



Australian Council of
Deans of Education Inc.

**Renewing the Academic and Research
Workforce in Education:
Challenges and Opportunities**

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Renewing the Academic and Research Workforce in Education: Challenges and Opportunities

Abstract

Although there is increasing recognition that Australia's research and academic workforce in general requires renewal and expansion, the Australian Council of Deans of Education (ACDE) believes that the challenges confronting Education academics are significantly greater than for other sectors. Not only is the Education sector older and lacking a follow-up replacement leadership cohort, but current government policies of student participation and social inclusion will almost certainly result in demand outstripping supply—at least in the short term. At the same time there is an even greater need for Education faculties to engage in long-term cumulative research on major issues that will provide the evidence for improved policies and practices across early childhood, primary, secondary and tertiary education sectors. The changes required to enable this approach to educational research in Faculties of Education are substantial, and the barriers to doing so are not inconsequential. Relative to other academic disciplines and established professions, the Education workforce is in a more perilous condition requiring immediate and sustained action. ACDE also believes, however, that there has never been a more opportune moment to initiate genuine reform with a view to transforming training and related practices in Education. Consequently, the Council is keen to work cooperatively with other stakeholders to explore the prospects for generational change—especially in the area of teacher education. While a selection of possible strategies for reform is advanced in this paper, ACDE's view is that the first step must be to generate consensus on the specific nature and extent of the problems facing the Education sector.

Introduction

Education is the key to a nation's economic and social development. In knowledge-based economies and societies effective learning is central not only to increased productivity, but also to effective participation and engagement. A high quality education system therefore, constitutes the essential foundation upon which individuals and groups can build their capacity for innovation and improvement. Hence, a nation's educators—along with others who provide the necessary support for learners—are precious human resources. Without highly expert teachers, instructors and coaches, learners are unlikely to achieve significant goals or maximise potential. Consequently, those with responsibility for the training and development of educators constitute the linchpin upon which national productivity and social justice depend.

Similarly, if the nation is to continually improve its performance in relation to educational, economic and social outcomes, then the evidence base for effective policy and practice needs to be robust, as well as rigorous. Unlike other sectors in Australia that engage in research, university faculties of Education currently undertake the bulk of this work that is typically funded directly or indirectly by governments.

There is also a lack of an established culture of large-scale, systematic and cumulative research in Education that stands in stark contrast to other sectors. Given the size and importance of the Education sector, there is an urgent need for genuine rethinking with regard not only to the focus, funding and conduct of research, but also to the training and development of its researchers and academics.

The purpose of this paper, therefore, is to increase awareness of the precarious state of Australia's Education research and academic workforce, and to stimulate informed debate around the possibilities for renewal, expansion and overall strengthening. The paper also seeks to complement, as well as contribute to current and emerging discussions involving the Prime Minister's Department and eminent scientists on the issue of learning. These discussions include topics such as 'the science of learning', 'lifelong learning', 'learning environments' and 'learning in the future' (PMSEIC, 2009). Structured in three parts—workforce issues, workforce characteristics, and workforce strategies—this paper aims to clearly articulate the nature and extent of current problems facing the Education sector as well as to initiate discussion on how these problems might be addressed. ACDE believes that prior to generating consensus around solutions, however, it is important to reach agreement among key stakeholders regarding the specific nature of the issues and challenges confronting the profession.

For some time ACDE has been voicing concerns about looming staff shortages and related matters to do with the training and support of Education academics and researchers. Building on its previous research therefore, the Council's current objective is to provide an evidence-based account of contemporary workforce issues and challenges. To that end, data from a range of sources have been compiled with a view to comparing and contrasting Education with four other fields, namely, Health; Management and Commerce; Natural and Physical Sciences; and Society and Culture. The inclusion of the two largest academic disciplines and two professional fields—one of which has a similarly sized cohort of doctoral by research candidates¹—is seen as a useful strategy for highlighting the plight of the Education sector. It needs to be emphasised that Education is one of the largest professional fields and differs from traditional academic fields in that it is formally related to and governed by employment with a registered profession (Evans & Macauley, 2010). As these authors argue, however, "the distinction between professional and academic disciplines is far from pure and mutually exclusive" (p. 2).

It should be acknowledged at this point that a number of difficulties exist in relation to the availability, validity and reliability of Education data, not the least of which is a degree of variation regarding the classification and aggregation of staff and student information. For example, the amalgamation of many Education faculties into much larger academic organisational units can result in the (re)classification of academics and researchers into fields other than Education. Similarly, doctoral candidates who are simultaneously employed as educators may be classified as a student of a related discipline (e.g. Sociology), or in the subject or discipline in which they lecture or teach (e.g. Mathematics).

¹ In 2008, the equivalent full-time student load (EFTSL) for doctoral by research candidates in Education was 3,445 and for Management and Commerce 3,494.

1. WORKFORCE ISSUES

1.1 Limited engagement in, and support for Educational research

In Australia the conduct of advanced research in the field of Education is on a relatively small scale, limited in scope and confined to universities. A major review conducted in the late 1990s found that research is one activity in a wide field of educational endeavour that “accounts for less than one per cent of the total personnel resources devoted to education and training in Australia. Of these resources, university-based research accounts for about 90 per cent” (DETYA, 2000, p.5). In other words, advanced research is conducted overwhelmingly by academics, researchers and postgraduate students based in Education faculties. Despite such a “thin spread of research” this report confirmed the interdependence of university teaching and research, observing that “there is a subtle, complex and productive relationship between researchers and educators developed through a wide range of communication processes, both formal and informal ...” (ibid, p. 13). The report also recorded a number of positive features and future possibilities regarding the impact of Educational research select aspects of which are incorporated in the Workforce Strategies section of this paper.

1.2 Lack of a systematic and coherent research agenda in Education

While research in Education addresses a range of topics and is informed by multiple disciplines and theories, it can be difficult to identify a research agenda in which national priorities and objectives are clearly articulated. This contrasts with other fields of research (e.g. laboratory sciences) where there is an established culture of sustained and cumulative research involving public and private institutions and agencies in the implementation of large-scale programs. In fields like Earth Sciences, Health Sciences and Environmental Science, for example, Cooperative Research Centres and other mechanisms have been established to promote greater interaction between experts in academia, industry and the professions on issues of national significance, as well as to foster innovation and creativity. In Education, however, it is difficult to identify an established tradition of concentrated and cooperative endeavour in research over time given that government is the main industry player at various levels—funding directly or indirectly most of the research in the early years, school and higher education sectors. ACDE believes that researchers in education need to further engage in a set of major/critical issues (e.g. lifelong learning and capability development), that not only reflect contemporary priorities (e.g. Indigenous education, increased knowledge, skills and understandings that will facilitate more dynamic participation in global economies) but also promote continuous individual and social development.

1.3 Baby-boomer bubble about to burst

Concurrent with the increased demand for researchers and academics in the field of Education is an ageing workforce on the brink of retirement. Highlighting the predicament of Education in relation to other fields, Hugo has argued that “we do know the education discipline is a very old

teaching faculty and yet we know that there is a shortage of teachers, so the demand there is considerable” (Hannaford, 2010). More importantly, however, Hugo has also observed that “there has been an attitude that the market will take care of it [staff shortages], but we know that’s not necessarily happening.” (ibid). In their recent stocktake of the ageing academic workforce, Hugo and Morriss (2010) propose that further work be conducted in three professional areas [namely, Education, Nursing and Mining Engineering] “to identify the current academic workforce involved in the training of professionals, to map the age-sex composition of that workforce and the supply structure for academic staff who train practitioners” (p. 85). Contemporary approaches to the recruitment and training of Education researchers/academics are creating significant challenges for universities. One is the capacity to renew an Education workforce in a timely and effective manner. Another is to meet new targets established by the national government in relation to increased rates of student participation and social inclusion. There is also an expectation that Education faculties and schools will continue to conduct high quality programs of research while simultaneously maintaining rigorous and creative approaches to the teaching of trainees in increasingly complex national and global contexts. In other words, Education researchers and academics are being expected to become more productive in research activities and also in producing more graduates with a sophisticated mix of knowledge, skills and capabilities.

