



Improving higher education through research

Higher education has existed for a very long time, yet it still remains unclear exactly what is achieved. This is not for the lack of productivity or success, but largely due to the complexities of defining and assessing the kind of higher-order knowledge produced through learning, teaching and research.

Yet progress is being made, and with increasing vigour and return. Basic research into learning is yielding insights on ever-more productive means of assessing achievement and potential. Finding better ways to understand people's aptitude for university study and building insight into the characteristics of the academic workforce are two very important means of improving higher education.

This edition of the Higher Education Update provides an overview of ACER's recent progress in such areas. It looks at international students – on work being done to enhance admissions, and on how international students in Australia are doing relative to those in other countries. The significance of this industry to Australia underpins a vital need for more research on this front.

Over the last decade, attracting more researchers and teachers into the academic workforce will play an important role in advancing broader

innovation and growth. This is particularly true in key areas such as the sciences – where a recent study has clarified hurdles that must be overcome. More general insights produced via the 25 country Changing Academic Profession study have helped map broader insights for fuelling the renewal and contribution of academic staff.

Many systems of higher education are moving towards being universal in scale. With demands for such expansion comes an imperative to research and improve the processes used for university admissions. Stories on the national pilot of an aptitude test and on a review of the validity of the Undergraduate Medical School Admissions Test offers insights on ACER's recent efforts on this front.

Further reports in this Higher Education Update seek to stimulate reflection on how people engage with study – reporting findings from the most extensive study yet of undergraduate students, and how we can design and implement new approaches to quality assurance and improvement.

The Higher Education Update offers insights on different aspects of higher education. We hope you enjoy this review, and welcome your feedback and ideas to highereducation@acer.edu.au

*Dr Hamish Coates
Principal Research Fellow*

INSIDE...

Selecting students for success

- *Alternative entry pathways may boost enrolments* 2
- *High stakes for aspiring doctors* 4

Attracting international students

- *Selecting international students* 5
- *Engaging international students* 6

Engaging and retaining students

- *AUSSE insights aid retention* 8
- *Employment improves graduates' course perceptions* 9
- *Where to after postgrad?* 10

Developing the academic workforce

- *Policy reform for academic profession* 12
- *Young scientists uninterested in academia* 14

Standards and outcomes

- *Forecasting university attainment numbers* 16
- *Quality standards* 17
- *ACER to assist in establishing Middle East centre* 18

Selecting students for success

2

Alternative entry pathways may boost enrolments

By 2025, 40 per cent of Australian 25-34 year olds will have a bachelor level qualification or higher; and 20 per cent of higher education enrolments at undergraduate level will be from low socioeconomic backgrounds, if universities meet the targets set by the federal government last year in response to the Bradley Review.

A challenge for universities will be to enrol increasing numbers of students, particularly those from disadvantaged backgrounds, while maintaining high standards.

Several universities are already moving to provide additional entry pathways to candidates who are likely to succeed at university but who may not be eligible for places under the current system, which predominantly relies on the Australian Tertiary Admissions Rank.

Three of Australia's leading universities recently administered an aptitude test to identify candidates with the potential to succeed at university who may otherwise have been overlooked.

Flinders University, the Australian National University and Macquarie University held sittings of uniTEST in November and December to select students for their first semester 2010 intake. More than 500 candidates took part.

uniTEST assesses generic reasoning and thinking skills that are necessary for successful study at university. It



has been developed by the Australian Council for Educational Research (ACER) in collaboration with Cambridge Assessment.

This latest administration of uniTEST is taking place as part of stage two of the Federal Government's pilot National Student Aptitude Test for Tertiary Admission (SATTA).

Candidates' results on uniTEST are combined with their academic achievement to determine their suitability for university study.

According to ACER's chief executive Professor Geoff Masters, the use of aptitude tests such as uniTEST assists universities to gain a broader profile of the capability of university applicants by providing information that complements Year 12 academic results.

Professor Masters noted that the use of aptitude tests may assist universities in identifying students – including students from under-represented groups – who have the capacity for success, but who may not be identified through standard selection processes.



Photo by Andres Rodriguez/stockxpert

The test is designed to assist universities with the often difficult and time-consuming processes of student selection. It assesses the kinds of generic reasoning and thinking skills that underpin studies at higher education and that are needed for students to be successful at this level. The aim of uniTEST is to complement existing selection criteria, such as tertiary admissions ranks, for current school leavers. By providing applicants with a 'second chance', it is designed to make university more accessible to students whose backgrounds and circumstances

may have placed them at a disadvantage in regular selection processes.

ACER produces another test of generic aptitude for university entrance called the Special Tertiary Admissions Test (STAT). STAT is similar to uniTEST, but is for candidates not currently completing Year 12. STAT has been used by Australian universities since 1992 as part of the admissions of mature-age students. The two tests are designed for different audiences.

While some educators express concern

that use of aptitude testing alone could lead to a lowering of standards on campus, others suggest the move is a result of dissatisfaction with existing selection methods.

More widespread use of aptitude testing for entry to university could alleviate the system's reliance on the Australian Tertiary Admissions Rank (ATAR). The rank is a number that indicates a student's position in relation to all other students in their year level based on performance in senior secondary schooling exams and assessment. It is a rank, not a score, and is designed to allow higher education institutions to select candidates for admission to courses.

The ranking process has been criticised for putting undue pressure on students in their final year of schooling, for being biased against students from disadvantaged backgrounds, for distorting school curricula and tertiary course selection, and for failing to accurately predict students' success or retention in higher education.

In contrast, early evidence from uniTEST trials suggests that tertiary admissions based on a range of factors, including both aptitude and traditional academic assessments such as Year 12 results, is likely to result in a high pass rate for students.

Research is being conducted by Drs Hamish Coates, Daniel Edwards and Tim Friedman tracking the academic performance of students accepted into university courses based on uniTEST results. This is due to be completed later this year.

Further information about uniTEST is available on the ACER website at <http://unitest.acer.edu.au/>

High stakes for aspiring doctors

The Undergraduate Medicine and Health Sciences Admission Test (UMAT) has played a part in deciding the fate of aspiring medical students across the country since the 1990s. The test is used to evaluate a test taker's skills and abilities gained through prior learning and experience, as well as skills in problem solving and logical reasoning. While it doesn't necessarily predict achievement, it assists universities to decide whether an individual has what it takes to study medicine.

