



## Report on the fifth cycle of the triennial National Assessment Program – Science Literacy 2018

### Background

The 2018 National Assessment Program – Science Literacy (NAP–SL) assessment was delivered online in October and November 2018 to a stratified random sample comprising 5578 Year 6 students in 342 schools and 3043 Year 10 students in 204 schools across Australia.

As 2018 was the transition year for Year 10 students undertaking NAP–SL, jurisdictions were given the option to indicate the size of their sample.

- New South Wales, Victoria and Western Australia requested larger sample sizes in order to contribute to both national and state level reporting.
- All other states and territories opted for smaller sample sizes and therefore contributed only to national level reporting.

In Western Australian, students were assessed to determine their levels of skills, knowledge and understandings in science in a sample, representing all school system/sectors, consisting of:

- 724 Year 6 students from 45 schools
- 412 Year 10 students from 29 schools.

The assessment included:

- a. a set of practice items designed to help students use the online system
- b. an online test to assess students' science literacy skills utilising a broad range of contexts
- c. an online inquiry or investigation task
- d. a survey of students' attitudes towards science.

### Summary of Key Test Findings – Year 6

The results over the six cycles of NAP–SL assessments show little change in national performance levels, in terms of both average student achievement and the proportion of students performing at or above the defined proficient standard in science literacy. The exceptions are Queensland, where the 2018 percentages are significantly higher than in all previous cycles, and Western Australia, where the percentages are significantly higher than in 2006.

The proficient standard is set at a challenging level and only just over half (58 per cent) of Year 6 students reach or exceed it nationally. In Western Australia 62 per cent of students achieved the proficient standard.

At the national level in 2018, the average scale score of students in Year 6 was 407 score points. This is not significantly different from the average in any other cycle.

For Western Australia in 2018:

- The average scale score of students in Year 6 was 415 score points. This is significantly different from the 2006 average but not from the 2009, 2012 or 2015 averages.
- Western Australia has maintained the cumulative gain made between 2006 and 2015 of 27 points, with the gain between 2006 and 2018 being 34 points.
- Western Australian students' performance in science literacy improved consistently from 2006 to 2012, lifting the state's ranking from seventh in 2006 to fourth in 2009 and second in 2012 in terms of means. Western Australia's ranking dropped to fourth in 2015, but lifted to third in 2018.
- Over the same period, Western Australia's ranking, in terms of meeting or exceeding the proficient standard, changed from seventh in 2006, to third in 2009, to second in 2012, and to third in 2015 where it has remained for 2018, as shown in the table below.

**Table 1: Western Australia's Ranking (compared with all other states and territories)**

	Western Australia's Comparative Ranking				
Year 6	2006	2009	2012	2015	2018
State Means	7	4	2	4	3
Percentage of WA students meeting or exceeding standard	7	3	2	3	3

**Achievement by sex – national level**

- The average scale score of Year 6 female students was 409.
- The average scale scores for Year 6 male students was 405.
- These scores were not significantly different. However, the results show some evidence of a positive trend in Science achievement for female students.
- The average scale score of Year 6 female students in 2018 was significantly higher than that of 2009, and the percentage of Year 6 female students who attained the proficient standard in 2018 was significantly higher than in 2012 proficient standard.

**Achievement by Indigenous status – national level**

- Indigenous students had a statistically significant lower mean achievement than non-Indigenous students. These results are consistent with all previous cycles.
- However, the percentage of Year 6 Indigenous students attaining the proficient standard (35 per cent) was significantly higher than in 2015, 2012 and 2009 (23 per cent, 20 per cent and 20 per cent respectively).

**Achievement by language background – national level**

- Year 6 students who speak English at home had a significantly higher average scale score (411) than students who speak a language other than English at home (398).
- This is different to previous cycles (and different to the performance in Year 10) where the differences between the average scale scores were not statistically significant.

**Achievement by geographic location – national level**

- Year 6 students attending schools located in major cities performed significantly better than students attending schools in both remote and very remote areas.