1.4 Lack of younger cohorts engaged in research training

Given the ‘top-heavy’ nature of the current workforce there is an urgent need to attract new and younger recruits—i.e. in their late 20s and early 30s. There is also the problem of persistent shortages of personnel in specialist areas such as Indigenous education and students with disabilities, as well as various fields of study (e.g. mathematics, science, physical education). New Higher Degree by Research (HDR) graduates from within and beyond Education are required not only to replace an ageing population, but also to foster a process of renewal by bringing new perspectives and approaches to the research enterprise. At present, much of the research training undertaken in Education can be described as ‘on-the job’, or a form of continuous professional development. While there are major benefits (e.g. the training is contextualised, practical and up-to-date), there are also significant disadvantages (e.g. it can be stressful for all involved given competing priorities and needs, as well as potentially inward-looking). Hence, ACDE believes that a balance of younger and older researchers and academics—from a range of related backgrounds and experiences—is required to meet the demands and challenges of global economies and knowledge-based societies.

1.5 Lack of incentives to join the research and academic workforce

The attractiveness of a research/academic career in Education has declined markedly in recent years through a range of factors—especially for graduates and postdoctoral fellows. At the same time, however, there is a major disincentive for practising teachers in mid-late career who are considering a move to the research and academic workforce. A differential remuneration rate is in operation with the result that most experienced teachers would be required to accept a substantial

decrease in salary on transferring to academia. For example, an accomplished teacher could be expected to lose \$10-20,000 pa to become a Level A lecturer². In some cases there are additional issues associated with the maintenance or accrual of personal benefits in the form of superannuation and long service leave, along with seniority and status achieved in a school-based context.

1.6 Significant developments

In addition to the aforementioned issues, a number of significant developments are occurring at the national level with the potential to impact significantly on the policy, funding and professional practice of the research and academic workforce in Education.

1.6.1 The report *Australian Workforce Futures* (Skills Australia, 2010) has identified the need to position the tertiary education sector to ensure that it has the capacity to deliver skills for the new economy. To that end, it has recommended an investment of \$40 million per annum over the next six years to develop and implement a workforce development strategy for the tertiary sector (p. 65).

1.6.2 Universities Australia and Professions Australia are currently engaged in a joint study led by Professor Graeme Hugo that is exploring various dimensions associated with the issue of teaching workforce renewal in relation to the capabilities of universities to train/graduate the number of new professionals needed given demographic changes in Australian professions. This study is building on the outcomes of a BHERT Round Table workshop on the Academic Workforce in Higher Education conducted in November, 2009.

1.6.3 A proposal to develop a Research Workforce Strategy was announced in *Powering Ideas* (DIISR, 2009), with that department currently responsible for “anchoring its preparation”. The Strategy’s key objectives are to develop a strong and productive research workforce and to underpin the government’s reform agendas for innovation and higher education. A reference group has been established (17) with three subgroups (employer demand, research training experience and research career pathways), Work on the Strategy is expected to be completed “in the second half of 2010”.

1.6.4 The Prime Minister’s Science, Engineering and Innovation Council issued a report in December 2009, a core component of which is concerned with learning (PMSEIC, 2009). The report states that “a **united effort by practitioners and researchers** that advance (sic) our knowledge of what education practices work best, underpinned with solid evidence of why they work, should be initiated. Teaching and learning practitioners from all areas need to be included in the choice of research direction, and in the application of research outcomes” (p. 2—with original

² Information obtained from AEU and NTEU websites suggests that annual classroom teacher salary rates for an accomplished teacher in 2009 in NSW is in the range \$56,829-\$68,540, while the minimum standard for levels of academic staff in 2010 for Level A was \$39,552-\$49,594 and Level B \$51,664-\$59,332.

emphasis recorded in the primary source).

1.6.5 \$350,000 has been provided by the National Government for two new research projects to boost the nation's engineering workforce (Gillard, 2010). In March 2010 the Minister for Education, Employment and Workplace Relations announced that these projects would be conducted by the Australian National Engineering Taskforce (ANET) to combat engineering shortages.

1.7 Key drivers

Various national government initiatives are likely to result in a further increase in demand for researchers and academics in Education, such as:

- the introduction of new targets for student participation and social inclusion in higher education (e.g. 40 per cent 25-34 year olds to have a bachelors degree by 2025; and 20 per cent enrolments to be low SES by 2020);
- renewed emphasis on the need to ensure that teachers are capable of contributing to and sustaining the 'digital education revolution'; and
- the allocation of an additional 1500 places in Australian universities for Early Childhood Education to meet election promises of 15 hours of preschool by 4-year trained teachers for every 4 year old child in Australia by 2013.

Previous research on principal and teacher supply and demand (Preston, 2002) reported that:

- most of teachers recruited around the 1970s and still teaching—or in the role of principal—will retire from 2010 onwards; and
- the next cohort of teachers—mostly in their 40s—is very small (half the size of the 1970s cohort) and have experienced few career advancement opportunities to date, and are likely to be keenly sought after for senior positions in schools, academic positions in Education in universities, as well as a range of other occupations in public and social services.

More recently, Preston (2010, personal correspondence) has analysed data from the 2006 Census on the population of school principals and found that:

- 1.2 per cent of all principals (223 in number) have obtained a doctoral degree, and 24.5 per cent (4,414) have obtained a masters degree.

This suggests that higher degrees already constitute a valued credential in the profession and are likely to become even more important as a credential for securing promotion and leadership positions in the years ahead.

2. WORKFORCE CHARACTERISTICS

2.1 The education industry and tertiary sector interface

In its report *Employment Outlook for Education and Training* (DEEWR, 2009), there is evidence to indicate that:

- the education and training industry is the largest in Australia, employing 790,400 people—7.3 per cent of the total workforce (p.3);
- tertiary education employs 226,700—29.3 per cent of the education and training workforce (p.5);
- in the five years to 2013-14, employment in the industry is expected to grow at an average rate of 2.4 per cent per annum, which equates to 101,500 new jobs (p.6);
- in the future, it is expected that there will be an increase in the retirement rate of existing teachers due to an ageing workforce, giving rise to stronger demand for new teaching graduates (p.6); and
- in the five years to 2013-14, tertiary education is projected to grow by 2.5 per cent with 32,400 new jobs created (p.7-8).

More recently, (Gallagher, 2010) has foreshadowed that domestic student demand for tertiary education generally will begin to rise rapidly from 2015. “Go8 estimates indicate that upwards of an additional 450,000 students domestic students (EFTSL) will be participating by 2030 with some 26,000 extra academic staff needed to meet this demand Additionally some 12,000 retiring staff will need to be replaced over this period, thus bringing the net new teacher requirement to around 38,000”.

2.2 Researchers and academics in Education

In its report *Transforming Australia's Higher Education System* (Australian Government, 2009, p.23), the national government acknowledged the existence of:

- an “ageing academic workforce”;
- an “intense globally competitive market” for attracting and retaining academic staff;
- an “under representation of academics in their 20s and 30s to replace those retiring”; and
- “increased casualisation, increasing workloads and lower salaries compared with other sectors” resulting in a diminishing attractiveness of an academic career.

Comparative data reveals that in 2004 the age of Education academics was considerably older than those in other fields (see Appendix 1). At that time, the percentage of staff aged 50 and over in Education was 60 per cent, compared with 46 per cent in Society and Culture; 44 per cent in Natural and Physical Sciences; 43 per cent in Management and Commerce; and 42 per cent in Health.

An Occasional Paper (Hugo, 2008) published by CHASS contains more recent data confirming distinctive aspects of the research and academic workforce in Education that is reiterated in Hugo and Morriss (2010), namely, that:

- 63 per cent of staff in teacher education are over the age of 50, compared with 41 per cent across all disciplines (p. 20), which makes this one of, if not *the* oldest professional workforces; and
- 60.4 per cent of staff in 'education-general' and 58.6 per cent of staff in 'curriculum and education studies' are over the age of 50.

During the period 2005-08 the total number of staff in the higher education sector increased by 9 per cent reaching a total of 98,378 in 2008 (see Appendix 2a), Not surprisingly, there was a corresponding 8 per cent increase in the number of full-time equivalent academics with a teaching function—reaching a total of 56,045 in 2008 (see Appendix 2b). Significantly, FTE teaching academics in Education however, actually **decreased** by 6.5 per cent (from 1,912 to 1,788). This was in contrast to increasing percentages of FTE teaching academics in Health (11.6 per cent), Management and Commerce (8.5 per cent) and the Natural and Physical Sciences (5.2 per cent)³. While each of these fields experienced increased student numbers during the same period, this varied as follows: 4.1 per cent in the Sciences; 5.6 per cent in Education; 9.1 per cent in Society; 15.8 per cent in Management; to 28.9 per cent in Health.

