International achievement studies: Lessons from PISA and TIMSS
This year ACER celebrates its 75th anniversary. We have grown from two staff in 1930 to more than 220 staff today. Over the past 75 years, thousands of Australian teachers and other educators have supported ACER’s research by participating in research projects, providing feedback on our work, and pilot testing and using evidence-based information, products and services in their day-to-day work.

In recent years there has been growing international interest in how educational standards compare from one country to another and in what can be learnt from global experiences about effective educational practices. This edition of Research Developments includes a discussion of the findings of two recently-released international studies: the OECD Programme for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS). These two studies provide different, but complementary, evidence about educational standards in Australia.

This issue also includes an article by Adrian Beavis on the post-school plans of disadvantaged junior secondary students. ACER’s research for The Smith Family found that young Australians generally have a good understanding of their own interests and abilities, and make their post-school plans accordingly. However, some students appear not to understand the levels of education required for the jobs they want; other students seek employment in areas where there will be insufficient jobs for all who want them.

In his article, Doug McCurry reports on an initiative to collect assessments of key competencies (as opposed to assessments of knowledge and skills specific to individual school subjects). The method draws on the judgements of a range of teachers about each student’s performance.

We hope you enjoy this edition of Research Developments and thank all who have supported ACER’s efforts to improve outcomes for learners over the past 75 years.
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Post-school plans
of junior secondary students: Are they realistic?

A report that investigated the educational and occupational plans of junior secondary students prepared by ACER for The Smith Family was released in March. The study surveyed more than 3000 financially disadvantaged students in Years 8 and 9 who are part of the Smith Family’s Learning for Life Program. One of the study’s co-authors, Adrian Beavis reports on its findings and implications.

The question of how young people from low income families overcome financial disadvantage in making a successful transition from school into the world of work has been the subject of ongoing research by The Smith Family. In 2004 ACER completed a study Post-School Plans: aspirations, expectations and implementation for The Smith Family. The researchers found that young Australians have a good understanding of their own interests and abilities and make their post-school plans accordingly.

That study also prompted further research. The result is a new report, Junior secondary school students’ perceptions of the world of work by Adrian Beavis, David Curtis and Niola Curtis, released by The Smith Family in March 2005.

This recent study involved a survey of 3721 students who are all participants in The Smith Family’s Learning for Life Program – a scholarship program for students whose families meet The Smith Family eligibility criteria of low income and commitment to their children’s education. It provides financial support and educational support from Smith Family staff.
The study asked two research questions about how young people are preparing for their later years of education and their entry into the world of work, and the factors that shape these plans:

• What are the plans and aspirations of young people and factors associated with these plans?

• How accurate are the understandings about paths from education to work that young people in the early years of secondary school bring to their plans?

The second question was extended to consider the characteristics of those who appear to have a poor understanding of the pathways they need to take into the world of work.

Educational plans

Two thirds of the students surveyed planned to complete Year 12. Around 20 per cent did not yet know if they would complete Year 12. Students with an interest in work and problem solving using their hands were more likely to plan to leave at the end of Year 10 or to not know at what level they would leave school.

Most students planned to continue studying after leaving school. More than half (52.3 per cent) of the students surveyed intend to undertake further study after school with students identifying university, TAFE and apprenticeships or traineeships as likely options.

Students’ perceptions of their own school performance weighed heavily on their plans for further study with those who perceived themselves as doing better at school most likely to plan post-school education. Students who perceived themselves as below average in school performance were more likely to plan to leave school at the end of Year 10, or to not know at what level they would leave school. They were more likely to plan no further study after leaving school, and if they were planning post-school education, were more likely to plan an apprenticeship or traineeship.

There was also a substantial minority who did not know what they want to do. Boys and students who perceived themselves as below average in their school work were more likely to not know what they will do, or if they did know, planned lower levels of education than others.

Vocational aspirations

When asked to nominate an occupation they would like to do at the age of 25 around 70 per cent of students could do so, while around 30 per cent did not know what they would like to do. Of those nominating an occupation, around half indicated they would like a professional level job and a further 25 per cent would like a trade level job.

Gender and perceived ability appeared to influence vocational aspirations. Girls were more interested in the professions and boys in trades. Girls preferred jobs in which more women than men work. Conversely boys preferred jobs where males are predominant. Those with the lowest levels of perceived ability were least likely to prefer a professional level job and most likely to prefer a trade or lower status occupation than other students and were less inclined to expect to get their preferred job.

Mismatched plans

While many students had well-founded plans for their post-school future, some appeared to be headed for disappointment in later life. Some were planning a level
of education that will not be sufficient to qualify them for the type of job they want. Others were aiming for employment in areas where there will not be enough jobs available for all who want them.

Almost half (just over 45 per cent) of students planned an education that would provide them with the level required for the job they would like. However, around 35 per cent of students planned education that would be at too low a level for the occupation that they would like at the age of 25. Of most concern, 23 per cent of all students surveyed were planning a level of education that would be too low to attain their employment goal, yet they still expected to get that type of job.

