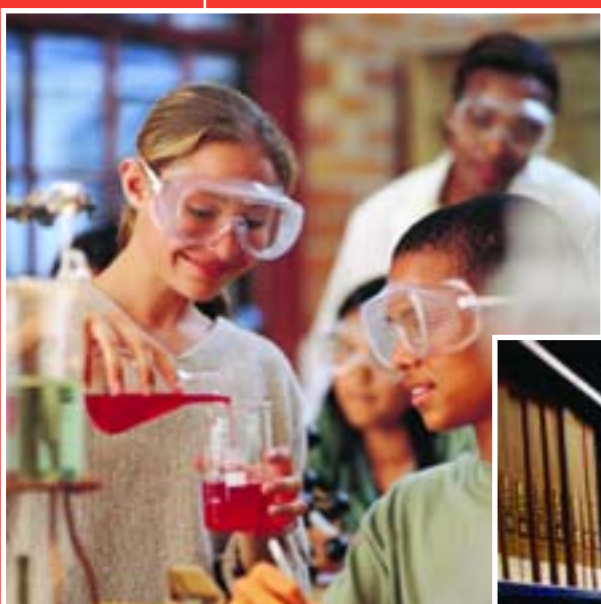


Research Highlights



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Australian Council for Educational Research

The Australian Council for Educational Research (ACER) provides state-of-the-art educational research, tools and services

Established in 1930 as Australia's leading independent educational research organisation, ACER has a long history and solid reputation as a provider of reliable support to education policy makers and professional practitioners. Today, ACER is one of the world's leading education research centres, committed to creating and distributing research-based knowledge, products and services to improve learning across the lifespan in both formal and informal settings.

What we do

ACER is a leader in the provision of quality research, both within Australia and internationally. As a national, independent research body, we bring a high level of expertise and objectivity to our work. Blending solid

experience and creative talent with established methodologies, ACER is a full-service research consultancy specialising in collecting and interpreting information to shape strategic decision making.

One of our greatest strengths is our people. Our researchers bring many years of experience to their projects, and skills in a range of disciplines and research methods.

In addition to being a national centre for educational policy research and advice, ACER designs and manages large-scale assessment projects and develops a range of professional resources for practitioners.

Assessment services

ACER provides secure, fee-for-service testing programs to schools, universities, employers and professional organisations. These programs include selection tests for entry to schools and universities, scholarship tests and tests for diagnostic and monitoring purposes.

Library resources

ACER's Cunningham Library provides educators with access to more than 50 000 books, 400 professional journals and numerous conference papers and reports. The library also offers a variety of online information services, including library catalogues, electronic databases, literature searches and document delivery services.

Publications

ACER publishes and sells an extensive range of professional resources such as tests, kits, books and software to practitioners in education, psychology, parent education and human resources.



‘Creating and disseminating research-based knowledge and tools to improve learning.’

Capabilities

ACER offers all the services you would expect to find in a leading educational research organisation.

Policy research

Research is a crucial element of informed decision making. ACER research projects investigate topics of importance to education and training and play a major role in shaping education policy.

Educational measurement

Educational measurement work covers all areas of the curriculum and all sectors of education. ACER activities include test development, test administration, data coding, data analysis and the development of candidate, group and system reports.

Teaching and learning

ACER has an interest in the development of teachers as professionals and in the relationship between teacher learning and improved student learning. Current work includes an investigation of the role of professional standards in improving teacher practice.

Large-scale survey research

ACER has an established reputation in large-scale survey research. Our current activities include the OECD Programme for International Student Assessment (PISA) and work for the Third International Mathematics and Science Study (TIMSS).

Longitudinal surveys

ACER also has considerable experience in the conduct of longitudinal surveys. Since the 1970s, the Longitudinal Surveys of Australian Youth have followed the progress of young Australians to provide a better understanding of transitions between school, post-secondary education and work.

International work

ACER is working to support educational reform and development in a number of countries. ACER has provided professional development programs in educational assessment and evaluation to ministries of education throughout the Asia-Pacific and through projects funded by agencies such as AusAID and the World Bank.

International achievement studies

In addition to managing the OECD-PISA project to assess the mathematical, scientific and reading literacy skills of 15-year-olds in around 50 countries, ACER has been responsible for the Australian component of studies conducted by the International Association for the Evaluation of Educational Achievement (IEA). These studies have included the Third International Mathematics and Science Study (TIMSS) and associated follow-up research, and the Civic Education Study.