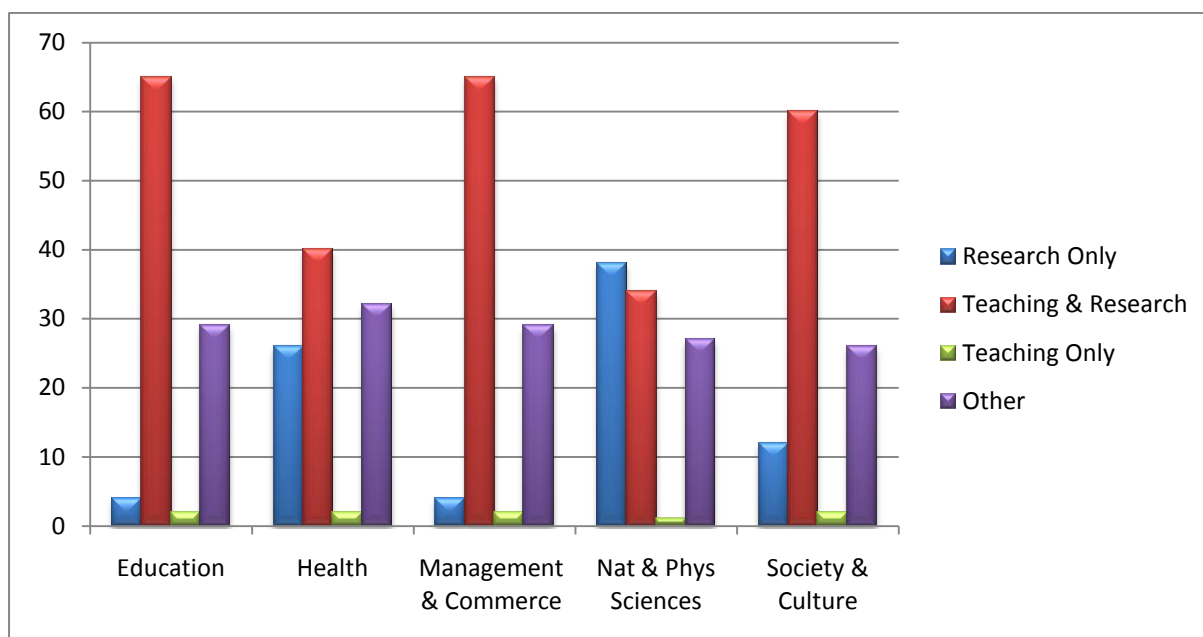
Education occupies a small percentage of the total academic staff in Australia in 2008 relative to these select fields, namely, three per cent. However, the nature and extent of this difference is more dramatic when the proportion of FTE staff engaged in full-time research is considered (see Figure 1, based on Appendix 3). Unlike the Natural and Physical Sciences, for example, where 38 per cent of staff is engaged exclusively in research, the Education sector has just 4 per cent conducting a 'research only' function. While the same percentage is recorded for Management and Commerce, it is still considerably lower than for Health (26 per cent) and Society and Culture (12 per cent).

There is evidence to suggest that the *staff:student ratio* is relatively high in the field of Education. On the basis of FTE staff relative to EFTSL the ratio in Education is 1:33 compared with 1:21 in the field of Health and 1:23 in Natural and Physical Sciences. As indicated previously, however, the validity and reliability of data can be problematic. For example, (Gallagher, 2010) has calculated the average staff:student ratio in higher education in 2008 to be 1:20. More detailed information is available in Appendix 4, where ratios for select fields of study have been calculated on the basis of FTE:EFTSL.

There is also a research finding suggesting that Education academics have *higher workloads* than those in other fields. Research conducted as part of an ALTC/UTS study on PhD supervisors in Australia and New Zealand (Hammond, Tennant et al., 2009) found that academics in the field of Education supervised more HDR students than most other fields. While Education supervisors have an average of 5.84 HDR students, the number is lower in Health 4.47; Natural and Physical Sciences 4.66; and Society and Culture 5.54 (p. 28).

³ As mentioned previously, however, it is possible that organisational re-structuring and the re-classification of Education academics may have been a factor in the decline in staff numbers for this sector of the workforce.

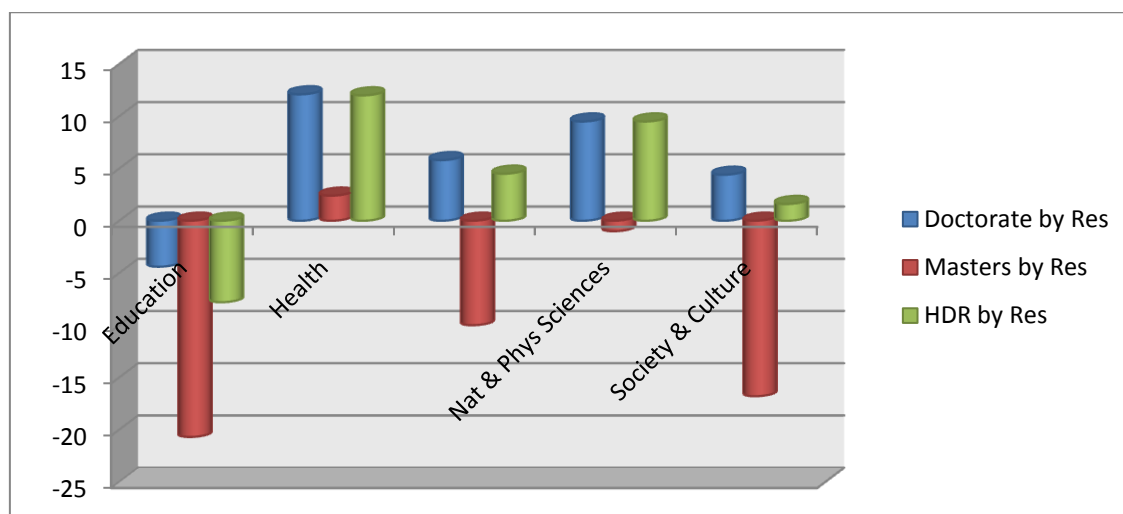
Figure 1: FTE for full-time and fractional full-time staff by function and select organisational group, 2008 (per cent)



Source: Compiled from the DEEWR Higher Education Statistics Collection, customised data set.

At the same time, however, there is evidence to suggest that Education academics are *more productive* in terms of publishing. ACDE has argued previously based on data from the Australian Research Council that “Australia produces 5.4 per cent of all the educational research publications created around the world—almost double the proportion of research publications produced by Australia generally. This places education first in all fields of Research in Australia followed by Plant and Animal Sciences (5.3 per cent) and Geosciences (5.02 per cent)” (ACDE, 2009).

Figure 2: Changes in actual student load (EFTSL) for higher degree by research students by level of course and select broad field of study, 2005-2008 (per cent)



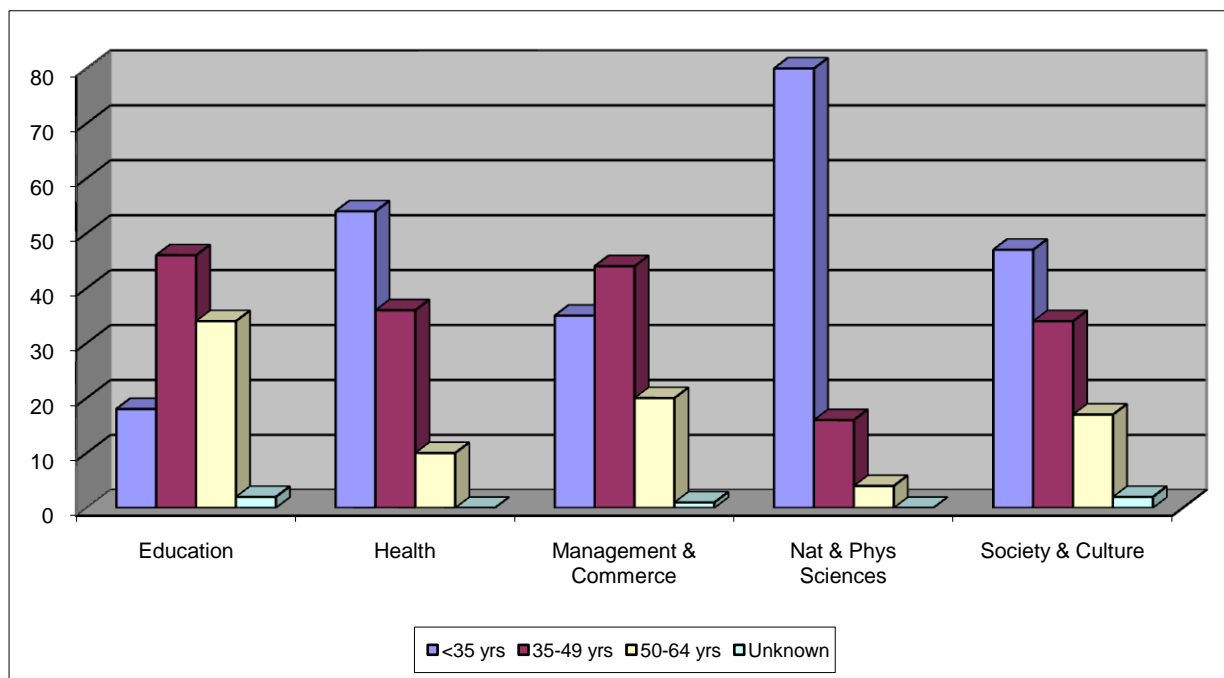
Source: Compiled from select DEEWR Higher Education Statistics, customised data set.

