



Australia's results from

PIRLS 2021

Progress in International Reading Literacy Study

Kylie Hillman, Elizabeth O'Grady, Sima Rodrigues, Marina Schmid & Sue Thomson

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Key findings from PIRLS 2021

Almost 5,500 Year 4 students from 281 schools around Australia participated in the PIRLS 2021 assessment. Internationally, over 400,000 students in 65 countries and educational systems took part in PIRLS 2021.

Year 4 reading results: International, national and Australian demographic groups

- ✓ Australian Year 4 students scored higher, on average, in the PIRLS 2021 assessment than Year 4 students in 28 other countries.
- ✓ Australian students' average score of 540 points in PIRLS 2021 is similar to the average score of Australian students in PIRLS 2016 and higher than the average score in PIRLS 2011.
- ✓ 80% of Year 4 students in Australia met the proficient standard (the PIRLS Intermediate benchmark), including 14% at the Advanced benchmark and 34% at the High benchmark.
- ✓ The proportion of Australian Year 4 students who did not meet the proficient standard (20%) has not changed since PIRLS 2016.
- ✓ Students in the Australian Capital Territory scored higher, on average, than students in all other jurisdictions.
- ✓ Female Year 4 students scored higher, on average, than male Year 4 students in Australia and in New South Wales, Queensland, Western Australia and South Australia.
- ✓ Students who identified as having a First Nations background scored 491 points on average, lower than the average 547 points for students from other backgrounds.
- ✓ Differences in the average reading scores of First Nations background students and other Australian students have changed little over 3 cycles of PIRLS. The difference was 57 points in 2011, 67 points in 2016 and 56 score points in 2021.
- ✓ Australian students who had *many books* in the home scored 566 points on average, 12 points higher than students with *an average number of books* in the home (554 points), and 60 points higher than those with *a few books* in the home (506 points).
- ✓ Australian students in *more disadvantaged* schools scored 508 points on average, which was 32 points lower than students in *neither more affluent nor more disadvantaged* schools (540 score points), and 54 points lower than students in *more affluent* schools (562 points).
- ✓ Australian students who attended schools in *major cities* scored 546 points on average, 19 points higher than students in *provincial areas* (527 points), and 62 points, on average, higher than students who attended schools in *remote areas* (485) points).
- ✓ Australian students showed a relative strength in the *Literary* reading purpose, but no difference in their performance on the *Informational* purpose subscale and overall reading.
- ✓ Australian students had a relative strength in the *Interpreting, Integrating and Evaluating* processes subscale, with a mean of 547 points, and a relative weakness in the *Retrieving and Straightforward Inferencing* subscale, with a mean of 534 points.

Reading behaviours and attitudes

- ✓ 29% of Australian Year 4 students *very much like reading*, 45% *somewhat like reading* and 26% *do not like reading*.
- ✓ Australian students who *very much like reading* scored significantly higher in reading (562 points), on average, than those who *somewhat like reading* (542 points) and those who *do not like reading* (517 points). Students who *somewhat like reading*, also scored significantly higher in reading, on average, than those who *do not like reading*.
- ✓ Australian students who were *very confident in reading* scored higher (582 points), on average, than students who were *somewhat confident in reading* (528 points). Students who were *not confident in reading* scored significantly lower (477 points), on average, than other students.
- ✓ Over 50% of Australian Year 4 students were *very engaged* in reading lessons, and a further 42% were *somewhat engaged*. Only 7% of students were classified as being *less than engaged* in reading lessons.
- ✓ Students who were *less than engaged* in reading lessons scored lower (512 points), on average, on the reading assessment than students who were *somewhat engaged* (539 points) or *very engaged* (547 points).
- ✓ The majority of Australian students spent *30 minutes or less* using digital devices to find and read information per school day.
- ✓ Students who reported that they spent either *more than 30 minutes* or *30 minutes or less* using digital devices for their schoolwork had higher reading scores, on average, than students who spent *no time* using digital devices to find and read information for schoolwork.
- ✓ The proportion of male students who reported spending *more than 30 minutes* per school day on digital devices (30%) was significantly higher than the proportion of female students who used digital devices this often (24%).

Schools and the learning environment in Australia

- ✓ 46% of Australian Year 4 students attended schools in which principals had completed a master's degree and 2% were in schools in which the principal held a doctorate or PhD.
- ✓ More than half of the PIRLS 2021 students were in schools in which the principal had less than 10 years' experience.
- ✓ 40% of Australian Year 4 students attended *more affluent* schools, 26% attended *more disadvantaged* schools and 34% attended schools that were *neither more affluent nor more disadvantaged* according to their principals' reports.
- ✓ Students in *more affluent* schools recorded higher reading scores (562 points), on average, than students in *more disadvantaged* schools (508 points). In terms of the PIRLS benchmarks, students in *more affluent schools*, on average, performed at the High benchmark level, while those in *more disadvantaged* schools were at the Intermediate benchmark.
- ✓ Around half (47%) of PIRLS 2021 students attended schools in which more than 90% of the student population spoke English as their first language, while one-fifth (20%) attended schools in which less than half the students spoke English as their first language. There were no significant differences in the average reading scores of students grouped by the language background of the school body.
- ✓ 40% of Year 4 students attended schools whose principals reported that *less than 25% of students enter school with literacy skills*. Students in these schools scored lower (532 points), on average, than students in schools in which *more than 75% of students enter with literacy skills* (556 points).
- ✓ Just 1% of Australian Year 4 students attended schools where instruction was deemed to be *affected a lot by resource shortages*. Most students (65%) attended schools that were *not affected by resource shortages*, while 33% of students attended schools that were *somewhat affected by resource shortages*.

- ✓ More than half of Australian Year 4 students were categorised as having a *high sense of school belonging*, and only 8% of students reported *little sense of belonging*.
- ✓ Most students attended schools whose principals reported that their school placed a *high* (58%) or *very high emphasis* (13%) on academic success.
- ✓ Students in schools where principals reported a *very high emphasis on academic success* scored higher (566 points), on average, than students in schools with a *high emphasis on academic success* (545 points). Students in schools with a *high emphasis on academic success* scored higher, on average, in the PIRLS 2021 reading assessment than students in schools with a *medium emphasis on academic success* (520 points).
- ✓ Most Australian Year 4 students (69%) attended schools in which principals reported that there were *hardly any discipline problems*. Just 2% of students attended schools in which principals reported *moderate to severe problems*. Reading scores were higher, on average, in schools with *hardly any discipline problems* (548 points) than in schools with *minor discipline problems* (525 points). There were too few students in schools with *moderate to severe discipline problems* to calculate a meaningful average reading score.
- ✓ 85% of Australian Year 4 students in *more affluent* schools benefit from environments in which the principal reported *hardly any problems* with school discipline. Only principals of *more disadvantaged* schools reported that their schools suffered from *moderate to severe discipline problems*.
- ✓ 52% of Australian Year 4 students reported that they are *almost never* bullied. Around 35% reported being bullied *about monthly* and just 13% reported being bullied *about weekly*. On average, students who were bullied *about weekly* scored lower (508 points) on the PIRLS 2021 than students who were *almost never* bullied (553 points).

Teachers and the teaching of reading in Australia

- ✓ Nearly 40% of Australian students were taught reading by a teacher aged in their 40s or 50s.
- ✓ The majority of Year 4 students in Australia (81%) were taught reading by a female teacher.
- ✓ Since PIRLS 2016, the proportion of students with teachers who had *at least 5 years but less than 10 years* of experience has increased, while the proportions of students with very experienced teachers (20 years or more) and with relatively new teachers (*less than 5 years experience*) have decreased.
- ✓ Most Australian Year 4 students had reading teachers whose training had emphasised pedagogy of reading (78%) or English language (72%).
- ✓ Almost all Australian students worked in same-ability groupings during their reading classes *at least sometimes*, including 30% who worked in these types of groups *every or almost every* lesson.
- ✓ 87% of Australian Year 4 students were assigned short stories *at least once a week* and 86% were assigned longer chapter books *at least once a week*. Students who were assigned longer chapter books *at least once a week* scored higher on the PIRLS assessment (544 points) than students who were assigned longer books less often (530 points).
- ✓ 65% of Australian Year 4 students were in classrooms in which reading instruction was *limited some* by students not being ready for learning due to hunger, tiredness, lack of prior learning or other related factors. 6% of students were in classrooms where instruction was limited *a lot* by these factors.
- ✓ Most students' teachers had participated in professional development in teaching reading skills or strategies, and differentiation of instruction to address students' needs and interests in the 2 years before PIRLS 2021. Far fewer students had reading teachers who had participated in professional development in the area of integrating technology into reading instruction during the same time.



Acknowledgements

The undertaking of PIRLS 2021 was a collaborative effort, during a time of unprecedented interruptions to schools around the world. An international study such as PIRLS could not be undertaken successfully without the cooperation and contributions of the school systems, principals, teachers, parents and, of course, the students.

Data of the quality collected and analysed in PIRLS depends upon a high participation rate of the randomly selected schools and students. Australia was able to meet the response criteria set internationally for school and students in PIRLS 2021, despite many schools and students experiencing extended periods of remote learning. The PIRLS team at ACER gratefully recognises the assistance of the education system officials Australia-wide, and of the principals, teachers, parents and students in the participating schools, who gave generously of their time and support in contributing to the project during a particularly challenging year.

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Reader's guide

Sample surveys

PIRLS is conducted as a *sample survey* in most participating countries. In sample surveys, 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 so that they provide reliable estimates about the population they represent. Sample surveys are often less expensive to undertake as well as less burdensome for schools than running a full census of a particular population (for example, assessing every Year 4 student in Australia). The sample design for PIRLS is generally referred to as a '2-stage stratified cluster sample design'. The first stage is the sample of schools (from a list of all schools that enrol Year 4 students), and the second stage is the random selection of one intact class of Year 4 students from each of the sampled schools. The students are 'clustered' within their classes.

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 (for example, to oversample particular sub-populations) or non-participation by students who were selected. In this way measures of achievement for the Year 4 student population in Australia can be provided, based on the responses of a sample of Year 4 students.

PIRLS achievement scales

PIRLS 2021 used item response theory (IRT) methods to summarise the achievement of students on a scale with a mean of 500 points and a standard deviation of 100 points.

The PIRLS reading scales for Year 4 were based on the 2001 assessment and the methodology enables comparable trend measures from assessment to assessment. Further information on the methods employed in scaling the PIRLS 2021 data is available from the [PIRLS 2021 website](#).

International comparison statistics

Several international comparison statistics are given in the report: the PIRLS scale centrepoin, the international average and the international median.

The PIRLS scale centrepoin is the mean of the scales for Year 4 reading (overall and for the subscales) established in the first cycle of the study (2001), calibrated to be 500 points, with a standard deviation of 100 score points.

The international average is the mean score or percentage of all countries that participated in PIRLS 2021 at that year level. In this report, the international Year 4 average is presented to allow comparison between the results for countries and the average value for all countries who tested Year 4 students for PIRLS 2021.

The international median is the midpoint in a ranking of countries ordered by score or percentage. By definition, half of the participating countries will have a score or percentage above the median and half below.

It should be noted that the international average and the international median will vary depending on the set of countries included. Therefore, these statistics should be used in the context of a number of comparison statistics.

Standard errors and confidence intervals

In this and other reports, student achievement is often described using a mean score. For PIRLS, each mean score is calculated from the sample of students who undertook the assessments. These sample means are an approximation of the actual mean score (known as the population mean) that would have been derived had all students in Australia participated in the PIRLS assessment. If another sample of students was chosen on a different day, it is highly likely that the sample mean would be slightly different. Indeed, the sample mean is just one point along the range of student achievement scores, and so more information is needed to gauge whether the sample mean is an underestimation or overestimation of the population mean.

In this report, means are presented with an associated standard error. The standard error is an estimate of the error in the estimate of the population mean from the sample and is based on the standard deviation of the sampling distribution of the mean. The size of the sample, as well as the variance in the scores within the sample, can affect the size of the standard error. Smaller samples, or samples with a greater variance in scores, will have larger standard errors.

The calculation of confidence intervals can assist our assessment of a sample mean's precision as a population mean. Confidence intervals provide a range of scores within which we are 'confident' that the population mean actually lies. The confidence interval is calculated as plus or minus 1.96 standard errors of the sample mean. Thus, a larger standard error results in a larger confidence interval and a greater likelihood that the confidence intervals of two means will overlap. If the confidence intervals for two statistics, such as means, do not overlap, then those means are considered to be different to one another. If the confidence intervals overlap, however, it is not necessarily true that the means are not significantly different. Statistical comparison tests are employed to determine whether these means are significantly different.

Statistical significance

The term 'significantly' is used throughout the report to describe a difference (identified by statistical comparison tests) that meets the requirements of statistical significance at the 0.05 level, and would be found in at least 95 analyses out of 100 if the comparison were to be repeated. It is not to be confused with the term 'substantial', which is qualitative and based on judgement rather than statistical comparisons. A difference may appear substantial but not be statistically significant (due to factors that affect the size of the standard errors around the estimate, for example) while another difference may seem small but reach statistical significance because the estimate was more accurate.

Trends

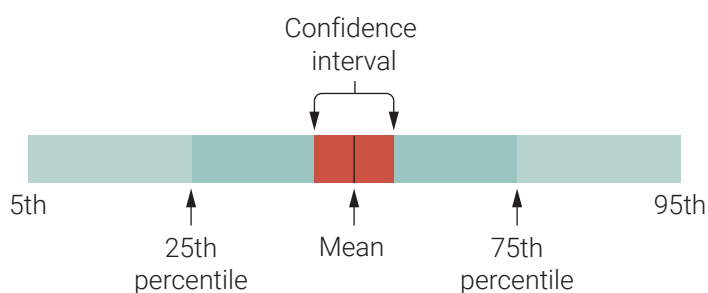
A change that was made in 2015 to the method of calculating standard errors means that standard errors for data from PIRLS 2011 (or earlier cycles) presented in the current report will not match those presented in reports for PIRLS 2011 or earlier cycles. Any standard errors from PIRLS 2011 that appear in this report will have been recalculated using the same method used for PIRLS 2016.

Figures that contain results for PIRLS 2021 along with those from previous cycles will have a dashed line joining the 2021 results to earlier results. The dashed line is used to indicate that there may be differences in the number of years between the data collections across countries, due to the COVID-19 pandemic and school closures.

Rounding of figures

Due to rounding to eliminate decimals, some percentages in tables and figures may not exactly add to 100. Totals, differences and averages are always calculated on the basis of exact numbers and are rounded only after calculation. When standard errors have been rounded to one decimal place and the value 0.0 is shown, this does not imply that the standard error is zero, rather that its value is smaller than 0.05.

Reading the distribution graphs



Distribution graphs are presented alongside mean reading scores in Chapter 2. These distribution graphs are presented as horizontal bars with degrees of shading. The left end of the bar marks the 5th percentile – this is the score below which 5% of the students have scored. The lightest shading on the left-hand end of the bar covers the range between the 5th and the 25th percentiles. The next band, a slightly darker shade, covers the range between the 25th percentile and the lower limit of the confidence interval for the mean. The dark band in the middle of the distribution graph is the confidence interval for the mean – that is, the dark band indicates a range within which analysts can claim to be ‘confident’ that the mean will lie. On the right-hand side of the bar, the medium level of shading indicates the range between the upper limit of the confidence interval and the 75th percentile. The lightest shading on the right-hand end of the bar covers the range between the 75th and the 95th percentiles, while the right end of the bar marks the 95th percentile – this is the score below which 95% of the students have scored (with the remaining 5% scoring above this).

Notes about participating countries

A number of countries have official names that are longer than those usually used in conversation. To make PIRLS reports easier to read, these countries are referred to by their shortened form (for example, Hong Kong, Korea, Iran) in the text, but are referred to by their official name (for example, Hong Kong SAR; Korea, Republic of; Iran, Islamic Republic of) in any tables or figures.

The PIRLS target population is the grade that represents 4 years of schooling counting from the first year of ISCED Level 1. Norway chose to assess students in Year 5 for PIRLS, and their results are reported as Norway (5).

The proficient standard

The Measurement Framework for Schooling in Australia 2020 (Australian Curriculum, Assessment and Reporting Authority, 2020) 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 Alice Springs (Mparntwe) Education Declaration (Education Council, 2019). Proficient standards represent a ‘challenging but reasonable’ expectation of student achievement. Further information on the PIRLS Intermediate benchmark and the types of tasks students at this level are capable of doing is provided in Chapter 1.

Definitions of background characteristics

There are various definitions used in this report that are particular to the Australian context, as well as many that are used internationally. This section provides an explanation for those that may not be self-evident.

Number of books in the home

This variable is used as a proxy for socioeconomic status, where information about parents’ occupations, education and wealth is not available. It is derived from student self-reports of the number of books in their homes. Their responses have been grouped so that *a few books* equals 25 or fewer books, *an average number of books* equals between 26 and 200 books and *many books* equals more than 200 books. Students with *many books* in the home generally come from households with higher socioeconomic status.

School socioeconomic composition

As PIRLS does not collect detailed socioeconomic data from Year 4 students (instead using the number of books in the home as a proxy measure of student-level socioeconomic status), the school questionnaire asked school principals to report on the socioeconomic composition of their school by indicating what percentage of students came from economically affluent homes and what percentage came from economically disadvantaged homes. The responses to these questions were then used to create 3 categories of school socioeconomic composition:

- ✓ *more affluent* – schools where more than 25% of the student body comes from economically affluent homes and not more than 25% from economically disadvantaged homes
- ✓ *more disadvantaged* – schools where more than 25% of the student body comes from economically disadvantaged homes and not more than 25% from economically affluent homes
- ✓ *neither more affluent nor more disadvantaged* – all other response combinations.

First Nations peoples

The student questionnaire includes a question asking students whether they identify as being Aboriginal, Torres Strait Islander, both or neither of these. To meet Australian Government reporting requirements, these categories were combined and results are reported as students from First Nations background and students from other backgrounds.

The authors respectfully acknowledge that collective terms for Aboriginal and Torres Strait Islander peoples do not always reflect the diversity of the First Peoples of Australia.

Language spoken at home

The language spoken at home variable is derived from student self-report of how often English was spoken at home. Where the student spoke English *never* or only *sometimes*, the student was considered to speak a language other than English as the main language at home. Those who indicated that they spoke English *always* or *almost always* were considered to be English speakers in the home environment.

Geographic location of the school

In Australia, the participating schools were coded using the Australian Bureau of Statistics' Australian Statistical Geography Standard (ASGS) Remoteness Structure, (ABS, 2011), which has superseded the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) classification of geographic location.

The following categories are used to report geographic location using the ASGS Remoteness Structure:

- ✓ *major cities*, which includes all major cities of Australia
- ✓ *regional areas*, which includes all inner regional and outer regional areas in Australia
- ✓ *remote areas*, which includes all remote and very remote areas in Australia.

Teacher education

Over the past decade, the requirements for registration as a qualified teacher in Australia have changed, and registration as a new qualified teacher now requires completion of an accredited initial teacher education (ITE) program of 4 years fulltime (or equivalent), including an initial primary or secondary teaching qualification of at least 1 year. Teachers who were registered under the previous qualification requirements (for example, a general undergraduate degree plus a graduate diploma), however, were still working in schools at the time of PIRLS 2021.

For the purposes of this report, given that the graduate diploma was necessary for teacher accreditation for some teacher cohorts, the graduate diploma has been reported as a separate category. This was not the case in PIRLS 2011, when the graduate diploma was included as a postgraduate degree, thus responses to the teacher-education variable cannot be compared across the 2011 and 2021 cycles.



1

Introduction to PIRLS 2021

In 2021, Australia participated in the Progress in International Reading Literacy Study (PIRLS) – an assessment of the reading literacy of students in Year 4 – for the third time. PIRLS is directed by the International Association for the Evaluation of Educational Achievement (IEA), 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, almost 5,500 Year 4 students participated in PIRLS 2021. These students completed tests in reading comprehension and answered questionnaires on their background and experiences in learning reading at school. To inform educational policy in the participating countries, alongside the assessment of reading literacy, PIRLS also routinely collects extensive background information that addresses concerns about the quantity, quality and content of instruction. This background information is collected through a series of questionnaires for students, teachers, principals and curriculum specialists.

The importance of PIRLS

Reading literacy is one of the most important abilities students acquire as they progress through their early school years. It forms the foundation for future learning across all academic subjects as well as for personal growth and recreation (Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2000). Reading literacy also equips young students with the foundational skills that will be needed in order to participate fully in their communities and the larger society (Organisation for Economic Cooperation and Development [OECD], 2010).

The PIRLS definition of reading literacy is

... the ability to understand and use those written language forms required by society and/or valued by the individual. Readers can construct meaning from texts in a variety of forms. They read to learn, to participate in communities of readers in school and everyday life, and for enjoyment (Mullis & Martin, 2019).

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 (for example, 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 education policies and teaching practice at this key point in students' learning.

The PIRLS 2021 Reading Literacy Framework

The PIRLS reading assessment is based on a comprehensive framework developed by the Reading Development Group, which is made up of representatives from participating countries along with external reading consultants and members of the PIRLS International Study Center at Boston College.

The PIRLS framework includes 3 aspects of students' reading literacy:

- ✓ purposes for reading
- ✓ processes of comprehension
- ✓ reading behaviours and attitudes.

The first 2 aspects – purposes for reading and processes of reading comprehension – are assessed using the PIRLS reading literacy tasks. The tasks consist of 2 short texts and questions related to those texts. The third aspect of students' reading literacy – behaviours and attitudes – is investigated using the responses to the PIRLS questionnaires.

Two purposes for reading are identified as accounting for most of the reading activities done by young students in and out of school:

- ✓ for literary experience
- ✓ to acquire and use information.

Within each of these 2 major reading purposes, 4 processes of comprehension are also assessed:

- ✓ focusing on and retrieving explicitly stated information
- ✓ making straightforward inferences
- ✓ interpreting and integrating ideas and information
- ✓ examining and evaluating content, language, and textual elements.

Overall, half of the PIRLS assessment focuses on reading for literary experience and half on reading to acquire and use information. The proportion of the assessment focusing on each of the 4 reading processes is shown in Table 1.1.

TABLE 1.1: Distribution of the PIRLS assessment over the reading purposes and processes

	Proportion of the PIRLS 2021 assessment (%)	Examples
Purposes for reading		
Literary experience	50	narrative fiction
Acquire and use information	50	informative articles, instructional texts
Processes of comprehension		
Focus on and retrieve explicitly stated information	20	<ul style="list-style-type: none"> Identifying and retrieving information that is relevant to the specific goal of reading Looking for specific ideas Searching for definitions of words or phrases Identifying the setting of a story (time and place) Finding the topic sentence or main idea (when explicitly stated) Identifying specific information in a graphic (e.g. graph, table, or map)
Make straightforward inferences	30	<ul style="list-style-type: none"> Inferring that one event caused another event Giving the reason for a character's action Describing the relationship between two characters Identifying which section of the text or website would help for a particular purpose
Interpret and integrating ideas and information	30	<ul style="list-style-type: none"> Discerning the overall message or theme of a text Considering an alternative to actions of characters Comparing and contrasting text information Inferring a story's mood or tone Interpreting a real-world application of text information Comparing and contrasting information presented within and across texts or websites
Evaluate and critique content and textual elements	20	<ul style="list-style-type: none"> Judging the completeness or clarity of information in the text Evaluating the likelihood that the events described could really happen Evaluating how likely an author's argument would be to change what people think and do Judging how well the title of the text reflects the main theme Describing the effect of language features, such as metaphors or tone Describing the effect of the graphic elements in the text or website Determining the point of view or bias of the text or website Determining an author's perspective on the central topic

Structure of the PIRLS 2021 assessment

Students completed a PIRLS booklet, which contained 2 short texts (either 2 literary texts, 2 informational texts or 1 of each) and their associated questions, and 2 questions that asked students to rate how much they liked the texts they read. The assessment booklets were designed to be administered over 2 sessions of 40 minutes duration, separated by a short break. In addition to completing the assessment booklet, each student was asked to fill in a questionnaire.

The assessment task

In total, 18 texts were used in the PIRLS 2021 assessment, which included 12 texts used in PIRLS 2016 (6 carried through from 2011). These texts and their associated test questions were combined to create 18 different PIRLS booklets. The questions were either multiple-choice or constructed-response items of various length (for example, a single word up to a few sentences). The booklets were evenly distributed within each participating class, thus, only 1 or 2 students in each class completed a particular PIRLS booklet.

Further information on the PIRLS assessment booklets and the types of items students attempted to complete is presented later in this chapter and in [Appendix C](#).

Further information about the methods and procedures followed during PIRLS 2021, including the allocation of texts to booklets and distribution of booklets, is available on the [TIMSS and PIRLS website](#).

The context questionnaires

After completing their PIRLS reading assessment, students were asked to complete a background questionnaire, which sought information on home contexts, and on the students' characteristics and attitudes towards learning and reading.

The Teacher Questionnaire, distributed (online) to reading/English teachers of students selected to participate in PIRLS, asked about teacher preparation and experience, pedagogical practices, use of technology, assessment, assignment of homework, school and classroom climate, and their own attitudes towards reading.

The School Questionnaire, answered by the principal (or the principal's designate), sought descriptive information about school characteristics, instructional time, resources and technology, school climate for learning, students' school readiness, and principal preparation and experience.

The Curriculum Questionnaire focused on the reading curriculum, and schools' organisational approaches and instructional practices in participating countries. Australia's response to this extensive questionnaire was provided by the Australian Council for Educational Research (ACER), reviewed by curriculum experts in each state and territory education department, and then submitted to the International Study Center.

Further information about the curricula and education policies of participating PIRLS countries is available in the [PIRLS 2021 Encyclopedia](#).

Participants in PIRLS 2021

Countries

There were 65 participants in PIRLS 2021, including 57 countries and 8 benchmarking entities. Over 400,000 students participated worldwide.

During a normal PIRLS cycle, countries conduct the assessment with Year 4 students at the end of the school year. When COVID-19 was declared a pandemic in March 2020 and many countries placed restrictions on social interactions, including in-person attendance at school, the 2021 PIRLS cycle was impacted. Some participating countries conducted the assessment as originally scheduled – during October and November 2020 for Southern Hemisphere countries New Zealand and Singapore or during May and June 2021 for Northern Hemisphere countries. Other countries, including Australia, delayed the assessment until students were able (for the most part) to attend school in person.

For some participating countries, the delays meant that students who participated in PIRLS 2021 were actually in Year 5 when they took part (although at the beginning of their school year).

Due to the differences in when the assessment was held and the average age of participating students, results for some countries in PIRLS 2021 are not considered comparable with those of others. This report presents PIRLS 2021 results from Australia and other countries who tested Year 4 students towards the end of the academic year (43 countries in all). Results for all participating countries, including those who tested Year 5 students and those who were benchmarking participants, are available from the [PIRLS website](#).

Countries that participated in PIRLS 2021 are listed in Table 1.2 along with an indication of when they tested, which year level was assessed, how they tested (mode of delivery: paper or digital) and whether they were a full participant or benchmarking participant. For further information about the mode of delivery and PIRLS 2026 transitioning to a digital assessment for all participants, please refer to [Appendix D](#).

TABLE 1.2: PIRLS 2021 participating countries and educational systems

Country	Time of assessment	Year level	Mode of delivery	Participation level	No. of years from PIRLS 2016
Abu Dhabi, UAE	Second half, 2021	5	Digital	Benchmarking	-
Albania	First half, 2021	4	Paper	Full	5
Alberta, Canada	First half, 2021	4	Digital	Benchmarking	5
Austria	First half, 2021	4	Paper	Full	5
Australia	Second half, 2021	4	Paper	Full	6
Azerbaijan	First half, 2021	4	Paper	Full	5
Bahrain	Second half, 2021	5	Paper	Full	-
Belgium (Flemish)	First half, 2021	4	Digital	Full	5
Belgium (French)	First half, 2021	4	Paper	Full	5
Brazil	Second half, 2021	4	Paper	Full	6
British Columbia, Canada	First half, 2021	4	Digital	Benchmarking	5
Bulgaria	First half, 2021	4	Paper	Full	5
Canada	Second half, 2021	5	Digital	Full	-
Chinese Taipei	First half, 2021	4	Digital	Full	5
Croatia	Second half, 2021	5	Digital	Full	-
Cyprus	First half, 2021	4	Paper	Full	5
Czech Republic	First half, 2021	4	Digital	Full	5
Denmark	First half, 2021	4	Digital	Full	5
Dubai, UAE	Second half, 2021	5	Digital	Benchmarking	-

Country	Time of assessment	Year level	Mode of delivery	Participation level	No. of years from PIRLS 2016
Egypt	First half, 2021	4	Paper	Full	5
England	First half, 2022	4	Paper	Full	6
Finland	First half, 2021	4	Digital	Full	5
France	First half, 2021	4	Paper	Full	5
Georgia	Second half, 2021	5	Paper	Full	-
Germany	First half, 2021	4	Digital	Full	5
Hong Kong SAR	First half, 2021	4	Paper	Full	5
Hungary	Second half, 2021	5	Digital	Full	-
Iran, Islamic Republic of	First half, 2022	4	Paper	Full	6
Ireland	Second half, 2021	5	Paper	Full	-
Israel	First half, 2022	4	Digital	Full	6
Italy	First half, 2021	4	Digital	Full	5
Jordan	First half, 2021	4	Paper	Full	5
Kazakhstan	Second half, 2021	5	Digital	Full	-
Kosovo	First half, 2021	4	Paper	Full	5
Latvia	Second half, 2021	5	Paper	Full	-
Lithuania	Second half, 2021	5	Digital	Full	-
Macao SAR	First half, 2021	4	Paper	Full	5
Malta	First half, 2021	4	Digital	Full	5
Montenegro	First half, 2021	4	Paper	Full	5
Morocco	Second half, 2021	5	Paper	Full	-
Moscow City, Russian Federation	First half, 2021	4	Digital	Benchmarking	5
Netherlands	First half, 2021	4	Paper	Full	5
Newfoundland & Labrador, Canada	First half, 2021	4	Digital	Benchmarking	5
New Zealand	Second half, 2020	4	Digital	Full	5
Northern Ireland	Second half, 2021	5	Paper	Full	-
North Macedonia	First half, 2021	4	Paper	Full	5
Norway	First half, 2021	5 ¹	Digital	Full	5
Oman	First half, 2021	4	Paper	Full	5
Poland	First half, 2021	4	Paper	Full	5
Portugal	First half, 2021	4	Digital	Full	5
Qatar	Second half, 2021	5	Digital	Full	-
Quebec, Canada	Second half, 2021	5	Digital	Benchmarking	-
Russian Federation	First half, 2021	4	Digital	Full	5
Saudi Arabia	Second half, 2021	5	Digital	Full	-
Serbia	First half, 2021	4	Paper	Full	5
Singapore	Second half, 2020	4	Digital	Full	5
Slovak Republic	First half, 2021	4	Digital	Full	5
Slovenia	First half, 2021	4	Digital	Full	5
South Africa	Second half, 2021	4	Paper	Full	6
South Africa	Second half, 2021	6	Paper	Benchmarking	6
Spain	First half, 2021	4	Digital	Full	5
Sweden	First half, 2021	4	Digital	Full	5
Türkiye	First half, 2021	4	Paper	Full	5
United Arab Emirates	Second half, 2021	5	Digital	Full	-
United States of America	Second half, 2021	5	Paper ²	Full	-
Uzbekistan	First half, 2021	4	Paper	Full	5

¹ Norway assesses Year 5 students due to the relatively younger starting age for schooling.

² Bridge study data

Schools and students

Two hundred and eighty-one schools participated in the Australian data collection for PIRLS 2021. At least one intact Year 4 class from each school was selected to participate in the assessment. In schools with composite or staged classes (that is, classes with students from more than one year level), multiple classes were selected to provide sufficient numbers of Year 4 students, but only the Year 4 students participated. This resulted in a sample of 5,487 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 1.3.

While all of the Australian jurisdictions now include a foundation year prior to Year 1, there are still differences between the jurisdictions in school starting ages. The differences result in students' average ages at the time of PIRLS testing varying across jurisdictions, ranging from 9.8 years in Western Australia to 10.3 years in Tasmania, as shown in Table 1.4.

Internationally, the average age of students at Year 4 varied from 9.6 years in Kuwait to 10.9 years of age in Latvia. Students in the Russian Federation, Bulgaria, Finland, Lithuania and Norway were 10.8 years old, on average (Norwegian students were in Grade 5).

TABLE 1.3: The PIRLS 2021 designed and achieved school and student sample for Australia and the jurisdictions

Jurisdiction	Designed school sample	N schools	N students	Weighted N students	Weighted % of total Australian students
ACT	30	29	494	5,053	2
NSW	45	45	967	96,203	32
VIC	45	42	713	69,974	24
QLD	45	45	922	61,644	21
SA	40	40	781	20,749	7
WA	40	40	913	34,796	12
TAS	30	30	462	5,689	2
NT	15	10	235	2,196	1
Australia	290	281	5,487	296,304	100

TABLE 1.4: The average age of Year 4 students in the PIRLS 2021 assessment for Australia and the jurisdictions

Jurisdiction	Average age of Year 4 student (years)	N students	Weighted N students
ACT	10.1	494	5,053
NSW	10.1	967	96,203
VIC	10.2	713	69,974
QLD	9.9	922	61,644
SA	10.0	781	20,749
WA	9.8	913	34,796
TAS	10.3	462	5,689
NT	10.0	235	2,196
Australia	10.0	5,487	296,304

Schooling during a pandemic

An indication of the impact of COVID-19 on schools is presented in Table 1.5. Principals were asked to report the number of weeks in the current academic year during which normal school operations had been affected by COVID-19.

Further information about each participating country's experience during the COVID-19 pandemic and any impacts on schooling can be found in the [PIRLS 2021 Encyclopedia](#).

Close to 50% of students who participated in PIRLS 2021 in Australia were in schools in which normal instruction was impacted by COVID-19 related restrictions for 8 or more weeks. Principals' responses to this question varied across the jurisdictions, as expected given differences in infection rates and restrictions in place during 2021 in the states and territories.

TABLE 1.5: Weeks of normal primary school operations impacted by the COVID-19 pandemic, according to principals (Year 4 countries)

Country	Percentage of students by number of weeks of school affected									
	School operations not affected		Less than 2 weeks of instruction		2–4 weeks of instruction		5–8 weeks of instruction		More than 8 weeks of instruction	
	Students (%)	SE of %	Students (%)	SE of %	Students (%)	SE of %	Students (%)	SE of %	Students (%)	SE of %
Albania	25	3.8	52	4.3	9	2.8	1	~	13	2.9
Australia*	8	1.5	22	1.8	12	2.1	10	2.0	48	2.4
Austria	0	~	1	~	6	2.3	24	3.7	69	3.9
Azerbaijan	17	3.0	11	2.7	10	2.0	6	1.8	55	3.9
Belgium (Flemish)	3	1.9	21	4.0	29	4.4	12	2.6	34	4.3
Belgium (French)	4	1.9	14	3.0	58	3.7	13	2.7	10	2.5
Brazil*	19	3.3	6	1.8	6	2.4	3	1.5	65	3.7
Bulgaria	23	3.6	4	1.8	40	4.5	30	3.9	3	1.3
Chinese Taipei	77	3.0	19	2.8	3	1.4	1	~	1	~
Cyprus	2	~	5	1.6	51	3.8	34	4.2	8	2.4
Czech Republic	0	~	0	~	0	~	0	~	100	0
Denmark	0	~	1	~	1	~	8	2.3	91	2.5
Egypt	9	1.9	5	1.9	9	2.5	22	3.4	55	3.7
England* r	26	4.2	11	2.6	6	2.0	16	2.8	42	4.5
Finland	17	2.7	11	2.5	10	2.4	14	3.4	47	3.6
France	3	1.4	50	3.9	20	3.2	9	2.5	18	3.1
Germany r	0	~	1	~	0	~	8	2.0	91	2.0
Hong Kong SAR	5	1.9	8	2.3	17	3.3	13	2.7	57	4.0
Iran, Islamic Rep. of*	8	2.2	6	1.7	8	1.8	15	3.4	62	4.0
Israel* r	6	2.0	5	1.8	14	2.8	34	3.7	41	4.2
Italy	6	1.7	6	2.0	44	3.8	21	3.4	23	3.1
Jordan	11	2.7	7	1.9	13	3.1	7	2.0	63	4.1
Kosovo	9	2.3	39	4.0	38	4.1	4	1.8	10	2.7
Macao SAR	36	0.1	3	0	3	0	11	0	46	0.1
Malta	8	4.4	14	4.9	61	7.6	9	3.5	8	3.6
Montenegro	2	~	6	0.9	14	0.3	40	0.7	38	0.5
Netherlands r	3	1.7	2	~	7	2.4	35	5.7	53	6.1
New Zealand r	0	~	0	~	0	~	0	~	100	0
North Macedonia	34	3.5	9	2.4	28	4.6	3	1.7	26	4.1
Norway (5)	12	2.6	11	2.6	13	3.0	13	2.9	51	4.1
Oman	15	2.5	13	2.4	24	3.1	15	2.3	34	3.5
Poland	1	~	1	~	0	~	0	~	98	1.2
Portugal	6	1.8	4	1.5	8	2.0	44	3.8	37	3.7
Russian Federation	61	3.8	14	2.3	20	3.1	2	~	3	1.1
Serbia	29	3.9	4	1.6	19	3.0	15	2.8	33	4.2
Slovak Republic	0	~	3	1.3	12	2.7	37	3.5	48	4.1
Slovenia r	3	2.0	4	1.5	2	~	8	2.5	83	3.4
South Africa*	16	3.0	15	2.6	28	4.0	14	2.6	28	3.3
Spain	34	2.9	18	2.4	18	2.4	13	2.2	17	2.1
Sweden r	34	4.3	12	3.3	10	2.9	10	2.6	34	5.0
Türkiye	3	1.2	3	1.3	3	1.3	8	2.1	83	2.9
Uzbekistan	14	3.2	23	3.9	28	3.3	10	2.2	25	3.7
Singapore	-	-	-	-	-	-	-	-	-	-

Notes: Percentages may not add to 100 due to rounding.