Aid-funded projects

In collaboration with IDP Education Australia, ACER has undertaken an AusAID-funded development and training project to improve the secondary school examination system in Cambodia. We have also completed a project to analyse baseline census data on primary schools and teachers in Vietnam. In a project funded by the World Bank and Japanese Government, we have provided advice and training in the Philippines on student achievement testing and teacher-based assessment strategies.

With increased world-wide demand for educational research, ACER is well-placed to provide leading-edge capabilities to improve learning – at home, in school, in tertiary education institutions and within the workplace.

Australian students excel in international study

Results from an international study indicate that Australian 15-year-olds are among the best in the world in reading, mathematics and scientific literacy

Australian 15-year-olds achieved above the OECD average in reading, mathematical and scientific literacy. Across 32 countries, only students in Finland clearly outperformed Australian students in reading, only in Japan did students have significantly higher levels of mathematical literacy, and only in Japan and Korea did students perform significantly better than Australia in scientific literacy.

These are among the findings of the first OECD Programme for International Student Assessment (PISA) survey conducted in 2000 and published world wide in 2002.

PISA surveyed the reading, mathematical and scientific literacy skills of 265 000 students, including 6200 Australian students from 231 government, Catholic and independent schools. The survey's main emphasis in 2000 was on the measurement of student outcomes in reading.

ACER Executive Director, Professor Geoff Masters, said the study provides unique information about how well Australia is preparing our young people for life after school.

'The findings are highly encouraging. There are very few countries anywhere in the world providing 15-year-olds with reading, mathematical and scientific literacy above those being achieved in Australia', Professor Masters said.

Students in all Australian states and territories achieved results at or above the OECD

average. Students in the ACT performed well in all three areas, and students in WA performed well in mathematical and scientific literacy, although differences between states often were small and not significant.

In all 32 countries, girls outperformed boys in reading. In mathematical literacy, boys outperformed girls in about half the participating countries, but there was no significant gender difference for Australian students in either mathematical or scientific literacy.

Australian students had more varied literacy levels than students in many other countries. In almost all Australian states and territories, the top 10 per cent of students in reading outperformed the top 10 per cent of students in even the highest-performing country, Finland (see graph)



In mathematical and scientific literacy, the top 10 per cent of students in the ACT and WA outperformed the top 10 per cent of students in Japan and Korea respectively. However the bottom 10 per cent of Australian students had literacy levels consistently below those of the bottom 10 per cent of students in these high-performing countries.

While Australian students did well, there are some aspects that are a cause for concern, including the relatively low performance of boys in reading, particularly in relation to narrative texts. Boys from disadvantaged backgrounds were twice as likely as girls from similar backgrounds to be in the lowest quarter of reading scores. It was found that boys were much less engaged in reading than girls.

Another area of concern was the relatively low performance of Indigenous students. The report notes that Indigenous students as a group will continue to need extra support to raise achievement levels, but PISA has shown that some Indigenous students perform well and many have more than adequate literacy skills for participation in adult life.

The report also found that higher amounts of homework are associated with higher achievement in Australia and in many other countries surveyed. It emphasises the importance of schools and parents encouraging students to do homework as a way of enhancing their achievement.

Apart from the amount of homework, the most important school-level factors in Australia were teacher morale (as perceived by principals) and disciplinary climate and teacher support (as perceived by the students). These factors were associated with better student results in more than one area.

Students in Australia who came from a non-English speaking home background performed at an equivalent level of mathematical literacy to students whose home language was English, but at a lower level in reading and scientific literacy.

Further information is available in the report '15-up and Counting, Reading, Writing, Reasoning... How Literate are Australia's Students?' by ACER researchers Jan Lokan, Lisa Greenwood and John Cresswell.



Assessing the moral and ethical outcomes of schooling

Internationally, and at all levels of educational discussion, there is a renewed focus on the social aspects of schooling including students' moral and ethical development

In response to this discussion the Australian Council for Educational Research (ACER) has undertaken a number of projects to assist schools in measuring and monitoring students' social, moral and ethical development.

In 1997, John XXIII College in Perth approached ACER to assist the College to monitor the attitudes and values of its students. The College was interested in monitoring how well it was developing socially and emotionally competent people of conscience and compassion.





On the basis of discussions with senior staff and members of the College Council, ACER researchers drafted a series of statements relating to seven dimensions. The draft statements were trial tested and a questionnaire developed.

In 1998 and 1999, the questionnaire was administered to John XXIII students in Years 8 and 12 as well as to ex-students of the College five and ten years after graduation.

