

Highlights from

PIRLS 2016

Australia's perspective

Selected findings from the full report
'Reporting Australia's results PIRLS 2016'

Sue Thomson

Kylie Hillman

Marina Schmid

Sima Rodrigues

Jessica Fullarton

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19 Prospect Hill Road, Camberwell, Victoria, 3124, Australia

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Please note that there is the potential for minor revisions of data in this report.

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Highlights from PIRLS 2016: Australia's perspective

What is PIRLS?

The Progress in International Reading Literacy Study (PIRLS) is an international study of reading literacy directed by the IEA (International Association for the Evaluation of Educational Achievement), an independent international cooperative of national research institutions and government agencies that has been conducting studies of cross-national achievement in a wide range of subjects since 1959.

In Australia, PIRLS is implemented by the Australian Council for Educational Research (ACER), which is Australia's representative to the IEA. In Australia, PIRLS is part of the National Assessment Program. PIRLS has been conducted internationally at Year 4 on a five-year cycle since 2001, however, Australia participated for the first time in 2011.

The goal of PIRLS is to provide the best policy-relevant information about how to improve teaching and learning and to help young students become accomplished and self-sufficient readers.

Mullis, Martin, Foy & Hooper (2017)

The main goal of PIRLS is to assist countries to monitor and evaluate their teaching of reading across time. PIRLS offers countries an opportunity to:

- ▶ collect comprehensive and internationally comparable data about the reading concepts, processes and attitudes that students have learnt by Year 4
- ▶ assess progress internationally in reading learning across time for students in Year 4
- ▶ understand the contexts in which students learn best, since PIRLS enables international comparisons of the key policy variables in relation to school curricula, modes of instruction and provision of resources that result in higher levels of student achievement
- ▶ use PIRLS to address internal policy issues – within countries, for example, PIRLS provides an opportunity to examine the performance of population sub-groups (e.g. students in metropolitan, regional and remote school locations) and address equity concerns.

Year 4 students are the focus of the PIRLS assessment because they are usually at a key transition point in their schooling, during which they move from learning *how* to read, to reading *in order* to learn. PIRLS aims to inform policies and practice while there still is an opportunity to improve students' performance in reading.

How is reading assessed in PIRLS?

Reading literacy is one of the most important abilities students acquire as they progress through their early school years. PIRLS defines reading literacy as ‘the ability to understand and use those written language forms required by society and/or valued by the individual’.

PIRLS focuses on three aspects of students’ reading literacy:

- ▶ Purposes for reading
- ▶ Processes of comprehension
- ▶ Reading behaviours and attitudes.

The first two aspects are assessed using the PIRLS reading literacy tasks, while the third is investigated using the responses to the PIRLS questionnaires.

Reading purposes and processes

Students’ reading literacy is assessed by having participating students read selected texts and respond to a variety of questions about the texts they have read. To reflect the broad range of literacy requirements, the PIRLS assessment reflects the two different purposes for reading described in Box 1, and incorporates the processes described in Box 2, using *literary texts* (short stories with one or two episodes of problem/resolution and two central characters) and *informational texts* (sets of short informational materials involving texts, maps, illustrations, diagrams and photographs).

Reading for literary experience	Reading to acquire and use information
The reader becomes involved in imagined events, settings, actions, consequences, characters, atmosphere, feelings and ideas, he or she brings an appreciation of language and knowledge of literary forms to the text. This is often accomplished through reading fiction.	The reader engages with types of texts where she or he can understand how the world is and has been, and why things work as they do. Texts take many forms, but one major distinction is between those organised chronologically and those organised non-chronologically. This area is often associated with information articles and instructional texts.

BOX 1 The PIRLS purposes of reading

Focus on and retrieve explicitly stated information	Readers are required to recognise information or ideas presented in the text, and how that information is related to the information being sought. Specific information to be retrieved is typically located in a single sentence or phrase.
Make straightforward inferences	Readers move beyond the surface of texts to fill in the ‘gaps’ in meaning. Proficient readers often make these kinds of inferences automatically, even though it is not stated in the text. The focus may be on the meaning of part of the text, or the more global meaning representing the whole text.
Interpreting and integrating ideas and information	Readers need to process the text beyond the phrase or sentence level. Readers attempt to construct a more specific or complete understanding of the text by integrating personal knowledge and experience with meaning that resides in the text. Because of this, meaning that is constructed is likely to vary among readers.
Examine and evaluate content, language, and textual elements	Readers draw on their interpretations and weigh their understanding of texts against their world view – rejecting, accepting or remaining neutral to the text’s representation. Readers need to draw on their knowledge of text genre and structure, as well as their understanding of language conventions. Readers may also reflect on the author’s devices for conveying meaning and judge their adequacy, or identify weaknesses in how the text was written.