* indicates countries and educational systems conducted the assessment 1 year later than originally scheduled

r indicates data are available for at least 70% but fewer than 85% of students

~ (tilde) indicates insufficient data to report results

– (dash) indicates comparable data not available (question may not have been presented)

TABLE 1.6: Weeks of normal primary school operations impacted by the COVID-19 Pandemic according to principals, Australian jurisdictions

	Percentage of students by number of weeks of school affected									
	School operations not affected		Less than 2 weeks of instruction		2–4 weeks of instruction		5–8 weeks of instruction		More than 8 weeks of instruction	
	%	SE	%	SE	%	SE	%	SE	%	SE
ACT	0		0		0		17	5.7	83	5.7
NSW	0		0		7	3.9	15	5.1	78	6.2
VIC	0		0		0		0		100	0.0
QLD	23	5.5	43	4.6	19	5.0	13	3.7	1	1.3
SA	0		62	8.2	30	9.0	5	4.0	3	2.6
WA	10	6.0	59	9.1	26	8.1	4	3.7	0	
TAS	59	8.9	11	6.5	8	5.6	18	8.0	3	3.2
NT	11	10.9	70	8.5	17	13.1	0		3	3.0

How the PIRLS results are reported

The PIRLS reading achievement scale summarises Year 4 students' performance when interacting with a variety of texts and questions. The PIRLS scale is calibrated to have a mean of 500 points and a standard deviation of 100 points. Students' achievement is based on their responses to test questions designed to assess the different reading purposes and processes described earlier in this chapter. When comparing groups of students across and within countries, summary statistics such as the average, or mean, scale score are often used (please see the [Reader's guide](#) for more information about the achievement scales and the various statistics used in this report). A single score, whether a mean or median, does not provide detailed information as to what types of tasks students were able to undertake successfully. Instead, PIRLS uses international benchmarks to provide descriptions of achievement on the scale in relation to performance.

The PIRLS international benchmarks

Internationally, it was decided that performance should be measured at 4 levels, which summarise the achievement reached by:

- ✓ the Advanced international benchmark, which was set at 625 score points
- ✓ the High international benchmark, which was set at 550 score points
- ✓ the Intermediate international benchmark, which was set at 475 score points
- ✓ the Low international benchmark, which was set at 400 score points.

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

Table 1.7 provides a summary of the PIRLS 2021 Year 4 reading benchmarks. The descriptions of the benchmarks on the Informational texts include references to online reading and web-based skills to reflect the tasks included in the digital assessment that came from the ePIRLS tasks (an assessment of reading conducted in a simulated online environment). Australian students completed their PIRLS assessment in paper booklets and did not complete ePIRLS tasks.

TABLE 1.7: The PIRLS international benchmarks for reading literacy

PIRLS international benchmarks	Scale score	Knowledge and skills	
		Literary texts	Informational texts
Advanced	625	<p>When reading predominately difficult literary texts, students can:</p> <ul style="list-style-type: none"> ✓ Interpret and integrate story events and character actions to describe reasons, motivations, feelings, and character development ✓ Evaluate the intended effect of the author’s language, style, and composition choices 	<p>When reading predominately difficult informational texts or online tasks, students can:</p> <ul style="list-style-type: none"> ✓ Make inferences about complex information across different webpages and parts of text to recognise the relevant information in a list and use evidence in the text to support ideas ✓ Interpret and integrate multiple pieces of different information across texts and webpages to present an overview of ideas in the text and provide comparisons and explanations ✓ Evaluate textual, visual, and interactive elements to explain their purpose, and identify the writer’s point of view and provide supporting evidence
High	550	<p>When reading medium and difficult literary texts, students can:</p> <ul style="list-style-type: none"> ✓ Locate and identify significant actions and details embedded across the text ✓ Make inferences about relationships between intentions, actions, events, and feelings ✓ Interpret and integrate story events to give reasons for character actions and feelings ✓ Recognise the meaning of some figurative language (e.g. metaphor, imagery) 	<p>When reading informational texts or online tasks of medium or high difficulty, students can:</p> <ul style="list-style-type: none"> ✓ Locate and identify relevant information in texts with a variety of features, such as diagrams and illustrations ✓ Make inferences to provide comparisons, descriptions, explanations, predictions, and choose a relevant website ✓ Interpret and integrate textual and visual information across texts and webpages to connect ideas, sequence events, identify characteristics, and provide explanations ✓ Evaluate the content to take and justify a position; describe how illustrations, diagrams, photographs, and maps convey and support content; and recognise the contribution of word choice in conveying the writer’s point of view
Intermediate	475	<p>When reading literary texts of easy or medium difficulty, students can:</p> <ul style="list-style-type: none"> ✓ Locate, recognise, and reproduce explicitly stated actions, events, and feelings ✓ Make straightforward inferences about events and characters’ actions ✓ Interpret reasons for characters’ feelings or actions and identify supporting evidence 	<p>When reading informational texts or online tasks of easy or medium difficulty, students can:</p> <ul style="list-style-type: none"> ✓ Locate, recognise, and reproduce explicitly stated information across texts ✓ Make straightforward inferences to provide comparisons, descriptions, and explanations ✓ Interpret and integrate to provide information about central ideas and reasons for actions, events, and outcomes
Low	400	<p>When reading predominantly easy literary texts, students can:</p> <ul style="list-style-type: none"> ✓ Locate, retrieve, and reproduce explicitly stated information, actions, or ideas ✓ Make simple straightforward inferences about characters’ actions 	<p>When reading predominantly easy informational texts, students can:</p> <ul style="list-style-type: none"> ✓ Locate, retrieve, and reproduce explicitly stated information ✓ Make simple straightforward inferences to provide a reason for an outcome

Advanced benchmark

At Year 4, students performing at the Advanced international benchmark are able to:

- ✓ interpret story events and character actions to describe reasons, motivations, feelings and character development
- ✓ evaluate the intended effect of the author's language, style, and composition choices with full text-based support
- ✓ when reading informational text, to distinguish and interpret complex information from different parts of text, integrate information across texts and evaluate textual and visual elements to consider the author's point of view.

As an example, Figure 1.1 shows an item from the literary text 'The Empty Pot', a re-telling of a story about a competition to become the next Emperor of China. Students who answered this question correctly were able to demonstrate that they could interpret a character's hidden motivation in the context of the whole story.

12. Why did the Emperor scowl while looking at Jun's pot?

- (A) He was worried about the contest.
- (B) He thought Jun's pot was not shiny enough.
- (C) He was hiding what he was thinking.
- (D) He did not know why Jun was there.

FIGURE 1.1: Example of an item at the Advanced international benchmark – literary purpose

An example of an Advanced informational item is provided in Figure 1.2. This item required the reader to locate and reproduce explicitly stated information provided in the text.

5. Octopuses are famous for showing up in unusual places.
Give one example from the text.

They can be in bottles

FIGURE 1.2: Example of an item at the Advanced international benchmark – informational purpose

High benchmark

At the High international benchmark, students can:

- ✓ locate and identify significant actions and details embedded across the text, or locate and identify relevant information in informational texts that contain a variety of features, such as diagrams and illustrations
- ✓ make inferences about relationships between intentions, actions and events or provide comparisons or predictions
- ✓ interpret and integrate story events to provide reasons for characters' actions and feelings or to connect ideas or sequence events in informational texts
- ✓ recognise some figurative language, such as metaphor or imagery, or evaluate content and word choice in communicating the author's view.

Figure 1.3 is an example of a question students at the High international benchmark would be able to answer. By correctly answering this multiple-choice question, students demonstrated that they had recognised the meaning of a metaphor central to the story; the seed represents a chance to win the contest and become the next emperor.

3. Why was each seed called a “precious possibility”?

- A Each seed was a chance to win the contest.
- B Each seed was royal and very expensive.
- C Each seed would grow into a beautiful plant.
- D Each seed gave a chance to become the best gardener.

FIGURE 1.3: Example of an item at the High international benchmark – literary purpose

The example item from ‘The Amazing Octopus’ shows how students at the High international benchmark were able to make straightforward inferences to distinguish the 3 correct facts from the 5 options provided (Figure 1.4). Students who selected all 3 correct options (octopuses have round bodies, eight long arms and like to eat crabs and small fish) and no incorrect options received 2 points. Students who selected all 3 correct options along with an incorrect option received one point, as did students who selected only 2 of the 3 correct options.

1. According to the article, which statements are true about octopuses?

Tick **all** that apply.

- They have round bodies.....
- They have eight long arms.....
- They only live in cold parts of the ocean.....
- They like to eat crabs and small fish.....
- They catch their food with their mouths.....

FIGURE 1.4: Example of an item at the High international benchmark – informational purpose

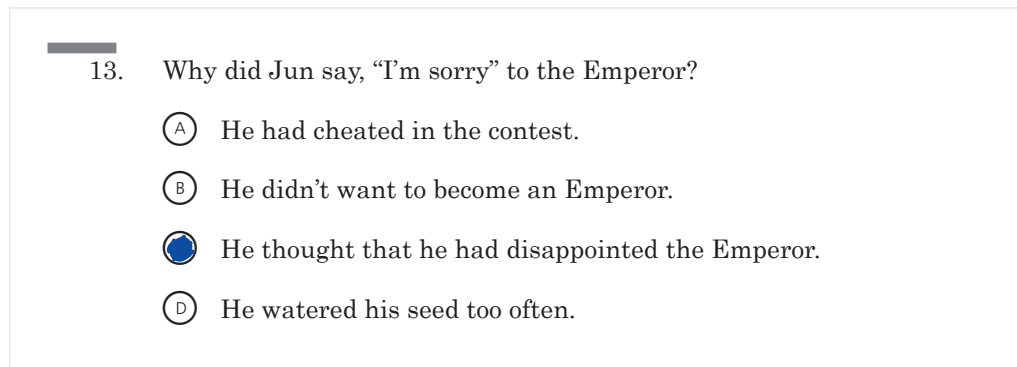
Intermediate benchmark

At the Intermediate international benchmark, the proficient standard for Australian students, readers demonstrate greater facility in:

- ✓ retrieving explicitly stated actions, events and feelings
- ✓ making inferences about events and characters' actions
- ✓ interpreting reasons for characters' feelings or actions
- ✓ identifying supporting evidence in texts
- ✓ demonstrating an emerging ability to recognise language choices.

Please see the [Reader's guide](#) for further information about the proficient standard.

Figure 1.5 is an example of an Intermediate literary item (multiple-choice), in which students were asked to make a straightforward inference about the lead character's reaction to a situation.

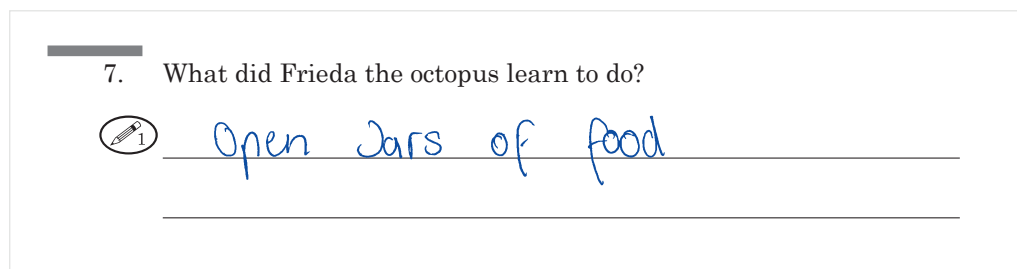


13. Why did Jun say, "I'm sorry" to the Emperor?

- (A) He had cheated in the contest.
- (B) He didn't want to become an Emperor.
- (C) He thought that he had disappointed the Emperor.
- (D) He watered his seed too often.

FIGURE 1.5: Example of an item at the Intermediate international benchmark – literary purpose

Figure 1.6 is an example of an Intermediate informational item, in which students were asked to make a straightforward inference to describe the action of a particular octopus.



7. What did Frieda the octopus learn to do?

1 Open Jars of food

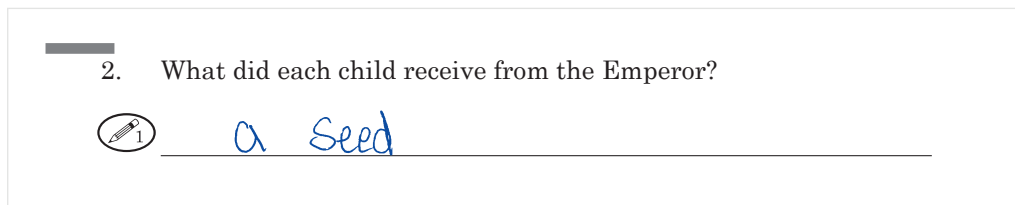
FIGURE 1.6: Example of an item at the Intermediate international benchmark – informational purpose

Low benchmark

At the Low international benchmark, students:

- ✓ can retrieve an explicitly stated detail in a literary text, or locate and reproduce 2 or 3 pieces of information from within the text
- ✓ may be able to make simple, straightforward inferences about characters' actions.

Figure 1.7 is an example of a literary item at the Low benchmark, in which students were required to identify what the Emperor had given each child (information provided in the first paragraph of the story).



2. What did each child receive from the Emperor?


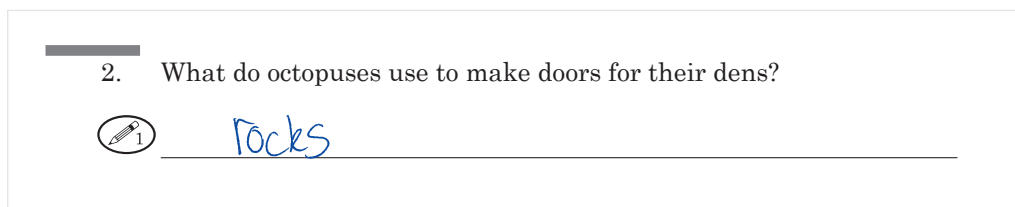
 a Seed

FIGURE 1.7: Example of an item at the Low international benchmark – literary purpose

Figure 1.8 is an example of a Low informational item. Again, this item required students to locate and retrieve a piece of information that was stated explicitly in the text (octopuses sometimes use rocks as doors for their dens).



2. What do octopuses use to make doors for their dens?


 Rocks

FIGURE 1.8: Example of an item at the Low international benchmark – informational purpose

Further information about the types of reading skills demonstrated by Year 4 students who performed at each of the international benchmarks, along with examples of the types of responses given by students at each of the benchmarks, is available from the [PIRLS website](#).

Structure of this report

Chapter 2 describes Australia's results in PIRLS 2021 within the international context, followed by a detailed presentation of results for the Australian jurisdictions and for different demographic groups of students within Australia. The next section provides the PIRLS 2021 results in the purposes and processes domains.

Chapters 3, 4 and 5 of this report present the results from the contextual questionnaires. Each chapter focuses on a different element of the contexts in which learning and achievement occur. Chapter 3 reports on students' reading behaviour and attitudes, Chapter 4 examines the school learning environment, and Chapter 5 focuses on teachers and classrooms.

2

Reading results: International, national and Australian demographic groups

Key findings

- ✓ Australian Year 4 students scored higher, on average, in the PIRLS 2021 assessment than Year 4 students in 28 other countries.
- ✓ Australian students' average score of 540 points in PIRLS 2021 is similar to the average score of Australian students in PIRLS 2016 and higher than the average score in PIRLS 2011.
- ✓ 80% of Year 4 students in Australia met the proficient standard (the PIRLS Intermediate benchmark), including 14% at the Advanced benchmark and 34% at the High benchmark.
- ✓ The proportion of Australian Year 4 students who did not meet the proficient standard (20%) has not changed since PIRLS 2016.
- ✓ Students in the Australian Capital Territory scored higher, on average, than students in all other jurisdictions.
- ✓ Female Year 4 students scored higher, on average, than male Year 4 students in Australia and in New South Wales, Queensland, Western Australia and South Australia.
- ✓ Students who identified as having a First Nations background scored 491 points on average, lower than the average 547 points for students from other backgrounds.
- ✓ Differences in the average reading scores of First Nations background students and other Australian students have changed little over 3 cycles of PIRLS. The difference was 57 points in 2011, 67 points in 2016 and 56 score points in 2021.
- ✓ Australian students who had *many books* in the home scored 566 points on average, 12 points higher than students with *an average number of books* in the home (554 points), and 60 points higher than those with *a few books* in the home (506 points).
- ✓ Australian students in *more disadvantaged schools* scored 508 points on average, which was 32 points lower than students in *neither more affluent nor more disadvantaged schools* (540 score points), and 54 points lower than students in *more affluent schools* (562 points).
- ✓ Australian students who attended schools in *major cities* scored 546 points on average, 19 points higher than students in *provincial areas* (527 points), and 62 points, on average, higher than students who attended schools in *remote areas* (485) points).
- ✓ Australian students showed a relative strength in the *Literary* reading purpose, but no difference in their performance on the *Informational* purpose subscale and overall reading.
- ✓ Australian students had a relative strength in the *Interpreting, Integrating and Evaluating* processes subscale, with a mean of 547 points, and a relative weakness in the *Retrieving and Straightforward Inferencing* subscale, with a mean of 534 points.

Australia's reading results within the international context

Chapter 2 presents the PIRLS 2021 reading results as average scores and distributions on the PIRLS reading scale (see the [Reader's guide](#) for information about the achievement scale).

Figure 2.1 provides a summary of the overall performance of students in Year 4 across countries on the PIRLS reading achievement scale, in terms of the mean (average) scores achieved by students in each country, the standard error of the mean, and the range of scores between the 5th and 95th percentiles. The countries are presented according to decreasing level of achievement, with the highest scoring countries at the top. The shading in the figure indicates whether the mean score for a country is statistically different to Australia's.

As discussed in Chapter 1, differences in the timing of the PIRLS 2021 assessment and the year level of participating students mean that results for some countries are not comparable to results from other countries. For example, students in the United States were in Year 5 when they participated in their assessment so comparisons with Australian Year 4 students' results are not valid. Comparisons in this report focus on a total of 43 countries including Australia that assessed Year 4 students towards the end of their school year (Year 5 students in Norway, as in previous cycles) whether the assessment took place in 2020, 2021 or 2022. Results for all PIRLS 2021 participants, along with multiple-comparison tables, are presented in the international report, available from the [TIMSS and PIRLS website](#). Australia's average reading score of 540 points was significantly higher than the scores of 28 other countries who assessed Year 4 students, including New Zealand.

Australia's average score was lower than the average scores for 6 other countries, including Singapore, Hong Kong and England (all tested in English), as well as other top-performing countries, the Russian Federation, Finland and Poland.

Of all participating countries, students in Singapore scored the highest, on average, on the PIRLS 2021 assessment, followed by students in Hong Kong and the Russian Federation.

Figure 2.1 also shows a measure of the range of achievement within participating countries (between the 5th and 95th percentile of achievement). A larger range between the 5th and 95th percentile indicates that there is greater diversity in the achievement of students in a particular country, while a smaller range indicates greater similarity in achievement, whether this be higher (that is, placed closer to the right side of the figure) or lower (that is, placed towards the left side of the figure). When comparing Australia's performance with other countries, consider the range of achievement as well as the mean score. Australia's range between high and low achievers – 270 points – was mid-level, similar to Malta (277), Sweden (261) and Singapore (284). The gap separating the highest and lowest scoring students in Hong Kong and the Russian Federation was narrower: 216 points in Hong Kong (the narrowest range recorded in PIRLS 2021) and 235 points in the Russian Federation. More than 360 score points separated the highest and lowest scoring students in South Africa (430 score points), Brazil (400 score points) and Jordan (373 score points).



* Countries and educational systems conducted the assessment 1 year later than originally scheduled.

FIGURE 2.1: Mean scores and distribution of PIRLS 2021 Year 4 reading performance across countries

Performance at the international benchmarks across countries

Figure 2.2 presents the percentage of students in each country who performed at each of the international benchmarks (described in Chapter 1). The countries are ordered by the percentage of students who reached the Intermediate benchmark, which is the proficient standard set for PIRLS reading in Australia.

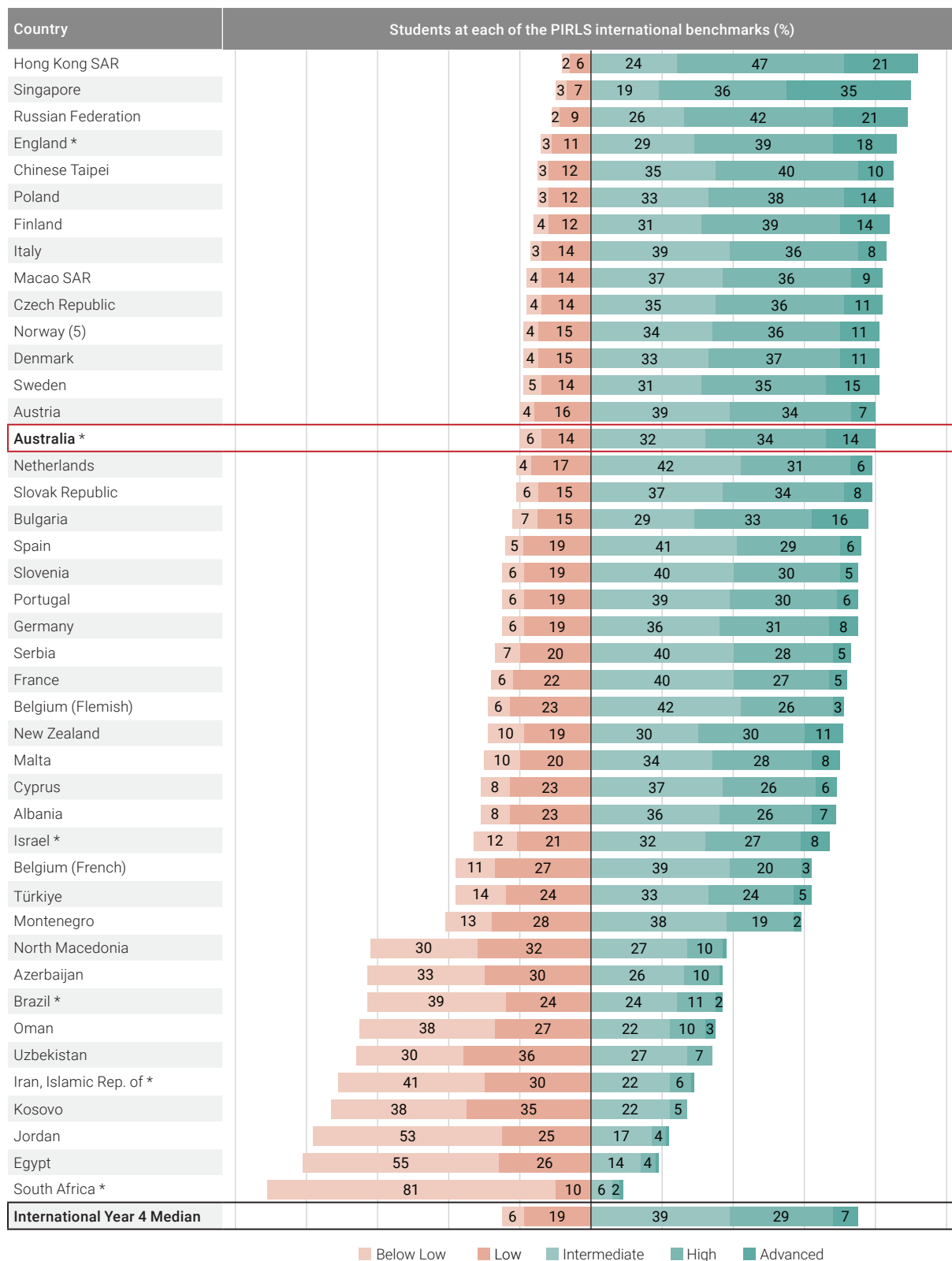
The average achievement of Australian students (540 points) was above the Intermediate benchmark (the proficient standard) and just under the High benchmark.

Fourteen per cent of Australian students reached the Advanced benchmark, while 34% performed at the High benchmark and a further 32% performed at the Intermediate benchmark. This means that 80% of Australian students reached at least the Intermediate benchmark.

Of concern, however, are the 20% of Australian Year 4 students reading at or below the Low benchmark – 14% at the Low benchmark and 6% who did not reach the Low benchmark.

The average scores of students in Singapore, Hong Kong, the Russian Federation and England were above the High benchmark, but not quite at the Advanced benchmark.

Singapore recorded the highest proportion of students at the Advanced international benchmark; 1 in every 3 students reached this level of reading comprehension. A similar proportion of students reached the High benchmark. Around 1 in 5 students in Hong Kong and the Russian Federation were at the Advanced benchmark. Very few students in these 3 countries failed to reach the Low benchmark (2% in Hong Kong and the Russian Federation, and 3% in Singapore). England recorded slightly lower proportions of students at the Advanced and High benchmarks than did Hong Kong or the Russian Federation.



Note: The numeric label is not shown when the proportion of students in a benchmark band includes values of 1 or less.

* Countries and educational systems conducted the assessment 1 year later than originally scheduled.

FIGURE 2.2: Percentage of students at the international benchmarks for PIRLS 2021 Year 4 reading across countries

Trends in reading performance

Figure 2.3 presents the average PIRLS scores for Australia and selected countries for the past 3 cycles of PIRLS. Due to differences in the timing of the PIRLS 2021 assessment and the potential impact of COVID-19 and school closures on the results for PIRLS 2021, the lines between the 2016 and 2021 cycles are dashed. For Singapore and New Zealand, there were 5 years between the 2016 and 2021 assessments, whereas for Australia, Hong Kong and England there were 6 years.

Thirty-two of the 43 Year 4 countries in PIRLS 2021 had also participated in PIRLS 2016. Of those 32 countries, 21 recorded lower average reading performance in 2021 compared to 2016 (including strong performers Finland, Poland and the Russian Federation), 8 had little or no change, and 3 countries recorded higher average reading scores in 2021.

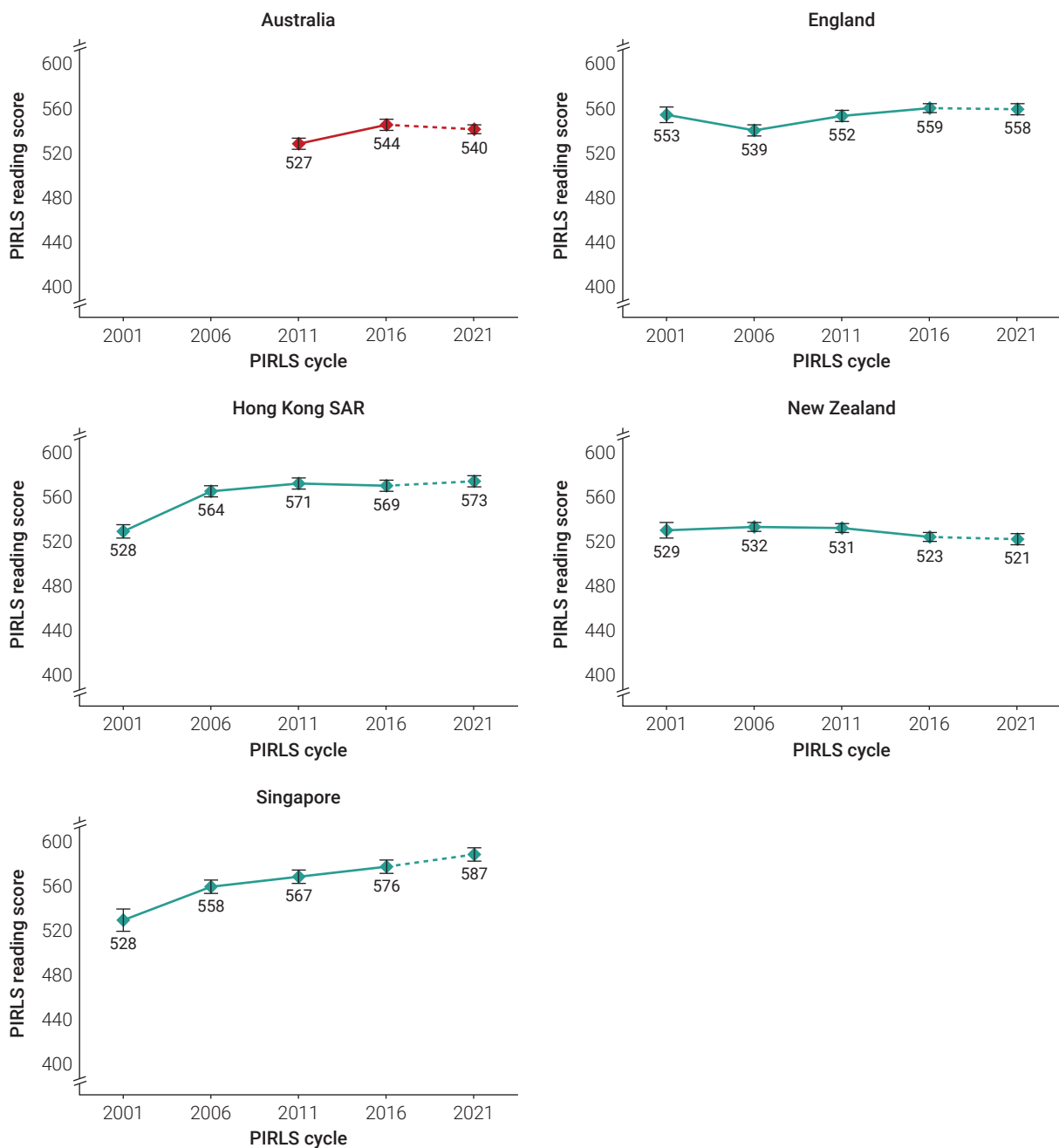


FIGURE 2.3: Trends in Year 4 PIRLS reading performance for selected countries, 2011 to 2021

Australia's average score in PIRLS 2021 was not significantly different to the average score in PIRLS 2016 (544 points) and remains higher than the average score for PIRLS 2011 (527 points). Results for Hong Kong, England and New Zealand have also remained stable between PIRLS 2016 and 2021, while Singapore recorded a statistically significant increase to its already strong average performance in 2016.

Data and graphs for all PIRLS 2021 countries are available from the [TIMSS and PIRLS website](#).

Figure 2.4 highlights the proportions of students who reached the Intermediate benchmark in past cycles of PIRLS. The proportion of Australian students who reached the Intermediate benchmark (the proficient standard) increased between 2011 and 2016, but there was no significant change between 2016 and 2021. While the stability of the proportion of students who performed at or above the Intermediate benchmark is a positive outcome, particularly given the significant interruptions to schooling that these students experienced in the years leading up to the assessment, the lack of change in the proportion of Australian students who did not reach the proficient standard, including 6–7% of Australian Year 4 students who did not reach the Low benchmark, is a concern.

Since 2006, over 90% of students in Hong Kong have reached the Intermediate benchmark while Singapore only reached 90% in 2021. In contrast to the other countries profiled in Figure 2.4, the proportion of New Zealand students who reached the Intermediate benchmark is lower in PIRLS 2021 than in PIRLS 2006.

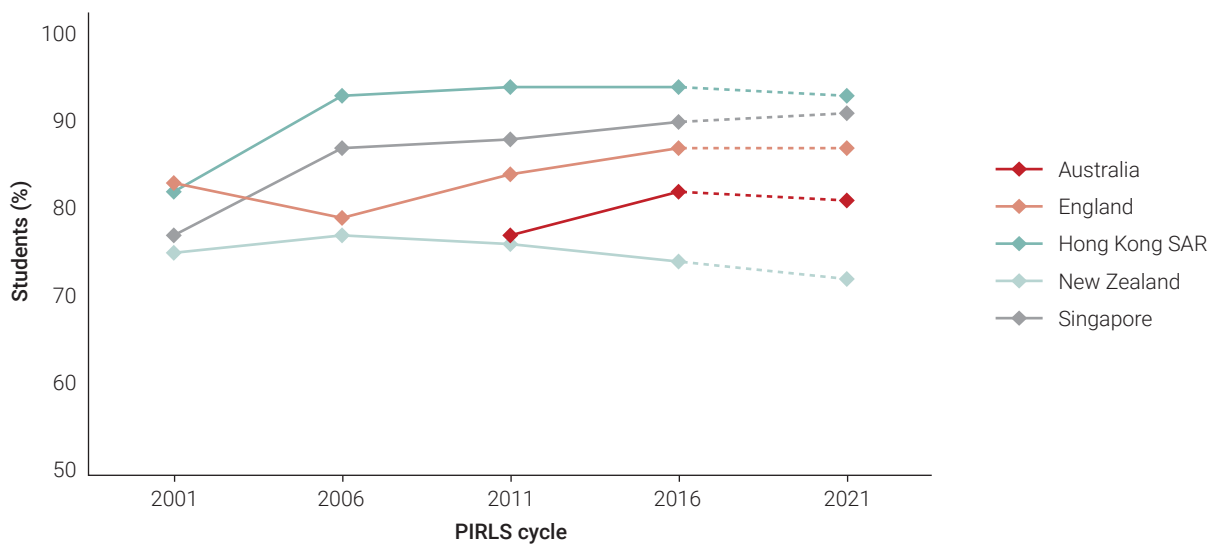


FIGURE 2.4: Trends in proportion of students at the Australian proficient standard (Intermediate international benchmark) for PIRLS Year 4 reading for selected countries, 2011 to 2021

Australia's results at the national level

Figure 2.5 presents the distribution of Year 4 reading performance for each of the Australian jurisdictions and for Australia overall for PIRLS 2021. This should be read in conjunction with Table 2.1, which presents the multiple comparisons of mean reading scores between jurisdictions and indicates which jurisdiction's performance differs significantly from the performance of another's.

The performance of students in the Australian Capital Territory was significantly higher than that of students in all other jurisdictions. Students in South Australia performed significantly lower, on average, than students in the Australian Capital Territory and Victoria. There were no other significant differences in performance between students across states.

The differences between the average score for students in the Northern Territory and those in jurisdictions other than the Australian Capital Territory did not reach statistical significance due to the large standard errors associated with the mean score for the Northern Territory.

The largest ranges of student performance were in the Northern Territory, Tasmania and Western Australia, where the range between the 5th and 95th percentiles was over 300 points. Victoria had the narrowest range of reading achievement, at 243 points.

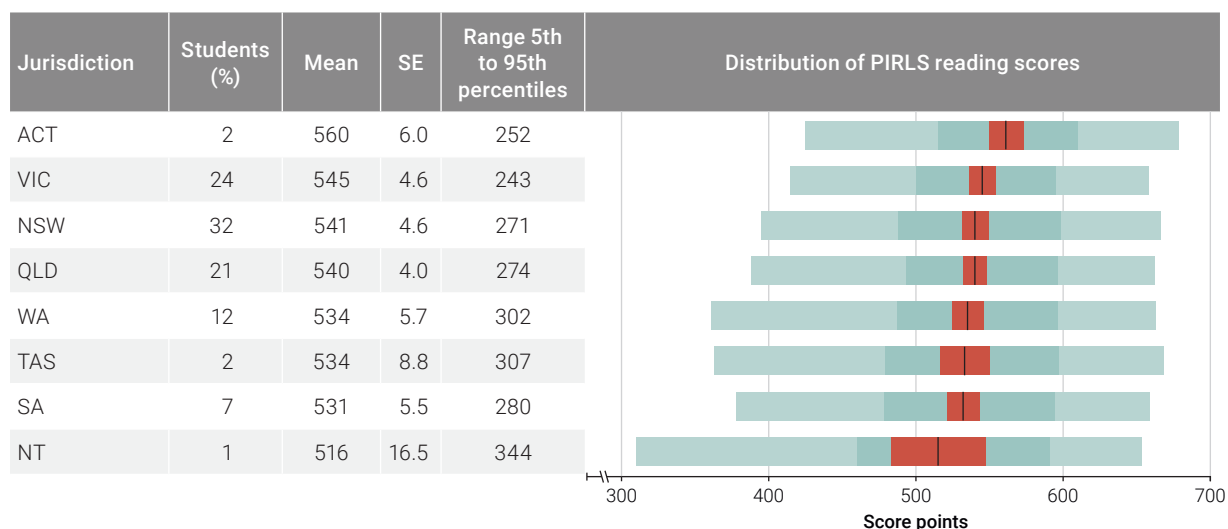


FIGURE 2.5: Mean scores and distribution of PIRLS 2021 Year 4 reading performance within Australia by jurisdiction

TABLE 2.1: Multiple comparisons of Year 4 reading achievement, by jurisdiction

Jurisdiction	Mean	SE	ACT	VIC	NSW	QLD	WA	TAS	SA	NT
ACT	560	6.0		▲	▲	▲	▲	▲	▲	▲
VIC	545	4.6	▼		●	●	●	●	▲	●
NSW	541	4.6	▼	●		●	●	●	●	●
QLD	540	4.0	▼	●	●		●	●	●	●
WA	534	5.7	▼	●	●	●		●	●	●
TAS	534	8.8	▼	●	●	●	●		●	●
SA	531	5.5	▼	▼	●	●	●	●		●
NT	516	16.5	▼	●	●	●	●	●	●	

Note: Read across the row to compare a state's/territory's performance with the performance of each jurisdiction listed in the column heading.

