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Australian students ranked 2nd in digital reading literacy

Australian students ranked second of participating countries in an international assessment of digital reading literacy, with girls performing better than boys, according to an ACER report released in May.

The 'Preparing Australian Students for the Digital World' report reveals Australia's national results from the Electronic Reading Assessment component of the OECD Programme for International Student Assessment (PISA) 2009, in which 15-year-old students' ability to read, understand and apply digital texts was assessed. Students also completed a questionnaire about their access to and use of information and communication technologies at home and school.

Nineteen countries or economies participated in the assessment and questionnaire, including Austria, Belgium, Denmark, France, Hong Kong-China, Japan, Norway, Poland, Spain and Sweden. Australia was outperformed only by Korea, while all other countries or economies apart from New Zealand performed on average at a level significantly lower than Australia. New Zealand achieved a similar score to Australia.

The report notes that 17 per cent of Australian students were highly skilled digital readers compared to eight per cent of students across the OECD, while 10 per cent of Australian students were low performers compared to 17 per cent of students across the OECD. In Australia, 20 per cent of girls and 15 per cent of boys reached a very high level in digital reading literacy, compared to nine per cent and six per cent respectively across participating OECD countries.

Australian students performed more strongly in digital reading literacy than in print reading literacy. This was generally the case in countries that were high performers in print reading literacy. Lower achieving countries in print reading literacy, on the other hand, performed more strongly in print than digital reading literacy.

Student's access to and use of ICT at home and school

PISA 2009 revealed that 99 per cent of Australian students reported having a computer in their home, with 95 per cent of those connected to the Internet. These proportions were higher than the OECD averages of 94 per cent and 89 per cent respectively.

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Across Australia, 22 per cent of students reported having just one computer in their home, 31 per cent having two and 46 per cent having three or more. The number of computers in the home was positively related to digital reading literacy, with students having three or more computers in the home having much higher scores than students with one computer in the home.

The most popular leisure-related computer activities at home reported by students were browsing the Internet for fun, chatting online and using email, while the most common school-related activities at home reported by students were using the Internet for school work and doing homework.

Girls reported significantly more frequent use of computers at home for school-related activities, while boys reported significantly more frequent use of computers at home for leisure-related activities. Students from metropolitan schools reported significantly more frequent use of computers at home for leisure-related activities than students in provincial or remote schools.

The most common computer activity at school reported by students is browsing the Internet for school work. Students in remote schools reported significantly more frequent use of computers at school than students attending schools in metropolitan or provincial areas.

ACER Chief Executive, Professor Geoff Masters, said that while Australian students performed very well in digital reading literacy and had high levels of access to computers and the Internet at home and school, the report identified two major areas for policy attention.

'The gender gap found in print reading literacy is also evident in digital reading literacy. On average, Australian males performed at a significantly lower level than females. At the same time, male students have stronger skills in digital navigation than female students, which will have negative repercussions in a digital age,' Professor Masters said.

'Significant differences in digital reading literacy performance have been found in different social groups. These include those students attending government schools or remote areas, indigenous students and students from low socioeconomic backgrounds.

'These are generally the same groups that are disadvantaged in print reading and other literacy areas, so strategies that are applied to increase students' understanding more generally need also be applied in this area,' Professor Masters concluded.

The report *Preparing Australian Students for the Digital World: Results from the PISA 2009 Digital Reading Literacy Assessment*, by ACER Head of Educational Monitoring and Research, Dr Sue Thomson, and ACER Research Fellow, Lisa De Bortoli, can be downloaded from www.acer.edu.au/documents/PISA2009_PreparingAustralianStudentsForTheDigitalWorld.pdf

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Joint efforts needed to improve the literacy and numeracy skills of Australian adults

Investment in increasing adult literacy and numeracy levels may be one of the keys to boosting Australia's productivity, delegates at the first national conference on adult language, literacy and numeracy assessment were told in May.

ACER Senior Research Fellow David Tout said international studies have demonstrated that investment in increasing the literacy and numeracy skills of adults has a direct and positive impact on productivity and GDP per capita.

'But it is more than that; low levels of adult literacy and numeracy costs Australia at individual, family, economic and social levels,' said Mr Tout. 'Investment in adult literacy and numeracy education can therefore benefit individuals and families as well as Australia's economy and society.'

Australian Industry Group's Director – Education and Training, Ms Megan Lilly, delivered the first keynote presentation of the conference, on the findings of their National Workforce Literacy Project report, *When Words Fail*. In the study, employers overwhelmingly indicated that they are experiencing problems with literacy and numeracy skills in their workforce, resulting in reduced productivity.

