Programme for International Student Assessment

PISA 2018

PISA in Brief I
Student Performance

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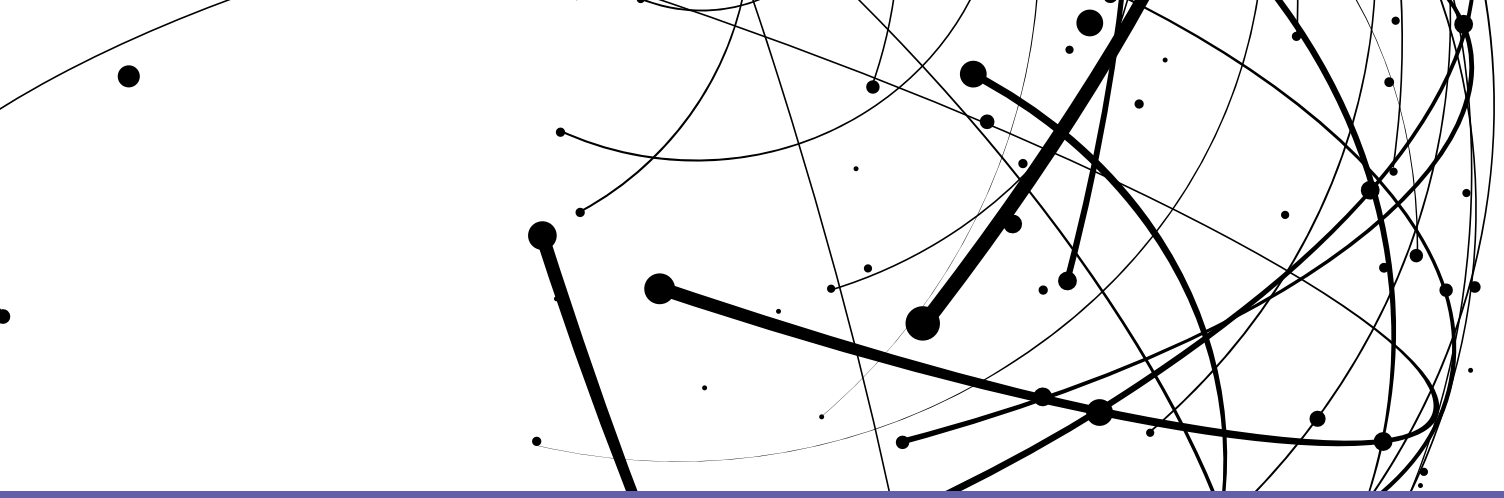
Please check the online version of the report at www.acer.org/pisa for any amendments.



What does PISA 2018 tell us?

This document provides a summary of student performance in the PISA 2018 assessment and tells us about their capacities to apply knowledge and skills in the domains of reading, mathematical, and scientific literacy.

Each cycle of PISA has a major domain and students are given more time to complete this section than for the other domains. Reading literacy was the focus of the 2018 cycle, as it was in PISA 2000 and 2009, and we can now compare reading literacy performance over an 18-year period. In 2003 and 2012, mathematical literacy was the major domain, and in 2006 and 2015, it was scientific literacy.

PISA gives us regular information on educational outcomes within and across countries. We can form insights into the range of skills and competencies in reading, mathematics and science that are considered essential to a person's ability to participate in and contribute fully to society, particularly one that is experiencing rapid technological change.

Like other international comparative studies, PISA lets us observe the similarities and differences between educational policies and practices. It lets researchers and others observe what is possible for students to achieve and what environments are most likely to help student learning.

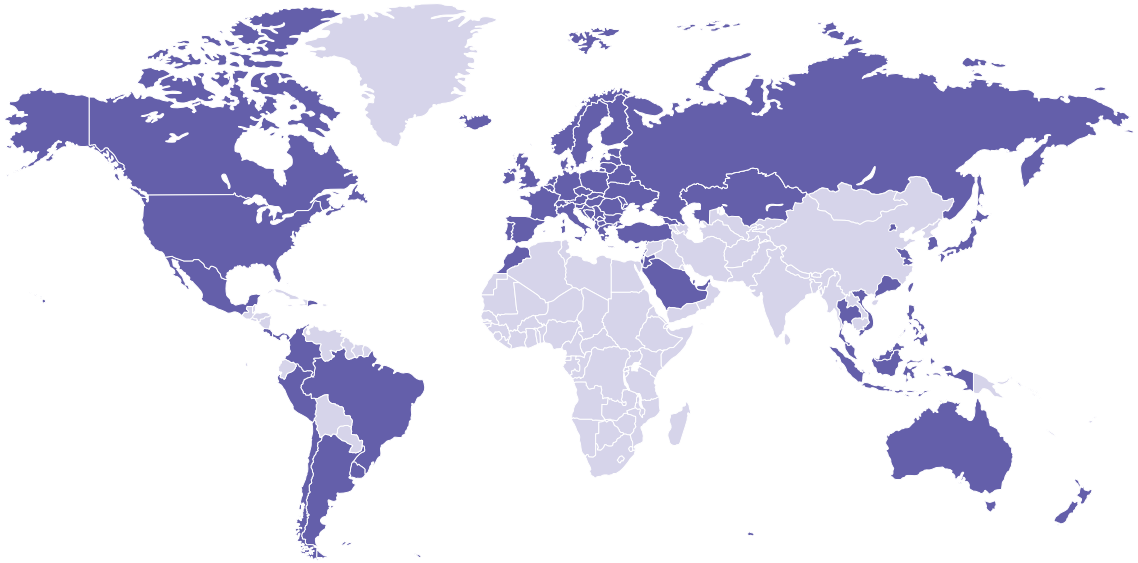
PISA results are reported as mean scores – a measure of average performance – and other statistics are given that reflect the distribution of performance. This provides a summary of student performance and allows different countries and subgroups to be compared. Using proficiency levels, we can see a detailed picture of performance by providing a profile of students' reading, mathematical and scientific literacy performance. These levels are categories that summarise the skills and knowledge that students are able to display.

In this report, the focus is on differences that are statistically significant (in other words, are unlikely to have arisen by chance). Where the commentary states that there was a difference between sets of numbers, whether these are score, percentage or percentage point differences, it means that the difference satisfied this condition. Where the commentary states that there was no difference, or where no comment is made regarding a possible comparison, it indicates that the difference was not statistically significant.[2]

2 For more information about statistical significance, refer to the Reader's Guide in *PISA 2018: Reporting Australia's results: Volume I Student performance.*

Which countries took part in PISA 2018?

In 2018, 79 countries and economies participated in PISA, including 36 OECD countries and 43 partner countries or economies, as shown on the map below.



OECD countries		
Australia	Hungary	New Zealand
Austria	Iceland	Norway
Belgium	Ireland	Poland
Canada	Israel	Portugal
Chile	Italy	Slovak Republic
Czech Republic	Japan	Slovenia
Denmark	Korea	Spain
Estonia	Latvia	Sweden
Finland	Lithuania	Switzerland
France	Luxembourg	Turkey
Germany	Mexico	United Kingdom
Greece	The Netherlands	United States

Partner countries/economies		
Albania	Georgia	Philippines
Argentina	Hong Kong (China)	Qatar
Baku (Azerbaijan)	Indonesia	Republic of North Macedonia
Belarus	Jordan	Romania
Bosnia & Herzegovina	Kazakhstan	Russian Federation
Brazil	Kosovo	Saudi Arabia
Brunei Darussalam	Lebanon	Serbia
B-S-J-Z (China)*	Macao (China)	Singapore
Bulgaria	Malaysia	Thailand
Chinese Taipei	Malta	United Arab Emirates
Colombia	Moldova	Ukraine
Costa Rica	Montenegro	Uruguay
Croatia	Morocco	Vietnam
Cyprus	Panama	
Dominican Republic	Peru	

* B-S-J-Z (China) refers to the four PISA participating provinces: Beijing, Shanghai, Jiangsu and Zhejiang.

Which Australians took part in PISA 2018?

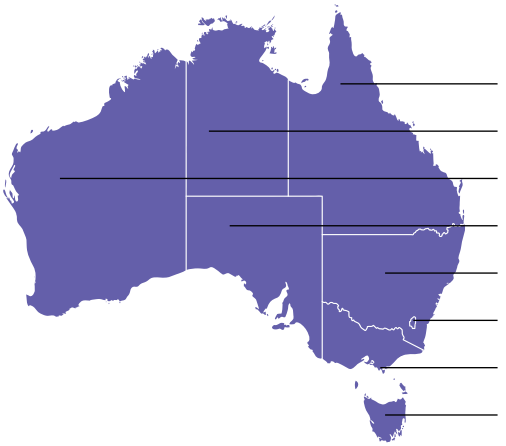
The Australian PISA 2018 sample looked like this:

14 273 students from **740** schools

56% government

24% Catholic

20% independent



Qld. **2525** students in **133** schools

NT **339** students in **17** schools

WA **1942** students in **101** schools

SA **1888** students in **100** schools

NSW **3315** students in **166** schools

ACT **843** students in **41** schools

Vic. **2492** students in **126** schools

Tas. **929** students in **56** schools

PISA is a sample assessment. We can't test every 15-year-old (that would take too long and cost too much) so we randomly take a sample of these students. We know how many 15-year-old students there are in Australia, which lets us extrapolate the results we get from the sample to make inferences about the population of 15-year-old Australian students. In all, 14 273 students undertook the assessment, representing almost 258 000 15-year-olds in Australia.