▲ Average performance statistically significantly higher than in comparison jurisdiction.

▼ Average performance statistically significantly lower than in comparison jurisdiction.

● No statistically significant difference from comparison jurisdiction.

Performance at the PIRLS international benchmarks by jurisdiction

The percentage of students in each jurisdiction at each of the international benchmarks for Year 4 reading, along with the percentages for Australia for comparison are presented in Figure 2.6.

The Australian Capital Territory had the highest proportion of students who reached the Advanced benchmark (19%), followed by 15% in New South Wales and Tasmania, 14% in Queensland and Western Australia, and 13% of students in Victoria. South Australia and the Northern Territory were the jurisdictions with the lowest proportion of students at the Advanced benchmark (12%).

Fourteen per cent of students in the Northern Territory did not reach the Low benchmark, compared to only 3% of students in the Australian Capital Territory and Victoria.

Close to 90% of students in the Australian Capital Territory met the proficient standard, compared with just over 80% of students in Victoria and Queensland, and over 70% in the other jurisdictions.

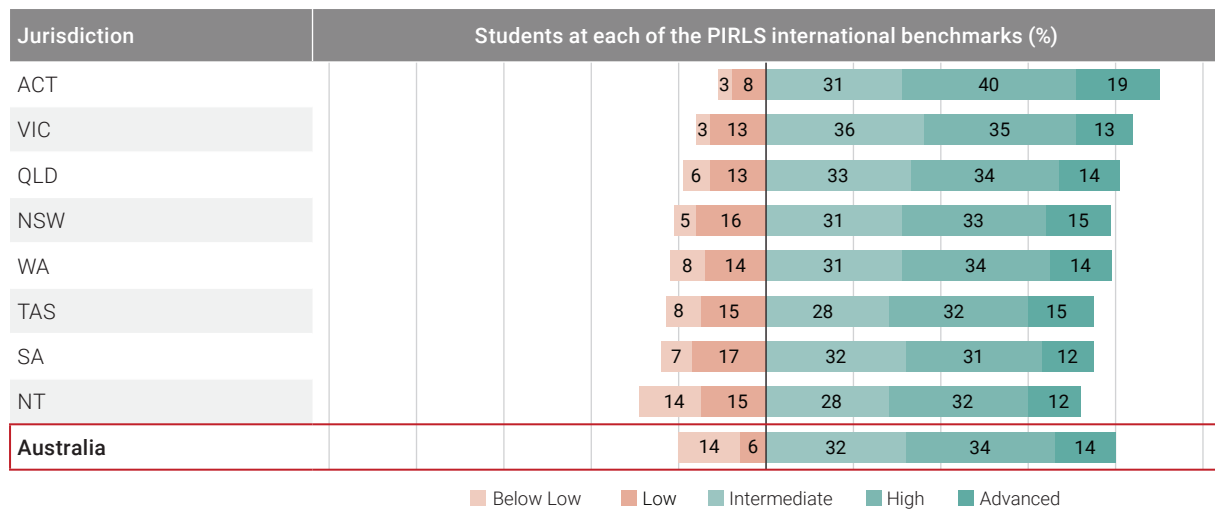


FIGURE 2.6: Percentage of Australian students at the international benchmarks for PIRLS 2021 Year 4 reading by jurisdiction

Trends in reading performance by jurisdiction

Table 2.2 presents the trends in reading performance for each jurisdiction for PIRLS 2011, 2016 and 2021, along with an indication of the statistical significance of the difference between cycles.

While Victoria, Queensland and Western Australia recorded significant improvements in average reading scores between the 2011 and 2016 PIRLS cycles, there were no significant gains made between 2016 and 2021. In fact, Victoria's mean score dropped significantly, by 14 points, between the 2016 and 2021 cycles. Victorian students spent the longest periods of time in emergency remote learning during the COVID-19 pandemic and had only recently returned to face-to-face learning at the time of the 2021 assessment.

Reading results for this cohort of Victorian students from NAPLAN 2022 (during May 2022, when the students were in Year 5) suggest no significant differences from the average score of the previous cohort of Year 5 students in 2021 (see Australian Curriculum, Assessment and Reporting Authority [ACARA], 2022). While the PIRLS and NAPLAN assessments are not directly comparable, this may indicate that the negative effect the lockdowns may have had on the performance of Victorian students was limited in duration.

Figure 2.7 presents the proportion of students at each of the reading benchmarks in PIRLS 2016 and 2021 in each jurisdiction.

The decrease in Victoria's average score noted in Table 2.2 should be considered alongside the significant decrease in the proportion of higher performing students in this jurisdiction, with decreases in the proportion of students at the Advanced benchmarks between the 2016 and 2021 PIRLS assessments. The proportion of students in the Australian Capital Territory who did not reach the Low benchmark halved between 2016 and 2021, decreasing from 7% to 3%. There were no significant changes in the proportions of students at the international benchmarks in the other jurisdictions.

Between PIRLS 2016 and 2021, the proportion of students who met the Australian proficient standard (the Intermediate international benchmark), increased significantly among students in the Australian Capital Territory but remained stable among students in all other jurisdictions.

TABLE 2.2: Trends in average PIRLS Year 4 reading scores by Australian jurisdiction, 2011 to 2021

Jurisdiction	2011		2016		2021		Difference between 2011 & 2016		Difference between 2016 & 2021	
	Mean	SE	Mean	SE	Mean	SE				
ACT	558	5.5	552	5.2	560	6.0	-6		9	
VIC	539	4.2	560	4.2	545	4.6	21	▲	-14	▼
NSW	535	5.0	542	5.4	541	4.6	7		-1	
QLD	511	5.1	537	5.4	540	4.0	26	▲	2	
WA	516	4.6	544	6.0	534	5.7	28	▲	-10	
TAS	525	7.3	537	8.0	534	8.8	12		-3	
SA	518	4.4	527	5.6	531	5.5	9		4	
NT	509	9.9	527	13.5	516	16.5	18		-11	

▲ Difference is a statistically significant improvement between cycles.

▼ Difference is a statistically significant decrease between cycles.

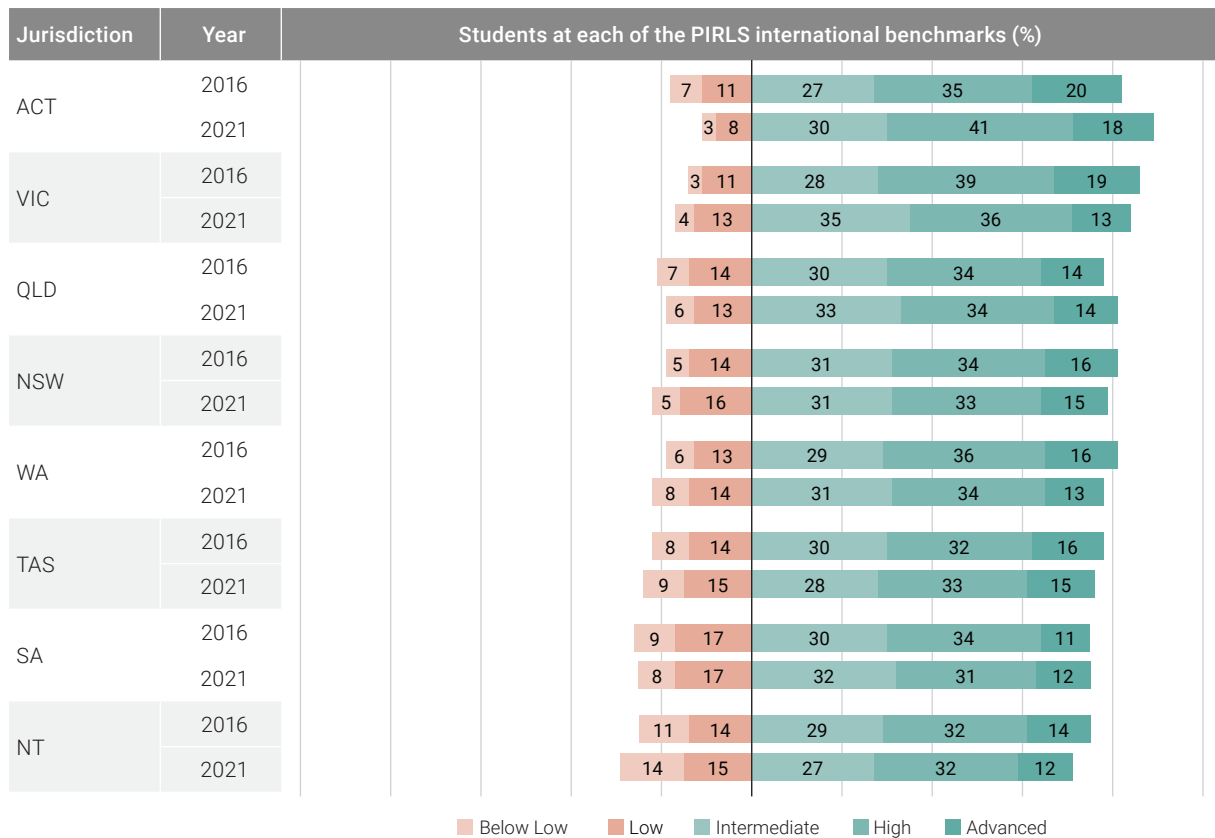


FIGURE 2.7: Trends in percentage of Australian students at the international benchmarks for PIRLS Year 4 reading by jurisdiction, 2011 to 2021

Student factors

Gender

Reading performance by gender

Figure 2.8 shows the reading performance of male and female Year 4 students across countries in PIRLS 2021. The average scores of females and males are shown separately, along with the differences between the averages. Gender differences are shown by a bar indicating the size of each difference (all were in favour of females) and whether the difference was statistically significant (indicated by a darker bar). Countries are presented in increasing order of the difference between females and males in average achievement.

Only 5 countries had no significant differences in the average reading scores of male and female students (Spain, Israel, the Czech Republic, Malta and Iran¹). Australia, along with 37 of the other participants who tested Year 4 students towards the end of their academic year, recorded significant differences in favour of female students. These differences ranged from 6 points in Portugal, to 17 points in Australia and then to a substantial 57 points in South Africa (more than half of a standard deviation on the PIRLS scale).

Figure 2.9 presents the distribution of reading scores for Australian male and female students. The range of scores was greater for Australian Year 4 male students (280 points) than for Year 4 female students (258 points), with a slightly larger 'tail' evident among male students (that is, lower scores among the lower performing students).

1 Although the magnitude of the difference between the average scores of female and male students in Iran is the same as that in Australia – 17 points – the larger standard errors recorded for Iran result in there being no statistically significant difference between the scores.

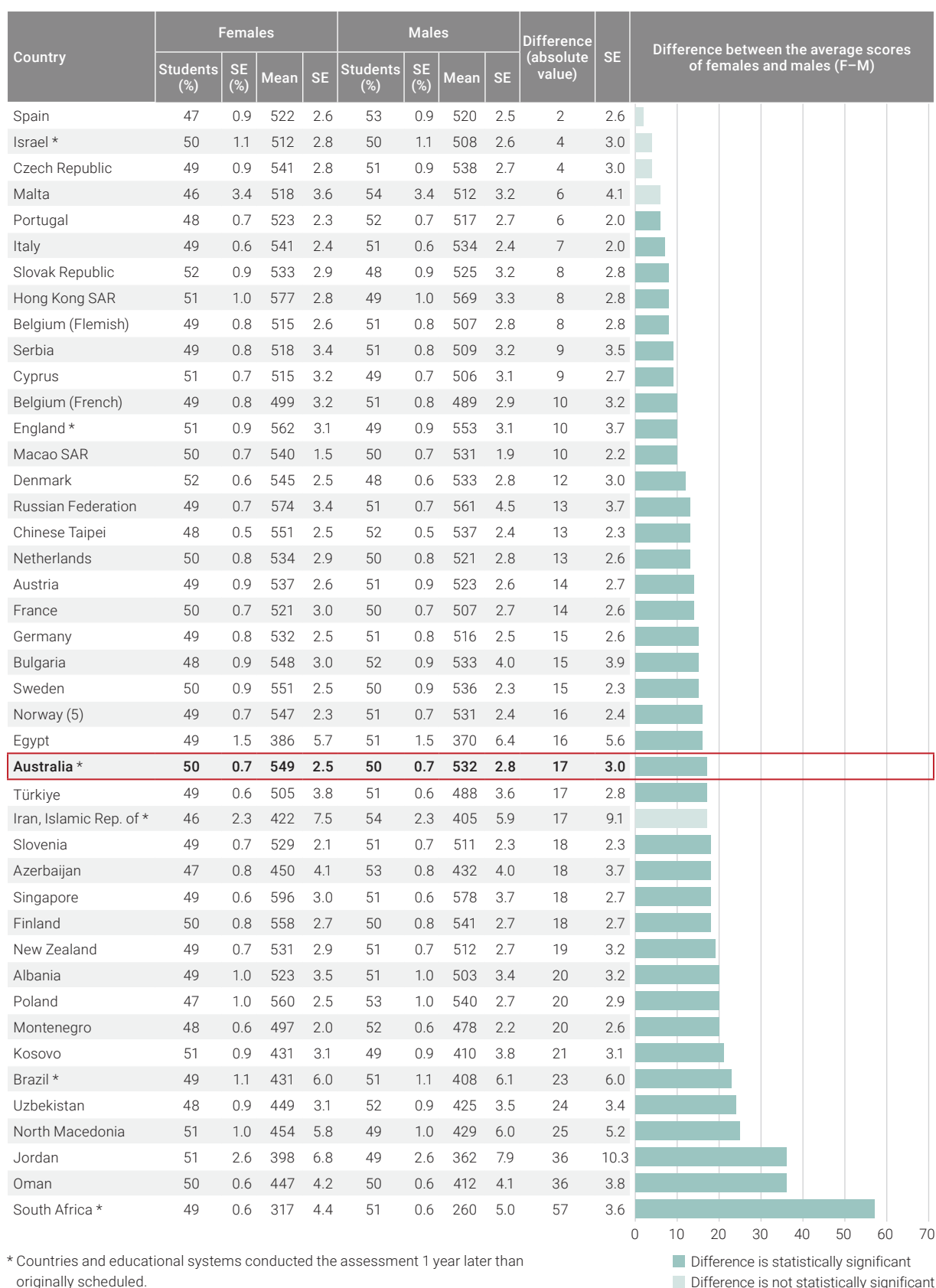


FIGURE 2.8: Gender differences in PIRLS 2021 Year 4 reading performance, across countries

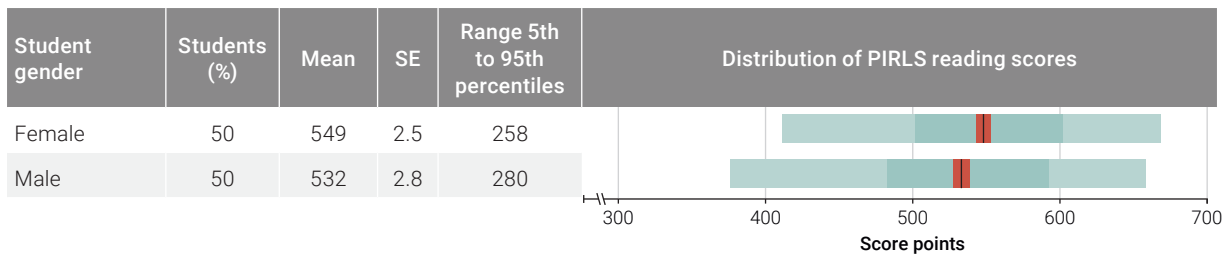


FIGURE 2.9: Mean scores and distribution of PIRLS 2021 Year 4 reading performance within Australia by gender

Performance at the PIRLS international benchmarks by gender

Figure 2.10 also highlights the difference in the reading performance of male and female Year 4 students. There were greater proportions of female students who reached the Advanced benchmark and greater proportions of male students at or below the Low benchmark. These differences are statistically significant and combine to paint a less than impressive picture for male students – fewer performed at relatively high standards and more of them failed to reach the lowest international benchmark.

A significantly higher proportion of female students (84%) compared to male students (77%) reached the Australian proficient standard (the Intermediate benchmark).

Significant differences in the average performance of male and female students in Years 3 and 5 (and through Years 7 and 9) have also been recorded in multiple cycles of NAPLAN (see ACARA, 2022).

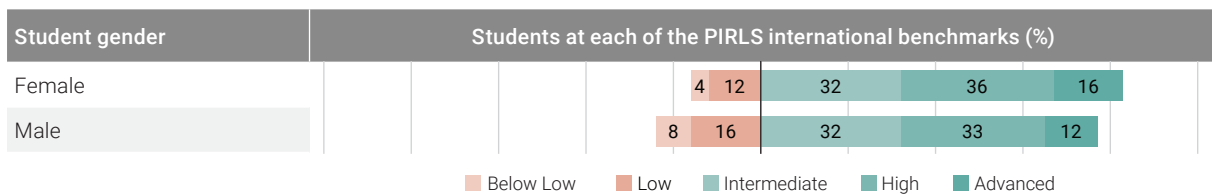


FIGURE 2.10: Percentage of Australian students at the international benchmarks for PIRLS 2021 Year 4 reading by gender

Trends in reading performance by gender

The gender difference in reading performance in Year 4 students in Australia has remained the same over the 3 cycles of assessment between PIRLS 2011 and 2021 (Figure 2.11). While the average performance of both male and female students has improved since 2011 with no change between 2016 and 2021, the gender ‘gap’ has not changed significantly.

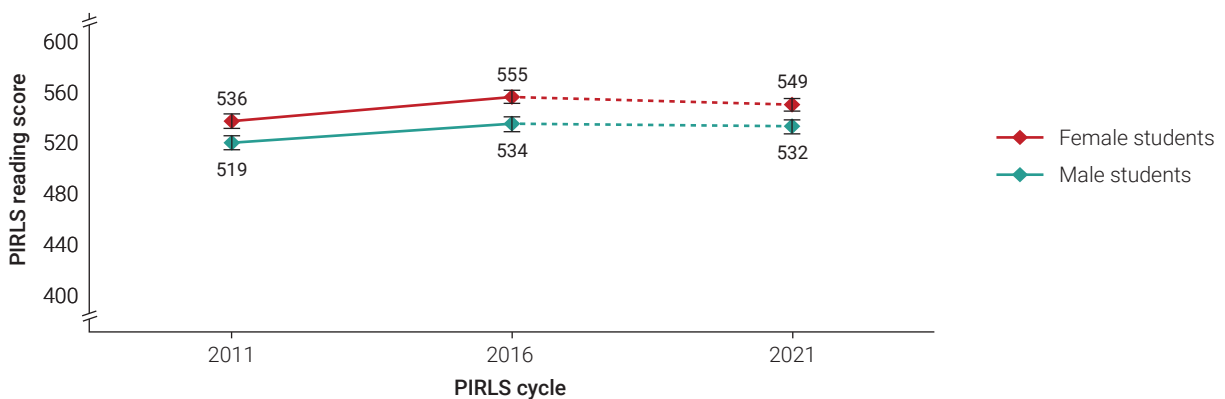


FIGURE 2.11: Trends in PIRLS Year 4 reading performance within Australia by gender, 2011 to 2021

Gender differences in reading performance by jurisdiction

Table 2.3 shows the gender differences in Year 4 reading by jurisdiction.

Female students scored higher, on average, than male students in New South Wales, Queensland, Western Australia, and South Australia. In the Australian Capital Territory and Victoria, the average scores of male and female students were not statistically different. In Tasmania and the Northern Territory, the differences between male and female students appear larger, substantially so in the case of the Northern Territory, but are not statistically significant (possibly due to the large standard errors).

Figure 2.12 shows the percentages of students at each of the international benchmarks in reading in each jurisdiction, by gender.

There were no significant differences in the proportions of male and female students at each of the international reading benchmarks in the Australian Capital Territory, Tasmania, Victoria and Western Australia. In New South Wales, the proportion of males who were below the Low benchmark was significantly higher than the proportion of female students at this level, while the proportion of female students at the Advanced benchmark was significantly greater than the corresponding proportions of male students at this level.

In the Northern Territory, Queensland and South Australia, there were significantly more male students than female students who were at the Low benchmark.

In New South Wales, Queensland and South Australia, there was a statistically significant difference in the proportions of male and female students who met the proficient standard, while in other jurisdictions there were statistically similar proportions of male and female students who performed at this level.

TABLE 2.3: Percentage of Australian students at the international benchmarks for PIRLS 2021 Year 4 reading by jurisdiction and gender

Jurisdiction	Female		Male		Difference between females and males (F-M)	
	Mean	SE	Mean	SE		
ACT	562	7.0	559	7.2	3	
VIC	547	4.8	543	6.3	4	
NSW	553	5.5	528	4.9	25	▲
QLD	549	4.4	530	5.5	19	▲
WA	543	7.3	525	6.9	18	▲
TAS	542	8.5	525	12.6	17	
SA	543	6.6	519	7.0	24	▲
NT	530	16.6	502	22.1	28	

▲ Female students scored statistically higher on average.

▼ Female students scored statistically lower on average.

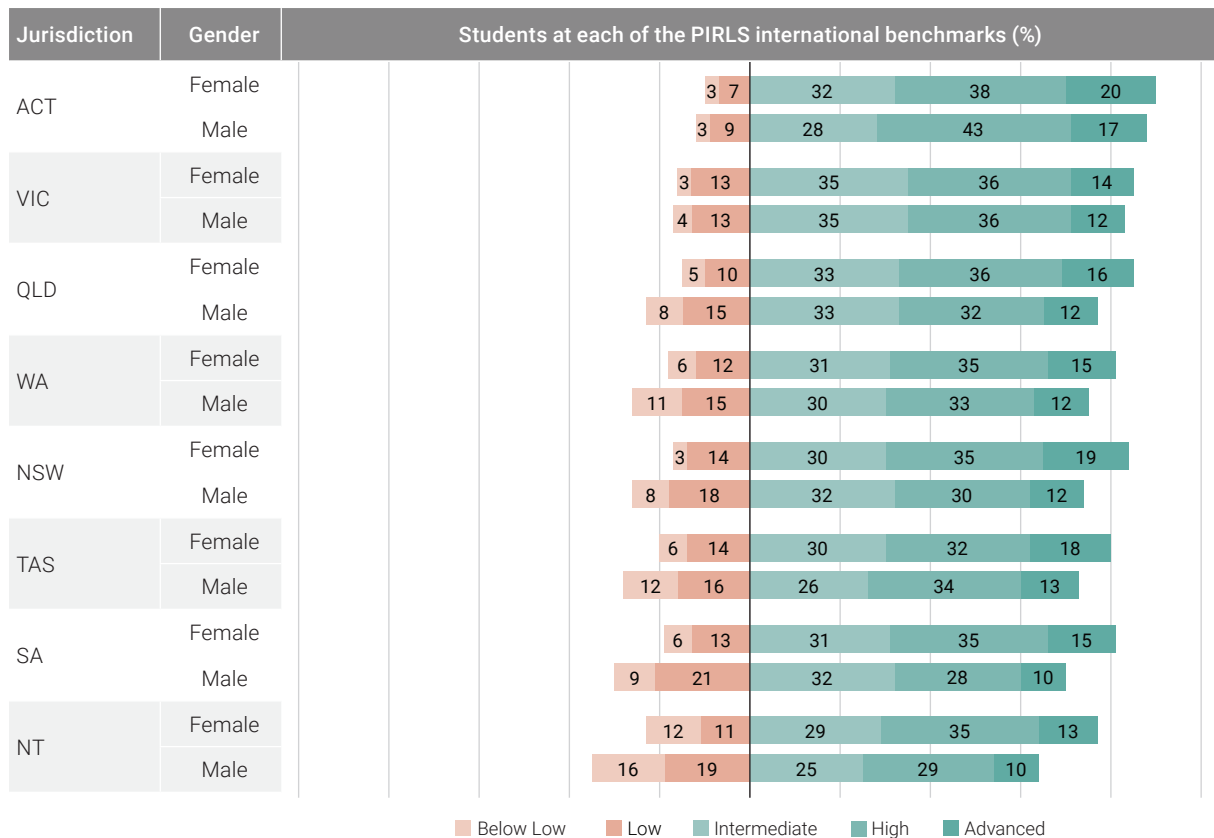


FIGURE 2.12: Percentage of Australian students at the international benchmarks for PIRLS 2021 Year 4 reading by jurisdiction and gender

Student background

Reading performance by student background

This section presents Australian students' reading achievement grouped according to whether students identified as coming from a First Nations background or not. For more information about this variable, please refer to the [Reader's guide](#). The performance of students who identify as coming from a First Nations background in core subject areas such as reading is an important issue, as reading comprehension and fluency form a strong foundation for student performance in many areas of learning.

As shown in Figure 2.13, 10% of the PIRLS Year 4 sample identified as having a First Nations background. These students attained an average score of 491 points in reading, which is 56 points lower than the average score for students from other backgrounds (547 points). The mean scores for First Nations background students and other Australian students are both within the range of the Intermediate benchmark (475 to 549 points).

Figure 2.13 also presents the distribution of Year 4 achievement scores for First Nations background students and students from other backgrounds. The spread of scores between the 5th and 95th percentiles was slightly wider for those students with a First Nations background, at 286 points, compared to 261 for other students. This difference is driven largely by the longer 'tail' among First Nations background students (that is, lower scores among the lower performing students than among lower performing students in the comparison group).

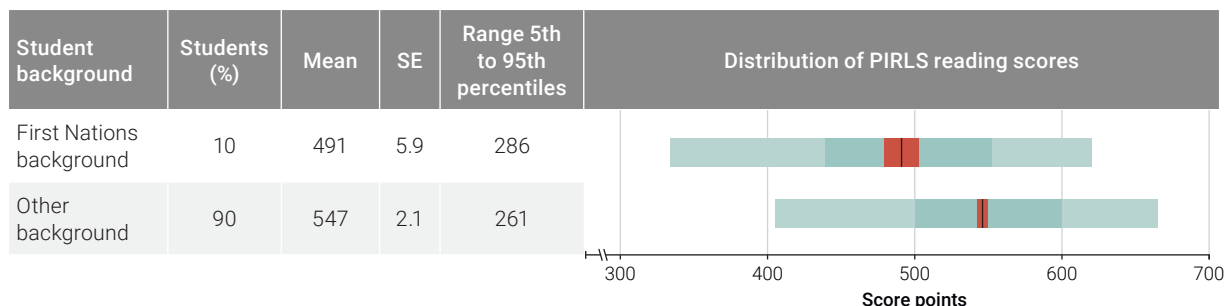


FIGURE 2.13: Mean scores and distribution of PIRLS 2021 Year 4 reading performance within Australia by student background

Performance at the PIRLS international benchmarks by student background

Figure 2.14 adds to our understanding of reading performance by providing the percentages of First Nations background and other Australian students at each of the international benchmarks, with differences apparent at both ends of the achievement scale. Five per cent of First Nations background students reached the Advanced benchmark, while 15% of other Australian students reached this level. At the lower levels of performance, the differences are just as stark; 15% of First Nations students did not reach the Low benchmark, compared to 5% of other Australian students.

Sixty per cent of First Nations background students met the proficient standard (the Intermediate benchmark), while the comparable figure for other Australian students was 83%.

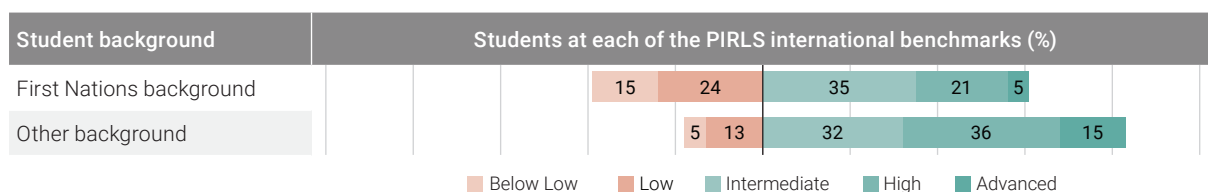


FIGURE 2.14: Percentage of Australian students at the international benchmarks for PIRLS 2021 Year 4 reading by student background

Trends in reading achievement by student background

Figure 2.15 presents trends in reading performance at Year 4 for students who identified as having a First Nations background for the 3 cycles of PIRLS in which Australia participated.

There was no significant change in the average score of students with a First Nations background between 2011 (475 points) and 2016 (483 points), nor was there any change between 2016 and 2021 (491 points). In each cycle, students with a First Nations background performed, on average, around the Intermediate benchmark and met the proficient standard for Australia.

The difference between the average reading scores of First Nations background students and other Australian students has changed little over this time – from 57 points in 2011, 67 points in 2016 and 56 score points in 2021.

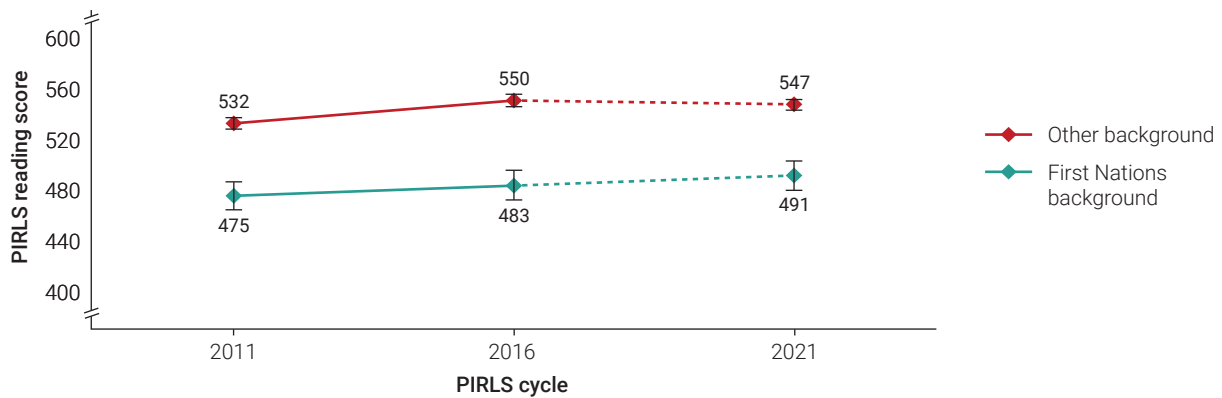


FIGURE 2.15: Trends in PIRLS Year 4 reading performance within Australia by student background, 2011 to 2021

Home factors

Reading performance by language spoken at home

This section presents Australian students' reading performance grouped by students' reports of whether a language other than English was spoken as the main language at home. For more information about this variable, please refer to the [Reader's guide](#).

How often English is spoken at home is a factor that was associated with the performance of Australian students in PIRLS 2011 and 2016 but does not appear to have the same relationship with performance in PIRLS 2021.

Figure 2.16 shows that 19% of Australian students in PIRLS 2021 indicated that they did not speak English at home *always* or *almost always*, slightly more than was reported in PIRLS 2016 (15%).² The average reading scores of students who spoke English at home (*always* or *almost always*) and those who spoke another language most of the time were statistically similar – 540 score points for students from English-speaking households and 548 score points for students from other language households. Figure 2.16 also shows the distribution of reading scores for students by the main language spoken at home. The range of reading scores between the 5th and 95th percentiles was also similar for these groups of students, under 270 points.

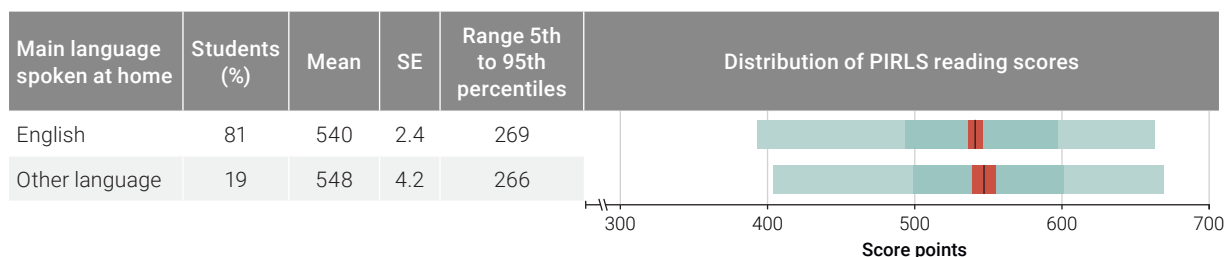


FIGURE 2.16: Mean scores and distribution of PIRLS 2021 Year 4 reading performance within Australia by language spoken at home

² This is in line with census data that records an increase in the percentage of Australians who reported using a language other than English at home between the 2016 and 2021 censuses – from 21.6% in 2016 to 22.8% in 2021 (Australian Bureau of Statistics, 2022).

Performance at the PIRLS international benchmarks by language spoken at home

The proportions of students at each of the international reading benchmarks, grouped by the language they spoke most frequently at home, are shown in Figure 2.17. The proportions of students at each benchmark were very similar. In total, 80% of students who spoke English at home met the Australian proficient standard in reading (the Intermediate benchmark) and 83% of students who spoke a language other than English at home reached this level.

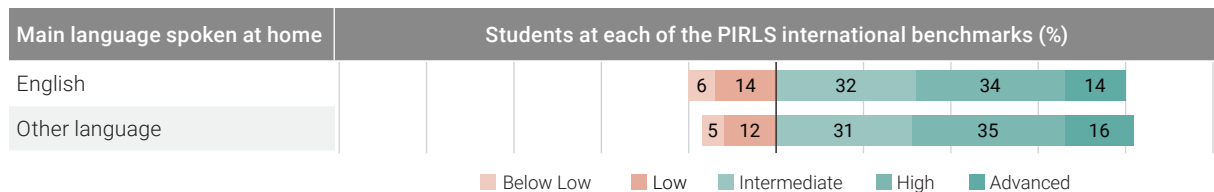


FIGURE 2.17: Percentage of Australian students at the international benchmarks for PIRLS 2021 Year 4 reading by language spoken at home

Reading performance by number of books in the home

This section presents Australian students' reading achievement according to the number of books in the home reported by students. In PIRLS, the number of books in the home is used as a proxy for socioeconomic status.³ For more information about this variable, please refer to the [Reader's guide](#).

As shown in Figure 2.18, the majority of Australian students (57%) reported having an *average number of books* and only 14% reported having *many books* at home. Students who had *many books* in the home recorded the highest reading performance, scoring, on average, 12 points higher than students with an *average number of books* in the home, and 60 points higher than those with a *few books* in the home. This is consistent with previous cycles of PIRLS, which have shown that students from homes with more literacy resources achieve, on average, at higher levels in Year 4 reading than students from less well-resourced homes.

Figure 2.18 also shows the spread of scores in reading for students according to their report of the number of books in the home. The spread of scores for students with *many books* in the home was similar to that for students with a *few books* in the home, close to 270 points. The range between the 5th and 95th percentiles was slightly narrower for students in the group who reported having an *average number of books* in the home (254 points).

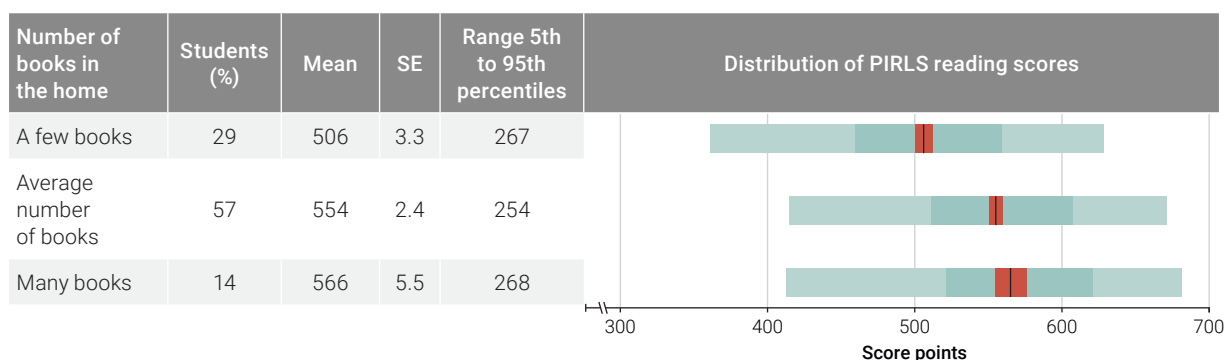


FIGURE 2.18: Mean scores and distribution of PIRLS 2021 Year 4 reading performance within Australia by number of books in the home

³ PIRLS 2021 included a new measure of socioeconomic status that included information about parental education, occupation, number of books in the home and number of children's books in the home. All this information was collected in the parent questionnaire; however, Australia did not participate in the parent questionnaire option.