BOX 2 The PIRLS processes of reading comprehension

Who participated in PIRLS 2016?

Internationally

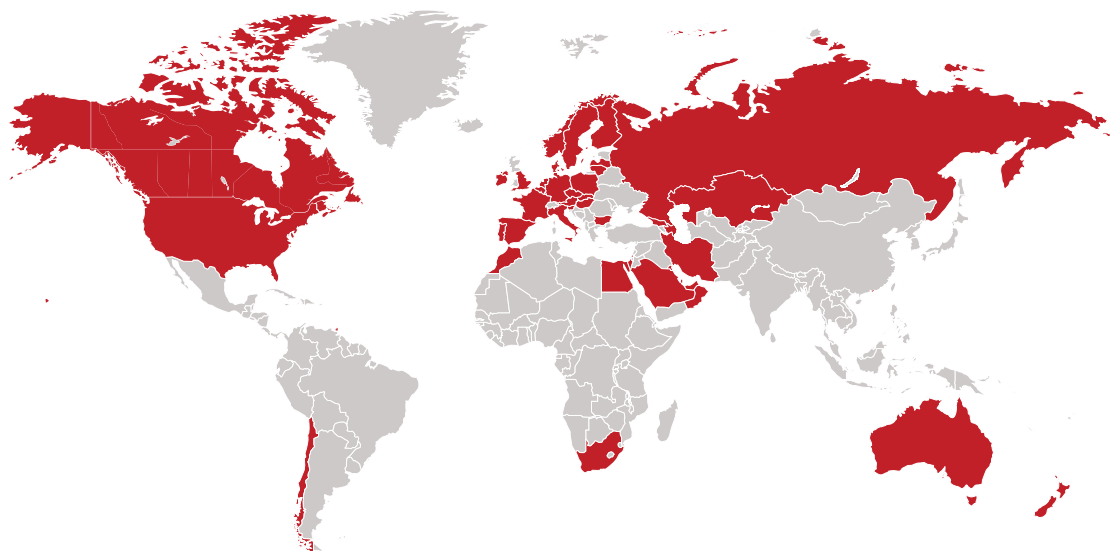
There were 61 participants in PIRLS 2016, including 50 countries and 11 benchmarking entities. In total, over 580,000 students participated worldwide. The participating countries are shown in Figure 1.

Sample surveys

PIRLS is conducted as a sample survey in most participating countries. In surveys such as this, a sample of students is selected to represent the population of students at a particular year level in a given country. The samples are designed and conducted so that they provide reliable estimates about the population that they represent. Sample surveys are cheaper to undertake and less of a burden for schools than a full census of the particular population.

The basic sample design for PIRLS is generally referred to as ‘a two-stage stratified cluster sample design’. The first stage consists of a sample of schools and the second stage consists of the identification of a single classroom selected at random from the target year level in sampled schools.

Students in the selected classrooms are representative of the students in the population, and weights are used to adjust for any differences arising from intended features of the design (e.g. to oversample particular sub-populations) or non-participation by students who were selected. In this way we can provide measures of achievement for the population, based on the responses of a sample of students.



Participating countries			Benchmarking participants
Australia	Germany	Norway	Buenos Aires, Argentina
Austria	Hong Kong SAR	Oman	Ontario, Canada
Azerbaijan	Hungary	Poland	Quebec, Canada
Bahrain	Italy	Portugal	Denmark
Belgium (Flemish)	Iran, Islamic Rep. of	Qatar	Norway
Belgium (French)	Ireland	Republic of South Africa	Moscow City, Russian Federation
Bulgaria	Israel	Russian Federation	Eng/Afr/Zulu RSA
Canada	Kazakhstan	Saudi Arabia	Andalusia, Spain
Chile	Kuwait	Singapore	Madrid, Spain
Chinese Taipei	Latvia	Slovak Republic	Abu Dhabi, UAE
Czech Republic	Lithuania	Slovenia	Dubai, UAE
Denmark	Macao SAR	Spain	
Egypt	Malta	Sweden	
England	Morocco	Trinidad and Tobago	
Finland	Netherlands	United Arab Emirates	
France	New Zealand	United States of America	
Georgia	Northern Ireland		

FIGURE 1 Map of countries and benchmarking entities participating in PIRLS 2016

In Australia

In Australia, 286 primary schools participated in the data collection for PIRLS 2016. At least one intact Year 4 class, along with all Indigenous students in that year level, from each school was selected to participate in the assessment. In schools with composite or staged classes (i.e. classes with students from more than one year level), multiple classes were selected in order to provide sufficient numbers of Year 4 students, and only the Year 4 students participated in PIRLS. This resulted in a sample of 6341 Year 4 students. Statistical weighting enables the sampled students to represent the total student population at Year 4. The weighted numbers for Australia for Year 4, along with the numbers of participating schools and students, are shown in Table 1.