UMAT is a high-stakes exam that determines students' futures. With so much riding on these decisions, ACER is committed to ensuring UMAT's ongoing effectiveness as a selection tool.

In order to demonstrate the role of UMAT in student selection, the Australian Council for Education Research (ACER) will conduct a thorough review into the validity of the test. The study will specifically look at the criterion validity of the test, both concurrent and predictive. The review will provide evidence on the extent to which UMAT, in combination with Year 12 performance and interview scores, adds value to determining an individual's capability for medical study.

Currently, UMAT is used to select students into medicine, dentistry and health science degree programs at universities such as the University of New South Wales and Monash University. UMAT is one of a range of selection measures; others include prior academic scores, such as applicants'

Australian Tertiary Admissions Ranks, and scores from interviews conducted during the selection process.

UMAT Project Director Veronica Vele said as entry to medical courses becomes more competitive, an increasing amount of research is being conducted to produce evidence that could be used to optimise selection processes.

She said most health-related criterion validation studies had focused on the North American Medical College Admission Tests, although some had been completed in Australia, including validity studies into ACER's Graduate Australian Medical School Admissions Test (GAMSAT). A 2007 study looked at the relationship between GAMSAT scores, interview performance and subsequent performance in medical school. This study also investigated the criterion validity of the test compared to university undergraduate Grade Point Average and interview scores. It found a combination of GAMSAT and Grade Point Average scores provided the best means of predicting students' achievement. The GAMSAT study, says Ms Vele, outlined the need for further large-scale evidence-based research into university selection processes.

Ms Vele described UMAT as a "high-stakes" test and said the UMAT research, once completed, would help provide further assurance to educators and the public that test results were reliable and added value to selection decisions.

"As a selection instrument, the capacity of UMAT to support and add value to other selection mechanisms and to predict future performance is critical. By reviewing the validity of the instrument, we ensure its continued effectiveness

and significance," she said.

The UMAT study will use the same research approach employed by ACER in recent evaluations of GAMSAT, uniTEST, the Special Tertiary Admissions Test, and UMAT (for Monash University) and will focus on students who took UMAT in 2005 and 2006, allowing for multiple years of study to be analysed.

Seven universities are expected to be involved in the study, which will be conducted in four phases, including a background review, data collection, psychometric and statistical analysis, and documentation and reporting. Each phase is expected to take three months. The results of the study will be benchmarked against criterion validity studies conducted for other high-stakes, large-scale higher education admissions tests, such as GAMSAT, uniTEST, and the Special Tertiary Admissions Test.

The study will be headed by ACER Principal Research Fellow Hamish Coates, along with Research Officer Tim Friedman and Senior Research Fellow Daniel Edwards. David Harding of the University of Western Sydney School of Medicine will also collaborate with the team, with further input from Ms Vele and data analysis from Research Fellow Luc Le.

For more information visit <http://umat.acer.edu.au>

Photo by Carlo Dapino/stockxpert



Attracting international students



Photo by Robert Churchill/iStockphoto

Innovative test to transform international student selection

A move from paper to computer-based testing for the International Student Admissions Test (ISAT) will improve access to Australian degrees for international students.

ISAT provides universities with the opportunity to use a reliable and efficient way of testing students' potential to cope academically with Australian tertiary courses. It complements existing English-language competency tests.

The test is independently administered by the Australian Council for Educational Research (ACER).

ISAT is currently used by a range of Australian universities to assist in selection of international candidates to medical, dentistry, health sciences and veterinary science courses. Most of these

courses require domestic applicants to sit a relevant aptitude test, such as the Undergraduate Medical Admissions Test. ISAT allows universities to apply the same rigorous admissions standards to international applicants through a test developed specifically for a culturally and linguistically diverse candidature.

The move to computer-based testing from 2010 will allow international students to take the test in locations and at dates and times that suit them. Candidates will pay to sit the test at secure, accredited Prometric test centres. Prometric has more than 4,000 test centres globally. Candidates may still have to travel to a test centre to sit the test, but there will be a greater number of centres in many countries, and more flexibility in test availability. Previously ISAT had been administered on fixed dates, often in examination rooms with a large cohort of candidates taking the test. There will no longer be mass sittings of the test. Instead, the computer-based system will allow individuals to attend a secure test centre, undergo an identity check, sit the test on a video-monitored computer, with the answers transmitted back to ACER through secure channels for marking.

ISAT will continue to be a useful

predictor of student ability for use in the university selection process for international applicants, but with greater ease of use for candidates and universities, according to ACER's ISAT Project Director Susan Nankervis.

"Computer-based administration of ISAT will be considerably more flexible for candidates in the choice of test dates and locations. This will improve equity in many countries by reducing the need for candidates to travel to take the test and allowing a wider exposure of candidates to the test," she says.

"It will ensure the security of data, the confidentiality of the test and of candidates' results, and it will reduce the carbon footprint of the test by eliminating the need to print test papers and to send them around the world."

Candidates receive an electronic copy of their respective results, and results are also listed on a secure ACER database to be independently verified by Australian universities.

ISAT requires students to answer 100 multiple-choice questions in three hours. The questions measure critical reasoning drawing on material in the humanities and social sciences, and quantitative reasoning using material from science and mathematics. ISAT aims to test abilities that 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.

Registrations for ISAT 2010 will open in March 2010.

For more information, visit <http://isat.acer.edu.au>



Engaging international students

International fee-paying students are a large and important group within the higher education sectors of Australia, New Zealand and the United States of America. In 2006 these three countries enrolled nearly 30 per cent of all international tertiary education students worldwide. The USA has the largest share (20 per cent of all students), but Australia and New Zealand are showing remarkable growth in market share.

Australia and New Zealand also have a very high concentration of international students. Figures from the Organisation for Economic Cooperation and Development show that in 2006, almost 20 per cent of all enrolments in Australian universities and 15 per cent in New Zealand universities were international students. By contrast, the figure for the USA was three per cent.

Despite this high proportion of international students, the latest research briefing from the Australasian Survey of Student Engagement (AUSSE) suggests that Australian universities still have much to learn about the experiences of this cohort – and with international institutional reputations on the line, and nearly 15 per cent of all income of Australian tertiary providers derived from international student fees, there is much to lose if they do not.

