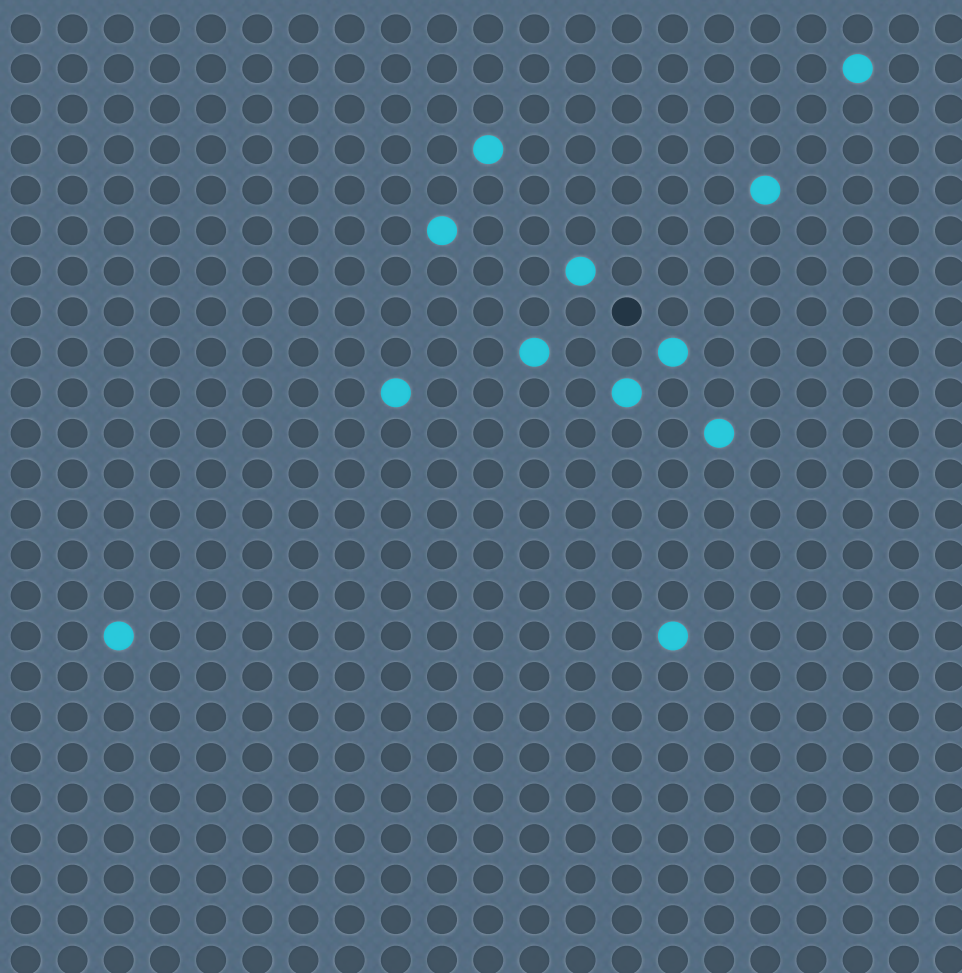# Living in a 2.2 World:
ERA, Capacity Building and the Topography of Australian Educational Research

TERRI SEDDON, DAWN BENNETT, JANETTE BOBIS, SUE BENNETT, NEIL HARRISON, SUE SHORE, ERICA SMITH & PHILIP CHAN

DECEMBER 2012

ACDE

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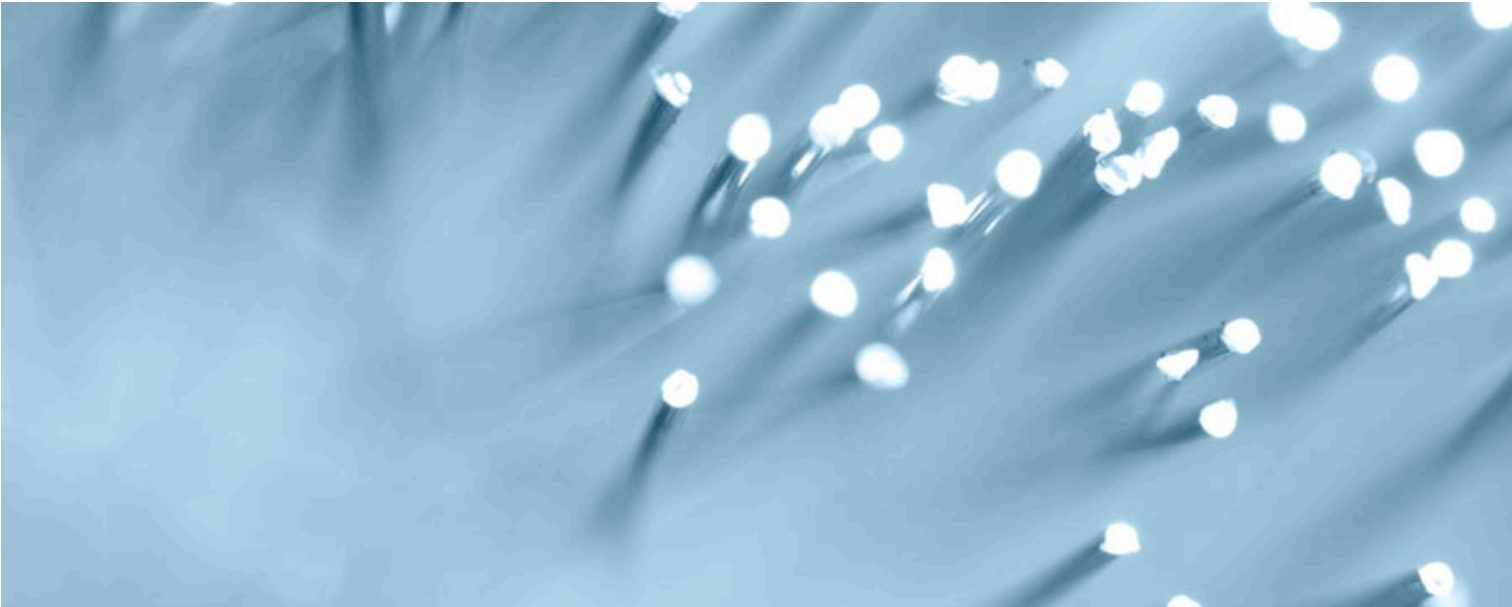
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LIVING IN A 2.2 WORLD
ABBREVIATIONS

AARE	Australian Association for Research in Education
ABS	Australian Bureau of Statistics
ACDE	Australian Council of Deans of Education
ADU	Academic Development Unit
ANZSRC	Australian and New Zealand Standard Research Classification
AOU	Academic Organisational Unit
ARC	Australian Research Council
ARDEN	Australian Research Deans of Education Network
ATN	Australian Technology Network
DIISTRE	Department of Industry, Innovation, Science, Research, and Tertiary Education
EC	Economics and Commerce
EHS	Education and Human Society
ERA	Excellence in Research for Australia
FoR	Field of Research (ANZSRC)
FTE	Full-Time Equivalent
HEP	Higher Education Providers
HERDC	Higher Education Research Data Collection
HERDSA	Higher Education Research and Development Society of Australasia
NHMRC	National Health and Medical Research Council
NTRO	Non-traditional research outputs
REC	Research Evaluation Committee
SBE	Social, Behavioural, and Economic Sciences
UoE	Unit of Evaluation

What is the topography of Australian educational research?

LIVING IN A 2.2 WORLD
EXECUTIVE SUMMARY

Early in 2011, the Australian Association for Research in Education (AARE) and the Australian Council of Deans of Education (ACDE) established a joint working party to create a strategic plan for strengthening national research capacity in the field of Education. This proposal followed the publication of Excellence of Research in Australia (ERA) 2010 results, which revealed that the national average weighting of Australian research in Field of Research 13 (FoR 13) - Education was well below the 'world standard' rating of 3.0. Moreover, the 2010 ERA data demonstrated that we had no up-to-date picture of who is involved in educational research, what their strengths are, or how they relate to one another.

As an input into strategic research capacity building in Australian educational research, this project begins the process of documenting who 'we' are as educational researchers. The research described within the report used an ecological model to address the project's overarching question, which was: What is the topography of Australian educational research?

The aim of the project, then, was to better understand the ecology of Australian educational research. In particular, we asked: what was it about this field of research and its research outputs that led to the assessment that FoR 13 (henceforth FoR Education) was a 2.2 world in ERA 2010? Four sub-questions guided the work:

1. Where is Australian educational research conducted and by whom?

2. What problems are addressed and using what methodologies?

3. What relationships, resources and networks shape the social organisation of Australian educational research?

4. What does this mean for Australian educational research into the future?

Two key data collection strategies were used: namely, secondary analysis of ERA 2010 and 2012 data, and an online survey of academic researchers. Ethical approval for the project was obtained by Monash University prior to commencement. ERA data was submitted by 15 Australian universities and

provided 13 useable data sets. The survey attracted 504 responses from educational researchers across Australia.

Research outputs were classified using a four-category typology, according to the Academic Organisational Unit (AOU) (or other type of unit) location of the researcher (Education AOU or other unit) and the Field of Research (FoR) of the research output (FoR Education or other FoR). The ERA data was analysed according to only three categories (the outputs were either in FoR Education or produced by researchers located in an Education AOU or both), while the fourth category of outputs (neither in the FoR Education nor by a researcher located in an Education AOU) was used in the analysis of survey data.

In this report we present initial findings from the study. Further data analysis is planned and will be reported as follow-up reports.

The report is organised in three sections:

1. Shifting locations of education knowledge building;
2. Patterns of education knowledge building; and
3. The topography of education knowledge building.

SHIFTING LOCATIONS OF EDUCATION KNOWLEDGE BUILDING

▸ Educational researchers are categorised according to their location and the FoR of their research outputs, though individual researchers may produce research in more than one FoR. Researchers in Education Academic Organisational Units (AOUs) produce research outputs in FoR Education (Category 1) and other FoRs (Category 2), and those in other AOUs also produce research outputs in FoR Education (Category 3) as well as other FoRs (Category 4).

▸ In ERA 2010, 55.0% of outputs in FoR Education came from staff employed within Education (Category 1) and 40.0% came from staff employed outside of Education AOUs (Category 3).

▸ In ERA 2012, 59.0% of outputs in FoR Education came from staff employed within Education AOUs (Category 1) and 37.0% came from staff employed outside of Education AOUs.

▸ For researchers in Education AOUs, the most common FoR other than FoR Education in 2010 and 2012 was FoR11 - Medical and Health Sciences.

▸ Amongst the 15 universities that submitted ERA data for this project, there was only one institution for which the total outputs in FoR Education were produced solely by academics working in Education AOUs. In contrast, 70.0% of the FoR Education outputs at another institution came from those located outside of Education AOUs.

▸ A comparison of the two ERA data sets from 2010 and 2012 reveal a decline in the percentage share of conference publications (7.6%) and an increase in the percentage share of journal outputs (3.6%).

What relationships, resources and networks shape the social organisation of Australian educational research?

PATTERNS OF EDUCATION KNOWLEDGE BUILDING

▶ Survey respondents were mostly over 45 years old and roughly two-thirds were female. Two-thirds of the sample was born in Australia, with 1 per cent being Indigenous Australians. The sample was skewed towards full-time and tenured position holders, which represented a far greater proportion than that in the academic workforce nationally.

▶ The three research priorities identified by respondents related to advancing knowledge, personal intellectual stimulation, and making a difference for practitioners.

▶ A wide range of research interests was revealed across the survey sample. The two research interests identified most frequently were higher education and teacher education.

▶ FoR Education research outputs reported by the survey sample were produced largely by academics appointed to teaching and research positions. Respondents reported very few research-only appointments.

THE TOPOGRAPHY OF EDUCATION KNOWLEDGE BUILDING

▶ Patterns of educational research are unevenly distributed across Australia's universities.

▶ The Southeast region increased its share of research outputs in ERA 2012 while also increasing its share of research only appointments between 2010 and 2012.

▶ Of the 13 universities that submitted ERA datasets, four belonged to the Go8. These 4 universities contributed more than half of the total percentage share of research outputs (54.0%) in 2010, increasing to 60.0% in 2012.

What do these data mean for Australian educational research into the future?

The results of ERA 2010 suggested that Australian education research was a 2.2 world. This assessment of educational research excellence was premised on a discipline-based category: a specific FoR code, which is defined in terms of the way knowledge is produced. As the ABS indicates, this classification prioritises methodology over the activity of the organisational unit doing the research or the purpose of the research (ABS, 2013).

Historically, educational research developed in the service of Education. Education researchers employed within Education AOUs organised their research in ways that supported schooling: they prioritised research purposes. However this study suggests that the institutional landscape of educational research has changed over past decades. The purposes of educational research have diversified to address educational activity in many different places: universities and colleges, workplaces and communities, in and beyond Australia. The composition of researchers has also shifted, with changing organisation of Education AOUs, which reduce the number of dedicated Faculties and Schools of Education, and shifting employment practices in and outside of Education AOUs.

ERA 2010 provides two kinds of information about educational research. First it clarifies the social category that the Commonwealth uses to define research excellence. It also provides a snapshot of Education AOUs within the wider institutional trajectory of Australian universities.

What does this mean for Australian educational research into the future?