TABLE 1 The PIRLS 2016 designed and achieved school and student sample for Australia

Jurisdiction	Designed school sample	N schools	N students	Weighted N students	Weighted % of total Australian students
ACT	30	30	617	4489	2
NSW	45	45	1 107	88 770	32
VIC	44	44	867	68 328	24
QLD	45	45	1 169	61 323	22
SA	41	41	814	19 785	7
WA	39	39	884	28 421	10
TAS	27	27	563	6 600	2
NT	15	15	320	2 374	1
Australia	286	286	6341	280089	100

What does PIRLS tell us about performance in Year 4 reading?

- ▶ Students in the Russian Federation performed better, on average, than students in all other participating countries, apart from those in Singapore. Students in Singapore, in turn, performed better in reading than students in all other countries, apart from Hong Kong.
- ▶ Australia's average reading score of 544 was significantly higher than the scores of 24 other countries, including France and French-speaking Belgium, New Zealand, Trinidad and Tobago and Malta (the latter three countries tested in English).
- ▶ Australia's average score was lower than the average scores for 13 other countries, including Singapore, Hong Kong, Ireland, Northern Ireland and England (who all tested in English), as well as other top-performing countries Finland and Poland.
- ▶ Australia recorded a significant improvement of around 20 points in the average reading score between the 2011 PIRLS assessment and 2016.



FIGURE 2 Mean scores and distribution of Year 4 reading achievement, by country

Australian students' performance across the jurisdictions

TABLE 2 Multiple comparisons of Year 4 reading achievement, by jurisdiction

STATE	Mean	SE	VIC	ACT	WA	NSW	QLD	TAS	SA	NT
VIC	560	4.2		•	↑	↑	↑	↑	↑	↑
ACT	552	5.2	•		•	•	•	•	↑	•
WA	544	6.0	↓	•		•	•	•	↑	•
NSW	542	5.4	↓	•	•		•	•	•	•
QLD	537	5.4	↓	•	•	•		•	•	•
TAS	537	8.0	↓	•	•	•	•		•	•
SA	527	5.6	↓	↓	↓	•	•	•		•
NT	527	13.5	↓	•	•	•	•	•	•	

↑ average achievement significantly higher than other jurisdictions'

↓ average achievement significantly lower than other jurisdictions'

• average achievement not significantly different to other jurisdictions'

- ▶ The performance of students in Victoria was significantly higher than that of students in all other jurisdictions except the Australian Capital Territory.
- ▶ Students in South Australia performed significantly lower, on average, than students in Victoria, the Australian Capital Territory and Western Australia.
- ▶ Western Australia has shown the greatest improvement of 28 points from PIRLS 2011 to 2016, followed by Queensland (26 points) and Victoria (21 points). There was no significant change in average scores between 2011 and 2016 in the remaining jurisdictions.

Performance at the PIRLS international benchmarks

While the achievement scale in reading summarises student performance on the purposes and cognitive processes measured by the PIRLS test, the international benchmarks help put these scores in context.

Internationally it was decided that performance should be measured at four levels. These four levels summarise the achievement reached by:

- ▶ the 'Advanced international benchmark', which was set at 625
- ▶ the 'High international benchmark', which was set at 550
- ▶ the 'Intermediate international benchmark', which was set at 475
- ▶ the 'Low international benchmark', which was set at 400.

The descriptions of the levels are cumulative, so that a student who reached the High benchmark can typically demonstrate the knowledge and the skills for both the Intermediate and the Low benchmarks.

Table 3 provides a summary of the PIRLS 2016 Year 4 reading benchmarks.