The students who reported this ‘mismatch’ of educational and vocational plans were more likely to be male; report below average achievement at school; have low levels of vocational engagement; and be unhappy and keen to disengage from school.

From a policy perspective it is these students who are of most interest. They plan less education than is required to obtain the job they say they would most like to do. These students can be seen to be at risk of making educational choices and develop other options because of this background. Those students who perceived themselves as having high ability, were seeking jobs which require above average skill levels and ability. They were not limiting their horizons to low level work because of this background. Those students in the Learning for Life program who perceived themselves as having high ability, would like to attain, on average, higher levels of education, higher skilled jobs, and jobs with higher levels of socioeconomic status than other students in the program.

Another area of concern identified in this study is that, proportionately, many more of the Learning for Life students wanted professional and trade level occupations than are available in the Australian labour market. It is likely around 5 per cent of them will be unemployed, at current rates, but only one per cent expected to be unemployed. This suggests that these young people need to refine their plans to take account of these realities in the world of work and compromise their preferences.

Conclusions
This study has shown that the Year 8 and 9 students in the Learning for Life program have begun to locate parts of the world of work that they like – guided it seems by their gender and constrained by perceptions of their ability. These students were beginning to identify paths that they will need to follow in order to enter the world of work. However, it appears that a sizeable proportion of them did not properly understand these routes – they do not know how to get to where they want to go.

Overall, the Year 8 and 9 students in this study appeared to match their perceived ability to their educational and vocational goals. This is important for, despite the fact that all of these students come from low socioeconomic backgrounds, those who perceived themselves as above average were seeking jobs which require above average skill levels and ability. They were not limiting their horizons to low level work because of this background. Those students in the Learning for Life program who perceived themselves as having high ability, would like to attain, on average, higher levels of education, higher skilled jobs, and jobs with higher levels of socioeconomic status than other students in the program.

Despite this, there appears to be a mismatch between what these students would like to do – especially in terms of skill levels – and the availability of these jobs in the labour market. While these students were not representative of all Australian Year 8 and 9 students, this finding does raise questions about the extent to which these young people correctly understand the skill levels required for various occupations, and whether they know how and where these skills need to be acquired.

The students whose educational plans did not appear to provide the correct pathway to their planned destination tended to be those who were not happy at school, and who thought they do not do well there. However they should not be seen necessarily as marginalised nor dispirited – most of these students planned an active engagement in the world of work, across a wide range of occupations. The direction they are setting, however, will make it difficult for them to implement these plans. They need to adjust their plans or change their destinations, and to do this, they require pertinent information and guidance.

At this point, it is likely that their families, schools, communities and society more generally could be expected to play an important role. Labour and educational ‘markets’ do not function as well on ‘imperfect knowledge’.

Students whose plans appeared on track need encouragement to reflect upon their choices and develop other options because many were seeking employment in areas where there will not be enough jobs for all who want them.

For further information
The full report What do students think of work?: Junior secondary school students’ perceptions of the world of work by Adrian Beavis, David Curtis and Niola Curtis and further information on the Learning for Life program are available on The Smith Family website at www.smithfamily.com.au. The Smith Family, with ACER, is currently undertaking further research into the perceptions and post school plans of older Learning for Life students in Years 10, 11 and 12, with results due to be released later this year.
International Lessons
In early December 2004, the results of two international studies were released providing the most recent evidence we have on how levels of school achievement in Australia compare with international standards. ACER’s chief executive Geoff Masters compares the results and outlines lessons we can learn from the findings.

The OECD Programme for International Student Assessment (PISA) surveys reading, mathematical and scientific literacy levels every three years. The Trends in International Mathematics and Science Study (TIMSS), conducted by the International Association for the Evaluation of Educational Achievement (IEA), surveys student achievement in mathematics and science every four years. Every 12 years PISA and TIMSS align, and their results are released more or less simultaneously, as was the case in 2004 when only a week separated the release of the two studies.

PISA and TIMSS allow students’ performances to be compared across countries and over time. The latest TIMSS results compare performances in 2002/03 with performances in 1994/95; the latest PISA results compare performances in 2003 with performances in 2000.

Both surveys were conducted in 2002/03 in more than 40 countries. In Australia, samples of students were drawn from all states and territories and included government, Catholic and independent schools. As well as providing information about overall levels of achievement, PISA and TIMSS provide details of the performances of girls, boys, students in each State/Territory, Indigenous students, students living in cities/regional/rural areas, students with non-English language backgrounds, and students from various socioeconomic backgrounds. The Australian samples were large and there were strict international
procedures that ensured the samples were representative. In PISA more than 12500 students from over 300 schools took part. In TIMSS there were approximately 10000 students from more than 400 schools.