Putting this information together redraws the boundaries around educational research as it was conventionally understood. This re-categorisation of educational research brings researchers who use similar methodologies together, while cutting across established boundaries between AOUs, and their purposes relative to particular research users. It reads FoR Education against the grain of established patterns of research outputs and researchers, which were organised through Education AOUs, with consequences for research priorities and resourcing.

Such information prompts educational researchers and their professional bodies to reflect on the parameters of FoR Education. It raises questions about the emerging field of research, the distinctiveness of its knowledge-building practices in the wider disciplinary division of research labour, and the implications of who is included and what kind of research they do for the research that is done on behalf of its historic research users.

The challenge is to consider what strategic research capacity building might look like as Australian educational research moves forward. Addressing this question calls for reflections on: methodology; how to accommodate the rich diversity of research interests that were supported through Education AOUs; and the effects of regional variations in resources, relationships and knowledges between Australia's higher education institutions. Answering it requires consideration of two options: to move forward as the FoR that, as in the past, serves Education as a particular institution; or to clarify and improve the way educational knowledge is produced, which should improve the ERA rating.

Terri Seddon	Monash	(Task Group 1 leader)
Dawn Bennett	Curtin	(Survey Team leader)
Erica Smith	Ballarat	(Survey Team)
Janette Bobis	Sydney	(ERA Data Team leader)
Sue Bennett	Wollongong	(ERA Data Team)
Neil Harrison	Macquarie	(ERA Data Team)
Sue Shore	Charles Darwin	(ERA Data Team)
Philip Chan	Monash	(Project Manager)

INTRODUCTION

The Excellence in Research for Australia (ERA) initiative is a research assessment instrument intended to assess the quality of research across all discipline fields and Australian higher education institutions. It uses a combination of indicators and expert review to assess research outputs based on the Australian Bureau of Statistics classification of Fields of Research (FoR). This form of research assessment has emerged in a number of countries, suggesting that it is a global trend although there are important differences in the models that countries implement.

The best-known research assessments are the British Research Assessment Exercise (RAE), which is now being replaced by the Research Excellence Framework (REF), and the New Zealand Performance Based Research Fund (PBRF). The REF is organised by the four funding councils in Britain, while the New Zealand Tertiary Education Commission administers the PBRF. Another model exists in the Netherlands where research quality assessment in the form of nation-wide discipline reviews began in the 1990s. Until 2003, the quality assessment was organised

through the peak university body, the Association of Universities in the Netherlands (VSNU). Since then, research assessment has been organised by universities themselves, using a protocol designed by the VSNU, the Netherlands Organisation for Scientific Research and the Royal Netherlands Academy of Arts and Science.

In Australia the ERA initiative is more like the RAE and PBRF than the university-centred Netherlands approach. Its units of assessment are based on all the research outputs submitted by institutions under specific FoR codes, such as 'FoR Education'. In ERA 2010 these outputs were assessed on a 5-point scale where 3 or above was designated 'at world standard' or 'above world standard', and a score below 3 was considered 'below world standard'.

According to ERA 2010 results, Australian research in the field of Education was assessed as being at the standard of 2.2. The results were based on research outputs from the reference period 2003-2008. It seemed that almost 1000 more researchers had outputs included in FoR Education than were identified with employment profiles in Faculties and Schools of Education. Similarly, some researchers employed in Education Academic Organisational Units (Education

AOUs) also submitted publications to discipline codes other than FoR Education.

Initial responses to these outcomes suggested it was increasingly difficult to define and locate Australian educational researchers. Adopting research assessment metrics based on the definition of FoR Education and its range of associated research outputs also seemed to be re-scoping educational research. These developments, whether intended or unintended, prompted educational researchers to reflect on who 'we' are post-ERA and what the implications might be for future research capacity building.

Early in 2011, the Australian Association for Research in Education (AARE) and the Australian Council of Deans of Education (ACDE) established a joint working party to create a strategic plan for strengthening national research capacity in the field of Education. The research that would underpin this plan was to be conducted from December 2011 and through 2012 by groups of educational researchers from around Australia.

The main aim of the work through 2012 was to prepare a draft report, with recommendations for action and investment, on a national strategy for Australian educational research (working title: Strategic Plan for Australian Educational research). The report was considered by AARE Executive at its meeting in early June 2012 and by the ACDE Board at a meeting in late September. The final report was submitted to both AARE and ACDE Executives in November 2012.

The data collection and analysis that informed the draft report was carried out by educational researchers who volunteered for one of five task groups, co-ordinated by a steering group. The five task groups are depicted in Figure 1. The current document reports the findings of Task Group 1.
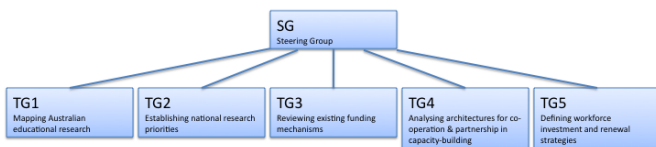
Figure 1: Structure of the AARE-ACDE Strategic Capacity Building for Australian educational research project

Task Group 1 was charged with mapping Australian educational researchers and their work. This work was required because ERA 2010 made it clear that, as a discipline grouping:

A)We have no reliable, up to date, comprehensive picture of who is involved in educational research, what their strengths are, or how they relate to one another;

B)More researchers submit publications to FoR Education than are identified with Faculties and Schools of Education. We have limited understanding of who these people are or what their research backgrounds are; and

C)Some researchers in Education Academic Organisational Units submit publications to discipline codes other than FoR Education. We do not know how extensive this disciplinary publication is, nor how it is directed.

The purpose of Task Group 1 was to map educational researchers in Australia. The aim was to establish an evidence base that would help us to better understand the ecology of Australian educational research as a step towards a research capacity building agenda. Task Group 1 approached this task by adopting an ecological perspective that viewed research as a purposeful form of labour whose object was producing knowledge.

The project's overarching question was: What is the topography of Australian educational research? Four sub-questions guided the work:

1. Where is Australian educational research conducted and by whom?

2. What problems are addressed and using what methodologies?

3. What relationships, resources and networks shape the social organisation of Australian educational research?

4. What does this mean for Australian educational research into the future?

CONTEXT & BACKGROUND

The Excellence in Research for Australia (ERA) initiative is a research assessment instrument intended to assess the quality of research across all discipline fields and Australian higher education institutions. It uses a combination of indicators and expert review to assess the quality of research outputs based on the Australian Bureau of Statistics (ABS) classification of Fields of Research (FoR). This classification of research prioritises methodology, rather than research purpose or the organisational unit doing the research (ABS, 2013). The assessment process is organised through Research Evaluation Committees (RECs). ERA 2010 had 7 RECs, with FoR Education located in the committee for Social, Behavioural and Economic

Sciences (SBE). In ERA 2012, the volume of work in the SBE REC prompted its division into two: Education and Human Society (EHS), and Economics and Commerce (EC) committees. The 2010 SBE Committee had 23 experienced, internationally recognised experts. The expert panel for EHS has a chair and 19 members (ARC, 2010).

Each university submission is organised through the Australian Bureau of Statistics notion of Fields of Research (FoR) with 4-digit and 6-digit levels of classification (ABS, 2012). FoR Education – Education has four 4-digit FoR codes:

1301 Education Systems
1302 Curriculum and Pedagogy
1303 Specialist Studies in Education
1399 Other Education

Research outputs that may relate to education but are centred by other disciplines are excluded from FoR Education and located in the relevant discipline FoR include:

a) Economics of education, included in Group 1402 Applied Economics;
b) Education policy, included in Group 1605 Policy and Administration;
c) Sociology of education, included in Group 1608 Sociology;
d) Educational psychology, included in Group 1701 Psychology;
e) Educational linguistics, included in Group 2004 Linguistics; and
f) History and philosophy of education, included in Group 2202 History and Philosophy of Specific Fields.

Assessments for each university submitting Units of Evaluation under FoR Education were recorded at both 2-digit and 4 digit codes. This assessment was against a 5-point world standard scale with a rating of 3 being 'at world standard'. The effect of this approach to research assessment created a field through discipline-based Units of Evaluation (UoE) and their research products, such as book chapters, journals, rather than a field of education based on AOUs and the educational researchers who worked within those units.

ERA 2010 RESULTS

The ERA 2010 national report (ARC, 2010) summarised the results as follows:

Education (13) accounted for approximately 5% of the national research outputs. The majority of these outputs were journal articles and conference papers. Research outputs increased 43% over the reference period. Education received approximately 1% of HERDC

Category 1 research income for the reference period. Thirty-nine (39) UoEs were assessed at the two-digit FoR code level, and 109 at the four-digit FoR code level. Thirty-nine per cent (39%) of assessed UoEs in Education received a rating at or above world standard. The largest FoR codes were Specialist Studies in Education (1303; 7,377 outputs) and Curriculum and Pedagogy (1302; 5,739 outputs)

Returning to the world standard metaphor these findings positioned Australian FoR Education as a 2.2 world, based on the average 2-digit evaluations. The distribution of Units of Evaluation at each rating is shown in Table 1.

Rating	1	2	3	4	5
Descriptor	Well below world standard	Below world standard	World standard	Above world standard	Well above world standard
Distribution	29	38	29	12	1

Table 1: Distribution of 4-digit units of evaluation against the 5-point rating scale (ARC, 2010)

Figure 2 shows the FoR Education contributions to the national research effort against key indicators.
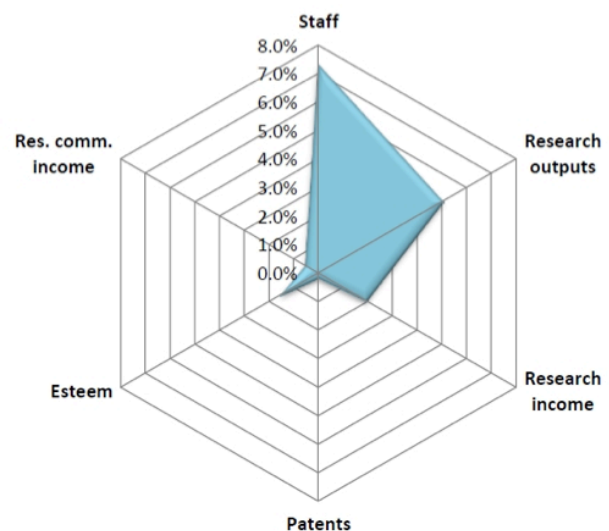
Figure 2: Contribution of FoR Education to the national research landscape (%) (ARC, 2010)

When treated as a snapshot, it seems that FoR Education has a lot of people but limited research outputs in terms of publications and research income. This raises questions about per capita research productivity and, more importantly, why this pattern of research production exists. Three issues seem significant.

First, it is significant that FoR Education produces 5% of Australia's research outputs from 1% of Australia's research funding. This disparity between outcomes and funding inputs may be partly explained by the absence of Education-specific competitive grant programs apart from the National Vocational Education and Training Research and Evaluation Program (NVETRE). By contrast every other significant field of research has its own grant schemes (DIISRTE, 2013)

Second, it is not surprising that there is a lack of patents and research commercialisation income. Educational research developed to service Education, an industry that since the 19th century was mostly organised through the public sector. Modest esteem results are partly explained by this public sector history and its ethos, and also by the nature of the tightly defined esteem indicators:

Editor of a prestigious work of reference, fellowship of a Learned Academy or membership of AIATSIS, recipient of a nationally competitive research fellowship, membership of a statutory committee and recipient of an Australia Council grant or Australia Council fellowship. (ARC, 2009, p. 17)

Finally, these ERA data offer little insight into who is producing FoR Education research outputs or their employment status. ERA 2010 indicated that universities portfolios submitted for FoR Education showed that the FoR Education workforce was comprised 2,886 full-time equivalent staff (FTE). A study of the workforce employed in EOUs commissioned by the Australian Council of Deans of Education (ACDE, 2009) reported 1,852 FTE, but without including academics on casual employment contracts. DIISRTE indicates that in 2011 there were 1987 (and in 2004 1852) 'FTE for full time and fractional full time staff' in the Education AOU, but 2950 'FTE for Full-time, Fractional Full-time and Actual Casual Staff' (2856 in 2010). While the number of FTEs are similar if casual staff are included, there is limited information on the proportion of FTEs employed:

▶ In Education AOUs and publishing in FoR Education

▶ In Education AOUs and publishing in FoR codes outside of FoR Education;

▶ In AOUs outside Education AOUs and publishing in FoR Education; and

▶ In AOUs outside Education AOUs and publishing in other FoR codes.

The distribution of casual staff across each of these four categories is also not clear, although DIISRTE

(2012) data suggest that there are higher levels of casualization in Education AOUs than in other AOUs except Architecture and Building. Edwards, Bexley & Richardson (2011) extracted casual employment figures from Department of Education, Employment and Workplace Relations (DEEWR) selected statistics and found that approximately 20% of Australian academics are employed on a casual basis. These figures also indicate that 30% of academic staff in the Creative Arts, Architecture and Education hold casual contracts – the highest level across all disciplines. In reality the figures are almost certainly higher, because DEEWR data exclude people employed as sub-contractors and report staffing in terms of full-time equivalence rather than by person count (Coates & Goedegebuure 2010).

These arrangements arising from the historic organisation of educational research suggests a need to better understand the ecology of FoR Education in order to clarify what kind of research capacity-building might be both possible and strategic in improving the rating of FoR Education in ERA.

UNDERSTANDING ERA

Task Group 1 approached ERA, the ERA results, and the questions that would shed light on these developments from a social and organisational perspective. This strategy was seen to provide a way of looking behind the abstracted ERA assessment results to see the people and places, actions and interactions, relationships and workplace conditions that shape research practice. Three observations framed this approach.

