

# National Assessment Program: Science Literacy – Year 6

## Information for schools

During October, a sample of Year 6 primary students from across Australia will take part in a national assessment of science literacy. This assessment comprises both a paper and pencil section, which takes 60 minutes, a practical task taking 45 minutes and a short survey.

The assessment of science literacy is part of the National Assessment Program (NAP) that monitors and reports on student performance against the National Goals of Schooling in the Twenty-first Century. The national goals and the importance of monitoring student performance in relation to the goals were agreed to by all state, territory and federal education ministers in 1999. The monitoring and reporting program is being implemented by the Performance Measurement and Reporting Taskforce (PMRT), a nationally representative taskforce established by the nation's education ministers.

As part of the NAP, student performance in Science Literacy was assessed in 2003 and 2006, Civics and Citizenship was assessed in 2004 and 2007 and Information and Communication Technology literacy in 2005 and 2008.

### WHAT WILL BE ASSESSED

The assessment will focus on *scientific literacy*. This means the emphasis will be on the students' capacity to use scientific knowledge and approaches rather than on how much factual information they have acquired.

The decision to measure scientific literacy rather than test the acquisition of science facts was based on an extended study of the options for assessing performance in primary school science. The final decision, made by a Ministerial Taskforce including expert members from every State and Territory and the Australian Government, was the option most appropriate for the purpose of national reporting and monitoring progress towards the National Goals of Schooling.

Scientific literacy is also the focus of the international Programme for International Student Assessment (PISA). The Australian definition of scientific literacy, which was derived from the international one, is as follows:

*...the capacity to use scientific knowledge, to identify questions, to investigate and to draw evidence-based conclusions in order to understand and help make decisions about the natural world and the changes made through human activity.*

For the purposes of measuring and reporting students' scientific literacy three domains have been defined :

- formulating or identifying investigable questions and hypotheses, planning investigations and collecting evidence;
- interpreting evidence and drawing conclusions from their own or others data, critiquing the trustworthiness of evidence and claims made by others, and communicating findings;
- using science understandings for describing and explaining natural phenomena, making sense of reports about phenomena, and for decision making.

The Assessment Domain for science, which includes the major scientific concepts addressed in the assessments and a progress map describing increasing levels of complexity and competence in each domain can be found on the MCEETYA website:

[http://www.mceetya.edu.au/verve/\\_resources/assessment\\_domain.pdf](http://www.mceetya.edu.au/verve/_resources/assessment_domain.pdf)

The science literacy assessment materials for the sample assessment have been developed by Educational Assessment Australia and Curriculum Corporation. The assessment consists of tasks that enable students to demonstrate performance at a range of levels. Each state and territory has endorsed the assessment materials. Below is an example of one type of item that will appear in the assessment:

## The Sun

Rosa was using a computer at school. It was mid-afternoon and the sun was shining through the window on the computer screen making it hard to read the text. Rosa wondered why the sunlight on the screen had not been a problem in the morning.



Q1 Why was the Sun a problem only in the afternoon?

The assessment items are designed to assess student's scientific understandings. Student responses to tasks like this will be scored by trained markers.

The national assessment planned for October 2009 is specifically designed to provide nationally comparable state and territory data and overall trends. No individual student or school results will be published.

### **HOW IT WILL BE ASSESSED**

Educational Assessment Australia (EAA) has been contracted by the PMRT to conduct the assessments and prepare a report showing the national results. EAA has drawn a nationally representative sample of schools. Those selected to take part in the assessment will be notified in June 2009.

One class of Year 6 students in each of the sample schools will be selected to participate in the national science assessments. These assessments will be administered in the students' regular classroom by the students' usual classroom teacher. Students will attempt the pencil and paper test individually but will work on the practical tasks in small groups. Teachers will receive detailed instructions about selecting the groups and about the conduct of the assessment in general.

Students will be presented with a paper and pencil assessment which will include multiple choice responses, short extended answers and data tables to complete. The assessment items are of scientific understanding and will present much of the information visually. As well, teachers will be able to read out the assessment items if students request it, but they will not be allowed to explain or interpret the questions. The materials required for the practical assessment will be supplied from outside the school.

Special attention has been paid to making the assessment and the whole 'atmosphere' of the assessment procedure engaging for the students. Underpinning the design of the tests is a well-recognised requirement to 'bring out the best' in the students, to encourage their full participation by making the assessment an engaging and interesting experience for them.

The main difference from an ordinary classroom activity is that specified standardised procedures will need to be followed exactly so that comparable data are collected from all sample classrooms.

Nominated School Contact Officers of schools selected in the national sample will receive detailed instructions about the preparation and conduct of the assessment.

The tests will be marked centrally by markers who have undergone extensive training.

### **WHO WILL BE ASSESSED**

A sample of Year 6 students will be assessed. Approximately 6 percent of the students for this year level across Australia will complete the assessment. Students will be selected by drawing a random sample of schools across Australia ensuring that metropolitan, provincial and remote schools and government, Catholic and independent schools are appropriately represented. Then a random class of students within each of these schools will be selected.

### **HOW THE RESULTS WILL BE USED**

It is important to recognise that the principal purpose of the national Year 6 science literacy assessment is to monitor and report on the overall progress which is being made towards achieving the national goals related to science literacy. However, there will be a number of other valuable 'products' and benefits from the assessment program.

In terms of national reporting, this assessment will deliver a number of specific outcomes:

- a public report published on the test results which document students' attainment in relation to proficiency levels. Comparisons of the scientific literacy performance of groups of students will be included – for example, the relative attainment of boys and girls across Australia, of metropolitan students, rural and remote students. The overall results in each state and territory will be reported but the results of government and non-government schools will not be compared.
- a comparison will be possible between the data gathered in 2003, 2006 and that of this test round to identify any trends in student performance.
- as the scientific literacy of 15-year olds will be assessed in 2009 through the international PISA test, it should be possible to draw some comparisons about the development of scientific literacy between Year 6 and Years 9–10 from examining the two sets of assessment information.

At the school level there will be two immediate 'products':

- Schools that were involved in the sample assessment will receive information summarising their students' performance on the assessment before the end of the 2009 school year.

All schools will be able to access assessment materials that will enable Year 6 teachers to examine the nature of the test items in the national assessment. It is expected that teachers will be able to use this information to enhance their own teaching and monitoring programs and to gauge their own student's proficiency in science literacy in comparison with the national standards. Please note that the National Year 6 Science Literacy School Assessment 2006 materials have been produced and are available to the government, Catholic and independent education authorities on the [mceetya.edu.au](http://mceetya.edu.au) website..