### **Achievement by parental occupation – national level**

- Year 6 students with parents who were senior managers or professionals had average scale scores that were 66 points higher than those with parents who were recorded as unskilled labourers, office, sales or service staff.
- 73 per cent of students with parents in the category of senior managers or professionals had scores above the proficient standard for Year 6. By comparison, 49 per cent of students with parents classified in the group comprising unskilled labourers, office, sales and service staff scored at or above the proficient standard.

### **Achievement by parental education – national level**

- There were considerable differences in achievement between levels of parental education.
- Year 6 students with parents who had a Bachelor's degree or higher obtained average scale scores that were 96 points above those with parents who had not exceeded Year 10 as their highest level of education.
- 72 per cent of Year 6 students with parents who had a Bachelor's degree or higher reached the proficient standard set for Year 6, compared with 36 per cent of students with parents who had not exceeded Year 10 as their highest level of education who reached the proficient Year 6 standard.
- Compared with the only states that had sufficient samples of students (New South Wales and Victoria), WA was ranked first for average scale score and first for the percentage of students meeting or exceeding the proficient standard.

## **Summary of Key Test Findings – Year 10**

At the national level in 2018, 50 per cent of Year 10 students attained the proficient standard and the average scale score of students in Year 10 was 490 score points.

For Western Australia in 2018:

- 58 per cent of Year 10 students attained the proficient standard and the average scale score of students in Year 10 was 515 score points.
- Western Australia had the highest percentage of the three states that consented to participating in jurisdiction-level data collection, with the percentage for New South Wales being 49, and the percentage for Victoria being 47, as per the table below.

### **Achievement by sex – national level**

- The national average scale score of Year 10 female students was 494, and the national average scale score for male students was 485.
- These scores were not significantly different.

### **Achievement by Indigenous status – national level**

- Indigenous students had a statistically significant lower mean achievement than non-Indigenous students.
- The percentage of Year 10 Indigenous students who attained the proficient standard was 20 per cent compared with 51 per cent of non-Indigenous students.

### **Achievement by language background**

- There was no statistically significant difference between the achievement of students from English-speaking backgrounds and students from language backgrounds other than English.

### **Achievement by geographic location**

- Year 10 students attending schools located in major cities performed significantly better than students attending schools in both remote and very remote areas.

### **Achievement by parental occupation**

- Year 10 students with parents who were senior managers or professionals had average scale scores that were 104 points higher than those with parents who were recorded as unskilled labourers, office, sales or service staff.
- 70 per cent of students with parents in the category of senior managers or professionals had scores above the proficient standard set for Year 10, compared with 30 per cent of students whose parents were classified in the group comprising unskilled labourers, office, sales and service staff who scored at or above the proficient standard.

### **Achievement by parental education**

- There were considerable differences in achievement between levels of parental education.
- Year 10 students with parents who had a Bachelor's degree or higher obtained average scale scores that were 125 points above those with parents who had not exceeded Year 10 as their highest level of education.
- 70 per cent of Year 10 students with parents who had a Bachelor's degree or higher reached the proficient standard set for Year 10, compared with 25 per cent of students with parents who had not exceeded Year 10 as their highest level of education who reached the proficient standard.

### **Summary of key survey findings**

- The survey canvassed students' perceptions of, and attitudes to, science. It also asked students about their science-learning experiences at school.
- 84 per cent of Year 6 students responded that they would like to learn more science at school, and 69 per cent of Year 6 students indicated they believe it would be interesting to be a scientist, showing a positive attitude toward this subject area exists.
- More than 80 per cent of Years 6 and 10 students acknowledged that science is important for many jobs and for helping people to make informed decisions.
- 31 per cent of students indicated that guest speakers are invited to their school to talk about science topics. (There is growing body of research that points to the benefits of the contextualisation of science, which can be achieved by the inclusion of outside specialists).
- The survey also showed that more than half of students disagreed with the idea that science is easy for most people to understand.