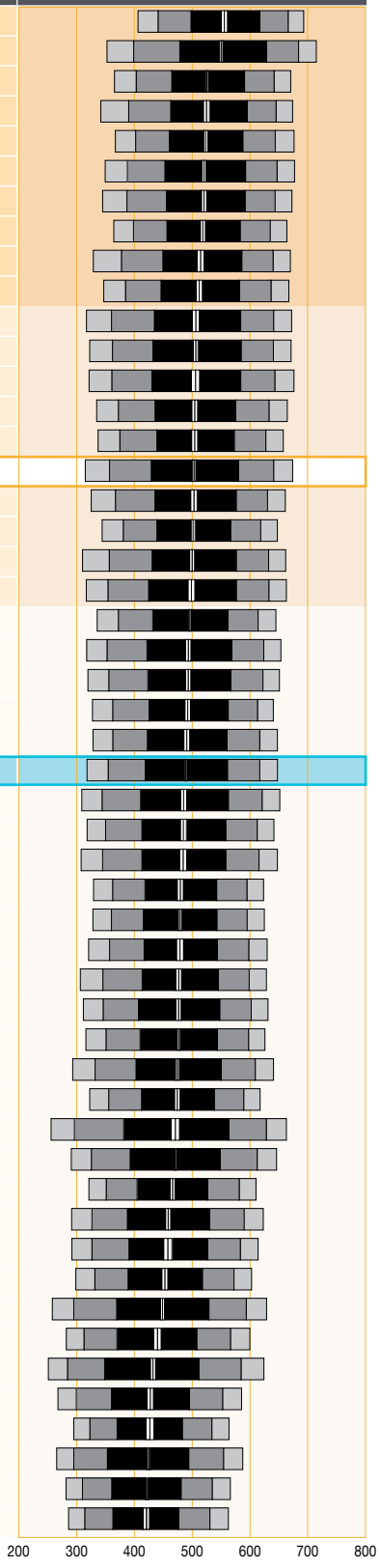
1.1 Australia's performance results in an international context

This section presents the average (mean) scores for each country, for reading, mathematical and scientific literacy.

Reading literacy

	Country	Mean score	SE	Confidence interval	Difference between 5th & 95th percentiles
Significantly higher than Australia	B-S-J-Z (China)	555	2.7	560 - 549	287
	Singapore	549	1.6	552 - 546	362
	Macao (China)	525	1.2	527 - 522	305
	Hong Kong (China)	524	2.7	529 - 518	332
	Estonia	523	1.8	526 - 519	309
	Canada	520	1.8	523 - 516	327
	Finland	520	2.3	524 - 515	327
	Ireland	518	2.2	522 - 513	299
	Korea	514	2.9	519 - 508	341
	Poland	512	2.7	517 - 506	320
Not significantly different from Australia	Sweden	506	3.0	511 - 499	355
	New Zealand	506	2.0	509 - 501	348
	United States	505	3.6	512 - 498	354
	United Kingdom	504	2.6	508 - 498	330
	Japan	504	2.7	509 - 498	320
	Australia	**503**	**1.6**	**505 - 499**	**359**
	Chinese Taipei	503	2.8	508 - 497	336
	Denmark	501	1.8	504 - 497	303
	Norway	499	2.2	503 - 495	351
	Germany	498	3.0	504 - 492	346
Significantly lower than Australia	Slovenia	495	1.2	497 - 492	309
	Belgium	493	2.3	497 - 488	336
	France	493	2.3	497 - 488	331
	Portugal	492	2.4	496 - 487	313
	Czech Republic	490	2.5	495 - 485	319
	OECD average	487	0.4	487 - 486	327
	Netherlands	485	2.7	489 - 479	342
	Austria	484	2.7	489 - 479	323
	Switzerland	484	3.1	490 - 477	339
	Croatia	479	2.7	484 - 473	294
	Latvia	479	1.6	481 - 475	296
	Russian Federation	479	3.1	484 - 472	309
	Italy	476	2.4	481 - 471	322
	Hungary	476	2.3	480 - 471	319
	Lithuania	476	1.5	478 - 472	310
	Iceland	474	1.7	477 - 470	347
	Belarus	474	2.4	478 - 469	295
	Israel	470	3.7	477 - 463	407
	Luxembourg	470	1.1	472 - 467	355
	Turkey	466	2.2	469 - 461	289
	Slovak Republic	458	2.2	462 - 453	331
	Greece	457	3.6	464 - 450	322
	Chile	452	2.6	457 - 447	304
	Malta	448	1.7	451 - 444	371
	Serbia	439	3.3	445 - 433	317
	United Arab Emirates	432	2.3	436 - 427	373
	Uruguay	427	2.8	432 - 421	318
	Costa Rica	426	3.4	433 - 419	268
	Cyprus	424	1.4	427 - 421	322
	Montenegro	421	1.1	423 - 418	284
	Mexico	420	2.7	425 - 415	276

Distribution of scores



Australian students achieved an average score of **503 points**.

This was significantly higher than the OECD average of **487 points**.

Australia performed the equivalent of about **1½ years** of schooling **lower** than the highest performing economy, B-S-J-Z (China), and around **1⅓ years** **lower** than the highest performing country, Singapore.

There were **10** countries/ economies whose performance was **significantly higher** than Australia's.

There were **9** countries/ economies whose performance was **not significantly different** to Australia's.

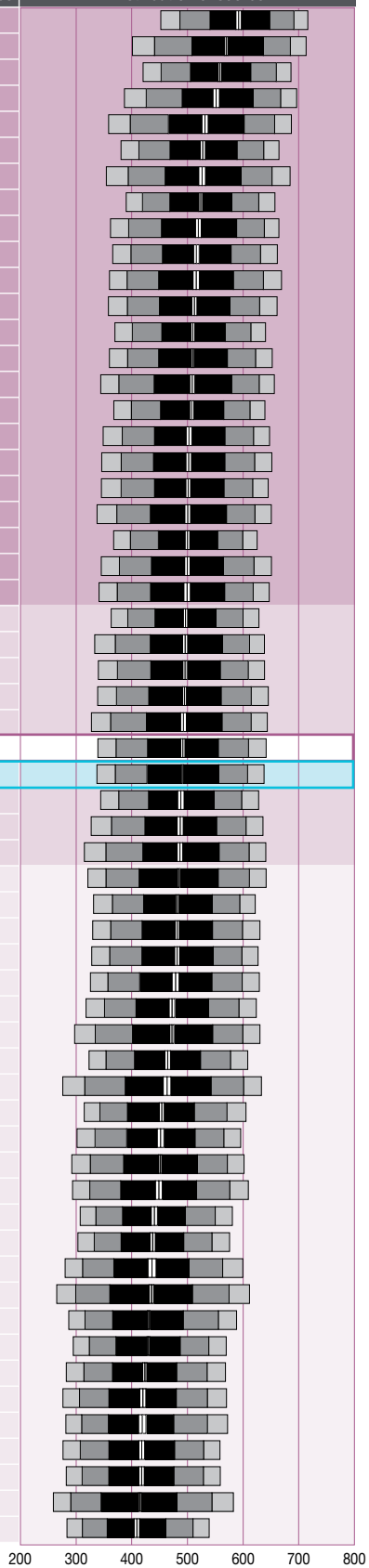
There were **58** countries/ economies whose performance was **signficantly lower** than Australia's.

Refer to the Reader's Guide on page 26 for the interpretation of this figure.

FIGURE 1.1 Mean reading literacy scores and distribution of student performance, by country

Mathematical literacy

	Country	Mean score	SE	Confidence interval	Difference between 5th & 95th percentiles
Significantly higher than Australia	B-S-J-Z (China)	591	2.5	596 – 586	264
	Singapore	569	1.6	572 – 565	312
	Macao (China)	558	1.5	560 – 554	265
	Hong Kong (China)	551	3.0	557 – 545	309
	Chinese Taipei	531	2.9	536 – 525	328
	Japan	527	2.5	531 – 522	283
	Korea	526	3.1	532 – 519	330
	Estonia	523	1.7	526 – 519	267
	Netherlands	519	2.6	524 – 514	302
	Poland	516	2.6	520 – 510	295
	Switzerland	515	2.9	521 – 509	309
	Canada	512	2.4	516 – 507	303
	Denmark	509	1.7	512 – 505	270
	Slovenia	509	1.4	511 – 506	292
	Belgium	508	2.3	512 – 503	312
	Finland	507	2.0	511 – 503	271
	Sweden	502	2.7	507 – 497	299
	United Kingdom	502	2.6	506 – 496	305
	Norway	501	2.2	505 – 496	299
	Germany	500	2.6	505 – 494	313
	Ireland	500	2.2	503 – 495	258
	Czech Republic	499	2.5	504 – 494	305
	Austria	499	3.0	504 – 493	305
Not significantly different from Australia	Latvia	496	2.0	499 – 492	265
	France	495	2.3	499 – 490	305
	Iceland	495	2.0	499 – 491	298
	New Zealand	494	1.7	497 – 491	306
	Portugal	492	2.7	497 – 487	316
	Australia	491	1.9	495 – 487	302
	OECD average	489	0.4	490 – 488	297
	Russian Federation	488	3.0	493 – 481	283
	Italy	487	2.8	492 – 481	308
	Slovak Republic	486	2.6	491 – 481	326
Significantly lower than Australia	Luxembourg	483	1.1	485 – 481	320
	Spain	481	1.5	484 – 478	290
	Lithuania	481	2.0	485 – 477	300
	Hungary	481	2.3	485 – 476	298
	United States	478	3.2	484 – 471	303
	Belarus	472	2.7	477 – 466	306
	Malta	472	1.9	475 – 467	333
	Croatia	464	2.5	469 – 459	285
	Israel	463	3.5	469 – 456	356
	Turkey	454	2.3	457 – 449	290
	Greece	451	3.1	457 – 445	294
	Cyprus	451	1.4	453 – 447	309
	Serbia	448	3.2	454 – 442	315
	Malaysia	440	2.9	445 – 434	273
	Albania	437	2.4	441 – 432	272
	Bulgaria	436	3.8	443 – 428	319
	United Arab Emirates	435	2.1	439 – 430	346
	Brunei Darussalam	430	1.2	432 – 427	301
	Montenegro	430	1.2	432 – 427	274
	Kazakhstan	423	1.9	426 – 419	286
	Baku (Azerbaijan)	420	2.8	425 – 414	294
	Thailand	419	3.4	425 – 411	290
	Uruguay	418	2.6	422 – 412	282
	Chile	417	2.4	422 – 412	276
	Qatar	414	1.2	416 – 411	323
	Mexico	409	2.5	413 – 403	255



Australian students achieved an average score of 491 points.

