099	
19	9.27097	
20	9.56469	9.5
21	9.92468	
22	10.40216	
23	11.14752	
24	12.92197	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Student Bullying Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item							
			ASBG13A	ASBG13B	ASBG13C	ASBG13D	ASBG13E	ASBG13F	ASBG13G	ASBG13H
Australia	0.86	50	0.72	0.68	0.75	0.64	0.72	0.68	0.73	0.72
Austria	0.82	45	0.69	0.65	0.73	0.57	0.69	0.67	0.69	0.67
Azerbaijan	0.80	43	0.63	0.60	0.69	0.62	0.66	0.69	0.75	0.63
Bahrain	0.84	46	0.63	0.65	0.73	0.64	0.70	0.68	0.69	0.71
Belgium (Flemish)	0.84	47	0.72	0.68	0.74	0.53	0.72	0.67	0.70	0.67
Belgium (French)	0.83	45	0.69	0.61	0.72	0.60	0.70	0.66	0.70	0.72
Bulgaria	0.81	44	0.66	0.53	0.74	0.52	0.73	0.67	0.73	0.70
Canada	0.85	49	0.71	0.66	0.75	0.62	0.72	0.68	0.72	0.72
Chile	0.84	49	0.69	0.69	0.72	0.64	0.74	0.74	0.66	0.73
Chinese Taipei	0.84	47	0.72	0.69	0.73	0.51	0.69	0.67	0.76	0.71
Czech Republic	0.82	44	0.72	0.55	0.73	0.58	0.66	0.66	0.75	0.65
Denmark	0.84	48	0.70	0.68	0.74	0.54	0.72	0.71	0.71	0.72
Egypt	0.84	49	0.66	0.65	0.73	0.66	0.72	0.74	0.74	0.67
England	0.85	49	0.73	0.68	0.77	0.56	0.72	0.68	0.71	0.73
Finland	0.84	48	0.73	0.67	0.75	0.54	0.72	0.67	0.74	0.71
France	0.80	43	0.68	0.61	0.72	0.53	0.67	0.62	0.68	0.69
Georgia	0.82	47	0.69	0.57	0.73	0.66	0.69	0.72	0.72	0.72
Germany	0.82	45	0.65	0.64	0.72	0.56	0.71	0.67	0.71	0.67
Hong Kong SAR	0.83	46	0.65	0.65	0.76	0.54	0.66	0.74	0.63	0.74
Hungary	0.79	41	0.64	0.64	0.69	0.52	0.65	0.64	0.67	0.67
Iran, Islamic Rep. of	0.82	45	0.66	0.57	0.72	0.62	0.71	0.66	0.71	0.72
Ireland	0.84	47	0.71	0.67	0.75	0.58	0.69	0.66	0.70	0.70
Israel	-	-	-	-	-	-	-	-	-	-
Italy	0.81	42	0.69	0.63	0.70	0.54	0.64	0.63	0.70	0.65
Kazakhstan	0.81	45	0.65	0.58	0.72	0.62	0.69	0.65	0.74	0.68
Kuwait	0.77	39	0.61	0.62	0.64	0.56	0.64	0.61	0.67	0.63
Latvia	0.84	47	0.73	0.61	0.76	0.54	0.74	0.66	0.75	0.69
Lithuania	0.81	44	0.69	0.59	0.72	0.57	0.68	0.64	0.71	0.68
Macao SAR	0.78	40	0.57	0.59	0.71	0.55	0.63	0.68	0.58	0.71
Malta	0.86	50	0.72	0.66	0.76	0.64	0.71	0.72	0.74	0.73
Morocco	0.80	41	0.61	0.62	0.69	0.60	0.66	0.63	0.68	0.66
Netherlands	0.83	46	0.73	0.69	0.73	0.54	0.70	0.67	0.68	0.68
New Zealand	0.87	52	0.73	0.70	0.76	0.66	0.73	0.71	0.76	0.71
Northern Ireland	0.83	47	0.73	0.68	0.74	0.57	0.69	0.66	0.70	0.69
Norway (5)	0.84	48	0.74	0.69	0.76	0.52	0.70	0.68	0.72	0.71
Oman	0.82	44	0.64	0.57	0.70	0.65	0.68	0.67	0.71	0.67
Poland	0.85	50	0.70	0.69	0.76	0.58	0.72	0.69	0.79	0.73
Portugal	0.83	46	0.69	0.62	0.73	0.56	0.74	0.65	0.70	0.71
Qatar	0.85	49	0.67	0.61	0.73	0.67	0.72	0.73	0.74	0.73
Russian Federation	0.79	42	0.69	0.44	0.72	0.50	0.72	0.61	0.76	0.66
Saudi Arabia	0.87	53	0.68	0.66	0.74	0.67	0.75	0.75	0.78	0.75
Singapore	0.83	47	0.65	0.65	0.73	0.59	0.70	0.68	0.72	0.72
Slovak Republic	0.82	46	0.70	0.59	0.74	0.55	0.68	0.68	0.73	0.71
Slovenia	0.84	47	0.71	0.63	0.77	0.57	0.69	0.66	0.76	0.69
South Africa	0.79	40	0.60	0.58	0.65	0.56	0.65	0.68	0.68	0.64
Spain	0.82	44	0.66	0.63	0.71	0.55	0.69	0.67	0.65	0.71
Sweden	0.84	48	0.71	0.67	0.77	0.59	0.71	0.68	0.70	0.71
Trinidad and Tobago	0.80	42	0.63	0.56	0.69	0.60	0.70	0.59	0.72	0.66
United Arab Emirates	0.84	47	0.65	0.62	0.72	0.66	0.72	0.71	0.71	0.72
United States	0.85	49	0.72	0.65	0.76	0.66	0.70	0.65	0.73	0.72
Benchmarking Participants										
Buenos Aires, Argentina	0.81	47	0.66	0.66	0.74	0.61	0.70	-	0.72	0.70
Ontario, Canada	0.85	49	0.70	0.67	0.76	0.63	0.72	0.69	0.71	0.71
Quebec, Canada	0.84	47	0.74	0.63	0.74	0.55	0.70	0.64	0.74	0.73
Denmark (3)	0.83	47	0.69	0.63	0.73	0.52	0.71	0.69	0.70	0.76
Norway (4)	0.85	48	0.72	0.67	0.76	0.56	0.71	0.70	0.71	0.73
Moscow City, Russian Fed.	0.83	46	0.73	0.51	0.73	0.57	0.73	0.66	0.77	0.70
Enq/Afr/Zulu - RSA (5)	0.78	39	0.59	0.55	0.65	0.52	0.67	0.66	0.69	0.67
Andalusia, Spain	0.80	42	0.64	0.62	0.70	0.54	0.71	0.65	0.64	0.69
Madrid, Spain	0.80	42	0.65	0.65	0.69	0.51	0.67	0.65	0.64	0.70
Abu Dhabi, UAE	0.85	48	0.64	0.62	0.72	0.66	0.71	0.74	0.72	0.73
Dubai, UAE	0.85	48	0.66	0.65	0.75	0.64	0.71	0.69	0.74	0.70

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Relationship Between the PIRLS 2016 Student Bullying Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.13	0.02	0.03
Austria	0.13	0.02	0.03
Azerbaijan	0.13	0.02	0.03
Bahrain	0.22	0.05	0.05
Belgium (Flemish)	0.10	0.01	0.02
Belgium (French)	0.09	0.01	0.01
Bulgaria	0.12	0.01	0.02
Canada	0.13	0.02	0.03
Chile	0.19	0.04	0.06
Chinese Taipei	0.11	0.01	0.02
Czech Republic	0.11	0.01	0.02
Denmark	0.06	0.00	0.01
Egypt	0.10	0.01	0.01
England	0.14	0.02	0.03
Finland	0.12	0.01	0.02
France	0.14	0.02	0.03
Georgia	0.18	0.03	0.04
Germany	0.15	0.02	0.04
Hong Kong SAR	0.11	0.01	0.02
Hungary	0.12	0.02	0.03
Iran, Islamic Rep. of	0.01	0.00	0.00
Ireland	0.18	0.03	0.04
Israel	-	-	-
Italy	0.07	0.00	0.01
Kazakhstan	0.10	0.01	0.01
Kuwait	0.12	0.01	0.02
Latvia	0.18	0.03	0.04
Lithuania	0.19	0.04	0.04
Macao SAR	0.11	0.01	0.02
Malta	0.16	0.02	0.04
Morocco	0.15	0.02	0.03
Netherlands	0.07	0.00	0.01
New Zealand	0.17	0.03	0.04
Northern Ireland	0.13	0.02	0.03
Norway (5)	0.09	0.01	0.02
Oman	0.15	0.02	0.03
Poland	0.18	0.03	0.04
Portugal	0.10	0.01	0.01
Qatar	0.20	0.04	0.06
Russian Federation	0.11	0.01	0.02
Saudi Arabia	0.25	0.06	0.08
Singapore	0.18	0.03	0.04
Slovak Republic	0.14	0.02	0.03
Slovenia	0.09	0.01	0.02
South Africa	0.17	0.03	0.04
Spain	0.14	0.02	0.03
Sweden	0.11	0.01	0.02
Trinidad and Tobago	0.12	0.01	0.02
United Arab Emirates	0.22	0.05	0.06
United States	0.13	0.02	0.03
International Median	0.13	0.02	0.03
Benchmarking Participants			
Buenos Aires, Argentina	0.14	0.02	0.03
Ontario, Canada	0.14	0.02	0.03
Quebec, Canada	0.08	0.01	0.01
Denmark (3)	0.12	0.01	0.02
Norway (4)	0.07	0.00	0.01
Moscow City, Russian Fed.	0.15	0.02	0.02
Eng/Afr/Zulu - RSA (5)	0.19	0.04	0.05
Andalusia, Spain	0.11	0.01	0.02
Madrid, Spain	0.09	0.01	0.02
Abu Dhabi, UAE	0.23	0.05	0.07
Dubai, UAE	0.16	0.03	0.05

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

A dash (-) indicates comparable data not available.

