PISA FAQS
What is PISA?
The Programme for International Student Assessment (PISA) is an initiative of the OECD. PISA is a test of education systems, and achieves this by assessing the skills and knowledge of nationally representative samples of 15-year-old students in three core areas: reading, mathematics and science. PISA was born in 2000 after the OECD found that they had a number of economic measures of member countries but no measures of educational achievement. Since then it has been conducted every three years to report on the academic competency of 15-year-olds from a variety of countries, including all OECD and a growing number of non-OECD countries. To date, more than a million students in over 60 countries have participated in PISA assessments. The continuous schedule of PISA also allows trends in educational performance to be monitored.

Why do we need to do international assessments?
The National Assessment Program includes state-based and national testing programs, plus the two international studies PISA and TIMSS (the Trends in International Mathematics and Science Study). Together, these assessment programs provide the big picture of the Australian education system. By using different levels of assessment, we are able to see trends that are not always noticeable at the level of individual schools. For example, in the last PISA assessment it was found that nationally, reading scores had declined significantly. At the school level this was probably not obvious.

Why this age group?
Fifteen-year-olds are targeted by PISA as this is generally the age when adolescents can choose to leave the education system and enter the workforce. Understanding the competency levels of these students is, therefore, particularly important.

What is PISA trying to find out?
- How well prepared are young adults to meet the challenges they will face in their future?
- Are they able to analyse, reason and communicate their ideas effectively?
- How capable are they at applying their skills and knowledge to real-life problems and situations?

What does PISA assess?
The main aim of PISA is to measure the competencies that will equip students to participate productively and adaptively in their life beyond school. Rather than assessing students’ understanding of the curriculum that has been taught to them, PISA assesses their ability to apply their skills and knowledge in real-life situations. The term literacy is used to reflect a focus on these broader skills. PISA assesses literacy in three core domains: reading, mathematics and science. These three areas were chosen because they were considered by the OECD to be pervasive in modern life, and so in order for an individual to participate fully and effectively in today’s world, there is a need to be literate in these knowledge areas. Each of the three domains is assessed in every round of PISA with one given particular emphasis; for instance, PISA 2006 concentrated on scientific literacy while PISA 2009 will focus on reading literacy.

What types of information are collected for PISA?
Students complete an assessment booklet that contains questions from the main domain being tested, as well as from one or more of the minor domains being tested. Their skills are measured with assessment tasks that typically contain some text, a diagram, table or a chart. These information sources describe a real-life situation and then a series of questions are asked. Questions are presented in a variety of formats: multiple choice, selecting one or more answers from a list, short written responses, and more detailed written answers. Two hours are allocated for students to complete the assessment booklet.

Following the completion of the assessment, students fill in a questionnaire that asks about their attitudes and backgrounds. Other information is also collected about students’ home and school environment so that the context of their academic development can be understood. School principals complete a short questionnaire which seeks information about the school and its instructional practices, the number of staff employed, teacher morale, the autonomy of the school and teachers, and information about school resources, policy and practices.

To see some sample questions plus scoring guides, go to pisa-sq.acer.edu.au.

EXCHANGE RATE

Mei-Ling from Singapore was planning to go to South Africa for 3 months as an exchange student. She needed to change some Singapore dollars (SGD) into South African rand (ZAR).

Mei-Ling found out that the exchange rate between Singapore dollars and South African rand was:

\[ 1 \text{ SGD} = 4.2 \text{ ZAR} \]

Mei-Ling changed 5000 Singapore dollars into South African rand at this exchange rate.

How much money in South African rand did Mei-Ling get?

Answer:

\[ 5000 \times 4.2 = 21000 \]

Mei-Ling could exchange 21000 South African rand for her 3 months in South Africa.
How are the assessment instruments developed?

Assessment items are developed and selected through an iterative process. During the stages of development and selection, expert groups are consulted, ideas are discussed among participating countries, and advice is sought from various boards and groups. The final set of items and measures used are required to fit within an assessment framework that is developed by the expert groups and representatives of the participating countries. Every item included is rated by each country in terms of potential cultural, gender or other biases, as well as the relevance to 15-year-olds, familiarity and level of interest. These items are piloted in a field trial in all participating countries and final item selection for the main study occurs after the items are reviewed.

How is the sample of students from each country chosen?

Every round of PISA assesses a representative sample of 15-year-old students from each participating country. Trying to assess all 15-year-olds would be impractical and require a great amount of time and money to administer. By carefully designing the sample to be as representative of the target population as possible, the accuracy of results remains high. This process also ensures that the cost and time required to administer the assessment and analyse the data is kept to a minimum.

To guarantee that the sample is as representative and inclusive of the target population as possible, certain requirements must be met when the sample is drawn. These revolve around:

• meeting minimum response rates for schools and students
• guidelines for the numbers and types of schools and students that can be excluded from the sample, and
• the proportion of the population that the sample covers.

Before sampling begins, the sampling ‘frame’, containing details about all Australian schools, is sorted to ensure that the sample will contain the correct ratios of schools in each sector and area. The precise variables used to sort schools differ from country to country. In Australia, schools are sorted by school sector (Catholic, government or independent), state and territory, and geographical location (metropolitan, provincial and rural). Estimates about the number of 15-year-olds enrolled in schools in each sector, state or territory and geographical location, are based on information provided by each state and territory Education Department and information gleaned from previous PISA data.