**Results from PISA**

The PISA assessment focuses on young people’s ability to apply their knowledge and skills to real-life problems and situations rather than on how much curriculum-based knowledge they have. Assessments are conducted across three core domains – reading literacy, mathematical literacy and scientific literacy.

The latest results showed that Australia’s 15-year-old students have a level of reading, mathematical and scientific literacy among the best in the world. Australia’s results were above the OECD average in mathematical, scientific and reading literacy as well as in problem solving and in each of four mathematical literacy subscales: quantity, space and shape, change and relationships and uncertainty.

Four countries (Hong Kong-China, Finland, Korea and the Netherlands) performed significantly better than Australia in mathematical literacy. In reading literacy only Finland achieved significantly better results than Australia while three countries (Finland, Japan and Korea) outperformed Australia in scientific literacy.

Although Australia’s results in PISA on average were very encouraging, when results for specific sections of the population are examined, areas of concern are revealed such as the low level of performance by our Indigenous students and students in remote communities. While there are no significant gender differences overall in mathematical literacy, boys tended to be over-represented in the upper levels of achievement while girls appeared to be less engaged, more anxious and less confident in mathematics than boys.

**Results from TIMSS**

The results from the Trends in International Mathematics and Science Study (TIMSS) painted a less positive picture of Australian students’ achievement in mathematics and science.

TIMSS 2002/03 was the third combined mathematics and science study that Australia has participated in since 1994. TIMSS 2002/03 tested achievement in mathematics and science of students in Year 4 and Year 8. The testing took place in late 2002.

Australian students performed moderately well in TIMSS 2002/03 mathematics with the average scores achieved by Australian students about the same as the international average for Year 4 and significantly higher than the international average for Year 8. In science, Australian students achieved above the international average at both year levels.

Although Australian students acquitted themselves quite well overall in TIMSS 2002/03 mathematics with the average scores achieved by Australian students about the same as the international average for Year 4 and significantly higher than the international average for Year 8. In science, Australian students achieved above the international average at both year levels.

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**Comparing the studies**

While PISA and TIMSS have much in common, they provide different, but complementary, information about levels of student achievement. In both studies there are carefully developed assessment frameworks that define what is assessed. The tests are sound, reliable instruments that measure accurately what they were designed to measure.

PISA looks at 15-year-olds - who in most countries are approaching the end of compulsory schooling - and asks how well they are able to apply understandings and skills in reading, mathematics and science to everyday situations. Are they able to perform currency conversions? read tables and graphs in newspapers? use basic understandings of science to make sense of magazine articles about topics such as genetically modified foods and animal cloning?

One of the more difficult PISA questions in 2003 asked 15-year-olds to calculate the average speed in kilometres per hour of a person who walks 89.6 metres in a minute.
This task does not require high-level mathematical knowledge (students need to know that there are 60 minutes in an hour and 1000 metres in a kilometre), but it does require a level of mathematical skill: the ability to think logically, to multiply and divide accurately, and to apply steps in sequence.

TIMSS, on the other hand, looks at how well Year 4 and Year 8 students have mastered the factual and procedural knowledge taught in school mathematics and science curricula. Do students know how many legs an insect has? which animals lay eggs? what happens when light passes through a prism? what the angles of a triangle sum to? how to convert 7/10 to a decimal? what congruent triangles are? TIMSS begins with a detailed analysis of Year 4 and Year 8 mathematics and science curricula and then tests curriculum content common across participating countries.

**What lessons did we learn from these observations?**

So what did we learn? It will take some time to sift through the results in detail, but there are some clear and immediate conclusions.

From PISA, we learn that Australian 15-year-olds perform well (on average) when it comes to careful reading, logical thinking, and the application of reading skills and mathematical and scientific understandings to everyday problems. In fact, Australian students are among the best in the world on tasks of this kind.

The conclusion from PISA is that, on average, Australian 15-year-olds have relatively high levels of reading, mathematical and scientific literacy, defined as the ability to apply skills in reading and basic mathematical and scientific principles and processes to everyday problems. PISA also reveals that many students in Australia— as in other countries— complete the compulsory years of school with only minimal levels of reading, mathematical and scientific literacy. For example, among Australian 15-year-olds, 7 per cent of girls and 17 per cent of boys perform at or below the lowest international reading benchmark. Many of these students are able to locate specific detail in a piece of text, but are unable to connect ideas or to draw conclusions from a piece of writing.

From TIMSS we learn that Australian students perform less well on tests of mathematical and scientific knowledge. Among the 25 countries testing at Year 4 in 2002/03, Australia ranked 16th in mathematics and 11th in science. Countries significantly outperforming Australia in either Year 4 mathematics or science included England, USA, Latvia, Lithuania, Russian Federation, Hungary and Cyprus. Worse, over the past decade, achievement levels in Australia remained largely static while achievement levels in many other countries increased. The result is that some countries which were below or equal to Australia a decade ago in school science achievement (eg, Hong Kong SAR, England) and school mathematics (eg, England, Hungary) now outrank us.