The briefing, *International students' engagement with effective educational practices: A cross-national comparison*,

prepared by ACER Senior Research Fellow Dr Daniel Edwards, shows that international students in Australian universities have lower levels of engagement with their institution when compared to international students enrolled in US universities.

While the AUSSE data show that within a national context the international student group is relatively well engaged, in a global context – which is essentially the context in which the international student market operates – there appears to be some room for improvement within higher education institutions for lifting the engagement of international students to the levels witnessed elsewhere in the world.

Student engagement is an idea specifically focused on learners and their interactions with university: on aspects of teaching, the broader student experience, learners' lives beyond university, and institutional support. It is based on the premise that learning is influenced by how an individual participates in educationally purposeful activities. While students are seen to be responsible for constructing their knowledge, learning is also seen to depend on institutions and staff generating conditions that stimulate and encourage involvement.

The largest difference between Australian, New Zealand and US international students was related to student and staff interactions. About 12 per cent of later-year international students in Australia and 13 per cent in New Zealand ranked their relationships with teaching staff as highly supportive. This compares with 30 per cent in the US.

Students' participation in broadening educational activities also appeared to be higher in the US than in Australia

or New Zealand. Australasian-based international later-year students were more likely to have 'never' tutored other students (59 per cent for Australia) when compared with those in the US, where only 33 per cent indicated that they had not had any experience tutoring.

International students studying in Australian and New Zealand institutions also had notably different responses to the US-based international students in relation to feedback, support and

- among Australasian higher education students the international student group have on average higher levels of engagement than domestic students, and
- when compared cross-nationally, the engagement score difference between international students in Australasia and international students in the US is larger than the gap between domestic students from these countries.

While the AUSSE data show that within a national context the international student group is relatively engaged, in a global context...there appears to be room for improvement.

involvement in class activities. For example, about eight per cent of first-year international students based in Australia and six per cent of those in New Zealand said that they asked questions in class 'very often'. In the US, this figure was about 24 per cent.

Within Australia and New Zealand, few international students indicated that they received feedback on their academic performance 'very often' (about seven per cent and three per cent respectively). However, US international students seemed to fare better with 21 per cent 'very often' receiving regular feedback on their performance.

The AUSSE analysis also found that:

- the growth in engagement with their institution between first and later year students among the international cohort is stronger among those enrolled in the USA than those in Australia or New Zealand

The AUSSE briefing suggests that international students are learning through their cross-national educational experiences, but clearly these students also influence the academic, professional and social contexts in which they move. Recent events in Australia have highlighted that careful management of the international student experience is imperative, both for individual success and for the health of the system as a whole. In a global context, there is room for improvement in the engagement of international students in Australia and New Zealand.

The AUSSE was conducted with 25 Australasian universities in 2007, 29 in 2008 and 35 in 2009. The recent briefing paper uses data from the 2008 AUSSE and 2008 US National Survey of Student Engagement (NSSE).

For more information visit <http://ausse.acer.edu.au>

Engaging and retaining students

8

Recent attrition rates confirm AUSSE findings

The Australasian Survey of Student Engagement (AUSSE) has provided the most extensive insights yet into how Australasian students engage in university study. The 2009 collection, involving 35 universities and also including a parallel staff survey, has provided universities with data that they can use for quality improvement.

Statistics from the 2009 AUSSE can be found at <http://ausse.acer.edu.au>

This data profiles detailed results of around 100 facets of engagement for Australia and New Zealand. It also includes results for 'Australasia University', which represents the averages of all students surveyed for the AUSSE this year.

Reports on individual universities' performance in the 2009 AUSSE were released to institutions in early December, and analysis of results will be released in 2010.

It comes as no surprise, for instance, that one in five first-year Australian students drop out of university, says Principal Research Fellow Hamish Coates of the Australian Council for Educational Research (ACER).

The national university attrition rates released this month by the federal government only confirm AUSSE findings recently released to universities that show as many as one in three students across the country seriously

considers leaving university during their first year of study.

On average, 28 per cent of students surveyed in 2009 said they had considered leaving their institutions before graduation.

Dr Coates, who directs the AUSSE, said the student engagement survey had revealed startling statistics about students' study intentions but had also provided universities with key information to help them better support, engage and retain students through to graduation.

"Collecting feedback from students themselves is beneficial in that it provides key insights into what university students are actually doing," Dr Coates said.

"AUSSE provides insights that can help universities better support student learning and development, monitor academic standards and outcomes and ensure students are getting the most out of their university experience.

"This information is vital to improving student engagement and retention through to graduation.

"AUSSE provides information that is imperative to ensuring the quality and productivity of the higher education system."

Latest figures released by the federal government show that almost one in five students drops out of Australian universities by the end of their first year.

In the recent review of higher education, Professor Denise Bradley suggested that retention targets should be set for each university to reduce attrition. The Bradley review acknowledged

that students' decisions to complete or leave courses were affected by students' satisfaction and engagement with courses, students' expectations and circumstances, the level of support from staff and institutions, and course content.

Reflecting this recommendation, the federal government has announced it will negotiate targets, including student completion rates, with universities this year. Universities that agree to targets will receive funding in 2011, with funding related directly to performance against those targets to start in 2012.

AUSSE is developed and managed by ACER and was designed to stimulate evidence-focused conversations about students' engagement in university study.

The 2009 administration of AUSSE, which took place earlier this year, surveyed more than 30,000 students from 35 Australian and New Zealand universities. Reports on individual universities' performance in the 2009 AUSSE were released to institutions in early-December 2009, and analysis of results will be released this year.

For more information about AUSSE, visit <http://ausse.acer.edu.au>



Photo by Chris Schmidt/iStockphoto

Employment improves graduates' course perceptions

Employed graduates remember their almae matres fondly, according to results from the latest Course Experience Questionnaire report, written by ACER for Graduate Careers Australia.

The results showed that graduates who are working in the occupation for which they trained report greater satisfaction with their course experience than those who are not employed in a related occupation.

The Course Experience Questionnaire (CEQ), along with the Graduate Destination Survey, is sent to all new Australian university graduates every year. The surveys collect information at the end of the course about university graduates' perceptions of course quality and the skills they acquired as a result of their higher education experience.

The most recent CEQ report analyses the course experience perceptions of almost 100,000 graduates who completed coursework degrees in 2007 and who responded to the 2008 questionnaire. A total of 49 institutions participated in the survey in 2008. These included all Australian public universities and a number of private educational colleges.