Performance at the PIRLS benchmarks by number of books in the home

Figure 2.19 presents the proportions of students at each of the international benchmarks for reading, grouped by the number of books they reported having in the home. Of those students who reported having *many books* in the home, 23% reached the Advanced benchmark, compared to 17% for students in the *average number of books* category and just 5% for those with *a few books* in the home.

At the other end of the achievement scale, 8% of students in the group who reported having *many books* in the home reached the Low benchmark and 5% did not reach even this very basic level. Of those students with an *average number of books* in the home, 11% performed at the Low benchmark and 4% did not reach this level. Among students who reported having *a few books* in the home, 10% fell below the Low benchmark – around twice as many as in the groups of students with *many books* and an *average number of books* in the home.

The proportions of students from homes with *many books* (87%) and an *average number of books* (85%) who met the Australian proficient standard (the Intermediate international benchmark) were significantly higher than the proportion of students with *a few books* in the home who met the proficient standard (68%).

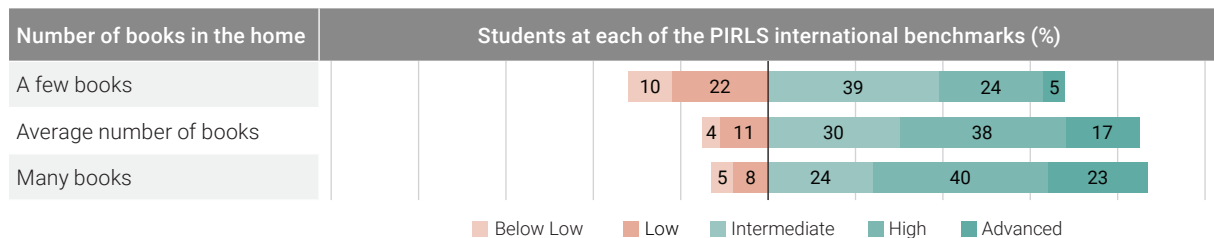


FIGURE 2.19: Percentage of Australian students at the international benchmarks for PIRLS 2021 Year 4 reading by number of books in the home

School factors

Reading performance by school socioeconomic composition

While the number of books students report having at home can act as an indicator of their individual levels of socioeconomic status, it is also possible in PIRLS to examine student performance by school-level socioeconomic composition (please see the [Reader's guide](#) for further information about this variable). Principals' responses to questions about the socioeconomic make-up of their school were used to create 3 categories:

- ✓ *more affluent*
- ✓ *more disadvantaged*
- ✓ *neither more affluent nor more disadvantaged.*

As shown in Figure 2.20, Australian students who attended schools that were categorised as being *more affluent* (40% of students) scored 22 points higher, on average, than students who attended schools that were *neither more affluent nor more disadvantaged*. Around 26% of Australian students attended a school that was described by their principal as being *more disadvantaged*. The average performance of these students was 32 points lower than students in *neither more affluent nor more disadvantaged* schools and 54 points lower than students in *more affluent* schools. The range of scores from the 5th to 95th percentiles was larger for *more disadvantaged* schools as well, with a longer 'tail' of reading performance (that is, lower scores among the lower performing students) among students in these schools than was the case for schools that were not as disadvantaged.

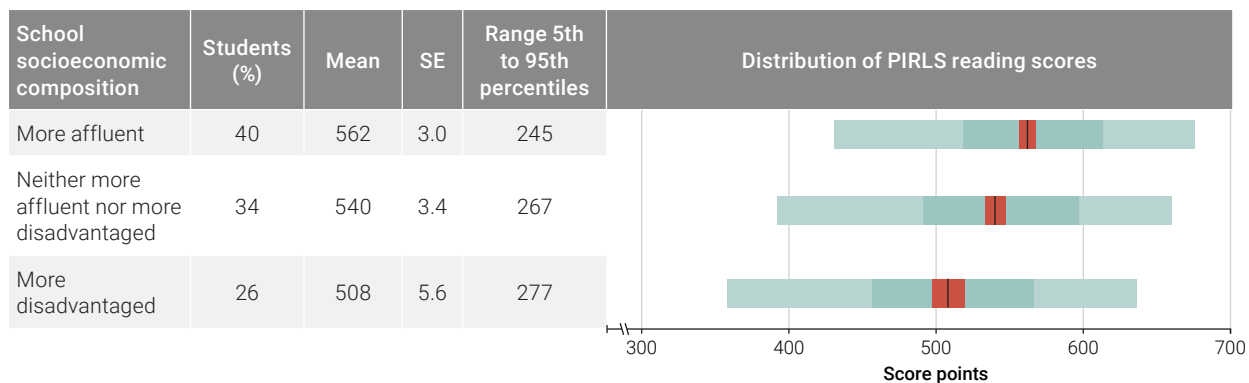


FIGURE 2.20: Mean scores and distribution of PIRLS 2021 Year 4 reading performance within Australia by school socioeconomic composition

Performance at the PIRLS international benchmarks by school socioeconomic composition

Figure 2.21 shows the percentages of Year 4 students at each of the international benchmarks in reading, by school socioeconomic composition. The longer ‘tail’ in reading among students in *more disadvantaged* schools is evident again here; 21% of students in these schools reached the Low benchmark and another 10% did not reach this level. In contrast, only 6% of students from *neither more affluent nor more disadvantaged* schools and 3% from *more affluent* schools performed at a level below that of the lowest international benchmark.

At the other end of the performance scale, there were also stark differences associated with school-level advantage; 20% per cent of students in *more affluent* schools reached the Advanced benchmark, compared to 14% of students in *neither more affluent nor more disadvantaged* schools and only 7% of students in *more disadvantaged* schools.

Close to 90% of students in *more advantaged* schools met the Australian proficient standard, which was higher than the 81% of students in *neither more affluent nor more disadvantaged* schools and 69% of students in *more disadvantaged* schools who met the standard.

More disadvantaged schools appear to have greater proportions of students who find reading challenging, and this has not changed since the PIRLS 2016 assessment, when the proportion of students in these schools who did not meet the proficient standard was also 31%.

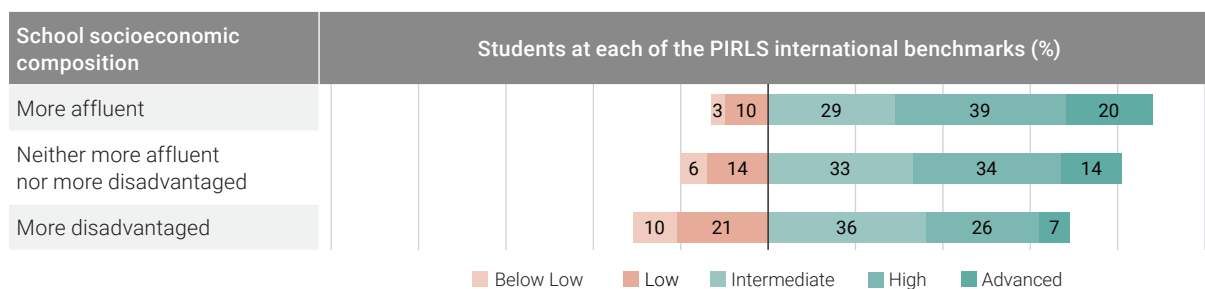


FIGURE 2.21: Percentage of Australian students at the international benchmarks for PIRLS 2021 Year 4 reading by school socioeconomic composition

Reading performance by school geographic location

Past cycles of PIRLS and TIMSS (Trends in International Mathematics and Science Study) have shown that students who attend schools in remote or regional areas of Australia are often at an educational disadvantage compared to students at metropolitan schools (for example, Thomson et al., 2012; Thomson, De Bortoli & Underwood, 2017; Thomson et al., 2017; Thomson et al., 2020).

As discussed in the *Reader's guide*, changes to the variables used to categorise the geographic location of schools in Australia mean that results from PIRLS 2011 and 2016 are not directly comparable with those of PIRLS 2021. However, the relationship between school location and reading performance remains, as shown in Figure 2.22.

Students who attended schools in *major cities* scored, on average, 19 points higher than students in *provincial* areas, and 62 points, on average, higher than students who attended schools in *remote* areas. These differences are statistically significant, despite the larger standard errors for students in *remote* area schools. The range of scores from the 5th to 95th percentiles was larger for *provincial* than *major cities* schools (282 and 262 points, respectively). The spread of scores for students in *remote* schools was larger again, at 323 points. While the average scores of the top 5% of students in schools in *major cities* and *provincial* areas were similar, the average score of the top 5% of students in *remote* schools was significantly lower, by around 40 points. There was also a longer 'tail' of reading performance (that is, lower scores among the lower performing students) among students in *remote* schools.

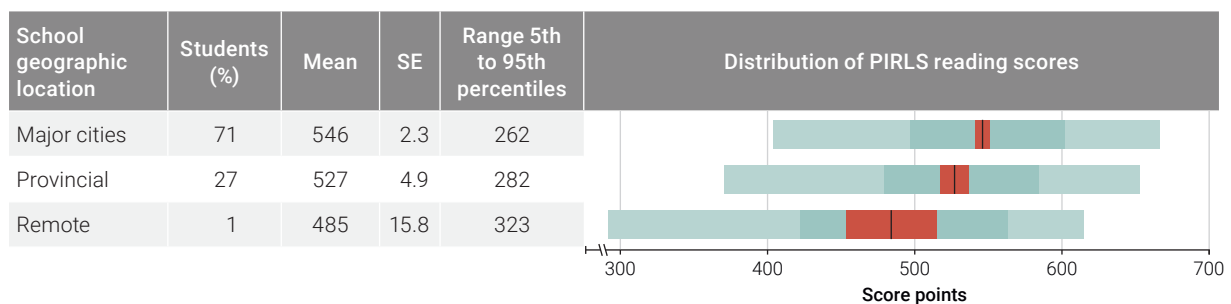


FIGURE 2.22: Mean scores and distribution of PIRLS 2021 Year 4 reading performance within Australia by school geographic location

Performance at the PIRLS benchmarks by school geographic location

Figure 2.23 shows the percentages of Australian Year 4 students at each of the international benchmarks in reading by school geographic location. The longer 'tail' in reading among students in *remote* schools is evident again here; 42% of students in *remote* schools did not reach the Intermediate benchmark, including 20% who did not reach the Low benchmark. Eight per cent of students from *provincial* schools and 5% from schools in *major cities* performed at a level below that of the Low international benchmark.

There were also differences at the higher end of performance, with significant differences in the proportions of students who reached the Advanced benchmark according to the geographic location of the school. Only 2% of students in *remote* schools were reading at the Advanced benchmark, compared to 11% from *provincial* schools and 16% of students from schools in *major cities*.

Fifty-eight per cent of students in *remote* schools met the proficient standard for Australia (the Intermediate benchmark), compared to 82% and 76% of students from schools in *major cities* and *provincial* areas, respectively (all differences are statistically significant).

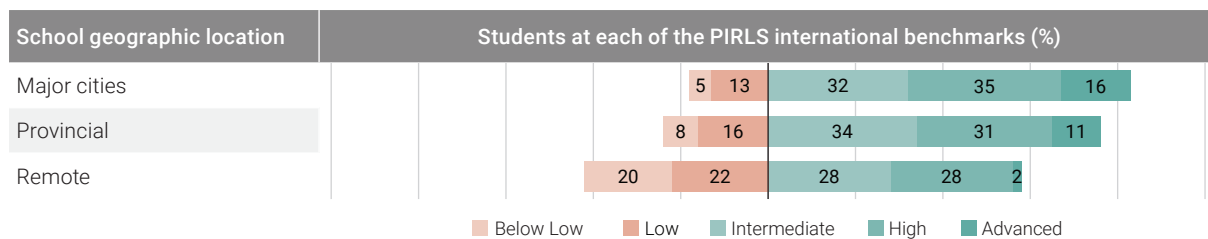


FIGURE 2.23: Percentage of Australian students at the international benchmarks for PIRLS 2021 Year 4 reading by school geographic location

PIRLS 2021 subscales: Reading purposes and processes

As discussed in Chapter 1, the PIRLS reading assessment can be described in terms of reading purposes and processes. These purposes (or reasons for reading) account for most of the reading done by young people at school and outside of school – for literary experience (that is, reading for interest and pleasure) and in order to acquire and use information (reading to learn). The reading processes detail the thinking processes that students need in order to respond to the assessment items, but also to interact with texts in general.

Each prompt text is categorised as either *Literary* or *Informational*, and the accompanying questions address that purpose – questions regarding theme, plot events, characters and setting for literary texts, and questions about the information contained in the passages for informational texts.

The processes assessed – focus on and retrieve explicitly stated information; make straightforward inferences; interpret and integrate ideas and information; and examine and evaluate content, language, and textual elements – are evaluated across both *Literary* and *Informational* purposes. Each assessment question is thus categorised according to one reading purpose and one reading process. For example, Item 3 from *The Empty Pot* is categorised as Purpose: Literary/Process: Make Straightforward Inferences (see Figure 2.24).

3. Why was each seed called a “precious possibility”?

- Each seed was a chance to win the contest.
- Each seed was royal and very expensive.
- Each seed would grow into a beautiful plant.
- Each seed gave a chance to become the best gardener.

FIGURE 2.24: Example PIRLS 2021 item

The reading processes are summarised on two subscales: 1. Retrieving and Straightforward Inferencing (combining responses to retrieving and making straightforward inferences) and 2. Interpreting, Integrating and Evaluating (combining interpreting and integrating items with examining and evaluating items).

Table 2.4 shows that overall, Australian students showed a relative strength in the *Literary* reading purpose, with a mean score of 543 points (compared to an overall mean of 540), but no difference between overall reading and the *Informational* purpose (mean score of 539).

Students in Singapore also scored relatively higher in the *Literary* reading purposes (591 points) but there was no difference between their overall reading score and their average score in the *Informational* purpose (586 points). England and New Zealand showed no differences in performance on the 2 purpose subscales, while Hong Kong showed a relative strength in the *Informational* purpose combined with a relative weakness in the *Literary* purpose.

TABLE 2.4: Relative performance in the PIRLS 2021 Year 4 reading purposes for selected countries

	Overall PIRLS average scale score		Reading purposes									
			Literary		Difference between reading overall and literary		Informational		Difference between reading overall and informational			
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE		
Australia	540	2.2	543	2.4	3	▲	1.2	539	2.3	1	1.0	
England	558	2.5	558	2.4	1		1.0	559	2.5	1	0.9	
Hong Kong SAR	573	2.7	564	2.7	8	▼	0.9	582	2.7	10	▲	1.1
New Zealand	521	2.3	523	2.4	2		1.2	521	2.5	1	1.1	
Singapore	587	3.1	591	3.2	4	▲	0.9	586	3.1	1	0.8	

▲ Difference is a relative strength in subscale.

▼ Difference is a relative weakness in subscale.

The relative strength in *Literary* reading purposes shown at the Australian national level was significant only among students in Queensland, female students and students who did not identify as having a First Nations background. Interestingly, female students also showed a relative weakness in responding to *Informational* texts, but this was not evident among any other Australian student groups (Table 2.5).

Table 2.6 shows that Australia had a relative strength in the *Interpreting, Integrating and Evaluating* processes subscale, with a mean of 547 points, and a relative weakness in the *Retrieving and Straightforward Inferencing* subscale, with a mean of 534 points. This pattern was also evident in England and Singapore, both strong performers in PIRLS 2021.

New Zealand recorded no differences between their process subscale scores and their overall reading score. Hong Kong, however, recorded a relative strength in *Retrieving and Straightforward Inferencing* but no difference between the *Interpreting, Integrating and Evaluating* subscale and their overall reading performance.

TABLE 2.5: Relative performance in the PIRLS 2021 Year 4 reading purposes within Australia, by jurisdiction, gender and First Nations background.

	Overall PIRLS average scale score		Reading purposes									
			Literary		Difference between reading overall and literary		Informational		Difference between reading overall and informational			
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE		
Australia	540	2.2	543	2.4	3	▲	1.2	539	2.3	1	1.0	
ACT	560	6.0	564	5.8	3		3.6	561	6.4	1	4.5	
NSW	541	4.6	544	5.0	3		2.4	540	4.7	1	2.3	
NT	516	16.5	518	15.9	2		3.9	514	15.3	3	4.4	
QLD	540	4.0	544	4.0	4	▲	1.8	540	4.3	0	2.3	
SA	531	5.5	533	6.1	2		2.4	530	5.6	1	2.0	
TAS	534	8.8	537	9.0	3		4.6	533	8.7	1	3.1	
VIC	545	4.6	548	4.8	3		2.2	543	4.8	2	2.8	
WA	534	5.7	538	5.2	4		2.8	534	5.5	0	2.9	
Female	549	2.5	557	2.6	8	▲	1.5	544	2.4	5	▼	1.6
Male	532	2.8	530	3.1	1		2.3	534	3.0	3	1.5	
First Nations background	491	5.9	493	7.0	3		5.4	489	5.8	2	4.8	
Other background	547	2.1	550	2.2	3	▲	1.0	546	2.3	1	1.0	

▲ Difference is a relative strength in subscale.

▼ Difference is a relative weakness in subscale.

TABLE 2.6: Relative performance in the PIRLS 2021 Year 4 reading processes for selected countries

	Overall PIRLS average scale score		Reading processes									
			Retrieving and straightforward inferencing		Difference between reading overall and retrieving		Interpreting, integrating and evaluating		Difference between reading overall and interpreting			
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE		
Australia	540	2.2	534	2.4	6	▼	1.1	547	2.3	7	▲	1.0
England	558	2.5	554	2.4	3	▼	0.9	561	2.5	4	▲	1.4
Hong Kong SAR	573	2.7	577	2.9	4	▲	1.4	572	2.6	0		1.3
New Zealand	521	2.3	521	2.3	1		0.8	522	2.4	1		1.0
Singapore	587	3.1	584	3.0	3	▼	0.7	591	3.2	4	▲	0.5

▲ Difference is a relative strength in subscale.

▼ Difference is a relative weakness in subscale.

The national pattern of a relative weakness in the *Retrieving and Straightforward Inferencing* subscale combined with a relative strength in the *Interpreting, Integrating and Evaluating* subscale was found among male and female students, students who did not identify as having a First Nations background, and among students in 4 jurisdictions: New South Wales, Queensland, Victoria and Western Australia (Table 2.7).

TABLE 2.7: Relative performance in the PIRLS 2021 Year 4 reading processes within Australia by jurisdiction, gender and First Nations background.

	Overall PIRLS average scale score		Reading processes									
			Retrieving and straightforward inferencing		Difference between reading overall and retrieving		Interpreting, integrating and evaluating		Difference between reading overall and interpreting			
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE		
Australia	540	2.2	534	2.4	6	▼	1.1	547	2.3	7	▲	1.0
ACT	560	6.0	555	6.6	6		3.4	566	6.6	6		3.1
NSW	541	4.6	534	4.8	7	▼	2.1	547	4.5	7	▲	1.8
NT	516	16.5	509	16.0	7	▼	2.7	523	15.5	6		4.3
QLD	540	4.0	533	4.4	6	▼	2.6	548	4.2	8	▲	2.2
SA	531	5.5	525	6.3	6		3.5	538	6.0	7	▲	2.8
TAS	534	8.8	529	8.2	5		3.8	543	8.2	9	▲	3.7
VIC	545	4.6	539	4.3	6	▼	2.0	550	4.4	5	▲	2.1
WA	534	5.7	529	5.2	5	▼	2.2	543	5.3	9	▲	2.6
Female students	549	2.5	542	2.6	7	▼	1.7	557	2.5	8	▲	1.2
Male students	532	2.8	525	2.8	6	▼	1.4	537	2.9	6	▲	1.6
First Nations background	491	5.9	484	5.9	7		5.1	498	5.6	7		4.1
Other background	547	2.1	540	2.4	6	▼	1.0	554	2.3	7	▲	1.0

▲ Difference is a relative strength in subscale.

▼ Difference is a relative weakness in subscale.

As shown in Table 2.8, there was no difference in the reading purpose subscale scores for Australia overall in PIRLS 2011, while there was a small significant difference in the comprehension process subscales, which favoured the *Interpreting, Integrating and Evaluating* subscale. In PIRLS 2016, this difference in the processes increased in size, and a difference in the purpose subscale also reached significance. In PIRLS 2021, Australian students recorded relative strengths when working with *Literary* texts, and with the processes of *Interpreting, Integrating and Evaluating*, along with a relative weakness in *Retrieving and Straightforward Inferencing*.

TABLE 2.8: Trends in Australian performance on the PIRLS Year 4 reading purposes and processes subscales, 2011 to 2021

PIRLS cycle	Reading purposes				Reading processes			
	Literary		Informational		Retrieving and straightforward inferencing		Interpreting, integrating and evaluating	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
2011	527	2.4	528	2.3	527	2.6	529	2.2
2016	547	2.4	543	2.6	541	2.6	549	2.4
2021	543	2.4	539	2.3	534	2.4	547	2.3

Performance in all sub-areas of PIRLS reading achievement has improved in Australia since 2011, and Australian students have shown a relative strength in undertaking tasks that require them to interpret, integrate and evaluate when they read (demonstrating high-level comprehension skills) over 3 cycles of PIRLS. However, work could be done to improve students’ skills in working with non-fiction (informational) texts, and to encourage students to develop their skills in retrieving information from what they have read and making connections (inferences) when reading both fictional and non-fictional texts.

3

Reading behaviours and attitudes

Key findings

- ✓ 29% of Australian Year 4 students *very much like reading*, 45% *somewhat like reading* and 26% *do not like reading*.
- ✓ Australian students who *very much like reading* scored significantly higher in reading (562 points), on average, than those who *somewhat like reading* (542 points) and those who *do not like reading* (517 points). Students who *somewhat like reading*, also scored significantly higher in reading, on average, than those who *do not like reading*.
- ✓ Australian students who were *very confident* in reading scored higher (582 points), on average, than students who were *somewhat confident* in reading (528 points). Students who were *not confident* in reading scored significantly lower (477 points), on average, than other students.
- ✓ Over 50% of Australian Year 4 students were *very engaged* in reading lessons, and a further 42% were *somewhat engaged*. Only 7% of students were classified as being *less than engaged* in reading lessons.
- ✓ Students who were *less than engaged* in reading lessons scored lower (512 points), on average, on the reading assessment than students who were *somewhat engaged* (539 points) or *very engaged* (547 points).
- ✓ The majority of Australian students spent *30 minutes or less* using digital devices to find and read information per school day.
- ✓ Students who reported that they spent either *more than 30 minutes* or *30 minutes or less* using digital devices for their schoolwork had higher reading scores, on average, than students who spent *no time* using digital devices to find and read information for schoolwork.
- ✓ The proportion of male students who reported spending *more than 30 minutes* per school day on digital devices (30%) was significantly higher than the proportion of female students who used digital devices this often (24%).

This chapter presents information about students' attitudes towards reading – their levels of enjoyment and confidence with reading – and their levels of engagement in their reading lessons. This chapter also presents the frequency with which students use digital devices to find and read information.

Students' attitudes towards reading

Considerable research over many years has shown that positive attitudes and achievement are related, and that the influence runs in both directions: attitudes influence achievement and achievement reinforces (or perhaps alters) attitudes. The importance of establishing strong positive attitudes towards learning – particularly towards reading – that underlie so much of students' learning is undeniable. PIRLS recognises the important role of attitudes in reading achievement by collecting students' responses to questions about what they read and how they feel about different aspects of reading. These responses were used to create 2 attitude scales: the Students Like Reading scale (a measure of participation and enjoyment of reading), and the Students' Confidence in Reading scale (a measure of their self-rated ability in reading). Further information on the construction of the scales and the categories reported here is provided in [Appendix A](#). The following sections report the average scores of Australian students on these scales alongside their average reading scores from PIRLS 2021.

Students like reading

The Students Like Reading scale summarises students' responses to 2 questions about how often they spent time reading out of school hours and 8 questions about how much they enjoyed reading.

Figure 3.1 shows that 29% of Australian students were in the *very much like reading* group, 45% in the *somewhat like reading* group and 26% in the *do not like reading* group. Students who *very much like reading* scored significantly higher in reading, on average, than those who *somewhat like reading* and those who *do not like reading*. Students who *somewhat like reading* also scored significantly higher in reading, on average, than those who *do not like reading*.

The average reading scores of students who *do not like reading* and who *somewhat like reading* were within the range of the Intermediate international benchmark, while students who *very much like reading* were at the High international benchmark.

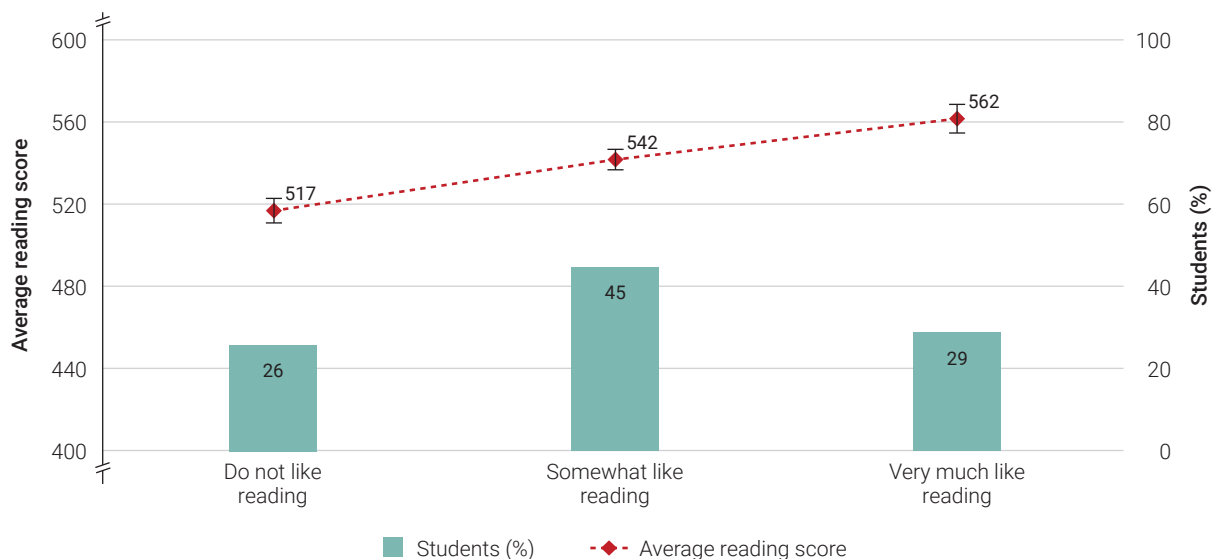


FIGURE 3.1: The Students Like Reading scale and Year 4 student performance in reading, Australian students

Figure 3.2 shows that similar proportions of male and female students (45%) *somewhat like reading*, while more female students than male students *very much like reading* (34% compared to 24%), and more male students reported that they *do not like reading* (31% compared to 21% of female students). The same pattern of stronger reading performance by students who reported that they liked reading *very much* compared to those who liked reading less was found among male and female students.



FIGURE 3.2: The Students Like Reading scale and Year 4 student performance in reading, by gender

The proportion of students who identified as having a First Nations background who reported that they *do not like reading* (35%) was significantly higher than the proportion of students from other backgrounds who *do not like reading* (25%). There were also fewer students with a First Nations background who *very much like reading* – 24% compared to 29% of students from other backgrounds. As shown in Figure 3.3, among students with other backgrounds, reading performance improved in line with levels of enjoyment of reading. Students who *very much like reading* scored higher than students who *somewhat like reading*, who in turn scored higher than those students who *do not like reading*. Among First Nations background students, however, there were no significant differences in the average reading scores of students who who *do not like reading* and those who *somewhat or very much like reading*.



FIGURE 3.3: The Students Like Reading scale and Year 4 student performance in reading, by student background

The proportion of students with *many books* in the home who reported that they *very much like reading* (47%) was significantly higher than the proportion students with an average number or a *few books* in the home who *very much like reading* (29% and 20%, respectively). The proportion of students with a *few books* in the home who reported that they *do not like reading* (37%) was significantly higher than the proportion of students with an *average number of books* or *many books* who expressed low enjoyment of reading (24% and 37%, respectively).

Figure 3.4 shows that among students with *many books* or an *average number of books*, there again appeared to be a linear relationship between how much students reported enjoying reading and their performance in PIRLS 2021. Those who *very much like reading* scored higher, on average, than those who *somewhat like reading*, and those who *somewhat like reading* scored higher, in turn, than students who *do not like reading*. For students with few reading resources at home, however, there were no significant differences in performance associated with enjoyment of reading. For this group of students, enjoyment of reading appeared to confer no advantage in terms of reading performance.

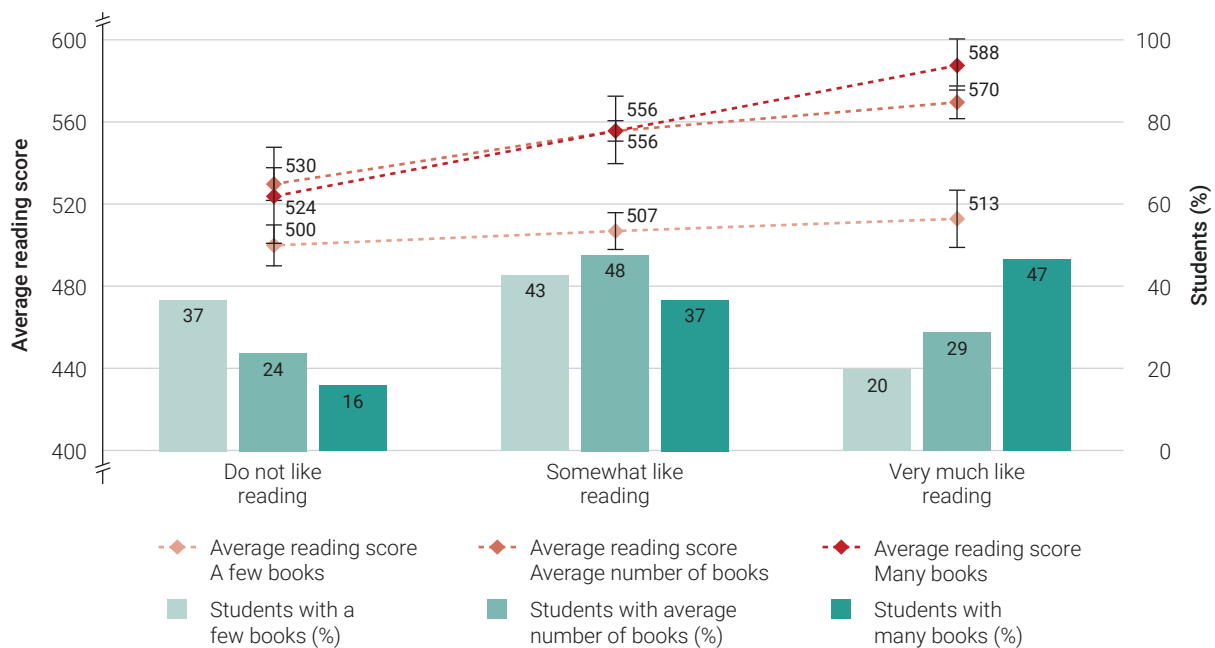


FIGURE 3.4: The Students Like Reading scale and Year 4 student performance in reading, by number of books in the home

Student confidence with reading

The Student Confidence with Reading scale was created from students' responses to 6 statements about how well they read.

Just over 40% of the students were in the *very confident in reading* group, with a further 38% in the *somewhat confident* group. Nineteen per cent were categorised as *not confident in reading*, which was a smaller proportion than those in the *do not like reading* category (26%, see Figure 3.1).

Figure 3.5 presents the proportions of Australian student cross-categorised according to their groupings on the Students Like Reading and Student Confidence in Reading scales. Interestingly, these two groups did not overlap perfectly, that is, there were students who were *not confident* in reading, but enjoyed it (*somewhat* or *very much*) while there were also students who did not enjoy reading but were at least *somewhat confident* in their reading abilities. The majority of students who were *somewhat confident* in reading indicated that they *somewhat like reading* (51%). Nearly half of those students who were *not confident* readers indicated that they *do not like reading* (47%).

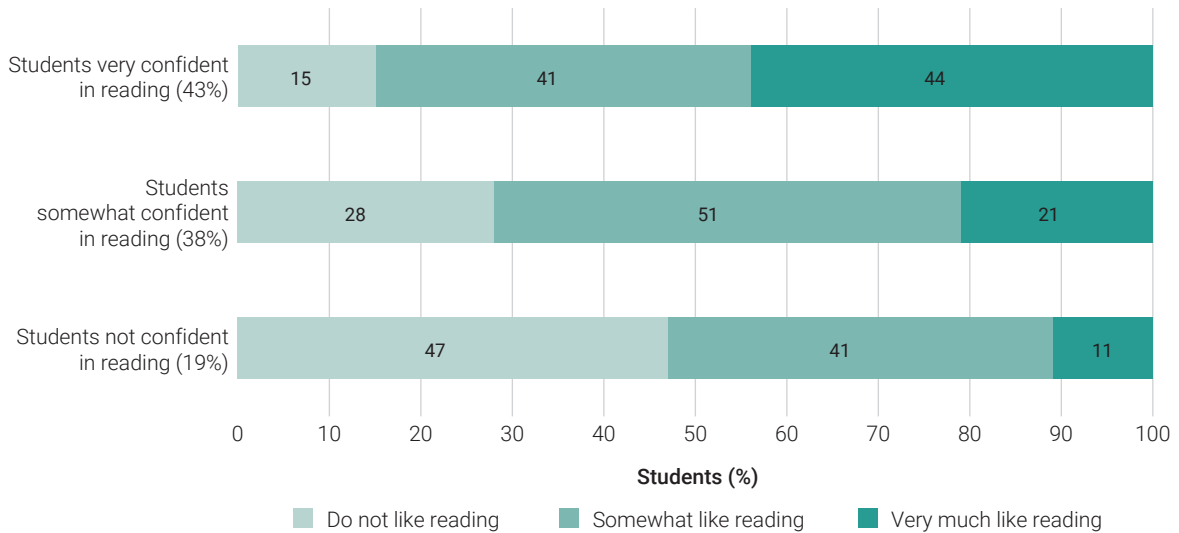


FIGURE 3.5: The Student Confidence in Reading scale, by the Students Like Reading Scale, Australian Students

As may be expected, students who were *very confident in reading* scored higher, on average, in the PIRLS 2021 reading assessment than students who were *somewhat confident in reading* (Figure 3.6). Students who were *not confident in reading* scored significantly lower, on average, than other students.

The average reading scores of Australian students who were *very confident in reading* were within the range of the High international benchmark. The average reading scores of students who were *somewhat confident in reading* or *not confident in reading* were within the range of the Intermediate international benchmark.

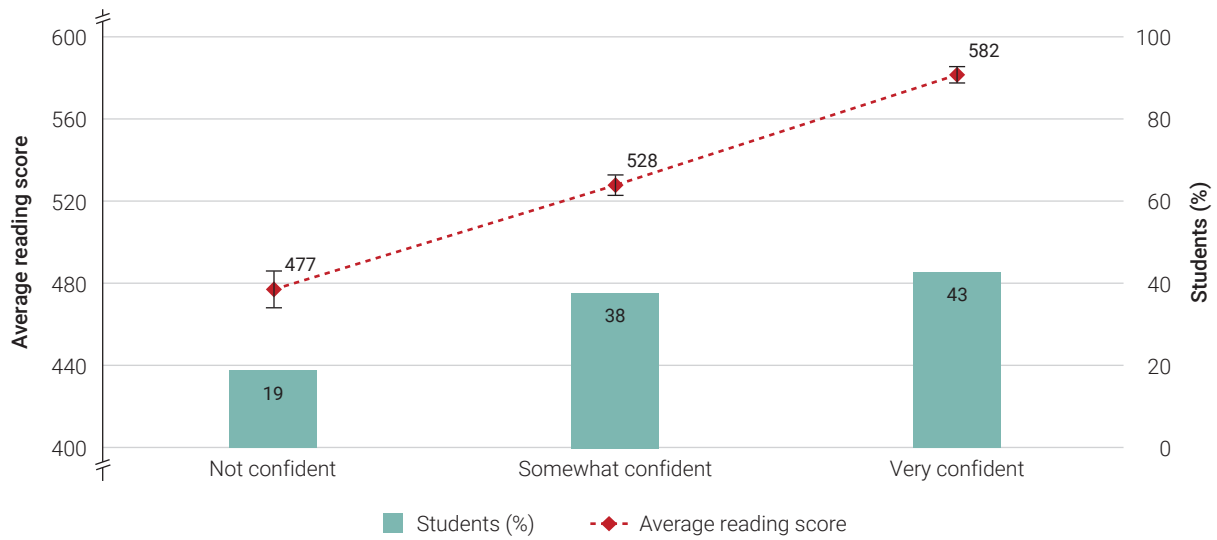


FIGURE 3.6: The Student Confidence in Reading scale and Year 4 student performance in reading, Australian students

Figure 3.7 presents the proportions of Australian students in each of the Confidence in Reading groups alongside the average reading scores of students in these groups. While there were similar proportions of male and female students (38%) who were *somewhat confident in reading*, there were more female students who were *very confident in reading* (46% compared to 40%), and more male students who were *not confident in reading* (22% compared to 16% of female students).

