



Report on the Fifth Cycle of the Triennial National Assessment Program – Information and Communication Technology Literacy 2017

Background

The fifth cycle of the triennial National Assessment Program – Information and Communication Technology (NAP–ICT) Literacy sample assessment was conducted in October and November 2017.

The Western Australian sample included 756 Year 6 students from 45 schools and 807 Year 10 students from 49 schools. Across Australia, a random sample of 5622 Year 6 students from 334 schools and 4940 Year 10 students from 315 schools participated in the assessment.

Each student completed four randomly assigned test modules each of 20 minutes duration and a student questionnaire of 10 minutes duration. In all schools, the assessments were delivered online.

Key test findings

In Western Australia

- In comparison to 2014, the Western Australian mean scale score for Year 6 students in 2017 has remained steady (404 to 406 points) and for Year 10 students has remained the same (539 points).
- The State's ranking in comparison to other states and territories by average scale score was third in Year 6 and first in Year 10 compared to fifth in Year 6 and first in Year 10 in 2014.
- The increases in percentages of students attaining the proficient standard at Year 6 (52 per cent to 54 per cent) and Year 10 (57 per cent to 62 per cent) between 2014 and 2017 were not statistically significant.

Across Australia

- The average scale score of students in Year 6 was significantly lower than the score in 2011, but not significantly different from other cycles.
- Fifty-three per cent of Year 6 students attained the proficient standard compared to 55 per cent in 2014 (not statistically significant).
- The average scale score of Year 10 students (523 points) was not significantly different from 2014, but was statistically significantly lower than all previous cycles.
- Fifty-four per cent of Year 10 students attained the proficient standard compared to 52 per cent in 2014 (not statistically significant).
- Female students showed significantly higher ICT literacy than male students, consistent with findings from previous cycles.
- The gap between Indigenous and non-Indigenous students remained significant and very large in 2017.
- Students' ratings of the importance of using digital devices were significantly higher in Year 10 than Year 6, and higher for males than females.
- Male students were significantly more likely to report completion of technological tasks using digital technologies than females, especially among Year 10 students.

- A significant difference in achievement was found in this cycle for Year 6 between students speaking only English at home and students speaking another language at home, to the advantage of students speaking another language at home.
- A significant difference in achievement was found in this cycle for Year 10 between students born in Australia and students born overseas, to the advantage of the students born in Australia.
- ICT literacy achievement gradually increased with increasing levels of parental occupation and parental education resulting in large, significant differences between the highest and the lowest occupational and educational groups.

Key student questionnaire findings

- Lower achieving Year 6 students reported slightly more frequent use of communication applications when at school than higher achieving students did. This was true for both female and male Year 6 students.
- The most frequently reported activity on the study utility index by both Year 6 and Year 10 students was searching the internet for information for study or schoolwork. This was true regardless of location (that is, both at school and outside of school).
- Outside of school, male students were significantly more likely to report using entertainment applications (such as watching videos, playing games and streaming music) than female students. The difference was more marked at Year 10 but was still observable among Year 6 students.
- Students reported receiving relatively little instruction in digital technologies-related tasks in comparison with issues relating to ICT literacy. This will likely change given that 2017 was the first year of implementation of the Australian Curriculum: Digital Technologies for a number of states and territories, including Western Australia.

A more comprehensive summary can be found in Appendix 1.

Appendix 1

Additional information – Information and Communication Technology Literacy 2017

The fourth cycle of the triennial National Assessment Program – Information and Communication Technology (NAP–ICT) Literacy sample assessment was conducted in October and November 2017.

The Western Australian sample included 763 Year 6 students from 48 schools and 726 Year 10 students from 49 schools from across the school systems/sector. Across Australia a random sample of 5439 Year 6 students from 327 schools and 4885 Year 10 students from 313 schools participated in the assessment.

The assessments were delivered to all schools via an online delivery system. Technical support services were provided to schools throughout the process.

The assessment instruments were designed to mirror students' 'real world' use of ICT to determine their levels of confidence, creativity and skill development in the use of information and communication technologies.

The assessment for NAP–ICT Literacy included a combination of simulated and authentic software applications, multiple choice and text response items grouped into seven modules, each of which could be completed in about 20 minutes. The modules covered skills such as creating a digital photobook, using the internet for research, designing a poster on positive online behaviour, analysing website analytics data and creating a webpage with a web form.

Each student was allocated four modules and a student questionnaire to complete.

Analysis of the questionnaire responses was used in the report to assist in explaining the performance of some groups of students.