Students Confident in Reading Scale

The *Students Confident in Reading* (SCR) scale was created based on students' degree of agreement with the six statements described below.

Items in the PIRLS 2016 *Students Confident in Reading* Scale

		How well do you read? Tell how much you agree with each of these statements.			
		Agree a lot	Agree a little	Disagree a little	Disagree a lot
ASBR07A	1) I usually do well in reading -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR07B	2) Reading is easy for me -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR07C*	3) I have trouble reading stories with difficult words* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR07D*	4) Reading is harder for me than for many of my classmates* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR07E*	5) Reading is harder for me than any other subject* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR07F*	6) I am just not good at reading* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* Reverse coded

Very Confident Somewhat Confident Not Confident

10.3 8.2

Item Parameters for the PIRLS 2016 Students Confident in Reading Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ASBR07A	-0.52312	-0.32359	-0.68416	1.00775	1.11
ASBR07B	-0.60120	-0.48024	-0.42689	0.90713	1.03
* ASBR07C	1.01425	-0.93819	0.50887	0.42932	1.22
* ASBR07D	0.25813	-0.38905	0.22763	0.16142	0.94
* ASBR07E	-0.00713	-0.11719	0.22036	-0.10317	0.92
* ASBR07F	-0.14093	-0.05955	0.23700	-0.17745	0.90

* Reverse coded

Scale Transformation Constants for the PIRLS 2016 Students Confident in Reading Scale

Scale Transformation Constants	
A = 8.137507	Transformed Scale Score = 8.137507 + 1.753646 • Logit Scale Score
B = 1.753646	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Students Confident in Reading Scale

Raw Score	Transformed Scale Score	Cutpoint
0	2.95794	
1	4.60752	
2	5.40368	
3	5.97279	
4	6.43307	
5	6.82953	
6	7.18533	
7	7.50982	
8	7.81385	
9	8.10473	8.2
10	8.40103	
11	8.70504	
12	9.03187	
13	9.39594	
14	9.81182	
15	10.31185	10.3
16	10.93952	
17	11.79542	
18	13.47027	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Students Confident in Reading Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ASBR07A	ASBR07B	ASBR07C*	ASBR07D*	ASBR07E*	ASBR07F*
Australia	0.81	52	0.67	0.73	0.62	0.79	0.75	0.77
Austria	0.81	53	0.71	0.74	0.59	0.76	0.76	0.79
Azerbaijan	0.68	40	0.11	0.25	0.51	0.84	0.84	0.81
Bahrain	0.69	40	0.19	0.40	0.62	0.76	0.81	0.75
Belgium (Flemish)	0.83	56	0.75	0.80	0.57	0.76	0.75	0.83
Belgium (French)	0.75	45	0.59	0.60	0.55	0.74	0.75	0.77
Bulgaria	0.80	53	0.71	0.73	0.49	0.78	0.80	0.80
Canada	0.81	53	0.69	0.75	0.57	0.78	0.78	0.78
Chile	0.69	39	0.38	0.48	0.57	0.71	0.75	0.78
Chinese Taipei	0.78	49	0.60	0.66	0.45	0.81	0.81	0.80
Czech Republic	0.79	50	0.65	0.73	0.50	0.78	0.75	0.80
Denmark	0.83	56	0.77	0.80	0.58	0.75	0.78	0.79
Egypt	0.72	42	0.32	0.60	0.53	0.77	0.80	0.76
England	0.82	54	0.68	0.74	0.61	0.80	0.78	0.79
Finland	0.80	53	0.72	0.75	0.57	0.79	0.76	0.78
France	0.78	48	0.68	0.62	0.57	0.77	0.72	0.79
Georgia	0.75	45	0.45	0.52	0.49	0.81	0.82	0.82
Germany	0.82	54	0.71	0.74	0.58	0.78	0.78	0.80
Hong Kong SAR	0.80	50	0.62	0.67	0.57	0.79	0.80	0.76
Hungary	0.82	55	0.76	0.75	0.52	0.80	0.77	0.82
Iran, Islamic Rep. of	0.70	41	0.40	0.46	0.59	0.74	0.79	0.75
Ireland	0.82	54	0.72	0.78	0.61	0.79	0.75	0.76
Israel	0.75	46	0.42	0.63	0.49	0.80	0.80	0.82
Italy	0.75	45	0.63	0.63	0.61	0.75	0.67	0.73
Kazakhstan	0.77	48	0.37	0.44	0.67	0.85	0.85	0.79
Kuwait	0.65	37	0.44	0.57	0.42	0.69	0.73	0.73
Latvia	0.80	52	0.73	0.76	0.51	0.79	0.76	0.74
Lithuania	0.80	52	0.69	0.74	0.54	0.80	0.78	0.75
Macao SAR	0.75	45	0.61	0.63	0.46	0.76	0.77	0.75
Malta	0.71	42	0.55	0.53	0.49	0.79	0.73	0.74
Morocco	0.56	34	-0.08	0.32	0.58	0.74	0.76	0.71
Netherlands	0.85	59	0.73	0.82	0.58	0.79	0.80	0.84
New Zealand	0.76	46	0.55	0.63	0.55	0.79	0.78	0.74
Northern Ireland	0.83	55	0.70	0.74	0.65	0.78	0.77	0.79
Norway (5)	0.82	54	0.71	0.77	0.64	0.76	0.80	0.74
Oman	0.67	38	0.33	0.40	0.55	0.75	0.78	0.72
Poland	0.83	56	0.68	0.73	0.65	0.80	0.80	0.79
Portugal	0.72	44	0.71	0.65	0.56	0.66	0.57	0.79
Qatar	0.72	42	0.19	0.36	0.65	0.80	0.83	0.80
Russian Federation	0.79	51	0.71	0.72	0.54	0.80	0.74	0.73
Saudi Arabia	0.53	41	-0.41	0.26	0.64	0.73	0.83	0.75
Singapore	0.79	49	0.65	0.70	0.57	0.77	0.75	0.76
Slovak Republic	0.81	53	0.68	0.74	0.54	0.79	0.76	0.82
Slovenia	0.83	55	0.73	0.77	0.66	0.78	0.77	0.74
South Africa	0.58	35	-0.13	-0.07	0.61	0.74	0.77	0.74
Spain	0.68	40	0.61	0.60	0.41	0.70	0.67	0.73
Sweden	0.82	55	0.69	0.75	0.65	0.77	0.77	0.79
Trinidad and Tobago	0.76	47	0.63	0.66	0.49	0.75	0.77	0.77
United Arab Emirates	0.72	42	0.39	0.47	0.61	0.76	0.79	0.75
United States	0.79	49	0.62	0.67	0.57	0.80	0.76	0.76
Benchmarking Participants								
Buenos Aires, Argentina	0.65	37	0.47	0.43	0.46	0.77	0.65	0.78
Ontario, Canada	0.82	54	0.70	0.76	0.57	0.79	0.79	0.79
Quebec, Canada	0.82	54	0.70	0.75	0.58	0.77	0.78	0.80
Denmark (3)	0.80	51	0.71	0.75	0.60	0.74	0.73	0.77
Norway (4)	0.79	50	0.65	0.73	0.61	0.74	0.77	0.74
Moscow City, Russian Fed.	0.80	52	0.74	0.77	0.53	0.80	0.76	0.70
Eng/Afr/Zulu - RSA (5)	0.68	39	0.23	0.30	0.56	0.80	0.80	0.77
Andalusia, Spain	0.66	38	0.59	0.51	0.42	0.71	0.68	0.73
Madrid, Spain	0.67	39	0.63	0.57	0.42	0.71	0.65	0.72
Abu Dhabi, UAE	0.71	41	0.38	0.46	0.61	0.75	0.78	0.75
Dubai, UAE	0.75	45	0.51	0.55	0.58	0.77	0.78	0.76

