

Australian Council for Educational Research (ACER)

**ACEReSearch**

---

[ACER eNews Archive](#)

[ACER Archives](#)

---

12-2012

## ACER eNews 12 December 2012

ACER

Follow this and additional works at: [https://research.acer.edu.au/enews\\_archive](https://research.acer.edu.au/enews_archive)



Part of the [Education Commons](#)

---

### Recommended Citation

ACER, "ACER eNews 12 December 2012" (2012).  
[https://research.acer.edu.au/enews\\_archive/15](https://research.acer.edu.au/enews_archive/15)

This Article is brought to you by the ACER Archives at ACEReSearch. It has been accepted for inclusion in ACER eNews Archive by an authorized administrator of ACEReSearch. For more information, please contact [repository@acer.edu.au](mailto:repository@acer.edu.au).

Published December 2012

In this issue:

- [TIMSS & PIRLS special edition](#)
- [Study reveals disappointing results for Australia](#)
- [School improvement the key](#)
- [Equity will lead to success](#)
- [ACER Update](#)

## TIMSS & PIRLS special edition

This edition of eNews focuses on the latest results from the Trends in International Mathematics and Science Study (TIMSS) and the Progress in International Reading Literacy Study (PIRLS). The Australian Council for Educational Research (ACER) released the TIMSS & PIRLS 2011 national reports on Tuesday, 11 December 2012.

Published December 2012

## Study reveals disappointing results for Australia

Reports released by ACER on Tuesday, 11 December 2012 reveal disappointing results for Australia in the latest international study of mathematics and science achievement, and in Australia's first ever international assessment of reading at primary school level.

Releasing the results, ACER Chief Executive Professor Geoff Masters said, 'To say the results are disappointing is an understatement.'

Figure 1: Number of countries

	Year 4			Year 8	
	PIRLS	TIMSS		TIMSS	
	Reading	Mathematics	Science	Mathematics	Science
Significantly higher than Australia	21	17	18	6	9
At a similar level to Australia	6	5	8	8	6
Significantly lower than Australia	17	27	23	27	26

The 2011 Progress in International Reading Literacy Study (PIRLS) assessed approximately 300 000 Year 4 students across the participating countries and provided the first ever internationally comparable information about the reading levels of Australian primary school students. The study revealed that many Australian Year 4 students have substantial literacy problems, with around one-quarter of students not meeting the Intermediate benchmark – the standard generally considered in international achievement studies to be the minimally acceptable standard of proficiency.

The 2011 Trends in International Mathematics and Science Study (TIMSS) assessed approximately 600 000 students in Years 4 and 8 across the participating countries. TIMSS 2011 shows that, with the exception of an improvement in Year 4 mathematics performances between 1995 and 2011, Australian students' performances in mathematics and science stagnated over the past 16 years. During this same period, a number of other countries either dramatically improved their performances (including Singapore, Hong Kong and Chinese Taipei) or showed steady improvements in performance (including Korea and the United States).

'It is difficult to see how Australia will be in the top five countries by 2025 if we continue on our current path,' said Professor Masters. 'We need to look carefully at what improving countries are doing to see what lessons there are for Australia.'

**Published December 2012**

Professor Masters said that between 29 and 37 per cent of Year 4 and Year 8 students in Australia performed below the Intermediate benchmark in mathematics and science. In two Australian states/territories this increased to more than 50 per cent for Year 8 mathematics. By comparison, in Korea and Singapore, seven and eight per cent of Year 8 students performed below the Intermediate benchmark in mathematics.

'For a developed country like Australia, these results are concerning,' Professor Masters said. He also noted the modest proportion of Australian students achieving at the High and Advanced international benchmarks.

'These latest results underline the enormous challenge we face if we are to lift Australian achievement levels in reading, mathematics and science to the levels of the highest performing countries. This challenge will not be met by any single strategy, but will require a well-planned and coordinated effort on the part of governments, education systems, schools, parents and the broader community,' Professor Masters said.

Questionnaires were used in PIRLS and TIMSS to gather information from students, parents, teachers and school principals. Findings from this additional information included:

Students attending schools in which principals reported no resource shortages scored significantly higher in reading and mathematics (but not in science) than students attending schools in which principals reported being affected by resource shortages.

More than half of the Australian Year 4 and Year 8 students participating in PIRLS and TIMSS were in schools that reported being 'somewhat' affected by resource shortages.

Only around half of Australian Year 4 students in TIMSS were being taught science by teachers who felt 'well-prepared' to teach science topics – dropping to less than half for the areas of physical and Earth sciences.

More than 20 per cent of Year 8 students were being taught mathematics by teachers who reported feeling only 'somewhat' confident in teaching the subject. The percentage was similar for Year 8 science.

Professor Masters said these findings highlighted the need to address the issue of 'teaching out of field' in secondary schools as well as current levels of preparation to teach primary science.