'Addressing workforce literacy and numeracy issues is a shared responsibility between government, individuals, education authorities and employers,' said Ms Lilly. 'Yet while there is willingness on the part of employers to play a role in building workforce literacy and numeracy skills, only eight per cent of our survey respondents told us they have adequate capacity to do so.'

In his conference opening presentation, ACER Chief Executive Professor Geoff Masters said that everybody—whether child or adult—is at a different point in their learning and is capable of making progress if motivated and provided with appropriate learning opportunities. Professor Masters said that the purpose of assessment is to establish what individuals know and where they are in their learning, and then use that knowledge to inform the next step in their development.

Industry Skills Councils also agree that now is the time for action. Mr Robert Bluer, Industry Manager, Education, at Innovation & Business Skills Australia (IBSA), in his keynote presentation addressed the issue of the need to increase the overall capacity of the vocational, education and training (VET) workforce in relation to adult English language, literacy and numeracy knowledge and expertise. He also said that good assessment is critical.

'We have a fairly brutal way of doing it in VET: Yes, you're competent—no, you're not. We need to do more than make that harsh judgement,' said Mr Bluer.

ACER convened the inaugural National Adult Language, Literacy and Numeracy Assessment Conference in response to increasing national and state interest in addressing and improving the language, literacy and numeracy skills of Australian youth and adults participating in the VET sector and in Australia's workforce.

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The most recent adult literacy and numeracy survey, conducted in 2007, revealed that about half of Australia's adult population—about 7 million Australians—has insufficient literacy and numeracy skills to cope in modern society. During her keynote Megan Lilly noted that four million of these adults are in jobs today and will continue to be for many more years. Ms Lilly said that a lot of these people with 'insufficient' language, literacy and numeracy skills have been in jobs that haven't necessarily demanded it of them in the past, however those jobs are transforming, due in a large part to technology, and the demands are increasing. For the remaining three million adults who are not in work, Ms Lilly acknowledged that low language, literacy and numeracy skills are a contributing factor to their unemployment.

Updated statistics on the number of adults with low-level language, literacy and numeracy skills will be available next year when the report on the 2011 OECD Programme for the International Assessment of Adult Competencies (PIAAC) is released. PIAAC is part of the OECD Skills Strategy, an initiative that aims to optimise the use of skills in the workforce to promote economic growth and social inclusion. ACER Research Director Juliette Mendelovits and ACER's David Tout presented an overview of PIAAC at the conference, and explained how such survey frameworks and instruments inform teaching and assessment practices in education, workplace and VET contexts.

The National Adult Language, Literacy and Numeracy Assessment Conference was held on Friday 4 May at the William Angliss Institute Conference Centre in Melbourne. Further information including a full list of speakers and topics, along with a number of the presentations, is available from www.acer.edu.au/nallnac/

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Preparing Mathematics Teachers: A Study of Teacher Education in 17 Countries

Countries that do well in international studies of mathematics achievement, such as Chinese Taipei and Singapore, have strong teacher education programs and quality assurance arrangements. They ensure that teaching is an attractive profession for the most able high school graduates, that the supply of new teachers matches the demand and that graduates meet high standards before gaining full entry to the profession, according to a study jointly managed by ACER.

The Teacher Education and Development Study in Mathematics (TEDS-M) compared how seventeen countries prepared teachers of mathematics, as well as the knowledge these future teachers had of mathematics and how to teach it. The first of several reports from the study was released by the International Association for the Evaluation of Educational Achievement (IEA) in April.

ACER and Michigan State University jointly managed the project. The ACER team included Lawrence Ingvarson, Ray Peck and Glenn Rowley. The MSU team included Teresa Tatto as project director, Jack Schwille and Sharon Senk. The study was funded by the IEA, the United States of America National Science Foundation and the collaborating countries.

Seventeen countries participated in TEDS-M: Botswana, Canada, Chile, Chinese Taipei, Georgia, Germany, Malaysia, Norway, Oman, the Philippines, Poland, the Russian Federation, Singapore, Spain, Switzerland, Thailand, and the United States of America. Australia did not participate in the study.

TEDS-M grew out of questions raised by earlier IEA studies of student achievement in mathematics and science, such as the Trends in International Mathematics and Science Study (TIMSS), about the extent to which differences in student achievement across participating countries might be related to differences in the quality of people recruited into teaching and the way they were prepared to teach.