Among the 46 countries testing at Year 8, Australia ranked 14th in mathematics and 11th in science. Countries significantly outperforming Australia in either Year 8 mathematics or science included England, Belgium, Netherlands, Estonia and Hungary. And while our performance in Year 8 science improved over the past decade, half the countries we outscored in Year 8 mathematics in 1994/5 improved to perform at the same level as Australia in 2002/03.

PISA and TIMSS provide information about different aspects of students’ mathematics and science learning. PISA assesses careful reading, logical thinking and the application of general mathematical and scientific processes and principles to everyday problems. TIMSS assesses mastery of the factual and procedural knowledge taught in school mathematics and science curricula.

While students in some countries— such as Hong Kong SAR and Korea— perform very well in both these areas, students in some other countries perform better in one area than the other.

In Australia and New Zealand, students perform better (on average) in applying general mathematical and scientific principles and skills to everyday problems than in recalling and using curriculum-based factual and procedural knowledge. As an illustration, Australian high school students significantly outperform students in the United States in the first of these two areas, but perform no better than US students in the second.
An obvious question that follows from these observations is whether Australian schools are placing sufficient emphasis on the teaching of factual and procedural knowledge in mathematics and science, particularly at Year 4. While 73 per cent of Year 4 students in Singapore reach the high international mathematics benchmark, only 26 per cent of Australian students reach this benchmark. The corresponding percentages for Year 4 science are 61 per cent and 38 per cent. And, relative to other countries, Australian Year 4 students now perform less well in school mathematics and science than they did a decade ago.

During the 1990s, considerable effort went into the reform of curricula for the primary and middle years of schooling in Australia, resulting in new state curriculum and standards frameworks. In the same period, education systems introduced system wide testing programs to monitor student and school achievement. It is not clear that these efforts have improved levels of mathematics and science performance in Australian primary schools.

If Australia is to lift its performance in mathematics and science over the next decade, then greater attention will need to be given to the teaching of basic factual and procedural knowledge and the development of teachers’ confidence and competence in teaching primary school mathematics and science. The focus of the past decade on what is taught (the curriculum) needs to be accompanied by a greater focus on how subject matter is taught (research-based pedagogy). Testing programs for accountability and monitoring need to be complemented by assessments more capable of diagnosing individuals’ learning difficulties and providing guidance to classroom teaching and learning. More effort may be required in attracting people with strong mathematics and science backgrounds into the teaching profession.

Australia should not be satisfied with maintaining existing levels of achievement and must strive for continual improvement and to see Australian students ranked among the best in the world in all achievement studies.

Further information

The full international PISA report is available from the OECD website at www.pisa.oecd.org.

The Australian national PISA report is, Facing the future: A focus on mathematical literacy among Australian 15-year-old students in PISA 2003, by Sue Thomson, John Cresswell and Lisa de Bortoli.

The TIMSS 2003 international reports are available from the IEA website at http://timss.bc.edu

The Australian national TIMSS report is published in two volumes, Summing it up: Mathematics achievement in Australian schools in TIMSS 2002 and Examining the evidence: Science achievement in Australian schools in TIMSS 2002 both by Sue Thomson and Nicole Fleming.

Both Australian PISA and TIMSS reports are available for download from the ACER website at www.acer.edu.au

ACER’s work on PISA

ACER leads an international consortium of research and other educational institutions and eminent individuals to deliver the International PISA project on behalf of the OECD. ACER’s work on PISA includes:

- leading the development of the methodology and procedures required to implement the PISA survey in all 59 participating countries;
- developing and implementing sampling procedures and assisting with monitoring sampling outcomes across participating countries;
- leading the development of all assessment instruments in Reading, Mathematics, Science, Problem Solving, Computer-based testing, background and contextual questionnaires;
- developing purpose-built software to assist in sampling and in data capture; and
- analysing all data and assisting the OECD in preparation of the international report.

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The central purpose of the Australian Principals Centre is to recognise and enhance the professional status of school leadership. It was established in the early 1990s by the Kennett government in Victoria to provide high quality professional development and training for school leaders. Since the mid 1990s, consistent with its name, APC has widened its activities to include service delivery in other parts of Australia and overseas. In addition APC has established a voluntary three level accreditation scheme, which acknowledges the achievements of members who participate in a portfolio based peer assessment process. Currently APC has about 350 accredited members.

Presently APC’s activities include the provision of a coaching program to 100 experienced government school Principals; working with the Victorian Association of State Secondary Principals to deliver their annual leadership conference and the provision of a 360 degree leadership assessment instrument to schools.

More recently APC has been working with staff in ACER’s Teaching and Learning research program, led by Dr Lawrence Ingvarson, to deliver a pilot program to accredit schools that can demonstrate a performance and development culture. This initial pilot involves around twenty Victorian government schools. APC and Dr Ingvarson are also working together to develop leadership standards for Australian school leaders on a project being conducted for the National Institute for Quality Teaching and School Leadership (NIQ TSL), an initiative of the Australian government.