*Reverse coded

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 Students Confident in Reading Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.52	0.27	0.28
Austria	0.41	0.17	0.16
Azerbaijan	0.31	0.10	0.11
Bahrain	0.45	0.20	0.22
Belgium (Flemish)	0.33	0.11	0.10
Belgium (French)	0.43	0.18	0.19
Bulgaria	0.42	0.17	0.18
Canada	0.45	0.20	0.21
Chile	0.39	0.15	0.17
Chinese Taipei	0.40	0.16	0.17
Czech Republic	0.40	0.16	0.17
Denmark	0.50	0.25	0.23
Egypt	0.39	0.15	0.16
England	0.49	0.24	0.23
Finland	0.42	0.18	0.17
France	0.41	0.17	0.19
Georgia	0.38	0.15	0.16
Germany	0.40	0.16	0.17
Hong Kong SAR	0.39	0.15	0.14
Hungary	0.49	0.24	0.22
Iran, Islamic Rep. of	0.43	0.18	0.19
Ireland	0.44	0.19	0.19
Israel	0.46	0.21	0.24
Italy	0.30	0.09	0.11
Kazakhstan	0.23	0.05	0.07
Kuwait	0.36	0.13	0.14
Latvia	0.41	0.17	0.17
Lithuania	0.47	0.22	0.20
Macao SAR	0.37	0.14	0.13
Malta	0.46	0.21	0.21
Morocco	0.42	0.17	0.19
Netherlands	0.37	0.14	0.13
New Zealand	0.50	0.25	0.26
Northern Ireland	0.46	0.21	0.23
Norway (5)	0.46	0.21	0.19
Oman	0.43	0.18	0.19
Poland	0.40	0.16	0.20
Portugal	0.39	0.16	0.17
Qatar	0.43	0.18	0.21
Russian Federation	0.41	0.17	0.19
Saudi Arabia	0.33	0.11	0.12
Singapore	0.49	0.24	0.24
Slovak Republic	0.42	0.18	0.19
Slovenia	0.43	0.19	0.20
South Africa	0.39	0.15	0.15
Spain	0.39	0.15	0.16
Sweden	0.41	0.17	0.17
Trinidad and Tobago	0.53	0.29	0.30
United Arab Emirates	0.48	0.23	0.25
United States	0.44	0.20	0.19
International Median	0.42	0.17	0.19
Benchmarking Participants			
Buenos Aires, Argentina	0.43	0.19	0.19
Ontario, Canada	0.45	0.20	0.21
Quebec, Canada	0.43	0.19	0.19
Denmark (3)	0.47	0.22	0.21
Norway (4)	0.45	0.20	0.20
Moscow City, Russian Fed.	0.40	0.16	0.16
Eng/Afr/Zulu - RSA (5)	0.43	0.19	0.18
Andalusia, Spain	0.42	0.18	0.20
Madrid, Spain	0.37	0.14	0.14
Abu Dhabi, UAE	0.50	0.25	0.27
Dubai, UAE	0.44	0.20	0.22

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Students Engaged in Reading Lessons Scale

The *Students Engaged in Reading Lessons* (ERL) scale was created based on students' degree of agreement with the nine statements described below.

Items in the PIRLS 2016 *Students Engaged in Reading Lessons* Scale

How much do you agree with these statements about your reading lessons?

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
ASBR01A 1) I like what I read about in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR01B 2) My teacher gives me interesting things to read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR01C 3) I know what my teacher expects me to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR01D 4) My teacher is easy to understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR01E 5) I am interested in what my teacher says	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR01F 6) My teacher encourages me to say what I think about what I have read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR01G 7) My teacher lets me show what I have learned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR01H 8) My teacher does a variety of things to help us learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR01I 9) My teacher tells me how to do better when I make a mistake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Very Engaged 9.5 Somewhat Engaged 7.1 Less than Engaged

Item Parameters for the PIRLS 2016 Students Engaged in Reading Lessons Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ASBR01A	0.21864	-0.59198	-0.74411	1.33609	1.06
ASBR01B	0.25459	-0.68288	-0.46758	1.15046	0.94
ASBR01C	0.06439	-0.36656	-0.61903	0.98559	1.19
ASBR01D	-0.12990	-0.58489	-0.54402	1.12891	1.04
ASBR01E	-0.02167	-0.56053	-0.56022	1.12075	0.95
ASBR01F	0.35783	-0.55558	-0.43518	0.99076	1.04
ASBR01G	0.13972	-0.56265	-0.42458	0.98723	1.01
ASBR01H	-0.53069	-0.08820	-0.47557	0.56377	0.98
ASBR01I	-0.35291	-0.16188	-0.43241	0.59429	1.00

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Scale Transformation Constants for the PIRLS 2016 Students Engaged in Reading Lessons Scale

Scale Transformation Constants	
A = 7.347685	Transformed Scale Score = 7.347685 + 1.442440 • Logit Scale Score
B = 1.442440	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Students Engaged in Reading Lessons Scale

Raw Score	Transformed Scale Score	Cutpoint
0	2.54080	
1	3.94030	
2	4.57040	
3	4.98984	
4	5.31080	
5	5.57732	
6	5.80694	
7	6.01513	
8	6.20800	
9	6.39051	
10	6.56630	
11	6.73824	
12	6.91081	
13	7.08114	7.1
14	7.25473	
15	7.43394	
16	7.62129	
17	7.81965	
18	8.03231	
19	8.26228	
20	8.51711	
21	8.80348	
22	9.13146	
23	9.51587	9.5
24	9.98157	
25	10.57734	
26	11.42874	
27	13.13080	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Students Engaged in Reading Lessons Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASPR01A	ASPR01B	ASPR01C	ASPR01D	ASPR01E	ASPR01F	ASPR01G	ASPR01H	ASPR01I
Australia	0.84	44	0.61	0.72	0.59	0.66	0.75	0.67	0.65	0.67	0.65
Austria	0.85	46	0.63	0.73	0.61	0.66	0.72	0.72	0.70	0.70	0.64
Azerbaijan	0.83	44	0.55	0.70	0.55	0.63	0.73	0.69	0.69	0.68	0.71
Bahrain	0.84	44	0.59	0.67	0.61	0.66	0.72	0.69	0.69	0.67	0.64
Belgium (Flemish)	0.80	39	0.58	0.69	0.51	0.60	0.67	0.63	0.68	0.63	0.63
Belgium (French)	0.84	45	0.63	0.74	0.68	0.67	0.71	0.66	0.57	0.70	0.64
Bulgaria	0.85	46	0.64	0.76	0.55	0.62	0.63	0.70	0.74	0.71	0.72
Canada	0.84	44	0.60	0.71	0.61	0.67	0.73	0.68	0.65	0.65	0.65
Chile	0.88	50	0.63	0.74	0.69	0.70	0.74	0.72	0.72	0.72	0.72
Chinese Taipei	0.89	52	0.61	0.74	0.73	0.68	0.75	0.75	0.76	0.76	0.74
Czech Republic	0.85	45	0.65	0.70	0.57	0.67	0.69	0.69	0.65	0.69	0.70
Denmark	0.85	46	0.67	0.74	0.58	0.59	0.71	0.74	0.72	0.72	0.63
Egypt	0.79	40	0.63	0.60	0.46	0.66	0.71	0.71	0.70	0.58	0.60
England	0.84	44	0.63	0.71	0.62	0.65	0.72	0.65	0.65	0.67	0.66
Finland	0.86	48	0.62	0.72	0.61	0.72	0.73	0.70	0.70	0.72	0.70
France	0.83	42	0.67	0.73	0.55	0.58	0.72	0.65	0.67	0.62	0.64
Georgia	0.72	35	0.56	0.69	0.49	0.64	0.47	0.47	0.69	0.66	0.64
Germany	0.85	46	0.63	0.75	0.61	0.73	0.69	0.71	0.67	0.66	0.66
Hong Kong SAR	0.89	52	0.66	0.78	0.70	0.68	0.78	0.74	0.73	0.72	0.71
Hungary	0.86	48	0.65	0.71	0.64	0.69	0.74	0.70	0.66	0.72	0.70
Iran, Islamic Rep. of	0.82	42	0.64	0.65	0.52	0.68	0.73	0.63	0.70	0.64	0.64
Ireland	0.83	44	0.64	0.76	0.59	0.64	0.75	0.64	0.62	0.65	0.63
Israel	0.87	49	0.67	0.77	0.59	0.66	0.77	0.71	0.71	0.69	0.71
Italy	0.78	37	0.66	0.71	0.49	0.57	0.69	0.59	0.59	0.58	0.60
Kazakhstan	0.80	40	0.54	0.66	0.59	0.64	0.66	0.68	0.67	0.57	0.62
Kuwait	0.79	38	0.59	0.67	0.52	0.59	0.67	0.63	0.65	0.60	0.60
Latvia	0.83	43	0.62	0.71	0.60	0.67	0.71	0.62	0.66	0.66	0.66
Lithuania	0.81	40	0.62	0.71	0.60	0.62	0.64	0.65	0.64	0.60	0.62
Macao SAR	0.85	46	0.68	0.74	0.65	0.66	0.71	0.69	0.69	0.66	0.62
Malta	0.81	41	0.61	0.69	0.64	0.55	0.69	0.65	0.65	0.62	0.65
Morocco	0.76	35	0.53	0.56	0.54	0.61	0.64	0.64	0.67	0.56	0.55
Netherlands	0.81	41	0.60	0.69	0.54	0.63	0.71	0.61	0.67	0.65	0.62
New Zealand	0.83	43	0.63	0.73	0.60	0.65	0.73	0.65	0.64	0.67	0.63
Northern Ireland	0.83	42	0.61	0.72	0.57	0.66	0.71	0.65	0.66	0.64	0.64
Norway (5)	0.83	43	0.62	0.71	0.57	0.66	0.69	0.72	0.66	0.63	0.62
Oman	0.83	44	0.59	0.68	0.51	0.67	0.72	0.69	0.69	0.70	0.66
Poland	0.86	48	0.66	0.75	0.66	0.63	0.74	0.68	0.71	0.69	0.68
Portugal	0.79	39	0.63	0.70	0.49	0.60	0.67	0.63	0.64	0.58	0.64
Qatar	0.87	49	0.65	0.73	0.68	0.71	0.74	0.69	0.69	0.72	0.68
Russian Federation	0.81	40	0.56	0.68	0.59	0.65	0.68	0.62	0.64	0.65	0.65
Saudi Arabia	0.82	42	0.48	0.64	0.56	0.67	0.70	0.71	0.71	0.69	0.66
Singapore	0.85	45	0.63	0.72	0.61	0.67	0.74	0.68	0.65	0.68	0.68
Slovak Republic	0.84	44	0.64	0.73	0.59	0.65	0.71	0.66	0.66	0.69	0.64
Slovenia	0.85	46	0.65	0.73	0.64	0.70	0.60	0.68	0.68	0.72	0.70
South Africa	0.84	44	0.62	0.70	0.65	0.64	0.62	0.66	0.70	0.69	0.66
Spain	0.80	40	0.61	0.70	0.47	0.57	0.70	0.66	0.65	0.66	0.63
Sweden	0.86	47	0.63	0.72	0.61	0.70	0.71	0.72	0.69	0.71	0.65
Trinidad and Tobago	0.83	42	0.60	0.69	0.61	0.66	0.73	0.66	0.62	0.63	0.64
United Arab Emirates	0.85	45	0.62	0.72	0.61	0.68	0.71	0.68	0.69	0.69	0.64
United States	0.86	47	0.60	0.74	0.62	0.69	0.76	0.71	0.67	0.67	0.68
Benchmarking Participants											
Buenos Aires, Argentina	0.83	44	0.60	0.68	0.55	0.56	0.70	0.67	0.72	0.72	0.71
Ontario, Canada	0.84	45	0.61	0.71	0.63	0.70	0.74	0.70	0.64	0.65	0.65
Quebec, Canada	0.83	43	0.54	0.71	0.60	0.65	0.75	0.64	0.69	0.65	0.65
Denmark (3)	0.83	43	0.66	0.73	0.59	0.51	0.73	0.70	0.72	0.65	0.59
Norway (4)	0.82	42	0.63	0.72	0.54	0.62	0.71	0.70	0.63	0.59	0.62
Moscow City, Russian Fed.	0.83	43	0.61	0.73	0.59	0.66	0.73	0.60	0.63	0.67	0.66
Enq/Afr/Zulu - RSA (5)	0.81	40	0.63	0.68	0.63	0.61	0.62	0.66	0.64	0.62	0.63
Andalusia, Spain	0.79	39	0.58	0.67	0.46	0.55	0.68	0.63	0.68	0.67	0.64
Madrid, Spain	0.81	41	0.61	0.70	0.51	0.61	0.65	0.67	0.67	0.66	0.66
Abu Dhabi, UAE	0.85	45	0.61	0.71	0.59	0.69	0.71	0.70	0.68	0.72	0.64
Dubai, UAE	0.84	44	0.63	0.71	0.62	0.63	0.71	0.66	0.69	0.66	0.64