First, ERA is one of a family of research assessment technologies developed and implemented by national governments since the 1980s. The British Research Assessment Exercise (RAE) first occurred in 1986 and recurred roughly every five years. It was used to allocate funding on the basis of research quality from the national funding councils to higher education institutions (Bence & Oppenheim, 2005). In this respect, ERA, the British RAE and the New Zealand PBRF were 'travelling reforms': reforms that establish new ways of governing research, which were taken up and institutionalised in slightly different ways in different countries. These reforms travel around the world more easily than in the past because processes of policy borrowing and lending between national governments are mediated and accelerated by global policy agencies and networks (Steiner-Khamsi, 2012).

Second, research assessment is only one of a number of travelling reforms that impinge on the field of Education. Their effects intersect with the established national institutional trajectory of Education, and concurrently reconfigure different dimensions of Education policy and practice, including:

▶ Professional practice in school education: e.g. from process to product-focused, outcomes-based education; national curriculum specifications; reorganisation of teachers' work;

▶ Teacher education: for example, dispersion of professional education to schools and other workplaces, social webs (MOOCS), private agencies outside the universities;

▶ Educational research: research assessments (ERA), Impact assessments, funding shifts, explicit regulation round ethics, endorsement of disciplines and discipline-based researchers in education.

These policy discourses, backed up by accountability regimes organised through comparative data analysis, are shifting patterns of work and practices of governing Education (Nóvoa & Yariv-Marshal, 2003).

Third, travelling policies and practices intersect and disrupt familiar national institutional trajectories in ways that affect education professionals and their work in Education (Rizvi & Lingard, 2010; Ozga, Dahler-Larsen, Segerholm & Simola, 2011). These shifts in discursive, organisational and governing practices affect the way educators talk about education, narrate their experience, formulate problems and solutions, and prioritise their interventions in learning processes. All these shifts have the effect of reconfiguring educational knowledge.

These travelling policies are significant because they are shifting historic relationships that constitute the national policy-practice-research nexus. Since the 1980s, there have been gradual reductions in research capabilities in State Education Departments (Brennan, 2012). Tertiary education has been subject to major reforms, altering the composition of the workforce, and working conditions. These workforce and workplace reforms have effects on patterns of research, rates of publication and the range of journals that researchers' target. The growth of e-journals, e-books, and open access publishing also has effects. For example, researchers' engagement with the academic literature is increasingly organised through search engines, which identify sources on the basis of keywords rather than established disciplinary traditions.

The research dialogue about Education is also increasingly informed by the research of global policy agencies, such as the UN, World Bank, OECD, whose work also feeds into wider processes of global governance. Their transnational horizons shape an orientation to policy, research and governance that is often different to the orientation located by 20th century nation-building states, which sustained a predominantly national research base that was relayed through an institutionalised nexus between national policy, practice and research. For example, global ideas and instruments, such as the OECD Program for International Student Assessment (PISA), the Teaching and Learning Instructional Survey (TALIS), the Program for the International Assessment of Adult Competencies (PIAAC) and the Assessment of Higher Education Learning Outcomes (AHELO) generate data that informs research outcomes and which enters national jurisdictions. These outputs generate a distinct lexicon about education, its problems and solutions, and its preferred ways of building educational knowledge. The consequent research dialogue is tensioned between global and national perspectives and purposes; fuelling debate about what it means to 'know' Education and which agencies can claim authority (Ozga, Seddon & Popkewitz, 2006).

RESEARCH AS A FORM OF WORK

Looking behind the abstract assessments generated through the ERA technology reveals research as a particular form of labour: what Connell (1983) terms 'intellectual labour'.

This understanding of research as work is acknowledged in official definitions that describe research as a purposeful activity: a process of producing knowledge. For example, the Australian Bureau of Statistics draws on the OECD standard to define research as:

> … creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications (ABS, 2011).

While educational research is part of Australia's national innovation system, it occurs in particular kinds of 'workplace' that were designed to advance education in Australia. Through the 20th century, these workplaces received budget allocations to build their capabilities in producing knowledge that would support and enrich teacher training through programs such as Diploma of Education and the professionalization of work in the field of education. Some research also fed into policy processes and distinct fields of policy science. The disciplines of

psychology, philosophy, history and sociology were initially significant influences but there is now a wide range of additional disciplinary inputs (Bessant & Holbrook,1995).

This history formed educational research capabilities as a rich interdisciplinary field, with boundaries that shifted over time alongside other institutional processes. Its foundations as a system for producing educational knowledge was organised historically through University Faculties of Education, which were established from the early 20th century to concentrate and deepen educational knowledge as the professional field of education transitioned from an apprenticeship model to specialist Teachers' Colleges, run by State Departments of Education. In the 1960s, stand-alone teachers colleges were reformed as Colleges of Advanced Education. In the 1990s, CAE's were amalgamated with existing Faculties and Schools of Education or configured into new universities, such as the University of South Australia and Edith Cowan University. Since then standalone Education AOUs in universities have become more integrated, creating composite entities such as the Faculty of Education and Social Work (Sydney), or the University of Queensland Faculty of Behavioural and Social Science, where Education is one of 7 departments.

These institutional and cultural trajectories organise and order educational research in particular ways. They create an institutional and discursive architecture that influence both the knowledge produced and the researchers who produce it. In this way, educational research can be seen as:

> … a kind of industry. There is a labour process: what researchers do. There is a workforce: who researchers are. There is a distribution and consumption process: how the knowledge gets circulated, and how it gets used …. Knowledge is a social product not in a vague and metaphorical sense, but in hard and intrusive detail. What is known, by whom, about whom, with what effects – these are social, indeed, political questions (Connell, 1993: 109).

METHODOLOGY

Task Group 1 incorporated these insights about educational research into a research design that could investigate the social ecology of Australian educational research. This idea of a 'social ecology' provides a way of grasping how educational research is both located and formed by actors, relationships and processes of interaction and activity, which build educational knowledge in Australia. These processes of doing research also form educational researchers as social, organisational and epistemological communities (Bronfenbrenner, 1979; Freebody, 2003; Abbott, 2005; Fenwick, Edwards & Sawchuck, 2011).

Early ecological research tended to focus on single systems and presume that they had firm boundaries; more recently, the focus has shifted towards 'linked ecologies' (Abbott, 2005). This approach recognises that ecologies, like educational research, operate more like social webs that interface with numerous other ecologies. So ecologies are open: their boundaries are spatially fluid and change over time. It is these fuzzy boundary conditions that define, organise and culture the space and its contents. In relation to educational research, this broad 'theory frame' offers a framework for mapping the ecology that locates educational research and its relations with adjacent ecologies. Ecologies comprise 'actors who seek alliances, resources, and support across ecological boundaries' (Abbott, 2005, p. 247). These ecologies:

1. Are defined by their actors, locations and relationships (interactions that transfer knowledge, funding, people);

2. Have linkages with other ecologies, which have effects on the work and outcomes of educational research; and

3. Have distinctive institutional and relational architectures, which means that educational research is distributed and linked in particular ways across Australia and with other parts of the world.

The ecology of educational research was examined by comparing the ecology of FoR Education and the historic ecology of educational research anchored in Education AOUs. This methodology acknowledges that ERA 2010 marked a shift in the criteria that defined educational research. As a result, FoR Education formalised boundaries for educational research, which differed from the boundaries of the past. Specifically, the classification of FoR Education:

▶ Excluded discipline-based Education Studies (e.g. Educational Psychology; Sociology);

- Recognised the research output of those who were not necessarily located in Education AOUs; and

- Generated an assessment of 'research quality', which will be used as an indicator by the Commonwealth as a basis for allocating quality-based funding to support Australian research.

Two data collection strategies were used: (a) secondary analysis of ERA 2010 and 2012 data provided by participating universities; and (b) an online survey of 'education-related researchers': individual researchers who either worked in Education AOUs or had publications submitted to FoR Education in 2010 or 2012.

When identifying location, it was necessary to work from the names of AOUs as official university categorisations of AOUs were not available.

It was also necessary to distinguish between ERA data sets for 2010 and 2012 because the rules shifted. For example, universities were required to submit a 20 per cent data publication sample for peer review in 2010 and 30 per cent sample in 2012.

The classification of research outputs by location according to the AOU or other organisational unit, and the Field of Research (FoR) of the research output (FoR Education or other FoR) provided a 4-category analytical matrix (see Table 2).

		Location of Researcher	
		Education AOUs	Other AOUs or units
Field of Research	FoR 13 (Education)	Category 1	Category 3
	Other FoRs	Category 2	Category 4

Table 2: Categorisation of research outputs by location of researcher and field of research

The ERA data were analysed according to only the first three categories (the outputs were either in FoR Education or produced by researchers located in an Education AOU or both), while the fourth category of outputs (neither in the FoR Education nor by a research located in an Education AOU) was used in the analysis of survey data.

Ethics approval was obtained through Monash University (See Appendix A), which formalised anonymity, confidentiality and opportunities for participating Deans of Education to review a draft report. Monash University ethics committee also approved an additional protocol that provided further safeguards in relation to handling ERA data once it

became obvious that specialist computing facilities were required to analyse these large data sets. Sydney University research office made its computing facilities available for this work and identified a particular person to work on data cleaning and analysis in consultation with ERA data team leader, Janette Bobis. The TG1 ERA data team interpreted the analysed data using either hard copy or secure computing facilities.

The research design offered a strategy for mapping educational research across Australia, while protecting the identities of individual academics and minimising disruption to institutions. TG1 contacted all Deputy Vice Chancellors Research with an invitation to participate in the study by submitting their university's ERA data. The invitation to participate in the survey was emailed to individual researchers through Deans of Education, Associate Deans Research and also via diverse professional networks. These strategies meant that university decisions regarding the submission of ERA data did not align with survey participation. These arrangements accommodated the sensitivities of different universities, while still providing insights into the diversity of research practice across Australian universities.

ANALYSIS OF ERA DATA FOR 2010 AND 2012

Each Australian university was required by the Australian Government to submit data to Excellence of Research for Australia (ERA) in 2010 and 2012. These data provided a snapshot profile of Australian educational research, which was used to assess its excellence in relation to world standard.

In the UK, data from the Research Assessment Exercise were publicly available to researchers in all discipline fields and were used extensively to better understand research and to inform strategic research capacity building across the university sector. In Australia, however, ERA 2010 data were not made available for secondary analysis by the higher education sector. For this reason, Task Group 1 approached all universities to request their ERA data in order to build up basic information about the ecology of Australian educational research. This strategy began to address research questions 1 and 2 by documenting:

- Actors – researchers, level of appointment, type of appointment;

- Locations – University by FoR Education, Academic Organisational Unit; and

- Research Outputs – total outputs, percentage of total outputs, by publication category, for each year of the reference period.

The ERA 2010 reference period included outputs from 2003 to 2008 inclusive. Institutions were required to submit a 20 per cent representative sample of outputs from each category (e.g. 20% each of books, book chapters etc.) in each 4-digit FoR code. Please see Appendix B for a full list of FoR codes and their respective disciplines.

The ERA 2012 reference period included outputs from 2005 to 2010 inclusive. While there was an overlap of four years in each assessment period, the outputs that were submitted for ERA 2010 may not have been selected for submission/assessment in 2012. Institutions were required to submit a 30 per cent representative sample of outputs from each output category in each 4-digit FoR for ERA 2012. The shift from a 20 to a 30 per cent representative sample of outputs across the two ERA exercises is important to bear in mind when interpreting the data contained in this report. The variation in percentage means that it is not valid to compare the number of outputs (as a total or as sub-totals within categories) from one ERA data set to the other, without also considering the percentage share.

Forty-two Higher Education Institutions, comprising 39 universities and three other colleges/institutes, that had submitted data to ERA 2010 and/or 2012, were invited to participate in the study. Fifteen universities returned their ERA data. Data from two institutions could not be used due to incomplete data sets being submitted. The 13 useable data sets included representation from all but one of the designated university groupings (see Table 3).

Designated University Grouping	Number participating in study
Group of Eight	4 (out of a possible 7*)
Innovative Research Universities	3 (out of 7)
Regional Universities	1 (out of 5)
Australian Technology Network	0 (out of 5)
Other (non-grouped)	5

Table 3: Summary of universities that provided useable ERA data

* Note: There is no Education Academic Organisational Unit at the Australian National University (ANU)

ONLINE SURVEY OF 'EDUCATION-RELATED ACADEMICS

An online survey was developed, trialled and launched in late May 2012. The aim of the survey was to seek from individual researchers additional information that would begin to elaborate the research practices, relationships, resources and networks that shape the social organisation of Australian educational research. Themes included researchers':

- Intellectual biographies and careers;
- Research focus and methodological expertise; and
- Engagement with industry and international research networks.

The survey also elicited data about research relationships, interactions and flows, which it was hoped would provide some insight into educational research as a linked ecology: for example,

- Interfaces with other 'linked ecologies' that create flexible or fuzzy boundary zones;
- Flows of knowledge, funding and people that indicate open systems, with evidence of blocked flows flagging potential constraints on mobility of knowledge, resources and people;
- The character of boundaries and boundary conditions; and
- Effects and patterns of educational knowledge that are produced.

An invitation to participate in the survey was circulated to Deans of Education and via relevant professional research networks to 'education-related' academics in all Australian universities. The term 'education-related academics' was used in order to target the three categories of researchers whose research activities were relevant to 'educational research'.