This was not significantly different to the OECD average of 489 points.

Australia performed the equivalent of more than 3½ years of schooling lower than the highest performing economy, B-S-J-Z (China), and around 3 years lower than the highest performing country, Singapore.

There were 23 countries/economies whose performance was significantly higher than Australia's.

There were 8 countries/economies whose performance was not significantly different to Australia's.

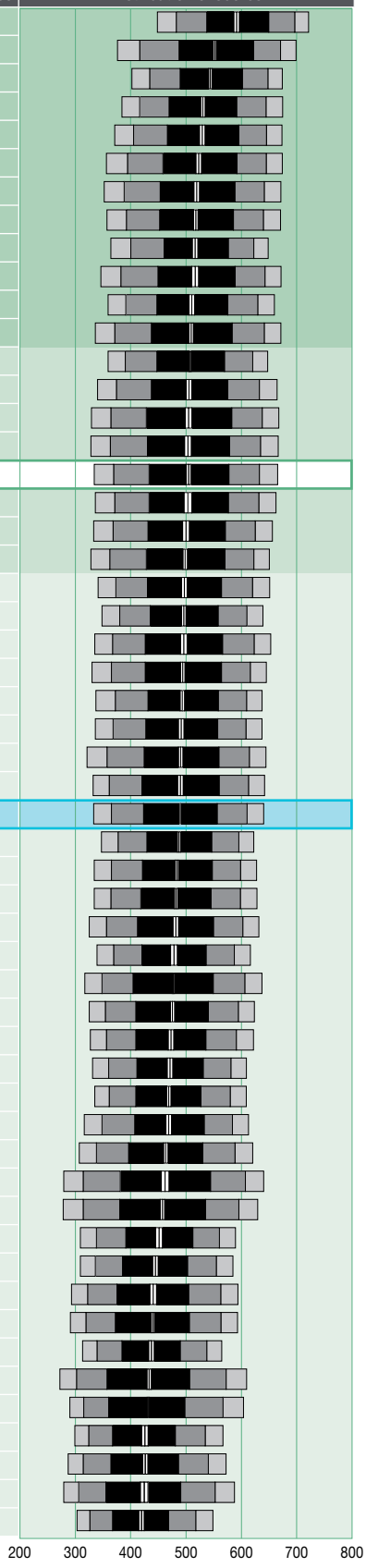
There were 47 countries/economies whose performance was significantly lower than Australia's.

Refer to the Reader's Guide on page 26 for the interpretation of this figure.

FIGURE 1.2 Mean mathematical literacy scores and distribution of student performance, by country

Scientific literacy

	Country	Mean score	SE	Confidence interval	Difference between 5th & 95th percentiles	Distribution of scores
Significantly higher than Australia	B–S–J–Z (China)	590	2.8	595 – 585	277	
	Singapore	551	1.5	554 – 548	322	
	Macao (China)	544	1.5	546 – 541	273	
	Estonia	530	1.9	534 – 526	289	
	Japan	529	2.6	534 – 524	302	
	Finland	522	2.5	527 – 517	317	
	Korea	519	2.9	525 – 514	320	
	Canada	518	2.2	522 – 514	314	
	Hong Kong (China)	517	2.5	522 – 512	285	
	Chinese Taipei	516	2.9	521 – 510	324	
	Poland	511	2.6	516 – 506	301	
	New Zealand	508	2.1	513 – 504	334	
Not significantly different from Australia	Slovenia	507	1.3	509 – 505	289	
	United Kingdom	505	2.7	510 – 499	326	
	Netherlands	503	2.8	509 – 498	336	
	Germany	503	2.9	509 – 497	337	
	Australia	503	1.8	506 – 499	330	
	United States	502	3.3	509 – 496	324	
	Sweden	499	3.1	505 – 493	322	
	Belgium	499	2.2	503 – 494	324	
Significantly lower than Australia	Czech Republic	497	2.5	502 – 492	310	
	Ireland	496	2.2	500 – 492	292	
	Switzerland	495	3.0	501 – 489	317	
	France	493	2.5	498 – 488	315	
	Denmark	493	1.9	496 – 489	300	
	Portugal	492	2.8	497 – 486	301	
	Norway	490	2.3	495 – 486	324	
	Austria	490	2.8	495 – 484	310	
	OECD average	489	0.4	489 – 488	307	
	Latvia	487	1.8	491 – 484	276	
	Spain	483	1.8	487 – 480	296	
	Lithuania	482	1.6	485 – 479	295	
	Hungary	481	2.3	485 – 476	306	
	Russian Federation	480	2.8	485 – 474	282	
	Luxembourg	477	1.2	479 – 474	320	
	Iceland	475	1.8	479 – 472	298	
	Croatia	472	2.8	478 – 467	295	
	Belarus	471	2.4	476 – 466	278	
	Turkey	468	2.0	472 – 464	273	
	Italy	468	2.4	473 – 463	296	
	Slovak Republic	464	2.3	469 – 460	314	
	Israel	462	3.6	469 – 455	361	
	Malta	457	1.9	460 – 453	350	
	Greece	452	3.1	458 – 445	282	
	Chile	444	2.4	448 – 439	275	
	Serbia	440	3.0	446 – 434	300	
	Cyprus	439	1.4	442 – 436	302	
	Malaysia	438	2.7	443 – 432	252	
	United Arab Emirates	434	2.0	438 – 430	337	
	Brunei Darussalam	431	1.2	433 – 429	313	
	Thailand	426	3.2	432 – 420	268	
	Uruguay	426	2.5	431 – 421	286	
	Bulgaria	424	3.6	431 – 417	309	
	Mexico	419	2.6	424 – 414	246	



Refer to the Reader's Guide on page 26 for the interpretation of this figure.

FIGURE 1.3 Mean scientific literacy scores and distribution of student performance, by country

Australian students achieved an average score of 503 points.

This was significantly higher than the OECD average of 489 points.

Australia performed the equivalent of more than 3 years of schooling lower than the highest performing economy, B-S-J-Z (China), and around 1¾ years lower than the highest performing country, Singapore.

There were 12 countries/economies whose performance was significantly higher than Australia's.

There were 7 countries/economies whose performance was not signficantly different to Australia's.

There were 59 countries/economies whose performance was significantly lower than Australia's.

1.2 Australia's proficiency results in an international context

PISA can give a profile of students' reading, mathematical and scientific literacy performance using proficiency levels. These are categories that summarise the skills and knowledge that students are able to display. Each domain has a different number of proficiency levels (8 for reading literacy, 6 for mathematical literacy and 7 for scientific literacy).

These levels are grouped to describe performance in a different way: low performers, high performers and students who attain the National Proficient Standard.

Low performers are students who scored below Level 2 in a particular assessment domain. This is the level at which students begin to demonstrate the competencies in reading, mathematical or scientific literacy that will enable them to engage effectively and productively across a wider range of situations.

High performers are students who scored at the highest two proficiency levels and are highly proficient in that assessment domain.

National Proficient Standard In Australia, students who scored at or above Level 3 achieve the National Proficient Standard. This level represents 'a reasonably challenging level of performance where students need to demonstrate more than the minimal skills expected'.[3]

The proportions of low performers, high performers and students who attained the National Proficient Standard in Australia, as well as the OECD average, are presented in Figure 1.4. B-S-J-Z (China) was the highest performing participant in PISA 2018 and has been included for comparison.

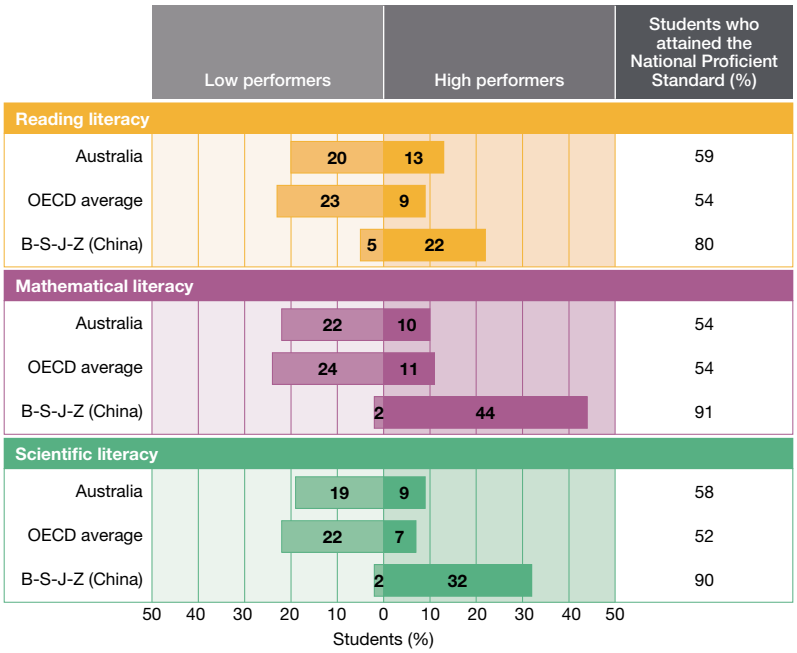


FIGURE 1.4 Australia's high and low performers and students who attained the National Proficient Standard

3 Australian Curriculum, Assessment and Reporting Authority. (2016). *National Assessment Program Standards*. Retrieved from https://www.nap.edu.au/results-and-reports/how-to-interpret/standards

1.3 Australia's performance over time, internationally

Between PISA 2015 and 2018

- Australia's mean performance in reading and mathematical literacy has not changed significantly.
- Australia's mean performance in scientific literacy declined by an average of 7 score points.
- The proportions of low performers and high performers in reading and mathematical literacy did not change.
- The proportion of low performers in scientific literacy did not change while the proportion of high performers declined significantly by 2 percentage points.
- The proportion of Australian students who attained the National Proficient Standard declined in scientific literacy by 3 percentage points. However, the proportion did not change in reading and mathematical literacy.