'Strong subject knowledge, as well as knowledge about how to teach subjects, is essential to teachers' abilities to address learning difficulties and to challenge and extend higher-achieving students,' Professor Masters said.

TIMSS and PIRLS are projects of the International Association for the Evaluation of Educational Achievement (IEA) and are directed by the TIMSS & PIRLS International Study Center at Boston College. ACER manages the implementation and reporting of TIMSS and PIRLS within Australia.

TIMSS has measured trends in mathematics and science achievement every four years since 1995. 2011 marked Australia's fifth cycle in TIMSS, following participation in 1995, 1999, 2003 and 2007. PIRLS has measured trends in reading comprehension at the fourth grade every five years since 2001. 2011 was Australia's first participation in PIRLS. TIMSS and PIRLS 2011 represent the first time the two assessments have been conducted concurrently.

**Published December 2012**

For further information and to download the full reports, summaries and multimedia visit [www.acer.edu.au/timss](http://www.acer.edu.au/timss)

Published December 2012

## School improvement the key

In her address to the National Press Club in September, the Prime Minister set an ambitious goal for the nation: to be ranked as a top-five country in reading, mathematics and science by 2025. In setting this goal, Julia Gillard noted education's ability to transform the lives of individuals and the relationship between national economic performance and the quality of a country's educational institutions. 'To win the economic race,' the Prime Minister observed, 'we must first win the education race.'

International test results released this week highlight the magnitude of the challenge we face in achieving this goal. The Trends in International Mathematics and Science Study (TIMSS) and the Progress in International Reading Literacy Study (PIRLS) add to the publicly available information about how students in our schools are performing. The results include the first ever data on how reading levels in Australian primary schools compare with standards in other countries.

And the findings are sobering. Australian Year 4 students were significantly outperformed by students in 21 countries in reading, 17 countries in mathematics and 18 countries in science. At Year 8, Australia was significantly outperformed by six countries in mathematics and nine countries in science. With the exception of an improvement in Year 4 mathematics between 1994 and 2010, Australian performances stagnated over these 16 years. The same period saw dramatic improvements in mathematics and science performances in Singapore, Hong Kong and Chinese Taipei and steady improvements in the United States, Korea and a number of other countries.

In her National Press Club speech the Prime Minister also sketched a national plan for lifting standards in Australian schools. The centrepiece of this plan is school funding reform linked to improvements in the work of schools. Although the challenge of being a top-five nation by 2025 may have grown with this week's results, the government's general strategy remains sound. There is overwhelming evidence that the key to lifting student achievement is to improve the quality and effectiveness of classroom teaching and, in improving schools, principals and other school leaders are pivotal in creating and driving the conditions for improvement.

But setting goals for national performance and providing monetary rewards to schools that improve will not in themselves bring significant change. Genuine and sustainable school improvement depends on old-fashioned capacity building. For governments, this means raising the status of teaching as a career, attracting highly able people into teaching, ensuring that all teachers have expert knowledge in the subjects they teach, developing teachers' skills in using effective teaching techniques and providing career paths to keep outstanding teachers in classrooms.

School improvement also depends on building the capacities of school leaders to establish and lead improvement agenda, marshal the support of school communities, create cultures of high expectations, build and lead professional teaching teams and promote the use of effective, evidence-based teaching in every classroom, every day.

Australian school systems already understand this. Last week, education ministers endorsed a national school improvement tool developed by the Australian Council for Educational Research (ACER). This tool is based on international research into the practices of highly effective and

**Published December 2012**

rapidly improving schools. It has the potential to focus school improvement efforts on a small set of practices to enhance the quality of teaching and learning. For the first time, all Australian schools not only will be able to measure student achievement but also will have a way of measuring and evaluating key school improvement practices.

Substantial improvements in Australian reading, mathematics and science performances will require school improvement plans focused on the things that matter most. They also will require strong leadership and coordinated efforts by governments, systems, schools, parents and local communities, as well as targeted funding to support schools to implement and monitor continually improving practices. This is a long-term agenda. School improvement across the nation will take time; improved student performances will take even longer.

*This opinion article by ACER Chief Executive [Professor Geoff Masters](#) was originally published in the Sydney Morning Herald on Wednesday, 12 December 2012.*

*Read the original article at [www.smh.com.au/opinion/politics/pms-education-goals-mired-in-underachievement-20121211-2b6xu.html](http://www.smh.com.au/opinion/politics/pms-education-goals-mired-in-underachievement-20121211-2b6xu.html)*

Published December 2012

## Equity will lead to success

Prime Minister Julia Gillard in September set an ambitious goal for Australia: to be ranked as a top-five country in reading, mathematics and science by 2025. Clearly she is hoping to lift Australia in the international rankings in the Programme for International Student Assessment (PISA), which tests samples of 15-year-old students on their preparedness to use the knowledge and skills they have gained at school to meet real-life challenges.