2.3 HDR candidates in Education

Higher education statistics from DEEWR reveal that the number of HDR candidates in Education is not large relative to select broad fields of study (see Appendix 5). For example, in 2008, the actual student load for postgraduate by research students was 1848 (doctorate by research) and 361 (masters by research), which when combined constituted six per cent of all HDR candidates in Australia—marginally less than Management and Commerce (seven per cent). However, when compared with Society and Culture (24 per cent), the Natural and Physical Sciences (23 per cent) and Health (13 per cent), the percentage is low. Even more alarming, however, is the fact that the actual HDR student load in Education has declined over the past four years (see Figure 2, based on Appendix 6). This is in marked contrast to growth witnessed in other select fields. For example, Health increased by 12 per cent and the Natural and Physical Sciences by 10 per cent. While Education and Health remain highly feminised HDR populations (65 per cent), those in Society and Culture (58 per cent), Natural and Physical Sciences (49 per cent), and Management and Commerce (44 per cent) are more in balance.

There is evidence to show that doctoral candidates in Education are considerably older than their counterparts in other fields. As shown in Figure 3 (based on Appendix 7) 33 per cent are 50 or more years of age—compared with 4 per cent in the Sciences, 10 per cent in Health, and 17 per cent in Society and Culture. Conversely, 18 per cent in Education are aged less than 35 years, compared with 80 per cent in the Sciences and 54 per cent in Health.

Figure 3: Doctoral by research students by age-group and select broad field of study, 2008 (per cent)



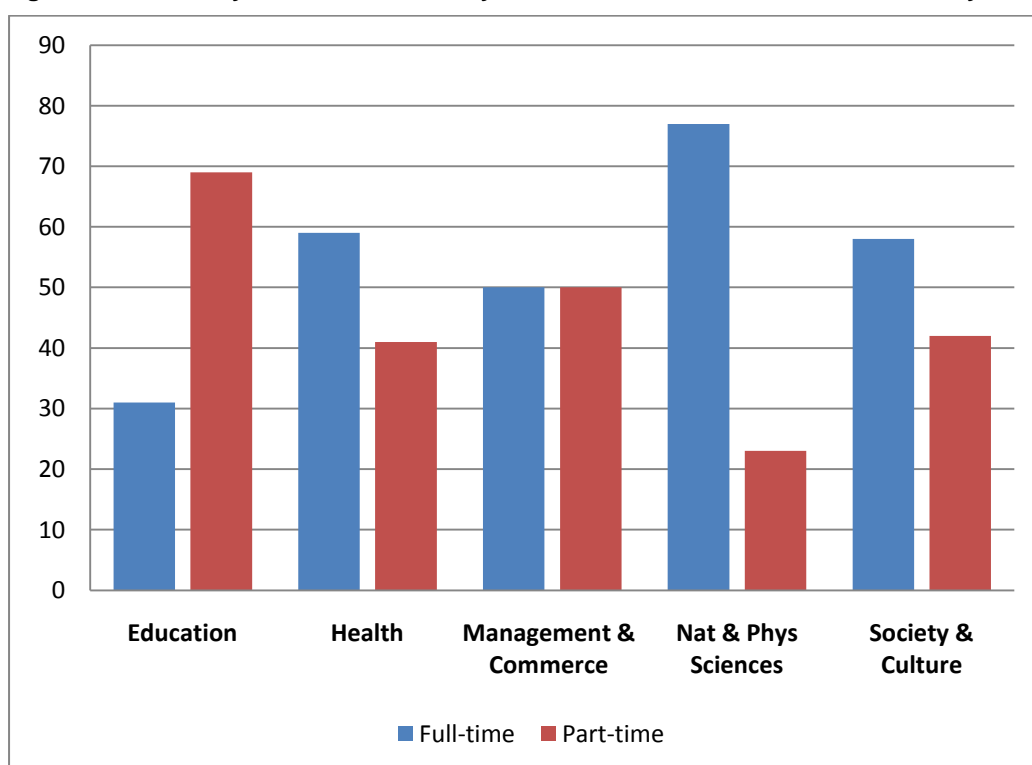
Source: Compiled from select DEEWR Higher Education Statistics, customised data set.

Data shown in Figure 4 (based on Appendix 8) reveal that the vast majority of doctoral candidates in Education are studying on a part-time basis (69 per cent), compared with 38 per cent across all broad

fields of study (with Natural and Physical Sciences 23 per cent; Health 41 per cent; Society and Culture 42 per cent; and Management and Commerce 50 per cent).

However, it is important to note that variation exists within as well as across all broad fields of study given that each field is classified into a number of narrower fields of study—Society and Culture (13); Health (12); Natural and Physical Sciences (7); Management and Commerce (7) and Education (4). For example, in the Natural and Physical Sciences, ‘Chemical Sciences’ has a younger cohort (87 per cent under 35; 11 per cent 35-49; and 2 per cent 50-64) than ‘Earth Sciences’ (72 per cent under 35; 23 per cent 35-49; and 5 per cent 50-64). As noted earlier in this paper, academics in the narrow field of ‘Teacher Education’ are older than those in ‘Curriculum and Education Studies’.

Figure 4: Doctoral by research students by attendance and select broad field of study, 2008 (per cent)



Source: Compiled from the DEEWR Higher Education Statistics Collection, customised data set.

A recent survey of doctoral candidates in Australia has highlighted the importance of acknowledging diversity and variation within the HDR student population. That research was part of an ARC Linkage Project—‘Reconceptualising the doctoral experience’—and provided new insights to the experiences of doctoral candidates (Pearson, Cumming et al., 2008). This research not only documented the highly variable nature of the candidate population, but also identified the way in which these students are ‘diversely different’. These researchers argue that traditional approaches to classifying and grouping students (e.g. by age, sex, mode of study) can mask the complexity of the doctoral population as well as the particularity of the doctoral experience.

Data in Appendix 9 derived from this team's research provides further indication not only of the mature age of HDR candidates in Education, but also the higher level demands on their time and other resources. For example, 73 per cent are living with a partner or spouse (compared with 47 per cent in the Sciences), and 46 per cent have children (compared with 11 per cent in the Sciences). In relation to other fields, significantly more students in Education are not supported by a scholarship (54 per cent). Forty per cent of Education candidates list their main occupation as that of an academic—although it should be noted that 45 per cent of candidates in Management do likewise, unlike those in the Sciences (24 per cent) or in Health (26 per cent). As mentioned previously, it is important to observe the level of diversity existing within the doctoral population across broad and narrow fields of study (e.g. a small percentage of doctoral students in the Sciences are over the age of 50; study part-time; have two or three children).