The report provides information about graduates' perceptions on a range of aspects of the course experience: teaching quality; generic skills development; overall satisfaction; the clarity of standards and expectations; appropriateness of the workload; appropriateness of assessment;

intellectual motivation; provision of student support; development of graduate qualities; learning resources; and the learning community.

In addition, last year's report focuses in detail on the course experiences of graduates from the accounting, teacher education and nursing fields. These fields were chosen because of their vocational emphasis and because they prepare students for occupations which are currently considered in high demand. The Department of Education, Employment and Workplace Relations has listed these professionals as being in short supply.

In particular, course experience has been compared between graduates in these fields who went on to gain employment in the occupations in which they trained for and those who were not working in a field related to their course. Overall, the analysis shows that graduates whose study led to a career in a relevant field reflect more favourably on the course experience than those who have not yet gained relevant employment.

The CEQ report shows that many accounting, education and nursing graduates who have gone into employment (not those who have gone onto further study) are working in the occupation for which they studied: 88 per cent of nursing graduates, 73 per cent of teacher education graduates and 58 per cent of accounting graduates had gained relevant employment.

These graduates tend to have different perceptions of their course experience than those who were not working in their field in the months following graduation.

New nurses reported being particularly satisfied with the use of assessment to promote deeper forms of learning, the access to facilities and student support services, and the goals, standards and structure in their courses.

New accountants reported being particularly satisfied that the use of assessment and the workload of their courses prepared them for employment.

The CEQ results also show differences in the perception of course experience between graduates who completed a postgraduate qualification and those who completed a bachelor degree. Half of new teachers and one-third of the new nurses had completed courses at postgraduate level. These graduates reported greater satisfaction with their courses than did the undergraduate course completers.

The report further shows that new nurses and teachers working in a capital city report being more positive about their course experience than those working in regional areas.

The CEQ is a primary source of information for those charting quality measures in higher education.

ACER has long been involved in analysis and reporting of the CEQ data, including the most recent report, Graduate Course Experience 2008.

The full CEQ report, written by ACER for Graduate Careers Australia, is available at <http://www.graduatecareers.com.au>

Where to after postgrad?

Most people who complete medical degrees tend to work as doctors. Most who complete teacher training work as teachers. The same cannot be said for academics.

Less than half of all research postgraduates work in academia after course completion, according to results from the latest Postgraduate Research Experience Questionnaire (PREQ).

The annual PREQ measures the quality of key aspects of research masters and doctoral degrees. The most recent survey, conducted in 2008, surveyed 3,655 research degree graduates from 41 institutions. The PREQ report is written by ACER for Graduate Careers Australia.

A focus of the most recent PREQ report was to examine the extent to which postgraduates go on to academic employment and the factors in relation to their course experience that might influence the choice of this occupational pathway after graduation.

PREQ data from 2006, 2007 and 2008 shows that only 42 per cent of doctoral graduates and 20 per cent of masters graduates work as academics in the first six months after graduation.

While a doctoral degree does not frame a career in the same explicit fashion as does a professional qualification, the PREQ results show a surprisingly weak relationship between research training and participation in the academic workforce.

ACER *Higher Education Update* February 2010

There are several reasons why this may be the case – including that many academic careers take shape beyond the six month window considered by the PREQ – but a more troubling explanation may be that the research experience does not stimulate research trainees to continue in the academic community.

Additionally, the PREQ shows that the quality of training is not strongly associated with whether a postgraduate chooses to pursue work as an academic.

The report shows that of those

postgraduates working in an academic post, 90 per cent have a doctoral degree, confirming that this is now the passport to the academic profession.

Approximately 36 per cent of postgraduates from Group of Eight institutions, 40 per cent of from Australian Technology Network institutions, and 45 per cent from Innovative Research Universities Australia institutions pursue work as academics.