However, results released yesterday by the Australian Council for Educational Research (ACER) from the more curriculum-based assessments, the Trends in International Mathematics and Science Study (TIMSS) and the Progress in International Reading Literacy Study (PIRLS), highlight the magnitude of the challenge Australia faces if we are to achieve the PM's goal. Australian Year 4 students were significantly outperformed by students in 17 countries in mathematics and 18 countries in science. At Year 8, Australia was significantly outperformed by six countries in mathematics and seven countries in science. With the exception of a small improvement in Year 4 mathematics scores, performances over the 16 years that TIMSS data have been collected have stagnated. At the same time, there were dramatic improvements in mathematics or science performances in England, Hong Kong and Singapore, among others, and steady improvements in the United States, Korea and a number of other countries.

The PIRLS results provide the first ever data on how reading levels in Australian primary schools compare with standards in other countries. These results show that Australia was outperformed by 21 countries in reading.

Alarmingly, the data for both studies show that there is a substantial tail of underperformance at both year levels and in all subject areas. More than one-quarter, and in some cases more than one-half, of our students failed to achieve the Intermediate international benchmark, the minimum proficient standard set by the Ministerial Council for Education, Early Childhood Development and Youth Affairs (now known as the Standing Council on School Education and Early Childhood) in mathematics and science, and extrapolated to reading in PIRLS. Many of these students come from families that do not have the option of sending their children to private or better resourced schools.

The PM's goal is unlikely to be realised if the attitudes of students are not changed. Around one in ten students at both year levels are disengaged from school, reporting that they do not like being in school and do not feel as though they belong. According to teachers, 70 – 80 per cent of students at both year levels are limited to some extent by their lack of knowledge and prerequisite skills. However the report also shows that around one third of Year 8 students are being taught mathematics and about 15 per cent taught science by teachers 'out-of-field' – lacking the strength in pedagogical and content knowledge to be able to provide adequate extension for high-achieving students or able to provide alternative structure for students who are having difficulties or who are disengaged.

In setting the 'top five' goal, Julia Gillard noted education's ability to transform the lives of individuals and the dependence of national economic performance on the quality of a country's educational institutions. 'To win the economic race,' the PM observed, 'we must first win the education race.' I would argue, however, that our aim as a nation should not be to win any race

**Published December 2012**

other than the race to provide an equitable system, ensuring that every child has the opportunity for and knows the pathway to success. Pasi Sahlberg, Director General of the Centre for International Mobility and Cooperation in the Ministry of Education in Finland) recently explained that this was the basis on which the Finnish education system was rebuilt, and the results of TIMSS, PIRLS and PISA have found this to be largely effective.

To be in the top five school systems in the world over the next 13 years, Australia will need to lift the achievements of our lowest-performing students – in many cases the most underprivileged students in our society – and to focus research and practice on this. The achievement of this goal would be something in which we could all take pride.

*This opinion article by ACER's Director of Educational Monitoring and Research, [Dr Sue Thomson](#), was originally published in The Conversation on Wednesday, 12 December 2012.*

*Read the original article at <https://theconversation.edu.au/latest-tests-show-pms-2025-education-goal-is-in-doubt-11292>*

Published December 2012

## ACER Update

### TIMSS & PIRLS 2011 reports

For detailed information about Australia's performance in the 2011 Trends in International Mathematics and Science Study (TIMSS) and the 2011 Progress in International Reading Literacy Study (PIRLS), please refer to the following reports:

[Highlights from TIMSS & PIRLS 2011 from Australia's perspective](#) (PDF: 36 pages, 1.2 MB)

Sue Thomson, Kylie Hillman, Nicole Wernert, Marina Schmid, Sarah Buckley and Ann Munene. (2012) Melbourne: ACER.

[Monitoring Australian Year 4 student achievement internationally: TIMSS and PIRLS 2011](#) (PDF: 273 pages, 3.4 MB)

Sue Thomson, Kylie Hillman, Nicole Wernert, Marina Schmid, Sarah Buckley and Ann Munene. (2012) Melbourne: ACER.

[Monitoring Australian Year 8 student achievement internationally: TIMSS 2011](#) (PDF: 194 pages, 2.6 MB)

Sue Thomson, Kylie Hillman and Nicole Wernert. (2012) Melbourne: ACER.

### Season's greetings from ACER

The management and staff of ACER wish you all the best for the festive season. Please note that our offices will be closed from midday on Monday 24 December and will reopen on Wednesday 2 January.

### Copyright © Australian Council for Educational Research 2015

All rights reserved. Except under the conditions described in the Copyright Act 1968 of Australia and subsequent amendments, no part of this electronic publication may be reproduced, stored in retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without written permission. Please address any requests to reproduce information to [communications@acer.edu.au](mailto:communications@acer.edu.au)

[Subscribe](#)