Building on to the work for John XXIII College, ACER is continuing to develop and refine frameworks against which schools and school systems might monitor the social, emotional, moral and ethical development of their students.

In our work to assess social outcomes, attitudes and values, ACER has successfully developed and used two approaches to data gathering. The first approach elicits students' responses to questionnaire statements. In

some questionnaires, students indicate their strength of agreement with each statement (eg, 'strongly agree', 'agree', 'disagree', 'strongly disagree'); in others, they indicate the frequency with which they engage in particular activities (eg, 'never', 'hardly ever', 'most of the time', 'always'). Instruments of this kind are designed to assess affective outcomes (ie, attitudes and values). When working with younger children pictures of faces ranging from 'very sad', 'slightly sad', 'slightly happy' and 'very happy', are used to support these categories. Here are examples of questionnaire statements of this kind:

	Strongly Disagree	Disagree	Agree	Strongly Agree
				
I feel comfortable working with a group.				
I am happy for others when they do well.				
When I work in a group... I make sure everyone gets a chance to speak if they want to.				

The second approach elicits responses to scenarios that explore students' understandings of interpersonal or intrapersonal issues. The focus in tasks of this kind is on students' cognitive ability to reflect on and explain intrapersonal or interpersonal issues.

'Each of these data gathering approaches brings its own challenges' says ACER Research Fellow Prue Anderson.

'For example, even when students respond to questionnaires anonymously, there may be uncertainty about the extent to which they have answered honestly. When ordered response alternatives are used, it is important to check that students of different ages interpret and use those alternatives in the same way. And it is important that there is clarity ahead of time about the kinds of

student responses expected to scenarios and about the responses that indicate higher and lower levels of understanding.'

A third approach to gathering data is through observation of students' behaviour. Attempts to develop an observation schedule that teachers can use to make judgments of student wellbeing from their day-to-day classroom behaviour have so far not been successful. A major challenge has been the teacher's capacity to make sufficient relevant observations of individuals when dealing with large numbers of students.

'An interesting observation arising in our work is that, while students' cognitive understandings of interpersonal and intrapersonal issues appear to develop through the years of school, some aspects of student wellbeing – such as optimism, self esteem and motivation – do not appear to increase and sometimes decline' Ms Anderson said.

This observation suggests that increasing cognitive understanding does not necessarily imply growth in affective outcomes such as attitudes and values. It also raises interesting questions for schools and school systems about the extent to which attitudes and values are formed outside schools and about schools' levels of comfort in reporting 'declines' in some areas of intended student development.

The findings from a pilot study conducted in 2000–2001 suggested that measurement of social outcomes may be best focused on the development of cognitive understandings in a school context. Most Year 3 students know which attitudes and values the curriculum intends to teach but their responses to the third party scenarios suggested that they have more difficulty in recognising the subtleties of application.



Findings from this study suggested that tasks designed to assess behaviour need to challenge older students' capacity to resolve tense situations allowing them the opportunity to demonstrate high levels of achievement. Students' metacognitive reflections on their performance might be also compared with external assessments of observed behaviour.

ACER is continuing to undertake research using the John XXIII questionnaires. The questionnaires are now available to other schools in the form of an ACER Attitudes and Values Questionnaire (AVQ) that includes five core dimensions of emotional growth, compassion, social growth, service to others and conscience as well as two optional dimensions for Christian schools.

Schools who participate in the AVQ program pay a per-student fee, and are required to leave their data in a central data bank. Over time aggregated data from these schools will be used to construct a broader picture and deeper understanding of aspects of Australian students' social, emotional, moral and ethical development.

Early literacy and numeracy achievement influences ENTER scores

Achievement in literacy and numeracy in Year 9 has the strongest impact on the Equivalent National Tertiary Entrance Rank (ENTER), according to research conducted as part of the Longitudinal Surveys of Australian Youth (LSAY)

The report, *Tertiary Entrance Performance: The Role of Student Background and Social Factors*, investigated the relationship between ENTER scores and a variety of factors. It focused on a national cohort of more than 13 000 students who were in Year 9 in 1995 and examined their experiences up to 2001 as they moved from school into post-compulsory education, training and work.



Dr John Ainley, Deputy Director of ACER, said that the strongest influence on tertiary entrance scores is a student's proficiency in literacy and numeracy in earlier years, which represents an accumulation of students' skills in foundation areas of learning.