Over the PISA cycles

PISA compares results between cycles and monitors the knowledge and skills of 15-year-old students over time. The starting point for future comparisons occurs the first time each assessment domain is assessed as a major domain. For reading literacy this occurred in PISA 2000, in mathematics literacy in PISA 2003, and in scientific literacy in 2006. This means that results for reading literacy can be reported over an 18-year period (PISA 2000 – 2018), for mathematical literacy over a 15-year period (PISA 2003 – 2018), and for scientific literacy over a 12-year period (PISA 2006 – 2018).

Table 1.1 shows that the results for Australia during this time reveal:

- the performance of students has declined in each assessment domain
- the proportion of low performers has increased while the proportion of high performers has decreased in each domain
- the proportion of students who attained the National Proficient Standard has declined in each domain.

TABLE 1.1 Changes in performance over time for Australia

Changes in…	Reading literacy (2000–2018)	Mathematical literacy (2003–2018)	Scientific literacy (2006–2018)
Average performance	▼ 26 points	▼ 33 points	▼ 24 points
Proportion of low performers	▲ 7 pp	▲ 8 pp	▲ 6 pp
Proportion of high performers	▼ 4 pp	▼ 9 pp	▼ 5 pp
Proportion of students who attained the National Proficient Standard	▼ 10 pp	▼ 13 pp	▼ 9 pp

pp = percentage points

2 Results for the Australian states and territories

Reading literacy

Table 2.1 provides the reading literacy performance results for the states and territories.

- Students in the Australian Capital Territory, Western Australia, Victoria, Queensland and South Australia performed at a higher level than the OECD average, while students in New South Wales, the Northern Territory and Tasmania performed on par with the OECD average.
- The performance of students in the Australian Capital Territory was higher than that of students in all other jurisdictions.
- Students in Western Australia, Victoria and Queensland performed at a similar level to each other and higher than students in New South Wales, the Northern Territory and Tasmania.
- Students in the Northern Territory and Tasmania performed at a similar level to each other.
- The difference in the mean reading literacy performance between the highest and lowest performing jurisdictions was 56 points, which is the equivalent of more than one-and-a-half years of schooling.

TABLE 2.1 Multiple comparisons of mean reading literacy performance, by state and territory

State/ Territory	Mean score	SE	ACT	WA	VIC	QLD	SA	NSW	NT	TAS	OECD average
ACT	535	4.1		▲	▲	▲	▲	▲	▲	▲	▲
WA	512	3.6	▼		●	●	▲	▲	▲	▲	▲
VIC	511	3.9	▼	●		●	▲	▲	▲	▲	▲
QLD	503	3.1	▼	●	●		●	▲	▲	▲	▲
SA	496	3.7	▼	▼	▼	●		●	●	▲	▲
NSW	493	3.5	▼	▼	▼	▼	●		●	▲	●
NT	481	7.6	▼	▼	▼	▼	●	●		●	●
TAS	479	5.0	▼	▼	▼	▼	▼	▼	●		●
OECD average	487	0.4	▼	▼	▼	▼	▼	●	●	●	

Note: read across the row to compare state or territory performances with the other states or territories listed in the column headings.

▲ Mean performance statistically significantly higher than in comparison state/territory
● Not significantly different from comparison state/territory
▼ Mean performance statistically significantly lower than in comparison state/territory

Figure 2.1 shows the proportions of students who were low performers, high performers and those who attained the National Proficient Standard in reading literacy, by state and territory.

- The range of low performers ranged from 13% in the Australian Capital Territory to 30% in the Northern Territory, while the proportion of high performers ranged from 10% in Tasmania to 21% in the Australian Capital Territory.

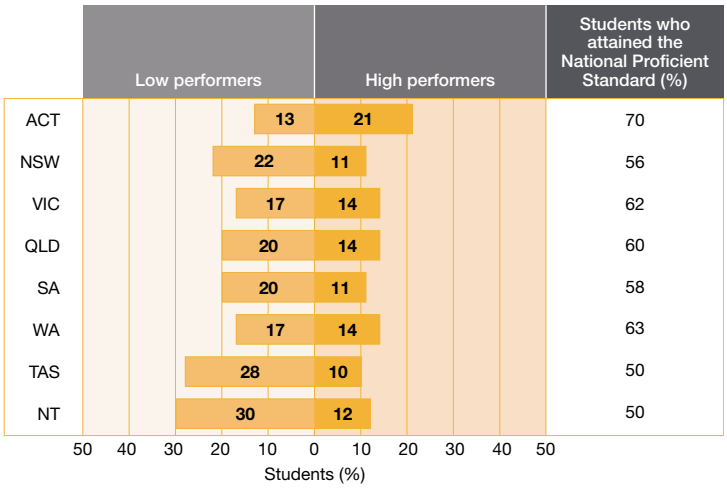


FIGURE 2.1 Proportions of students who were low performers, high performers and attained the National Proficient Standard in reading literacy, by state and territory

Mathematical literacy

Table 2.2 provides the mathematical literacy performance results for the states and territories.

- Students in the Australian Capital Territory and Western Australia performed at a higher level than the OECD average. Students in Victoria, Queensland and New South Wales performed on par with the OECD average, and students in South Australia, Tasmania and the Northern Territory performed at a level lower than the OECD average.
- The performance of students in the Australian Capital Territory was higher than that of students in all other jurisdictions.
- Students in Western Australia and Victoria performed at a similar level to each other.
- Students in Queensland, New South Wales and South Australia all performed at a similar level.
- Students in Tasmania and the Northern Territory were outperformed by those in all other jurisdictions.

TABLE 2.2 Multiple comparisons of mean mathematical literacy performance, by state and territory

State/ Territory	Mean score	SE	ACT	WA	VIC	QLD	NSW	SA	TAS	NT	OECD average
ACT	515	4.1		▲	▲	▲	▲	▲	▲	▲	▲
WA	500	3.9	▼		●	▲	▲	▲	▲	▲	▲
VIC	496	4.2	▼	●		●	●	▲	▲	▲	●
QLD	490	3.2	▼	▼	●		●	●	▲	▲	●
NSW	489	3.7	▼	▼	●	●		●	▲	▲	●
SA	482	3.1	▼	▼	▼	●	●		▲	▲	▼
TAS	465	4.5	▼	▼	▼	▼	▼	▼		●	▼
NT	465	7.4	▼	▼	▼	▼	▼	▼	●		▼
OECD average	489	0.4	▼	▼	●	●	●	▲	▲	▲	

Note: read across the row to compare state or territory performances with the other states or territories listed in the column headings.

▲ Mean performance statistically significantly higher than in comparison state/territory
● Not significantly different from comparison state/territory
▼ Mean performance statistically significantly lower than in comparison state/territory

Figure 2.2 shows the proportions of students who were low performers, high performers and those who attained the National Proficient Standard in mathematical literacy, by state and territory.

- The range of low performers ranged from 15% in the Australian Capital Territory to 33% in the Northern Territory, while the proportion of high performers ranged from 6% in Tasmania to 15% in the Australian Capital Territory.

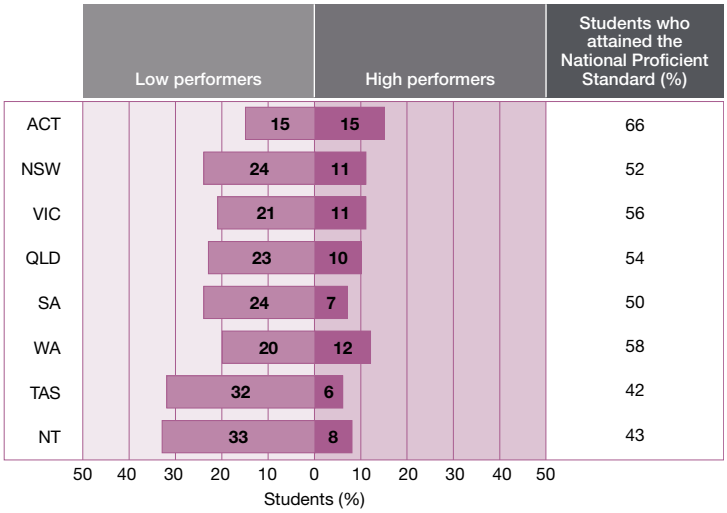


FIGURE 2.2 Proportions of students who were low performers, high performers and attained the National Proficient Standard in mathematical literacy, by state and territory

Scientific literacy

Table 2.3 provides the scientific literacy performance results for the states and territories.