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 Students Engaged in Reading Lessons Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.02	0.00	0.00
Austria	0.02	0.00	0.00
Azerbaijan	0.14	0.02	0.02
Bahrain	0.17	0.03	0.03
Belgium (Flemish)	0.04	0.00	0.00
Belgium (French)	-0.01	0.00	0.00
Bulgaria	0.06	0.00	0.01
Canada	0.09	0.01	0.01
Chile	0.12	0.01	0.03
Chinese Taipei	0.09	0.01	0.01
Czech Republic	-0.06	0.00	0.01
Denmark	0.15	0.02	0.03
Egypt	0.15	0.02	0.02
England	0.04	0.00	0.01
Finland	0.08	0.01	0.01
France	-0.01	0.00	0.00
Georgia	0.14	0.02	0.03
Germany	0.12	0.01	0.03
Hong Kong SAR	0.11	0.01	0.02
Hungary	0.05	0.00	0.00
Iran, Islamic Rep. of	0.08	0.01	0.02
Ireland	0.03	0.00	0.00
Israel	-0.09	0.01	0.00
Italy	0.06	0.00	0.01
Kazakhstan	0.04	0.00	0.00
Kuwait	0.13	0.02	0.03
Latvia	0.03	0.00	0.00
Lithuania	0.09	0.01	0.02
Macao SAR	0.10	0.01	0.01
Malta	0.19	0.04	0.05
Morocco	0.10	0.01	0.01
Netherlands	0.05	0.00	0.01
New Zealand	-0.01	0.00	0.00
Northern Ireland	-0.01	0.00	0.00
Norway (5)	0.05	0.00	0.00
Oman	0.15	0.02	0.04
Poland	-0.04	0.00	0.01
Portugal	0.09	0.01	0.01
Qatar	0.16	0.03	0.04
Russian Federation	-0.01	0.00	0.00
Saudi Arabia	0.16	0.03	0.04
Singapore	0.03	0.00	0.01
Slovak Republic	-0.08	0.01	0.00
Slovenia	-0.03	0.00	0.00
South Africa	0.16	0.03	0.04
Spain	0.03	0.00	0.00
Sweden	0.04	0.00	0.01
Trinidad and Tobago	0.09	0.01	0.01
United Arab Emirates	0.17	0.03	0.04
United States	0.08	0.01	0.01
International Median	0.07	0.01	0.01
Benchmarking Participants			
Buenos Aires, Argentina	0.02	0.00	0.00
Ontario, Canada	0.11	0.01	0.02
Quebec, Canada	0.06	0.00	0.01
Denmark (3)	0.05	0.00	0.01
Norway (4)	0.04	0.00	0.01
Moscow City, Russian Fed.	0.02	0.00	0.00
Eng/Afr/Zulu - RSA (5)	0.04	0.00	0.01
Andalusia, Spain	0.04	0.00	0.00
Madrid, Spain	-0.02	0.00	0.00
Abu Dhabi, UAE	0.16	0.03	0.04
Dubai, UAE	0.13	0.02	0.04

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Students Like Reading Scale

The *Students Like Reading* (SLR) scale was created based on students' responses to the ten items described below.

Items in the PIRLS 2016 *Students Like Reading* Scale

		What do you think about reading? Tell how much you agree with each of these statements.			
		Agree a lot	Agree a little	Disagree a little	Disagree a lot
ASBR06A	1) I like talking about what I read with other people -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR06B	2) I would be happy if someone gave me a book as a present -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR06C*	3) I think reading is boring* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR06D	4) I would like to have more time for reading -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR06E	5) I enjoy reading -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR06F	6) I learn a lot from reading -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR06G	7) I like to read things that make me think -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR06H	8) I like it when a book helps me imagine other worlds -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
		* Reverse coded			
		How often do you do these things <u>outside of school</u> ?			
		Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
ASBR05A	1) I read for fun -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASBR05B	2) I read to find out about things I want to learn -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Item Parameters for the PIRLS 2016 Students Like Reading Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ASBR06A	0.34442	-0.46997	-0.35824	0.82821	1.12
ASBR06B	-0.11815	-0.20564	-0.36880	0.57444	0.92
* ASBR06C	0.07123	-0.25296	0.13935	0.11361	1.27
ASBR06D	0.31398	-0.56008	-0.11801	0.67809	0.89
ASBR06E	-0.17844	-0.19317	-0.35192	0.54509	0.72
ASBR06F	-0.57533	-0.50890	-0.23851	0.74741	0.90
ASBR06G	-0.11502	-0.39988	-0.24307	0.64295	0.95
ASBR06H	-0.45737	0.03019	-0.28447	0.25428	1.02
ASBR05A	0.40723	-0.22541	-0.47027	0.69568	1.18
ASBR05B	0.30745	-0.62547	-0.19966	0.82513	1.13

* Reverse coded

Scale Transformation Constants for the PIRLS 2016 Students Like Reading Scale

Scale Transformation Constants	
A = 8.281596	Transformed Scale Score = 8.281596 + 1.704604 • Logit Scale Score
B = 1.704604	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Students Like Reading Scale