'Literacy and numeracy achievement reflects students' capacity to read, interpret and process text and numerical information. Those skills provide the foundation for learning in their specialist studies in the final years of school', Dr Ainley said.

'Students who have developed competency in these foundation areas will have greater confidence to tackle their studies in Years 11 and 12.'

The second most important influence on tertiary entrance performance, according to the report, was the particular school a student attended. The report and other research suggest that school culture or environment, teaching practices, student confidence and motivation, organisation and resource use may contribute to differences among schools.

Socioeconomic background, as measured by parental education, wealth and occupational status, was the third most important influence on tertiary entrance performance.

'Students whose parents are professionals, and to a lesser extent managers, exhibit higher ENTER scores. However, taking into account students' levels of literacy and numeracy, the direct influence of socioeconomic background is somewhat weaker', Dr Ainley said.

Closely following socioeconomic background as an influence on ENTER scores was school sector. Students who attended non-government schools outperformed students from government schools, even after taking into account socioeconomic background and achievement in literacy and numeracy.

The report also examined a number of other factors that influence ENTER scores including gender, region and ethnicity.

Overall, gender differences in ENTER scores are relatively minor. On average, females achieve higher tertiary entrance scores. Ethnicity also plays a small role in ENTER scores. The average ENTER score varies across ethnic groups. Some groups perform substantially higher than students with Australian-born fathers and some significantly lower. Students whose fathers were born in Asia showed higher ENTER scores than students whose fathers were born in Australia.

The report also found that some ethnic groups perform at higher levels than would be expected given their prior achievement levels and socioeconomic backgrounds. For example, the high performance of Asian students is not explained by differences in their socioeconomic background or prior achievement.



ACER manages the Longitudinal Surveys of Australian Youth jointly with the Commonwealth Department of Education, Science and Training (DEST).

ENTER Scores explained

The Equivalent National Tertiary Rank (ENTER) is a nationally equivalent measure developed as a selection tool to assist higher education institutions select applicants. All students in Australia who have successfully completed Year 12 study in tertiary entrance subjects receive an ENTER score.

States and territories differ in how they refer to this measure. In New South Wales and the ACT, it is the Universities Admissions Index (UAI). In Victoria, it is called the ENTER. In South Australia, Tasmania and Western Australia, it is called the Tertiary Entrance Rank (TER).

ENTER is a number between 99.95 and zero that reports the rank position relative to all

other students. It takes into account the number of students who sit the tertiary entrance subjects in any year and also the number of people of Year 12 school leaving age in the total population. For example, the performance of a student with a TER of 70.00 is equal to or better than 70 per cent of the Year 12 school leaver age population.

ENTER scores for each course and higher education institution vary, typically ranging from the high-90s for medicine and law to the mid-60s for arts and business.

These scores are also important for students who don't go on to higher education after Year 12. Employers may also use ENTER scores to screen applicants.

Advancing literacy learning

Approaches to literacy teaching and learning in Year 1 can have effects that last at least until Year 3. Children exposed to particular kinds of literacy teaching not only make greater progress in Year 1, but also display higher levels of literacy achievement by the end of Year 3

These are among the findings of research into Literacy Advance, a reform strategy of literacy teaching and learning introduced in 1997 by the Catholic Education Commission of Victoria. Literacy Advance provided Victorian Catholic primary schools with the opportunity to choose from a range of

approaches to literacy including the Children's Literacy Success Strategy (CLaSS) and an individual intervention program called Reading Recovery.

Schools were required to incorporate several elements in their literacy program. Key elements included early intervention programs for students experiencing difficulties in the area of literacy, the appointment of a full or part-time literacy coordinator from within the school, the assessment and monitoring of all Year 1 students and the provision of home-school links or partnerships.

The Literacy Advance Research Project (LARP) evaluated the implementation of Literacy Advance and explored the influence of a range of school, classroom and student background variables on literacy development in the early years of school.

LARP involved more than 300 teachers and 4000 students for each of two cohorts in 150 schools. Children in the first cohort were followed from the beginning of Year 1 until they participated in the state-wide assessment program late in Year 3. LARP also followed the literacy learning of a second cohort of children who commenced Year 1 in 2000.

Research methods employed during the project included surveys of schools and teachers, case study visits to selected schools and the gathering of data about classroom practices using literacy logs completed by teachers, as well as portfolios of student work.

The study revealed marked changes in schools' approaches to literacy teaching in the past few years. The percentage of schools adopting the Children's Literacy Success Strategy (CLaSS) increased from 11 to 60 per cent; schools with a literacy coordinator for two or more days a week increased from 18 to 50 per cent; and schools providing Reading Recovery for children in need of assistance



increased from 50 to 80 per cent. The vast majority of classrooms provided a two-hour literacy block each morning.