Approximately 22 000 future teachers from 750 programs in about 500 institutions were surveyed and tested for the study. Different tests were given to future primary and secondary teachers. Teaching staff within these programs were also surveyed. Close to 5000 teacher educators took part.

TEDS-M found striking differences between countries in the knowledge future teachers had of school mathematics and how to teach it. Future generalist primary teachers in Chinese Taipei and Singapore, for example, scored well above the mean on knowledge of mathematics and knowledge of mathematics pedagogy.

Future teachers of mathematics at the lower secondary level in Chinese Taipei, Singapore and the Russian Federation scored significantly higher than most other participating countries on knowledge of mathematics and knowledge of mathematics pedagogy.

The study found a significant relationship between the strength of quality assurance arrangements and the quality of graduates, as measured by tests of mathematical knowledge and mathematical pedagogy used in TEDS-M. Countries with strong quality assurance arrangements, such as Chinese

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Taipei and Singapore, scored highest on these measures, while countries with weaker arrangements, such as Georgia and Chile, tended to score lower.

TEDS-M shows that countries that do well in international studies of student achievement in mathematics, such as Chinese Taipei and Singapore, not only ensure the quality of entrants to teacher education, they also have strong systems for reviewing, assessing and accrediting teacher education providers. In addition, they have strong mechanisms for ensuring that graduates meet high standards of performance before gaining certification and full entry to the profession.

Future teachers in all countries generally saw mathematics as a process of enquiry that is learned best when students are actively involved, rather than just following teacher directions. There was, however, considerable diversity across the countries in the extent to which future teachers saw mathematics as a set of rules and procedures that have to be learned, and believed that the capacity to learn mathematics is a fixed ability that is not easily changed by teaching.

Future teachers with relatively greater knowledge of mathematics content and pedagogy were more inclined to see mathematics as a process of enquiry that is best learned by active students, and to believe that teachers can influence students' capacity to achieve in mathematics.

The pattern of beliefs held by the future teachers in every country closely matched the pattern of beliefs held by the teacher educators. ACER Principal Research Fellow Dr Lawrence Ingvarson said this suggests that substantial change in the beliefs held by future teachers is unlikely unless it is preceded by change in the beliefs held by the teacher educators.

'To simply alter the teacher-preparation curriculum is unlikely to be sufficient,' said Dr Ingvarson. 'Marked change in the beliefs of graduating teachers, if it is to occur, will probably require a significant investment in professional development for practising teachers as well as for teacher educators.'

The full report, *Policy, Practice and Readiness to Teach Primary and Secondary Mathematics in 17 Countries: Findings from the IEA Teacher Education and Development Study in Mathematics (TEDS-M)*, is available from www.iea.nl/?id=20

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Understanding children's road safety knowledge

As children around Australia participated in National Walk Safely to School Day in May, research released by ACER revealed that while boys have slightly greater awareness of road safety rules, girls are more likely to obey them.

The research, by ACER Research Fellow Ms Catherine Underwood, examined whether walking to school has an effect on children's physical activity and ability to move through their neighbourhood without adult supervision, also known as independent mobility.

More than 800 Victorian primary school students aged between 8 and 12 years participated in the research, of which 25 per cent reported they regularly walked to school.

Of those who said they walk to school, 94 per cent of boys and 91 per cent of girls reported that they know the road safety rules.

However, girls were more likely than boys to report that they look right and left before crossing the road (81 per cent of girls vs. 77 per cent of boys) and stop before crossing the road (86 per cent of girls vs. 69 per cent of boys). Girls were less likely than boys to report taking risks such as crossing the road away from the school crossing in order to save time (23 per cent of girls vs. 36 per cent of boys) and crossing the road next to a parked car (37 per cent of girls vs. 42 per cent of boys).

Ms Underwood said walking to school increases children's knowledge of their neighbourhood, and has a positive influence on their health and academic performance. In another aspect of the survey, school principals reported that their teachers observed students who actively commuted to school were more physically active in the playground. In the classroom, those students were more alert, confident, mature, and had higher levels of concentration which enhanced their academic performance.

'Research has shown that physical activity such as walking to school has a positive life-long impact on children, including greater cognitive, intellectual and social skills. More specifically, studies have found physical activity increases students' ability to pay attention, be alert and concentrate in class which in turn enhances academic performance,' she said.

Despite such evidence of the benefits walking to school can provide, Ms Underwood's research revealed only 15 per cent of children surveyed reported walking to school five days a week, with nine per cent walking to school three or four days per week.

Sixty-two per cent of children surveyed reported being driven to school five days a week. These children were slightly less likely to report knowing the road safety rules (90 per cent) compared to students who walk to school (93 per cent).