Raw Score	Transformed Scale Score	Cutpoint
0	2.55082	
1	4.26783	
2	5.03823	
3	5.54349	
4	5.92440	
5	6.23597	
6	6.50253	
7	6.73682	
8	6.95316	
9	7.15371	
10	7.34241	
11	7.52243	
12	7.69637	
13	7.86639	
14	8.03431	
15	8.20182	8.3
16	8.37054	
17	8.54211	
18	8.71838	
19	8.90141	
20	9.09362	
21	9.29790	
22	9.51573	
23	9.75594	
24	10.02472	
25	10.33319	10.3
26	10.69833	
27	11.15205	
28	11.75519	
29	12.66304	
30	14.58422	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Students Like Reading Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ASBR06A	ASBR06B	ASBR06C*	ASBR06D	ASBR06E	ASBR06F	ASBR06G	ASBR06H	ASBR06I	ASBR06J
Australia	0.88	49	0.53	0.73	0.77	0.78	0.84	0.68	0.71	0.66	0.67	0.55
Austria	0.86	45	0.54	0.67	0.65	0.71	0.83	0.66	0.62	0.67	0.74	0.58
Azerbaijan	0.68	33	0.34	0.63	0.24	0.69	0.75	0.74	0.69	0.67	0.28	0.42
Bahrain	0.83	41	0.55	0.66	0.40	0.75	0.80	0.73	0.70	0.64	0.48	0.56
Belgium (Flemish)	0.87	47	0.56	0.73	0.76	0.77	0.85	0.66	0.69	0.60	0.69	0.47
Belgium (French)	0.86	45	0.56	0.73	0.53	0.74	0.81	0.68	0.71	0.63	0.63	0.61
Bulgaria	0.89	50	0.66	0.72	0.55	0.78	0.83	0.72	0.73	0.68	0.71	0.66
Canada	0.86	45	0.52	0.70	0.70	0.77	0.83	0.66	0.68	0.61	0.63	0.55
Chile	0.88	49	0.64	0.75	0.47	0.76	0.85	0.73	0.80	0.69	0.60	0.67
Chinese Taipei	0.89	51	0.59	0.62	0.64	0.84	0.86	0.79	0.72	0.67	0.66	0.67
Czech Republic	0.88	47	0.63	0.72	0.69	0.70	0.83	0.69	0.62	0.63	0.71	0.64
Denmark	0.85	44	0.62	0.71	0.69	0.71	0.84	0.64	0.75	0.66	0.50	0.48
Egypt	0.84	44	0.64	0.67	0.40	0.71	0.81	0.81	0.79	0.67	0.48	0.55
England	0.87	47	0.58	0.71	0.72	0.75	0.84	0.68	0.69	0.64	0.69	0.52
Finland	0.89	50	0.64	0.76	0.75	0.71	0.84	0.64	0.76	0.71	0.69	0.53
France	0.84	43	0.53	0.69	0.60	0.71	0.80	0.66	0.67	0.59	0.64	0.60
Georgia	0.72	36	0.48	0.74	0.32	0.72	0.80	0.67	0.55	0.66	0.17	0.56
Germany	0.88	49	0.57	0.75	0.73	0.72	0.85	0.68	0.68	0.70	0.72	0.56
Hong Kong SAR	0.89	50	0.58	0.72	0.60	0.80	0.84	0.76	0.72	0.74	0.65	0.63
Hungary	0.87	46	0.67	0.73	0.65	0.76	0.83	0.63	0.68	0.66	0.65	0.48
Iran, Islamic Rep. of	0.71	33	0.51	0.63	0.33	0.68	0.74	0.65	0.57	0.70	0.31	0.45
Ireland	0.87	48	0.56	0.75	0.75	0.75	0.85	0.67	0.68	0.63	0.69	0.54
Israel	0.89	51	0.59	0.73	0.58	0.80	0.85	0.74	0.77	0.67	0.70	0.65
Italy	0.86	45	0.58	0.71	0.70	0.77	0.82	0.63	0.63	0.61	0.58	0.62
Kazakhstan	0.74	36	0.58	0.66	0.14	0.67	0.77	0.62	0.66	0.63	0.63	0.44
Kuwait	0.78	36	0.57	0.64	0.42	0.69	0.74	0.68	0.66	0.57	0.47	0.47
Latvia	0.89	50	0.61	0.77	0.69	0.79	0.84	0.69	0.68	0.62	0.71	0.63
Lithuania	0.86	44	0.62	0.74	0.65	0.69	0.79	0.67	0.60	0.62	0.65	0.60
Macao SAR	0.86	45	0.55	0.66	0.54	0.79	0.83	0.70	0.67	0.67	0.59	0.63
Malta	0.84	42	0.56	0.72	0.58	0.73	0.81	0.68	0.64	0.57	0.64	0.45
Morocco	0.71	30	0.48	0.54	0.33	0.64	0.69	0.68	0.61	0.56	0.40	0.47
Netherlands	0.88	48	0.59	0.70	0.73	0.76	0.85	0.68	0.72	0.64	0.70	0.54
New Zealand	0.86	45	0.55	0.71	0.53	0.76	0.82	0.70	0.73	0.66	0.64	0.58
Northern Ireland	0.87	47	0.56	0.76	0.71	0.76	0.83	0.66	0.68	0.61	0.67	0.53
Norway (5)	0.87	46	0.63	0.73	0.73	0.75	0.84	0.63	0.69	0.63	0.62	0.50
Oman	0.78	36	0.52	0.61	0.32	0.67	0.75	0.73	0.66	0.65	0.46	0.52
Poland	0.90	53	0.63	0.77	0.70	0.73	0.86	0.71	0.72	0.66	0.75	0.69
Portugal	0.84	43	0.59	0.66	0.58	0.69	0.80	0.66	0.69	0.62	0.64	0.61
Qatar	0.83	42	0.57	0.70	0.31	0.74	0.80	0.76	0.72	0.67	0.47	0.59
Russian Federation	0.85	43	0.56	0.73	0.62	0.76	0.81	0.65	0.63	0.58	0.64	0.54
Saudi Arabia	0.77	37	0.47	0.63	0.23	0.73	0.79	0.72	0.71	0.59	0.49	0.52
Singapore	0.84	44	0.50	0.73	0.64	0.80	0.83	0.74	0.66	0.61	0.32	0.60
Slovak Republic	0.88	48	0.64	0.71	0.65	0.71	0.83	0.66	0.64	0.67	0.72	0.66
Slovenia	0.86	45	0.59	0.77	0.65	0.74	0.83	0.63	0.60	0.66	0.61	0.56
South Africa	0.75	36	0.55	0.69	0.08	0.69	0.74	0.69	0.69	0.65	0.38	0.50
Spain	0.86	45	0.56	0.66	0.63	0.74	0.82	0.69	0.69	0.62	0.62	0.64
Sweden	0.88	49	0.63	0.72	0.75	0.71	0.85	0.68	0.72	0.68	0.72	0.51
Trinidad and Tobago	0.82	39	0.58	0.65	0.49	0.75	0.81	0.64	0.68	0.60	0.48	0.50
United Arab Emirates	0.81	40	0.56	0.67	0.38	0.74	0.79	0.74	0.70	0.63	0.43	0.56
United States	0.87	46	0.59	0.71	0.61	0.77	0.82	0.68	0.71	0.64	0.65	0.59
Benchmarking Participants												
Buenos Aires, Argentina	0.87	47	0.57	0.75	0.54	0.79	0.83	0.68	0.73	0.65	0.68	0.61
Ontario, Canada	0.87	47	0.52	0.72	0.70	0.79	0.84	0.67	0.70	0.62	0.66	0.59
Quebec, Canada	0.84	42	0.52	0.68	0.69	0.75	0.82	0.60	0.61	0.60	0.65	0.54
Denmark (3)	0.83	41	0.56	0.68	0.67	0.71	0.83	0.63	0.73	0.64	0.43	0.45
Norway (4)	0.85	43	0.58	0.72	0.68	0.72	0.80	0.64	0.70	0.60	0.55	0.51
Moscow City, Russian Fed.	0.86	45	0.61	0.75	0.69	0.76	0.81	0.64	0.60	0.56	0.68	0.52
Eng/Afr/Zulu - RSA (5)	0.76	37	0.59	0.71	0.20	0.71	0.78	0.69	0.65	0.61	0.39	0.50
Andalusia, Spain	0.86	46	0.55	0.69	0.63	0.73	0.83	0.71	0.70	0.63	0.63	0.63
Madrid, Spain	0.86	46	0.57	0.67	0.68	0.73	0.82	0.70	0.68	0.61	0.64	0.64
Abu Dhabi, UAE	0.82	40	0.57	0.66	0.34	0.75	0.80	0.74	0.69	0.62	0.48	0.55
Dubai, UAE	0.83	42	0.57	0.71	0.51	0.75	0.80	0.72	0.68	0.61	0.47	0.56

*Reverse coded

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 *Students Like Reading* Scale and PIRLS 2016 Reading Achievement