The first tranche of survey data were downloaded in early August 2012 and form the basis of this report.

DATA ANALYSIS

Data analysis was organised through three key steps:

Step 1: Shifting locations of educational knowledge building

ERA data were used to create sub-samples in order to identify the knowledge-building location of three categories of research outputs produced by 'education-related researchers'.

Step 2: Patterns of educational knowledge building

Survey data was then used to elaborate the basic ERA-based demographic data for each of the three categories of research outputs associated with education-related researchers. These elaborations were organised around three questions:

Who are these educational researchers and how do they locate their educational knowledge building?

Where do these educational researchers work and what terms and conditions locate their educational knowledge building?

What do these educational researchers produce through their research activity and what is the form of the educational knowledge outputs?

Step 3: The topography of educational knowledge building

ERA data were used to map the topography of Australian educational research by showing the patterns of research outputs for the categories of educational researchers in relation to: a) University groupings; and b) Geographic regions, crudely grouped into: Northeast, West and Centre (Queensland, Western Australia, South Australia and Northern Territory); East (NSW and ACT); and Southeast (Victoria, Tasmania).

It is important to note that the unit of measure for the survey was the individual researcher. Many of the respondents located within Education AOUs were found to be submitting outputs in both 1300 FoR Education codes and in FoR codes outside of Education. As such there was an overlap between category 1 research outputs (where staff were employed within Education AOUs and submitting to FoR Education) and category 2 researchers (staff employed within Education AOUs and submitting outside of FoR Education). Accurate analysis entailed collapsing these categories on multiple occasions, as will be seen later in the report.

ORGANISATION OF THE REPORT

The report is organised into three main sections. First, we document the way education reforms are re-scoping educational knowledge building. Then we detail the empirical findings using ERA and survey data. Finally, we discuss the findings and implications of this research.

RESEARCH FINDINGS

ERA DATA ANALYSIS

The outcomes of ERA 2010 suggested that educational knowledge building occurred in many institutional locations outside of Education Academic Organisational Units (AOUs). Task Group 1 mapped these different locations by cross-tabulating ERA data for 2010 and 2012 on research outputs by AOU. This procedure utilised three or the four categories of research outputs (see Table 2), which identified 'education-related academics' who produced:

Category 1 research outputs: Educational researchers who work in Education AOUs and had publications submitted to FoR Education;

Category 2 research outputs: Educational researchers who work in Education AOUs and had publications submitted to other FoR codes; and

Category 3 research outputs: Educational Researchers who work in AOUs outside of Education and had publications submitted to FoR Education.

The categories thus defined were employed to answer key questions, bearing in mind that individual researchers may produce research outputs classified in different categories. As part of the ERA process, each output is attributed to a maximum of three FoR codes. So a researcher who works in an Education AOU may code their research outputs in multiple ways — some outputs may be coded solely using FoR Education codes (e.g., 1301, 1302, 1303 or 1399) while other outputs may be coded partly or entirely in one, two or three other fields of research. Hence, a researcher working in an Education AOU may code some outputs in FoR Education and produce Category 1 research outputs, but may also produce Category 2 research outputs that are submitted to additional FoRs. It also means that some researchers located in an Education AOU might only produce Category 2 research outputs despite being located in an Education AOU because none of their outputs were coded in FoR Education. For example, researchers publishing in FoR1701 – Educational Psychology or FoR1608 – Sociology of Education may fall into this category.

The implications of using these three categories, is that the data reported here paints a much more comprehensive landscape of the nature and origins of educational research and research conducted by Educational researchers than that provided by the

ARC's National Report of ERA 2010 (ARC, 2010). The TG1 report does not focus on ERA data already reported by ARC unless it is a necessary foundation for understanding additional information more deeply.

Who produces FoR Education research outputs?

Tables 4 and 5 show the distribution of outputs contributed to by staff employed in Education AOUs and other AOUs for ERA 2010 and ERA 2012, respectively. Table 4 illustrates the percentage share of the 7,831 outputs submitted to FoR Education in 2010 by the 13 Universities who participated in the ERA secondary analysis study component of this project. Of these, 4,293 (54.8%) research outputs came from staff employed within an Education AOU (Category 1); 3,158 (40.3%) came from staff employed in AOUs outside Education (Category 3); and the remaining 380 (4.9%) outputs came from researchers whose location could not be identified.

Tables 4 and 5 show the distribution of outputs contributed to by staff employed in Education AOUs and other AOUs for ERA 2010 and ERA 2012, respectively. Table 4 illustrates the percentage share of the 7,831 outputs submitted to FoR Education in 2010 by the 13 Universities who participated in the ERA secondary analysis study component of this project. Of these, 4,293 (54.8%) research outputs came from staff employed within an Education AOU (Category 1); 3,158 (40.3%) came from staff employed in AOUs outside Education (Category 3); and the remaining 380 (4.9%) outputs came from researchers whose location could not be identified.

	Total	%
Category 1: Research outputs produced by researchers within an Education AOU	4293	54.8
Category 3: Research outputs produced by researchers within an AOU outside of Education	3158	40.3
Outputs from researchers whose AOU was unidentifiable	380	4.9
	7831	100
Other (non-grouped)	5	

Table 4: ERA 2010 data - Distribution of outputs submitted to FoR Education

Table 5 illustrates the distribution of the 9,956 outputs submitted to FoR Education in 2012. Of these, 5,899 (59.3%) came from staff employed within a Education AOU; 3,727 (37.4%) came from staff employed in AOUs outside Education; and the remaining 330 (3.3%) outputs came from researchers whose origin could not be identified.

	Total	%
Category 1: Research outputs produced by researchers within an Education AOU.	5899	59.3
Category 3: Research outputs produced by researchers within an AOU outside of Education	3727	37.4
Outputs from researchers whose AOU was unidentifiable	330	3.3
	9956	100
Other (non-grouped)	5	

Table 5: ERA 2012 data - Distribution of outputs submitted to FoR Education

Taking account of both ERA 2010 and 2012 data, we see that over half the research outputs submitted to FoR Education – Education originated from researchers located within Education AOUs (Category 1) with the remaining 40-45% originating from researchers outside of Education AOUs (Category 3).

Percentages for each type of output submitted by researchers from Education AOUs and other AOUs were calculated. This allowed a closer examination as to the nature of FoR Education outputs (see Figures 3 and 4 for ERA 2010 and 2012 data respectively).

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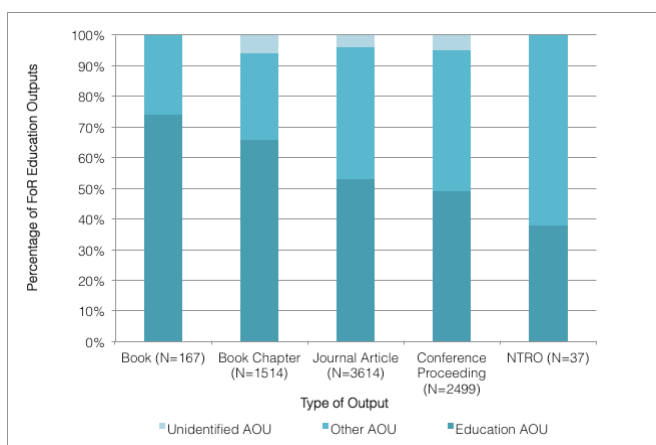
Figure 3: Percentage of each type of output in FoR Education ERA 2010 submitted by academics from Education AOUs and other AOUs
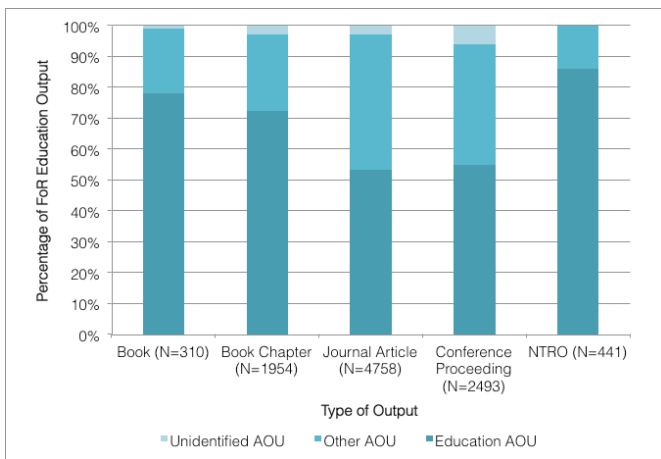
Figure 4: Percentage of each type of output in FoR Education ERA 2012 submitted by academics from Education AOUs and other AOUs

Figures 3 and 4 indicate that in both ERA exercises research outputs from AOUs other than Education (Category 3) contributed a significant proportion of each type of output in FoR Education, particularly conference papers, journal articles and, in the case of ERA 2010, the non-traditional research outputs (NTRO) (including creative works). Comparison of the two data sets indicates that the proportion of Category 3 research outputs submitted to FoR Education in ERA 2012 decreased by approximately 5.0% (e.g., conference papers) to 15.0% (e.g., book chapters) from ERA 2010 for all output types except for non-traditional research outputs, which dropped from approximately 63.0% to just 15.0% of outputs in ERA 2012. This drop in the proportion of non-traditional Category 3 outputs produced by researchers outside of Education AOUs was mainly a result of the increase in the number of non-traditional Category 1 research outputs submitted by researchers in Education AOUs (see Figures 3 and 4 for more details).

What do researchers from Education Academic Organisational Units publish?

Figures 5 and 6 show the percentage share of Category 1 and 2 outputs produced by researchers working in Education AOUs and submitted to ERA 2010 and 2012 respectively. The figures show that for ERA 2010, researchers working in EOUs submitted a total of 9,567 outputs for assessment across all twenty-two 2-digit FoR codes, and for ERA 2012 they submitted a total of 11,791 outputs. There was almost an 8.0% decrease in the number of conference papers submitted to ERA 2012 compared to 2010 submissions. However, journal outputs increased in the same period from 46.1% in 2010 to 49.7% in 2012. Notably, this increase in journal articles predominantly occurred in FoR Education coded journals.
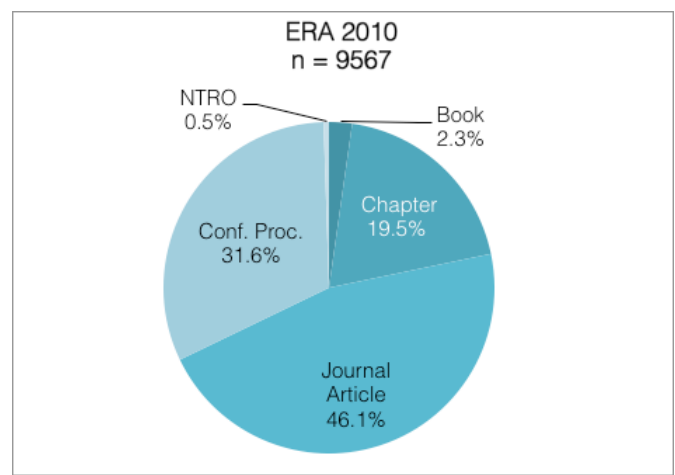
Figure 5: ERA 2010 research outputs submitted by researchers from Education AOUs to all FoRs
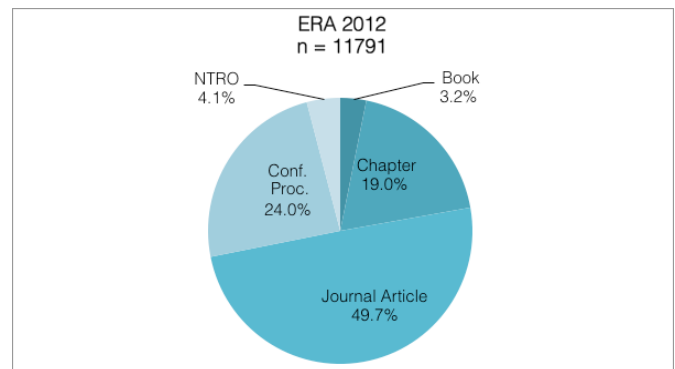
Figure 6: ERA 2012 research outputs submitted by academics from Education AOUs to all FoRs

Notable shifts in the percentage share of outputs for each of the publication categories from ERA 2010 to 2012 include:

▶ The percentage of books increased from 2.3% to 3.2% (up 0.9%);

▶ The percentage of book chapters slightly decreased 19.5% to 19.0%;

▶ The percentage of conference papers significantly decreased from 31.6% to 24.0% (down 7.6%);

▶ The percentage of non-traditional and creative works (NTRO) increased quite substantially from 2010 to 2012.

Where do researchers from Education Academic Organisational Units publish?