APC has a local, national and international presence and is currently determining the balance of activities to be delivered in each of these arenas. Most importantly APC maintains strong links with practising school leaders and listens carefully to advice provided from schools and school leaders in government, Catholic and independent settings.

For further information about APC and its activities please contact:
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ACER incorporated the Australian Principals Centre (APC) in January 2005. As a result ACER is set to broaden its activities in support of the professional learning and work of school principals, strengthen its connections with individual schools and principals’ associations and enhance ACER’s impact on educational outcomes in schools.
ACER celebrates its 75th anniversary in 2005. For 75 years, ACER has been undertaking a range of research and development projects and providing services and materials in support of educational policy-making and improved professional practice.
ACER was established in 1930 with a grant from the Carnegie Corporation, a US organisation created in 1911 to promote ‘the advancement and diffusion of knowledge and understanding’.

The official title ‘Australian Educational Research Council’ was first selected, but then changed at the first council meeting in 1930 to Australian Council for Educational Research, which has not changed since. The original staff of two grew to five by the end of the first decade.

**ACER’s early years**

Prior to the establishment of ACER there had been no educational institution with an Australia-wide interest.

ACER’s early focus was on research as opposed to service activities, and making ACER a clearinghouse of research information. Emphasis was placed on primary and secondary education.

In its early years ACER built up an image as:

- a centre devoted to the scientific study of education;
- a knowledgeable institution that could be used by Australian educators to improve their information, and a source of reference on what was the best and latest in educational thought and practice; and
- a supporter of progressive education.

During the Second World War, ACER was involved in psychological testing for personnel selection to the Armed Services and government departments. For the three years from 1942 to 1945 ACER was mostly concerned with the war effort, with regular work suspended. Its war time work helped lead to government financial support for ACER from 1946 and confirmed it as a significant national institution.

In the post-war years, ACER was able to move away from war work to focus on schools again. There was now more emphasis on testing. ACER had become dependent on government finance. ACER’s work now included: a large growth in library work; establishment of a semi-autonomous test division; conferences of test users; research into test theory; Australia-wide curriculum survey; university study to determine predictions of academic success; and studies into adolescence and unemployment.

In the 1960s ACER began the Co-operative Scholarship Testing Program (CSTP) for scholarships to independent schools. The program still runs today along with several others.

ACER grew rapidly in the post-war decades, outgrowing several premises. From two staff in 1930, then five at the end of the decade, ACER now has more than 200 staff members, located in three Melbourne premises as well as in Sydney and Dubai.
Taking a new
The assessment of students and the reporting of these assessments to parents take place in a variety of ways. Some reports are oral at parent-teacher interviews, some are school report cards, some are officially printed and certified statements, as in Year 12. What these reports encompass is also varied: primarily academic achievement. However, in many places, the student's personal development, behaviour, attitudes, extra-curricular abilities and other individual attributes also get assessed and reported. In schools, most assessing and reporting procedures are conducted by one teacher about one student in one subject area.

Aiming to find an alternative form of assessment that might be less time consuming and more collegial while taking into account the student's personal attributes and abilities, ACER researchers developed and trialled an assessment procedure known as Whole School Assessment.

The judgements made in the Whole School Assessment process are concerned with general aspects of education (cross-curricular competencies) rather than the knowledge and skills that are specific to individual subjects and which are the basis of subject-based assessments. The objective is to create an overall judgement that arises from a range of teacher perspectives that can be seen as escaping the limitations of any individual teacher's perspective, and, as a result, increasing the reliability of the assessment and giving a more in-depth view of the student's progress through the school.

In the Whole School Assessment method, judgements are made based on the individual student's achievement in the seven Key Competencies, sometimes called the "Mayer competencies". Since 2001 ACER has worked with the Victorian Curriculum and Assessment Authority (VCAA) to trial the assessment method using three
The seven key competencies as listed in the 1992 Mayer report are:

1. **Collecting, analysing and organising information**
   The capacity to locate information, sift and sort information in order to select what is required and present it in a useful way and evaluate both the information itself and the sources and methods used to obtain it.

2. **Communicating ideas and information**
   The capacity to communicate effectively with others using a range of spoken, written, graphic and other non-verbal means of expression.

3. **Planning and organising activities**
   The capacity to plan and organise one's own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance.

4. **Working with others and in teams**
   The capacity to interact effectively with other people both on a one-to-one basis and in groups, including understanding and responding to the needs of a client and working effectively as a member of a team to achieve a shared goal.

5. **Using mathematical ideas and techniques**
   The capacity to use mathematical ideas, such as number and space, and techniques, such as estimation and approximation, for practical purposes.

6. **Solving problems**
   The capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and the desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome.

7. **Using technology**
   The capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems.

trials on the assessment procedures and software with 20 schools in 2002, 40 schools in 2003 and 50 schools in 2004 with positive reactions.