Fee-paying international students are more likely to work in academia (50 per

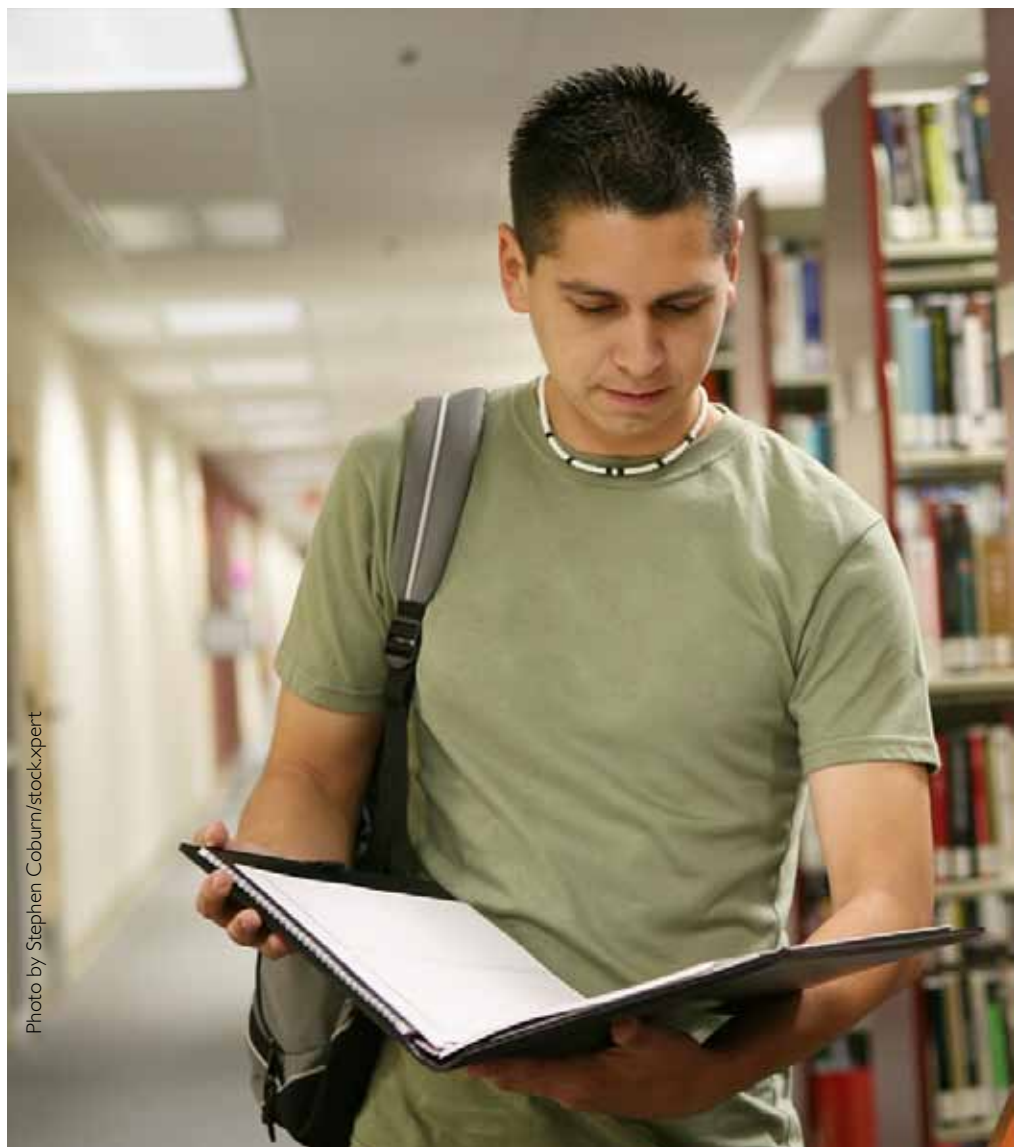


Photo by Stephen Coburn/stockxpert



cent) compared with those who held a research scholarship (37 per cent).

Females were slightly more likely to take up work as an academic, and accounted for larger numbers in the overall pool.

Across the disciplines, engineering, agriculture, health and science research graduates were least likely to work as academics, particularly compared with graduates from the fields of education, IT or business.

People who remained working with the employer from their final year of study

were more likely than others to work as an academic.

Only 10 per cent of the PREQ respondents who work as academics completed a research masters.

How masters students financed their study had an impact on their course perceptions. If they paid HECS upfront, research masters graduates working as academics provide more favourable reports about the course overall and about thesis examination. By contrast, graduates working in academia who deferred some or all of their HECS

were less satisfied with the infrastructure provided, thesis examination and the overall experience. Compared with those working outside the academy, postgraduates who studied by paying full international or domestic student fees were more satisfied with many aspects of their training.

Course financing arrangements can be read as a proxy index of the nature in which people have invested in their course and whether an expected outcome has been achieved, which may be why paying upfront or full fees and securing academic work is linked with more positive course perceptions.

The PREQ found that the intellectual climate and the quality of supervision of courses have only very weak effects on whether or not graduates pursue work as academics. Surprisingly, it did find that those doctoral graduates who see themselves as having better skill outcomes are less likely to work as academics.

It is not possible from the PREQ to determine whether the apparent disconnect between research training and subsequent work as an academic is due to the nature of training or to the nature of academic work; however the findings provide strong grounds for further investigation of the outcomes of research training.

The report suggests that a stronger relationship must be built between quality research training and graduate employment in universities to ensure the future sustainability of the academic workforce.

The full PREQ report, written by ACER for Graduate Careers Australia, is available at <http://www.graduatecareers.com.au>



Developing the academic workforce

12

Policy reform needed for the Australian academic profession



Photo by Dmitry Goygel-Sokol/stock.xpert

A 'one size fits all' approach to renewing the Australian academic profession will not work, and policy action at the national and institutional level must address systemic problems, according to a new research briefing based on the Changing Academic Profession survey.

The attractiveness of the Australian academic profession: A comparative analysis, was written by ACER researchers Hamish Coates, Daniel Edwards and Tim Friedman, Director of the Educational Policy Institute Ian Dobson, and LH Martin Institute for Higher Education Director Lynn Meek and Deputy Director Leo Goedegebuure, and released in October last year.

The briefing provides an analysis of challenges facing the sustainability and development of the academic workforce in Australia. It draws together insights from national statistics collections and a number of recent studies, sheds light on current characteristics of the academic profession, and identifies key problem areas.

Research shows that Australian academics:

- earn salaries commensurate with those of their international peers but not of their Australian colleagues in other sectors
- are less satisfied with their work than international colleagues and possibly other professionals in Australia
- report one of the highest propensities for job change, changing either out of the profession or the country
- would often prefer to undertake more research than their role allows them

- report one of the lowest levels of satisfaction with institutional management and support
- sit slightly below the international average in terms of the extent of fixed-term contracts, and
- work among the longest hours per week – particularly those in senior ranks.

The briefing concludes that there is growing demand for academic work propelled by system growth, looming retirements, and increased international mobility, and that to date the response to this demand lacks coherence, strength and vision. It calls for six key actions in policy development, planning and research on Australia's academic workforce.

Stimulating mission diversity

While the majority of academics aspire to a research career, many spend most of their time teaching. Reform of reward structures to put teaching and research on an equal footing has been discussed but not achieved over several decades. The briefing argues that this is not possible so long as the pretence of a teaching/research nexus remains a fundamental symbolic aspect of Australian higher education.

No country can afford to fund all of its higher education institutions as world-class research intensive universities, according to the authors. There is a need to support the formal differentiation of universities by mission as being teaching or research intensive.

A support structure should take the form of calibrated industry-wide

professional standards for university teaching; methods for assessing performance against these standards, including evidence on the quality of student engagement and achievement; and an integrated approach to professional learning through aligned university-specific certificates.

Expanding staff numbers

If the ambitious government targets for further expansion are to be met, there must be a parallel increase in academic staff numbers. Alongside this is an evident need for careful succession planning.

Streamlining accountability requirements

According to the briefing, one finding that clearly stands out in the survey results is the administrative burden that academics face, which takes them away from the core activities they still hold dear. Much administrative work is a result of increased accountability pressures from state and federal governments, and industry regulators; streamlining of reporting requirements could diminish this burden.

Engaging the new generation of academics

Efforts to attract, retain and train young academics need to be made on a variety of fronts: attracting a greater number of high quality candidates to the PhD; increasing the completion rates of those who enrol in doctoral degrees; and encouraging a larger proportion of PhD completers to take up academic postings.

Increasing understanding of the casual workforce

The briefing identifies a need for policy insight on the nature and implications of the casualisation of the

Australian academic workforce. More information would determine whether the current casual workers have the capacity and desire to replenish the current workforce of tenured academics as they retire.