According to the LARP report, the tracking of Literacy Advance over three years reveals a steady take up of its essential elements. Some elements of Literacy Advance were more readily adopted than others. Although the ClaSS approach embodied the key elements of Literacy Advance more clearly than other approaches, there was convergence over time. Three years after Literacy Advance began, there was measurable improvement in students' reading proficiencies at the beginning of Year 1 and the benefits of approaches to teaching that were more explicitly embodied in the principles of Literacy Advance had endured through to Year 3.

According to Dr John Ainley, ACER deputy director and co-author of the report, the LARP project provides valuable insights into the nature of literacy development.

'As students progress from Year 1 to Year 3, the gap between the most and least able readers widens and the rate of progress slows. The study also provides useful insights into factors influencing literacy development', Dr Ainley said.

The amount of uninterrupted time for literacy learning was found to be positively related to children's progress, as was their engagement in reading. Children involved in ClaSS displayed greater progress than other children, and children participating in Reading Recovery made greater gains than their peers.

There also was evidence for the effectiveness of increased attention to literacy learning in the preparatory year of school, with children in 2000 commencing Year 1 about a quarter of a year in advance of children who commenced Year 1 in 1998.



The Literacy Advance Research Project was undertaken collaboratively by the Catholic Education Office Melbourne (on behalf of the Catholic Education Commission of Victoria), ACER and the Centre for Applied Educational Research at the University of Melbourne with funding from the Commonwealth government. Further information is available in the report *Three Years On: A Study of Literacy Advance and its Effects Over Three Years* by ACER researchers Dr John Ainley, Ms Marianne Fleming and Ms Margaret McGregor.

Expansion in school–industry programs

ACER researchers have conducted an extensive survey of school–industry programs commissioned by the Enterprise and Career Education Foundation (ECEF)

The two main purposes of the study were to collect information about school–industry programs provided by schools and to compare progress since the last ACER survey in 1996.

The survey of 488 Australian schools from all sectors and states/territories (with the exception of state schools in Western Australia) found that there has been a major increase in school–industry programs available in secondary schools in the past few years, and a significant increase in student participation in these programs. This development reflects Australia’s growing recognition of the importance of vocational learning.

In 1999 an estimated 86 per cent of secondary schools provided opportunities for Year 11 and Year 12 students to spend time learning in a workplace – up from only 46 per cent of schools in 1995. In the same period, the percentage of senior secondary students participating in school–industry programs grew from seven per cent to 19 per cent.

These are among the key findings contained in a report, *Witnessing Evolution: A report on the growth of workplace learning in Australian schools to 1999*, by Jeff Malley, John Ainley and Lyn Robinson published by ECEF.

The report found that 75 per cent of all schools have VET in schools programs, 28 per cent have School-Based New Apprenticeship (SBNA) programs and 58 per cent of schools had work experience programs. Most (75 per cent) of school–industry programs are VET, 15 per cent are SBNAs and 10 per cent are other programs.

Over 90 per cent of government and Catholic schools now offer school–industry programs, with only minor variations by state. This increased from around 70 per cent in 1996.

Twenty-two per cent of all Year 11 and 12 students in government schools participate in school–industry programs, a 50 per cent increase on 1996 figures. Students in Catholic schools have increased their participation to 18 per cent. The number of independent school students participating in school–industry programs remains steady at five per cent. However, independent schools have increased their provision of school–industry programs from 20 per cent in 1996 to 63 per cent in 1999.

Participation rates were found to vary considerably between states. New South Wales, Queensland and the ACT each have student participation rates over 20 per cent while rates in Victoria and Tasmania are



around 10 per cent. The differences can be partly attributed to policy differences between the states.

The different rates of participation between states in school-industry programs suggest that there is considerable scope for further growth in the total number of students seeking work placements over the next few years.

Dr John Ainley, one of the authors of the report, said programs for secondary school students that involve learning in the workplace expand options in post-compulsory schooling in important ways.

‘This includes widening the range of what can be learned in those years, providing the opportunity for a wider group of young people to learn about the world of work and enabling them to develop skills in settings other than traditional classrooms. This experience can help young people become good learners in settings outside school,’ he said.

The report also investigated differences in participation by industry, gender and time in the workplace.