TABLE 3 The PIRLS 2016 international benchmarks for Year 4 reading

International benchmarks		
Advanced	625	<p>Literacy</p> <p>When reading relatively complex literary texts, students can:</p> <ul style="list-style-type: none"> ▶ interpret story events and character actions to describe reasons, motivations, feelings and character development with full text-based support ▶ begin to evaluate the effect on the reader of the author’s language and style choices <p>Informational</p> <p>When reading relatively complex informational texts, students can:</p> <ul style="list-style-type: none"> ▶ distinguish and interpret complex information from different parts of the text and provide full text-based support ▶ integrate information across a text to explain relationships and sequence activities ▶ begin to evaluate visual and textual elements to consider the author’s point of view
High	550	<p>Literacy</p> <p>When reading relatively complex literary texts, students can:</p> <ul style="list-style-type: none"> ▶ locate and distinguish significant actions and details embedded across the text ▶ make inferences to explain relationships between intentions, actions, events and feelings, and provide text-based support ▶ interpret and integrate story events and character actions, traits and feelings as they develop across the text ▶ recognise the use of some language features (e.g. metaphor, tone, imagery) <p>Informational</p> <p>When reading relatively complex informational texts, students can:</p> <ul style="list-style-type: none"> ▶ locate and distinguish relevant information within a dense text or complex table ▶ make inferences about logical connections to provide explanations and reasons ▶ integrate textual and visual information to interpret the relationship between ideas ▶ evaluate and make generalisations about content and textual elements
Intermediate	475	<p>Literacy</p> <p>When reading a mix of simpler and relatively complex literary texts, students can:</p> <ul style="list-style-type: none"> ▶ independently locate, recognise, and reproduce explicitly stated actions, events and feelings ▶ make straightforward inferences about the attributes, feelings and motivations of main characters ▶ interpret obvious reasons and causes, recognise evidence and provide examples ▶ begin to recognise language choices <p>Informational</p> <p>When reading a mix of simpler and relatively complex informational texts, students can:</p> <ul style="list-style-type: none"> ▶ locate and reproduce two or three pieces of information from the text ▶ make straightforward inferences to provide factual explanations ▶ begin to interpret and integrate information to order events
Low	400	<p>Literacy</p> <p>When reading predominantly simpler literary texts, students can:</p> <ul style="list-style-type: none"> ▶ locate and retrieve explicitly stated information, actions or ideas ▶ make straightforward inferences about events and reasons for actions ▶ begin to interpret story events and central ideas <p>Informational</p> <p>When reading predominantly simpler informational texts, students can:</p> <ul style="list-style-type: none"> ▶ locate and reproduce explicitly stated information from text and other formats (e.g. charts, diagrams) ▶ begin to make straightforward inferences about explanations, actions and descriptions

At Year 4, students achieving the Advanced international benchmark are able to interpret story events and character actions to provide reasons, motivations, feelings and character traits with full text-based support, and when reading informational texts are able to distinguish and interpret complex information from different parts of text, integrate information across texts and evaluate textual and visual features to explain their function.

As an example, Box 3 shows an item from the literary text *Macy and the Red Hen*. Students were asked to provide one reason the alternative title *Macy Finds a Way* might be appropriate for the story. A correct response required the reader to evaluate story events and actions of the characters Macy and the hen.

16. Why would “Macy Finds a Way” be good as a different title for this story?

Give one reason.

1 She did find ^{a way} to make the hen do what she wanted.

BOX 3 Advanced international benchmark, Year 4 reading – example literary item

An example of an Advanced informational item is provided in Box 4. This multiple-choice item required the reader to evaluate textual elements and content to recognise how they exemplify the writer’s point of view.

15. How does the writer show you that the green sea turtle is special?

A by asking you to save it

B by telling you the amazing things it does

C by describing how beautiful it looks

D by warning you that few turtles are still alive today

BOX 4 Advanced international benchmark, Year 4 reading – example informational item

At the Intermediate international benchmark, the proficient standard for Australian students, readers demonstrated greater facility in retrieving explicitly stated information and making inferences, in interpreting and integrating story events and information. They also demonstrated an emerging ability to recognise language choices.

The proficient standard

The Measurement Framework for Schooling in Australia 2015 (Australian Curriculum, Assessment and Reporting Authority, 2015) specifies the proficient standard for PIRLS Reading as the Intermediate international benchmark. The Measurement Framework for Schooling in Australia is the basis for reporting on progress towards the Melbourne Declaration on Educational Goals for Young Australians (MCEETYA, 2008). Proficient standards represent a ‘challenging but reasonable’ expectation of student achievement.

Box 5 provides an example of an Intermediate literary item (multiple-choice), in which students were asked to indicate how an author could demonstrate a character's traits or personality.

2. How does the author show you what the red hen is like?

- (A) by describing what the red hen looks like
- (B) by describing the red hen's favourite food
- (C) by describing where the red hen lives
- (D) by describing how the red hen behaves

BOX 5 Intermediate international benchmark, Year 4 reading – example literary item

Box 6 provides an example of an Intermediate informational item, in which students were asked to identify one way in which people have endangered sea turtles, based on their reading of the text.

6. According to the article, what is one way people have made the sea more dangerous for turtles?

(1) People put plastic in the sea.

BOX 6 Intermediate international benchmark, Year 4 reading – example informational item

At the Low international benchmark, students are able to retrieve an explicitly stated detail in a literary text, or to locate and reproduce two or three pieces of information from within the text. Box 7 provides an example of a multiple-choice literary item at the Low benchmark, in which students were required to identify who had offered to care for Granny Gunn's animals at the beginning of the story *Flowers on the roof*.

4. Who offered to look after Granny Gunn's animals when she moved to town?

- (A) the people on the next farm
- (B) the doctor
- (C) Granny Gunn's family
- (D) Robert

BOX 7 Low international benchmark, Year 4 reading – example literary item

Box 8 provides an example of a Low informational item. This text, titled 'Rhinos' was not presented to Australian students, but to students in countries participating in PIRLS Literacy. However, it does represent the type of informational item at the Low benchmark that Australian students would have faced in the other, secured, PIRLS texts. Again, this item required students to make an inference based on information presented in the text, namely, the reason hunters would want to kill rhinoceroses.