Building institutional leadership capability

Australian academics – together with their British colleagues – are the least complimentary when it comes to the leadership and management of their institutions, and perhaps this can be seen as a result of the profound government induced changes undertaken in the Australian system. This result shows a need for management and leadership styles to be aligned with the specific nature of each university.

The Changing Academic Profession (CAP) study, the largest of its kind, canvassed 1,250 academics from 21 Australian institutions. The study is part of an international comparative project across some 20 countries, namely Argentina, Brazil, Canada, China/Hong Kong, Finland, France, Germany, India, Italy, Japan, Malaysia, Mexico, The Netherlands, Norway, Portugal, Russia, South Africa, United Kingdom, United States of America and Venezuela.

The full report, *The attractiveness of the Australian academic profession: A comparative analysis* can be found in ACER's research repository at <http://research.acer.edu.au>

Results of the Changing Academic Profession project are available from http://www.mihelm.unimelb.edu.au/research_publications_consultancy/research/cnap/index.html

Young scientists uninterested in academia

Australia must foster a new generation of young science academics if it is to meet government targets for participation in university, a paper in the peer-reviewed journal *Higher Education* argues.

The paper by Daniel Edwards of the Australian Council for Educational Research (ACER) and T. Fred Smith of Monash University's Centre for Population and Urban Research investigates demographic change and other factors impacting on the desirability of a science or mathematics academic career within Australian universities.

It draws on findings of a research project undertaken in 2008 for the Commonwealth Department of Education, Employment and Workplace Relations (DEEWR) with updated data and feedback collected from interviews carried out with 120 individuals, representing academics, science employers, early career researchers and postgraduate students in Australia.

Academics employed in the natural and physical sciences (comprising mathematical sciences, physics and astronomy, chemical sciences, earth sciences, and biological sciences) make up approximately 20 per cent of Australia's total academic workforce.

In general the science academic workforce is around 10 years younger than the academic workforce as a

whole, helped in part by a recent influx of young women. But the authors warn this seemingly positive situation is no cause for complacency when considering the future sustainability of the workforce.

The paper's co-author Daniel Edwards said there are wider issues of sustainability in the science academic workforce beyond its demographics.

"The ageing workforce issue is not as bad in the sciences as it is for the academic sector as a whole and this is a good thing. The bad news is a lot of young scientists seem uninterested in pursuing an academic career and that is a problem," Edwards says.

The paper identifies a number of issues that could threaten the future sustainability of the science academic workforce.

Research into the career intentions of people with PhDs in science reveals that their interest in the academic profession is low. Disincentives to pursuing or remaining in an academic career in Australian universities include the lure of university and private sector research jobs overseas, a declining number of tenured appointments in Australian universities and a phenomenon described as the 'post-doc treadmill.'

In the consultations and interviews carried out during this research, "academics of all levels of seniority expressed concern with the 'post-doc

treadmill' issue," the authors write.

"Researchers in the sciences indicated that they found themselves stuck in post-doctoral contract after post-doctoral contract, always chasing new grants and never getting time to properly establish their research profile, nor having the opportunity to gain teaching experience," Edwards says.

He says post-doctoral appointments provide a legitimate career path for some academics but it is a worry that for some scientists they are not leading to tenure or ways of expanding research and teaching.

"Ultimately, if young and mid-career science academics cannot see long term career options available, we are likely to see them leaving the profession," he says.

The paper points to two major concerns relating to the future sustainability of the science academic workforce. Firstly if measures are not taken to make academic careers more desirable there is a risk that today's young academics will leave universities before they reach an age and level of experience suitable for replacing the retiring baby boomers in coming years.

Secondly the government target to have 40 per cent of people aged between 25 and 34 qualified with a bachelor degree or above by 2025 will require a new large group of academics to provide the training to a larger cohort of students.

Edwards said Australian universities need to go beyond sustaining the current number of science academics; they need to find more.

"If we are going to get anywhere near the government targets we need to encourage young scientists to pursue academic careers. We need to find and develop a new generation of science academics," he says.

The paper concludes that there are key challenges to ensuring the sustainability of the science academic workforce in the future.

"While there is recent growth in the number of younger academics in these fields, retaining these academics in the middle and latter stages of their careers remains a big issue. Key challenges in this regard include providing security of tenure, realistic career pathways, and providing incentives for bright young scientists to remain in Australia or to be lured back from overseas positions," Edwards says.

Dr Daniel Edwards is a Senior Research Fellow with ACER's Transitions and Post-School Education and Training research program and an Adjunct Research Associate at the Centre for Population and Urban Research at Monash University.

Emeritus Professor T. Fred Smith is an Honorary Professorial Fellow in the Monash University Centre for Population Research.

The paper, Supply issues for science academics in Australia: now and in the future, was published online by Higher Education on 30 October 2009 and will be published in a forthcoming print edition. The online article is available from SpringerLink at <http://www.springerlink.com/content/1363081783601811/>



Standards and outcomes

16



Photo by Vinko Murko/Stockphoto

Forecasting university attainment numbers for Victoria

A new tertiary education plan to be developed by Skills Victoria will assist the state to meet the long-term future of the higher education system and to consider the implications for secondary education.

The Australian Council for Educational Research (ACER) has played a role in forecasting university attainment numbers for Victoria for the higher education expert panel, which advises the Victorian government on the implementation of the tertiary education plan. The plan will be released this year.

Addressing growth is a key to the plan: it considers how the system might keep pace with population growth and meet industry needs. The plan makes practical recommendations on reaching Commonwealth attainment, participation, engagement and quality targets.

While Victoria can boast relatively high rates of bachelor-level attainment comparative to other states, higher

education institutions are largely concentrated in urban areas, and there is a need to increase university participation and attainment in rural and regional Victoria.

A first step in developing the plan was for the panel to assess the broad trends in Victoria's higher education sector in the past and to predict the needs for the future.

ACER was actively involved in contributing to this stage of the plan. ACER research provided the Victorian government's higher education expert panel with information relating to the provision of university education in Victoria and the size of the university-educated cohort since 2006, and projections up to 2025.

ACER projected overall attainment numbers, identified the components of attainment numbers, and estimated university commencement and completion numbers.

While Victoria's participation in higher education has grown substantially in the past 20 years, it has not kept pace with the national rate of growth. If this trend continues, previous studies suggest that Victoria will experience a shortfall of nearly 50,000 people with higher education qualifications and more than 120,000 people with diploma or advanced diploma qualifications by 2015.