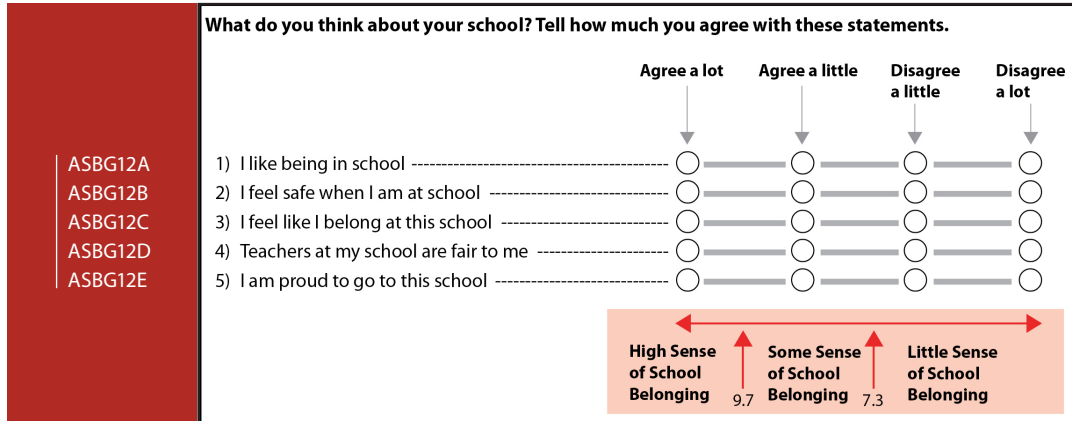
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.12	0.01	0.03
Austria	0.11	0.01	0.02
Azerbaijan	0.18	0.03	0.03
Bahrain	0.18	0.03	0.03
Belgium (Flemish)	0.14	0.02	0.02
Belgium (French)	0.11	0.01	0.01
Bulgaria	0.10	0.01	0.03
Canada	0.14	0.02	0.02
Chile	0.07	0.01	0.00
Chinese Taipei	0.20	0.04	0.03
Czech Republic	0.12	0.01	0.02
Denmark	0.23	0.05	0.04
Egypt	0.29	0.09	0.09
England	0.18	0.03	0.04
Finland	0.25	0.06	0.06
France	0.09	0.01	0.01
Georgia	0.12	0.01	0.02
Germany	0.25	0.06	0.07
Hong Kong SAR	0.19	0.04	0.04
Hungary	0.17	0.03	0.04
Iran, Islamic Rep. of	0.20	0.04	0.05
Ireland	0.18	0.03	0.04
Israel	-0.01	0.00	0.00
Italy	0.07	0.00	0.01
Kazakhstan	0.05	0.00	0.00
Kuwait	0.17	0.03	0.03
Latvia	0.06	0.00	0.01
Lithuania	0.05	0.00	0.01
Macao SAR	0.24	0.06	0.05
Malta	0.18	0.03	0.04
Morocco	0.23	0.06	0.06
Netherlands	0.20	0.04	0.04
New Zealand	0.08	0.01	0.01
Northern Ireland	0.20	0.04	0.05
Norway (5)	0.22	0.05	0.05
Oman	0.24	0.06	0.06
Poland	0.08	0.01	0.01
Portugal	0.01	0.00	0.00
Qatar	0.16	0.03	0.03
Russian Federation	0.03	0.00	0.00
Saudi Arabia	0.19	0.04	0.03
Singapore	0.22	0.05	0.05
Slovak Republic	0.16	0.02	0.02
Slovenia	0.14	0.02	0.02
South Africa	0.22	0.05	0.04
Spain	0.09	0.01	0.01
Sweden	0.21	0.04	0.05
Trinidad and Tobago	0.12	0.01	0.02
United Arab Emirates	0.19	0.04	0.04
United States	0.08	0.01	0.01
International Median	0.16	0.03	0.03
Benchmarking Participants			
Buenos Aires, Argentina	-0.09	0.01	0.01
Ontario, Canada	0.16	0.03	0.02
Quebec, Canada	0.12	0.01	0.02
Denmark (3)	0.15	0.02	0.02
Norway (4)	0.14	0.02	0.02
Moscow City, Russian Fed.	0.11	0.01	0.01
Eng/Afr/Zulu - RSA (5)	0.05	0.00	0.00
Andalusia, Spain	0.08	0.01	0.01
Madrid, Spain	0.06	0.00	0.01
Abu Dhabi, UAE	0.22	0.05	0.05
Dubai, UAE	0.12	0.01	0.02

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Students' Sense of School Belonging Scale

The *Students' Sense of School Belonging* (SSB) scale was created based on students' degree of agreement with the five statements described below.

Items in the PIRLS 2016 *Students' Sense of School Belonging* Scale



Item Parameters for the PIRLS 2016 Students' Sense of School Belonging Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ASBG12A	0.35879	-0.45320	-0.71326	1.16646	1.03
ASBG12B	-0.05809	-0.47509	-0.46271	0.93780	1.02
ASBG12C	0.05363	-0.33690	-0.38143	0.71833	1.00
ASBG12D	-0.20416	-0.29014	-0.40311	0.69325	1.10
ASBG12E	-0.15017	-0.09998	-0.47379	0.57377	0.95

Scale Transformation Constants for the PIRLS 2016 Students' Sense of School Belonging Scale

Scale Transformation Constants	
A = 7.558990	Transformed Scale Score = 7.558990 + 1.566579 • Logit Scale Score
B = 1.566579	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Students' Sense of School Belonging Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.45100	
1	4.84737	
2	5.50192	
3	5.96197	
4	6.33045	
5	6.65432	
6	6.95548	
7	7.25277	7.3
8	7.54290	
9	7.85416	
10	8.19786	
11	8.59455	
12	9.08205	
13	9.73132	9.7
14	10.70304	
15	12.65139	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2016 Students' Sense of School Belonging Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item				
			ASBG12A	ASBG12B	ASBG12C	ASBG12D	ASBG12E
Australia	0.82	58	0.76	0.74	0.79	0.71	0.82
Austria	0.78	53	0.74	0.78	0.70	0.65	0.76
Azerbaijan	0.72	48	0.69	0.67	0.68	0.69	0.76
Bahrain	0.77	52	0.74	0.71	0.76	0.62	0.78
Belgium (Flemish)	0.78	53	0.74	0.69	0.76	0.66	0.78
Belgium (French)	0.74	50	0.71	0.67	0.76	0.58	0.81
Bulgaria	0.76	52	0.63	0.70	0.80	0.66	0.81
Canada	0.79	54	0.72	0.73	0.75	0.68	0.81
Chile	0.82	58	0.74	0.77	0.81	0.63	0.85
Chinese Taipei	0.77	52	0.74	0.69	0.74	0.67	0.76
Czech Republic	0.72	48	0.71	0.71	0.59	0.68	0.77
Denmark	0.80	56	0.74	0.77	0.79	0.63	0.80
Egypt	0.72	47	0.65	0.67	0.70	0.66	0.75
England	0.81	57	0.75	0.73	0.76	0.69	0.83
Finland	0.81	57	0.78	0.77	0.71	0.74	0.78
France	0.70	47	0.73	0.66	0.64	0.55	0.81
Georgia	0.67	44	0.68	0.63	0.63	0.64	0.74
Germany	0.79	54	0.70	0.76	0.76	0.65	0.80
Hong Kong SAR	0.80	56	0.73	0.78	0.82	0.69	0.73
Hungary	0.78	54	0.68	0.71	0.78	0.69	0.80
Iran, Islamic Rep. of	0.63	44	0.72	0.71	0.75	0.64	0.46
Ireland	0.79	56	0.72	0.74	0.74	0.73	0.79
Israel	0.84	61	0.78	0.78	0.77	0.74	0.84
Italy	0.76	52	0.73	0.72	0.68	0.67	0.80
Kazakhstan	0.68	46	0.67	0.59	0.74	0.65	0.73
Kuwait	0.75	50	0.73	0.70	0.73	0.60	0.79
Latvia	0.77	52	0.73	0.71	0.73	0.67	0.77
Lithuania	0.73	48	0.73	0.65	0.69	0.66	0.75
Macao SAR	0.73	49	0.65	0.74	0.77	0.63	0.69
Malta	0.74	49	0.71	0.66	0.73	0.64	0.77
Morocco	0.59	39	0.52	0.67	0.72	0.52	0.67
Netherlands	0.79	55	0.76	0.73	0.75	0.70	0.78
New Zealand	0.80	56	0.72	0.74	0.77	0.69	0.81
Northern Ireland	0.78	55	0.70	0.74	0.76	0.68	0.80
Norway (5)	0.79	55	0.70	0.73	0.78	0.70	0.79
Oman	0.76	52	0.71	0.69	0.74	0.67	0.77
Poland	0.80	55	0.76	0.70	0.75	0.67	0.83
Portugal	0.74	50	0.77	0.68	0.72	0.53	0.82
Qatar	0.82	57	0.78	0.73	0.77	0.67	0.83
Russian Federation	0.72	48	0.72	0.66	0.71	0.67	0.71
Saudi Arabia	0.75	50	0.67	0.70	0.75	0.65	0.76
Singapore	0.79	55	0.76	0.72	0.77	0.65	0.80
Slovak Republic	0.78	53	0.70	0.71	0.74	0.68	0.81
Slovenia	0.78	53	0.72	0.71	0.73	0.67	0.80
South Africa	0.74	49	0.69	0.72	0.71	0.64	0.73
Spain	0.74	49	0.71	0.69	0.70	0.67	0.74
Sweden	0.82	59	0.74	0.74	0.82	0.69	0.82
Trinidad and Tobago	0.73	48	0.70	0.62	0.75	0.60	0.79
United Arab Emirates	0.79	54	0.74	0.73	0.77	0.64	0.79
United States	0.81	57	0.72	0.75	0.78	0.70	0.81
Benchmarking Participants							
Buenos Aires, Argentina	0.75	50	0.74	0.71	0.68	0.65	0.76
Ontario, Canada	0.78	54	0.72	0.72	0.75	0.66	0.82
Quebec, Canada	0.77	52	0.71	0.73	0.69	0.67	0.80
Denmark (3)	0.78	53	0.73	0.74	0.77	0.63	0.77
Norway (4)	0.78	54	0.73	0.70	0.78	0.65	0.80
Moscow City, Russian Fed.	0.77	53	0.75	0.70	0.73	0.69	0.74
Eng/Afr/Zulu - RSA (5)	0.75	50	0.69	0.70	0.78	0.61	0.75
Andalusia, Spain	0.76	51	0.72	0.68	0.73	0.66	0.78
Madrid, Spain	0.75	51	0.72	0.69	0.71	0.66	0.78
Abu Dhabi, UAE	0.78	53	0.73	0.73	0.76	0.63	0.78
Dubai, UAE	0.79	54	0.75	0.73	0.76	0.64	0.79

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 Students' Sense of School Belonging Scale and PIRLS 2016 Reading Achievement