The NAP–ICT Literacy scale, established in 2005, has been used for all four assessment cycles. The described scale comprises six proficiency levels that are used to describe the achievement of students both at Year 6 and Year 10. Each level description provides a synthesised overview of the knowledge, skills and understandings that a student working within the level is able to demonstrate.

Results

Results are considered in terms of mean scores and the distribution of students across five proficiency bands. The proficiency standards represent points on the proficiency scale that represent a 'challenging but reasonable' expectation for typical Year 6 and Year 10 students to have reached by the end of each of these years of study. In general, Year 10 students are operating about one proficiency band higher than Year 6 students across the scale.

The proficient standard for Year 6 is 409 scale points, which is the boundary between Levels 2 and 3 on the NAP – ICT Literacy scale. The proficient standard for Year 10 is 529 scale points, which is the boundary between Levels 3 and 4 on the scale. Year 6 students performing at Level 3 or above and Year 10 students performing at Level 4 or above have met or exceeded their relevant proficient standard.

Figure 1. Cut points for proficiency levels

Level	Cut- point in scale score
Level 6	769
Level 5	649
Level 4	529
Level 3	409
Level 2	289
Level 1	

Key:

Year 10 proficient standard
 Year 6 proficient standard

Mean score

Across Australia, ICT Literacy average scale scores of students in Year 6 were 410 points, significantly lower than in 2011 but not significantly different from the averages in any other years. The average scale score of Year 10 students (523 points) was not significantly different from 2014, but was statistically significantly lower than all previous cycles.

In comparison to 2014, the Western Australian mean scale score for Year 6 students in 2017 has remained steady (404 to 406 points) and for Year 10 students has remained the same (539 points).

Western Australia's Year 6 average scale score in 2017 was significantly lower than those of the Victoria and the Australian Capital Territory and significantly higher than the Northern Territory.

Western Australia's Year 10 average scale score was significantly higher than that of Queensland, Tasmania and the Northern Territory.

Western Australia's ranking by average scale score was third in Year 6 and first in Year 10, compared to fifth in Year 6 and first in Year 10 in 2014.

Figure 2. State and territory average scale scores since 2005: Year 6

	2017	2014	2011	2008	2005
NSW	404 (±11.9)	412 (±12.0)	▲ 445 (±12.5)	413 (±14.5)	405 (±12.9)
Vic.	432 (±9.4)	437 (±9.6)	448 (±9.3)	447 (±15.1)	424 (±13.7)
Qld	399 (±12.4)	393 (±13.7)	415 (±14.0)	392 (±11.8)	▼ 370 (±12.3)
WA	406 (±10.3)	404 (±13.2)	424 (±13.5)	403 (±11.5)	▼ 379 (±10.8)
SA	405 (±14.9)	421 (±10.3)	▲ 436 (±10.3)	▲ 439 (±12.5)	412 (±11.4)
Tas.	390 (±12.9)	385 (±15.1)	405 (±12.4)	408 (±16.4)	404 (±19.4)
ACT	437 (±17.3)	429 (±26.0)	466 (±22.8)	▲ 472 (±13.9)	428 (±22.1)
NT	335 (±43.5)	361 (±20.5)	367 (±37.5)	364 (±49.8)	346 (±53.7)
Aust.	410 (±5.4)	413 (±5.7)	▲ 435 (±5.7)	419 (±6.9)	400 (±6.3)

Confidence intervals (1.96*SE) are reported in brackets.
 ▲ if significantly higher than 2017
 ▼ if significantly lower than 2017

Figure 3. State and territory average scale scores since 2005: Year 10

	2017	2014	2011	2008	2005
NSW	531 (±16.4)	512 (±13.7)	▲ 565 (±12.8)	▲ 564 (±13.7)	551 (±13.1)
Vic.	530 (±10.6)	532 (±14.3)	▲ 568 (±12.5)	▲ 569 (±18.1)	▲ 565 (±9.8)
Qld	505 (±13.1)	504 (±16.8)	▲ 553 (±9.5)	▲ 549 (±14.0)	▲ 547 (±11.6)
WA	539 (±10.4)	539 (±11.8)	548 (±10.8)	559 (±12.1)	535 (±11.8)
SA	524 (±11.0)	532 (±15.8)	▲ 552 (±14.8)	▲ 560 (±11.5)	547 (±11.0)
Tas.	480 (±13.0)	▲ 514 (±15.6)	▲ 534 (±15.5)	▲ 539 (±16.3)	▲ 538 (±11.8)
ACT	530 (±21.2)	536 (±26.2)	▲ 582 (±16.1)	▲ 598 (±14.5)	▲ 572 (±17.8)
NT	447 (±30.3)	▲ 501 (±19.9)	490 (±49.5)	466 (±71.5)	▲ 515 (±28.2)
Aust.	523 (±6.6)	520 (±6.7)	▲ 559 (±5.7)	▲ 560 (±7.1)	▲ 551 (±5.7)

Confidence intervals (1.96*SE) are reported in brackets.