The same linear pattern, with more confident students scoring higher, on average, than less confident students was found for male and female students. Female students who were *somewhat confident* and *not confident* readers scored higher on average than male students with similar levels of confidence. The difference in scores was greatest among students who were *not confident* readers (21 points).

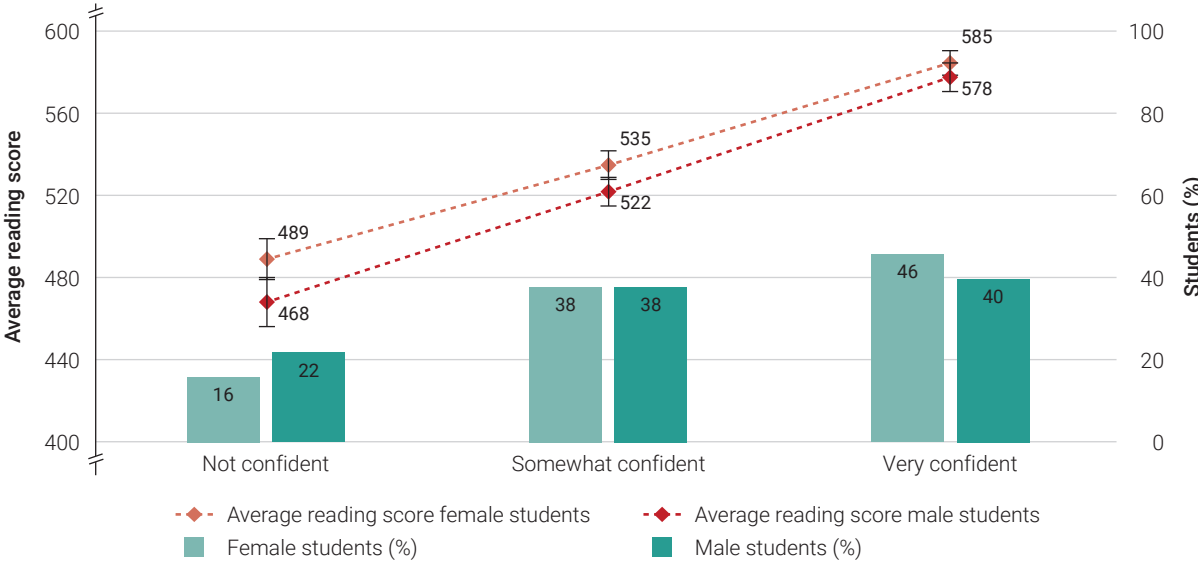


FIGURE 3.7: The Student Confidence in Reading scale and Year 4 student performance in reading, by gender

As shown in Figure 3.8, the proportions of students in the Confidence in Reading groups varied with student background. Around one-quarter of students with a First Nations background were categorised as *very confident* readers compared to nearly half of students from other backgrounds (45%). The relationship between confidence in reading and reading scores in PIRLS 2021 was similar for students from all backgrounds; more confident readers outperformed students who were less confident, on average.

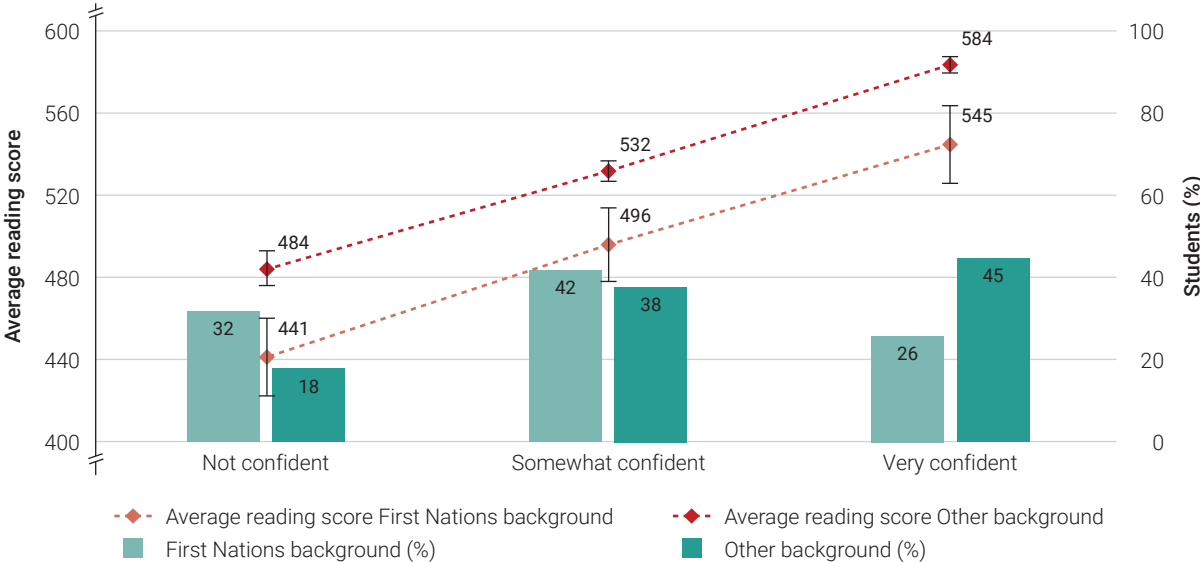


FIGURE 3.8: The Student Confidence in Reading scale and Year 4 student performance in reading, by First Nations background

Figure 3.9 shows that the proportion of students with *a few books* who were *not confident* readers (29%) was larger than the proportion of students with either *an average number of books* or *many books* who were *not confident* readers (16% and 13%, respectively). A far greater proportion of students with *many books* were *very confident* readers, compared to students who reported having fewer books at home. It would seem that exposure to more books at home – whether this represents higher socioeconomic status, greater value placed on reading, or even modelling of reading in families – is related to students’ confidence in their abilities as readers.

Greater levels of confidence in reading were associated with stronger performance in the PIRLS assessment regardless of the number of books students reported having at home. The highest reading scores, on average, were recorded by students who were *very confident* readers and who had *many books* at home (598 points).

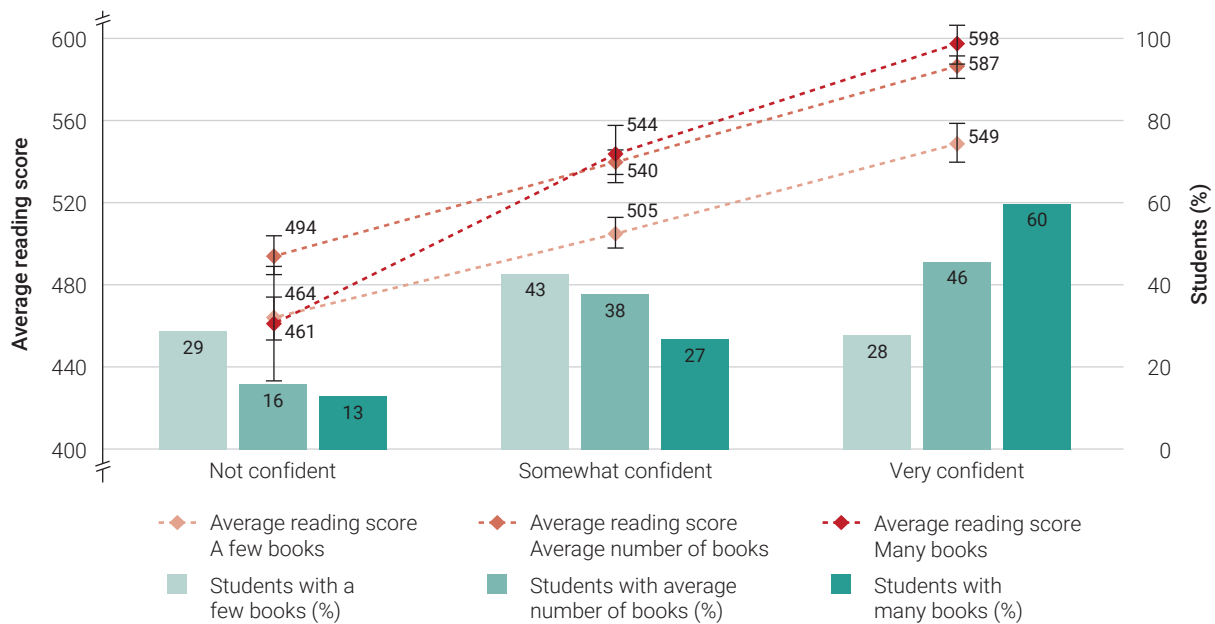


FIGURE 3.9: The Student Confidence in Reading scale and Year 4 student performance in reading, by number of books in the home

Student engagement in reading lessons

Students responded to a set of 9 statements about what happens and how they feel during their reading lessons – for example, whether they are interested in what they are reading and what their teachers says and whether they know what their teacher expects. Their levels of agreement with these statements were combined to form the Student Engagement in Reading Lessons scale.

Over 50% of Australian students in Year 4 were *very engaged in reading lessons*, and a further 42% were *somewhat engaged* (Figure 3.10). Only 7% of students were classified as being *less than engaged* in reading lessons. Students who were *less than engaged* scored lower (512 points), on average, than students who were *somewhat engaged* (539 points) or *very engaged* (547 points) in reading lessons. The difference between the average reading scores of *somewhat engaged* students and *very engaged* students was also statistically significant, although not substantial (8 points). Please refer to the [Reader's guide](#) for further information about confidence intervals and statistical significance.

The average reading scores of students in all 3 groups on the Student Engagement in Reading lessons scale were within the range of the Intermediate international benchmark.

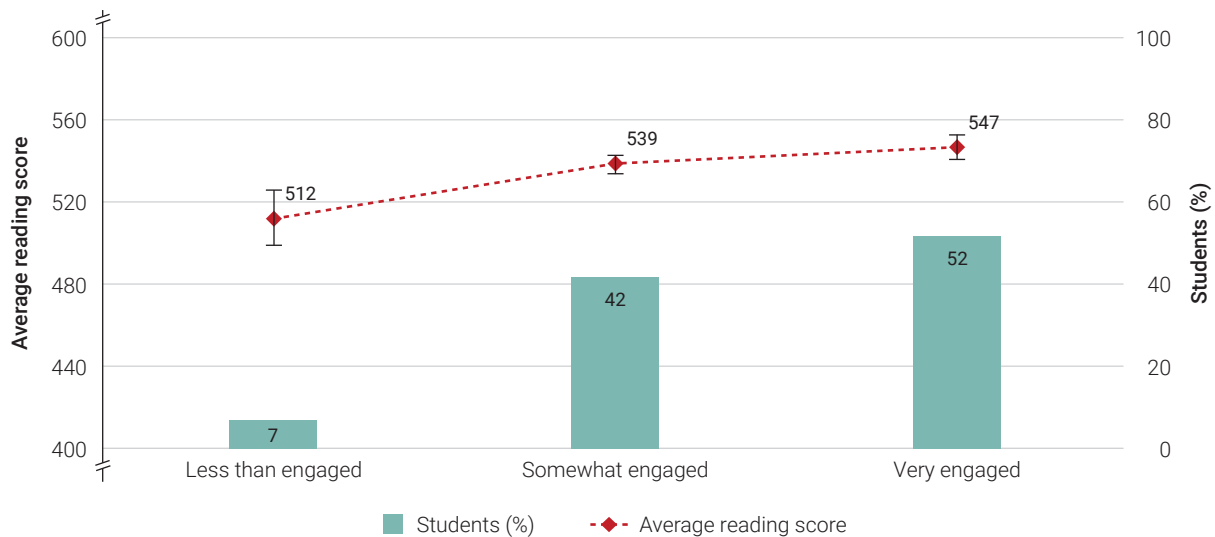


FIGURE 3.10: The Student Engagement in Reading Lessons scale and Year 4 student performance in reading, Australian students

A higher proportion of female students than male students were *very engaged* in reading lessons (56% compared to 48%), while the proportions of male students who were *somewhat engaged* or *less than engaged* in reading lessons were larger than the proportions of female students in these groups.

Figure 3.11 shows that for female students, there was a linear pattern of stronger reading performance if they reported that they were *very engaged* in reading lessons compared to students who were *somewhat* or *less than engaged* during their reading classes. For male students, there were no significant differences in the average reading scores of those who were *very engaged* or *somewhat engaged* during reading lessons, but both of these groups scored higher than male students who were *less than engaged* during reading.

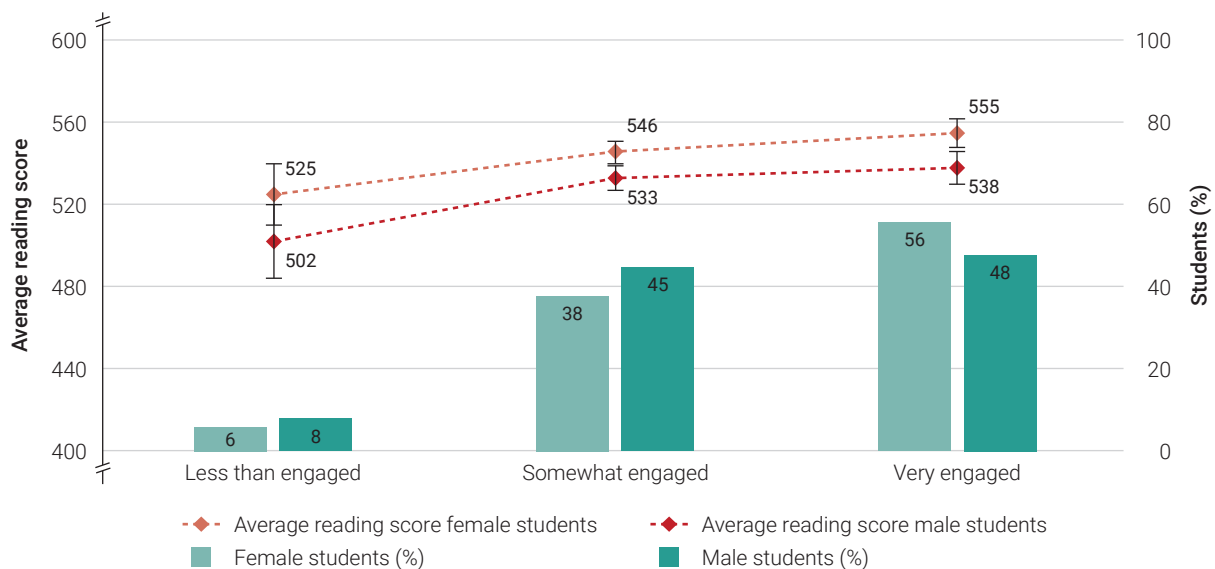


FIGURE 3.11: The Student Engagement in Reading Lessons scale and Year 4 student performance in reading, by gender

As Figure 3.12 shows, the proportions of students from a First Nations background and other backgrounds who were *less than engaged*, *somewhat engaged* or *very engaged* in reading lessons were quite similar. For students with a First Nations background, there were no significant differences in reading scores associated with the Engagement in Reading groups. For students from other backgrounds, there was a benefit associated with higher levels of engagement in reading.

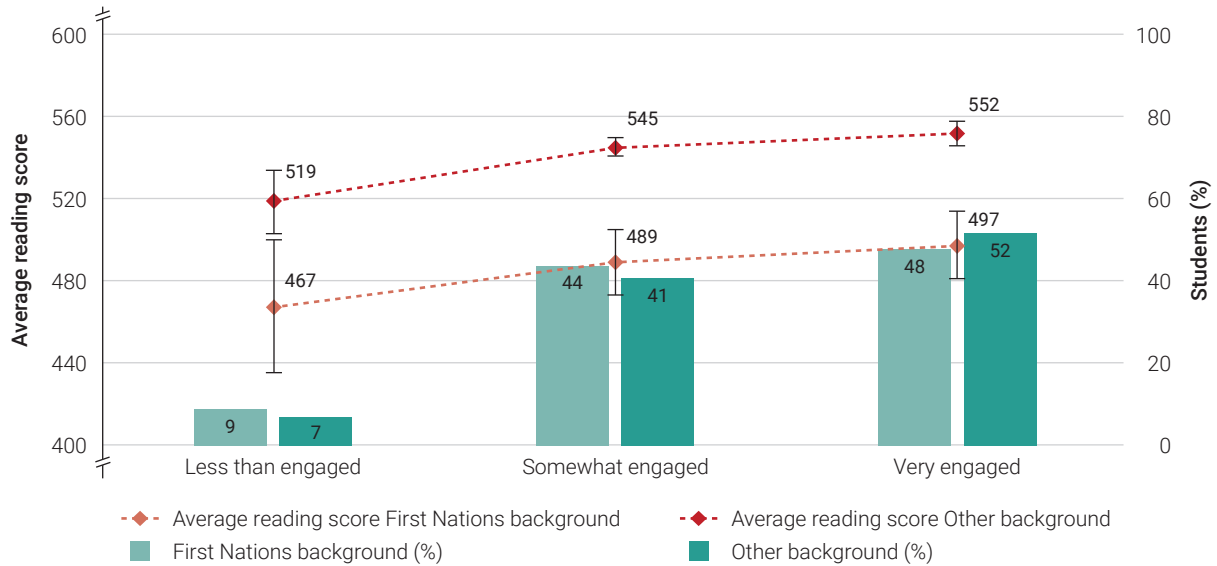


FIGURE 3.12: The Student Engagement in Reading Lessons scale and Year 4 student performance in reading, by student background

Figure 3.13 presents the proportions of students across the Engagement in Reading Lessons and number of books in the home (a proxy measure for socioeconomic background). The proportion of students from homes with *many books* who were *very engaged* during reading was larger than the proportion of students from homes with *a few books* who were *very engaged*, but not different to the proportion of students from homes with *an average number of books* who reported being *very engaged* during their reading lessons. Interestingly, there was no difference in the proportion of students from homes with *many books* or *a few books* who were *less than engaged* during reading lessons (8% and 7%).

Among students from homes with *an average number of books* or *a few books*, higher levels of engagement during reading lessons appeared to confer a benefit in reading performance – those with higher engagement (*somewhat* or *very engaged in reading lessons*) scored higher, on average, than students who were *less than engaged* during their classes.

For students from homes with many books, there were no significant differences in reading scores associated with levels of engagement in reading lessons.

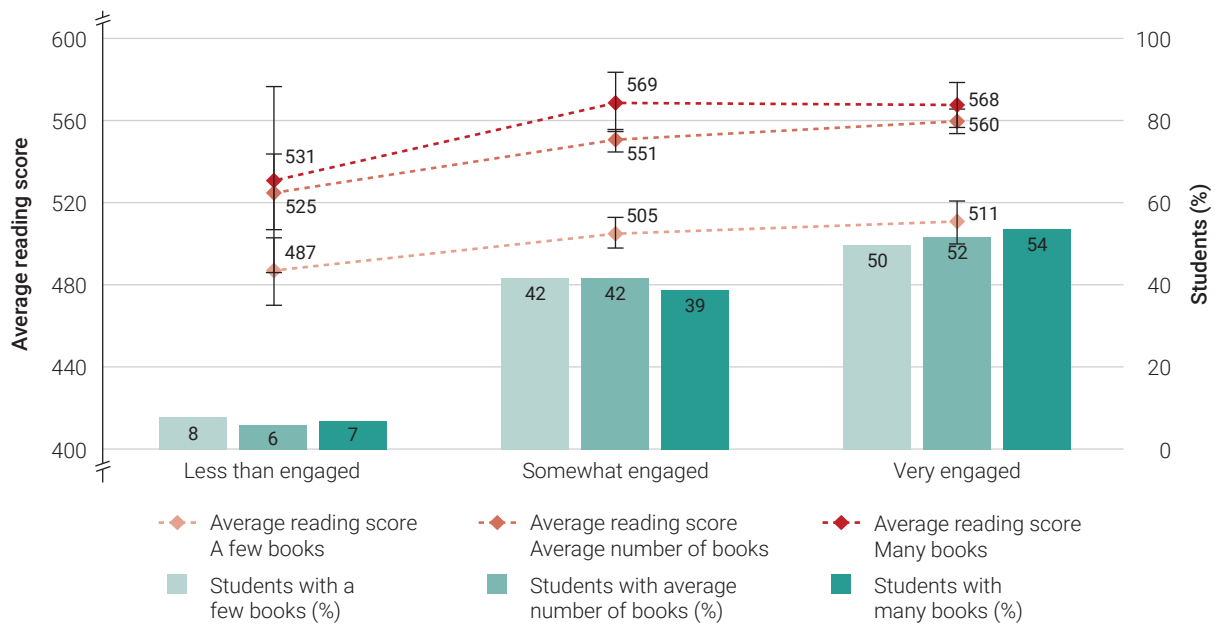


FIGURE 3.13: The Student Engagement in Reading Lessons scale and Year 4 student performance in reading, by number of books in the home

Student time spent using digital devices to find and read information

The prominence of digital devices in the lives of young people has changed enormously over the past decade, perhaps particularly during the COVID-19 related periods of remote learning during 2020 and 2021, when many Australian students received, completed, and submitted schoolwork using digital devices (home computers, laptops, tablets or even smart phones).

In PIRLS 2021, students were asked to indicate how much time they spent using a computer or tablet to find and read information for schoolwork on a normal school day. Table 3.1 presents Australian students' reports of how much time they spent using digital devices to source and read information for their schoolwork overall, along with various student groups.

The majority of Australian students spent *30 minutes or less* per school day using digital devices to find and read information. Students who reported that they spent either *more than 30 minutes*, or *30 minutes or less*, had higher reading scores on average compared to students who spent *no time* using digital devices to find and read information for schoolwork.

The proportion of male students who reported spending *more than 30 minutes* per school day on digital devices (30%) was significantly higher than the proportion of female students who used digital devices at this level (24%). Among male and female students, those who reported using digital devices regularly for schoolwork (*30 minutes or less*, or *more than 30 minutes* per school day) scored higher, on average, in PIRLS 2021 than students who reported *no time* using digital devices to find and read information for their schoolwork.

Twenty-six per cent of students with a First Nations background reported *no time* using digital devices to source information for their schoolwork, compared to 15% of students from other backgrounds. For students with a First Nations background and students from other backgrounds, the average reading scores of students who used digital devices for *30 minutes or less* each school day were higher, on average, than the reading scores of students who did not use digital devices.

When time spent on digital devices was compared across students grouped by the number of books they reported having at home, there was some correspondence between students who reported fewer literary resources (books) and spending *no time* on digital devices for schoolwork. The proportion of students from homes with *a few books* who did not use digital devices for school work was higher than the corresponding proportions of students from homes with *many books* or *an average number of books*. For all students, regardless of the number of books at home, reading scores were higher, on average, among students who reported using digital devices for their schoolwork for *30 minutes or less* each school day compared to students who did not use digital devices to find and read information regularly.

TABLE 3.1: Australian students' time spent using digital devices to find and read information and Year 4 student performance in reading, by gender, student background and number of books in the home

	Students' time spent using digital devices to find and read information											
	More than 30 minutes				30 minutes or less				No time			
	Students (%)	SE (%)	Mean reading score	SE	Students (%)	SE (%)	Mean reading score	SE	Students (%)	SE (%)	Mean reading score	SE
Australia	27	1.1	545	2.9	57	1.1	547	2.3	17	1.0	516	5.2
Female	24	1.3	551	4.6	61	1.3	554	3.2	16	1.2	531	6.4
Male	30	1.4	541	3.9	53	1.4	538	3.0	17	1.3	502	6.3
First Nations background	21	2.9	492	10.2	52	3.1	503	6.4	26	3.0	471	12.2
Other background	27	1.2	550	2.9	57	1.1	551	2.5	15	1.0	525	4.8
Many books	32	2.0	565	6.3	53	2.3	576	5.3	14	2.0	529	18.4
Average number of books	28	1.4	555	3.7	57	1.4	557	2.7	15	1.3	539	5.4
A few books	22	1.5	512	6.0	58	1.8	513	3.4	20	1.4	480	7.0

4

Schools and the learning environment

Key findings

- ✓ 46% of Australian Year 4 students attended schools in which principals had completed a master's degree and 2% were in schools in which the principal held a doctorate or PhD.
- ✓ More than half of the PIRLS 2021 students were in schools in which the principal had less than 10 years' experience.
- ✓ 40% of Australian Year 4 students attended *more affluent* schools, 26% attended *more disadvantaged* schools and 34% attended schools that were *neither more affluent nor more disadvantaged* according to their principals' reports.
- ✓ Students in *more affluent* schools recorded higher reading scores (562 points), on average, than students in *more disadvantaged* schools (508 points). In terms of the PIRLS benchmarks, students in *more affluent* schools, on average, performed at the High benchmark level, while those in *more disadvantaged* schools were at the Intermediate benchmark.
- ✓ Around half (47%) of PIRLS 2021 students attended schools in which more than 90% of the student population spoke English as their first language, while one-fifth (20%) attended schools in which less than half the students spoke English as their first language. There were no significant differences in the average reading scores of students grouped by the language background of the school body.
- ✓ 40% of Year 4 students attended schools whose principals reported that *less than 25% of students enter school with literacy skills*. Students in these schools scored lower (532 points), on average, than students in schools in which *more than 75% of students enter with literacy skills* (556 points).
- ✓ Just 1% of Australian Year 4 students attended schools where instruction was deemed to be *affected a lot by resource shortages*. Most students (65%) attended schools that were *not affected by resource shortages*, while 33% of students attended schools that were *somewhat affected by resource shortages*.
- ✓ More than half of Australian Year 4 students were categorised as having a *high sense of school belonging*, and only 8% of students reported *little sense of belonging*.
- ✓ Most students attended schools whose principals reported that their school placed a *high* (58%) or *very high emphasis* (13%) on academic success.
- ✓ Students in schools where principals reported a *very high emphasis on academic success* scored higher (566 points), on average, than students in schools with a *high emphasis on academic success* (545 points). Students in schools with a *high emphasis on academic success* scored higher, on average, in the PIRLS 2021 reading assessment than students in schools with a *medium emphasis on academic success* (520 points).

- ✓ Most Australian Year 4 students (69%) attended schools in which principals reported that there were *hardly any discipline problems*. Just 2% of students attended schools in which principals reported *moderate to severe problems*. Reading scores were higher, on average, in schools with *hardly any discipline problems* (548 points) than in schools with *minor discipline problems* (525 points). There were too few students in schools with *moderate to severe discipline problems* to calculate a meaningful average reading score.
- ✓ 85% of Australian Year 4 students in *more affluent* schools benefit from environments in which the principal reported *hardly any problems* with school discipline. Only principals of *more disadvantaged* schools reported that their schools suffered from *moderate to severe problems* with discipline.
- ✓ 52% of Australian Year 4 students reported that they are *almost never* bullied. Around 35% reported being bullied *about monthly* and just 13% reported being bullied *about weekly*. On average, students who were bullied *about weekly* scored lower (508 points) on the PIRLS 2021 than students who were *almost never* bullied (553 points).

The contexts in which teaching and learning occur constitute an important component of the PIRLS framework. This chapter focuses on schools and the school environment for learning, while Chapter 5 examines the teachers and the teaching of reading in Australia.

It should be noted that, because PIRLS focuses on student outcomes, the results from the school and teacher questionnaires are presented with regard to students. That is, each result is reported as the percentage of students who attended a school that has a certain characteristic or the percentage of students who had a teacher that responded in a particular way.

School context for teaching and learning

Principals' qualifications

Principals were asked about their highest level of formal education, which is presented in Table 4.1. In 2021, 46% of Australian students attended schools in which principals had completed a master's degree, and 2% were in schools in which the principal held a PhD or doctorate. Although the proportions of students in schools where the principal held a master's degree or an undergraduate degree seem to have changed between 2016 and 2021, there was no significant difference.

TABLE 4.1: Principals' formal education, PIRLS 2016 and PIRLS 2021

PIRLS cycle	Percentage of students by principals' educational level									
	PhD or doctorate		Master's degree		Graduate or postgraduate diploma		Undergraduate or bachelor's degree		TAFE or college diploma	
	Students (%)	SE	Students (%)	SE	Students (%)	SE	Students (%)	SE	Students (%)	SE
2016	1	0.7	39	3.2	18	2.7	40	3.4	0.6	0.4
2021	2	1.0	46	3.8	19	3.2	33	3.2	0	0.0

Principals' years of experience

The distribution of principals' experience from PIRLS 2021 is presented in Table 4.2, alongside the data from PIRLS 2016. More than half of the students in PIRLS 2021 (56%) attended schools in which principals had less than 10 years' experience, and around one-fifth (20%) attended schools in which principals had 20 years or more experience. On average, Australian principals in PIRLS 2021 had 10 years of experience as a principal, the same as in PIRLS 2016. While it looks as though there are some differences between the 2016 and 2021 data, none are statistically significant.

TABLE 4.2: Principals' years of experience, PIRLS 2016 and PIRLS 2021

PIRLS cycle	Percentage of students by principals' years of experience								Average years of experience as a principal	
	20 years or more		At least 10 but less than 20 years		At least 5 but less than 10 years		Less than 5 years		Mean	SE
	Students (%)	SE	Students (%)	SE	Students (%)	SE	Students (%)	SE		
2016	15	2.9	32	3.8	25	2.9	27	3.1	10	0.5
2021	20	2.6	24	3.3	32	3.9	24	3.6	10	0.6

School socioeconomic composition

As presented in the *Reader's guide* and Chapter 2, Australian schools were categorised as being *more affluent*, *more disadvantaged* or *neither more affluent nor more disadvantaged* according to the responses made by principals to items on the school questionnaire. Figure 4.1 presents the proportions of students in schools in each of these categories, along with their average reading scores.

In 2021, 40% of Australian Year 4 students attended *more affluent* schools, 26% attended *more disadvantaged* schools, and 34% attended schools that were *neither more affluent nor more disadvantaged*. These percentages were similar to those reported in PIRLS 2016.

As can be seen in Figure 4.1 and underlining what has been reported in myriad other studies, there is a clear relationship between the composition of the student body and average reading performance at Year 4. There is a substantial gap (54 points on average) between those who attend *more affluent* schools and those who attend *more disadvantaged* schools. In terms of the PIRLS benchmarks, students in *more affluent* schools, on average, performed at the High benchmark level, while those in *more disadvantaged* schools performed at the Intermediate benchmark.

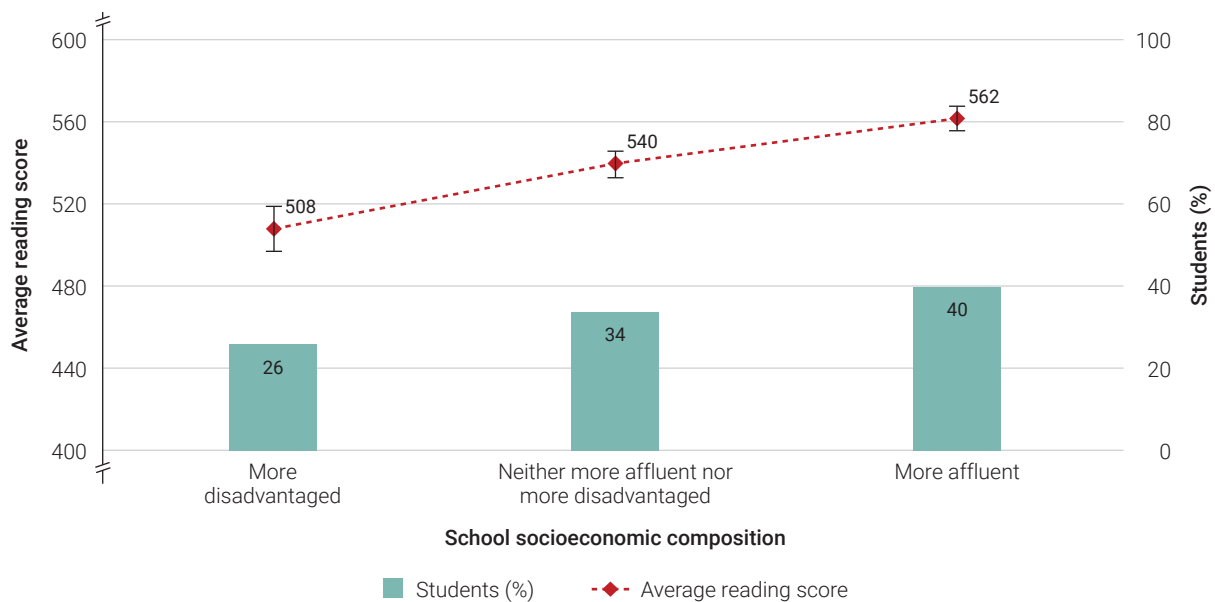


FIGURE 4.1: Socioeconomic composition of Australian schools and average PIRLS 2021 reading scores

Language background of school populations

The predominant language spoken at home can be an important factor in the development of a student’s reading literacy (see Bruggink et al., 2022 for a summary of research on reading comprehension among multilingual students). Additionally, when a student body is composed predominantly of students who do not have the language of instruction as a first language, there may be added layers of challenge for schools and teachers in communicating with parents about reading approaches, learning strategies, even homework requirements. Not speaking the language of instruction and the language of reading literacy at home may not be the same obstacle for the Australian PIRLS 2021 cohort as it was in the past. Results presented in Chapter 2 indicated that there was no difference in the average PIRLS 2021 reading scores of students who spoke English as their main language at home and the reading scores of students who spoke another language at home.

The PIRLS 2021 school questionnaire asked principals what proportion of the student body had English as their first language. Figure 4.2 presents the proportion of Australian students in each of the 3 language group categories (50% or less; 51 to 90%; more than 90% have English as a first language), along with their average reading scores. According to Australian principals, 47% of Year 4 students attended schools in which more than 90% of the student population spoke English as their first language, while 20% attended schools in which 50% or less of the student body spoke English as their first language.

Interestingly, there were no significant achievement differences between the 3 groups of schools. This contrasts with PIRLS 2016 results, in which average reading scores for students who attended schools where almost all (more than 90%) of students spoke English as their first language were significantly higher than for students in the other 2 groups.

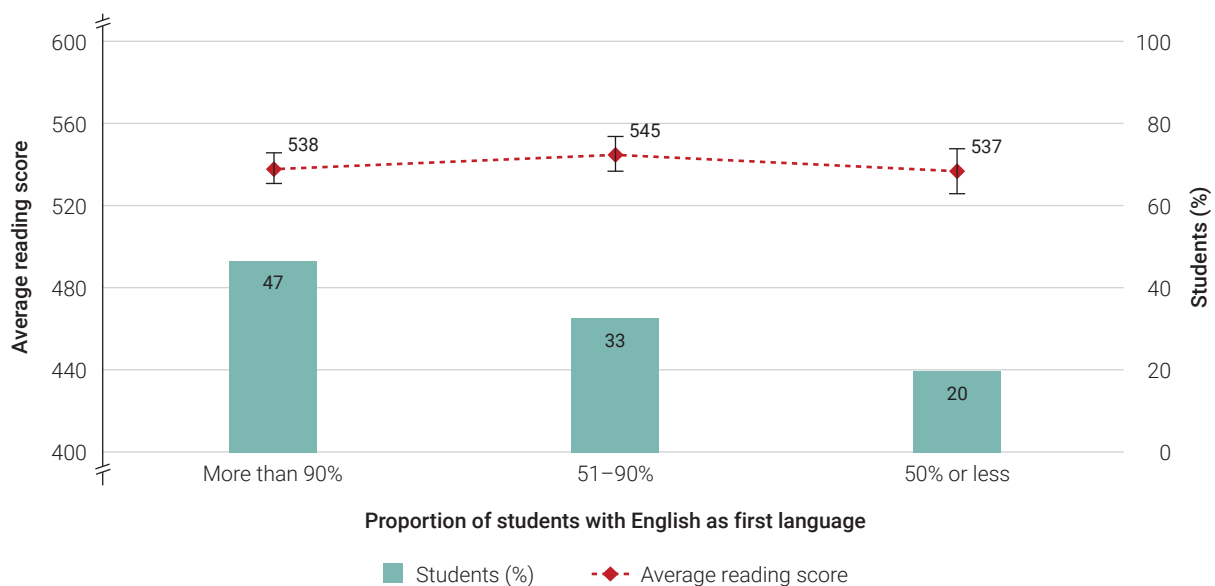


FIGURE 4.2: Language background of Australian schools and average PIRLS 2021 reading scores

Students entering school with literacy skills

School principals were asked to indicate what proportion of students in their school (more than 75%; 51–75%; 25–50%; or less than 25%) had basic literacy skills, such as being able to write letters of the alphabet or write sentences, when they began their first year of primary school. Figure 4.3 shows these proportions along with the mean reading score for each group of students.