Figure 7 and Figure 8 show the proportion of Category 1 and 2 research outputs submitted to ERA 2010 and ERA 2012 respectively by academics from Education AOUs to all FoR codes. While researchers from Education AOUs submitted outputs in all twenty-two 2-digit FoR codes, the figures only show the percentage of outputs in which approximately a two per cent or greater contribution was made. The figures show that in 2010, 81.9% of the total outputs were in FoR

Education and in 2012 this increased to 84.4%. Conversely, this means that approximately 18.0% of outputs submitted by academics from EOUs in ERA 2010 and 16.0% in ERA 2012 contributed to fields of research outside of FoR Education.
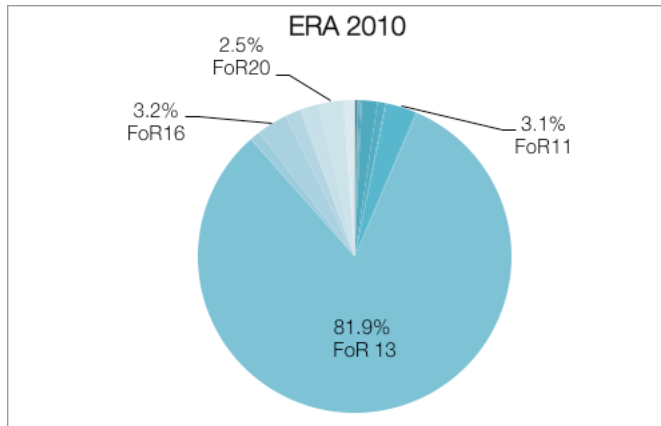
Figure 7: Percentage of research outputs for ERA 2010 by academics from Education AOUs according to all FoRs
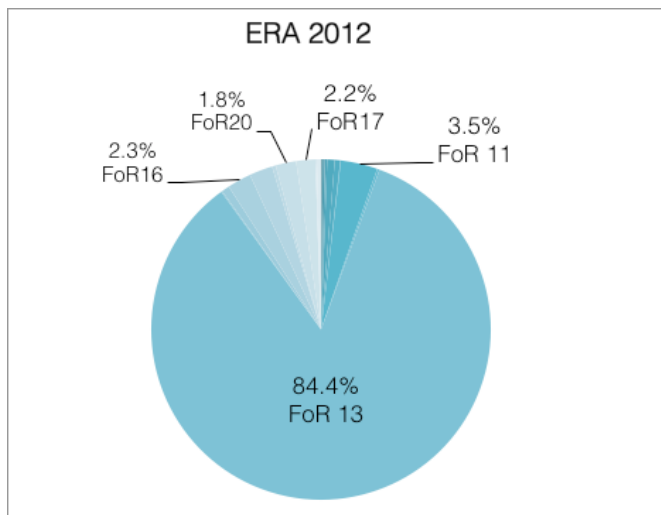
Figure 8: Percentage of research outputs for ERA 2012 by academics from Education AOUs according to all FoRs

Other than FoR Education, the FoRs most commonly used by academics from Education AOUs in 2010 and 2012 were FoR11 - Medical and Health Sciences, FoR16 - Studies in Human Society and FoR20 - Language, Communication Culture. While there was a slight decrease in research outputs in FoR16 and FoR20 from 2010 to 2012, contributions by academics employed in Education AOUs to FoR11 increased in the same period. The greatest increase in contributions from Education AOUs between ERA2010 to 2012 occurred in FoR17 - Psychology and Cognitive Sciences, moving from 1.6% to 2.2%.

Where do researchers who publish in FoR Education but do not work in Education AOUs come from?

ERA 2012 data were used to identify the AOUs of Category 3 research outputs: those produced by researchers who contributed to the FoR Education ERA submission but who were not located in an Education AOU. Of the 13 universities who contributed to the study, there was only one institution whose total outputs in FoR Education were produced solely by academics working in Education AOUs. In contrast, 70.0% of the FoR Education outputs at another institution came from academics who were located outside of an Education AOU. At the remaining 11 institutions, the percentage of Category 3 research outputs fell somewhere between these two extremes. The mean number of Category 3 outputs in FoR Education originating from academics across all the institutions in the data set was 38.7%.

The sources of Category 3 outputs in FoR Education were diverse. Outputs predominantly came from the health and medical related AOUs, accounting for 28.0% of the outputs in FoR Education in 2012. Notable contributions also originated from AOUs in the fields of arts, science and business in 12 of the 13 universities.

What is the appointment type and level of researchers who publish in FoR Education?

The ERA 2010 National Report (ARC, 2011) provided information relating to academic level. However, it did not provide important information concerning type of appointment. Figures 9 and 10 show the number of researchers submitting to FoR Education along with their academic level (Level A-E or 'other', including honorary appointments and those whose level information was missing) and type of appointment (e.g. research only, teaching and research).

Figure 9. Appointment level and type of ERA 2010 researchers contributing to the FoR Education submission

	A	B	C	D	E	Other
Teaching Only	3	3				
Research Only	33	39	14	9	3	15
Teaching & Research	70	417	383	151	92	9
Missing Appointment type	29	127	77	50	34	209

Figure 10: Appointment type and level of ERA 2012 researchers contributing to the FoR Education submission

	A	B	C	D	E	Other
Teaching Only	4	8		4		20
Research Only	49	58	22	12	21	23
Teaching & Research	73	529	429	224	136	11
Missing Appointmen Level	12	49	37	20	16	547

While the number of academics with teaching only appointments who contributed to the FoR Education submission was quite small in both assessment periods, there is a slight increase in the number for ERA 2012. This may be indicative of a changing trend in appointment types based on institutional economic circumstances and/or research and teaching foci. The increase in teaching only appointments, coupled with the larger number of Level B and C academics in teaching and research appointments, highlights the intimate relationship between teaching and research for FoR Education researchers. Also notable is the relatively small number of academics contributing to FoR Education with research-only appointments in both assessment periods. The fact that the majority of these are Level A and B academics indicates that they may be Post-doctorate appointments. While there is an increase in the overall number of research only appointments across all levels of academic appointments from 2010 to 2012, there are fewer experienced researchers (Levels D and E) with research-only appointments than early career researchers.

ANALYSIS OF SURVEY DATA

Demographic characteristics

A total of 504 survey responses were received from researchers at 38 of Australia's 39 universities. Of those, 333 or 66.1% of respondents were female and 32.7% or 165 were male, with 6 (1.2%) refusing to self identify in the gender binary. The majority of academics were between the ages of 46 and 65 (68.4%), with only 3.2% over the age of 66 and 6.5% below the age of 35. A total of 336 respondents (66.6%) were born in Australia. Of all cases, five (1.0%) academics indicated Aboriginal or Torres Strait Island ancestry. The distribution of survey respondents by university grouping is shown at Table 6.

Designated University Grouping	Percentage of survey respondents
Group of Eight (n=8)	22.0
Innovative Research Universities (n=7)	14.0
Regional Universities Network (n=6)	9.2
Australian Technology Network (n=5)	14.6
Other (non-grouped) (n=13)	40.2

Table 6: Distribution of survey respondents by university grouping (for groupings see AEN 2010)

The survey data also indicated where respondents undertook their post-secondary (tertiary) education and training and provides a picture of their academic qualifications – see Tables 8 and 9.

Further analysis will enable the team to establish, for example, the extent to which location of training aligns with location of research collaboration; basic migration patterns; and age/stage of doctoral study, as well as enabling comparison with other aspects of work and identity.

		Category 1		Category 2		Category 3	
		Count	Valid N %	Count	Valid N %	Count	Valid N %
Gender	**Male**	73	29.7	6	35.3	26	28.6
	Female	173	70.3	11	64.7	65	71.4
Age range	**26-35**	14	5.7	1	5.9	5	5.5
	36-45	47	19.3	9	52.9	16	17.6
	46-55	79	32.4	4	23.5	40	44.0
	56-65	95	38.9	3	17.6	26	28.6
	66-75	9	3.7	0	0	4	4.4
Academic level	**Associate lecturer**	7	2.8	1	5.9	2	2.2
	Lecturer	79	32.1	10	58.8	20	22.0
	Senior lecturer	62	25.2	1	5.9	23	25.3
	Assoc. Professor	41	16.7	0	0	20	22.0
	Professor	38	15.4	0	0	14	15.4
	Other	19	7.7	5	29.4	12	13.2
Year of highest qualification	**2008-2012**	54	22.2	6	35.3	27	31.4
	2003-2007	71	29.2	9	52.9	24	27.9
	1998-2002	48	19.8	2	11.8	10	11.6
	1993-1997	37	15.2	0	0	12	14.0
	1988-1992	17	7.0	0	0	7	8.1
	1983-1987	8	3.3	0	0	2	2.3
	1978-1982	4	1.6	0	0	3	3.5
	1973-1977	4	1.6	0	0	0	0
	1968-1972	0	0	0	0	1	1.2
Employment type	**Tenured**	189	77.5	10	58.8	58	63.7
	Fixed term contract	40	16.4	4	23.5	25	27.5
	Sessional (hourly)	6	2.5	0	0	3	3.3
	Adjunct/honorary	3	1.2	0	0	0	0
	Other	6	2.5	3	17.6	5	5.5

Table 7: Demographic data for the survey sample

Country	Frequency*	% of those with collaborations
Australia	438	88.1
Northern America	57	11.5
UK	54	10.9
New Zealand	23	4.6
Europe (other than the UK)	14	2.8
Asia	11	2.2
Africa	6	1.2
Latin America and the Caribbean	4	0.8
Middle East	3	0.6
Oceania other than Australia and New Zealand	2	0.4

Table 8: Country of training (survey sample)
***Multiple locations possible**

Qual	Education Discipline		Non-education discipline	
	Freq	%	Freq	% Occ
Bachelor	129	26.2	203	41.2
Graduate degree	157	31.8	31	6.3
Masters degree	198	40.2	82	16.6
PhD	255	51.7	113	22.9
Professional doctorate	33	6.7	0	0

Table 9: Higher education qualifications (survey sample, multiple response)

How do researchers identify with educational research?

Initial analysis of the survey data indicated that researchers located in an Education AOU and self-identifying as publishing in FoR Education commonly undertake research both within and outside of education. This meant that these researchers were often producing research outputs in both Categories 1 and 2.

As can be seen from Figure 11, 95.1% of the researchers employed in Education AOUs indicated they were undertaking some form of educational research, and 47.2% of this cohort indicated that educational research was their exclusive research interest. Other researchers in Education AOUs undertook a mix of education and non-educational research, with 71.3% undertaking more than 50% of their research in education. The pattern of research among the researchers employed in AOUs outside Education AOUs and publishing in FoR Education was similarly broad.
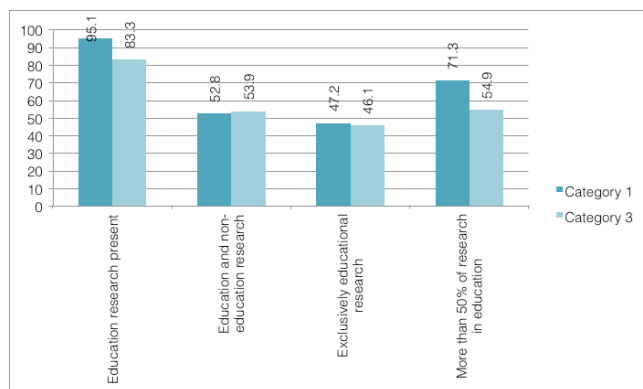
Figure 11: Research focus amongst researchers employed in and outside of Education AOUs

Analyses of data from ERA reports did not reveal the location of academics who published in FoR Education. To provide more detail, responses were next analysed across four distinct cohorts:

1. Respondents located in an Education AOUs;
2. Respondents located in an Academic Development Unit (ADU) that, for example, supports academic teaching and learning;
3. Respondents located in a non-teaching/ administrative organisational unit, including student/faculty support; and
4. Respondents located in an Other AOU that is none of the above: for example in a school of medicine or history.

Respondents located in an Education AOU numbered 345, and 328 of these researchers undertook educational research. Within this cohort, 163 researched exclusively in education. Research outside of education was claimed by 182 respondents, 99 of whom indicated that education represented less than 50% of their research. This cohort reported both category 1 and category 2 research outputs.

Thirty-four respondents were located in an ADU and just two of these respondents did not undertake educational research. Of the remaining 32 ADU, 26 indicated that education was their major research focus (>50% of their research), nineteen people focused exclusively on educational research, and 13 people undertook educational research in combination with research outside of education.

Eleven respondents worked in non-teaching/ administrative organisational units, including student/ faculty support. Ten of these respondents undertook educational research, three of them exclusively. Eight incorporated research outside of education and the same number indicated that education was their priority research area.

The 24 respondents located in other AOUs all undertook educational research, and 16 of them

included non-educational research. The same number indicated that education was their priority research area.

A number of questions probed issues that have a bearing on academics' research focus and identity. They included the question about the extent to which academics prioritised educational research.

Of the 345 respondents located in an education school, faculty or unit (n=345), 4.9% (n=17) did not identify any of their research as being in education. Educational research as the priority research area (>50% for 71.3% (n=246) of this cohort, and 47.2% (n=163) undertook only educational research.

Of the 102 respondents located in a school, faculty or unit outside of education, 16.7% (n=17) people did not identify any of their research as best described by a FoR13 code; however, 54.9% (n=56) identified more than 50% of their research as educational research. Of these respondents, 46.1% (n=47) identified 100% of their research as best described by a FoR13 code.

Thirty-four of the survey respondents were located in an academic development unit. Of these, 5.9% (n=2) did not undertake educational research and 23.5% (n=8) undertook more than 50% of their research in education. Of these, 55.9% (n=19) identified 100% of their research was best described by a FoR13 code.

There were also 11 respondents located in a non-teaching/administrative unit, including student/faculty support. Nine per cent did not identify any of their research as best described by a FoR13 code, whereas 72.2% (n=8) reported that more than 50% of their research was in education. Of these respondents, 27.3% (n=3) identified an exclusive focus on educational research.