In Australia, the sample that is drawn is substantially larger than the minimum requirements. This is done for several reasons.

1. Students who participate in PISA are invited to take part in the Longitudinal Surveys of Australian Youth (LSAY), which is an ongoing project examining students’ transitions into further education, work and training. A large sample is necessary for this project to allow for drop-out rates over time.

2. Smaller states, territories and Indigenous students are oversampled in order for reliable estimates to be inferred for their populations, and for separate analyses to be conducted.

Once schools are sampled, schools send ACER a list of all age-eligible students, from whatever year level in which they are enrolled. The National Centre, using specially-designed software, then randomly samples approximately 50 students to participate in PISA. (In some schools, there are more than 50 students sampled to accommodate the oversampling of Indigenous students.)
Why does it matter whether we participate or not?

It is vital for the validity of an international study that each participating country rigorously adheres to the sampling requirements so that the sample is an accurate reflection of the population. In particular, we must:
- have a minimum participation rate of 80% of the total number of students approached and 85% of the number of schools approached, and
- exclude no more than 5% of the nationally desired target population.

If these response rates are not met, the consequences are that a country’s data are not considered to be valid and are excluded. Of course this is because there is no way to prove that the sample that is achieved is representative of the whole population. This is why the Australian PISA team works so hard to achieve the sampling requirements, and why it is so important that all selected students participate.

Why can’t we replace students who are absent with others?

The sample of students is selected completely randomly. By selecting random students from random schools, the student profile ‘averages out’ across the whole country. It is not possible to have replacement students because there is no guarantee that the student is an exact match for the one replaced. Remember, it would not simply be a matter of replacing the student with one who had a similar academic profile, but one who also had a similar sociocultural background, attitudes and aspirations. In terms of an international study, there are other reasons that we can’t allow for replacement students. It is very important that exactly the same procedures are carried out in every country so that results are comparable. If schools were allowed to select replacement students, there is every possibility that this would not be done in a consistent way across countries.

So how many students and schools end up participating in PISA?

From the 356 schools sampled in PISA 2006, a total of 14,170 students participated in the project. 85% of participating schools were co-ed, 8% were all-female and 7% were all-male, 65% of schools were in the metropolitan zone, 30% in provincial zones and 5% in remote areas. Thanks to the hard work of all concerned, we achieved our required school response rate, but ACER test administrators had to go back to one-in-three of the sampled schools to get the student response rate we needed. Not only is this a great deal of added cost, it causes further disruption to schools. We would prefer to go into schools just once, and that’s why we put so much emphasis on actively encouraging students to attend the testing session.

Why should students put any effort into PISA?

Each student selected to take part in PISA is representing a number of other ‘like’ students in the Australian sample. In this way, selected students are representing others and their country in an international achievement study. Most people don’t get the opportunity to represent their country and our hope is that students are encouraged to feel pride in their selection and do their very best. It is important that we know how all Australian students are doing: high and low achievers, Indigenous and immigrant students, girls and boys, city and country students. Without accurately knowing the achievement levels of all students, we can’t improve education for those students who are not achieving the levels that we want for all students in Australia.
How is PISA administered and implemented?

In each country, there is a team of key personnel involved in the PISA project. These include the National Project Manager, school contacts, and test administrators.

The National Project Manager is responsible for implementing the project in his/her country. This includes the overall conduct and security of the assessment.

School contacts organise school-related activities with the national centre and the test administrators. They are in charge of various administrative aspects of the assessment such as:

- preparing the list of age-eligible students for sampling
- receiving, distributing and collecting the school questionnaire
- informing staff, students and parents about the nature of PISA, and
- assisting the test administrator with arrangements for the day of the PISA assessment.

Test administrators are primarily responsible for administering the PISA test fairly, impartially, and uniformly, in accordance with international standards and PISA procedures. To maintain fairness, a test administrator cannot be the reading, mathematics or science teacher of the students being assessed, and it is preferred that they are not a staff member at any school participating in PISA. Test administrators have many responsibilities, including ensuring the security of the test materials, confirming plans for the day of assessment, ensuring the number of tests and questionnaires collected from the school match the number sent, and sending the questionnaires and test materials back to the National Project Manager after the testing has been completed.

What happens with the data once testing has been completed?

Once all the test materials and questionnaires have been returned, a team of specially trained markers at ACER code all of the open-ended items, and all data are entered. The data are then sent back to the PISA consortium and collated with that of other countries to create an international database.

The database created provides a multitude of information that is used to inform educational policy. Information from the questionnaires is used to analyse potential influences on student performance across and within countries. At an individual student level, influences may be as diverse as a student’s socio-economic background, immigration status and cultural possessions in the home. At a school level, factors such as student perceptions of instructional practices, disciplinary environment and, importantly, the collective socio-economic background of students at each school may influence student performance. At the school system level, the extent of school autonomy and the structural organisation of students in secondary education can be compared to the overall performance and distribution of the performance of 15-year-old students.
Contact details

For more information about PISA in Australia, including pdfs of all national reports, go to [www.acer.edu.au/ozpisa](http://www.acer.edu.au/ozpisa).

To contact the PISA National Project Team, email [ozpisa@acer.edu.au](mailto:ozpisa@acer.edu.au).