▲ if significantly higher than 2017

▼ if significantly lower than 2017

Proficient standard

In 2017, across Australia, 53 per cent of Year 6 and 54 per cent of Year 10 students reached or exceeded their respective proficient standards, Levels 3 and 4. Compared with 2014, no significant changes were recorded in the percentage of students achieving the proficient standard. However, these percentages were significantly lower than 2011 (Years 6 and 10) and 2008 (Year 10).

In Western Australia the increases in percentages of students attaining the proficient standard at Year 6 (52 per cent to 54 per cent) and Year 10 (57 per cent to 62 per cent) between 2014 and 2017 were not statistically significant.

Figure 4. National, state and territory trends by proficient standard since 2005: Year 6

	2017	2014	2011	2008	2005
NSW	51 (±4.2)	55 (±4.9)	▲ 66 (±4.1)	55 (±5.7)	51 (±6.6)
Vic.	62 (±4.5)	64 (±4.5)	64 (±3.8)	66 (±6.5)	58 (±6.3)
Qld	47 (±5.8)	48 (±5.8)	55 (±4.8)	48 (±5.3)	38 (±5.3)
WA	54 (±4.5)	52 (±4.8)	59 (±5.5)	51 (±4.1)	▼ 40 (±5.4)
SA	53 (±6.5)	59 (±4.3)	62 (±4.9)	▲ 64 (±5.3)	52 (±5.0)
Tas.	49 (±5.9)	46 (±5.4)	51 (±5.5)	52 (±7.0)	49 (±9.0)
ACT	65 (±8.4)	58 (±10.6)	74 (±8.3)	75 (±6.6)	58 (±12.5)
NT	35 (±11.5)	43 (±6.3)	42 (±9.2)	42 (±10.6)	36 (±10.0)
Aust.	53 (±2.4)	55 (±2.5)	▲ 62 (±2.0)	57 (±2.8)	49 (±3.0)

Confidence intervals (1.96*SE) are reported in brackets.

▲ if significantly higher than 2017

▼ if significantly lower than 2017

Figure 5. National, state and territory trends by proficient standard since 2005: Year 10

	2017	2014	2011	2008	2005
NSW	57 (±6.8)	50 (±5.5)	66 (±5.3)	67 (±5.4)	61 (±7.6)
Vic.	55 (±5.0)	55 (±5.9)	▲ 68 (±4.9)	▲ 70 (±6.7)	▲ 67 (±4.8)
Qld	47 (±6.6)	47 (±5.6)	▲ 63 (±4.3)	▲ 62 (±6.2)	60 (±7.4)
WA	62 (±4.0)	57 (±5.8)	61 (±4.0)	65 (±5.9)	56 (±6.1)
SA	56 (±4.6)	57 (±5.9)	63 (±5.6)	▲ 65 (±4.9)	61 (±5.4)
Tas.	39 (±5.6)	▲ 51 (±5.8)	▲ 54 (±7.1)	▲ 58 (±7.4)	▲ 56 (±6.4)
ACT	54 (±8.4)	60 (±9.1)	▲ 72 (±7.0)	▲ 77 (±6.1)	66 (±11.4)
NT	27 (±8.4)	▲ 43 (±9.1)	▲ 48 (±8.8)	▲ 46 (±13.4)	▲ 56 (±13.2)
Aust.	54 (±3.0)	52 (±2.5)	▲ 65 (±2.3)	▲ 66 (±3.0)	61 (±3.1)

Confidence intervals (1.96*SE) are reported in brackets.

▲ if significantly higher than 2017
▼ if significantly lower than 2017

Performance by background characteristics

As this is a sample assessment, analysis and commentary on the effect of background factors is made at the Australian level only for all factors except for gender. Of the student characteristics that might affect student performance, those with the greatest effects on ICT literacy were socioeconomic group and Indigenous status.

Parental background

Across Australia, parental occupation shows the same pattern of correlation with attainment of the proficient standard as in previous cycles. Students whose parents were in the 'senior managers and professionals group' scored between 78 (Year 6) and 65 (Year 10) scale points higher than those whose parents who were in the 'unskilled labourers, office, sales and service staff' group.