A focus on education research (more than 50% of research activity) was reported by 71.3% of respondents located in Education AOUs, 76.5% of respondents in Academic Development Units, 72.7% of respondents located in non-teaching/administrative units, and 66.7% of respondents working in AOUs outside of Education.

Respondents were also asked whether educational research was their primary or secondary research focus, or whether it was of equal importance to another research area. In this case it was possible to utilise the three categories of researchers adopted for the ERA data analysis. Shown at Figure 12, the focus on educational research is not surprising given that this was a self-selected survey sample.

It is notable that Category 2 researchers (employed in an EOU but publishing in FoR codes other than FoR

Education) prioritised educational research as a primary interest less than Category 3 researchers (who did not work in an EOU but published in FoR Education).
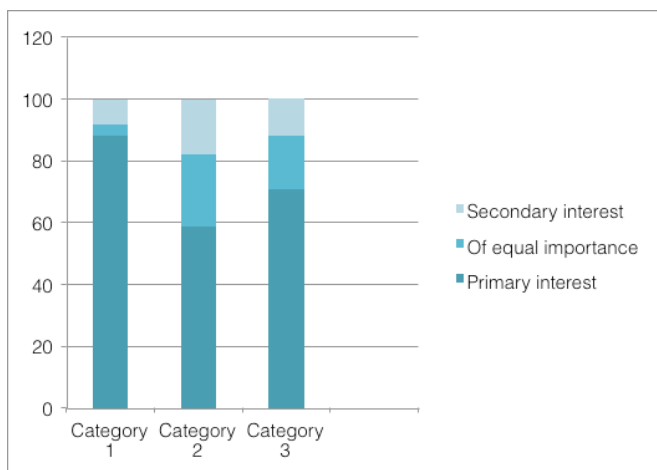
Figure 12: Interest in educational research among the 3 researcher categories

Main research interests

Question 1 of the survey asked respondents to 'please identify up to 5 research interests', with headings given as follows:

Q1.1a Main research interest:
Q1.1b Second research interest:
Q1.1c Third research interest:
Q1.1d Fourth research interest:
Q1.1e Fifth research interest:

A total of 504 responses were received. Only the main research interest have been analysed at the time of writing. Analysis utilised inductive coding to develop basic themes, which were subsequently checked and refined by a second member of the team. The main research interest themes are shown below. Further analysis will employ NVivo and will weight research themes, where possible enabling comparison with the ERA datasets. Analysis of research approaches will similarly be analysed over the coming months.

The majority (70.5%) of academics in the sample described themselves as either established educational researchers (n=161, 32.5%) or emerging educational researchers (n=188, 38.0%). It is likely that most of the emerging researchers were among the 37.0% (n=180) who were working at their first higher education institution when they responded to the survey. Almost half (n=235, 47.9%) of the sample was employed in a teaching and research position, with a further 21.0% (n=103) in a teaching and research position that included a part-time managerial role. Future analysis will begin to examine each of these characteristics in more detail and against a number of factors.

Other (any theme for which there were less than 4 responses)	55
Higher Education policy and pedagogy	42
Teacher education, practice, identity	35
School policy and pedagogy incl. ECE	27
ICT in education	26
Non-education science/health/psychology	21
'Higher Education' responses relating to specific disciplines	19
Maths	18
Science and technology	17
Education not specified	16
Non-education arts and humanities	16
Non-education business/law	16
Literacy and literacies	15
Educational psychology/psychology not specified	12
Disability/special education	12
Curriculum inquiry	10
Research students	9
Diversity (cultural and not specified)	9
Research processes	8
Assessment	8
Sociology	8
Aboriginal students	8
Disadvantage	8
Vocational Education and Training policy and pedagogy	7
Arts and music	7
Non-education politics/sociology	7
Education policy not specified	6
Workplace learning	6
Educational sociology (general)	6
Equity/social justice	6
English and literature	5
Environment	5
Rural Education	5
Cognitive/neuroscience	4
LOTE	4
Youth	4
Non-education other	4

Table 10: Main research interests of the survey sample

Methodological expertise

The survey asked respondents to rate their expertise in using a range of research methodologies or analytical packages, using a seven point Likert scale. Self-ratings were separated into Category 1 and Category 3 responses. These responses were then weighted for level of self-identified expertise where 1 = no expertise, 2 = low to average expertise, and 3 = above average to high expertise. The mean response was determined for each variable and is shown at Figure 13.

The initial analysis suggests very little difference in the approaches adopted by researchers in Education AOUs and 3 researchers in other AOUs. Both groups assess their expertise in using specific methodological software packages lower than more generic research approaches. The data suggest a somewhat stronger rating of expertise in qualitative research among researchers working in Education AOUs than

researchers who work in other AOUs. Further analysis, once another round of survey data has been amassed, will employ a 3x2 chi-square test for each item. The initial data are included at Appendix C.
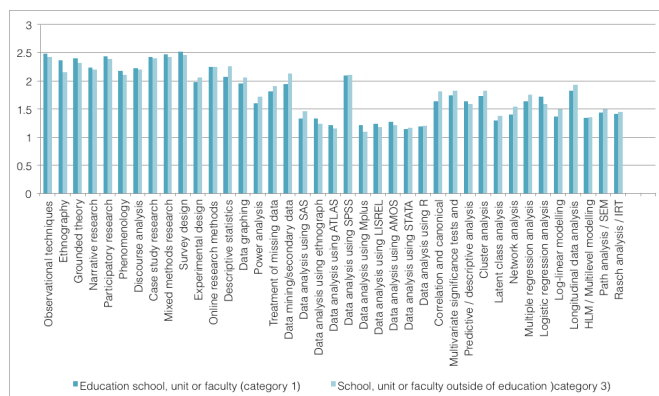
Figure 13: Expertise in using selected methodologies or analytical packages

Which FoR codes were used by Education-related researchers?

Survey data showed that education-related academics publish in a range of FoR codes. Unsurprisingly, FoR Education codes were used most frequently but significant publishing occurred through FoR 11 FoR11 - Medical and Health Sciences, FoR16 - Studies in Human Society and FoR20 - Language, Communication Culture. As reported, a total of 83.3% of the researchers employed in Education AOUs identified education as their main research interest, as did 48% of the researchers located outside of Education AOUs and 79.4% of those in an academic development unit.

The following figures (14-18) illustrate the range of FoR codes in which the sample published. The analysis begins with the total sample (n=504) and then disaggregating this population by organisational unit. The disaggregation revealed slightly different publication patterns. The FoRs listed at the start of this report are repeated below for ease of reading. Appendix B includes Fields of Research division codes and titles.

Four 4-digit FoR codes within Education:

> 1301 Education Systems
> 1302 Curriculum and Pedagogy
> 1303 Specialist Studies in Education
> 1399 Other Education

Research outputs that may relate to Education but are centred by other disciplines:

a) Economics of education, included in Group 1402 Applied Economics;

b) Education policy, included in Group 1605 Policy and Administration;

c) Sociology of education, included in Group 1608 Sociology;

d) Educational psychology, included in Group 1701 Psychology;

e) Educational linguistics, included in Group 2004 Linguistics; and

f) History and philosophy of education, included in Group 2202 History and Philosophy of Specific Fields.
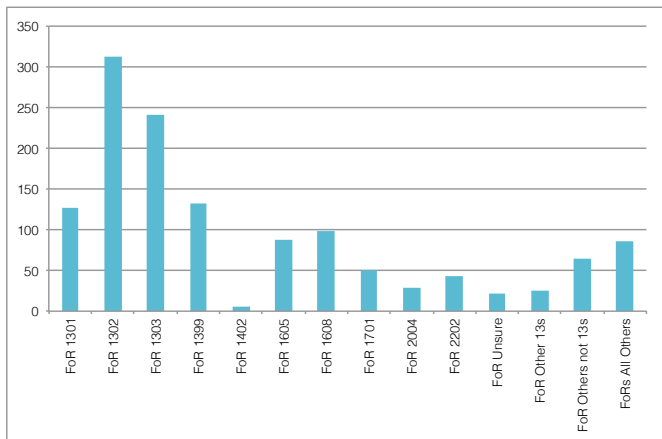
Figure 14: Number of academics (total sample) researching in a range of FoR codes

Shown at Figure 15, 5% (n=17) of the respondents located in an Education AOU (n=345), did not identify any of their research as best described by a FoR Education code; 47% (n=163) identified 100% of their research as best described by a FoR Education code; and 71% (n=246) identified at least 50% of their research as best described by a FoR Education code. A similar breakdown is shown at Figure 16 for respondents located outside of an Education AOU.
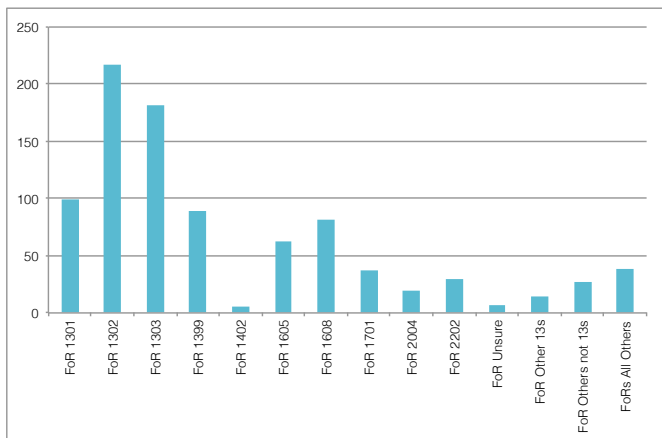
Figure 15: Academics in an Education AOU publishing in a range of FoR codes
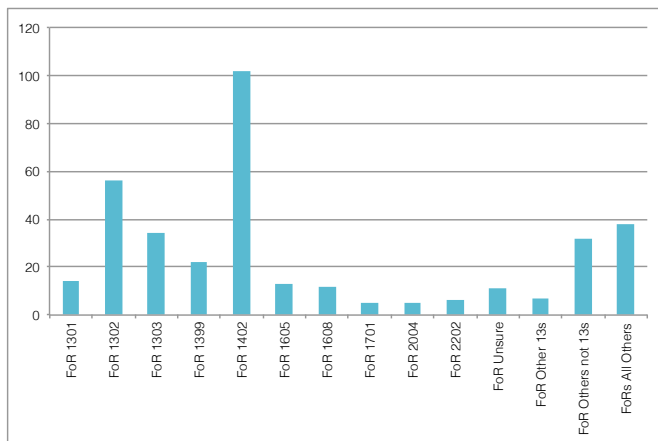
Figure 16: Number of academics in an AOU outside of Education AOUs publishing in a range of FOR codes

Shown at Figure 17, 6% (n=2) of the 34 researchers located in an Academic Development Unit did not identify any of their research as best described by a FoR Education code; 56% (n=19) identified 100% of their research as best described by a FoR Education code; and 23.5% (n=8) identified at least 50% of their research as best described by a FoR Education code. The same breakdown is included at Figure 18 for the respondents located in a non-teaching/administrative unit.
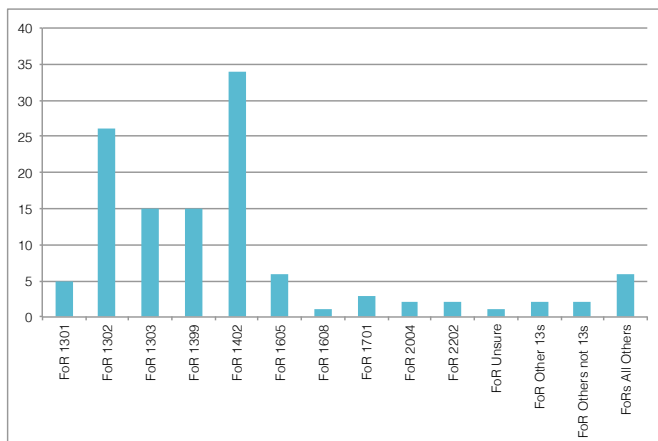
Figure 17: Number of academics in an Academic Development Unit publishing in a range of FOR codes.
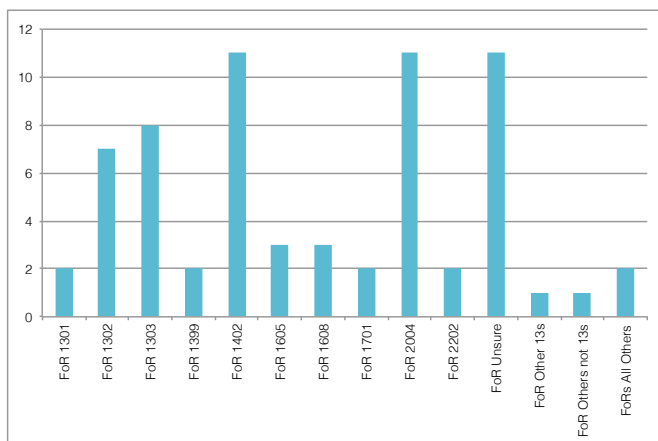
Figure 18: Number of academics in a non-teaching/ administrative unit, publishing in a range of FoR codes

Where do educational researchers work?

Of the 345 survey respondents employed in an Education Organisation Unit, 334 (97%) reported that all of their work was within an Education Organisational Unit. Researchers employed in another AOU numbered 147 (27.3%), including 34 in an Academic Development Unit and 11 in a non-teaching administrative unit including student/faculty support. Two per cent of the total sample was simultaneously employed in an Education AOU and in another AOU. A further 1% was also employed in a non-teaching/ administrative unit and 0.3% was also employed in an Academic Development Unit.