2.4 HDR completions in Education

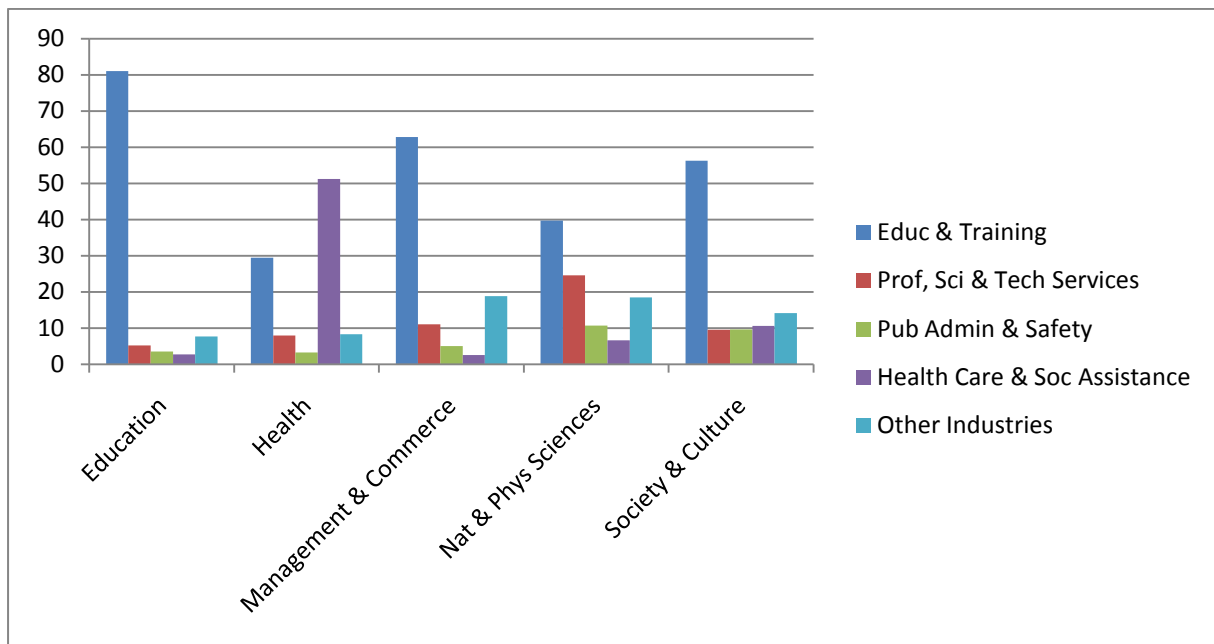
There is evidence to suggest that the current number of HDR completions will be insufficient to meet the anticipated increase in demand for Education academics (see Appendices 10 and 11). In 2007, for example, 300 doctorates and 83 research masters degrees were completed. A more detailed analysis of HDR completions during the period 2005-2008 (see Appendix 11), however, reveals that even though there is some fluctuation occurring during this period, the number of doctoral by research completions in Education actually decreased from 402 in 2005 to 384 in 2008. This stands in marked contrast to increased rates of doctoral completion in other fields for the same period, namely, 29 per cent in Management; 17 per cent in Health; 8 per cent in the Sciences and 6 per cent in Society and Culture.

2.5 Researcher and academic pathways in Education

As shown in Figure 5 (based on Appendix 12), while 81 per cent of Education graduates were employed in the education and training industry in 2006, much lower percentages were recorded in other fields (e.g. Health 29.4 per cent; Natural and Physical Sciences 39.7 per cent; Society and Culture 56.2 per cent; and Management and Commerce 62.8 per cent). However, data from the Graduate Destination Survey administered in 2009 suggests that the percentage of doctoral by research graduates taking up employment in the education industry may be decreasing.

Appendix 13 provides more detailed information on education as an industry/activity destination for HDR graduates through the specification of narrower categories, namely, higher education, public schools, private schools and other education. Although in 2009, 62.4 per cent of doctoral by research graduates in Education were employed in the education industry generally, only 36.8 per cent were employed in the higher education sector specifically. This is in contrast to graduates from Management and Commerce—38.4 per cent of whom were employed in higher education.

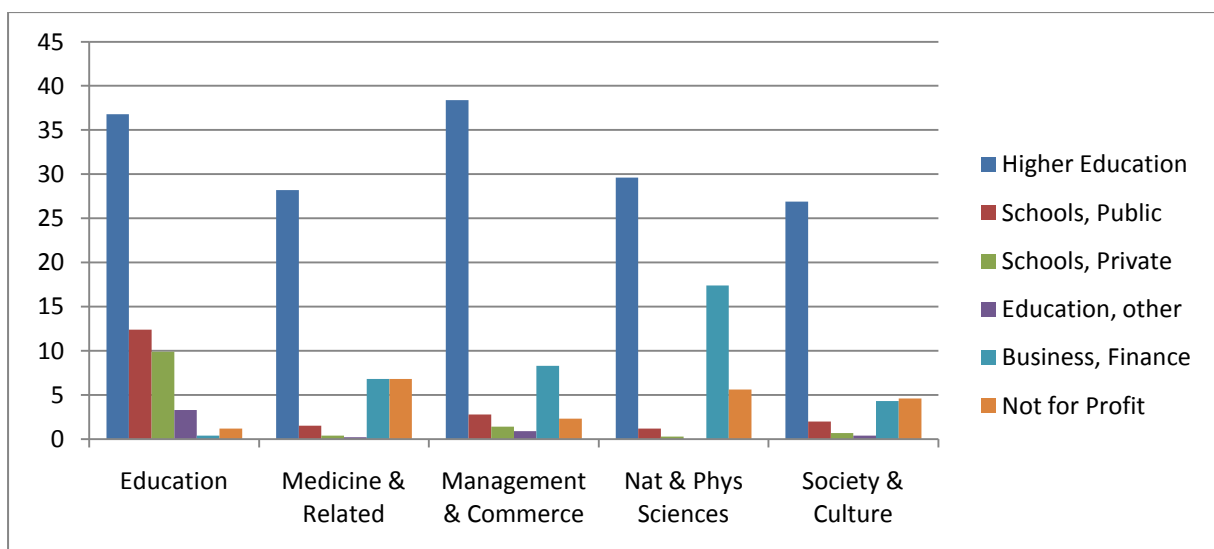
Figure 5: Employed doctorate population by select broad field of study in which doctorate was gained and industry of employment, 2006 (per cent)



Source: (Edwards, Radloff & Coates, 2009, p.43, extraction of data) ABS Census of Population and Housing, 2006

It is possible to speculate on the reasons for the apparent decline in the employment of doctorate by research graduates in the higher education sector. As mentioned previously, the relatively unattractive nature of an academic career (e.g. remuneration, workloads etc) is one possible explanation. Another is the amalgamation of Education faculties into larger structures and the associated reduction of tenured positions, reduced budgets and so on. At this stage, however, more research is needed to determine the nature and extent of the apparent decline.

Figure 6: Destinations of doctorate by research graduates by field of education, 2009 (per cent)



Source: Compiled from Graduate Destination Survey, unpublished data analysed by ACER

2.6 Labour Market Indicators

Although data provided by DEEWR's *Job Outlook* contain no specific information on Education academics, they do reveal a range of labour market indicators for school principals; secondary school teachers; primary school teachers, and early childhood teachers, e.g.

- rates of full-time employment range from 100 per cent for school principals to 55 per cent for early childhood teachers;
- turnover rates (how many leave the occupation per year) range from 44 per cent for school principals to 4 per cent for primary school teachers;
- long-term (10 year) employment growth rates range from 66 per cent for school principals to 16 per cent for primary school teachers; and
- short-term (2 year) labour market shortages for school teachers vary across the states and territories, however, while primary teachers are not anticipated to be in demand in the short term, secondary school and early childhood teachers are—especially NSW, Victoria & ACT.

(see Appendix 14 for more information).

3. WORKFORCE STRATEGIES

Although the main purpose of this paper is to document the plight of the academic and research workforce in Education, this section is designed to outline a selection of possible strategies with a view to stimulating informed discussion among key stakeholders about new directions and opportunities.

3.1 Broaden the human resource base of Education faculties and schools

Create a dynamic mix of research and academic staff from diverse backgrounds and experiences with a view to developing a sustainable research culture. The mix could comprise educators with:

- strong research/discipline training (e.g. traditional honours-PhD pathway);
- strong research training, extensive teaching practice and in-depth professional knowledge of teaching (e.g. mid-career research training pathway);
- extensive teaching practice and in-depth professional knowledge of teaching (e.g. advanced performance professional pathway); and
- appropriate blends of research, education, training, work and career development in related fields—nationally and internationally.

3.2 Implement schemes to foster higher level cooperation between schools and universities

Generate a series of initiatives that involve schools, state education departments and non-government agencies on the one hand, and universities on the other, in joint appointments designed to enhance the level of interaction between teachers and researchers. Building on the solid knowledge base established through previous national programs (e.g. the Innovative Links Project for Teacher Professional Development), a key feature of these schemes would be to foster a culture of collaborative and rigorous research that would generate mutually beneficial outcomes.