ACER provided the panel with updated projections to examine the numbers of people in the population with a bachelor degree or higher by 2025 according to three scenarios in which variously: current attainment levels are maintained; Victoria achieves 40 per cent attainment in the 25-34 year age group; and Australia achieves 40 per cent attainment in the 25 to 34 year age group.

The research considered age profiles for populations aged between 18 and 85, provided breakdowns by local government area, and specified attainment numbers by qualification level.

The team drew on data from the Australian Bureau of Statistics Survey of Education and Training and the 2006 Census, the Victorian Department of Planning and Community Development population projections, and the federal Department of Education, Employment and Workplace Relations' Higher Education Statistics Collection.

ACER Senior Research Fellow Dr Daniel Edwards led ACER's involvement in this project, assisted by Research Officer Tim Friedman.

For more information, visit www.skills.vic.gov.au/corporate/providers/universities/victorias-plan-for-tertiary-education

Quality standards: Aiming for excellence and diversity

Australian universities already have rigorous quality assurance measures in place that deliver a world-class university system but, according to speakers at a University of Melbourne seminar, more needs to be done to ensure adequate assessment of student achievement and graduate outcomes.

Professor Alan Robson, Vice-Chancellor of the University of Western Australia and current chair of the Group of Eight and Dr Hamish Coates, Principal Research Fellow with the Australian Council for Educational Research (ACER) delivered the third in a series of seminars conducted by the University of Melbourne's Centre for the Study of Higher Education (CSHE) and the LH Martin Institute for Higher Education Leadership and Management on 31 August 2009. The seminar, *Quality Standards and Regulation: the start of a new era*, examined the role of the new Tertiary Education Quality and Standards Agency (TEQSA) in monitoring quality and institutional performance.

Funding for the new agency was announced in the 2009 budget and its establishment represents a core component of the Rudd Government's response to the Bradley Review of Higher Education. When it is fully operational in 2012 TEQSA will assume the role of national regulatory agency and develop a new quality assurance framework.

Both Professor Robson and Dr Coates argued that a major challenge for the new agency will be in assuring the public that universities were meeting minimum academic standards for students.

Despite the seminar's title, Professor Robson refused to use the term 'a new era' as this implied the university sector would be starting from scratch in terms of quality assurance. He insisted that the existing system of audits, accreditation, state government regulation and reporting, research and assessment exercises and peer review, international ranking systems and reputation indicated there was already a vast amount of quality monitoring going on.

"I would argue that the existing system has delivered a comprehensive high quality university system with universities aspiring to quality and excellence in research, innovation, student learning, teaching, and community and industry engagement."

Professor Robson argued that the public was primarily concerned with knowing that universities were meeting minimum academic standards. He suggested a method of 'light touch' external examiners would help address concerns over academic standards.

"I propose a system where you have external examiners accredited by the quality agency (TEQSA). Universities choose the examiners from the list. You only do external examination of final year units. You do it once every three years and the results have got to be available for the quality audit when the quality audit comes around. Now that to me is an example of a system that could work. It's not terribly intrusive and it would guarantee, I believe, minimum standards," he said.

In his presentation Dr Coates supported an increased emphasis on student assessment in the quality assurance process but warned the setting of minimum standards should not mean all institutions aim for the same standards.

According to Dr Coates more sophisticated methodologies than setting minimum standards are available and feasible and the university sector could adapt methodologies for assessment and reporting currently being used in the schools sector.

He said national performance indicators for Australian universities had not been defined since 1989 and it was time they were reviewed. Dr Coates argued that universities needed to identify the things that counted, set external reference points, collect quantitative data and use them to highlight strengths and identify areas for improvement, provide information to potential students on what they should be doing and assure the public that minimum standards were being met.

He called on universities to report the results of quality assessments saying such reporting was an area in which Australia has done quite badly in comparison to other countries in the past few years.

"Satisfying all of these principles is not going to be easy. It's not going to be quick but it needs to be done if the system is to have the desirable impact," he said.

Further information about the seminar and others being conducted by the Centre for the Study of Higher Education is available from <http://www.cshe.unimelb.edu.au/seminars09/seminar3.html>