- Students in the Australian Capital Territory, Western Australia, Victoria, Queensland, South Australia and New South Wales performed at a higher level than the OECD average, while students in Tasmania and the Northern Territory performed at a similar level to the OECD average.
- The performance of students in the Australian Capital Territory was higher than that of students in the other jurisdictions.
- Students in Western Australia and Victoria performed at a similar level to each other.
- Students in Queensland, South Australia and New South Wales all performed at a similar level.
- Students in Tasmania and the Northern Territory were outperformed by those in all other jurisdictions.

TABLE 2.3 Multiple comparisons of mean scientific literacy performance, by state and territory

State/ Territory	Mean score	SE	ACT	WA	VIC	QLD	SA	NSW	TAS	NT	OECD average
ACT	533	3.8		▲	▲	▲	▲	▲	▲	▲	▲
WA	515	4.0	▼		●	▲	▲	▲	▲	▲	▲
VIC	507	4.1	▼	●		●	▲	▲	▲	▲	▲
QLD	505	3.1	▼	▼	●		●	●	▲	▲	▲
SA	496	3.5	▼	▼	▼	●		●	▲	●	▲
NSW	496	3.6	▼	▼	▼	●	●		▲	●	▲
TAS	481	4.3	▼	▼	▼	▼	▼	▼		●	●
NT	481	7.5	▼	▼	▼	▼	●	●	●		●
OECD average	489	0.4	▼	▼	▼	▼	▼	▼	●	●	

Note: read across the row to compare state or territory performances with the other states or territories listed in the column headings.

▲ Mean performance statistically significantly higher than in comparison state/territory
● Not significantly different from comparison state/territory
▼ Mean performance statistically significantly lower than in comparison state/territory

Figure 2.3 shows the proportions of students who were low performers, high performers and those who attained the National Proficient Standard in scientific literacy, by state and territory.

- The range of low performers ranged from 11% in the Australian Capital Territory to 28% in the Northern Territory, while the proportion of high performers ranged from 6% in Tasmania to 15% in the Australian Capital Territory.

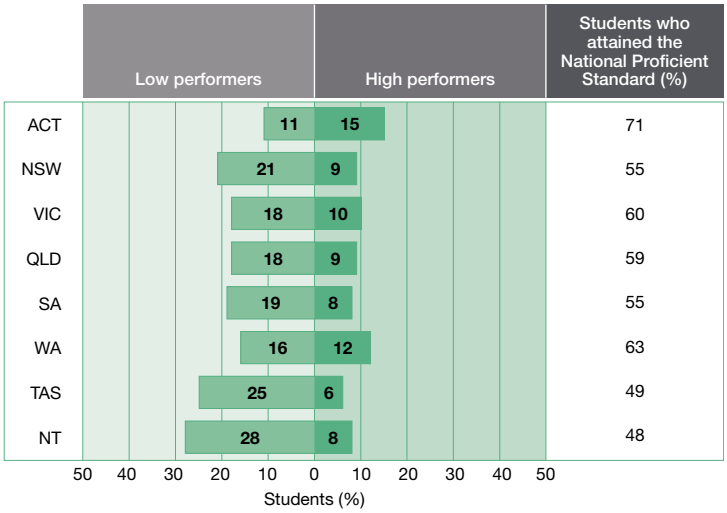


FIGURE 2.3 Proportions of students who were low performers, high performers and attained the National Proficient Standard in scientific literacy, by state and territory

Between PISA 2015 and 2018

- Two jurisdictions reported changes in performance during this time. In the Australian Capital Territory, the mean reading literacy performance increased by 19 points, and the mean scientific literacy performance increased by 6 points. In New South Wales, the mean scientific literacy performance decreased by 12 points.
- In reading literacy, the proportion of high-performing students increased in Queensland by 3 percentage points, in Victoria and Western Australia by 4 percentage points, and in the Australian Capital Territory by 7 percentage points.
- In scientific literacy in New South Wales, the proportion of high-performing students decreased by 4 percentage points.
- The proportions of students who attained the National Proficient Standard in reading and scientific literacy declined in New South Wales by 4 percentage points.

Over the PISA cycles

Table 2.4 shows changes in state and territory performance between PISA 2000 and 2018 for reading literacy, between 2003 and 2018 for mathematical literacy, and between 2006 and 2018 for scientific literacy.

TABLE 2.4 Changes in performance over time for the states and territories

Changes in…	State/Territory	Reading literacy (2000–2018)	Mathematical literacy (2003–2018)	Scientific literacy (2006–2018)
Average performance	ACT	▼ 17 points	▼ 33 points	▼ 16 points
	NSW	▼ 45 points	▼ 38 points	▼ 39 points
	VIC	*	▼ 14 points	*
	QLD	*	▼ 30 points	▼ 17 points
	SA	▼ 41 points	▼ 53 points	▼ 36 points
	WA	▼ 25 points	▼ 48 points	▼ 28 points
	TAS	▼ 35 points	▼ 42 points	▼ 25 points
	NT	*	▼ 32 points	*
Proportion of low performers	ACT	▲ 5 pp	*	*
	NSW	▲ 12 pp	▲ 10 pp	▲ 10 pp
	VIC	*	*	*
	QLD	▲ 6 pp	▲ 7 pp	▲ 5 pp
	SA	▲ 10 pp	▲ 12 pp	▲ 8 pp
	WA	▲ 5 pp	▲ 11 pp	▲ 6 pp
	TAS	▲ 10 pp	▲ 14 pp	▲ 6 pp
	NT	*	▲ 12 pp	*
Proportion of high performers	ACT	*	▼ 13 pp	▼ 6 pp
	NSW	▼ 7 pp	▼ 10 pp	▼ 8 pp
	VIC	*	▼ 4 pp	*
	QLD	*	▼ 9 pp	▼ 3 pp
	SA	▼ 8 pp	▼ 16 pp	▼ 7 pp
	WA	▼ 7 pp	▼ 16 pp	▼ 7 pp
	TAS	*	▼ 8 pp	▼ 5 pp
	NT	*	*	*
Proportion of students who attained the National Proficient Standard	ACT	▼ 8 pp	▼ 10 pp	*
	NSW	▼ 18 pp	▼ 14 pp	▼ 14 pp
	VIC	*	▼ 6 pp	*
	QLD	*	▼ 12 pp	▼ 7 pp
	SA	▼ 15 pp	▼ 22 pp	▼ 14 pp
	WA	*	▼ 18pp	▼ 10 pp
	TAS	▼ 15 pp	▼ 19 pp	▼ 10 pp
	NT	*	▼ 15 pp	*

pp = percentage points
* There were no significant differences between two cycles.
The figures show significant changes between the two cycles.

3 Results for the Australian school sectors

Figure 3.1 provides student performance results across the three school sectors (government, Catholic and independent) and compares them using the unadjusted (raw) mean scores.

- On the raw scores, across the assessment domains, students in independent schools performed higher than students in Catholic schools, and students in Catholic schools performed higher than students in government schools.
- Across the assessment domains, there was around three-quarters of a year of schooling difference between students in government schools and students in Catholic schools, around one-and-a-half years of schooling difference between students in government schools and students in independent schools, and almost one year of schooling difference between students in Catholic schools and students in independent schools.
- The mean score differences between students in government schools and Catholic schools were 28 points for reading literacy, 22 points for mathematical literacy and 23 points for scientific literacy. The mean score differences between students in government schools and independent schools were 49 points for reading literacy, 47 points for mathematical literacy and 47 points for scientific literacy. The mean score differences between students in Catholic schools and independent schools were 21 points for reading literacy, 25 points for mathematical literacy and 24 points for scientific literacy.
- After adjusting for the socioeconomic background at both student and school-level, there were no differences in the reading or scientific literacy performances between the school sectors. This means that, given similar socioeconomic backgrounds, there is no performance advantage for students who attend an independent school or a Catholic school over a government school. However, for mathematical literacy performance, once student and school-level socioeconomic background were accounted for, there was a difference in performance between government and Catholic schools, where students who attended government schools were achieving at a higher level.
- The proportion of low performers was highest in government schools, lower in Catholic schools, and lower again in independent schools.
- The proportion of high performers was lowest in government schools, higher in Catholic schools, and higher again in independent schools.

School sector	Mean score	SE	Confidence interval	Low performers	High performers	Students who attained the National Proficient Standard (%)
Reading literacy						
Government	487	2.1	482 – 491	24	11	53
Catholic	515	3.5	508 – 521	16	14	64
Independent	536	4.1	527 – 543	11	19	72
Mathematical literacy						
Government	477	2.4	472 – 482	28	8	47
Catholic	499	4.4	490 – 508	18	10	59
Independent	524	3.8	516 – 531	11	17	69
Scientific literacy						
Government	489	2.3	484 – 493	23	8	52
Catholic	512	3.6	504 – 518	15	9	62
Independent	536	4.0	528 – 543	10	14	72

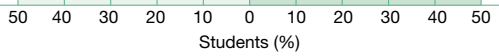


FIGURE 3.1 Student performance across school sector

Between PISA 2015 and 2018

- The mean scientific literacy performance declined by 10 points for students in Catholic schools and by 16 points for students in independent schools.
- In reading literacy, the proportions of low-performing students in Catholic and independent schools increased by 3 percentage points, and the proportion of high-performing students in government schools increased by 2 percentage points.
- In scientific literacy, the proportion of low-performing students in independent schools increased by 3 percentage points, and the proportion of high-performing students in independent schools decreased by 4 percentage points.
- The proportion of students who attained the National Proficient Standard declined for students in independent schools, by 5 percentage points in reading literacy, and 6 percentage points in scientific literacy.

Between PISA 2009 and 2018[4]

Table 3.1 shows changes in school sector performance between PISA 2009 and 2018 for reading literacy, between 2009 and 2018 for mathematical literacy, and between 2009 and 2018 for scientific literacy.