6. Why do hunters want to kill rhinos?

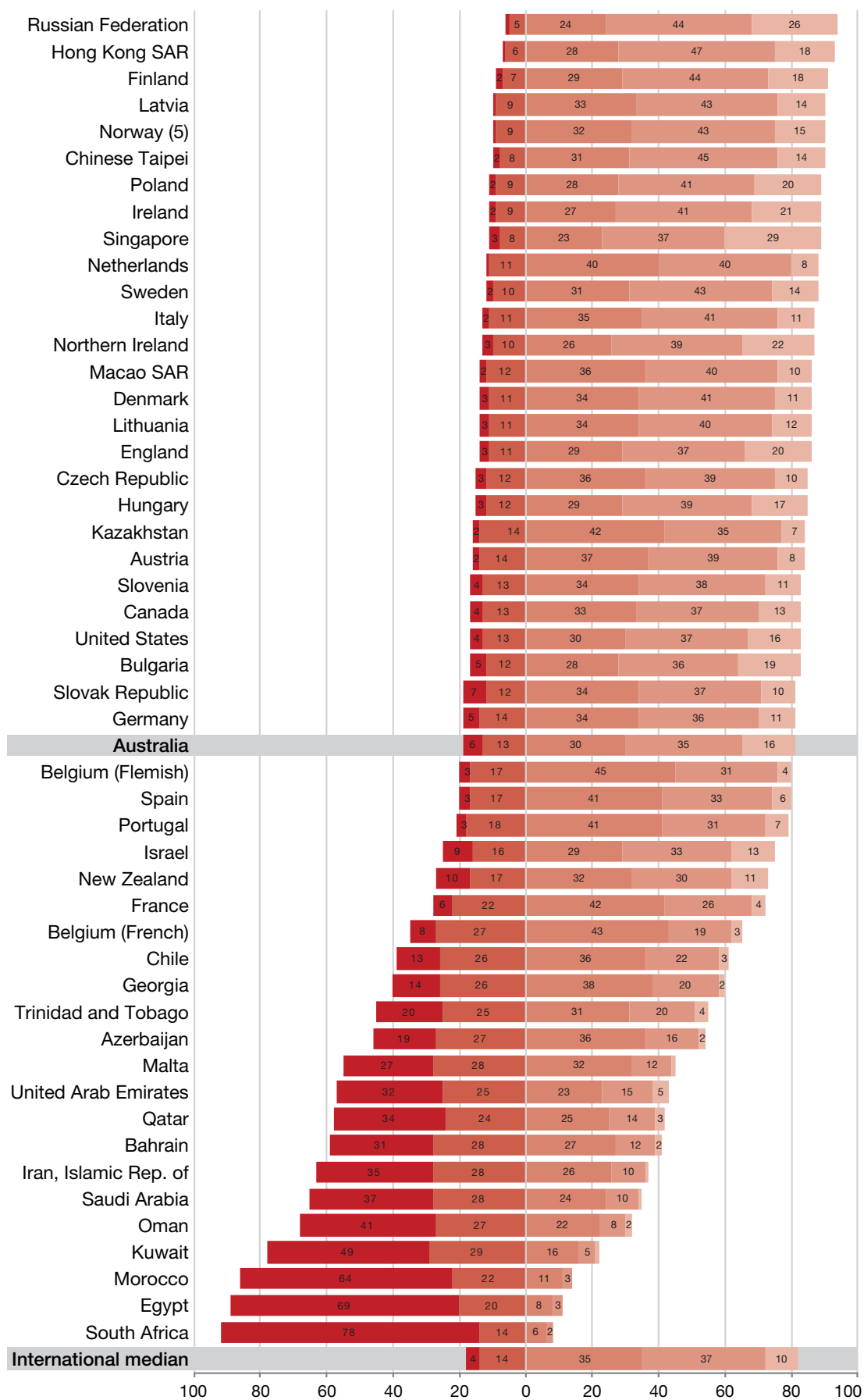
- (A) Rhinos are too dangerous.
- (B) Hunters want rhino meat.
- (C) Hunters want rhino horns.
- (D) There are too many rhinos.

BOX 8 Low international benchmark, Year 4 reading – example informational item

Performance at the PIRLS international benchmarks across countries

Figure 3 presents the percentage of students in each country who performed at each of the international benchmarks. The countries are ordered by the percentage of students reaching the Intermediate benchmark, which is the proficient standard set for PIRLS reading in Australia.