3.3 Create national agreement on more effective research training and flexible career pathways

Establish an equitable system involving national and state governments in the sharing of salary and on costs (e.g. superannuation) to promote the mutually beneficial transfer of high achieving researchers in Education—to and from—academic/school/VET/community settings. Establish targeted funding and practical forms of support to increase the research workforce in education as a national and state priority.

3.4 Involve beginning teachers in low intensity research and development

Establish pilot schemes designed to extend high performing graduate teachers by generating a professional culture that reflects an integrated approach to teaching, learning and research. By encouraging and supporting beginning teachers to explore a variety of ‘action research’ and other approaches the objective would be to foster the links between practice and theory. Building on the solid knowledge base established through previous national programs (e.g. the Teachers as

Researchers program), the issues, concerns and practices of beginning teachers would constitute a fundamental component.

3.5 Build the capacity of HDR candidates in Education

Overcome student isolation with a view to fostering the networking and collaborative research efforts of doctoral and masters by research candidates in Education. Researchers involved in an Australian study on the impact of educational research found that “postgraduate students have the potential to act as change agents in schools and school systems because they have developed the capacity to negotiate the boundaries between the two worlds in which they work” (Holbrook, Ainley et al., 2000, p.203). Hence, it is highly desirable that greater support be provided to enable HDR candidates to share their knowledge and expertise not only with each other but also with experienced researchers and academics.

3.6 Fast-track high achieving graduates, postgraduates and early career researchers

Identify, network and provide a range of other practical support measures to support the advancement of high achieving candidates, graduates, postdoctoral fellows and teachers to positions that will foster the growth and renewal of the research workforce in Education. Identify, encourage and support high performing educators from all sectors and levels to enrol in doctoral programs in their 30s rather than postpone commencement until they are in their 40s or 50s.

3.7 Develop a culture of cumulative and evidence-based research in education

Work to collaboratively construct a national large-scale, long-term research agenda in Education to address critical issues identified by key stakeholders as current and emerging (e.g. in the context of more direct links between innovation, research, learning and capability). ACDE believes that the implementation of this national agenda should be driven by *evidence-based* approaches where specific problems and strategies for their resolution are clearly articulated. Entrenched cultures and endemic problems in education require sustained funding and research to eradicate. For example, the ‘Future Fellowships’ scheme could establish a quota of workforce members to support a strategic national agenda for research in education.

3.8 Learn from best practice

Construct, analyse and disseminate a set of case studies demonstrating the way in which members of the research workforce in education are integrating innovation, research, research training, and as a result are generating increased productivity in a variety of contexts (e.g. Dr Chris Sarra’s research and professional practice in Indigenous education). Other potential targets worthy of investigation could be researchers in education who receive prestigious awards and fellowships, large research grants, and other forms of recognition for outstanding achievement. Outcomes might

also include the recording and analysis of key principles, strategies and techniques employed by acknowledged experts.

3.9 Contribute to new or reinvigorated government programs combining scientific & social research

Welcome the opening up of the Cooperative Research Centre program to research and development activities that focus on the ‘public good’ and that involve significant contributions from the social sciences—including educational research. Welcome and respond to the recommendations of the Prime Minister’s Science, Engineering and Innovation Council’s proposal to create a ‘Science of Learning Centres’ research program (PMSEIC, 2010). For example, these Centres aim to “harness input from parents, carers, learners, community leaders, formal and informal educators, and researchers from different disciplines to inform research, foster collaboration and disseminate knowledge amongst stakeholders” (ibid p.2).

3.10 Create new employment models designed to retain experienced academics and researchers

Develop a range of incentives designed to retain experienced and well-regarded academics and researchers as part of the workforce in Education. The provision of flexible arrangements with regard not only to working hours and related conditions, but more importantly in relation to an active engagement with identified national research priorities is worthy of consideration. Through the use of creative and innovative approaches it might be possible to persuade a number of academics with an established record in contemporary research to postpone their retirement and to continue on a part-time or casual basis. Ideally, this would involve mentoring and related professional relationships designed to increase levels of interaction between academics, researchers, teachers and community members.

Concluding Statements

This paper has provided comprehensive and substantial evidence to support ACDE's previous claims that urgent action is needed to address a number of current and emerging problems facing the research and academic workforce in Education. However, given the existing challenges of workforce renewal and expansion, together with new demands generated by government policies and targets, it is important to identify the specific nature of contemporary issues and challenges. This paper has demonstrated inter alia that:

- the Education sector is not just 'ageing', but is possibly the *oldest workforce* in academia;
- there is a *lack of a replacement leadership cohort* available to supplant experienced Education academics on the brink of retirement;
- it is unlikely that current and projected *staff shortages* in Education will be resolved through the interplay of market forces as has been the case previously;
- in contrast to other sectors of the workforce, a very *low percentage* of Education academics is *engaged primarily in research*;
- *staff:student ratios* in Education are high relative to other select broad fields of study; and
- while Education academics are reported to have more HDR candidates than their supervisory colleagues in other fields, they are *more productive* in terms of refereed publications.

Furthermore, relative to other research postgraduate students, doctoral candidates in Education:

- are *older* (i.e. many commence their doctoral studies in their late 40s and early 50s, unlike their counterparts in other fields of study who commence in their 20s);
- have an *established career* (i.e. after completing a first degree and teacher training many undertake professional practice for several years, unlike their counterparts in other fields who study continuously from honours to Masters/PhD by Research);
- are more likely to be *employed in the education industry* (e.g. in the early childhood, primary, secondary or tertiary sector);
- *take longer to complete* their higher degrees by research (i.e. most study part-time without financial support, unlike their counterparts in other fields—most of whom study full-time with a scholarship);
- are *near the climax of their career* on entry to the research and academic workforce (i.e. by the time they graduate many researchers and academics in Education are in their mid-late 50s, unlike their counterparts in other fields who are in their late 20s or early 30s);
- are more likely to have *family responsibilities*, especially with regard to raising children and caring for elderly parents and relatives; and
- are more likely to be *female* (65 per cent) than male. The gender imbalance associated with the emergent workforce is even more striking when statistics for domestic students enrolled in courses for initial teacher training in 2008 are considered. For example, of a total of 65,710 students 76 per cent were female and 24 per cent were male. Moreover, the number of male

enrolments reflected a 5.6 per cent decrease on enrolment figures for the preceding year [2007] (DEEWR, 2009).

While such challenges are substantial, it is important not to lose sight of the unique opportunity that exists in 2010 to begin a process of genuine reform within and beyond the Education profession. Rather than focus exclusively on short-term needs associated with replacing an ageing workforce, much is to be gained by adopting a comprehensive, long-term and future-oriented agenda designed to transform training and related practices in Education. Some of the strategies outlined in the previous section, for example, might provide the germ of bigger and more innovative ideas that could complement or be integrated with current national developments such as the proposals emanating from the PMEIC identified in the first part of this paper.

ACDE believes that in the first instance there is a need to build a much higher level of agreement on the nature and extent of the problems facing the research and academic workforce in Education. Once this has been established it would then be possible to stimulate informed debate about the ways in which contemporary issues and challenges might be addressed. Having provided evidence from a range of sources and advanced a number of possible strategies, the Council looks forward to the prospect of cooperative action with key stakeholders at the earliest opportunity.