A difference of 100 score points was evident when the highest level of education ('bachelor degree or above' compared to 'Year 9 equivalent of below') achieved by at least one parent was considered. Two-thirds of those with parents with the highest level of education performed at or above the proficient standard compared to one third of those in the other group of students.

Indigenous status

As in previous years, the results from 2017 confirm that Indigenous students perform at a much lower level than non-Indigenous students. In Year 6, the difference in average scale score is 103 points, with 22 per cent of Indigenous students reaching the proficient standard (non-Indigenous 55 per cent). In Year 10, the difference in average scale score is 101 points, with only 24 per cent of Indigenous students reaching the proficient standard compared with 55 per cent of non-Indigenous students.

Sex

As in previous years, females achieved higher levels of ITC literacy than males, both in terms of average scale scores and percentages achieving the proficient standard. However, the difference in 2017 was smaller than in 2014 (14 points for Year 6 and 19 points in Year 10).

The national percentages of both males and females attaining the proficient standard in both Years 6 and 10 remained similar to 2014. This is despite the higher levels of use of, and stronger interest in, computers by males.

Patterns of computer use also vary according to gender.

Geolocation

The geographic location of schools has a significant impact on performance in all tests, such that metropolitan students performed significantly better than regional students (Years 6 and 10), who similarly performed better than students in remote schools.

Background language and country of birth

While in 2014 no differences in performance between students for whom a language other than English was spoken at home or between students who were born overseas and other students were found, in 2017 those students in Year 6 who have a language other than English spoken at home outperformed those where English only was spoken at home. This difference was statistically significant. The reverse was true of Year 10 students.

Those Year 10 students born in Australia achieved significantly higher scores than those born overseas. The differences between these groups in Year 6 was small.

Student use of digital devices

- The majority of students (64 per cent of Year 6 students and 79 per cent of Year 10 students) reported having at least five years' experience using digital devices.
- Higher levels of digital device experience were associated with higher levels of ICT literacy, particularly in Year 10.
- Digital device self-efficacy was higher in Year 10 than Year 6, and higher for males than females.
- Higher levels of self-efficacy were associated with higher levels of ICT literacy for female and male students.
- Students' ratings of the importance of using digital devices were higher in Year 10 than in Year 6, and higher for males than females.
- Higher ratings of the importance of using digital devices were associated with higher levels of ICT literacy, particularly for Year 10 students, and particularly for male students.

Student use of applications

- The most frequently reported activity on the study utility index by both Year 6 and Year 10 students was searching the internet for information for study or schoolwork. This was true regardless of location (that is, both at school and outside of school).
- Outside of school, male students were significantly more likely to report using entertainment applications than female students. The difference was more marked at Year 10 but was still observable among Year 6 students.
- For both Year 6 and Year 10, students with lower ICT literacy achievement were more likely to report frequent use of entertainment applications when at school. This was particularly true for students in Year 6 and for male students in both year levels.
- Lower achieving Year 6 students reported slightly more frequent use of communication applications than did higher achieving students. This was true for both female and male Year 6 students.
- Both Year 6 and Year 10 students reported undertaking technological activities far less frequently than activities relating to study, entertainment and communication. Between 60 per cent and 90 per cent of students rarely engaged in technological tasks at school or outside of school.

Student use of ICT at school

- Of the ICT-related tools for school-related purposes, students at both year levels were most likely to use word processing software, presentation software and computer based information resources. These types of software were more frequently used by Year 10 students than Year 6 students.

- More frequent use of productivity applications (such as word processing and spreadsheet applications) was positively associated with achievement, whereas more frequent use of specialist applications (such as concept mapping or simulations and modelling applications) was negatively associated with achievement.
- Students reported that they were more likely than not to have learnt at school about how to look for different types of digital information on a topic, how to decide where to look for information about an unfamiliar topic, and the need to provide references to content from webpages.
- The most common activities using digital devices in class, across year levels, were teachers presenting information to the class, students presenting to the class and students working on short assignments.
- Frequency of use of digital devices in general classroom activities was positively associated with achievement, but frequency of use of digital devices in classroom activities requiring specialist software applications was negatively associated with achievement.
- In general, students reported receiving relatively little instruction in digital technologies–related tasks in comparison with issues relating to ICT literacy. This will likely change given that 2017 was the first year of implementation of the Australian Curriculum: Digital Technologies for a number of states and territories.