In proposing to schools that they participate in the trial, the research team offered three statements to accompany our assurance that we had tried to design an efficient process for undertaking Whole School Assessment:

- We believe that the Key Competencies offer an important opportunity for the development and assessment of generic, work-related skills in secondary education.
- We also believe that Whole School Assessment is the best way of assessing such challenging matters as teamwork and planning and organising.
- We recommend Whole School Assessment as a method for gaining new cross-curricular perspectives on students.

In the field trial students were assessed by as many of their teachers as possible. It was not expected that curricular programs would be changed in order to make the assessments, and no special activities needed to be undertaken by the students to be assessed. The first step was for participating teachers to get an overview of the global assessment framework, which was summarised on a single A3 page. Towards the end of the first semester, participating teachers made a global judgement of the performance of each of the target students on each of the Key Competencies.

A teacher needed to take no more than a few minutes per student to arrive at his or her assessment. A global impression of the student’s position in one of four categories was to be given by assigning a grade from 1 to 8 for each of the seven Key Competencies. Contact in subject classes was obviously the main basis of the assessment, but teachers were encouraged to take into account other information gathered from extra-curricular activities and work placements if these had occurred.

The assessments of the various teachers were entered into a piece of software, which then integrated the different judgements producing a recommended overall result. The software was able to produce reports on individual students and, further, to analyse and report on the results of the assessments for the school, and evaluate the whole trial process.

**What the trials showed**

The trials over a period of three years offered some challenge and enrichment to participating teachers and schools. They helped schools develop their understanding of the possibilities for Whole School Assessment, going beyond the Key Learning Areas and the requirements of any specific curriculum. Schools were also encouraged to use the Whole School Assessment method to assess other generic skills and attitudes which were important to them, in addition to trials relating to the Key Competencies.

There are a number of potential advantages in using this form of assessment. It replaces various onerous activities with one procedure which is quicker, but no less reliable. Moreover, in the long run, the procedure came to be seen as more informative and useful to students, their parents and their future teachers. It has the added advantage that teachers can more readily see that re-jigging their classroom procedures and activities, to give the Key Competencies a high profile as organising principles, improves student participation, increases motivation to learn, and allows students to see their learning whole.

They, like their teachers, came to see that the development of positive attitudes and enhancement of personal attributes has a place within, not apart from, academic advancement.

The assumption behind the process is that the judgements made in this assessment are stage related, in that they are made explicitly about students in specified grade levels, at a particular point in time (the end of Semester One of Year 10, in the case of our field trials). The judgements are made on the basis of participating teachers’ knowledge and experience of students at the chosen grade level, and they are based on what teachers know and expect of students at this level.

The trials also indicated that Whole School Assessment of generic skills can yield important and useful information about the student. For example, a poll of employers showed them to be supportive of the procedure and receptive of the information provided, even if some indicated they might require more than just Whole School Assessments when choosing employees. Teacher agreement on the individual student’s levels of achievement of the generic skills was consistently high, and the whole assessment and reporting model and software proved quite robust.

Indications are also clear that it is able to be adapted to a range of cohorts (ages and year levels) and for a range of purposes, including diagnostic use, as a spur to student self-assessment, as well as general reporting. However, Whole School Assessment of generic skills needs to be given further endorsement and support from education authorities if it is to be widely adopted by schools.
New student test developed for UK university entry

ACER’s CEO Geoff Masters (left) and Paul Lewis, Head of New Business Developments, Assessment Directorate, University of Cambridge Local Examinations Syndicate (UCLES) agree to collaborate on UniTest at ACER in March.

ACER is collaborating with the University of Cambridge Local Examinations Syndicate (UCLES) to develop a new test of academic reasoning for students applying to UK universities. An agreement was signed between ACER and UCLES to develop the test, to be known as UniTest, in Melbourne in March. UniTest will assist UK universities to identify students who are best able to take advantage of the educational opportunities they offer.

UniTest will be pilot tested in both the UK and Australia prior to a planned major national pilot in the UK.

TIMSS 2006/07

ACER has been awarded a contract with the Department of Education, Science and Training (DEST) to conduct the Australian component of TIMSS (Trends in International Mathematics and Science Study) 2006/07. TIMSS 2006/07 is the fourth in a cycle of internationally comparative assessments dedicated to improving teaching and learning in mathematics and science for students around the world. Carried out every four years at the fourth and eighth grades, TIMSS provides data about trends in mathematics and science achievement over time.