TABLE 3.1 Changes in performance for school sector

Changes in…	School sector	Reading literacy (2009–2018)	Mathematical literacy (2009–2018)	Scientific literacy (2009–2018)
Average performance	Government	*	▼ 22 points	▼ 22 points
	Catholic	▼ 17 points	▼ 27 points	▼ 28 points
	Independent	▼ 18 points	▼ 24 points	▼ 30 points
Proportion of low performers	Government	▲ 5 pp	▲ 7 pp	▲ 7 pp
	Catholic	▲ 8 pp	▲ 9 pp	▲ 8 pp
	Independent	▲ 5 pp	▲ 4 pp	▲ 4 pp
Proportion of high performers	Government	*	▼ 5 pp	▼ 4 pp
	Catholic	*	▼ 6 pp	▼ 4 pp
	Independent	*	▼ 9 pp	▼ 10 pp
Proportion of students who attained the National Proficient Standard	Government	*	▼ 9 pp	▼ 9 pp
	Catholic	*	▼ 13 pp	▼ 12 pp
	Independent	▼ 5 pp	▼ 9 pp	▼ 9 pp

pp = percentage points
* There were no significant differences between two cycles.
The figures show significant changes between the two cycles.

4 Results on student performance by school sector were first reported in PISA 2009.

4 Results for Australian female and male students

Figure 4.1 provides the performance results for male and female students.

- In reading literacy, female students performed at a higher level than male students with a 32 point difference in mean score, which is the equivalent of around one year of schooling. The proportion of low-performing female students was lower than of male students, while the proportion of high-performing female students was higher than of male students.
- In mathematical literacy, male students performed 6 points higher than female students, which is the equivalent of around one-fifth of a year of schooling. There were similar proportions of low-performing female and male students, while the proportion of high-performing female students was lower than of male students.
- In scientific literacy, there was no difference between the performance of female and male students. There were similar proportions of low-performing female and male students; however, the proportion of high-performing female students was lower than of male students.

Sex	Mean score	SE	Confidence interval	Low performers	High performers	Students who attained the National Proficient Standard (%)
Reading literacy						
Females	519	2.0	515 – 522	15	15	65
Males	487	2.2	483 – 492	24	11	54
Mathematical literacy						
Females	488	2.5	483 – 493	23	9	53
Males	494	2.4	489 – 499	22	12	55
Scientific literacy						
Females	502	2.0	498 – 506	18	8	58
Males	504	2.4	499 – 508	20	10	58

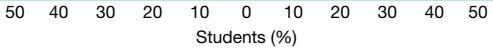


FIGURE 4.1 Student performance, by sex

Between PISA 2015 and 2018

- The mean scientific literacy performance for both female and male students declined by 7 points.
- In scientific literacy, the proportion of low-performing male students increased by 10 percentage points and the proportion of high-performing male students decreased by 2 percentage points, while the proportion of high-performing female students decreased by 10 percentage points.
- The proportions of students who attained the National Proficient Standard in scientific literacy decreased for both female and male students by 3 percentage points.

Over the PISA cycles

Table 4.1 shows changes in male and female performance between PISA 2000 and 2018 for reading literacy, between 2003 and 2018 for mathematical literacy, and between 2006 and 2018 for scientific literacy.

TABLE 4.1 Changes in performance, by sex

Changes in...	Sex	Reading literacy (2000–2018)	Mathematical literacy (2003–2018)	Scientific literacy (2006–2018)
Average performance	Females	▼ 28 points	▼ 33 points	▼ 25 points
	Males	▼ 25 points	▼ 33 points	▼ 23 points
Proportion of low performers	Females	▲ 7 pp	▲ 9 pp	▲ 6 pp
	Males	▲ 9 pp	▲ 7 pp	▲ 6 pp
Proportion of high performers	Females	▼ 6 pp	▼ 9 pp	▼ 5 pp
	Males	▼ 3 pp	▼ 10 pp	▼ 5 pp
Proportion of students who attained the National Proficient Standard	Females	▼ 11 pp	*	▼ 9 pp
	Males	▼ 9 pp	*	▼ 8 pp

pp = percentage points
* There were no significant differences between two cycles.
The figures show significant changes between the two cycles.

5 Results for geographic location of schools

Figure 5.1 provides the student performance results for the geographic location of schools using the broad categories of metropolitan, provincial and remote defined in the *MCEETYA Schools Geographic Location Classification*.[5]

- In reading and mathematical literacy, students from metropolitan schools performed at a higher level than students in provincial and remote schools, and in turn, students in provincial schools performed at a higher level than students in remote schools.
- In scientific literacy, students from metropolitan schools performed at a higher level than students in provincial and remote schools; however, there were no differences between students in provincial schools and students in remote schools.
- The differences in the mean scores between metropolitan and provincial schools were 21 points (or the equivalent of around two-thirds of a year of schooling) in reading literacy, 21 points (or the equivalent of around three-quarters of a year) in mathematical literacy, and 17 points (or the equivalent of around two-thirds of a year) in scientific literacy.
- The differences in the mean scores between metropolitan and remote schools were 59 points (or the equivalent of around one-and-three-quarter years of schooling) in reading literacy, 57 points (or the equivalent of two years) in mathematical literacy, and 50 points (or the equivalent of nearly two years) in scientific literacy.
- The differences in the mean scores between provincial and remote schools were 38 points (or the equivalent of more than one year of schooling) in reading literacy and 36 points (or the equivalent of around one-and-one-third years) in mathematical literacy.

Geographic location (MCEETYA)	Mean score	SE	Confidence interval	Low performers	High performers	Students who attained the National Proficient Standard (%)
Reading literacy						
Metropolitan	508	1.8	504 – 511	18	14	61
Provincial	487	3.4	480 – 493	24	10	54
Remote	449	16.3	417 – 481	38	8	40
Mathematical literacy						
Metropolitan	497	2.2	492 – 501	21	12	56
Provincial	476	3.4	469 – 482	27	7	48
Remote	440	10.5	419 – 460	45	5	34
Scientific literacy						
Metropolitan	508	2.1	503 – 511	18	10	60
Provincial	491	3.2	484 – 497	22	7	53
Remote	457	17.7	422 – 491	37	5	41

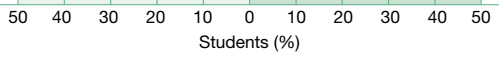


FIGURE 5.1 Student performance, by geographic location

5 For more information about the MCEETYA Schools Geographic Location Classification, refer to the Reader's Guide in *PISA 2018: Reporting Australia's results. Volume I Student performance.*

Between PISA 2015 and 2018

- The mean scientific literacy performance for students in metropolitan schools declined by 10 points.
- In reading literacy, the proportions of low-performing students and high-performing students in metropolitan schools increased by 2 percentage points. The proportion of high performers in provincial schools increased by 3 percentage points.
- In scientific literacy, the proportion of low-performing students in metropolitan schools increased by 2 percentage points, while the proportion of high-performing students in metropolitan schools decreased by 2 percentage points.
- The proportion of students who attained the National Proficient Standard declined for students in metropolitan schools, by 3 percentage points in reading literacy, and 4 percentage points in scientific literacy.

Over the PISA cycles

Table 5.1 shows changes in performance by geographic location between PISA 2000 and 2018 for reading literacy, between 2003 and 2018 for mathematical literacy, and between 2006 and 2018 for scientific literacy.

TABLE 5.1 Changes in performance, by geographic location

Changes in...	Geographic location (MCEETYA)	Reading literacy (2000–2018)	Mathematical literacy (2003–2018)	Scientific literacy (2006–2018)
Average performance	Metropolitan	▼ 26 points	▼ 31 points	▼ 23 points
	Provincial	▼ 31 points	▼ 39 points	▼ 30 points
	Remote	*	▼ 53 points	*
Proportion of low performers	Metropolitan	▲ 7 pp	▲ 7 pp	▲ 6 pp
	Provincial	▲ 10 pp	▲ 11 pp	▲ 8 pp
	Remote	*	▲ 23 pp	*
Proportion of high performers	Metropolitan	▼ 5 pp	▼ 10 pp	▼ 5 pp
	Provincial	▼ 4 pp	▼ 9 pp	▼ 6 pp
	Remote	*	▼ 7 pp	*
Proportion of students who attained the National Proficient Standard	Metropolitan	▼ 10 pp	▼ 12 pp	▼ 8 pp
	Provincial	▼ 11 pp	▼ 16 pp	▼ 11 pp
	Remote	*	▼ 17 pp	*

pp = percentage points
* There were no significant differences between two cycles.
The figures show significant changes between the two cycles.

6 Results for socioeconomic background

Information about students' socioeconomic background was collected in the Student Questionnaire. Students were asked about their family and home background. This information was used to construct a measure of socioeconomic background called the Economic, Social and Cultural Status index.[6] Figure 6.1 provides the student performance results for socioeconomic background, by quartiles.

- Across all assessment domains, the results showed that students from higher socioeconomic backgrounds performed at a higher level than students from lower socioeconomic backgrounds.
- Students from the highest socioeconomic quartile performed, on average, about three years of schooling higher than students in the lowest quartile. The mean score differences between students in the highest quartile and lowest quartile were 89 points for reading literacy, 81 points for mathematical literacy and 82 points for scientific literacy. The mean score differences between one quartile and the next were around 30 points for reading literacy, and around 27 points for mathematical literacy and scientific literacy.
- Across all assessment domains, the proportion of low performers decreased with each increment in socioeconomic quartile, while the proportion of high performers increased with each increment in socioeconomic quartile.