- ▶ The average scores of students in the Russian Federation, Singapore and Hong Kong were above the High benchmark, but not quite at the Advanced benchmark.
- ▶ Around one in four students in the Russian Federation and Singapore were at the Advanced benchmark, and very few students in these countries (3% and 1%, respectively) failed to reach the Low benchmark.
- ▶ The average achievement of Australian students was above the Intermediate benchmark (the proficient standard) and just under the High benchmark.
- ▶ Sixteen per cent of Australian students reached the Advanced benchmark, while 35 per cent performed at the High benchmark and a further 30 per cent performed at the Intermediate benchmark. This means that over 80 per cent of Australian students reached at least the Intermediate benchmark, the proficient standard for Australia.
- ▶ While the proportion of students at each of the benchmarks increased between 2011 and 2016, there was no change in the proportion of Australian students who failed to reach the Low benchmark (around 7% of students).



Note: Where the percentage is 1% or less, the numeric label is not displayed on the band. This convention applies to all figures about benchmarks.

■ Below Low ■ Low ■ Intermediate ■ High ■ Advanced

FIGURE 3 Percentage of students at the international benchmarks for Year 4 reading, by country

Australian student performance at the PIRLS benchmarks across the jurisdictions

Figure 4 shows the percentage of students in each jurisdiction at each of the international benchmarks for Year 4, along with the percentages for Australia as a whole, Singapore and the Russian Federation and the international median for comparison.

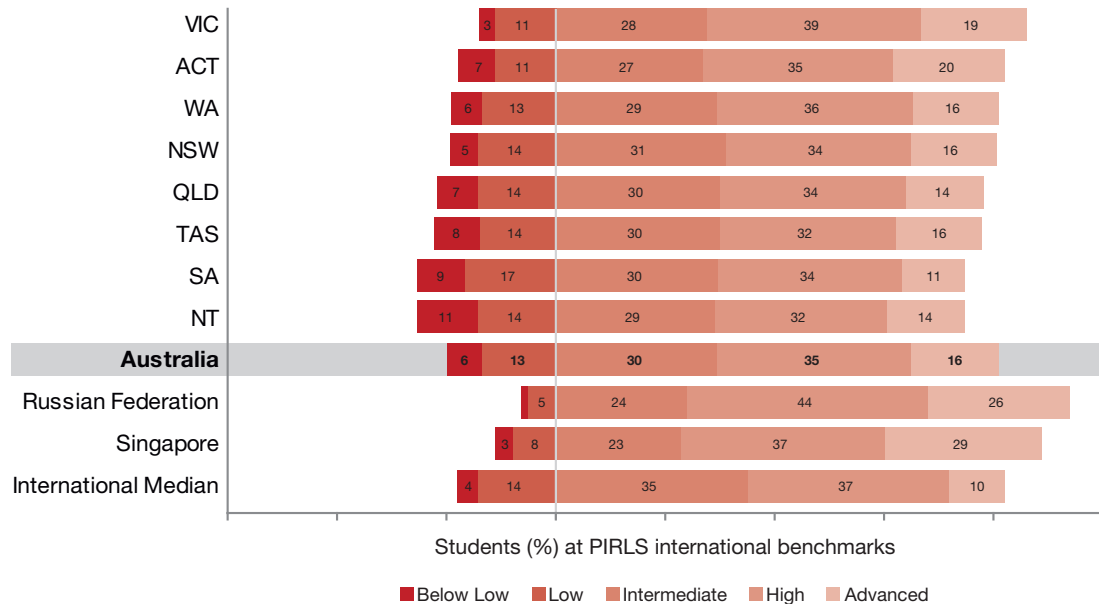


FIGURE 4 Percentage of Australian students at the international benchmarks for Year 4 reading, by jurisdiction and international comparisons

- ▶ The greatest proportions of students achieving at the Advanced benchmark were recorded in the Australian Capital Territory (20%) and Victoria (19%).
- ▶ South Australia had the lowest proportion of students at the Advanced benchmark, 11 per cent, which was similar to the international median of 10 per cent.
- ▶ Around 25 per cent of students in South Australia and the Northern Territory did not reach the proficient standard – the Intermediate benchmark – including nine per cent in South Australia and 11 per cent in the Northern Territory who were below the Low benchmark.
- ▶ The proportion of students who performed at or above the Intermediate benchmark increased between PIRLS 2011 and 2016 in Western Australia, Queensland, the Northern Territory, Victoria and Tasmania.

What does PIRLS tell us about achievement in the purposes and processes of reading literacy?