Hospitality was found to be the most common program and most popular with students. Business and clerical, computing, and building and construction, are in the second tier of popularity. Non industry-specific school-industry programs are also very popular.

The report noted significant differences in the take-up of industry-specific programs by gender with girls more likely to take part in programs in hospitality, business and clerical, and sales. They are much less likely to take part in construction or automotive programs. The participation rates for boys are spread more evenly across industries.

There are also variations in the types of industries that students can participate in by state. Much of the recent growth in programs in New South Wales has been in hospitality programs. Victoria and South Australia have higher numbers of automotive and primary-industry programs. Tasmania has more community and recreational courses.

Time in the workplace also varies considerably by state again reflecting policy differences. Queensland and Tasmania lead the way in terms of extended placements of 20 days or more. NSW has significantly more programs with 10 days or less.

According to Dr Ainley, the growth of programs in post compulsory education that incorporate structured workplace learning has emerged as a way of widening school curricula to provide more direct pathways to productive adult life.

‘Programs that include learning in the workplace offer the opportunity for young people to make direct links with potential employment opportunities,’ he said.

Dr Ainley added that there remains a challenge to better understand the characteristics of workplaces that provide the conditions for effective workplace learning. There is also a practical issue of finding enough workplaces to support the expansion of this aspect of education.

Reforming Cambodia's examination system

ACER is working with IDP Education Australia to assist the Cambodian government to reform the country's examinations system through the Cambodia-Australia National Examinations Project (CANEP)

ACER and IDP are working in partnership with the Examinations Office of the Secondary Education Department (SED) in the Cambodian Ministry of Education, Youth and Sport. CANEP is funded by the Australian Government's overseas aid agency (AusAID).

The project began in 1997 following a request made by the Cambodian Government to the Australian Government for assistance in improving the reliability and validity of examinations in the education system, particularly at Grade 12, the final school-leaving exam. The specific objectives of the project are to provide infrastructure to support the efficient and secure handling and administration of the national examinations; improve the quality of the examination papers and marking processes of the grades 9 and 12 examinations and; facilitate the review and

development of examinations and other educational policies on the basis of reliable data and research.

According to ACER's project director for CANEP Doug McCurry, the existing examination system posed a number of problems for administrators.

'Before the assistance offered by the Australian Government through CANEP, the Cambodian Ministry was unable to print large numbers of examination papers, and examination questions were written on black boards', he explained.

'The information technology available to the Ministry was very limited. Examination results were recorded manually, the results of examinations could not be analysed, and it was difficult for the Ministry to produce certificates for candidates.'

ACER is providing reports to the Ministry that analyse and evaluate examination administration training, research method training, English language training, educational research and policy advice and infrastructure support and development.

Mr McCurry says the project has contributed greatly to capacity building in the Examinations Office since its commencement.

'CANEP has made a major impact on the development of using grade 12 results for entry to higher education and giving the results of year 12 an increased status for both higher education institutions and prospective employers', he said.

CANEP has helped to bring about a number of significant reforms since its commencement and a number of major reforms are being implemented in 2002.

Until 2002, students sat separate entry tests to higher education after taking the Grade 12 exam. CANEP contributed to the policy debate within the Ministry of Education on



using the Grade 12 examination for entry to higher education. As a result, in May 2002, the Council of Ministers approved the use of Grade 12 exam results for the selection of students to higher education institutions and specialised studies from 2002 onwards.

CANEP has also promoted measures to strengthen the Grade 12 exam and to give the results increased status, not only in higher education institutions, but also to students and potential employers.

A number of changes will be made to the Grade 12 certificate as well. From 2002 individual subject results will be included on the Grade 12 Certificate in five Grades (A–E) – a change from three pass grades overall at Grade 12 (A, B and C) to five (A–E). The overall percentile rank will be shown on the certificate and grade descriptors will be printed on the back of the certificate in English and Khmer.

Students who fail the grade 12 overall but pass in one or more separate subjects will be awarded a Certificate of Achievement. This will extend recognition of student achievement at school. Of those who sat the Grade 12 exam in 2002, 24 812 students (87.5% of those who failed overall) will receive a certificate of achievement when they leave meaning that more students will leave school with something to show after 12 years of schooling than in the past.

To facilitate entry to higher education using Grade 12 exam results for the first time, CANEP and the Secondary Education Department supplied a complete set of results on CD listing all those students who passed the Grade 12 exam in 2002. The CDs were distributed to the Higher Education Department as well as public and private higher education institutions. They facilitated selection for tertiary entry by providing useful information such as lists of individual subject



grades, overall grades and percentile ranks for all candidates who passed overall and tables that enabled selectors to see how many students scored minimum grades, such as a minimum of grade B in Biology and grade C in Maths. A search facility enabled users of the CD to find candidates from about 4000 pages of information using names, percentile rank, seat number, or school.