Australian reports from the previous cycles of TIMSS are available for download from the ACER website at www.acer.edu.au/research/TIMSS/TIMSS_02_03.htm

Deputy CEO (Professional Resources) appointed

ACER is pleased to announce the appointment of Ms Pamela Macklin to the new position of Deputy CEO (Professional Resources). Pamela has most recently been Deputy CEO of the Curriculum Corporation, where she was responsible for the establishment and growth of a range of business areas, including Curriculum Corporation’s International Business Unit and its Assessment and Testing Services business. Pamela is an experienced teacher, education consultant, writer and senior executive. She has significant experience in the development and management of major curriculum and professional development projects. Her interests lie in educational leadership, educational policy, curriculum, school improvement and the management of organisational change and improvement. Her national and international work has focused on education reform and has included the development of policy and implementation strategies in areas such as ICT in education, literacy, numeracy and gender equity.

At ACER Pamela will lead and manage ACER’s work to provide high-quality, research-based products and services to support the professional learning and professional work of practitioners. This will involve working with and supporting the
heads of the existing five business units to
develop the Professional Resources division
as an integrated solution to the professional
needs of practitioners and working to
expand the range of professional products
and services provided by ACER, both
domestically and internationally.

Latest LSAY report released
The latest report in the Longitudinal
Surveys of Australian Youth (LSAY) was
released on 30 June. The report, Course
change and attrition from higher education,
examined the pathways of almost 7000
young Australians who were in Year 9 in
1995 and commenced higher education
in 1999 or 2000. Their education, training
and labour market activities were tracked
until late in 2001.
The study found that the majority of
students (almost 75 per cent) persisted with
their initial course while 13 per cent had
changed courses within the higher education
sector and 14 per cent had left the higher
education sector without completing a
qualification and had not returned.
Tertiary students who change courses or
withdraw from study without gaining a
qualification were more likely to be driven
by personal interests and career objectives
than academic difficulties or financial
pressures. The findings suggested that
course change and attrition can be a
positive outcome for some students and
may be regarded as part of the settling
in period in the transition from school
to higher education as students discover
where their interests lie.
The report can be downloaded from
the ACER website at www.acer.edu.au

National Survey of Information
and Communications
Technology Literacy
The Ministerial Council for Education,
Employment, Training and Youth Affairs
(MCEETYA) through its Performance
Measurement and Reporting Taskforce
(PMRT) has commissioned ACER to
conduct a national sample assessment of
information and communication technology
literacy commencing in O ctob er 2005.
Assessment instruments have been
developed and pilot studies began in late
2004. A field trial was conducted in April
2005 and the national sample survey
assessments of students in Year 6 and Year
10 will occur in O ctob er 2005. The national
samples will consist of approximately 260
schools and up to 4000 students at each
year level. A detailed report on the survey
is due to be published in May 2006.

Options for an Australian
Certificate of Education
ACER has been awarded the contract with
the federal government to develop options
for an Australian Certificate of Education.
The study will analyse and report on:
• existing arrangements for the Senior
Secondary Certificate of Education in
all Australian states and territories;
• overseas examples of Senior Secondary
Certificate of Education systems;
• the International Baccalaureate
Programme; and
• the use of general aptitude tests in senior
secondary schools.
Chief Executive of ACER, Professor Geoff
Masters will lead the study. The report is to
be completed by the end of the year.

Monitoring and evaluation
of secondary science program
ACER's International Institute worked
with Melbourne University Private earlier this
year to deliver training to a group of 14
senior administrators from Pakistan.
The training took place over three weeks in
February and March. ACER staff presented
a program on monitoring and evaluation in
secondary science for the group from the
provinces of the Punjab, Balochistan and
North West Frontier Province.

Indigenous education
researcher appointed
ACER has appointed Alison Stone to the
position of Research Fellow, Indigenous
Education. Alison is the first researcher
appointed by ACER to specialise in research
into Indigenous education. Prior to joining
ACER, Alison was a teacher in the
Department of Education in Tasmania.
Alison's research interests include high
poverty schools, Indigenous education,
leadership and inclusion.
Managing challenging behaviours workshops

Dr June Slee (left) with Taree Child Care Centre Director, Kristan Harper.

The challenge of finding ways to assist children to behave considerately, cooperatively and positively was addressed at a workshop presented by ACER in Taree, NSW on 19 March. The workshop was funded by the Telstra Foundation.

Education expert Dr June Slee helped early childhood educators and childcare workers understand what causes difficult behaviours, develop strategies to foster more cooperative and on-task behaviours and to support each other to implement targeted and consistent approaches to deal with challenging behaviours.

The workshop was one of several tailor-made professional development programs in early childhood education to be presented by ACER through Telstra Foundation funding. For further information on the workshops please contact Alison Elliott, Research Director, Early Childhood Education at ACER’s Sydney office on (02) 8338 6800 or by email at elliott@acer.edu.au.

Rowe appointed inquiry chairman

ACER’s Research Director, Learning Processes and Contexts, Dr Ken Rowe was appointed as chairman of the committee conducting the Australian Government’s National Inquiry into the Teaching of Literacy late in 2004. The inquiry is conducting an independent examination of reading research, teacher training and classroom practices for the teaching of reading. It is also examining the way reading skills are tested. The inquiry will be further informed by a review of national and international research on reading methods, including those used to help students with reading difficulties. The committee is expected to report on its findings in the second half of 2005.