Table 11 shows that most survey respondents see their workplace as an environment that encourages research. Their own goals in doing research are indicated in Table 12.

		Freq.	%	Valid %	Cum. %
Valid	No	85	16.9	17.5	17.5
	Yes	400	79.4	82.5	100.0
	Total	485	96.2	100.0	
Missing	Unanswered Qn	19	3.8		
Total		504	100.0		

Table 11: Research active environment

Goals	N	Max.	Mean	Std. Dev.
To advance knowledge in my field	496	7	6.42	.924
For the intellectual stimulation	496	7	6.25	1.120
To make a difference to practitioners	495	7	5.87	1.418
To find out about a puzzling issue	490	7	5.78	1.263
To be part of the research culture in my discipline	495	7	5.59	1.636
To contribute to social change	496	7	5.55	1.590
To be part of the research culture in my institution	494	7	5.20	1.729
To meet the research expectations of my institution	493	7	5.17	1.793
To inform policy development and implementation	495	7	5.17	1.689
To enable my career progression and promotion	495	7	5.16	1.818
To improve the scholarship of higher education teaching	489	7	5.02	1.861

Table 12: Respondents' motivation for doing research (multiple choice)

Of the survey sample, 69% (n=342) have active national or international research collaborations as indicated at Table 12. Of the respondents with collaborations, most of these collaborations (indicated as greater than 50%) were concerned primarily with educational research. Most respondents (75%, n=372) were members of an educational research network or organisation.

Country	Frequency	% of sample with collaborations
Australia	275	80.2
UK	135	39.4
Northern America	129	37.6
Europe (other than the UK)	115	33.5
New Zealand	87	25.4
Asia	84	24.5
Africa	26	7.6
Latin America and the Caribbean	20	5.8
Oceania other than Australia and New Zealand	19	5.5
Middle East	10	2.9

Table 13: Location and frequency of research collaborations

Additional demographic data for the survey sample, shown in Table 6, show that Category 1 researchers had spent an average of 8.5 years at their main institution. Category 2 researchers had been at their institution for an average of 4.5 years. Category 3 researchers had been at their institution for an average of 7.7 years. The highest rate of tenured positions was amongst the Category 1 cohort (77.5%), who had also been at their institution for the longest time.

Once in an academic position, survey respondents reported fairly low mobility. Between 82 and 92% of each cohort worked at a single institution. The academics in the sample represented a range of academic levels, with the majority in either a lecturer (n=149, 29.6%) or senior lecturer (n=128, 25.4%) position. Almost half of the sample (45.4%, n=224) reported having gaps in their higher education work for family or other reasons. Roles outside of education were common: 10% (n=49) of the sample held paid roles (most commonly between 0-5 hours per week); 32% (n=158) held unpaid roles (most commonly between 0-5 hours per week); and 43.5% (n=216) reported carer responsibilities.

THE TOPOGRAPHY OF EDUCATIONAL KNOWLEDGE BUILDING

The ERA 2010 and 2012 datasets from the 13 universities that submitted data were used to investigate geographical patterns in research outputs. The FoR Education output submissions were examined for Category 1 and 3 academics in two ways. First, the data were grouped according to Australian University Groupings (see Appendix C for a full list of universities belonging to each grouping). Second, data were grouped according to geographical region: East (NSW and ACT: n=5); Southeast (Victoria and Tasmania: n=3); Northeast, West and Centre (Queensland, Western Australia, South Australia and Northern Territory, n=5).

THE TOPOGRAPHY OF RESEARCH OUTPUTS BY UNIVERSITY GROUPINGS

Figures 19 and 20 show the percentage share of FoR Education outputs submitted to ERA 2010 and 2012 respectively, according to Australian University Groupings. It will be recalled from Table 3 that of the 13 universities that submitted their ERA datasets, four belonged to the GO8 grouping, one to the Regional Universities Network, three to the Innovative Research Universities and five to the Other Universities groupings. No university belonging to the Australian Technology Network submitted their ERA datasets.
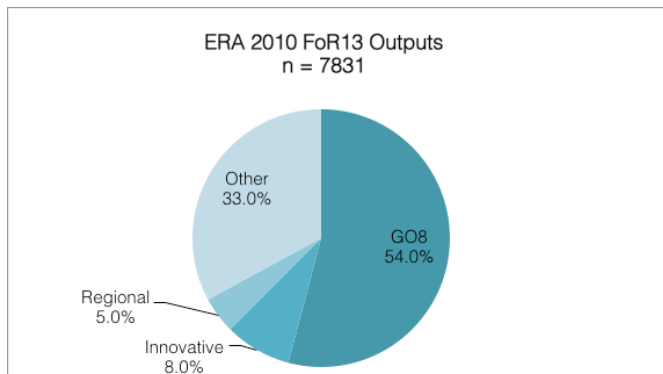
Figure 19: Percentage share of FoR Education outputs submitted by 13 universities to ERA 2010 according to Australian University Groupings
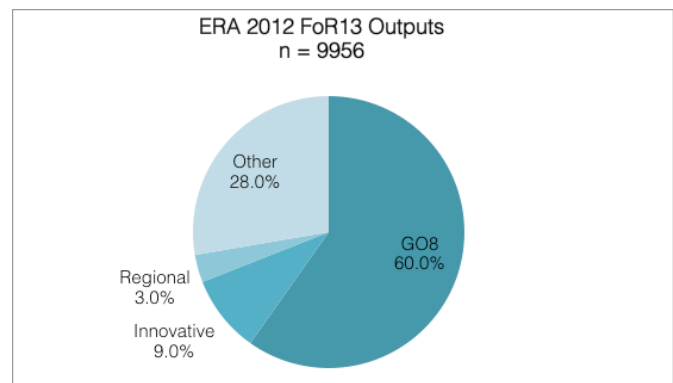
Figure 20: Percentage of FoR Education outputs submitted by 13 universities to ERA 2012 according to Australian University Groupings

A comparison of the 2010 and 2012 ERA data shows that FOR Education submissions by GO8 Universities contributed more than half of the total for each ERA exercise and that this proportion actually grew from 54.0% in 2010 to 60.0% in 2012. In the same period, the FoR Education submission by Regional and Innovative Universities was roughly stable but the proportion submitted from Other Universities decreased from 33.0% to 28.0%.

THE TOPOGRAPHY OF RESEARCH OUTPUTS BY REGION

Figures 21 and 22 show the percentage share of outputs by Category 1 and 3 academics for ERA 2010 and 2012 respectively, according to the geographical region of the university.
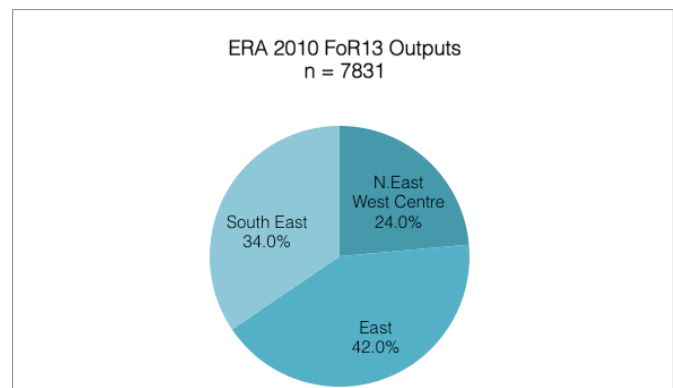
Figure 21: Percentage share of FOR Education outputs submitted by 13 universities to ERA 2010 according to geographical region
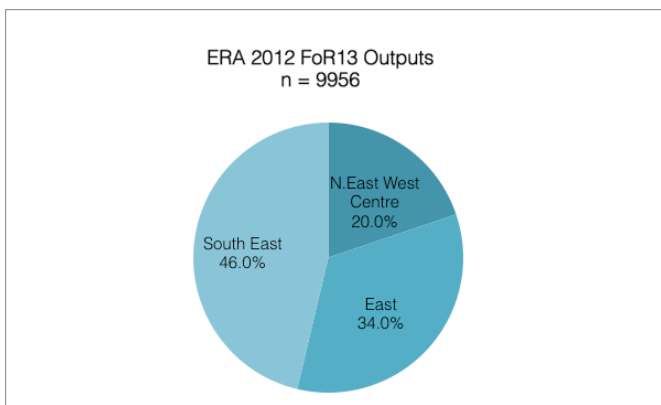
Figure 22: Percentage share of FoR Education outputs submitted by 13 universities to ERA 2012 according to geographical region

Figure 24: Appointment type for ERA 2012 researchers contributing to the FoR Education output submission in 13 universities

Of the 13 universities whose ERA submission data were used in the study, three were located in the Southeast, five in the East and five were located in the Northeast, West and Centre regions of Australia. The figures show that the proportion of outputs submitted from the Eastern Universities decreased in 2012 and increased by approximately the same amount from universities located in the Southeast.

The shift in percentages of outputs from one region to another may be attributed to the increase in the number of research only academic appointments in the Southeast universities. Figure 23 shows the number of ERA 2010 academics contributing to FoR Education according to their type of appointment for each of the three geographical regions. Figure 24 shows the same information for ERA 2012 academics. A comparison of the two figures illustrates how the number of teaching and research appointments remained fairly stable in universities located in the East and Southeast of Australia, but that there was a large increase in the number of teaching and research appointments in universities located in the Northeast, West and Centre regions of Australia. At the same time, the increase in the number of research only academics noted in Figures 23 and 24, is shown to be predominantly occurring in universities located in the Southeast region.

Figure 23: Appointment type for ERA 2010 researchers contributing to the FoR Education submission in 13 universities

DISCUSSION

The results from ERA 2010 represented FoR Education as a 2.2 world: the average rating across Units of Evaluation used in the 2010 ERA exercise. Across Australia, 39 per cent of units of evaluation were rated at or above world standard. At the 4-digit code level, this represented 42 units of evaluation, while 67 units of evaluation were rated below world standard. Yet the result of this research project shows that when educational research is represented with this aggregated rating, it masks considerable complexities.

SHIFTING LOCATIONS OF EDUCATIONAL KNOWLEDGE BUILDING

The study suggests that emerging patterns of FoR Education research are not always consistent with established understandings of educational research. However such memories must be treated with caution because they are always located. The historical memories of educational researchers employed in Education academic units, and associated with schoolteacher education and organisations, such as the Australian Association for Research in Education may well be different to those of educational researchers associated with other educational research organisations. For example, Higher Education Research and Development Society of Australasia (HERDSA), was established in the 1980s. It focused on higher education and embraced many academics employed outside of Education AOUs.

Institutional changes also influence what and how the past is remembered. For example, the transition from Teachers' Colleges to CAEs to universities was accompanied by shifts in the disciplinary configuration embraced by successive organisations. Equally, as institutional opportunities changed, employees moved, for example, between AOUs and from Education AOUs

to AOUs based on other disciplines. Funding arrangements had effects too. For instance, an emphasis on academic publishing was encouraged through the Education-specific national competitive grant program, the ERDC. This legacy continues to shape publishing priorities and formats across different sub-divisions of educational research.

Yet ERA is reframing those differently anchored relationships, social categories, and understandings of educational research. The findings reported here suggest that historical memories of educational research are no longer consistent with, or a good guide to, the emerging landscape of FoR Education.

ERA is driving institutional changes that affect priorities and resourcing of educational research, and make the notion of an organisational unit fluid. Research assessments have practical effects on the character of organisational units where research, coded FoR Education, is undertaken. While the location of educational research continues to be a 'workplace', the ERA exercise redefines the location of educational research in terms of the unit of assessment at the university scale. It is based on statistical principles aimed at optimising the university's ERA submission and, therefore, embraces academic units outside of Education AOUs within the fold of FoR Education.

FoR Education provides a public representation of the research outputs submitted under the discipline code called 'Education' but what counts as 'Education' varies. In the process of collecting data it became apparent that the process of coding research outputs occured in different ways at different universities. Some universities allowed their AOUs considerable discretion in coding and texting the ERA submissions. Elsewhere, it was the university's central research office or officers that allocated outputs to discipline codes and constructed the supporting statement about the FoR Education submission.

These patterns of change do not invalidate FoR Education but make it imperative that historic understandings of educational research are unpacked and contextualised rather than equated with FoR Education. There are three reasons for this caution.

First, there are significant differences between the ecology of FoR Education and the historic ecology of 'educational research'. This means the logics used to aggregate outputs that define FoR Education are different to the logics that previously concentrated, coordinated and ordered research productivity in historic fields of Australian educational research. For example, the coding of some FoR research outputs for ERA is rooted in institutionally anchored

understandings of education that developed alongside the formation of Education AOUs: faculties and schools of education that have a strong focus on teacher education and commitments to build knowledge, which supports teacher professionalisation. Other FoR Education outputs are coded according to interpretations of 'education' that are framed by different institutional ecologies and knowledge practices. The different significance of FoR Education '1302 – Curriculum and Pedagogy' between Education AOUs, other AOUs, Academic Development Units and non-teaching/administrative units is one indication that institutionalised interpretive frames have practical effects.