- ▶ Australian students showed a relative strength in the Literary reading purpose (547 points compared to 544 for reading overall) but no difference between their Informational score and reading overall (543 points compared to 544 points).
- ▶ Canada, England, New Zealand and the United States all showed relative strengths in the Literary reading purpose along with relative weakness in the Informational reading purpose.
- ▶ Top performers the Russian Federation and Hong Kong had relative strengths in the Informational purpose, while Singapore showed no differences between scores for the two reading purposes and reading overall.
- ▶ Australian students showed a relative strength on the interpreting, integrating and evaluating scale (549 points compared to 544 points) and a relative weakness in the retrieving and straightforward inferencing scale (541 points).
- ▶ This pattern was also found in Canada, England and the United States. New Zealand had a relative strength in the interpreting, integrating and evaluating scale, but no difference between the retrieving and straightforward inferencing score and reading overall.
- ▶ The Russian Federation, Singapore and Hong Kong showed no differences between their average scores on the reading processes scale and reading overall.
- ▶ Performance on all reading purpose and process sub-scales improved in Australia between PIRLS 2011 and 2016.

What factors are associated with Australian student performance in PIRLS?

Students in the fourth year of schooling typically have gained most of their reading skills in a multitude of environments – at school and at home; in different classrooms with different teachers. Community, school, classroom, and home environments that support each other can create extremely effective climates for learning.

To investigate the associations between different factors in these environments and student performance in reading, PIRLS includes a number of questionnaires for participating students, their parents, their teachers and the principals of the schools they attend:

- ▶ The School Questionnaire, answered by the principal, sought descriptive information about the school and information about instructional practices. For example, questions were asked about recruitment of teachers and numbers of staff, teacher morale, school and teacher autonomy, school resources, and school policies and practices such as use of student assessments.
- ▶ The Teacher Questionnaire examined a variety of issues related to qualifications, pedagogical practices, teaching styles, use of technology, assessment and assignment of homework, and classroom climate.
- ▶ The internationally standard Student Questionnaire sought information on students and their family background, aspects of learning and instruction in reading, and contexts of instruction.
- ▶ The Home Questionnaire, called the Learning to Read survey, sought information about the students' early at-home experiences with literacy-type activities, as well as information about the parents' own experiences and attitudes towards reading activities. This survey was distributed to parents/guardians of participating Australian students, but unfortunately, the response rate was too low for the data to be deemed reliable or representative, and so the responses to the items on this survey are not reported for Australia.

In PIRLS 2016, principals' reports on the socioeconomic composition of their school were used to create three categories:

- ▶ more affluent
- ▶ more disadvantaged
- ▶ neither more affluent nor more disadvantaged.

School factors in Australian student performance in PIRLS

- ▶ Thirty-five per cent of students attended schools categorised by their principals as having a *more affluent* student body, 26 per cent as having a *more disadvantaged* school body and the remainder somewhere between these two.
- ▶ Students attending *more affluent* schools scored 61 points higher, on average, than students attending *more disadvantaged* schools.
- ▶ A greater proportion of students in *more disadvantaged* schools than in *more affluent* schools were affected by resource shortages – 58 per cent and 23 per cent, respectively.
- ▶ There was a clear relationship between the achievement of Australian students and principals' reports of school discipline problems, with fewer discipline problems associated with higher achievement.
- ▶ Students attending *more disadvantaged* schools were far more likely than those in *more affluent* schools to face *moderate to severe problems* regarding school discipline.
- ▶ There was a clear relationship between the achievement of Australian students and teachers' reports of their school being safe and orderly, with more safe and orderly schools associated with higher student achievement.
- ▶ Sixty per cent of students at *more disadvantaged* schools and 86 per cent of those at *more affluent* schools had teachers who reported their school being *very safe and orderly*.
- ▶ Teachers of seven per cent of students in *more disadvantaged* schools reported their school as *less than safe and orderly*.
- ▶ Nineteen per cent of Australian Year 4 students reported being bullied *about weekly*. On average, students who reported *almost never* being bullied scored 30 points higher than those who reported being bullied *about weekly*.
- ▶ Fifteen per cent of students attending *more affluent* schools, compared to 23 per cent of students attending *more disadvantaged* schools, reported being bullied *about weekly*.
- ▶ More than half of the Australian Year 4 students reported that they had a *high sense of belonging*, with 33 reporting *some sense of belonging* and 10 per cent *little sense of belonging*. On average, students with a *high sense of belonging* scored 37 score points higher than those with *little sense of belonging*.
- ▶ Sixty-four per cent of students attended schools where reading instruction was *not affected* by resource shortages. Average reading scores were significantly higher in schools where instruction was *not affected* by shortages.