In Australia, about 20% of students attended schools in which *more than 75% of students enter with literacy skills*. At the other end of the scale, 40% of Year 4 students attended schools in which *less than 25% of students enter school with literacy skills*.

The average reading scores for students who attended schools in which *less than 25% of students entered with literacy skills* was 532 points, which was significantly lower than the 556 points attained by students who attended schools in which *more than 75% of students entered with literacy skills*.

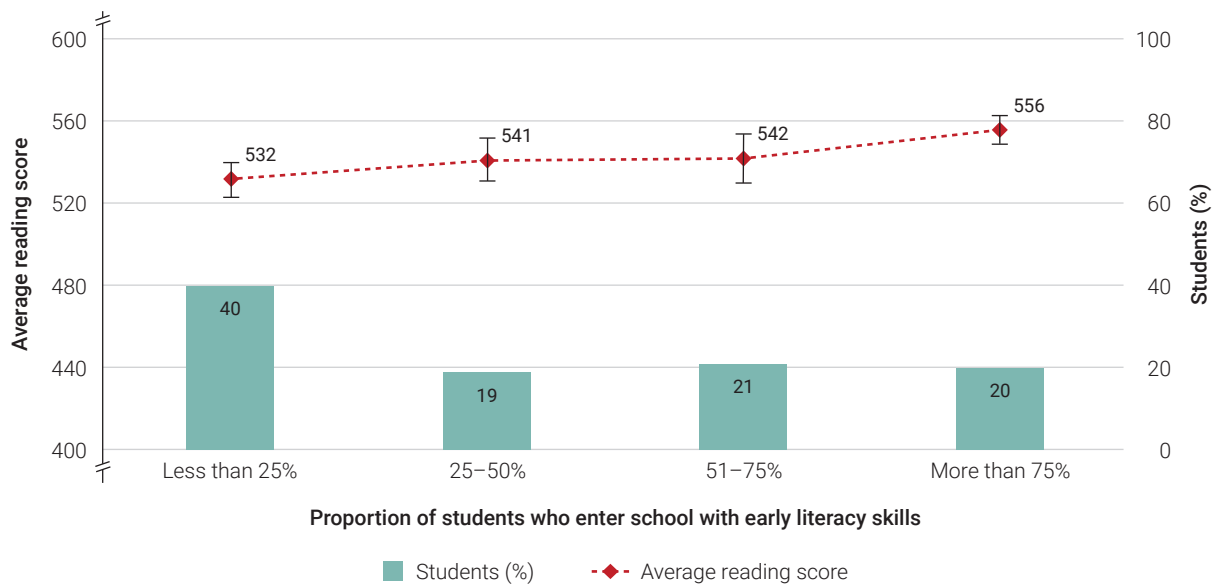


FIGURE 4.3: Australian principals' reports of proportions of students who started primary school with early literacy skills and average PIRLS 2021 reading scores

Figure 4.4 presents the proportions of students in each of the 3 early literacy categories for *more affluent* schools and *more disadvantaged* schools. Of those at *more affluent* schools, 33% attended a school where *more than 75% enter with literacy skills*, compared to 5% in *more disadvantaged* schools. At the other end of the scale, almost two-thirds (65%) of students at *more disadvantaged* schools are in schools where *less than 25% enter with literacy skills*, compared to 28% of those who attended *more affluent* schools.

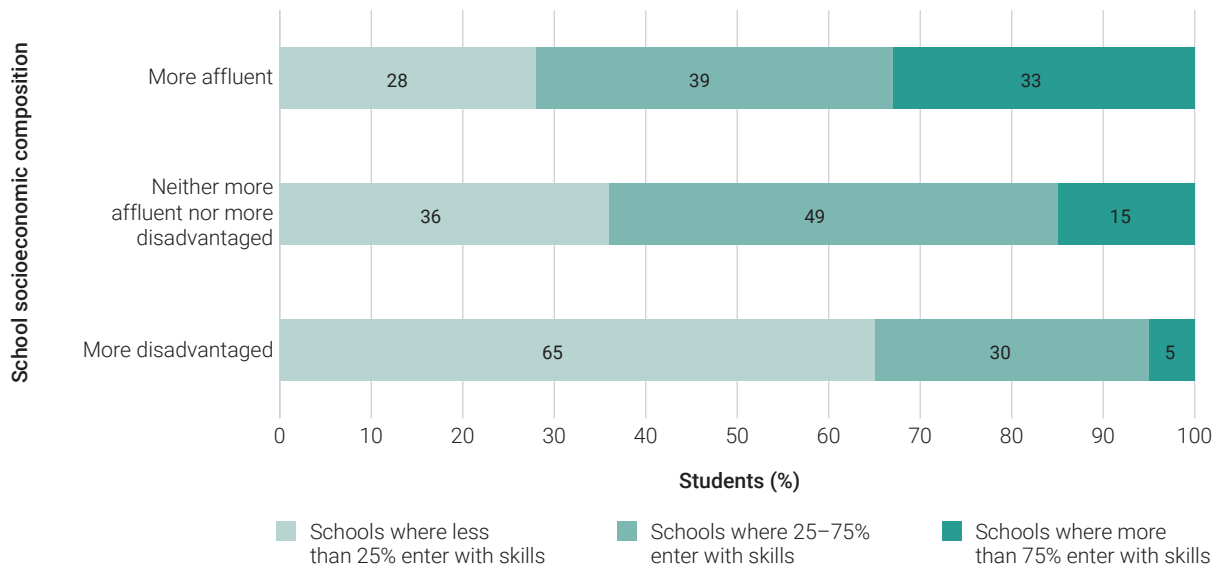


FIGURE 4.4: Proportion of Australian students who started primary school with early literacy skills and school socioeconomic composition

Figure 4.5 shows the average reading scores for each of the 3 groups of students by the socioeconomic composition of their school. While the influence of socioeconomic background is evident, it is notable that in those schools in which *more than 75% of students enter with literacy skills* there was no significant difference in average reading scores, no matter what the socioeconomic composition of the school body.

The provision of school resources to facilitate the literacy development and growth of students at schools in which the majority of students enter with few literacy skills is critical in ensuring that all students have equal opportunities to develop these skills.

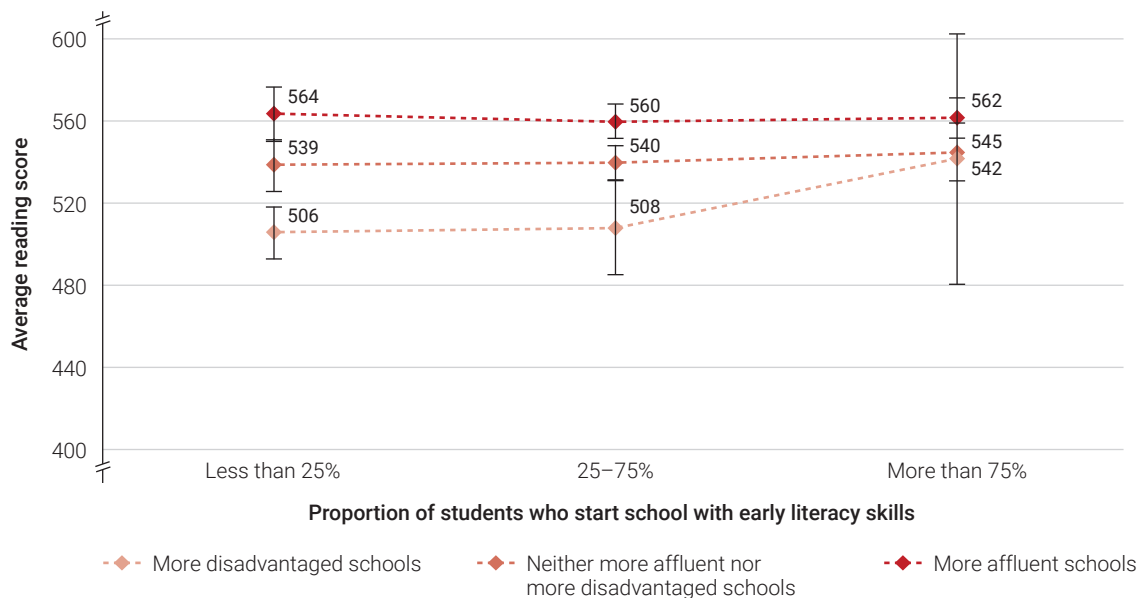


FIGURE 4.5: Average PIRLS 2021 reading scores by proportions of Australian students who started primary school with early literacy skills and school socioeconomic composition

Instruction affected by reading resource shortages

The extent and quality of school resources is also critical for quality instruction. Results from previous PIRLS cycles have shown that students in schools that are well resourced generally have higher levels of reading achievement than schools in which principals deem that shortages of resources affect the school's capacity to provide instruction.

Principals were asked to comment on how much their school's capacity to provide instruction was affected by a shortage of – or inadequacy in – a number of general resources, such as classroom supplies and instructional space, and reading instruction resources such as library resources, books and teachers with specialisations in reading instruction. Principals' responses to these items were combined to create the Instruction Affected by Reading Resource Shortages scale, and students were assigned to 1 of 3 groups based on their principal's scale score (see [Appendix A](#) for further information regarding scale construction and group assignment).

Figure 4.6 presents the proportions of Australian students in each of these groups, along with their average reading scores.

In Australia, most students (65%) attended schools that were *not affected by resource shortages*, while 33% of students attended schools that were *somewhat affected by resource shortages*. Just 1% of Australian Year 4 students attended schools where instruction was deemed to be *affected a lot by resource shortages*. These proportions are similar to those reported in PIRLS 2016.

There was no significant difference in the average reading scores for students in the *not affected* and *somewhat affected* groups, and there were too few students who attended schools that were *affected a lot by resource shortages* to accurately calculate a mean reading score.

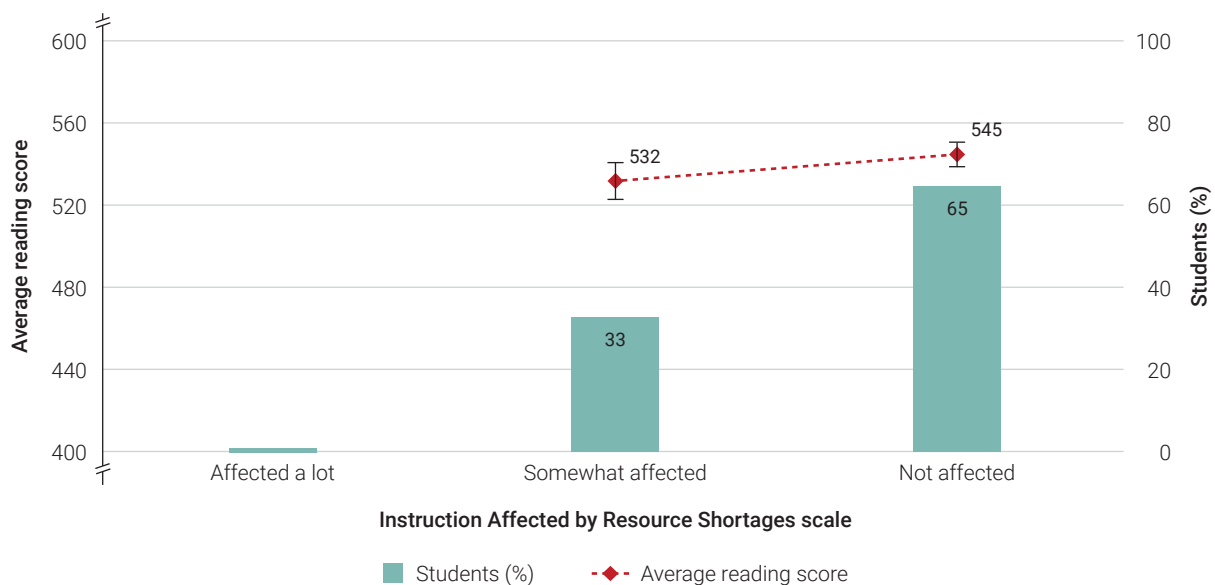


FIGURE 4.6: The Instruction Affected by Reading Resource Shortages scale and average PIRLS 2021 reading scores

School climate

Along with the structural and physical environment of the school captured in the resourcing items, 2 other important aspects of the school context in which students find themselves are the emotional and academic environments. These are explored in the following sections from the perspectives of the students themselves, their teachers, and their principals.

Students' sense of belonging

Students were asked to comment on how they felt about being at school – whether they felt safe, felt like teachers were fair to them and that they belonged at school.

Responses to these items were combined to create the Students' Sense of School Belonging scale, and scale scores were used to classify students into 3 groups – those with *little sense of school belonging*, those with *some sense of school belonging*, and those with a *high sense of school belonging*.

The percentages of Australian students in each group, along with the associated average reading score for each group, are shown in Figure 4.7.

On average in Australia, just over half of the surveyed students (54%) had a *high sense of school belonging*, and only 8% of Year 4 students reported *little sense of belonging*. These proportions are similar to those found in PIRLS 2016.

A higher sense of school belonging was reflected in significantly higher reading performance; students with a *high sense of belonging* scored an average of 549 points, significantly higher than those with *some sense of belonging* (537 points) and those with *little sense of belonging* (508 points).

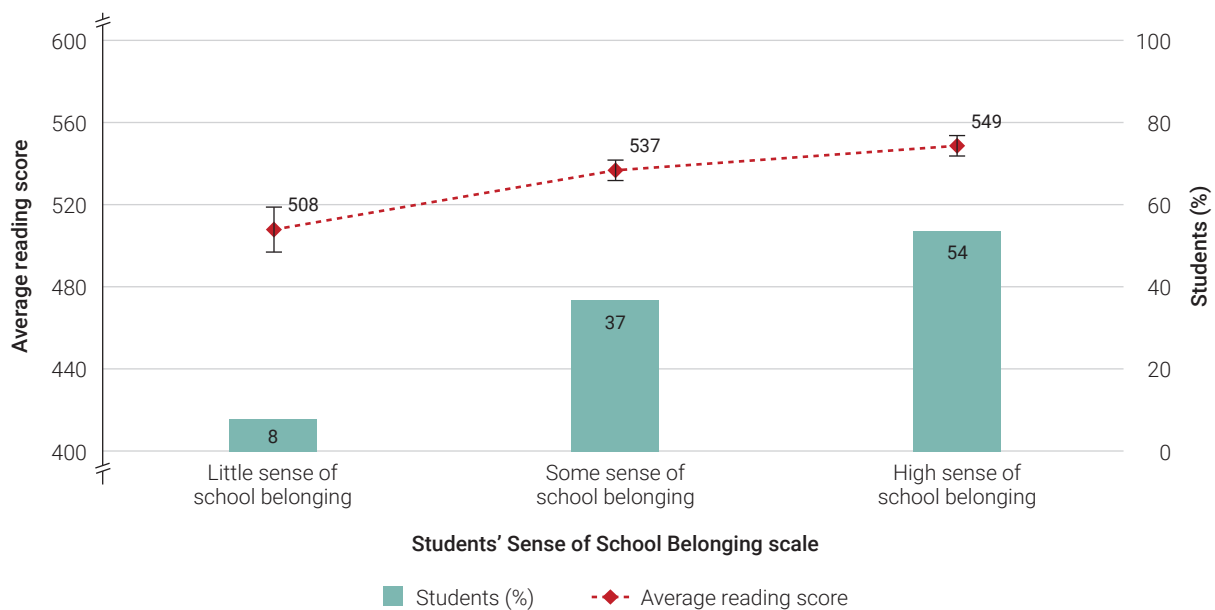


FIGURE 4.7: The Students' Sense of Belonging scale and average PIRLS 2021 reading scores

School emphasis on academic success: Principals' reports

One of the keys to the success of a school is its emphasis on academic success. In PIRLS 2021, both principals and teachers were asked about the extent to which the school emphasises academic success.

Principals' views about the academic climate of their schools, that is, the degree to which a school supports and encourages academic success, were collected using principals' responses to a set of 12 items. These included questions about their teachers' general expectations for student achievement, the level of involvement of parents in school activities and students' desires to do well at school.

Principals' responses were combined to create the School Emphasis on Academic Success scale. Students were then assigned to 3 groups based on their principal's scale score. The percentage of students in each group, along with their average reading score, is shown in Figure 4.8.

Most students attended schools in which principals reported that their school placed a *high* (58%) or *very high emphasis* (13%) on academic success; however, 29% of students attended schools in which principals reported *medium emphasis*. These percentages are very similar to those reported for PIRLS 2016.

Higher emphasis on academic success was clearly related to student achievement. Students who attended schools in which the principal reported a *very high emphasis* on academic success scored an average of 566 points. This was significantly higher than the average of 545 points for students at schools that placed a *high emphasis*, which in turn was significantly higher than the 520 points for those at schools in which a *medium emphasis* was placed on academic success.

Substantial differences between *more affluent* and *more disadvantaged* schools were evident on the School Emphasis on Academic Success scale (see Figure 4.9). Only 3% of students who attended *more disadvantaged* schools were in schools with a *very high emphasis* on academic success, compared to 25% of students in *more affluent* schools. Conversely, just 7% of students in *more affluent* schools and 52% of students in *more disadvantaged* schools attended schools that had only a *medium emphasis* on academic success.

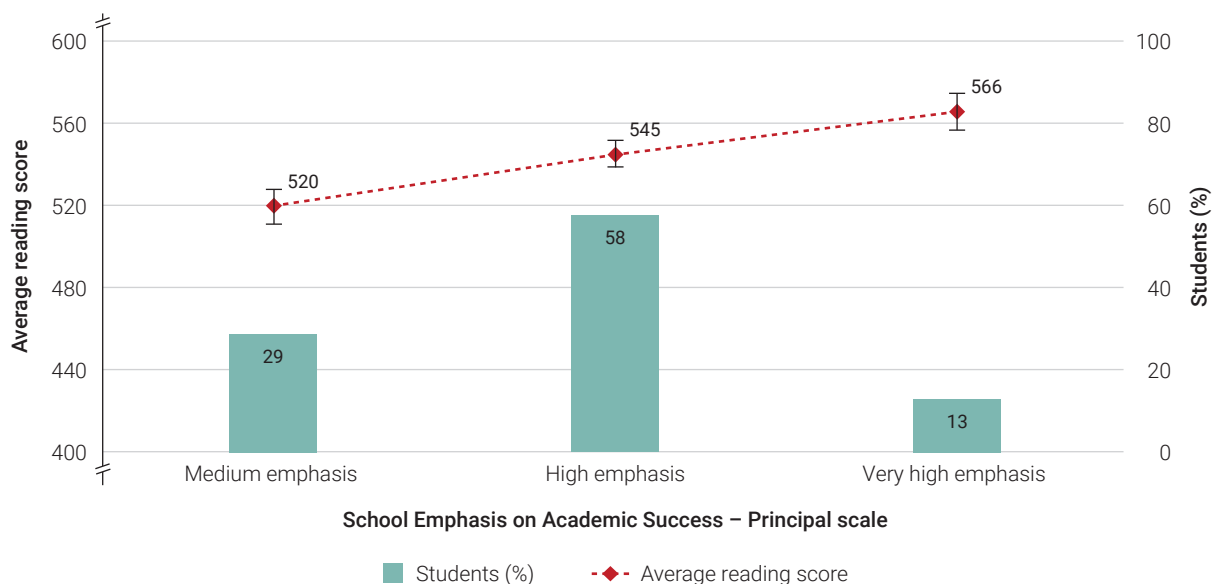


FIGURE 4.8: The School Emphasis on Academic Success scale (principals' reports) and average PIRLS 2021 reading scores

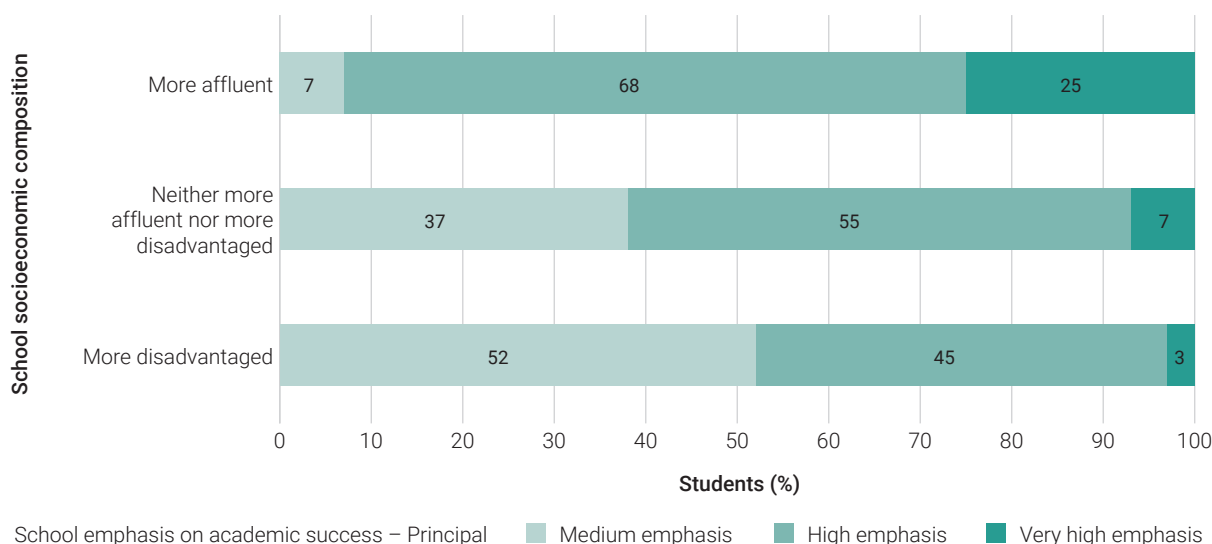


FIGURE 4.9: The School Emphasis on Academic Success scale (principals' reports) and Australian school socioeconomic composition

School emphasis on academic success: Teachers' reports

Teachers' views about the academic climate of their schools, that is, the degree to which a school supports and encourages academic success, were collected using teachers' responses to the same 12 items used for the principal's report of school emphasis on academic success.

Overall, the reports of level of school emphasis on academic success were similar between Australian teachers and principals, although teachers were, on average, less generous in their ratings than principals. Forty-eight per cent of students were taught by teachers who reported a *high emphasis* on academic success, while 44% of students attended schools in which teachers reported a *medium emphasis* (Figure 4.10).

As with principals' reports, the level of school emphasis on academic success was reflected in student reading scores. While there was no significant difference in the average scores of students at schools in which teachers reported a *very high* or *high emphasis* on success, the scores of students in both these groups were significantly higher than the reading scores for students in schools for which a *medium emphasis* was reported by teachers.

Substantial differences between *more affluent* and *more disadvantaged* schools were evident on the School Emphasis on Academic Success scale (Teachers' report) (see Figure 4.11). No students who attended *more disadvantaged* schools had teachers who reported a *very high emphasis* on academic success, compared to 15% of students in *more affluent* schools. Conversely, 31% of students in *more affluent* schools and 73% of students in *more disadvantaged* schools attended schools in which teachers reported only a *medium emphasis* on academic success.

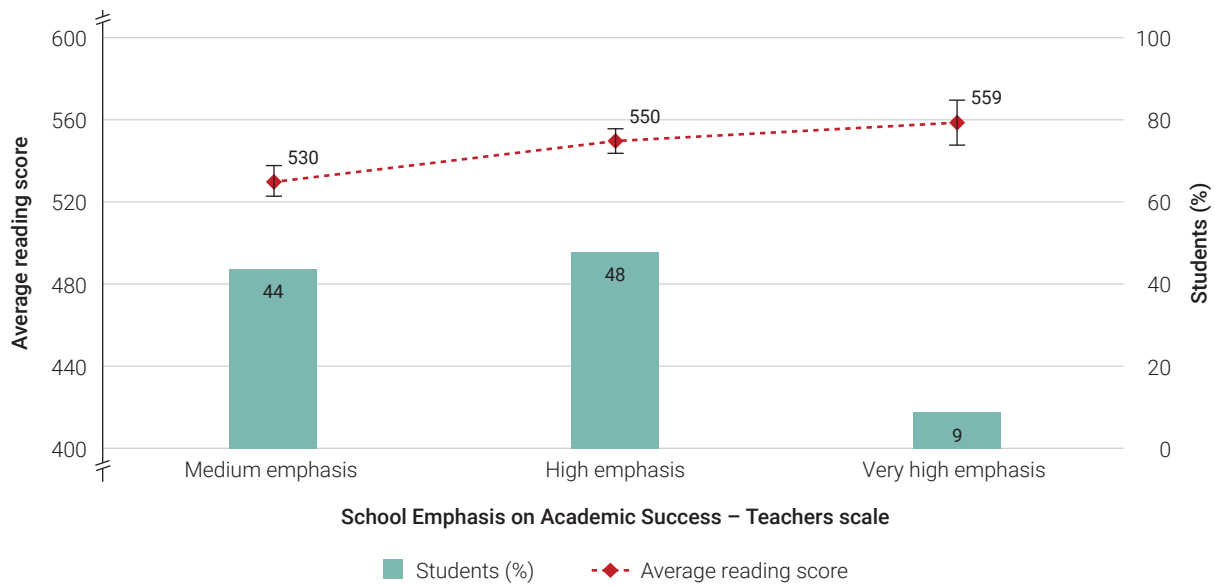


FIGURE 4.10: The School Emphasis on Academic Success scale (teachers’ reports) and average PIRLS 2021 reading scores

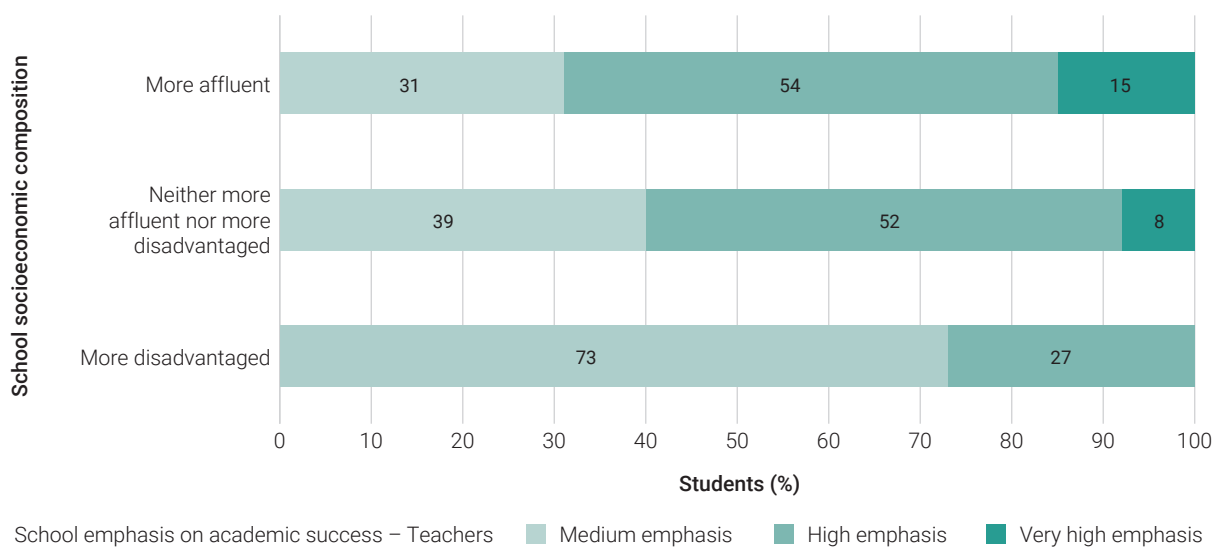


FIGURE 4.11: The School Emphasis on Academic Success scale (teachers’ reports) by Australian school socioeconomic composition

Teacher job satisfaction

Teachers’ satisfaction with their careers may be an important element in the classroom and school environment and could well impact on students’ own attitudes towards learning, the classroom and their achievement.

Teachers were asked to indicate how they felt about their profession, how regularly they felt enthusiastic about their job or felt pride in the work they did. The teachers’ responses were combined to create the Teacher Job Satisfaction scale. Students were then assigned to 3 groups based on their teacher’s scale score.

Figure 4.12 presents the results on this scale for Australia. Almost half (49%) of the Australian students in PIRLS 2021 were taught by teachers who were *very satisfied* with their profession (a decline from 58% in PIRLS 2016). A further 41% of students were taught by teachers who reported being *somewhat satisfied*. Ten per cent of students had teachers who were *less than satisfied* with their profession, an increase from the 2% recorded in PIRLS 2016. The average reading scores of students in each of these groups did not differ significantly from one another.

Interestingly, there was no difference in the average reports of teacher job satisfaction for teachers in *more affluent* or *more disadvantaged* schools.

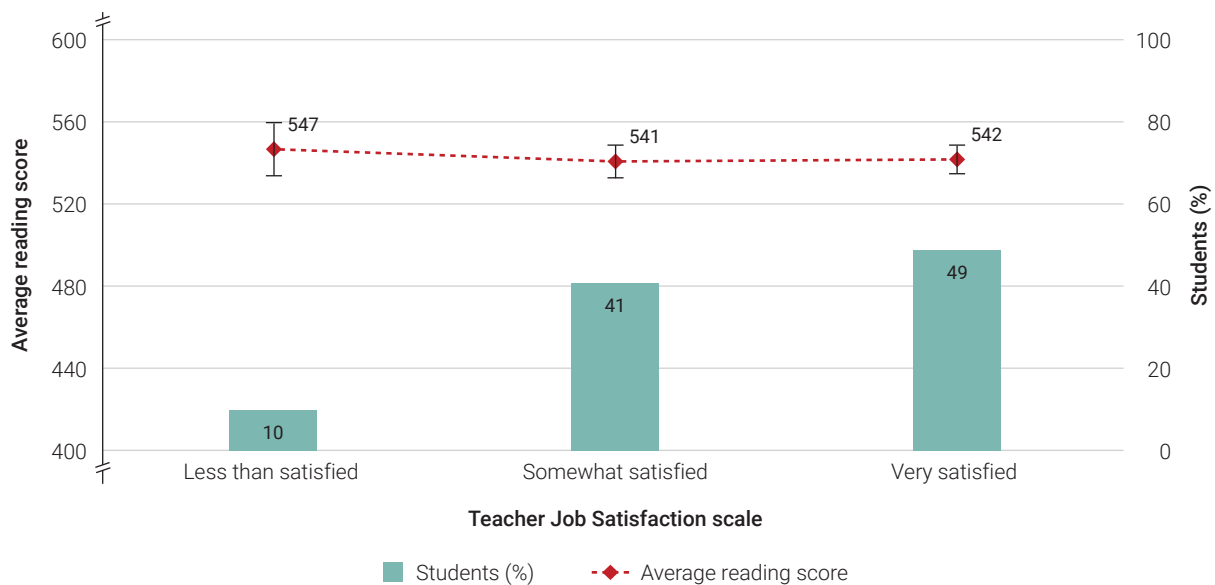


FIGURE 4.12: The Teacher Job Satisfaction scale and average PIRLS 2021 reading scores

Safety and discipline

A critical part of the school climate is the extent to which discipline problems in the school impede learning. A general lack of discipline, especially if teachers or students are concerned about their safety, is associated with lower levels of academic achievement.

Principals' reports of school discipline problems

Principals were asked to indicate the degree to which a number of behavioural issues, such as absenteeism, cheating, fighting and theft, were problematic among Year 4 students in their school. The principals' responses were combined to create the School Discipline Problems scale and students assigned to 3 groups based on their principal's scale score.

Most students (69%) attended schools in which principals reported that there were *hardly any problems* (Figure 4.13). The average reading score for these students was 548 points. This was significantly higher than the average score for the 29% of students who attended schools in which the principal reported *minor problems* (525 points). Just 2% of students attended schools in which the principal reported *moderate to severe problems*, but there were too few students in this category to calculate a meaningful average reading score.

The differences between *more affluent* and *more disadvantaged* schools on this scale were quite stark. As shown in Figure 4.14, 85% of Australian Year 4 students in *more affluent* schools were in

environments in which the principal reported *hardly any problems* with school discipline, compared with 48% of students who attended *more disadvantaged* schools who were in environments with *hardly any problems* with discipline. Only principals of *more disadvantaged* schools reported that their school suffered from *moderate to severe problems* with discipline.

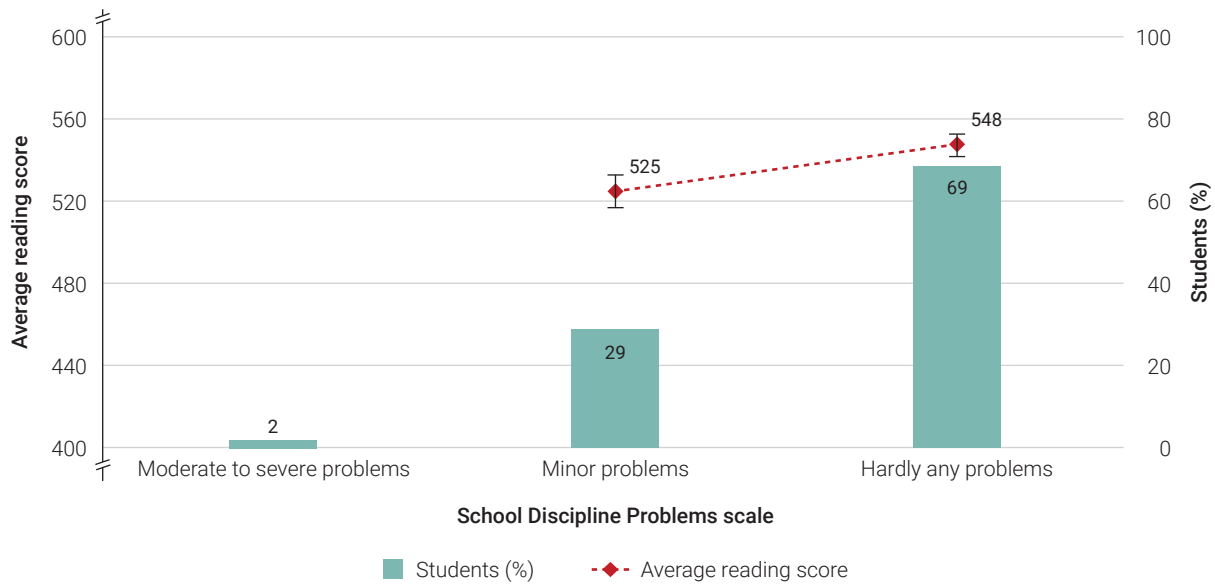


FIGURE 4.13: The School Discipline Problems scale and average PIRLS 2021 reading scores

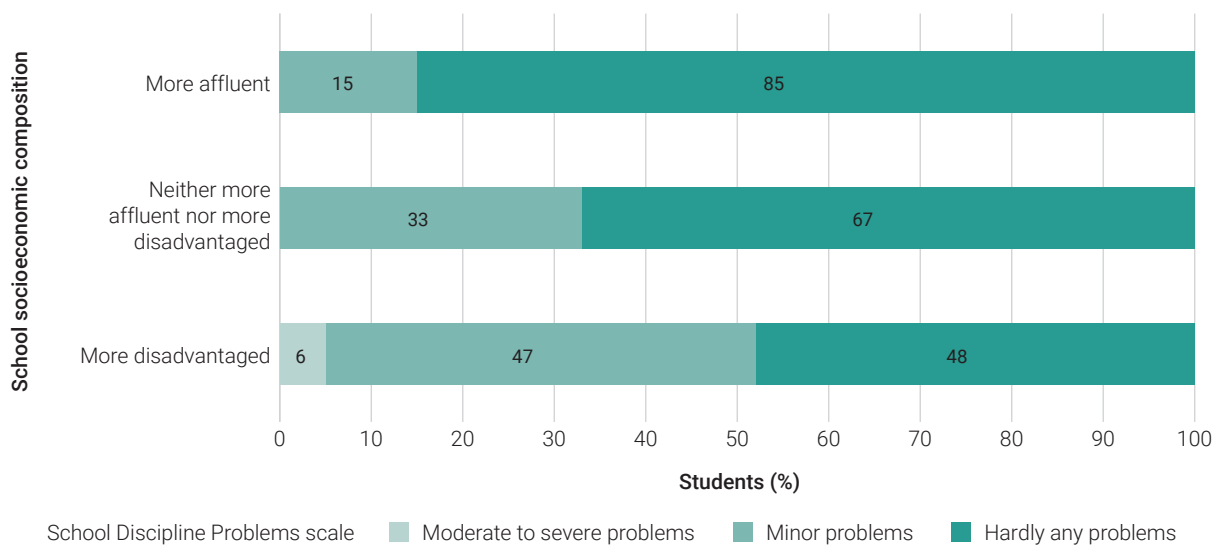


FIGURE 4.14: The School Discipline Problems scale by Australian school socioeconomic composition

Students' reports of bullying

Students' views of their personal safety at school were collected using 8 items that focused on their experiences of bullying behaviours. The Student Bullying scale was created by combining the responses to these items, and all students were assigned to 1 of 3 groups based on their Student Bullying scale score.

Just over half of the students (52%) reported that they are *almost never bullied*. Around one-third (35%) reported being bullied *about monthly* and just 13% reported being bullied *about weekly* (Figure 4.15).