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Appendix 1: FTE for full-time and fractional full-time staff by age and select academic organisational unit group, 2004

	Education		Health		Management & Commerce		Nat & Phys Sciences		Society & Culture	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
<25 years	0	0	3.3	0	22.8	1	11	0	11.4	0
25-29	16.1	1	87.8	2	117.8	4	97.2	3	135.3	2
30-34	56.9	3	213.7	6	259.6	8	222.7	6	439.8	7
35-39	123.0	7	365.1	10	318.2	10	416.2	12	689.3	11
40-44	212.9	12	636.8	18	448.2	14	596.6	17	947.2	15
45-49	323.1	17	761.6	22	603.2	19	684.2	19	1124.5	18
50-54	441.9	24	646.7	18	644.3	21	553.8	15	1091.4	18
55-59	465.6	25	525.7	15	477.0	15	617.9	17	1111.6	18
60-64	172.8	9	234.9	7	189.9	6	329.5	9	500.0	8
65+	39.7	2	57.4	2	49.6	2	74.0	2	106.8	2
Total	1852	100	3533	100	3131	100	3603	100	6166.31	100

Source: Compiled from the DEEWR Higher Education Statistics Collection, customised data set

Appendix 2a: Number of full-time and fractional full-time staff by select academic organisational unit group, 2005-2008

	2005		2006		2007		2008	
	No.	%	No.	%	No.	%	No.	%
Education	3,112	3.5	3,085	3.4	3,059	3.2	2,938	3.0
Health	11,111	12.3	11,753	12.8	12,643	13.3	13,099	13.3
Management & Commerce	5,636	6.2	5,445	5.9	5,773	6.1	5,749	5.8
Natural & Physical Sciences	10,974	12.1	11,435	12.4	12,078	12.7	12,469	12.7
Society & Culture	10,762	11.9	10,502	11.4	11,533	12.1	10,727	10.9
Other	48,812	54.0	49,788	54.1	49,976	52.6	53,396	54.3
Total	90,407	100	92,008	100.0	95,062	100.0	98,378	100.0

Source: Compiled from the DEEWR Higher Education Statistics Collection, customised data set

Appendix 2b: FTE for full-time and fractional full-time staff with a 'teaching only' or 'teaching and research' function in select academic organisational unit group, 2005-2008

	2005		2006		2007		2008	
	No.	%	No.	%	No.	%	No.	%
Education	1,912	3.7	1,920	3.6	1,818	3.3	1,788	3.2
Health	3,669	7.0	3,828	7.2	4,075	7.4	4,096	7.3
Management & Commerce	3,195	6.1	3,264	6.1	3,388	6.1	3,465	6.2
Natural & Physical Sciences	3,684	7.0	3,696	7.0	3,792	6.9	3,874	6.9
Society & Culture	6,202	11.9	5,975	11.3	6,257	11.3	5,788	10.3
Other	33,631	64.3	34,442	64.8	35,821	65.0	37,034	66.1
Total	52,293	100	53,125	100.0	55,151	100.0	56,045	100.0

Source: Compiled from the DEEWR Higher Education Statistics Collection, Staff 2008, Website Table 1.5

Appendix 3: FTE for full-time and fractional full-time staff by function and select academic organisational unit group, 2008

	Education		Health		Management & Commerce		Nat & Phys Sciences		Society & Culture	
	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Research Only	123	4	2,571	26	199	4	4,301	38	1,193	12
Teaching and Research	1,743	65	3,942	40	3,418	65	3,813	34	5,652	60
Teaching Only	45	2	174	2	120	2	89	1	160	2
Other	769	29	3,242	32	1,540	29	3,091	27	2,440	26
Total	2,680	100	9,929	100	5,277	100	11,294	100	9,445	100

Source: Compiled from the DEEWR Higher Education Statistics Collection, customised data set

Appendix 4: Staff-student ratios by FTE* and select academic organisational unit group, 2008

	FTE*	EFTSL	RATIO
Education	1,788	59,522	1:33
Health	4,096	87,661	1:21
Management and Commerce	3,465	160,552	1:46
Natural and Physical Sciences	3,874	88,072	1:23
Society and Culture	5,788	196,086	1:34
Other	37,034	165,957	
Total	56,045	757,850	

Source: Compiled from the DEEWR Higher Education Statistics Collection, Website Student Table 38 and Staff Table 1.5, 2008

* FTE for full-time and fractional full-time staff classified as 'Teaching Only' or 'Teaching and Research'

Appendix 5: Actual student load (EFTSL) for research postgraduate students by select broad field of education, 2008

	Doctorate by Research		Masters by Research		Total	
	EFTSL	Per Cent	EFTSL	Per Cent	EFTSL	Per Cent
Education	1,848	6	361	7	2,209	6
Health	3,889	13	630	13	4,519	13
Management and Commerce	2,172	7	222	5	2,394	7
Natural and Physical Sciences	7,251	24	669	14	7,920	23
Society and Culture	7,349	25	958	20	8,307	24
Other	7,601	25	1,988	41	9,589	27
Total	30,110	100	4,828	100	34,938	100

Source: Compiled from the DEEWR Higher Education Statistics Collection, customised data set

Appendix 6: Changes in actual student load (EFTSL) for research postgraduate students by select broad field of education, 2005-2008 (per cent)

	2005			2006			2007			2008		
	D-R	M-R	Total	D-R	M-R	Total	D-R	M-R	Total	D-R	M-R	Total
Education	1,932	455	2,387	1,871	419	2,290	1,764	382	2,146	1,848	361	2,209
Health	3,420	615	4,035	3,660	609	4,269	3,776	617	4,392	3,889	630	4,519
Mgt & Commerce	2,045	247	2,292	2,129	208	2,337	2,115	215	2,330	2,172	222	2,394
Nat & Phys Sciences	6,560	676	7,236	6,855	648	7,503	7,118	672	7,790	7,251	669	7,920
Society & Culture	7,027	1,151	8,178	7,109	1,072	8,181	7,235	1,005	8,240	7,349	958	8,307

Source: Compiled from the DEEWR Higher Education Statistics Collection, customised data set

D-R= Doctorate by Research

M-R=Masters by Research

Appendix 7: Doctoral by research students by age-group and select broad field of education, 2008

	Education		Health		Management & Commerce		Nat & Phys Sciences		Society & Culture	
	No	%	No	%	No	%	No	%	No	%
<25 years	34	1.0	686	12.2	163	4.7	2,183	25.0	799	7.5
25-29	188	5.5	1276	22.7	481	13.8	3,337	38.2	2,372	22.4
30-34	381	11.1	1055	18.8	576	16.5	1,451	16.6	1,827	17.2
35-39	437	12.7	870	15.5	570	16.3	690	7.9	1,392	13.1
40-44	536	15.6	597	10.6	506	14.5	413	4.7	1,129	10.6
45-49	652	18.9	538	9.6	480	13.7	273	3.1	1,070	10.1
50-54	580	16.8	301	5.4	389	11.1	188	2.2	818	7.7
55-59	382	11.1	190	3.4	208	6.0	116	1.3	616	5.8
60-64	188	5.5	74	1.3	86	2.5	51	0.6	325	3.1
Unknown	67	1.9	31	0.6	35	1.0	28	0.3	264	2.5
Total	3,445	100.1	5,618	100.1	3,494	100.1	8,730	99.9	10,612	100.0

Source: Compiled from the DEEWR Higher Education Statistics Collection, customised data set

Appendix 8: Number of doctoral by research students by type of attendance, 2008

	Education		Health		Management & Commerce		Nat & Phys Sciences		Society & Culture		All BFoS	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Full-time	1,105	31	3,473	59	1,822	50	7,076	77	6,491	58	27,796	62
Part-time	2,472	69	2,400	41	1,843	50	2,111	23	4,691	42	16,775	38
Total	3,577	100	5,873	100	3,665	100	9,187	100	11,182	100	44,571	100

Source: Compiled from the DEEWR Higher Education Statistics Collection, customised data set

Appendix 9: Data from a national survey of doctoral candidates, Australia

(Pearson, Cumming et al., 2008)

As part of an ARC Linkage Project—‘Reconceptualising the doctoral experience’—a national survey of doctoral candidates in Australia was administered in 2005 (n=5395). Subsequently, an analysis of results was published highlighting the extent and nature of diversity among doctoral candidates (Pearson, Cumming, Evans, Macauley & Ryland, 2008). Given the highly variable nature of the candidate population, there is a reluctance on the part of the authors to ascribe group identities (e.g. sex, age, mode of study). Essentially, they embrace the notion of candidates being ‘diversely different’—a concept that “recognises difference without ascribing affiliation” (p.111). With this caveat in place, the material included below has been extracted subsequently from the raw data with a view to noting diversity across select broad fields of study, namely, Education (n=395); Health (n=1071); Management and Commerce (n=341); Natural and Physical Sciences (n=1082); and Society and Culture (n=1262).