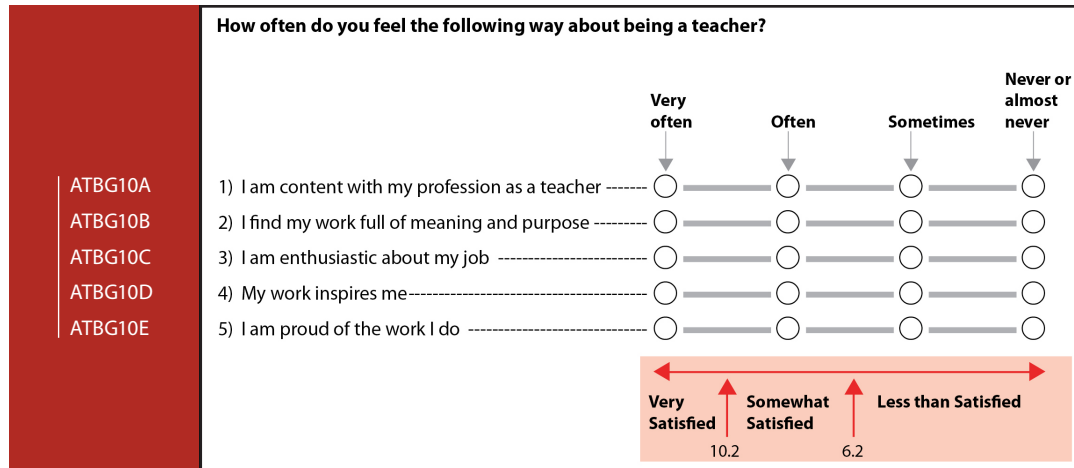
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.13	0.02	0.02
Austria	0.10	0.01	0.01
Azerbaijan	0.13	0.02	0.01
Bahrain	0.15	0.02	0.03
Belgium (Flemish)	0.16	0.03	0.03
Belgium (French)	0.09	0.01	0.01
Bulgaria	-0.07	0.00	0.00
Canada	0.14	0.02	0.02
Chile	0.17	0.03	0.03
Chinese Taipei	0.14	0.02	0.02
Czech Republic	0.06	0.00	0.01
Denmark	0.19	0.04	0.03
Egypt	-0.01	0.00	0.00
England	0.15	0.02	0.03
Finland	0.16	0.03	0.03
France	0.05	0.00	0.01
Georgia	0.05	0.00	0.01
Germany	0.18	0.03	0.03
Hong Kong SAR	0.18	0.03	0.02
Hungary	0.10	0.01	0.01
Iran, Islamic Rep. of	-0.11	0.01	0.01
Ireland	0.17	0.03	0.03
Israel	-0.04	0.00	0.00
Italy	0.10	0.01	0.01
Kazakhstan	0.03	0.00	0.00
Kuwait	0.08	0.01	0.01
Latvia	0.05	0.00	0.01
Lithuania	0.07	0.00	0.01
Macao SAR	0.14	0.02	0.02
Malta	0.18	0.03	0.04
Morocco	0.04	0.00	0.00
Netherlands	0.15	0.02	0.03
New Zealand	0.11	0.01	0.01
Northern Ireland	0.17	0.03	0.04
Norway (5)	0.15	0.02	0.02
Oman	0.16	0.02	0.03
Poland	-0.04	0.00	0.00
Portugal	0.12	0.02	0.02
Qatar	0.18	0.03	0.04
Russian Federation	0.01	0.00	0.00
Saudi Arabia	0.17	0.03	0.03
Singapore	0.11	0.01	0.01
Slovak Republic	-0.05	0.00	0.00
Slovenia	0.02	0.00	0.00
South Africa	0.08	0.01	0.01
Spain	0.08	0.01	0.01
Sweden	0.14	0.02	0.02
Trinidad and Tobago	0.12	0.02	0.02
United Arab Emirates	0.20	0.04	0.05
United States	0.17	0.03	0.03
International Median	0.12	0.02	0.01
Benchmarking Participants			
Buenos Aires, Argentina	0.01	0.00	0.00
Ontario, Canada	0.15	0.02	0.02
Quebec, Canada	0.11	0.01	0.01
Denmark (3)	0.16	0.03	0.02
Norway (4)	0.11	0.01	0.01
Moscow City, Russian Fed.	0.08	0.01	0.01
Eng/Afr/Zulu - RSA (5)	-0.07	0.00	0.00
Andalusia, Spain	0.05	0.00	0.01
Madrid, Spain	0.05	0.00	0.01
Abu Dhabi, UAE	0.15	0.02	0.03
Dubai, UAE	0.20	0.04	0.05

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Teacher Job Satisfaction Scale

The *Teacher Job Satisfaction (TJS)* scale was created based on the degree that teachers responded positively to the five items below.

Items in the PIRLS 2016 *Teacher Job Satisfaction Scale*¹



¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories "Sometimes" and "Never or almost never" were combined for all variables. The scale statistics that are reported herein reflect analysis of the items following collapsing.

Item Parameters for the PIRLS 2016 Teacher Job Satisfaction Scale

Item	delta	tau_1	tau_2	Infit
ATBG10A	0.37535	-2.26426	2.26426	1.11
ATBG10B	-0.78996	-2.26314	2.26314	1.05
ATBG10C	0.06308	-2.28012	2.28012	0.89
ATBG10D	0.46060	-2.32478	2.32478	0.91
ATBG10E	-0.10907	-1.95730	1.95730	1.14

Scale Transformation Constants for the PIRLS 2016 Teacher Job Satisfaction Scale

Scale Transformation Constants	
A = 8.192812	Transformed Scale Score = 8.192812 + 0.804273 • Logit Scale Score
B = 0.804273	

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2016 Teacher Job Satisfaction Scale

Raw Score	Transformed Scale Score	Cutpoint
0	4.38704	
1	5.47445	
2	6.12206	6.2
3	6.68375	
4	7.29255	
5	8.17713	
6	9.07681	
7	9.70719	
8	10.27783	10.2
9	10.92662	
10	11.99778	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

**Cronbach's Alpha Reliability Coefficient and Principal Components
Analysis of the Items in the PIRLS 2016 Teacher Job Satisfaction Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item				
			ATBG10A	ATBG10B	ATBG10C	ATBG10D	ATBG10E
Australia	0.90	71	0.87	0.82	0.89	0.87	0.74
Austria	0.86	65	0.76	0.75	0.85	0.86	0.80
Azerbaijan	0.79	55	0.71	0.68	0.73	0.81	0.77
Bahrain	0.88	69	0.84	0.80	0.85	0.83	0.82
Belgium (Flemish)	0.89	69	0.81	0.82	0.85	0.86	0.81
Belgium (French)	0.90	73	0.88	0.87	0.90	0.88	0.73
Bulgaria	0.87	66	0.75	0.82	0.85	0.85	0.79
Canada	0.89	70	0.81	0.84	0.87	0.88	0.78
Chile	0.86	65	0.79	0.82	0.82	0.86	0.74
Chinese Taipei	0.94	80	0.91	0.88	0.93	0.89	0.86
Czech Republic	0.91	73	0.82	0.88	0.87	0.89	0.82
Denmark	0.89	69	0.81	0.80	0.89	0.85	0.79
Egypt	0.74	50	0.80	0.66	0.73	0.74	0.60
England	0.90	72	0.80	0.87	0.89	0.90	0.78
Finland	0.92	76	0.86	0.83	0.91	0.90	0.84
France	0.84	62	0.77	0.63	0.89	0.88	0.74
Georgia	0.84	61	0.73	0.68	0.84	0.82	0.82
Germany	0.87	66	0.81	0.75	0.84	0.87	0.78
Hong Kong SAR	0.94	81	0.90	0.92	0.91	0.87	0.89
Hungary	0.89	69	0.80	0.83	0.87	0.85	0.80
Iran, Islamic Rep. of	0.72	52	0.76	0.69	0.81	0.84	0.45
Ireland	0.90	72	0.80	0.87	0.86	0.89	0.82
Israel	0.91	74	0.84	0.85	0.89	0.88	0.84
Italy	0.89	69	0.78	0.77	0.89	0.86	0.85
Kazakhstan	0.87	66	0.77	0.80	0.86	0.81	0.81
Kuwait	0.81	59	0.74	0.75	0.85	0.70	0.78
Latvia	0.85	62	0.76	0.76	0.75	0.84	0.82
Lithuania	0.87	65	0.81	0.65	0.85	0.87	0.83
Macao SAR	0.91	74	0.88	0.89	0.87	0.82	0.86
Malta	0.88	68	0.80	0.85	0.83	0.85	0.79
Morocco	0.85	63	0.77	0.75	0.85	0.82	0.78
Netherlands	0.87	66	0.75	0.77	0.86	0.85	0.84
New Zealand	0.88	69	0.78	0.81	0.88	0.90	0.77
Northern Ireland	0.89	70	0.82	0.87	0.86	0.89	0.73
Norway (5)	0.89	70	0.74	0.80	0.88	0.88	0.87
Oman	0.82	60	0.77	0.71	0.87	0.83	0.67
Poland	0.92	77	0.89	0.88	0.88	0.88	0.87
Portugal	0.88	67	0.82	0.81	0.87	0.83	0.78
Qatar	0.88	68	0.73	0.84	0.86	0.88	0.80
Russian Federation	0.85	63	0.79	0.72	0.81	0.83	0.80
Saudi Arabia	0.86	65	0.88	0.78	0.76	0.78	0.84
Singapore	0.96	85	0.91	0.92	0.94	0.94	0.92
Slovak Republic	0.90	71	0.81	0.80	0.88	0.87	0.85
Slovenia	0.90	70	0.82	0.78	0.87	0.87	0.84
South Africa	0.90	71	0.79	0.87	0.85	0.87	0.83
Spain	0.85	62	0.79	0.75	0.83	0.85	0.71
Sweden	0.86	64	0.81	0.69	0.87	0.85	0.78
Trinidad and Tobago	0.91	74	0.83	0.87	0.92	0.88	0.80
United Arab Emirates	0.87	66	0.81	0.77	0.85	0.85	0.77
United States	0.90	72	0.84	0.89	0.87	0.87	0.77
Benchmarking Participants							
Buenos Aires, Argentina	0.75	50	0.74	0.71	0.78	0.69	0.63
Ontario, Canada	0.90	71	0.79	0.86	0.89	0.90	0.76
Quebec, Canada	0.87	66	0.75	0.71	0.88	0.88	0.81
Denmark (3)	0.89	70	0.83	0.80	0.87	0.88	0.79
Norway (4)	0.91	74	0.84	0.84	0.90	0.90	0.82
Moscow City, Russian Fed.	0.85	62	0.78	0.77	0.79	0.85	0.75
Eng/Afr/Zulu - RSA (5)	0.91	74	0.74	0.90	0.92	0.90	0.81
Andalusia, Spain	0.83	61	0.78	0.78	0.80	0.87	0.65
Madrid, Spain	0.88	68	0.84	0.84	0.77	0.83	0.85
Abu Dhabi, UAE	0.89	69	0.85	0.80	0.88	0.86	0.77
Dubai, UAE	0.89	69	0.81	0.81	0.88	0.87	0.77