Reading achievement scores were negatively related to bullying; students who were bullied *about weekly* scored, on average, 45 points less than those who were *almost never* bullied.

It is notable that while there are some differences between *more advantaged* and *more disadvantaged* schools on this measure, they are not as large as might be expected, showing that bullying is a more widespread issue than many of the others examined in this chapter. Figure 4.16 shows that a little over half of the students who attended *more affluent* schools said that they were *almost never* bullied, similar to the 47% of students who attended *more disadvantaged* schools who were *almost never* bullied. At the other end of the scale, 11% of students who attended *more affluent* schools felt that they were bullied *about weekly*, compared to 16% at *more disadvantaged* schools.

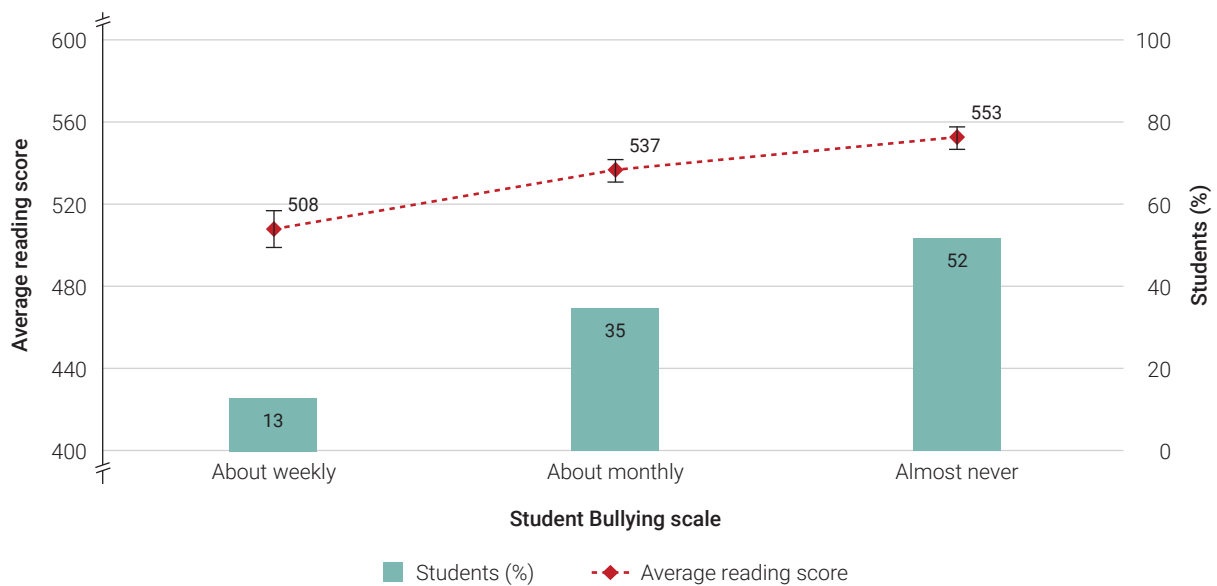


FIGURE 4.15: The Student Bullying scale and average PIRLS 2021 reading scores

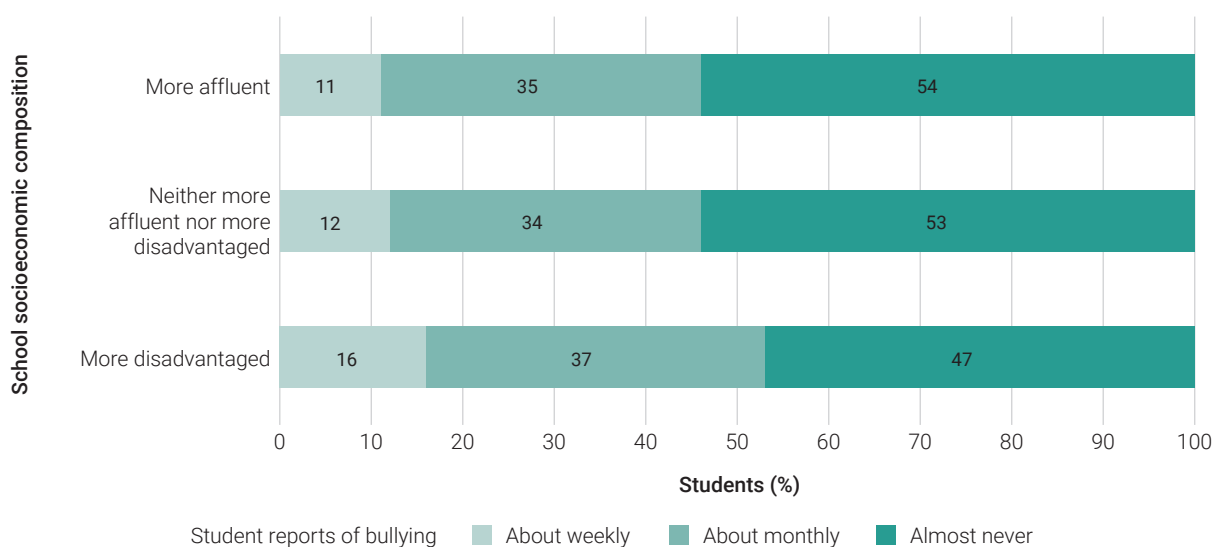


FIGURE 4.16: The Student Bullying scale by Australian school socioeconomic composition

5

Teachers and the teaching of reading in Australia

Key findings

- ✓ Nearly 40% of Australian students were taught reading by a teacher aged in their 40s or 50s.
- ✓ The majority of Year 4 students in Australia (81%) were taught reading by a female teacher.
- ✓ Since PIRLS 2016, the proportion of students with teachers who had at least 5 years *but less than 10 years* of experience has increased, while the proportions of students with very experienced teachers (20 years or more) and with relatively new teachers (less than 5 years' experience) have decreased.
- ✓ Most Australian Year 4 students had reading teachers whose training had emphasised pedagogy of reading (78%) or English language (72%).
- ✓ Almost all Australian students worked in same-ability groupings during their reading classes at *least sometimes*, including 30% who worked in these types of groups *every or almost every* lesson.
- ✓ 87% of Australian Year 4 students were assigned short stories *at least once a week* and 86% were assigned longer chapter books *at least once a week*. Students who were assigned longer chapter books *at least once a week* scored higher on the PIRLS assessment (544 points) than students who were assigned longer books less often (530 points).
- ✓ 65% of Australian Year 4 students were in classrooms in which reading instruction was *limited some* by students not being ready for learning due to hunger, tiredness, lack of prior learning or other related factors. 6% of students were in classrooms where instruction was limited *a lot* by these factors.
- ✓ Most students' teachers had participated in professional development in teaching reading skills or strategies, and differentiation of instruction to address students' needs and interests in the 2 years before PIRLS 2021. Far fewer students had reading teachers who had participated in professional development in the area of integrating technology into reading instruction during the same time.

Teachers

This section presents information about the teachers of students who participated in PIRLS 2021 in Australia, including teachers' background characteristics such as age, gender, qualifications and years of experience. Teachers can be an important influence on the learning outcomes of students. This is shown not just in student performance in assessments such as PIRLS, but in less tangible areas, such as attitudes and behaviours towards learning in general and reading.

A note about nomenclature: Australian Year 4 students do not usually have separate reading lessons, as reading is embedded in other subjects such as English or Language. Many Australian students are also taught all or most of their subjects by a single teacher or a small team of teachers, rather than by subject specialists. For these reasons, it is uncommon for Australian Year 4 students to have ‘a reading teacher’, or ‘reading teachers’, so these terms are used as shorthand for teachers responsible for teaching reading and related areas to Year 4 students.

Age and gender

Figure 5.1 shows the percentages of Australian Year 4 students whose teachers were in each of 6 age categories. Thirty-nine per cent of students were taught reading by a teacher aged in their 40s or 50s, with another 34% being taught reading by a teacher aged between 30 and 39 years. Only 3% of students had a reading teacher under 25 years and 8% had a reading teacher over 60 years.

There was some variation across the jurisdictions in the age profile of the teaching force – for example, 17% of Year 4 students in the Northern Territory were taught reading by a teacher under the age of 25, whereas no Western Australian or Tasmanian students had reading teachers in this age group. Fourteen per cent of students in Western Australia were taught reading by a teacher over 60, while only 1% of students in the ACT had reading teachers in this age group.

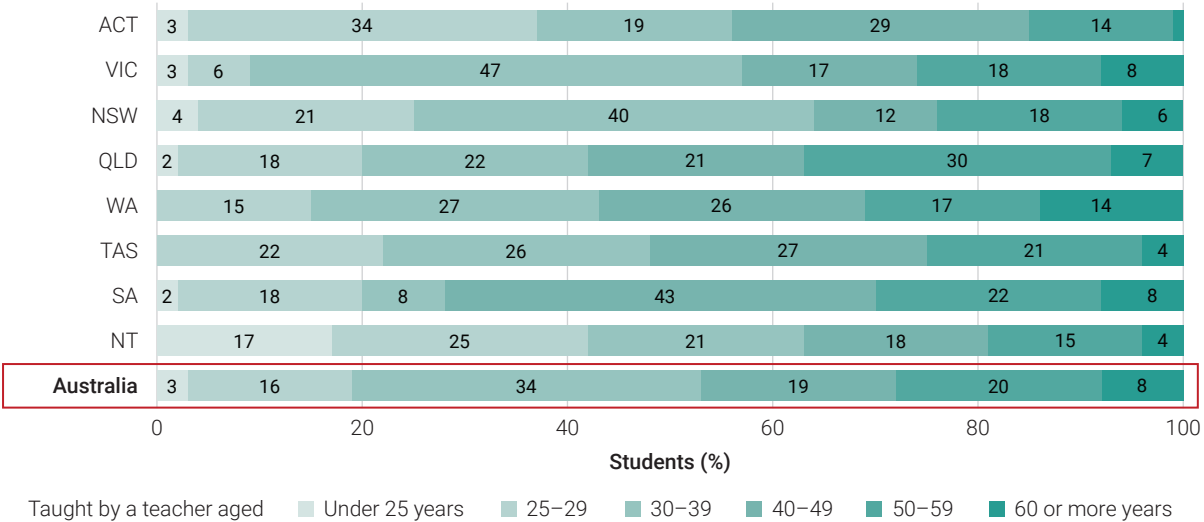


FIGURE 5.1: Percentage of PIRLS 2021 Year 4 students by age of reading teachers for Australia and jurisdictions

Figure 5.2 shows the gender of teachers of students in PIRLS 2021. The majority of Australian students were taught reading by a female teacher. This figure (81%) is similar to those reported in previous PIRLS cycles and is in line with profiles of the primary teaching profession reported in the *Schools* collection from the Australian Bureau of Statistics (ABS, 2022). There was some variation across the jurisdictions – more students in the Australian Capital Territory, Queensland and the Northern Territory had male reading teachers than in other jurisdictions.

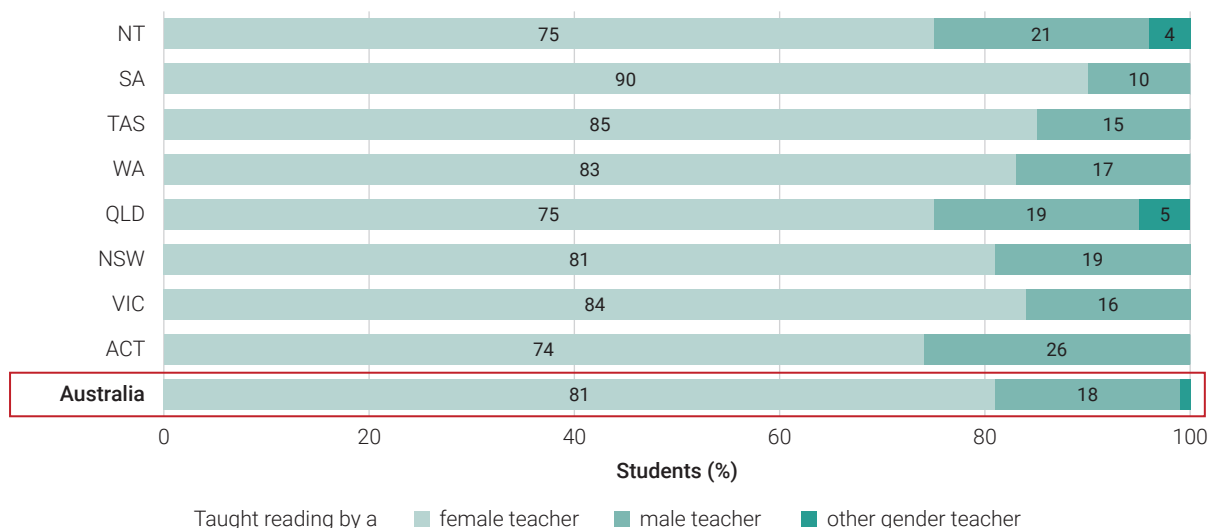


FIGURE 5.2: Percentage of PIRLS 2021 Year 4 students by gender of reading teachers for Australia and jurisdictions

Qualifications

The general qualifications of the Year 4 reading teachers in Australia are presented in Figure 5.3. Over 80% of Year 4 students were taught by a teacher with a bachelor degree or equivalent, with a further 18% of students being taught by a teacher with a master’s degree, doctorate or similar qualification. A small proportion of students had reading teachers who did not hold a bachelor degree but held a TAFE or college diploma. All of these teachers were in the older age groups and had likely completed their education and training before the current system of initial teacher preparation was introduced and 4-year undergraduate qualifications became the standard.

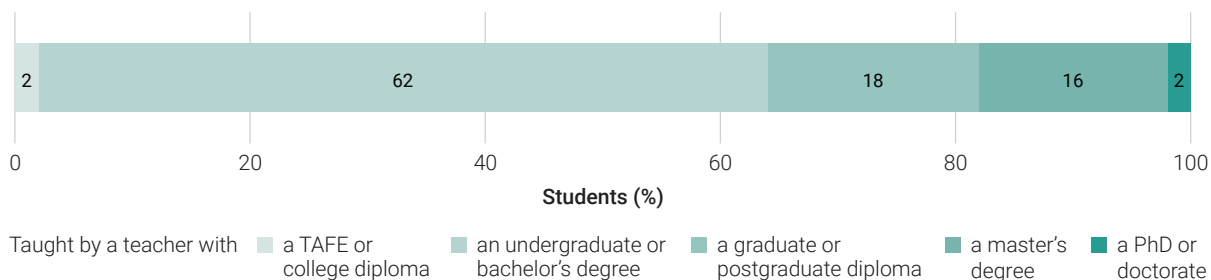


FIGURE 5.3: Percentage of PIRLS 2021 Year 4 students by qualification of reading teachers for Australia

Years of experience

Over half of Australian Year 4 students were taught reading by a teacher who had at least 10 years of experience, including 27% whose teachers had 20 years' or more experience.

Since PIRLS 2016, the proportion of students with teachers who had at least 5 years but less than 10 years of experience has increased, while the proportions of students with very experienced teachers (20 years or more) and the proportions with relatively new teachers (less than 5 years' experience) have decreased (Figure 5.4). These changes may reflect movement of the most experienced teachers out of the profession (into retirement) over time and a decrease in the number of newer teachers entering classrooms. The average years of experience of teachers has dropped from 17 years in PIRLS 2016 to 14 years in PIRLS 2021.

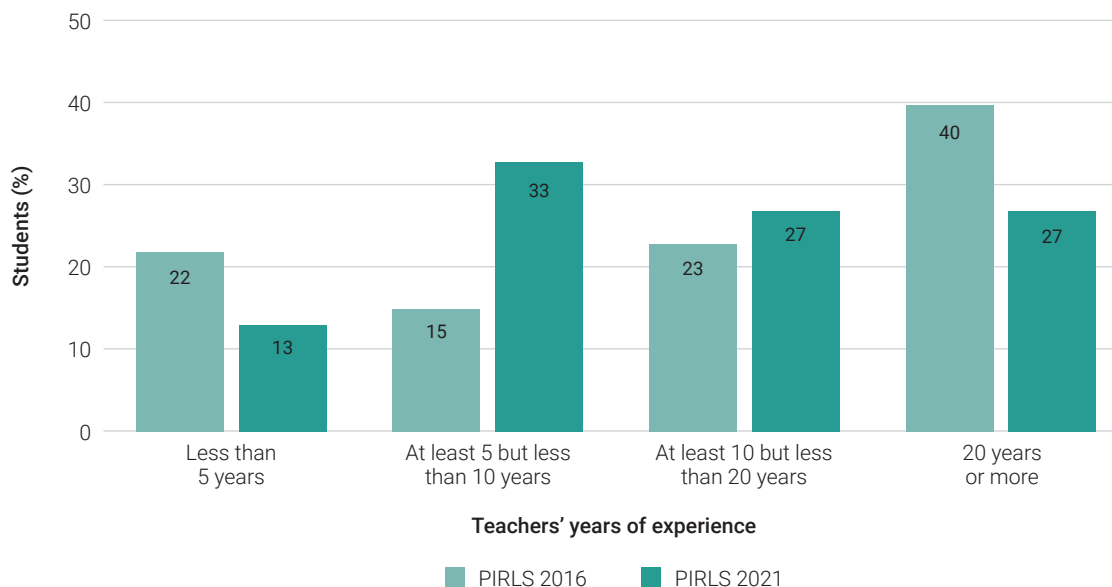


FIGURE 5.4: Percentage of PIRLS 2021 Year 4 students by experience of reading teachers for Australia

Emphasis on language and reading areas in teachers' formal education

Figure 5.5 presents the percentages of students whose teachers reported various areas of specialisation in their formal education. About three-quarters of students were taught reading by teachers who reported an emphasis on English language (72%) and pedagogy/teaching reading (78%). Close to half of the PIRLS 2021 students in Australia were taught by teachers whose education focused on literature (45%) and educational psychology (44%). Only 20% of students had reading teachers who had digital literacies emphasised during their formal education.

As shown in Table 5.1, students whose reading teachers reported an *emphasis* on or an *overview or introduction* to literature tended to score higher on the PIRLS 2021 assessment than students whose teachers had *not covered* this area at all in their teacher training. Students whose teachers had an *overview or introduction* to pedagogy or the teaching of reading during their training scored lower, on average, than students whose teachers reported an *emphasis* on this area of specialisation.

Teachers' reported areas of specialisation

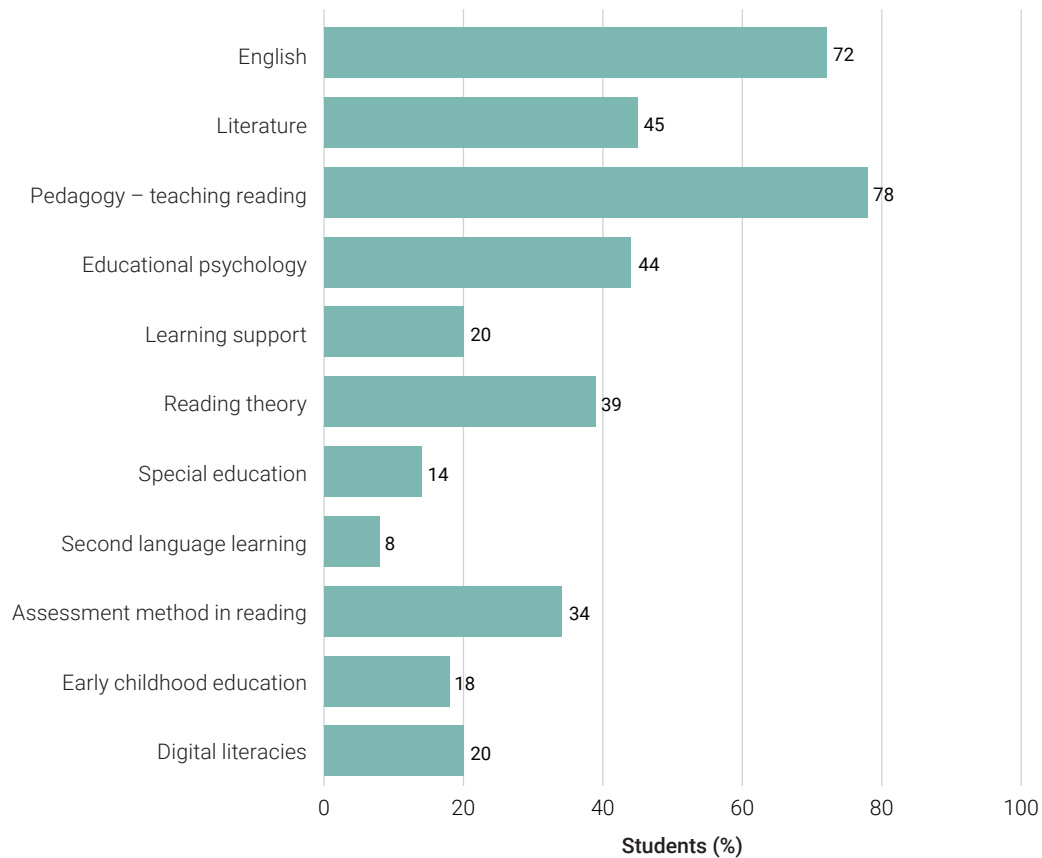


FIGURE 5.5: Percentage of Australian PIRLS 2021 students whose teachers reported areas of emphasis in their formal education

TABLE 5.1: Percentage of PIRLS 2021 Year 4 students and average PIRLS score by areas of emphasis in teachers' formal education for Australia

	Average reading score of students whose teachers reported ...					
	It was an area of emphasis		Overview or introduction to topic		Not covered at all	
	Mean reading score	SE	Mean reading score	SE	Mean reading score	SE
English	542	2.9	546	4.2	525	11.5
Literature	547	3.5	543	3.1	522	8.8
Pedagogy – teaching reading	546	2.6	529	5.2	534	10.4
Educational psychology	545	3.5	540	3.4	540	10.1
Learning support	542	5.9	545	3.0	537	5.3
Reading theory	545	3.6	542	3.9	531	6.4
Special education	538	7.3	543	3.0	542	4.9
Second language learning	542	10.0	540	3.8	544	3.2
Assessment method in reading	546	3.8	540	3.3	541	6.5
Early childhood education	537	4.9	545	3.6	542	4.4
Digital literacies	537	5.6	546	3.0	538	5.2

The teaching of reading

Instructional time

Based on teachers' reports of weekly instructional time for language and reading, and principals' reports of how many days the school was open for instruction (weekly and yearly), an estimate of the average hours per year spent on language and reading instruction was made and is shown in Table 5.2.

In PIRLS 2021, the average time spent on language instruction in Australia was 328 hours per year or 32% of instructional time. These figures are similar to those reported in PIRLS 2016.

TABLE 5.2: Time spent on language and reading instruction for Australia

	Total instruction hours per year (all subjects)	Language instruction (including reading, writing, speaking, literature and other language skills)		Reading instruction (including reading across the curriculum)	
		Hours per year	Total instruction time (%)	Hours per year	Total instruction time (%)
PIRLS 2016	1001	336	34	199	19
PIRLS 2021	1024	328	32	183	18

Organisation of students for reading instruction

Table 5.3 presents teachers' reports of how often they use different types of grouping for reading instruction. The most commonly reported grouping method in Australia was same-ability grouping, with 30% of Australian Year 4 students *always or almost always* taught this way and another 69% taught this way *often or sometimes*.

TABLE 5.3: Teachers' reports of grouping methods used in reading instruction for Australia

	Always or almost always		Often or sometimes		Never	
	Students (%)	SE	Students (%)	SE	Students (%)	SE
Reading taught as a whole-class activity	23	3.2	72	3.3	5	1.7
Same-ability groups created	30	3.5	69	3.5	1	0.5
Mixed-ability groups created	8	2.1	85	2.6	7	1.6
Individualised instruction for reading	17	3.2	80	3.1	3	1.1
Students work independently on an assigned plan or goal	14	2.6	83	2.8	4	1.5

Assignment of literary texts for reading instruction

For Australian PIRLS 2021 students, there appeared to be a benefit associated with the regular assignment (*once a week or more*) of longer fiction books with chapters as shown in Table 5.4. Students who were assigned such texts weekly scored a statistically significant 14 points higher, on average, than students whose teachers assigned longer books *less than once a week*. Students whose teachers assigned plays for reading instruction *once a week or more* often scored lower, on average, than students whose teachers used these texts less often. While these differences in average reading scores may not be as large as those associated with other factors, regular use of longer fictions books is certainly a factor that is within the control of reading teachers.

TABLE 5.4: Teachers' reports of types of literary texts assigned for reading instruction for Australia

	Once a week or more				Less than once a week			
	Students %	SE of %	Mean reading score	SE of mean	Students %	SE of %	Mean reading score	SE of mean
Short stories	87	2.5	541	2.5	13	2.5	551	5.0
Longer fiction books with chapters	86	2.3	544	2.6	14	2.3	530	5.3
Plays	15	2.8	529	6.5	85	2.8	544	2.5
Poems/poetry	17	3.1	532	6.7	83	3.1	544	2.6

Assignment of informational texts for reading instruction

In Australia, 83% of students were assigned non-fiction subject area books for reading weekly, 60% of students were assigned non-fiction articles to read weekly and 66% were assigned non-continuous texts, such as diagrams, maps, illustrations, photographs, or tables for reading instruction (Table 5.5). There were no differences in average performance on the PIRLS assessment associated with the regularity of assignment of different types of informational texts.

TABLE 5.5: Teachers' reports of types of informational texts assigned for reading instruction for Australia

	Once a week or more				Less than once a week			
	Students %	SE of %	Mean reading score	SE of mean	Students %	SE of %	Mean reading score	SE of mean
Non-fiction subject area books or textbooks	83	2.8	543	2.8	17	2.8	539	4.4
Longer non-fiction books with chapters	43	3.5	539	4.1	57	3.5	544	2.7
Non-fiction articles	60	3.6	544	2.9	40	3.6	539	4.5
Non-continuous texts	66	3.3	543	2.7	34	3.3	540	4.5

Reading comprehension skills and strategies

Figure 5.6 presents teachers' reports about the reading skills and strategies that they emphasised in their reading instruction on at least a weekly basis. At least weekly, almost all Year 4 students in Australia were asked to either locate information within a text, identify the main ideas, and explain or support their understanding of what they read in their lessons. Fewer students regularly worked on digital literacy skills during reading instruction, such as determining the usefulness of a website for a specific purpose or evaluating the credibility of a website (42% and 34%, respectively).

Proportion of students who were asked to do this once a week or more

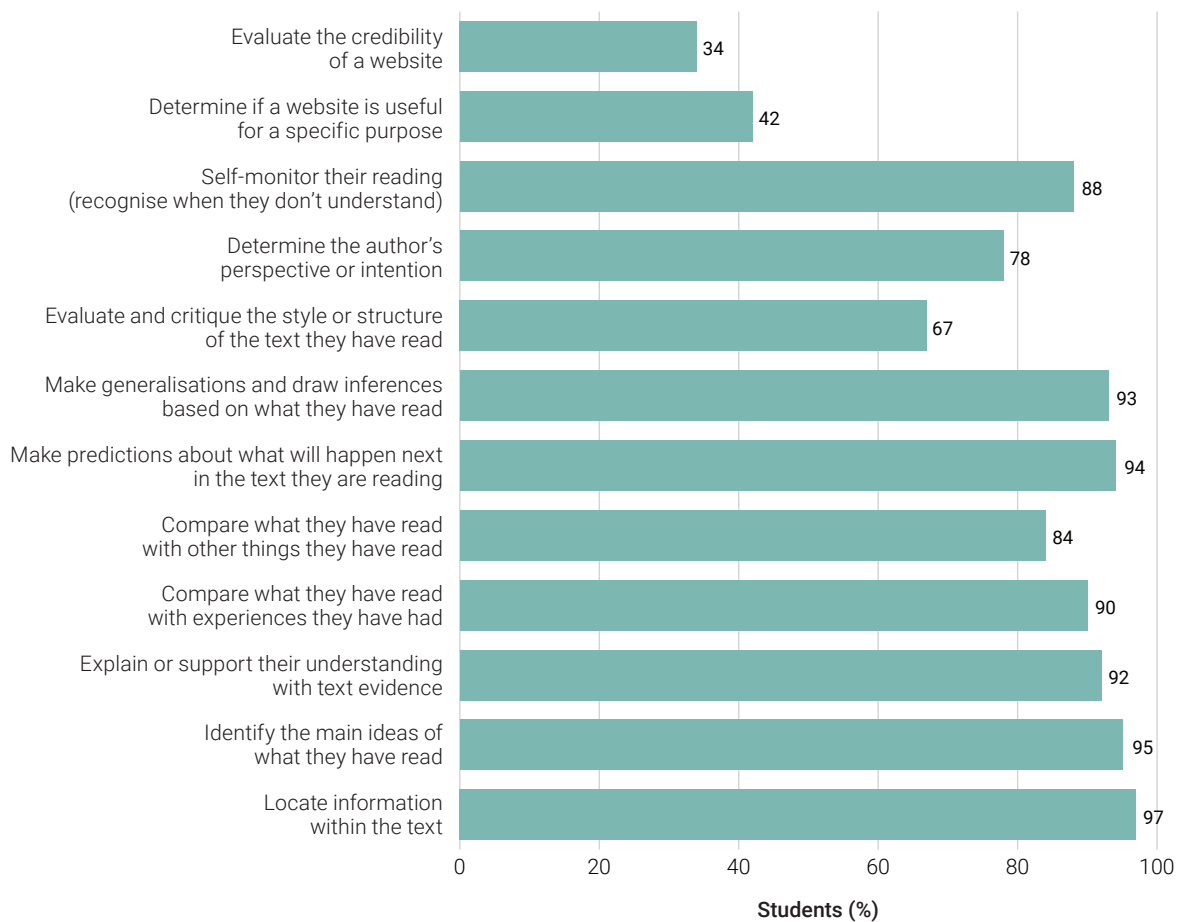


FIGURE 5.6: Percentage of Australian PIRLS 2021 students whose teachers emphasised these reading comprehension skills and strategies at least once a week

Reading instruction strategies

Figure 5.7 presents teachers' reports of the reading instruction strategies that they used in every or almost every lesson. The majority of Australian Year 4 students were encouraged to discuss the texts they read and deepen their understandings of the texts in every or almost every reading lesson. Far fewer Year 4 students were encouraged to read texts with multiple perspectives or to challenge the opinion expressed in the text in every lesson.

Students whose teachers did this every or almost every lesson ...

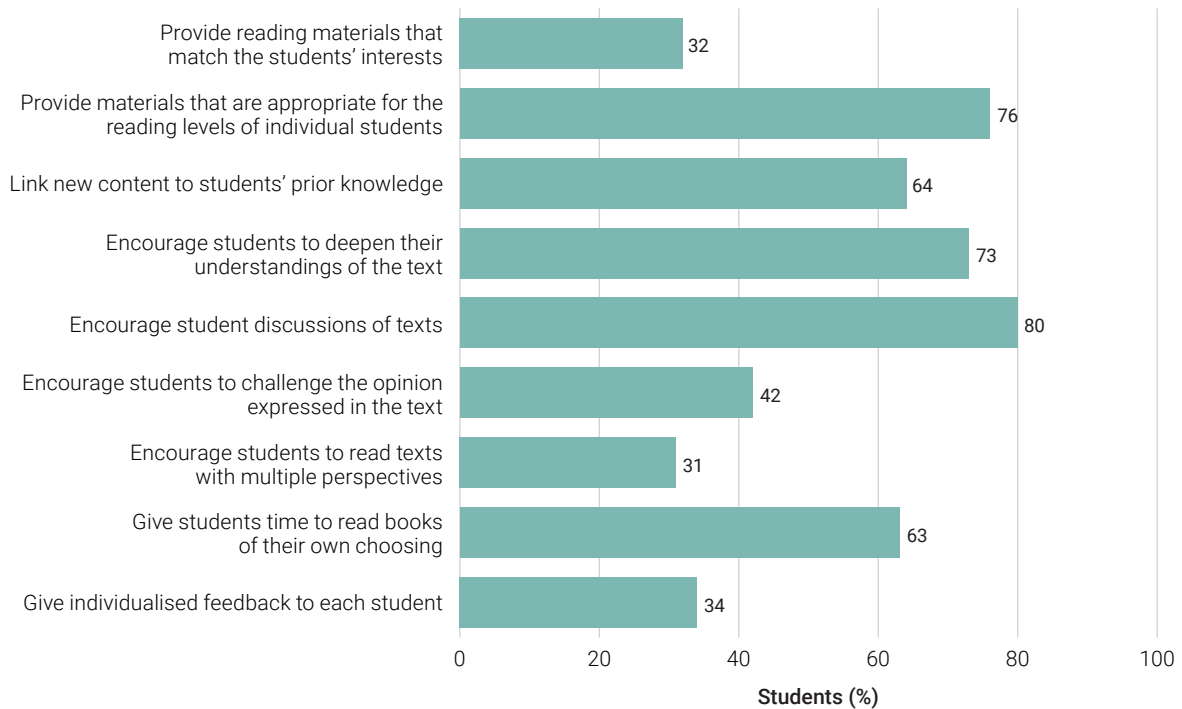


FIGURE 5.7: Percentage of Australian PIRLS 2021 students whose teachers used these reading instruction strategies every or almost every lesson

Access to classroom libraries

In Australia, 90% of Year 4 students were in classrooms with a library or reading corner, with 61% of students in classrooms with libraries that had 50 books or more.

Access to digital devices and digital activities in reading lessons

Figure 5.8 shows the majority of Australian Year 4 students (88%) had access to digital devices (desktop computers, laptops or tablets) during reading instruction. These devices were most commonly used to look up facts and definitions (77% of students did this once a week or more often) or to read digital texts (74% of students).

Students whose teachers asked them to use digital devices to ...

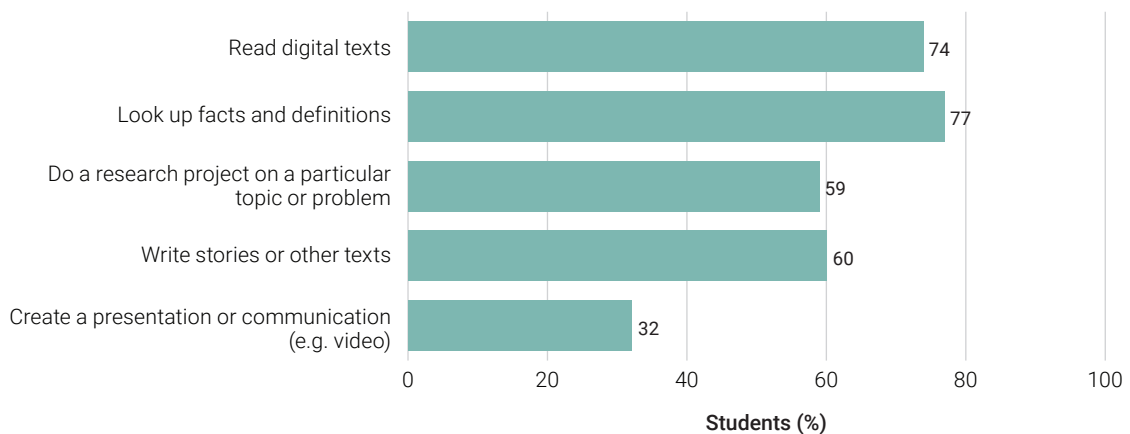


FIGURE 5.8: Percentage of Australian PIRLS 2021 students whose teachers use digital devices for these activities once a week or more often

Limitations on teaching: Teachers' report of student needs

Reading teachers of PIRLS 2021 students indicated the extent to which their teaching was limited by a set of 8 student factors:

- ✓ students lacking prerequisite knowledge or skills
- ✓ students suffering from lack of basic nutrition
- ✓ students suffering from not enough sleep
- ✓ students being absent from class
- ✓ disruptive students
- ✓ uninterested students
- ✓ students with severe issue (mental, emotional or psychological impairment)
- ✓ students needing extra support in reading.

Responses to this set of questions were combined to form the Classroom Teaching Limited by Students Not Ready For Instruction scale, with students classified into 3 groups – those whose classrooms were limited *very little*, *some* or *a lot* by students not being ready for instruction (see [Appendix A](#) for further information on scale construction and group classification).

As shown in Figure 5.9, close to two-thirds of Year 4 students were in classrooms that faced *some* limitations to teaching due to students not being ready for learning. Six per cent of students were in classrooms in which teaching was limited *a lot* by these factors. On average, students in classrooms with *very little* limitation to teaching due to students not being ready for instruction scored 25 points higher than students who faced *some* limitations to classroom instruction, and 57 points (more than one standard deviation) higher than students whose teachers reported *a lot* of limitation on their classroom teaching.

Figure 5.10 presents the proportions of students classified by their teachers' report of classroom instruction being limited by students unprepared to learn and their principals' report of the socioeconomic composition of their school. Unsurprisingly, the proportions of students whose classrooms were limited *a lot* by students not being ready to learn were far greater in *more disadvantaged* schools (14%) than in schools that were *neither more affluent nor more disadvantaged* (4%) or *more advantaged* schools (2%).