Table 5.1 Survey respondents living with a partner or spouse by select broad fields of study (per cent)

	Yes	No	Total
Education	73	27	100
Health	61	39	100
Management & Commerce	68	32	100
Natural and Physical Sciences	47	53	100
Society and Culture	58	42	100

Table 5.2 Number of children of survey respondents by select broad fields of study (per cent)

	None	One	Two	Three	Four	Five	Total
Education	54	16	21	7	2	0	100
Health	69	13	13	4	1	0	100
Management & Commerce	61	13	20	5	1	0	100
Natural and Physical Sciences	89	5	5	1	0	0	100
Society and Culture	72	13	11	3	1	0	100

Table 5.3 Survey respondents with or without a scholarship by select broad fields of study (per cent)

	Scholarship	No scholarship	Total
Education	46	54	100
Health	69	31	100
Management & Commerce	59	41	100
Natural and Physical Sciences	86	14	100
Society and Culture	81	19	100

Table 5.4 Survey respondents whose main occupation is an academic staff member* by select broad fields of study (per cent)

	Yes	No	Total
Education	40	60	100
Health	26	74	100
Management & Commerce	45	55	100
Natural and Physical Sciences	24	76	100
Society and Culture	30	70	100

* (full-time, part-time or on study leave)

Appendix 10: Number and share of HDR completions by type of course and select broad field of education, 2007

	Doctoral by research completions		Masters by research completions	
	Number	Per Cent	Number	Per Cent
Education	386	6.7	99	6.9
Health	733	12.8	180	12.7
Management and Commerce	426	7.5	48	3.4
Natural and Physical Sciences	1,369	23.9	153	10.8
Society & Culture	1,230	21.5	268	18.9
Other fields	1,577	27.6	672	47.3
Total	5,721	100.0	1,420	100.0

Source: Compiled from DEEWR Higher Education Statistics Collection, customised data set

Appendix 11: Number of award completions for research postgraduate students by type of course and select broad field of education, 2005-2008

	2005				2006				2007				2008			
	DR	HD	M	Total	DR	HD	M	Total	DR	HD	M	Total	DR	HD	M	Total
Education	402	0	117	519	400	4	131	535	386	2	99	487	384	1	125	510
Health	715	13	183	911	756	14	184	954	733	10	180	923	839	8	167	1014
Mgt & Comm	360	0	73	433	435	1	72	508	426	0	48	474	463	0	53	516
Nat & Phys Sci	1262	14	204	1480	1288	11	179	1478	1369	7	153	1529	1368	9	180	1557
Soc & Culture	1225	2	331	1558	1291	7	337	1635	1230	4	268	1502	1299	3	268	1570

Source: Compiled from DEEWR Higher Education Statistics Collection, customised data set

Appendix 12: Employed doctorate population by field of education in which doctorate was gained and industry of employment, Australia, 2006 (per cent)

(Edwards, Radloff & Coates, 2009, p.43)

Field of Education (ANZIC)	Prof, Sci, & Technical Services	Public Admin & Safety	Education & Training	Health Care & Soc Ass	Other Industries	Total	Total Count
Sciences	24.6	10.7	39.7	6.6	18.5	100	23,510
Information Technology	24.7	5.2	52.9	0.8	16.4	100	1,679
Engineering & Related	30.4	6.9	33.4	0.7	28.6	100	6,527
Architecture & Building	16.7	12.5	56.2	1.2	13.4	100	329
Agric, Environ & Related	23.8	23.2	26.4	1.4	25.2	100	1,820
Health	7.9	3.2	29.4	51.2	8.3	100	6,666
Education	5.2	3.5	81.0	2.7	7.7	100	2,952
Management & Commerce	11.0	5.0	62.8	2.5	18.8	100	2,249
Society & Culture	9.5	9.6	56.2	10.6	14.1	100	15,085
Creative Arts	4.0	3.3	70.3	3.1	19.3	100	1,008
Mixed Field Programmes	0.0	0.0	100.0	0.0	0.0	100	4
Not Stated/Not Applicable	13.1	7.6	54.0	7.1	18.3	100	1,034
Total	17.8	8.8	45.4	10.9	17.0	100	62,863

Source: ABS Census of Population and Housing, 2006, customised data set

Appendix 13: Destinations of doctorate by research graduates by select field of education, 2009 (per cent)

	Education	Medicine & Related	Management & Commerce	Nat & Phys Sciences	Society & Culture
Aust Govt	0	0.2	1.4	1.2	2.2
Defence	0	0	0	0.8	0.7
State Govt	2.5	1.3	0	1.8	2
Local Govt	0	0	0.5	0.4	0.3
Other Govt	0	0	0.5	0.6	1.2
Professional Practice	0.4	2.5	0.5	1.9	1.6
Industry & Commerce	0	0.4	0.9	0	0.1
Ag\Forest\Fish	0	0	0	0.3	0.3
Mining	0	0	0.5	0.6	0.1
Manufacturing	0	0.6	0	2.1	0.9
Elec\Gas\Water	0	0	0.9	0	0.3
Construction	0	0	0.5	0.1	0.1
Wholesale, Retail Trade	0	0.6	1.4	0.5	0
Transport & Storage	0	0.2	0	0	0.3
Communication Services	0	0	1.9	0.1	0.3
Bus, Finance	0.4	6.8	8.3	17.4	4.3
Accomm\Entertain\Recreation	0.4	0.4	0.9	0.3	0.1
Personal Services	0	0	0.9	0	0.8
Health Public	0	15.1	0.9	2.5	3.6
Health Private	0	1.1	0.5	0.8	0
Health NFI\Other	0.4	1.3	0.9	0.5	0.4
Schools, Public	12.4	1.5	2.8	1.2	2
Schools, Private	9.9	0.4	1.4	0.3	0.7
Higher Education	36.8	28.2	38.4	29.6	26.9
Education NFI\Other	3.3	0.2	0.9	0	0.4
Not-for-Profit Organisation	1.2	6.8	2.3	5.6	4.6
Employment NFI\Other	1.2	1.9	2.3	2.2	2.3
Work PT not seek FT	12.8	14	12.5	6.5	17.9
Work PT seek FT	3.3	4.5	5.6	6.8	10.5
Not work seek FT	2.9	3.4	4.6	5.7	3.5
Not work seek other than FT	1.7	0.2	0.5	0.3	0.9
Further Study	1.7	2.3	3.7	3.6	1.7
Unavailable or Unknown	8.7	5.9	3.7	6.4	9.2
TOTAL	100	100	100	100	100
TOTAL RESPONDENTS	242	471	216	770	769

Source: Graduate Destination Survey, 2009, unpublished data analysed by ACER.

Appendix 14: Labour market indicators for educators in Australia (DEEWR, 2010)

7.1 University lecturers and tutors

- Employment level—42,200 (9)*; 73% full-time (4); \$1533 av. weekly earnings (10)
- Educational attainment—62% postgraduate degree; 24% bachelors degree (15-64 years)
- Turnover 14.8% pa (9)
- Employment growth: medium term (5 years)—2.6% (4); long-term (10 years)—39% (6).

7.2 School principals

- Employment level—19,700 (10); 100% full-time (10) ; \$1603 av. weekly earnings (10)
- Educational attainment—27% postgraduate degree; 43% bachelors degree (15-64 years)
- Turnover 44% pa (8)
- Employment growth: medium term (5 years)—49% (8); long-term (10 years)—66% (8).

7.3 Secondary school teachers

- Employment level—136,800 (10); 83% full-time (6) ; \$1197 av. weekly earnings (8)
- Educational attainment—14% postgraduate degree; 56% bachelors degree (15-64 years)
- Turnover 17% pa (6)
- Shortages anticipated in short term in NSW, Vic, SA, Tas and ACT (in some subjects and some locations). No shortages anticipated in Qld, WA and NT [2009, DEEWR]
- Employment growth: medium term (5 years)—4.5% (4); long-term (10 years)—22% (5).

7.4 Primary school teachers

- Employment level—145,600 (10); 69% (4) full-time; \$1110 av. weekly earnings (8)
- Educational attainment—4% postgraduate degree; 63% bachelors degree (15-64 years)
- Turnover 4.4% pa (9)
- No shortages anticipated in short term in all states (although regional shortage in Tasmania) [2009, DEEWR]
- Employment growth: medium term (5 years)—5.6% (4); long-term (10 years)—16% (5).

7.5 Early childhood teachers

- Employment level—16,800 (6); 55% full-time (2); \$750 av. weekly earnings (3)
- Educational attainment— 4% postgraduate degree; 45% bachelors degree (15-64 years)
- Turnover 10.3% pa (3)
- Shortages anticipated in short term in NSW, Vic, Qld and ACT (in some subjects and some locations). No shortages anticipated in SA, WA, Tas, and NT [2009, DEEWR]
- Employment growth: medium term (5 years)— -2.9% (3); long-term (10 years)—25% (5).

* (Figures in brackets refer to deciles that range from (1) low to (10) high.

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