Identifying the student at risk

The Australian Principals Centre is running a series of workshops by leading adolescent psychologist Dr Michael Carr-Gregg. The one day skills based workshop outlines techniques for assessing the psychological well-being of young people. These techniques will enable school staff to establish rapport, assess risk and determine what interventions are the most appropriate. The workshop is suitable for all school personnel in a pastoral care position.

For further information contact Janine Meachen, Australian Principals Association. Tel: (03) 9817 0304, email: meachen@acer.edu.au

Former ACER CEO honoured

Former ACER chief executive, Professor John Keeves, was admitted as a Member of the Order of Australia for a lifetime of achievement in education in this year’s Australia Day awards. Professor Keeves received the award for services to educational research, particularly the development of statistical methods for measuring and analysing educational outcomes and to professional organisations and mentoring of research associates and students. Professor Keeves joined ACER, first from 1962 to 1967, and he then returned in 1972 as Assistant and later Associate Director, becoming Director in 1977 and continuing in that position until he retired in 1984. Professor Keeves is now a professorial fellow at Flinders University and Chair of the Flinders Institute of International Education.

Computers, Thinking and Learning

The latest title from ACER Press, Computers, Thinking and Learning by David Nettlebeck, was launched on 12 April by Garry Barker, Technology Editor for The Age newspaper. Computers, Thinking and Learning is a collaboration of engaging ideas from both teachers and students to help meet the challenge of new curriculum requirements. For more information on Computers, Thinking and Learning, visit the website at www.acer.edu.au/publications/acerpress/index.html
ACER Press appointed distributor of Sigma Assessment Systems

ACER has been appointed the exclusive distributor in Australia and New Zealand for Sigma Assessment Systems psychometric assessment instruments. Sigma is a founding member of the Association of Test Publishers, and has been providing products and services to human resource professionals, counsellors, and psychologists for over 30 years. Sigma publishes a variety of psychological instruments, including measures of ability, personality, and career interest. Clients include NASA, Intel, DaimlerChrysler, Lucent Technologies, Nokia, and AT&T.

ACER Press has produced an introductory catalogue of the Sigma assessments. They cover a wide range of applications including recruitment and selection, ability and personality, clinical and counselling, and careers interests. Most of the instruments in the catalogue are available for online administration. To obtain a copy of the catalogue or to discuss your requirements, please contact ACER Press by phone on (03) 9835 7447 or email sales@acer.edu.au.

ACER assists US school reform program

ACER is working with America’s Choice, a whole school reform project operating in many schools in the United States, to develop assessment items for the Ramp-up facet of the program. Ramp-up is a withdrawal program designed to assist students whose literacy and numeracy skills are two or three years behind that of their peers. ACER will develop assessments for Ramp-up programs at Grade 6 and Grade 9 that will provide feedback on student progress over time. ACER will be adapting items from its iAchieve mathematics assessments and developing new reading items plus assessments for fluency and writing. The initial implementation will involve pen and paper assessments with online data entry by schools and automatic report generation. The administration of the tests is likely to go online in the second year of operation.

Rowe, Pollard and Rowe take out research award

Dr Kathy Rowe (Consultant Physician in the Department of General Medicine, Royal Children’s Hospital Melbourne), with Jan Pollard (Audiological Services Specialist, Sonic Innovations Pty Ltd) and Dr Ken Rowe (ACER’s Research Director, Learning Processes and Contexts), have been awarded the prestigious Rue Wright Memorial Award for Research Excellence in Paediatrics & Child Health by the Royal Australasian College of Physicians. The trio received the award at the College dinner held in Wellington, New Zealand on 10 May where they presented the winning paper entitled: “Literacy, Behaviour and Auditory Processing: Does teacher professional development make a difference?” The paper is available for download from ACER's website at www.acer.edu.au.

ACER contributes to tsunami relief efforts

ACER has been working with World Vision, Red Cross, AusAid and the Curriculum Corporation to produce a Tsunami Education Kit for primary and secondary school teachers. The kit examines how the tsunami disaster fits with bigger picture issues of poverty, development and aid and provides a background for teachers and students on these issues through information and key questions, as well as providing activity suggestions for all age groups.

ACER has also donated $10 000 to World Vision’s Tsunami relief appeal and will continue to work with World Vision and other aid agencies. The kit can be downloaded from World Vision’s website at www.worldvision.com.au/resources/teachers.

CEET conference

The Annual Conference of the Monash University-ACER Centre for the Economics of Education and Training (CEET) will be held in Melbourne on Friday 28 October. The conference theme will be "The New Federalism in Australian Education and Training". Further details are available from www.education.monash.edu.au/centres/ceet/
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ACER Press publishes and distributes close to 4000 books, journals, tests, assessment instruments and programs. All of our publications are evidence based. ACER Press is supported by ACER’s significant body of research.

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