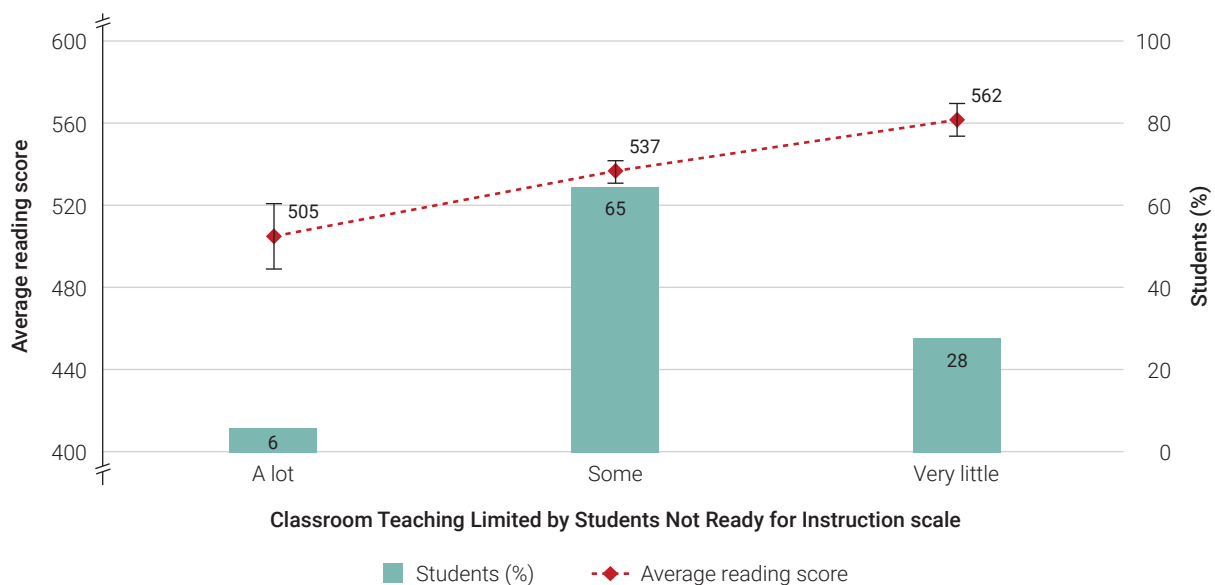


FIGURE 5.9: The Classroom Instruction Limited By Students Not Being Ready to Learn scale and Australian Year 4 performance in reading

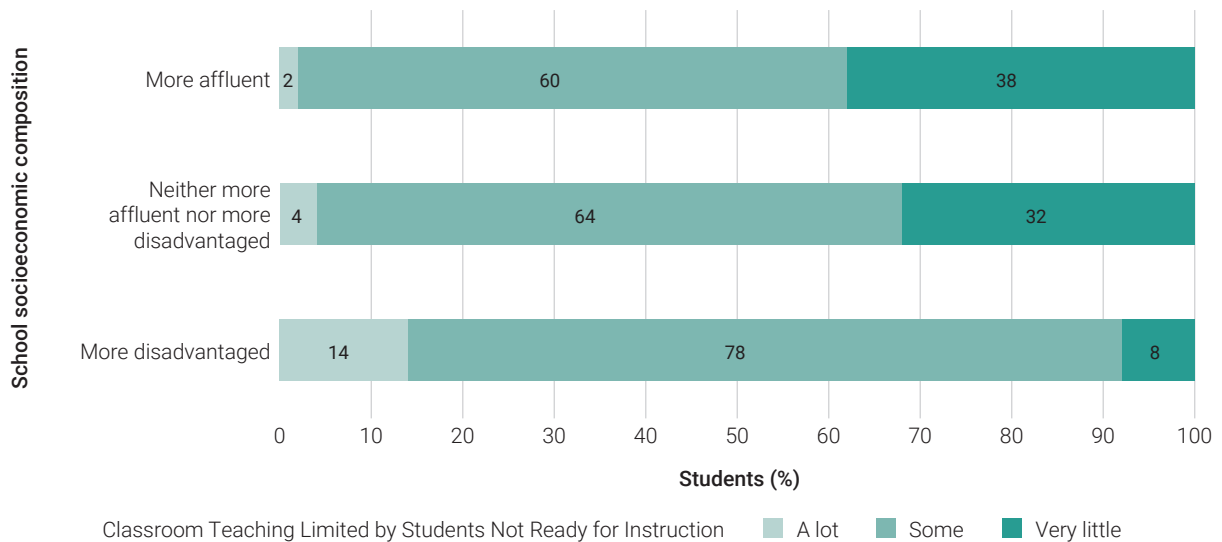


FIGURE 5.10: The Classroom Instruction Limited By Students Not Being Ready To Learn scale by school socioeconomic composition

Professional development in reading instruction

Many education systems, including Australia’s, require registered teachers to participate in ongoing professional development – supplementary to their initial qualifications – to ensure that students receive up-to-date instruction methods and information.

Figure 5.11 presents the proportions of Australian Year 4 students whose teachers had participated in professional development in various aspects of reading instruction in the two years prior to PIRLS 2021 alongside the proportion whose teachers placed high priority on future professional development in that area.

Most students’ teachers had participated in professional development in teaching reading skills or strategies and differentiation of instruction to address students’ needs and interests.

Far fewer students had reading teachers who had participated in professional development in the area of integrating technology into reading instruction in the 2 years prior to 2021, and only 25% of students had teachers who rated this area as a high priority in their future professional development plans.

The introduction of periods of emergency remote learning during the 2020 and 2021 academic years in Australia required teachers’ rapid uptake of newer technologies to conduct virtual classes for the first time. Despite this, teachers appeared to place greater priority on continuing their learning in areas such as teaching reading comprehension skills and strategies or addressing students’ language needs in teaching reading.

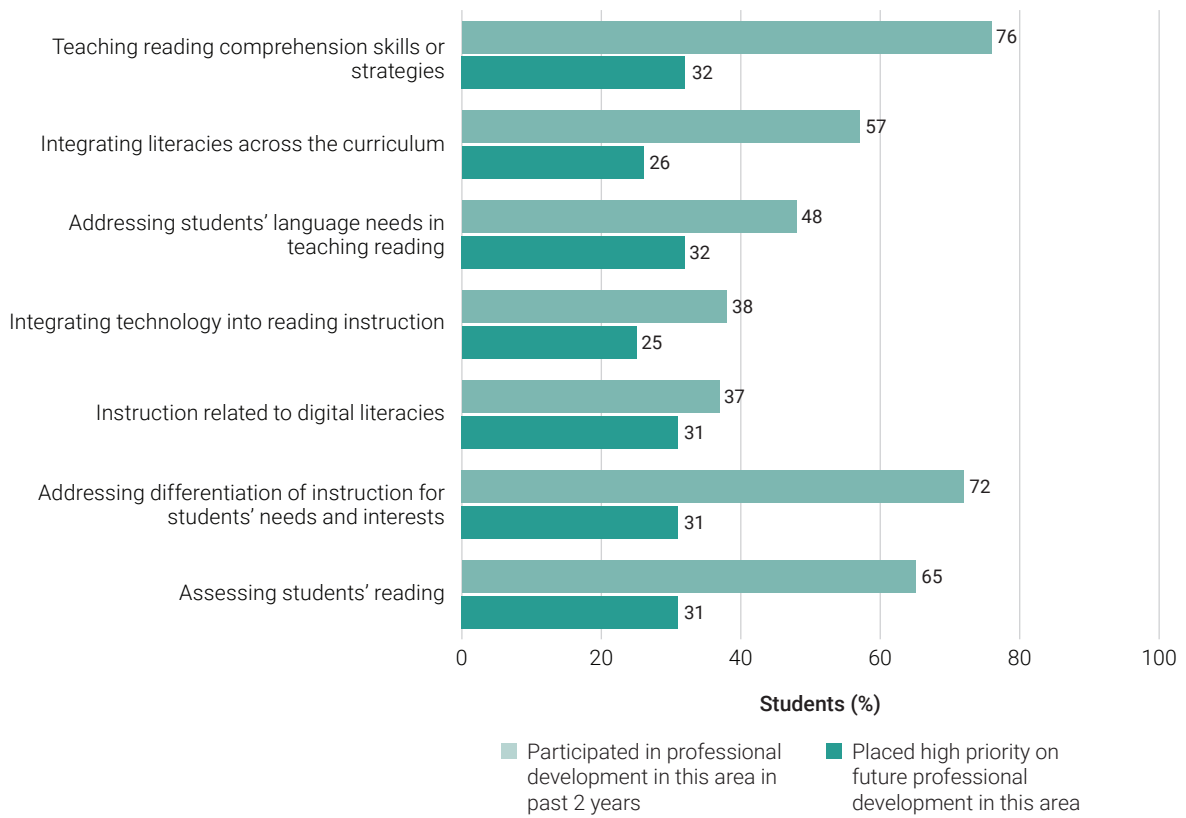


FIGURE 5.11: Teachers' reports of past participation in and high priority on future participation in professional development in reading for Australia

Appendices

Appendix A: Construction of scales in PIRLS 2021

Appendix A presents the questionnaire items, scales they contribute towards and the cut-points used when assigning students to groups or categories that are referred to in this report. Further information about the development of the PIRLS 2021 context questionnaires for students, principals and teachers and the construction of the PIRLS 2021 context scales can be found at <https://pirls2021.org/methods/>

Student scales

Students Like Reading scale (Chapter 3)

Students were asked to indicate their level of agreement ('agree a lot', 'agree a little', 'disagree a little' or 'disagree a lot') with each of the following 8 statements:

- ✓ I like talking about what I read with other people.
- ✓ I would be happy if someone gave me a book as a present.
- ✓ I think reading is boring (reverse scored).
- ✓ I would like to have more time for reading.
- ✓ I enjoy reading.
- ✓ I learn a lot from reading.
- ✓ I like to read things that make me think.
- ✓ I like it when a book helps me imagine other words.

Students were also asked how often ('every day or almost every day', 'once or twice a week', 'once or twice a month' or 'never or almost never') they did the following activities outside of school time:

- ✓ I read for fun.
- ✓ I read to find out about things I want to learn.

Responses to these 2 sets of questions were combined to create the Students Like Reading scale. Students who *very much like reading* had a score of at least 10.4. This is the point on the scale that corresponds to 'agreeing a lot' with 4 of the 8 statements and 'agreeing a little' with the other 4, as well as reporting that they read for fun and read things they choose themselves 'every day or almost every day', on average.

Students who *do not like reading* had scores no higher than 8.3. This is the scale point that corresponds to 'disagreeing a little' with 4 of the 8 statements and 'agreeing a little' with the other 4, as well as reporting that they read for fun and read things they choose themselves only 'once or twice a month', on average.

All other students were assigned to the *somewhat like reading* category.

Student Confidence in Reading scale (Chapter 3)

Students were asked to indicate their level of agreement ('agree a lot', 'agree a little', 'disagree a little' or 'disagree a lot') with each of the following 6 statements:

- ✓ I usually do well in reading.
- ✓ Reading is easy for me.
- ✓ I have trouble reading stories with difficult words (reverse scored).
- ✓ Reading is harder for me than for many of my classmates (reverse scored).
- ✓ Reading is harder for me than any other subject (reverse scored).
- ✓ I am just not good at reading (reverse scored).

Responses to these items were combined to create the Student Confidence in Reading scale. Students who were categorised as *very confident in reading* had a score of at least 10.2 on this scale, which is the point that corresponds to 'agreeing a lot' with the first 3 of the 6 statements and 'agreeing a little' with the other 3, on average.

Students who were *not confident in reading* had scores no higher than 8.2, which is the scale point that corresponds to 'disagreeing a little' with the first 3 of the 6 statements and 'agreeing a little' with the other 3, on average.

All other students were categorised as *somewhat confident in reading*.

Student Engagement in Reading Lessons scale (Chapter 3)

Students' views of how engaged or interested they were in their reading lessons were collected using their level of agreement ('agree a lot', 'agree a little', 'disagree a little' or 'disagree a lot') to the following 9 items about what happens during class time:

- ✓ I like what I read about in school.
- ✓ My teacher gives me interesting things to read.
- ✓ I know what my teacher expects me to do.
- ✓ My teacher is easy to understand.
- ✓ I am interested in what my teacher says.
- ✓ My teacher encourages me to say what I think about what I have read.
- ✓ My teacher lets me show what I have learned.
- ✓ My teacher does a variety of things to help us learn.
- ✓ My teacher tells me how to do better when I make a mistake.

Students' responses to these items were combined to create the Student Engagement in Reading Lessons scale. Scores on this scale were then used to categorise students into 3 groups representing their level of engagement in reading lessons.

Students who were *very engaged in reading lessons* had a scale score of at least 9.5, which is the point on the scale that corresponding to 'agreeing a lot' with 5 of the 9 statements and 'agreeing a little' with the other 4, on average.

Students who were *less than engaged in reading lessons* had scores no higher than 7.1, which is the scale point that corresponds to 'disagreeing a little' with 5 of the 9 statements and 'agreeing a little' with the other 4, on average.

All other students were categorised as *somewhat engaged in reading lessons*.

Students' sense of belonging (Chapter 4)

Students indicated how much they agreed ('agree a lot', 'agree a little', 'disagree a little' or 'disagree a lot') with the following 5 statements:

- ✓ I like being in school.
- ✓ I feel safe when I am at school.
- ✓ I feel like I belong at this school.
- ✓ Teachers at my school are fair to me.
- ✓ I am proud to go to this school.

Responses to these items were combined to create the Students' Sense of School Belonging scale, and scale scores were used to classify students into 3 groups.

Students with a *high sense of school belonging* had scores at or above 9.8, the cut score corresponding to 'agreeing a lot' with 3 of the 5 statements and 'agreeing a little' with the other 2 statements, on average.

Students with *little sense of school belonging* had scores no higher 7.3, the cut score corresponding to 'disagreeing a little' to 3 of the 5 statements and 'agreeing a little' with the other 2 statements, on average.

All other students had *some sense of school belonging*.

Student reports of bullying (Chapter 4)

Students' views of their personal safety at school were collected using items that focused on their experiences of bullying behaviours. Students were asked to indicate how often ('never', 'a few times a year', 'once or twice a month' or 'at least once a week') another student had:

- ✓ teased or called me names
- ✓ left me out of their games or activities
- ✓ spread lies about me
- ✓ stolen something from me
- ✓ hit or hurt me (for example, shoved, hit, kicked)
- ✓ made me do things I didn't want to do
- ✓ shared embarrassing information about me
- ✓ threatened me.

The Student Bullying scale was created by combining the responses to these items, and all students were assigned to 1 of 3 groups based on their Student Bullying score.

Students bullied *never or almost never* had a score at or above 9.2, the cut score corresponding to reporting that they 'never' experienced 5 of the 10 bullying behaviours and experienced the other 5 'a few times a year', on average.

Students bullied *about weekly* had a score at or below 7.7, the cut score corresponding to reporting that they experienced 5 of the 10 behaviours 'once or twice a month' and the other 5 'a few times a year', on average.

All other students were bullied *about monthly*.

School/Principal scales

Instruction Affected by Reading Resource Shortages (Chapter 4)

Principals were asked to comment on how much their school's capacity to provide instruction ('not at all', 'a little', 'some' or 'a lot') was affected by a shortage of – or inadequacy in – the following general and reading instruction resources:

General school resources

- ✓ instructional materials (for example, textbooks)
- ✓ supplies (for example, papers, pencils, materials)
- ✓ school buildings and grounds
- ✓ heating/cooling and lighting systems
- ✓ instructional space (for example, classrooms)
- ✓ technologically competent staff
- ✓ audio-visual resources for delivery of instruction (for example, interactive white boards, digital projectors)
- ✓ computer technology for teaching and learning (for example, computers or tablets for student use)

Resources for reading instruction

- ✓ teachers with a specialisation in reading
- ✓ computer software for reading instruction
- ✓ library resources (books, ebooks, magazines)
- ✓ instructional materials for reading (for example, reading series, textbooks)

Principals' responses to these items were combined to create the Instruction Affected by Reading Resource Shortages scale. Students were then assigned to groups based on their principal's scale score.

Students in schools where instruction was *not affected by resource shortages* had a score at or above 11.0, the cut score corresponding to their principals reporting that shortages affected instruction 'not at all' for 7 of the 13 resources and 'a little' for the other 6, on average.

Students in schools where instruction was *affected a lot* had a score at or below 7.0, the cut score corresponding to their principals reporting that shortages affected instruction 'a lot' for 7 of the 13 resources and 'some' for the other 6, on average.

All other students attended schools where instruction was *somewhat affected by resource shortages*.

School Emphasis on Academic Success – Principals (Chapter 4)

The views of principals regarding the academic climate of their schools, that is, the degree to which a school supports and encourages academic success, were collected using principals' ratings (of 'very high', 'high', 'medium', 'low' or 'very low') of the following 12 aspects:

- ✓ teachers' understanding of the school's curricular goals
- ✓ teachers' degree of success in implementing the school's curriculum
- ✓ teachers' expectations for student achievement
- ✓ teachers' ability to inspire students
- ✓ collaboration between school leadership and teachers to plan instruction
- ✓ parental involvement in school activities
- ✓ parental commitment to ensure that students are ready to learn
- ✓ parental expectations for student achievement

- ✓ parental support for student achievement
- ✓ students' desire to do well in school
- ✓ students' ability to reach school's academic goals
- ✓ students' respect for classmates who excel academically.

Principals' responses were combined to create the School Emphasis on Academic Success – Principal scale. Students were then assigned to 3 groups based on their principal's scale score.

Students in schools with a *very high emphasis on academic success* had a score at or above 12.9, the cut score corresponding to their principals characterising 6 out of 12 aspects as 'very high' and the other 6 as 'high', on average.

Students in schools with a *medium emphasis on academic success* had a score at or below 9.1, the cut score corresponding to their principals characterising 6 out of 12 aspects as 'medium' and the other 6 as 'high', on average.

All other students attended schools with a *high emphasis on academic success*.

Principals' reports of school discipline problems (Chapter 4)

Principals were asked to indicate the degree ('not a problem', 'minor problem', 'moderate problem' or 'serious problem') to which each of the following was problematic among Year 4 students in their school:

- ✓ arriving late at school
- ✓ absenteeism (unjustified absences)
- ✓ classroom disturbance
- ✓ cheating
- ✓ swearing
- ✓ vandalism
- ✓ theft
- ✓ intimidation or verbal abuse among students (including texting, emailing etc.)
- ✓ physical fights among students
- ✓ intimidation or verbal abuse of teachers or staff (including texting, emailing, etc).

The principals' responses were combined to create the School Discipline Problems scale. Students were then assigned to 3 groups based on their principal's scale score.

Students in schools with *hardly any problems* had a score at or above 9.9, the cut score corresponding to their principals reporting that 5 out of 10 issues are 'not a problem' and the other 5 are a 'minor problem', on average.

Students in schools with *moderate to severe problems* had a score at or below 7.7, the cut score corresponding to their principals reporting that 5 out 10 issues are a 'moderate problem' and the other 5 are a 'minor problem', on average.

All other students were in schools with *minor problems*.

Teacher scales

School Emphasis on Academic Success – Teachers (Chapter 4)

The views of teachers regarding the academic climate of their schools, that is, the degree to which a school supports and encourages academic success, were collected using reading teachers' ratings (of 'very high', 'high', 'medium', 'low' or 'very low') of the following 12 aspects:

- ✓ teachers' understanding of the school's curricular goals
- ✓ teachers' degree of success in implementing the school's curriculum
- ✓ teachers' expectations for student achievement
- ✓ teachers' ability to inspire students
- ✓ collaboration between school leadership and teachers to plan instruction
- ✓ parental involvement in school activities
- ✓ parental commitment to ensure that students are ready to learn
- ✓ parental expectations for student achievement
- ✓ parental support for student achievement
- ✓ students' desire to do well in school
- ✓ students' ability to reach school's academic goals
- ✓ students' respect for classmates who excel academically.

Teachers' responses were combined to create the School Emphasis on Academic Success – Teacher scale. Students were then assigned to 3 groups based on their reading teacher's scale score.

Students in schools where their teachers reported a *very high emphasis on academic success* had a score at or above 12.9, the cut score corresponding to their teachers characterising 6 out of 12 aspects as 'very high' and the other 6 as 'high', on average.

Students in schools where their teachers reported a *medium emphasis on academic success* had a score at or below 9.2, the cut score corresponding to their teachers characterising 6 of the of the 12 aspects as 'medium' and the other 6 as 'high', on average.

All other students attended schools where teachers reported a *high emphasis on academic success*.

Teacher job satisfaction (Chapter 4)

Teachers were asked to indicate how often ('very often', 'often', 'sometimes' or 'never or almost never') they agreed with the following 5 statements:

- ✓ I am content with my profession as a teacher.
- ✓ I find my work full of meaning and purpose.
- ✓ I am enthusiastic about my job.
- ✓ My work inspires me.
- ✓ I am proud of the work I do.

The teachers' responses were combined to create the Teacher Job Satisfaction scale. Students were then assigned to 3 groups based on their teacher's scale score.

Students with *very satisfied* teachers had a score at or above 10.3, the cut score corresponding to their teachers responding 'very often' to 3 of the 6 statements and 'often' to the other 3, on average.

Students with *less than satisfied* teachers had a score at or below 6.7, the cut score corresponding to their teachers responding 'sometimes' to 3 of the 6 statements and 'often' to the other 3, on average.

All other students had *somewhat satisfied* teachers.

Classroom Teaching Limited by Students Not Ready for Instruction (Chapter 5)

Teachers were asked to indicate the degree to which ('not at all', 'some', 'a lot') the following 8 issues limited how they taught their classes:

- ✓ 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 impairment
- ✓ students needing extra support in reading.

Response were combined to create the Classroom Teaching Limited by Students Not Ready for Instruction scale, and students were assigned to one of 3 groups based on the score of their reading teacher.

Students with teachers who felt their teaching was *limited very little* had a score at or above 10.9, the cut score corresponding to their teachers reporting they were 'not at all' limited by 4 of the 8 student attributes and were limited 'some' by the other 4, on average.

Students with teachers who felt their teaching was *limited a lot* had a score at or below 6.6, the cut score corresponding to their teachers reporting they were limited 'a lot' by 4 of the 8 attributes and were limited 'some' by the other 4, on average.

All other students had teachers who felt their teaching was *limited some*.

Appendix B: Organisation of PIRLS 2021

PIRLS around the world

Internationally, PIRLS 2021 was organised by the International Association for the Evaluation of Educational Achievement (IEA) and managed by the TIMSS & PIRLS International Study Center, Lynch School of Education, at Boston College in the United States. Sampling procedures were overseen by Statistics Canada and the IEA Data Processing and Research Center (DPC). The IEA Secretariat and the TIMSS & PIRLS International Study Center oversaw the translation and verification process as well as the quality-assurance program; the IEA DPC was responsible for oversight of the data collection, data processing and data analysis.

PIRLS in Australia

In Australia, the study was funded by the Australian Government Department of Education and by state and territory departments of education proportional to the size of their student populations. The study was managed in Australia by the Australian Council for Educational Research (ACER), which represents Australia to the IEA. Information about Australia's participation in PIRLS, including reports from previous cycles, is available from [ACER's Research Repository](#) and [Australia's dedicated PIRLS website](#).

PIRLS is a part of Australia's National Assessment Program (NAP). Components of the NAP include the National Assessment Program – Literacy and Numeracy (NAPLAN), which is conducted annually for every student in Years 3, 5, 7 and 9; the national sample assessments of civics and citizenship, information and communication technology (ICT) literacy, and science literacy; and the international assessments, which comprise – in addition to PIRLS – Trends in International Mathematics and Science Study (TIMSS) and the OECD's Programme for International Student Assessment (PISA).

Results collected from these assessments allow for nationally comparable reporting of progress towards the Alice Springs (Mparntwe) Education Declaration (Education Council, 2019) which set goals for high-quality schooling in Australia designed to secure for students the necessary knowledge, understanding, skills and values for a productive and rewarding life.

The Australian Curriculum, Assessment and Reporting Authority (ACARA) reports on the NAP assessments annually in its National Report on Schooling in Australia, which is the main vehicle for reporting against nationally agreed key performance measures defined in the Measurement Framework for Schooling in Australia 2020 (Australian Curriculum, Assessment and Reporting Authority, 2020).

Appendix C: Operations and procedures for PIRLS 2021

To assist readers to understand the scope and operations of PIRLS, a brief account of some of its procedures is provided in this appendix. A detailed account is available from the [TIMSS and PIRLS website](#). As most of the operational procedures have both international and national components, this appendix provides details specific to Australia, where appropriate.

Operationalisation of PIRLS

Procedures for administering the test were determined by the TIMSS & PIRLS International Study Center so that data from all students from all schools in all countries could be considered equivalent. These were operationalised by National Centres in each country, such as ACER in Australia. School Coordinators, nominated by the principal of each participating school, assisted the National Centre with the management of PIRLS within the school. The PIRLS test and student questionnaires were administered by a Test Administrator, who, in most cases, was a teacher from the school. The Test Administrator followed strict guidelines and was required to complete a report about any situation that constituted a deviation from these guidelines. National Quality Control Observers (employed by ACER, as the National Centre) visited a proportion of schools around Australia, although these visits were not possible in Victoria, New South Wales and the Australian Capital Territory due to COVID-19 related restrictions at the time of the assessment. An International Quality Control Observer (employed by the IEA) visited a further sample of schools, as well as examining the operations of the National Centre at ACER.

Sampling

The PIRLS 2021 assessment was administered to carefully drawn random samples of students from the target population in each country. Given that the accuracy of the PIRLS results depends on the quality of the national samples, the PIRLS sampling experts worked with participating countries on all phases of sampling to ensure efficient sampling design and implementation. National Centre staff were trained in how to select the school and student samples, and in how to use the sampling software provided by the IEA Data Processing Center. Staff from Statistics Canada reviewed the national sampling plans, sampling data, sampling frames and sample selections. The sampling documentation was used by the TIMSS & PIRLS International Study Center (in consultation with Statistics Canada and the sampling referee) to evaluate the quality of the samples. Internationally, the target population of fourth grade (Year 4) students is defined as all students enrolled in the grade that represents 4 years of schooling counting from the first year of Level 1 of the International Standard Classification of Education (ISCED), providing the mean age at the time of testing is at least 9.5 years. All students enrolled in the target grade, regardless of their age, belong to the international target population and should be eligible to participate in PIRLS. If the national target population differs from the international target population, this was annotated in the international reports. In Australia, the target population was Year 4 students.

Within the target population, countries could define a population that excluded a small percentage (no more than 5%) of certain kinds of schools or students that would be very difficult or resource intensive to test (for example, schools for students with special needs or schools that were very small or located in remote areas). In Australia, school-level exclusions included very small schools (fewer than 5 students in the target year level), non-mainstream schools (such as schools for students with special needs) and very remote schools. Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities and non-native language speakers (with less than one year of exposure to English). Table A.1 provides the rates of exclusion in Australia.

TABLE A.1: Rates of exclusion from the Australian national target population for PIRLS 2021

	School-level exclusions (%)	Within-school exclusions (%)	Overall exclusions (%)
Year 4 students	1.6	2.8	4.4

The basic design of the sample used in PIRLS 2021 was a 2-stage stratified cluster design. The first stage sampled schools; the second stage sampled intact classrooms from the target year level in the sampled schools. Schools were selected with probability proportional to size, and classrooms with equal probabilities. Most countries sampled 150 schools and one or two intact classrooms from each school. This approach was designed to yield a representative sample of at least 4,500 students in each country. For information about this approach to sampling, please refer to [Almaskut et al. \(2021\)](#).

In Australia, a larger sample of schools and students participated in PIRLS than was required to produce reliable estimates representative of each of the Australian jurisdictions. In order for comparisons to be made between jurisdictions, it was necessary to oversample the smaller jurisdictions, since a random sample proportionate to jurisdiction populations would not yield enough students in the smaller jurisdictions to give a result of sufficient precision.

At the school level, in Australia, the planned sample was 290 schools. In order to produce the representative sample, this sample was stratified in the following manner:

- ✓ explicit stratification (a separate sample was drawn for each stratum) – by jurisdiction
- ✓ implicit stratification (the schools were sorted according to the stratification variables within each of the explicit strata) – by geographic location (metropolitan, provincial, remote); school type (Catholic, government, independent); and socioeconomic index (low socioeconomic status, high socioeconomic status).

Table A.2 shows the designed school sample and the distribution of schools across the jurisdictions. Following sampling, some schools were withdrawn from the sample, either because they were ineligible (lacking students from the target population) or because all of their students fell into an exclusion category. In addition, some schools were replaced – by schools that had been identified as suitable replacements during the sampling process – as they were unable to participate for reasons other than ineligibility or exclusion. Where a school was withdrawn too late for replacement, they were recorded as a ‘refusal’. Table A.2 summarises these changes to the sample.

TABLE A.2: Allocation of school sample in Australia for PIRLS 2021

Country/ Jurisdiction	Schools in original sample (no.)	Eligible schools in original sample (no.)	Schools in original sample that participated (no.)	Replacement schools that participated (no.)	Schools that participated (total no.)
Australia	290	288	278	3	281
ACT	30	30	29	0	29
NSW	45	45	45	0	45
VIC	45	45	42	0	42
QLD	45	45	45	0	45
SA	40	40	39	1	40
WA	40	40	40	0	40
TAS	30	30	30	0	30
NT	15	13	8	2	10

After school sampling, class sampling was undertaken. The usual process was for each school to have only one reading or English class sampled. However, in cases where the classes were small (such as multi-year or composite classes), at least 2 classes were sampled in order to allow the total number of students to more closely approximate the average class size. Within-school exclusions of students were allowed where disability or language barriers prevented the students' full participation in the PIRLS assessment. These exclusions were either of full classes (where any such class comprised students with special needs) or of individual students within sampled classes. Table A.3 shows the student sample sizes achieved, as well as the numbers of excluded, absent and withdrawn students (withdrawn students were students that had left the school between the sampling of the class and the assessment date).

TABLE A.3: Student sample sizes in Australia for PIRLS 2021

	Students in participating schools (no.)	Students withdrawn from class/ school (no.)	Students excluded (no.)	Eligible students (no.)	Students absent (no.)	Students assessed (no.)
Year 4 students	6,336	24	177	6,159	451	5,488

To ensure accurate and unbiased data, the TIMSS & PIRLS International Study Center set minimum participation rates of 85% of sampled schools and 85% of sampled students (or a combined school and student participation rate of 75%). Non-participating sampled schools could be replaced by replacement schools that had been matched according to strata and size. However, countries that achieved these requirements only by the use of replacement schools are annotated in the international reports. Countries where less than 50% of sampled schools participated are also annotated in the international reports. Table A.4 shows that Australia achieved the minimum participation rate for PIRLS 2021.

TABLE A.4: Weighted participation rates in Australia for PIRLS 2021

	School participation (%)		Class participation (%)	Student participation (%)	Overall participation (%)	
	Before replacement	After replacement			Before replacement	After replacement
Australia	98	98	100	92	90	90

The structure of the PIRLS assessment

PIRLS 2021 reports student outcomes by reading processes (literary and informational) and procedures (retrieving explicitly stated information, making straightforward inferences, interpreting and integrating ideas and information, and examining and evaluating content, language and textual elements). In order to cover all of the subdomains thoroughly, there are more texts and more questions in the assessment than can be answered by a student in the amount of testing time available. Accordingly, PIRLS uses a matrix-sampling approach that involves packaging the entire assessment pool of reading texts (9 literary and 9 informational) and items into a set of 18 student-achievement booklets. Each student completes only one booklet. Each text and its accompanying items appears in 2 booklets providing a mechanism for linking together the student responses from the various booklets. Booklets are distributed among students in participating classrooms so that the groups of students completing each booklet are approximately equivalent in terms of student ability. Using item response theory (IRT) scaling techniques, a comprehensive picture of the achievement of the entire student population is assembled from the combined responses of individual students to the booklets they are assigned. This approach reduces to manageable proportions what would otherwise be an impossible student burden (albeit at the cost of greater complexity in booklet assembly, data collection and data analysis).

Countries that participate in PIRLS aim for a sample of at least 4,500 students to ensure that there are sufficient respondents for each item. The 18 student booklets are distributed among the students in each sampled class according to a predetermined order, so that approximately equal proportions of students respond to each booklet. PIRLS 2021 included a group adaptive design that allowed participating countries to allocate proportionally more difficult booklets or proportionally more easy booklets based on their average reading score in PIRLS 2016 (see the section Group adaptive design and booklet allocation for further information).

Question types and scoring the responses

Two question formats are used in the PIRLS assessment – multiple-choice and constructed-response.

Multiple-choice questions

At least half of the total number of score points that can be accrued in the assessment will come from multiple-choice questions. Each multiple-choice question is worth one score point. Multiple-choice questions provide 4 response options, of which only 1 is correct. These questions can be used to assess any of the reading processes. However, as they do not allow for students' explanations or supporting statements, multiple-choice questions may be less suitable for assessing students' ability to make more complex interpretations or evaluations. It is important that linguistic features of the questions be developmentally appropriate. Therefore, the questions are written clearly and concisely. The response options are also written succinctly in order to minimise the reading load of each question. The options that are incorrect are written to be plausible but not deceptive. For students unfamiliar with this test question format, the instructions include a sample multiple-choice item that illustrates how to select and mark an answer.

Constructed-response questions

For this type of test item, students are required to construct a written (or typed) response, rather than select a response from a set of options. Constructed-response questions require scoring by trained scorers. The scoring guide for each constructed-response question describes the essential features of appropriate and complete responses. The guides point to evidence of the type of behaviour that a given question is designed to assess. They describe evidence of partially correct and completely correct responses. In addition, sample student responses at each level of understanding provide

important guidance to those who will be rating the students' responses. In scoring students' responses to constructed-response questions, the focus is solely on students' achievement with respect to the reading process being assessed, not on their ability to write well. However, students need to communicate their response in a manner that will be clear to scorers.

For more information about the items and their development, please refer to [Wry and Mullis \(2023\)](#).

Translation and adaptation of materials

Experts in translation procedures ensured that translated materials were as equivalent in meaning and level of complexity as possible. Translation of the assessment booklets, questionnaires and manuals involved development and implementation of extensive and rigorous processes. Materials from the TIMSS & PIRLS International Study Center were provided in English. In Australia, while a full translation was not necessary, adaptation of the materials from American English to Australian English was required and undertaken in accordance with the PIRLS translation-verification process. The assessment materials, along with all questionnaires, manuals and documentation, were adapted to suit local linguistic usages and educational circumstances.

Appendix D: Changes to PIRLS 2021

PIRLS 2021 incorporated 2 major advances in international reading assessment at the fourth grade with a transition to digital assessment and implementation of a group adaptive design.

Digital assessment of reading

PIRLS 2021 transitioned to a digital assessment in which 26 countries and 7 benchmarking entities participated; 31 countries and 1 benchmarking entity continued to administer the assessment using paper booklets. The PIRLS 2021 digital assessment systems included item design, assessment reproduction (formerly printing), translation, administration to students, delivery of data to IEA Hamburg, and scoring. In a digital assessment, measurement can be improved through more engaging and interactive assessment materials and procedures. PIRLS 2021 developed an innovative new user interface for the digital assessment where students could scroll through the texts and click on the items. In addition to incorporating texts with interactive features, the digital assessment included ePIRLS tasks as a continuation of the work begun in 2016 to assess reading comprehension in a simulated online environment. Also, operational activities (for example, printing and sending materials to schools) can be accomplished with greater consistency and efficiency. Australia delivered a paper-based assessment for PIRLS 2021. A full list of participants in PIRLS 2021 and their mode of assessment delivery (paper or digital) is presented in Chapter 1.

Group adaptive design and booklet allocation

In response to the increasing diversity across the countries participating in the PIRLS assessments, the group adaptive design aims to improve the match across countries between the assessment difficulty and the students' levels of reading achievement. The group adaptive design is based on texts and items of 3 levels of difficulty (difficult, medium and easy) that are combined into booklets of 2 levels of difficulty (see Chapter 3 of the PIRLS 2021 Assessment Frameworks). The more difficult booklets have difficult and medium texts and items; the less difficult booklets contain easy and medium texts and items. All booklets are administered in each country, but countries whose students have higher reading achievement may give the more difficult booklets to a higher percentage of students and

countries whose students have lower reading achievement may give the less difficult books to a higher percentage of their students.

Countries with higher average performance, above 550 on the PIRLS achievement scale, would randomly assign proportionally more of the more difficult booklets, for example, 70%, and fewer of the less difficult booklets, for example, 30%. Countries with performance between 450 and 550 would assign equal proportions of more and less difficult booklets, and countries with lower average performance, below 450 on the PIRLS scale, would assign proportionally fewer of the more difficult booklets (30%) and more of the less difficult booklets (70%).

Australia recorded a PIRLS average score of 544 points in PIRLS 2016, and thus allocated equal proportions of more and less difficult booklets to participating students in PIRLS 2021.

Reports for past cycles of PIRLS can be accessed through the [ACER Research Repository](#).

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