Socioeconomic background	Mean score	SE	Confidence interval	Low performers	High performers	Students who attained the National Proficient Standard (%)
Reading literacy						
Lowest quartile	460	2.3	455 – 464	31	6	43
Second quartile	490	2.4	485 – 495	21	10	55
Third quartile	519	2.7	513 – 523	15	15	66
Highest quartile	549	2.3	544 – 553	10	24	76
Mathematical literacy						
Lowest quartile	451	2.3	446 – 455	37	4	36
Second quartile	480	2.4	475 – 484	25	7	49
Third quartile	506	2.8	499 – 511	17	13	61
Highest quartile	532	2.8	526 – 537	11	20	72
Scientific literacy						
Lowest quartile	462	2.2	458 – 466	31	4	41
Second quartile	491	2.4	486 – 496	20	7	53
Third quartile	519	3.0	512 – 524	14	11	65
Highest quartile	545	2.6	539 – 549	10	18	75

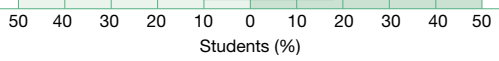


FIGURE 6.1 Student performance, by socioeconomic background

6 For more information about the Economic, Social and Cultural Status index, refer to the Reader's Guide in *PISA 2018: Reporting Australia's results. Volume I Student performance*

Between PISA 2015 and 2018

- The mean scientific literacy performance for students in the highest quartile declined by 14 points.
- In reading literacy, the proportion of low-performing students in the highest quartile increased by 2 percentage points, and the proportion of high-performing students in the third quartile increased by 3 percentage points.
- In mathematical literacy, the proportion of low-performing students in the highest quartile increased by 2 percentage points.
- In scientific literacy, the proportion of low-performing students in the highest quartile increased by 3 percentage points, and the proportion of high-performing students in the highest quartile decreased by 4 percentage points.
- The proportions of students who attained the National Proficient Standard declined significantly for students in the highest quartile by 3 percentage points in reading literacy, and for students in the third quartile and highest quartile in scientific literacy by 4 and 5 percentage points respectively.

Over the PISA cycles

Table 6.1 shows changes in socioeconomic background performance between PISA 2000 and 2018 for reading literacy, between 2003 and 2018 for mathematical literacy, and between 2006 and 2018 for scientific literacy.

TABLE 6.1 Changes in performance, by socioeconomic background

Changes in…	Socioeconomic background	Reading literacy (2000–2018)	Mathematical literacy (2003–2018)	Scientific literacy (2006–2018)
Average performance	Lowest quartile	▼ 24 points	▼ 28 points	▼ 20 points
	Second quartile	▼ 23 points	▼ 31 points	▼ 25 points
	Third quartile	▼ 21 points	▼ 34 points	▼ 13 points
	Highest quartile	▼ 38 points	▼ 40 points	▼ 30 points
Proportion of low performers	Lowest quartile	▲ 10 pp	▲ 11 pp	▲ 8 pp
	Second quartile	▲ 7 pp	▲ 9 pp	▲ 7 pp
	Third quartile	▲ 6 pp	▲ 7 pp	▲ 4 pp
	Highest quartile	▲ 7 pp	▲ 6 pp	▲ 5 pp
Proportion of high performers	Lowest quartile	*	▼ 4 pp	▼ 2 pp
	Second quartile	*	▼ 8 pp	▼ 4 pp
	Third quartile	*	▼ 10 pp	▼ 3 pp
	Highest quartile	▼ 10 pp	▼ 15 pp	▼ 9 pp
Proportion of students who attained the National Proficient Standard	Lowest quartile	▼ 9 pp	▼ 12 pp	▼ 9 pp
	Second quartile	▼ 10 pp	▼ 13 pp	▼ 10 pp
	Third quartile	▼ 8 pp	▼ 14 pp	▼ 5 pp
	Highest quartile	▼ 12 pp	▼ 13 pp	▼ 9 pp

pp = percentage points
* There were no significant differences between two cycles.
The figures show significant changes between the two cycles.

7 Results for Indigenous background

Information about the Indigenous background of Australian students was collected in the Student Questionnaire.[7] Five per cent of the PISA 2018 sample identified as having an Indigenous background. Figure 7.1 provides the student performance results by Indigenous background.

- The performance of Indigenous students was lower than for non-Indigenous students in all assessment domains. In reading literacy, the difference in the mean score was 76 points (or the equivalent of around two-and-a-third years of schooling). In mathematical literacy, the difference in the mean score was 69 points (or the equivalent of around two-and-a-half years), and in scientific literacy, the difference in the mean score was 75 points (or the equivalent of around two-and-three-quarter years).
- Across all assessment domains, the proportion of low-performing Indigenous students was higher than the proportion of low-performing non-Indigenous students, while the proportion of high-performing Indigenous students was lower than the proportion of high-performing non-Indigenous students.

Indigenous background	Mean score	SE	Confidence interval	Low performers	High performers	Students who attained the National Proficient Standard (%)
Reading literacy						
Indigenous	431	5.6	419 – 441	43	5	32
Non-Indigenous	507	1.8	503 – 510	18	14	61
Mathematical literacy						
Indigenous	426	6.3	413 – 438	48	3	27
Non-Indigenous	495	2.0	490 – 498	21	11	55
Scientific literacy						
Indigenous	432	5.9	420 – 443	44	3	31
Non-Indigenous	507	1.9	503 – 510	18	10	60

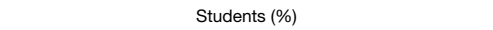


FIGURE 7.1 Student performance, by Indigenous background

7 For more information about Indigenous background, refer to the Reader's Guide in *PISA 2018: Reporting Australia's results. Volume I Student performance*.

Between PISA 2015 and 2018

- The mean scientific literacy performance declined by 6 points for non-Indigenous students.
- The proportion of high-performing non-Indigenous students increased by 2 percentage points in reading literacy.
- The proportion of non-Indigenous students who attained the National Proficient Standard in scientific literacy decreased by 2 percentage points.

Over the PISA cycles

Table 7.1 shows changes in performance by Indigenous background between PISA 2000 and 2018 for reading literacy, between 2003 and 2018 for mathematical literacy, and between 2006 and 2018 for scientific literacy.

TABLE 7.1 Changes in performance, by Indigenous background

Changes in…	Indigenous background	Reading literacy (2000–2018)	Mathematical literacy (2003–2018)	Scientific literacy (2006–2018)
Average performance	Indigenous	*	*	*
	Non-Indigenous	▼ 24 points	▼ 31 points	▼ 22 points
Proportion of low performers	Indigenous	▲ 10 pp	*	*
	Non-Indigenous	▲ 7 pp	▲ 8 pp	▲ 6 pp
Proportion of high performers	Indigenous	*	*	*
	Non-Indigenous	▼ 4 pp	▼ 9 pp	▼ 5 pp
Proportion of students who attained the National Proficient Standard	Indigenous	*	*	*
	Non-Indigenous	▼ 9 pp	▼ 12 pp	▼ 8 pp

pp = percentage points
* There were no significant differences between two cycles.
The figures show significant changes between the two cycles.

8 Results for immigrant background

Information about the immigrant background of Australian students was collected in the Student Questionnaire. Students were asked about where they and their parents were born.[8] Figure 8.1 provides the student performance results by immigrant background.

- In reading literacy, Australian-born students and foreign-born students performed at a lower level than first-generation students, while the performance of Australian-born students and foreign-born students was similar. The mean score difference between Australian-born students and first-generation students was 11 points or the equivalent of around one-third of a year of schooling. This was similar to the mean score difference between foreign-born students and first-generation students of 12 points.
- In mathematical literacy, Australian-born students performed at a lower level than first-generation and foreign-born students, while the performance of first-generation and foreign-born students was similar. The mean score difference between Australian-born and first-generation students was 12 points or the equivalent of around almost one-half of a year of schooling, and the mean score between Australian-born and foreign-born students was a similar 14 points.
- In scientific literacy, first-generation students performed at a higher level than foreign-born students. The mean score difference was 13 points or the equivalent of around one-half of a year of schooling.

Immigrant background	Mean score	SE	Confidence interval	Low performers	High performers	Students who attained the National Proficient Standard (%)
Reading literacy						
Australian-born	502	2.2	498 – 506	19	13	59
First-generation	513	2.6	507 – 517	17	15	62
Foreign-born	501	3.8	493 – 508	21	14	58
Mathematical literacy						
Australian-born	487	2.3	482 – 491	23	9	53
First-generation	499	3.1	493 – 505	21	13	57
Foreign-born	501	3.7	493 – 508	21	14	58
Scientific literacy						
Australian-born	504	2.2	499 – 508	18	9	59
First-generation	510	2.9	504 – 515	18	12	60
Foreign-born	497	4.0	489 – 505	22	10	56

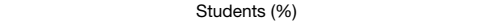


FIGURE 8.1 Student performance, by immigrant background

8 For more information about immigrant background, refer to the Reader's Guide in *PISA 2018: Reporting Australia's results. Volume I Student performance*.

Between PISA 2015 and 2018

- The mean scientific literacy performance declined by 6 points for Australian-born students and by 10 points for first-generation students.
- In all assessment domains, the proportion of low-performing first-generation students increased by 3 percentage points.
- In reading literacy, the proportion of high-performing Australian-born students increased by 3 percentage points.
- The proportion of students who attained the National Proficient Standard declined significantly for Australian-born students by 3 percentage points in scientific literacy. For first-generation students there was a decline of 3 percentage points in reading literacy and 4 percentage points in scientific literacy.

Over the PISA cycles

Table 8.1 shows changes in performance by immigrant background between PISA 2000 and 2018 for reading literacy, between 2003 and 2018 for mathematical literacy, and between 2006 and 2018 for scientific literacy.