Other recent CANEP developments include the creation and trial of a test item bank to assist in setting exam papers, design of a statistical moderation program for school-based assessment scores and training for Ministry staff.

CANEP was originally scheduled to operate for five years, ending in October 2002. Further support for the Examinations Office has been agreed to by AusAID in order to consolidate the substantial changes made to the examinations system at Grade 12 in recent years. It is now due for completion in late 2003.

Mr McCurry says that CANEP will continue to work with the Ministry of Education, Youth and Sport to ensure that project outcomes are fully sustainable after the next round of national exams in 2003.

'I am confident that by the end of the project in 2003, CANEP will have made a major contribution to the reform of the exam system in Cambodia.'

Extending access to research information

ACER has one of the most comprehensive educational research libraries in Australia and this is now being made more available to the public, here and around the world

The image of a library as a place filled with volumes of books on dusty shelves has changed dramatically over recent years with the growing use of information technology in cataloguing and storing library resources.

According to Cunningham Library Manager, Ms Margaret Findlay the way researchers have

accessed library collections has undergone major changes.

‘The web and electronic databases facilitate access to recent research documents – access is now quick and can be delivered directly to the computer of the researcher.’

ACER has an objective of making research findings more accessible to the education community. In keeping with this objective, the Cunningham Library has embraced the use of new technology in developing a full virtual library online.

Many of the library’s extensive range of resources can now be accessed via the internet extending access to those unable to visit the library in person. Online visitors can conduct their own searches for books, reports and journals held in the library.

Among the initiatives undertaken by library staff recently is EdResearch Online, an easily searchable database containing more than 12 000 research articles and documents. The database contains bibliographical details and links to the full text of over 7000 articles and documents that are available free of charge on the World Wide Web. The full-text of a further 5000 journal articles for which copyright access has been negotiated are available on a fee-for-service basis.

Documents include journal articles, research reports, government reports, theses, conference proceedings and papers and includes over 6000 documents published from 2000 onwards. All of the journals subscribed to are Australian journals related to educational research.

Interest in the service has increased rapidly since it was launched in mid 2001, with most hits on the site originating in the United States. Some 280 educational institutions around the world, including many leading



universities, have established links from their own web sites to EdResearch Online.

Cunningham Library also now offers a Complete Article Service providing users with immediate access to scanned images of the full text of articles selected from 120 Australian journals on a fee-per-use basis to cover copyright and processing costs.

Ms Findlay describes these services as breakthrough. 'Many of the articles available through EdResearch Online would otherwise be available only by subscribing to the journals or purchasing a copy of an article through an inter-library loan. EdResearch Online allows users to immediately download copies of the articles they are looking for.'

'Through the new services that have been introduced, we are now able to offer a virtual library online. The library catalogue and a database of higher research theses are all there along with the ability to download journal articles on demand.

'Not only have we opened up access to our catalogue but we're building on our backup services for our clients.'

Regular users of the library can access additional services by subscribing to the library's membership services. Members can use the library on site, borrow items, request items by phone, fax or email, request literature and information services, and have documents delivered. Members also have access to a range of the library's online information and full text documents through the databases that are available to members only.

'This new service will provide essential information for researchers of all kinds. Schools and organisations could use the service to support their staff in professional development, or in completing higher degrees', Ms Findlay said.



For further information about the Cunningham Library and its range of services, including details of the Library Membership Services or EdResearch Online, visit the library's web site at www.acer.edu.au/library

'Through the new services that have been introduced, we are now able to offer a virtual library online.'

Investigating the links between teacher professional development and student learning outcomes

ACER is undertaking a major research project to investigate the relationship between teacher professional development and student learning outcomes

What effect does professional development for teachers have on the learning outcomes of their students? What types of professional development are more effective than others? These questions and others are being investigated by ACER in a project that examines relationships between teacher learning and improvements in student learning outcomes.



The project, undertaken by ACER's Teaching and Learning research group headed by Dr Lawrence Ingvarson, was commissioned by the Commonwealth Department of Education, Science and Training (DEST) through the Quality Teacher Program (QTP), within the Commonwealth Quality Teacher initiative, Teachers for the 21st Century.