Analysis was based on data looking at children's independent mobility and active transport collected in 2010 with funding from VicHealth.

For further information on this study, download the [Fact Sheet: Walking to school and road safety knowledge](#).

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95% of staff in schools experienced workplace bullying

Over 95 per cent of staff in schools experienced some form of workplace bullying, with a zero tolerance approach needed to stamp out this behaviour, according to a book launched in May by General Peter Cosgrove AC, MC.

Written by Dr Dan Riley, Dr Deirdre J Duncan and John Edwards, and published by ACER, 'Bullying of Staff in Schools' aims to assist school employees to understand the phenomenon of staff bullying, its existence, the forms it takes, and its impact on staff and their schools.

The book draws together responses from over 2500 Australian government, Catholic and independent school employees to 42 separate kinds of bullying behaviour, revealing that over 95 per cent of respondents had experienced at least one of those behaviours. Over 75 per cent of respondents experienced a third or more of those bullying behaviours.

Speaking ahead of the launch, book co-author Dr Duncan said bullying behaviour is largely invisible in the school workplace—except to the target—because it is so typical of the behaviour encountered there.

'In many cases the bullies are quite unaware of the fact that their behaviour is seen as bullying,' Dr Duncan said. 'Bullying behaviour needs to be named and shamed if it is to be eliminated from the workplace.'

According to the research, the types of bullying behaviour most likely to be experienced by staff in schools are the questioning of one's professional judgement and being set impossible targets, deadlines or workload. Over 80 per cent of respondents had experienced these behaviours.

The least experienced types of bullying behaviour were those actionable by law under the sexual harassment and anti-discrimination legislation or criminal action such as assault. Dr Duncan said this suggests simply having a school policy on staff bullying is not sufficient to ensure a bully-free workplace exists.

'If location, location, location is a guiding principle for real estate investment, then education, education, education is the mantra for investing in a bully-free workplace,' said Dr Duncan.

Dr Deirdre J Duncan is an Adjunct Professor in Educational Leadership at the Australian Catholic University. Dr Dan Riley is an Adjunct Senior Lecturer at the University of New England. John Edwards is a statistical analyst with over 20 years experience teaching in secondary schools and has lectured in research methodology at university.

Bullying of Staff in Schools (ACER Press, 2012) was launched at ACU North Sydney campus on Thursday 10 May. Print copies can be purchased from the [ACER Online Shop](#) or by contacting customer service on 1800 338 402 or via email on [. \(JavaScript must be enabled to view this email address\)](#)

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ACER Update

Autism Master Class with Tony Atwood and Marilyn J Monteiro

ACER Psychology is hosting 'Autism Conversations', a two-day Master Class designed to provide practitioners with current information regarding the identification of and intervention planning for children, adolescents and adults with autism spectrum differences. The Master Class will be co-presented by renowned Aspergers Syndrome expert, Professor Tony Atwood, and, in her first visit to Australia, respected autism spectrum disorder specialist, Dr Marilyn J Monteiro. The 'Autism Conversations' Master Class takes place in Brisbane on Thursday 5 and Friday 6 July. For further information on this event and on other autism seminars taking place in July, visit the [ACER Psychology website](#).

Whole school improvement in literacy seminar

Primary and secondary educators with an interest in improving literacy are encouraged to attend the ACER Institute *Leading Thinkers* seminar, 'Whole School Improvement in Literacy: Key questions to guide leadership'. Presented by leading New Zealand literacy expert, Dr Alison Davis, this practical seminar will guide and assist school leaders and teachers of literacy to effectively develop and implement a sustainable school-wide plan for the improvement of literacy. The seminar is being held in Sydney on 13 June, in Melbourne on 14 June and in Brisbane on 31 October 2012. Further information is available on the [ACER Institute website](#).

NAB Schools First applications close soon

Applications for the 2012 *NAB Schools First* awards close on 29 June. This year there are 55 Impact Awards, 65 Seed Funding Awards and 10 Student Awards to be won, with \$3 million in funding is available to 130 outstanding school-community partnerships across the three award categories. The winners will be announced in August.

NAB Schools First is a strong partnership between NAB, ACER and the Foundation for Young Australians. It is Australia's largest corporate initiative of its kind and is open to all schools around the country. To date, 305 Australian schools have shared in over \$15 million award money to support their school-community partnership. To find out more and to download application forms, awards criteria, guidelines, and Terms and Conditions visit www.schoolsfirst.edu.au

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