TABLE 8.1 Changes in performance, by immigrant background

Changes in…	Immigrant background	Reading literacy (2000–2018)	Mathematical literacy (2003–2018)	Scientific literacy (2006–2018)
Average performance	Australian-born	▼ 27 points	▼ 40 points	▼ 24 points
	First-generation	▼ 24 points	▼ 22 points	▼ 21 points
	Foreign-born	*	▼ 24 points	▼ 29 points
Proportion of low performers	Australian-born	▲ 7 pp	▲ 10 pp	▲ 6 pp
	First-generation	▲ 7 pp	▲ 8 pp	▲ 6 pp
	Foreign-born	▲ 6 pp	▲ 6 pp	▲ 6 pp
Proportion of high performers	Australian-born	▼ 4 pp	▼ 11 pp	▼ 4 pp
	First-generation	*	▼ 8 pp	▼ 8 pp
	Foreign-born	*	▼ 7 pp	*
Proportion of students who attained the National Proficient Standard	Australian-born	▼ 10 pp	▼ 16 pp	▼ 9 pp
	First-generation	▼ 9 pp	▼ 8 pp	▼ 8 pp
	Foreign-born	*	▼ 9 pp	▼ 9 pp

pp = percentage points
* There were no significant differences between two cycles.
The figures show significant changes between the two cycles.

9 Results for language spoken at home

Information about the language background of Australian students was collected in the Student Questionnaire.[9] Figure 9.1 provides the student performance results by language spoken at home.

- In reading literacy, students who spoke English at home performed at a higher level than students who spoke a language other than English at home. The difference in the mean score was 24 points or the equivalent of around three-quarters of a year of schooling.
- In mathematical literacy, there was no difference between the performance of students who spoke English at home and those who spoke a language other than English at home.
- In scientific literacy, students who spoke English at home performed at a higher level than students who spoke a language other than English at home. The difference in the mean score was 21 points or the equivalent of around three-quarters of a year of schooling.
- Across all assessment domains, the proportion of low-performing students who spoke English at home was lower than the proportion of low-performing students who spoke a language other than English at home, while there were similar proportions of high-performing students regardless of language background.

Language background	Mean score	SE	Confidence interval	Low performers	High performers	Students who attained the National Proficient Standard (%)
Reading literacy						
English spoken at home	507	1.8	503 – 510	18	14	61
Language other than English spoken at home	483	4.7	473 – 492	27	13	51
Mathematical literacy						
English spoken at home	492	2.0	488 – 496	22	10	55
Language other than English spoken at home	486	5.7	474 – 497	28	14	51
Scientific literacy						
English spoken at home	506	2.0	502 – 510	18	10	59
Language other than English spoken at home	485	5.4	474 – 495	27	9	51

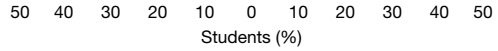


FIGURE 9.1 Student performance, by language spoken at home

9 For more information about language spoken at home, refer to the Reader's Guide in *PISA 2018: Reporting Australia's results. Volume I Student performance*.

Between PISA 2015 and 2018

- The mean scientific literacy performance declined by 8 points for students who spoke English at home.
- Of the students who spoke English at home, in reading literacy there were 2 percentage point increases in the proportions of low performers and high performers.
- In scientific literacy, there was a 2 percentage point increase in the proportion of low performers and a 2 percentage point decrease in the proportion of high performers.
- The proportion of students who spoke English at home who attained the National Proficient Standard in scientific literacy decreased by 3 percentage points.

Over the PISA cycles

Table 9.1 shows changes in performance by language background between PISA 2003 and 2018 for reading literacy, between 2003 and 2018 for mathematical literacy, and between 2006 and 2018 for scientific literacy.

TABLE 9.1 Changes in performance, by language background

Changes in…	Language background	Reading literacy (2003–2018)[10]	Mathematical literacy (2003–2018)	Scientific literacy (2006–2018)
Average performance	English spoken at home	▼ 22 points	▼ 35 points	▼ 24 points
	Language other than English spoken at home	▼ 26 points	▼ 29 points	▼ 22 points
Proportion of low performers	English spoken at home	▲ 7 pp	▲ 8 pp	▲ 6 pp
	Language other than English spoken at home	▲ 11 pp	▲ 9 pp	▲ 7 pp
Proportion of high performers	English spoken at home	*	▼ 10 pp	▼ 5 pp
	Language other than English spoken at home	*	*	*
Proportion of students who attained the National Proficient Standard	English spoken at home	▼ 11 pp	▼ 13 pp	▼ 9 pp
	Language other than English spoken at home	▼ 11 pp	▼ 11 pp	*

pp = percentage points
* There were no significant differences between two cycles.
The figures show significant changes between the two cycles.

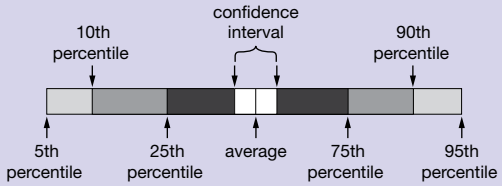
10 Language background in PISA 2000 was asked in a different way than in other PISA cycles so comparisons cannot be made.

PISA in Brief Reader's Guide

Reading the figures relating to Australia's results in an international context (Section 1.1)

These figures show the mean scores on the relevant assessment domain (reading, mathematical or scientific literacy), along with the standard errors, and confidence intervals around the mean for participating countries and economies. In addition, these figures also show the graphical distribution of students' performance. The box below details how to read these figures.

Each country's results are represented in horizontal bars with various colours. On the left end of the bar is the 5th percentile—this is the score below which 5% of the students have scored. The next two lines indicate the 10th percentile and the 25th percentile. The next line at the left of the white band is the lower limit of the confidence interval for the mean—i.e., there is 95% confidence that the mean will lie in this white band. The line in the centre of the white band is the average (mean). The lines to the right of the white band indicate the 75th, 90th and 95th percentiles.



Countries and economies are shown in order from the highest to the lowest mean score and the colour bands summarise Australia's performance compared to other participating countries and economies.

Although 79 countries and economies administered PISA 2018, not all are reported in these figures. For the sake of brevity and clarity in figures, only results for those countries that recorded a mean score higher than the lowest performing OECD country, Mexico, are presented here. Data for Spain were excluded for reading literacy and data for Vietnam were excluded for all assessment domains. Therefore, data for 77 countries is available for reading literacy and for 78 countries for mathematical and scientific literacy. Results for all remaining participating countries and economies are available in the OECD international PISA report.

Terms used in this publication

OECD average corresponds to the arithmetic average of the respective country estimates, and can be used to compare a country on a given indicator with a typical OECD country. The OECD average is presented for comparative purposes.

Interpreting differences using 'years of schooling' Analyses of the PISA data indicate that one school year in Australia corresponds to an average of around 33 points on the PISA reading literacy scale, around 28 points on the mathematical literacy scale, and around 27 points on the scientific literacy scale.

Between PISA 2015 and 2018 refers to a 3-year period between the current and previous PISA cycle.

Over the PISA cycles refers to a period of years between the first time an assessment domain was assessed as a major domain, and the current PISA cycle. For reading literacy, this is 18 years (PISA 2000 – 2018), for mathematical literacy this is 15 years (PISA 2003 – 2018), and for scientific literacy this is 12 years (PISA 2006 – 2018).

The complete report, *PISA 2018: Reporting Australia's results. Volume I Student performance*, contains data and analysis and is available to download from www.acer.org/au/ozpisa/publications-and-data.

What is the Programme for International Student Assessment (PISA)?

PISA is an assessment that measures the knowledge and skills of 15-year-old students, an age at which they have nearly completed compulsory schooling.

- The assessment, first carried out in 2000, is conducted every three years so that changes over time can be measured.
- Around 600 000 students, representing 32 million 15-year-olds from 79 countries and economies, took part in PISA 2018.
- Students completed a computer-based assessment that contained items from one or more of the reading, mathematical, and scientific literacy assessment domains.
- Students answered a questionnaire about their background, their motivations to learn and their attitudes to school.
- Principals answered a questionnaire that included questions about the level of resources in the school, the school environment and qualifications of staff.

PISA assesses young adults' ability to apply their knowledge and skills to real-life problems and situations rather than how well they have learned a specific curriculum.

- PISA assesses student capabilities in reading, mathematical and scientific literacy. The word 'literacy' reflects the focus on broader skills and means much more than the common definition of being able to read and write.
- To answer the PISA 2018 tasks correctly, students had to understand key concepts, use a range of processes in the correct way and apply their knowledge and skills in different situations.
- Some of the assessment tasks were multiple-choice items but many required students to construct and write their own answers.

PISA looks for answers to important questions related to education.

- How well prepared are young adults to meet the challenges of the future?
- What skills do young adults have that will help them adapt to change in their lives? Are they able to analyse, reason and communicate their arguments and ideas to others?
- Are some ways of organising schools and school learning more effective than others?
- What influence does the quality of school resources have on student outcomes?
- What educational structures and practices maximise the opportunities of students from disadvantaged backgrounds?
- To what extent does a student's performance depend on their background? How equitable is education for students from all backgrounds?

In Australia, PISA is a key part of the National Assessment Program (NAP) and complements other NAP assessments.

The results from these NAP assessments allow for nationally comparable reporting of student outcomes against the *Melbourne Declaration on Educational Goals for Young Australians*,[1] which aims to provide high-quality schooling in Australia that will secure for students the necessary knowledge, understanding, skills and values to lead productive and rewarding lives.

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1 Ministerial Council on Education, Employment, Training, and Youth Affairs. (2008). Carlton, Victoria: Curriculum Corporation.

www.acer.org/pisa