One major task for the project is to identify some of the ways schools and teachers may be investigating and assessing the link between teacher quality, particularly professional development, and student learning outcomes. A framework drawn from the assessment of international and Australian practice and research underpins school-based trials of whole school approaches linking teacher professional development to student learning outcomes. These school-based trials are central to the project.

In the first phase of the project ten professional development programs were selected for the school-based trials. Extensive consultations were conducted with government and non-government education authorities, universities, and teacher professional associations before the professional development programs and schools were selected for inclusion in the research study. The main criterion for selection was whether the strategy was based on a clearly articulated theory of teacher learning, one describing how that learning connects to significant areas of teachers' knowledge and practice and to improved student learning outcomes. Six to eight schools were selected for each project, providing a variety of contexts in which the effects of the professional development could be investigated.

A comprehensive review of professional development research literature provided a theoretical framework for the study. The focus

of the review was on studies linking teacher learning to classroom practices and evidence of student learning outcomes, broadly defined. This review provided a set of propositions about the conditions that need to be in place if teacher learning through professional development programs is to lead to improved opportunities for student learning. These propositions are being tested across the programs and schools included in the study.

According to ACER researcher, Ms Marion Meiers, the project director, an important component of the review is the collection of data about current Australian professional development programs where there may be evidence of links between teacher professional development and improved student learning outcomes.

‘Professional development may be effective at changing teaching practices but we know much less about the role of professional development in raising student achievement. This project provides an opportunity to find out more about the relationship between professional development and student outcomes.’

A team of researchers will work closely with the schools involved in the school-based trials of professional development programs. One link researcher will work throughout 2002 with the groups of teachers participating in each particular professional development program. They will visit schools to interview teachers and principals, in order to develop insights into the impact of the professional development program on teaching practices in schools. Assessment tasks aligned to the purposes of the different professional development programs will be used to gather relevant evidence of student learning over time to assess the effects of the professional development strategy. Project funds are available to schools to support time release for teachers to take part in the trials.



‘Studying the effects of each program in the participating schools will enhance the capacity of the project to test the theoretical framework that has been put in place and produce useful, generalisable findings,’ Ms Meiers said. ‘It will also enhance the capacity of the study to examine some of the contextual factors linking professional development to change in teaching practices and changes in student learning.’

Findings from the study will assist in the development of approaches to evaluate the impact of professional development programs on student learning.

The data collected during 2002 will be analysed in 2003 in preparation for the major report, which is expected to be published in late 2004.

Testing overseas candidates

ACER has developed a test that assesses the preparedness of overseas candidates for academic studies in Australia

In recent years, Australia has developed a strong reputation as a destination for international students, particularly those from Asia, who find the quality of education, the relatively low cost (compared to Britain and the US), and studying environment very appealing.

In 2001, about 140 000 international students were enrolled in Australian universities making education one of Australia's boom exports and the second largest services export earner after tourism. International students comprised about 18 per cent of Australia's university population and spent almost \$1 billion on university tuition alone.

With the influx of thousands of students from a large number of nations, Australian universities have faced difficulties in interpreting the varied credentials and evidence presented in support of student applications.

An innovative test launched by ACER in 2001 is assisting universities to tackle this issue. The

International Student Admissions Test (ISAT) is providing universities with a reliable and efficient way of testing students' potential to succeed in Australian tertiary courses. It complements the existing English-language competency tests.

'While Australian universities have procedures for assessing English language proficiency, until now there has been no commonly accepted method of assessing the preparedness of overseas candidates for academic studies in Australia. ISAT addresses this concern by assessing cross-curricular academic abilities', the Executive Director of ACER, Professor Geoff Masters, said.

ISAT requires students to answer 100 multiple-choice questions in three hours. The questions measure critical reasoning (using material from the humanities/social sciences) and quantitative reasoning (using material from science/mathematics) abilities which are considered important for coping with the intellectual demands of most tertiary courses. The emphasis is on thinking skills rather than curriculum-specific knowledge and English-language proficiency.

IDP Education Australia uses experienced test administrators and a wide network of offices in 65 countries to manage ISAT overseas. Students within Australia are able to apply to sit the test through most tertiary admissions centres.

ISAT candidates receive a copy of their results, which are also made available to Australian universities.

'ISAT provides universities with an indication of an applicant's cognitive abilities which should be useful in validating their credentials, assisting with decisions about borderline applicants and guiding placement into particular programs or courses', Professor Masters said.

The first test was conducted in November 2001. There will be at least four sittings of ISAT annually.



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