Standards and outcomes

18

ACER to assist in establishing Middle East centre

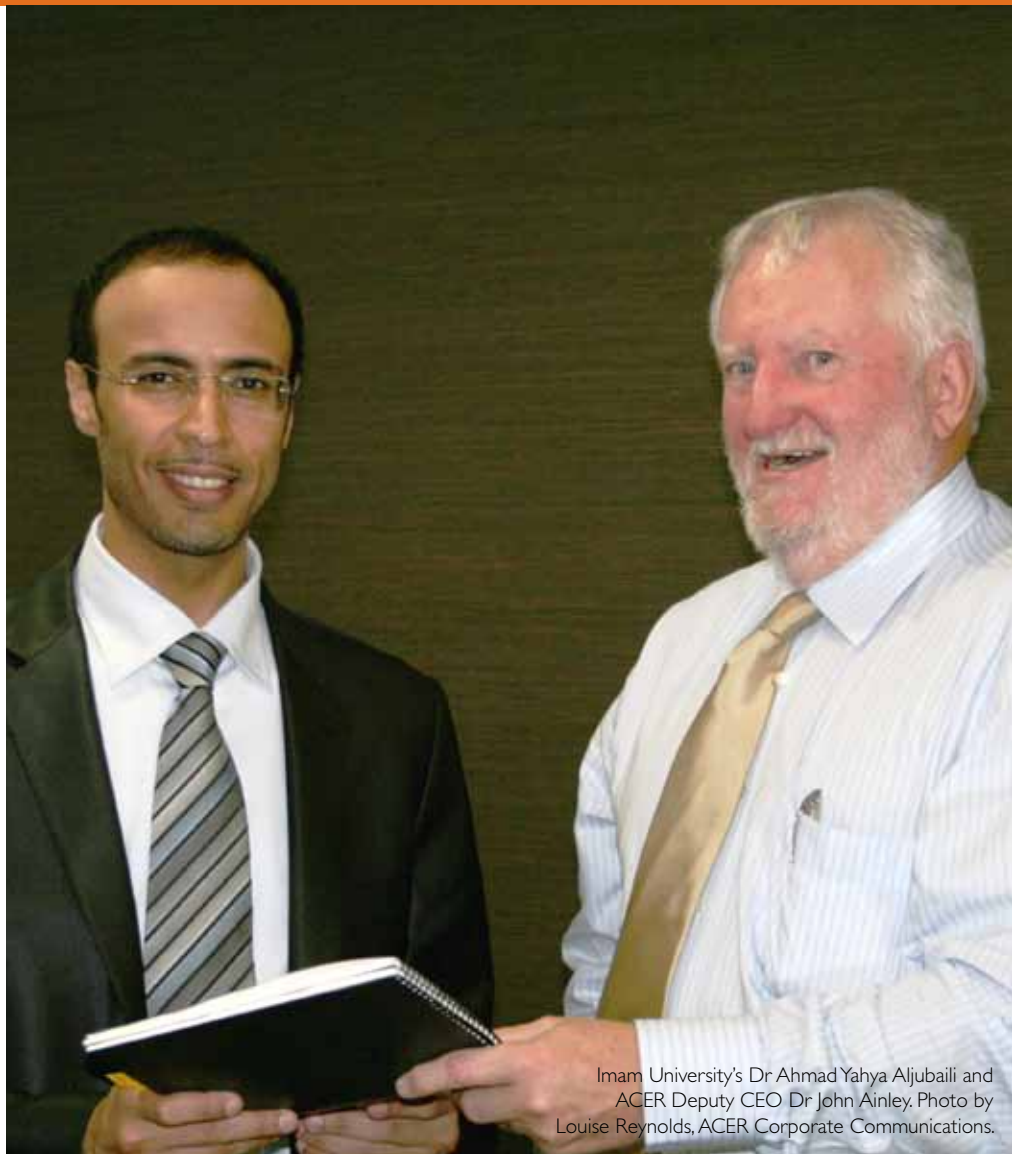
The Australian Council for Educational Research has entered into an agreement with the Imam Muhammad bin Saud Islamic University (Imam University), a major institute in Saudi Arabia, to help establish an Imam University Centre for Evaluation and Assessment (ICEA). Once established, the new centre will be influential in the educational processes that takes place within the university and will potentially improve and invigorate higher education throughout Saudi Arabia.

As part of the project, ACER will support the establishment of the ICEA by providing guidelines, assisting local staff with skills development and conducting seminars to build the capacity of staff.

ACER Higher Education General Manager Marita MacMahon Ball said the project further expanded the organisation's growing body of work in the Middle East, as well as that of the Higher Education division of the company.

Ms MacMahon Ball said the project would also highlight the technical capacity of Imam University and contribute to its growing reputation among Middle Eastern universities.

"The project will pave the way for Imam University's ICEA to become one of the world's best centres specialising in



Imam University's Dr Ahmad Yahya Aljubaili and ACER Deputy CEO Dr John Ainley. Photo by Louise Reynolds, ACER Corporate Communications.

sophisticated assessment, evaluation and reporting. University leaders and administrators, academic staff and university students will all benefit," she said.

Under a separate agreement ACER will develop a Cognitive Skills Test for Imam University to measure both critical reasoning and problem solving. The test will be used to gain a better understanding of the growth in generic skills attained by Imam University students over the course of their

undergraduate studies.

The project agreements were signed during a visit to ACER's Melbourne office by a delegation from Imam University in early January.

Imam University was established in 1974 and now has more than 1,300 academic staff and 25,000 students based at 10 campuses, encompassing a wide spectrum of learning areas from Shari'ah, Computer Science and Arabic Language, to Economics, Science and Medicine.

Australian Council for Educational Research

The Australian Council for Educational Research (ACER) is one of the world's leading educational research centres. Its mission is to create and promote research-based knowledge, products and services to improve learning across the lifespan.

ACER was established in 1930 and for more than 75 years has built a strong reputation as a provider of reliable support and expertise to education policy makers and professional practitioners. As a not-for-profit organisation, independent of government, ACER receives no direct financial support and generates its entire income through contracted research and development projects and through products and services that it develops and distributes. ACER has experienced significant growth in recent years and now has around 300 staff located in Melbourne, Sydney, Brisbane, Perth, Dubai and New Delhi.

ACER is a leader in the provision of quality educational research, both within Australia and internationally. As a national, independent research body, ACER brings a high level of expertise and objectivity to its work.

In recent times ACER has expanded on its program of research and development in support of learning in vocational education and training and in higher education institutions while maintaining and expanding work undertaken in support of schools.

ACER has seven research programs:

Research into Transitions and Post-school Education and Training explores influences on the educational and occupational pathways of young people as they progress from school to further education, training and work. Studies

investigate the labour market and social outcomes of different pathways as well as evaluations of particular policies and programs.

The Assessment and Reporting program conducts research into a wide range of educational outcomes (academic and social). This work, undertaken for clients nationally and internationally and in support of ACER's own tests and assessment programs, includes the refinement of test constructs; studies of test validity and reliability; assessment methods and formats; psychometric analyses of test data; and methods for item banking, online test delivery and reporting.

Research in the National and International Surveys area draws on staff expertise in sampling, survey management, the analysis of survey data and the interpretation and reporting of results in conducting large scale survey research. Current work includes the leadership of three major programs of international surveys including the OECD Programme for International Student Assessment

The Systemwide Testing program identifies more effective ways of monitoring achievement across entire education systems.

Research into Teaching, Learning and Leadership focuses on the relationship between teacher professional development and improved student learning.

The Policy Analysis and Program Evaluation unit explores education policy issues and conducts program evaluation.

The newly established Psychometrics and Methodology research program

provides high quality psychometric and data analytic support to projects, manages externally commissioned data analysis/methodology projects and undertakes, publishes and presents research on psychometric and other quantitative research issues.

In addition to being a national centre for educational policy research and advice, ACER develops and provides a range of research-based products and services to support the work of professional practitioners.

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, and recruitment tests.

The organisation also encompasses ACER Press, the Cunningham Library, the ACER Institute, and the ACER Leadership Centre.

The ACER Higher Education Update is published biannually by the Australian Council for Educational Research. Editorial support by Rebecca Leech and Raelene Morey.

t 03 9277 5555

f 03 9277 5500

e highereducation@acer.edu.au

w www.acer.edu.au

ISSN 1835-4912

Copyright © 2010 ACER