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the PIRLS 2016 Teacher Job Satisfaction Scale and PIRLS 2016 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Australia	0.05	0.00	0.00
Austria	0.00	0.00	0.00
Azerbaijan	0.06	0.00	0.00
Bahrain	0.08	0.01	0.00
Belgium (Flemish)	0.01	0.00	0.00
Belgium (French)	0.09	0.01	0.01
Bulgaria	0.05	0.00	0.00
Canada	0.00	0.00	0.00
Chile	-0.01	0.00	0.00
Chinese Taipei	-0.01	0.00	0.00
Czech Republic	0.03	0.00	0.00
Denmark	0.02	0.00	0.00
Egypt	0.00	0.00	0.00
England	0.00	0.00	0.00
Finland	-0.03	0.00	0.00
France	0.02	0.00	0.00
Georgia	0.04	0.00	0.00
Germany	0.10	0.01	0.01
Hong Kong SAR	0.01	0.00	0.00
Hungary	0.04	0.00	0.00
Iran, Islamic Rep. of	0.06	0.00	0.00
Ireland	0.03	0.00	0.00
Israel	-0.04	0.00	0.01
Italy	-0.01	0.00	0.00
Kazakhstan	0.08	0.01	0.00
Kuwait	-0.07	0.01	0.01
Latvia	0.09	0.01	0.01
Lithuania	0.10	0.01	0.01
Macao SAR	0.09	0.01	0.01
Malta	0.05	0.00	0.01
Morocco	0.16	0.03	0.02
Netherlands	-0.02	0.00	0.01
New Zealand	0.08	0.01	0.00
Northern Ireland	-0.01	0.00	0.00
Norway (5)	0.04	0.00	0.00
Oman	0.01	0.00	0.00
Poland	-0.01	0.00	0.00
Portugal	0.05	0.00	0.00
Qatar	-0.08	0.01	0.00
Russian Federation	0.02	0.00	0.00
Saudi Arabia	0.15	0.02	0.02
Singapore	-0.02	0.00	0.00
Slovak Republic	0.01	0.00	0.00
Slovenia	-0.01	0.00	0.00
South Africa	-0.03	0.00	0.03
Spain	0.07	0.01	0.00
Sweden	0.01	0.00	0.00
Trinidad and Tobago	0.03	0.00	0.00
United Arab Emirates	-0.03	0.00	0.00
United States	0.09	0.01	0.01
International Median	0.02	0.00	0.00
Benchmarking Participants			
Buenos Aires, Argentina	0.06	0.00	0.00
Ontario, Canada	0.02	0.00	0.00
Quebec, Canada	-0.06	0.00	0.00
Denmark (3)	0.01	0.00	0.00
Norway (4)	0.03	0.00	0.00
Moscow City, Russian Fed.	-0.02	0.00	0.00
Eng/Afr/Zulu - RSA (5)	-0.15	0.02	0.02
Andalusia, Spain	0.02	0.00	0.00
Madrid, Spain	0.11	0.01	0.01
Abu Dhabi, UAE	-0.08	0.01	0.01
Dubai, UAE	-0.02	0.00	0.00

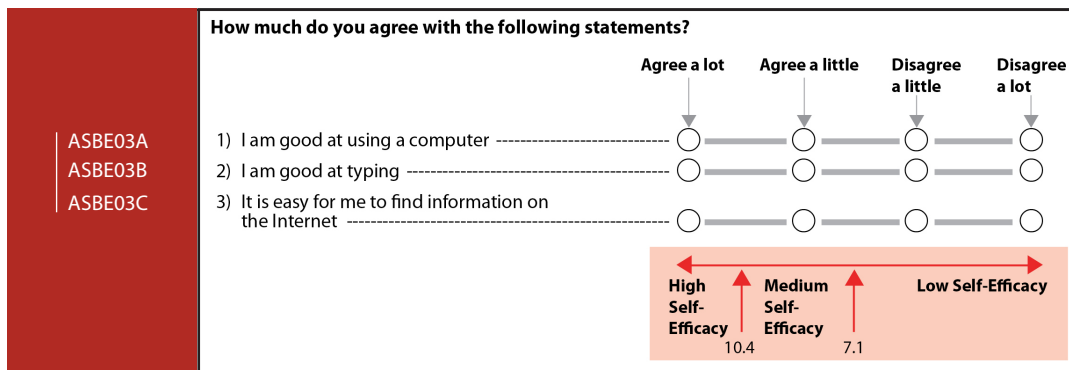
SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Appendix 14B: ePIRLS 2016 Context Questionnaire Scale

Self-Efficacy for Computer Use Scale

The *Self-Efficacy for Computer Use* (SEC) scale was created based on students' degree of agreement with the three statements described below.

Items in the ePIRLS 2016 *Self-Efficacy for Computer Use* Scale



Item Parameters for the ePIRLS 2016 Self-Efficacy for Computer Use Scale

Item	delta	tau_1	tau_2	tau_3	Infit
ASBE03A	-0.30146	-0.63034	-0.70712	1.33746	0.95
ASBE03B	0.28602	-0.73511	-0.61080	1.34591	0.97
ASBE03C	0.01544	-0.88525	-0.38788	1.27313	1.04

Scale Transformation Constants for the ePIRLS 2016 Self-Efficacy for Computer Use Scale

Scale Transformation Constants	
A = 7.582113	Transformed Scale Score = 7.582113 + 1.557903 • Logit Scale Score
B = 1.557903	

Equivalence Table of the Raw Score and Transformed Scale Scores for the ePIRLS 2016 Self-Efficacy for Computer Use Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.53502	
1	5.02075	
2	5.81380	
3	6.43388	
4	7.02434	7.1
5	7.63722	
6	8.34823	
7	9.25796	
8	10.49854	10.4
9	12.62271	

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016

Cronbach’s Alpha Reliability Coefficient and Principal Components Analysis of the Items in the ePIRLS 2016 Self-Efficacy for Computer Use Scale

Country	Cronbach’s Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item		
			ASBE03A	ASBE03B	ASBE03C
Canada	0.57	54	0.78	0.77	0.65
Chinese Taipei	0.66	60	0.77	0.79	0.76
Denmark	0.68	61	0.79	0.81	0.75
Georgia	0.51	52	0.78	0.61	0.77
Ireland	0.67	61	0.82	0.81	0.70
Israel	0.63	58	0.79	0.79	0.71
Italy	0.69	63	0.82	0.80	0.75
Norway (5)	0.66	60	0.81	0.79	0.72
Portugal	0.66	60	0.84	0.81	0.67
Singapore	0.64	59	0.81	0.78	0.69
Slovenia	0.68	62	0.83	0.79	0.74
Sweden	0.71	64	0.85	0.83	0.71
United Arab Emirates	0.57	54	0.76	0.75	0.69
United States	0.58	55	0.78	0.75	0.69
Benchmarking Participants					
Abu Dhabi, UAE	0.55	53	0.75	0.76	0.67
Dubai, UAE	0.58	54	0.76	0.77	0.68

SOURCE: IEA’s Progress in International Reading Literacy Study – PIRLS 2016

Relationship Between the ePIRLS 2016 Self-Efficacy for Computer Use Scale and ePIRLS 2016 Online Informational Reading Achievement

Country	Pearson's Correlation with ePIRLS Achievement		Variance in ePIRLS Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
Canada	0.08	0.01	0.01
Chinese Taipei	0.08	0.01	0.01
Denmark	0.14	0.02	0.03
Georgia	0.14	0.02	0.02
Ireland	0.06	0.00	0.01
Israel	0.12	0.01	0.02
Italy	0.03	0.00	0.00
Norway (5)	0.12	0.01	0.02
Portugal	0.10	0.01	0.01
Singapore	0.10	0.01	0.01
Slovenia	0.06	0.00	0.00
Sweden	0.07	0.01	0.02
United Arab Emirates	0.16	0.03	0.03
United States	0.07	0.00	0.01
International Median	0.09	0.01	0.01
Benchmarking Participants			
Abu Dhabi, UAE	0.17	0.03	0.04
Dubai, UAE	0.14	0.02	0.02

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2016