Classroom factors in Australian student performance in PIRLS

- ▶ A far greater proportion of Australian Year 4 students, compared to the international average, had computers available for use during reading lessons.
- ▶ Students who were assigned longer literary texts with chapters on a weekly basis scored a statistically significant 20 points higher, on average, than students whose teachers assigned longer books less often than once a week.
- ▶ Around 65 per cent of Australian students had teachers who reported that they were limited to *some extent* by student needs. Over 30 per cent of students had teachers who felt their instruction was limited *very little* by student needs.
- ▶ Students who were taught reading by teachers who were limited *very little* by student needs scored 40 points higher, on average, than students who were taught reading by teachers who reported being limited *a lot* by student needs.
- ▶ Australian students who were *never* or *almost never* absent from school, by their own report, scored 84 score points higher, on average, than those who were absent *once a week or more*.
- ▶ Twenty-seven per cent of Australian students arrived hungry *every day or almost every day*. This is a concerning trend given the relationship between nutrition, concentration and learning.
- ▶ There is a relationship between the frequency of arriving at school hungry and average reading achievement. Students who reported arriving at school hungry *every day* scored 41 points lower, on average, than students who *never* arrived at school hungry.

Limitations to classroom instruction in PIRLS 2016

Teachers of the PIRLS classes were asked their opinion on the extent to which instruction at their school was limited by the following seven student needs:

- ▶ students lacking prerequisite knowledge or skills
- ▶ students suffering from lack of basic nutrition
- ▶ students suffering from not enough sleep
- ▶ students absent from class
- ▶ disruptive students
- ▶ uninterested students
- ▶ students with mental, emotional or psychological disabilities.

Teachers' responses to these items were combined to create the Students Limit Classroom Instruction Scale and scores on this scale were used to categorise students as being in schools that were very limited, limited to some extent or not at all limited by student factors.

Students also reported the frequency with which limitations such as absences, hunger and tiredness happened for themselves.

- ▶ Over 50 per cent of Australian students were *very engaged in reading lessons*, according to their own reports, and a further 39 per cent were *somewhat engaged*. Only 5 per cent of students were classified as being *less than engaged in reading lessons*.
- ▶ As we would expect, students who were *less than engaged* during their reading lessons scored significantly lower on the PIRLS assessment, on average, than other students.

Student factors in Australian performance in PIRLS

Gender differences

- ▶ Female students continue to outperform male students in reading literacy (555 points compared to 534 points, on average).
- ▶ The proportion of female students who reached the Intermediate benchmark (the proficient standard) was higher than the corresponding proportion of male students (85% compared to 77%).
- ▶ Higher proportions of female students, compared to male students, reached the High and Advanced benchmarks, while greater proportions of male students were at or below the Low benchmark.
- ▶ Sex differences in reading performance in Australian Year 4 students have not changed significantly between PIRLS 2011 and 2016.

Indigenous background

- ▶ Students who identified as having an Indigenous background scored 67 points lower, on average, than non-Indigenous students (483 points compared to 550).
- ▶ Fifty-seven per cent of Australian Indigenous students achieved the Intermediate international benchmark, compared to 83 per cent of non-Indigenous students.
- ▶ There was no significant difference in the average scores of Indigenous students between PIRLS 2011 and 2016, while the average score on non-Indigenous students increased by 18 points between the two cycles.

Number of books in the home

Socioeconomic status has been found (in PIRLS and other studies) to be related to achievement. In PIRLS, the students' reports of the number of books in their homes is used as a proxy measure for socioeconomic status.

- ▶ The majority of Australian students (56%) reported having an *average number of books* and only 18 per cent reported having *many* books at home. Students who have *many* books in the home recorded the highest reading performance (578), scoring, on average, 22 score points higher than student with an *average number of books* in the home, and 80 score points higher than those with a *few books* in the home.
- ▶ Of those students who reported having *many books* in the home, 28 per cent reached the Advanced benchmark, compared to 17 per cent for the students in the *average number of books* category and just four per cent for those with a *few books* at home.
- ▶ Eleven per cent of students who reported having *many books* in the home did not reach the Intermediate benchmark, compared to 35 per cent of students who reported having just a *few books* in the home.

Attitudes to reading

- ▶ Forty-three per cent of Australian students *very much like reading*, 41 per cent *somewhat like reading* and 16 per cent of students *do not like reading*.
- ▶ Those students who *very much like reading* scored significantly higher in reading, on average, than did those who *somewhat like reading*, who in turn scored higher on average than students who *do not like reading*.
- ▶ Just under 50 per cent of students were *very confident in reading*, with a further 34 per cent *somewhat confident in reading*. Sixteen per cent were categorised as *not confident in reading*.
- ▶ As may be expected, students who were *very confident in reading* scored higher, on average, in the PIRLS reading assessment than did students who were *somewhat confident in reading*. Students who were *not confident in reading* scored significantly lower, on average, than other students.
- ▶ The majority of students who were *very confident* in reading liked reading *very much* (54%), while the proportions of students who were *somewhat* or *not confident* readers but enjoyed reading to the same extent were smaller – 35 per cent and 23 per cent, respectively.
- ▶ Over one-third of those students who were *not confident* readers indicated that they *did not like* reading.