Second, the research suggests that it is important to be cautious about historical memories of educational research because Education AOUs are also changing. While their history is rooted in teacher education and teacher professionalisation, much of which was governed through State Education Authorities, increasingly Education AOUs are not standalone educational units but are part of larger academic units. Interdisciplinary work is growing under these conditions, within these larger units and also between Education AOUs and other AOUs that organise and anchor different knowledge traditions and research practices. Lifelong learning reforms are also extending the reach of educational research with growing interfaces between educational research and learning in professions, communities and workplaces beyond early years, primary, secondary and tertiary schooling. These changes are also affected by the internationalisation of higher education, recruitment pressures and the increased global mobility of doctoral students and staff. It means that Education AOUs and the educational researchers that inhabit them are diversifying and, to varying degrees, taking up lines of research that are not premised on teacher education and professionalisation. These situational factors have implications for educational knowledge building. For example, methodological frames are shifting , from a national to a more cosmopolitan frame that sees Australia as one educational locale within a globally networked lifelong learning order (Beck & Sznaider, 2006). These wider cultural horizons are already being translated into university curricula and professional education but are likely to become more significant as the sector responds to the Commonwealth's White Paper on Australia in the Asian Century (DPMC, 2012).

Finally, despite the historic emphasis of Education AOUs on teacher education and professionalisation, the researchers employed in these units also submit research outputs to discipline codes other than FoR

Education. This publication pattern is a longstanding feature of the historic ecology of educational research. It ensures that the field of educational research remains connected to developments in foundational disciplines and it enables relationships that bridge between Education AOUs and other AOUs, and knowledge exchanges between FoR Education and disciplines outside Education. This division in research orientation between researchers employed in Education AOUs has been traditionally identified as a distinction between 'educational researchers' and 'education studies researchers'. The former contribute to knowledge about education systems, curriculum and pedagogy, specialist issues, and other education, whereas education studies researchers approach the world of education as an interdisciplinary field of study, contributing to knowledge about education and also to the knowledge traditions of particular disciplines. The current study shows that, in practice, many researchers employed in Education AOUs engage in both 'education' and 'education studies' research. It also suggests that a category distinction between discipline-focused 'educational researcher' and interdisciplinary 'education studies researcher' remains useful in relation to FoR Education.

PATTERNS OF EDUCATIONAL KNOWLEDGE BUILDING

FoR Education research outputs are produced largely by academics appointed to 'teaching and research' positions. It is not surprising that there are very few 'teaching only' academics with research outputs submitted to ERA, although there is some evidence that this pattern is changing. It is more striking that FoR Education has very few 'research-only' appointments. These are skewed towards levels A and B in both ERA 2010 and ERA 2012. However, as Figures 25 and 26 show, there was growth in 'research only' level E appointments between ERA 2010 and ERA 2012. This growth was greater in the South East of Australia (Victoria and Tasmania) than in the rest of the country. The respondents who answered questions about educational research have a demographic profile that is roughly two-thirds women and one-third men. They are mostly over 45 years old, with only 6.5 per cent under 35. Two-thirds of the sample was born in Australia, with 1.0 per cent being Indigenous Australians.

ERA data suggest that there is a meaningful distinction between research outputs coded FoR Education and those coded in other discipline codes. However the survey shows that less than 50 per cent of educational researchers from Education AOUs with publications coded FoR Education (i.e. Category 1 research outputs) reported that educational research was their exclusive research focus. This means that researchers employed in EOUs focus on education and other issues beyond education in their research and this is reflected in the way they direct their research outputs to FoR Education and other FoRs. This pattern is also evident amongst researchers who work in AOUs outside of Education AOUs. Breaking these data down further shows that academics working in Academic Development Units are most likely to report an exclusive focus on educational research. A small percentage of academics working in Education AOUs reported no focus on educational research. Researchers employed in an Education AOU but publishing in FoR codes other than FoR Education (i.e. Category 2 research outputs) prioritised educational research as a primary interest less than those researchers who did not work in an Education AOU but published in FoR Education. (i.e. Category 3 research outputs).

There is a wide range of research interests across the survey sample. Higher education and teacher education were identified as the top two interests, by some margin. The list of interests shows that educational research does not just address school education, which tended to be the priority in the historic school-focused ecology of educational research in Education AOUs. Educational research also encompasses issues related to universities, workplaces, vocational education, business and law, and Indigenous Australia. However, the pattern of expertise in using specific methodologies is similar across respondents.

Despite this diversity of research interests, the coding of publications suggests that work in FoR Education is centred particularly in FoR Education 1302 – Curriculum and Pedagogy. This emphasis on FoR Education 1302 publications was evident across all four types of organisational unit. However, it was most marked in Academic Development Units and in AOUs outside Education AOUs. It suggests that academics and managers outside of Education AOUs are interpreting the term 'Education' as 'teaching': the specific activities that relate to the teaching-learning relationship with learners. By contrast, in both Education AOUs and in non-teaching/administrative organisational units, the idea of 'Education' is contextualised in ways that give more attention to education systems and also specialist issues.

In 2010 there was significant use of FoR Education 1399 – Other Education in all four types of organisational unit. It was least used in non-teaching/

administrative units, which are probably focused mostly on higher education and unlikely to be coded 'Other Education'. However, according to the ERA 2012 report only two universities submitted to FoR 1399 and met the threshold for assessment purposes. This suggests that most universities are re-assigning outputs out of 1399. There is a need for a qualitative investigation as to why the disparity exists.

Preliminary analysis of data relating to workplace terms and conditions suggest that research is actively encouraged, but mobility and international collaborations are more limited. The two top goals identified by academics as motivating their research related to advancing knowledge and personal intellectual stimulation. Making a difference for practitioners came in as a third motivating goal. In a similar vein, fewest respondents identified speaking as a public intellectual. These data suggest that FoR Education researchers focus on their work in the field of education somewhat more than engaging with wider communities.

The sample showed modest mobility across the respondents. Between 82 and 90 of each cohort in the different organisational units had worked at a single university. International and national collaborations were reported by 69 per cent of respondents, of which 80 per cent were involved in national collaborations, with international collaborations skewed towards the UK (39.0%) and US (38.0%). Collaborations were more common with European researchers (33.5%) than with New Zealand (25.0%) and Asia (24.5%). The high levels of national collaborations are an important feature of FoR Education research given the size and dispersion of universities across Australia. However, given international endorsement of researcher mobility, and the policy and governance approach associated with Australia in the Asian Century (DPMC, 2012), modest international mobility is a matter of some concern.

THE TOPOGRAPHY OF EDUCATIONAL KNOWLEDGE BUILDING

The geographic patterns of educational research raise interesting questions about capacity building for future educational research. We attempted to represent the topography of educational knowledge building in Australia using ERA 2010 and 2012 data sets in two ways, although both warrant further research. First, we used established university groupings (e.g. G08, ATN) to identify research output patterns but this mapping was compromised by the absence of data sets from

the universities comprising the Australian Technology Network and considerable variation in the data sets from other groupings.

The second mapping strategy focused on geographic location and revealed some provocative shifts in the patterns of research outputs and inputs. We identified the distribution of research outputs across Australia, cutting the country roughly into thirds: East (NSW and ACT); Southeast (Victoria and Tasmania) and North East, North, West, and Centre (Queensland, Western Australia, South Australia and Northern Territory). These data showed a shift in percentage share of outputs generated through each geographic region in ERA 2010 and ERA 2012. These patterns suggest that there are differences in the ecologies of educational knowledge building across the three regions. Further analysis showed that the Southeastern region, which increased its share of research outputs in ERA 2012, had also increased its share of research only appointments between the two ERA periods. This is just one factor and is unlikely to account for the regional patterns that are evident. However, it is an indication that ecological features that organise and order educational research are unevenly distributed and shifting across Australia's universities. Understanding how they differ and with what effects, is important for research capacity building in a dispersed geography like Australia.

CONCLUSION

The original impulse for this research followed the publication of ERA 2010 results, which offered few insights into who was undertaking the educational research that was assessed. It meant that it was difficult to clarify how research outputs submitted to FoR Education and to other FoR codes were related to organisational units, which employed, resourced, mentored and developed researchers. Strategic capacity building to address the ERA ratings for FoR Education was difficult when there was no up-to-date picture of who was involved in educational research, what their strengths were, or how they related to one another.

This project has begun the process of documenting who 'we' are as educational researchers. It reveals two different narratives about educational research: one that is anchored in Education AOUs, and the other that concerns research outputs relating to FoR Education as a discipline field, which reaches across a wide range of organisational units. It also shows that we are just scraping the surface in terms of understanding the ecology and geography that sustains Australia's

national capability in building educational knowledge. There is enormous scope to do further data analysis by mining the resources collected through this project. However, serious investigations that will help us understand the dispersed, uneven and changing geography of educational research across Australia require further studies, including case study work to investigate the intersecting factors that drive educational research as a linked ecology.

Earlier reviews and citation studies indicated that Australia punched above its weight in terms of educational research, but those studies pre-dated ERA and the use of FoR Education to frame judgments about research quality. The challenge is now to consider what strategic research capacity building might look like in the Australian educational research ecology when it builds on the rich diversity of research associated with the discipline of Education that has come into view through this small-scale study, and also takes the tyranny of distance and uneven distribution seriously.

ERA provides an opportunity to grow the strengths of existing FoR Education research practice and also to explore the power of Education discipline knowledge across fields that include, but also move beyond, the traditional foci of research in Education AOUs. To this end, we suggest that:

1. It will be useful to further investigate the ecology of educational research as an input to the design of strategic research capacity building for Australian educational research;

2. Such investigations are best framed in terms of FoR Education in order to work with the discipline-based classification that has been institutionalised through ERA; and

3. The methodological focus of the FoR codes warrants careful consideration of the methodological dimensions of FoR Education, including:

   ▶ What and how methodologies are used in FoR Education;

   ▶ How they are justified and operationalised in different AOUs; and

   ▶ What these educational epistemologies reveal that is distinct from other disciplines, which defines the specific features of Education as a discipline field.

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APPENDIX A

ETHICS APPROVAL FROM MONASH UNIVERSITY

MONASH University

Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

Date: 8 March 2012

Project Number: CF12/0564 – 2012000217

Project Title: Mapping Australian Educational Research: The AARE-ACDE research capacity building project, Task Group 1

Chief Investigator: Prof Terri Seddon

Approved: From: 8 March 2012   To: 8 March 2017

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research.**
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

Professor Ben Canny
Chair, MUHREC

cc: Prof Erica Smith, Assoc Prof Paul Richardson, Prof Dawn Bennett, Dr Neil Harrison, Assoc Prof Sue Bennett, Assoc Prof Janette Bobis, Assoc Prof Sue Shore

Postal – Monash University, Vic 3800, Australia
Building 3E, Room 111, Clayton Campus, Wellington Road, Clayton
Telephone +61 3 9905 5490 Facsimile +61 3 9905 3831
Email muhrec@monash.edu www.monash.edu/research/ethics/human/index/html
ABN 12 377 614 012 CRICOS Provider #00008C

APPENDIX B

FIELDS OF RESEARCH (FoR) DIVISION CODES AND TITLES

01 Mathematical Sciences
02 Physical Sciences
03 Chemical Sciences
04 Earth Sciences
05 Environmental Sciences
06 Biological Sciences
07 Agricultural and Veterinary Sciences
08 Information and Computing Sciences
09 Engineering
10 Technology
11 Medical and Health Sciences
12 Built Environment and Design
13 Education
14 Economics
15 Commerce, Management, Tourism and Services
16 Studies in Human Society
17 Psychology and Cognitive Sciences
18 Law and Legal Studies
19 Studies in Creative Arts and Writing
20 Language, Communication and Culture
21 History and Archaeology
22 Philosophy and Religious Studies

APPENDIX C

AUSTRALIAN UNIVERSITY GROUPINGS

Group of Eight (GO8)

The University of Adelaide

The Australian National University

The University of Melbourne

Monash University

The University of New South Wales

The University of Queensland

The University of Sydney

The University of Western Australia

Australian Technology Network (ATN)

Curtin University of Technology

University of South Australia

RMIT University

University of Technology Sydney

Queensland University of Technology

Innovation Research Universities (IRU)

Flinders University

Griffith University

La Trobe University

Murdoch University

University of Newcastle

James Cook University

Charles Darwin University

Regional Universities Network

Central Queensland University

Southern Cross University

University of Ballarat

University of New England

University of Southern Queensland

University of the Sunshine Coast

Other

Australian Catholic University

Bond University

Charles Sturt University

Deakin University

Edith Cowan University

Macquarie University

Swinburne University

University of Canberra

University of Notre Dame

University of Tasmania

University of Western Sydney

University of Wollongong

Victoria University

APPENDIX D

EXPERTISE IN USING DIFFERENT RESEARCH METHODOLOGIES/ANALYTICAL PACKAGES

		Not in an Education school, faculty or unit (n=147)				Education school, faculty or unit (n=345)			
		Count	Sub-table N %	Weighted scores	Mean	Count	Sub-table N %	Weighted scores	Mean
Observation Techniques	**Not at all**	25	18.2%	25	2.43	35	11.1%	35	2.48
	Low to average expertise	28	20.4%	56		96	30.5%	192	
	Above average to high expertise	84	61.3%	252		184	58.4%	552	
	TOTAL	**137**		**333**		**315**		**779**	
Ethnography	**Not at all**	49	34.5%	49	2.16	68	20.9%	68	2.37
	Low to average expertise	22	15.5%	44		71	21.8%	142	
	Above average to high expertise	71	50.0%	213		187	57.4%	561	
	TOTAL	**142**		**306**		**326**		**771**	
Grounded Theory	**Not at all**	36	25.4%	36	2.32	76	23.0%	76	2.4
	Low to average expertise	25	17.6%	50		45	13.6%	90	
	Above average to high expertise	81	57.0%	243		209	63.3%	627	
	TOTAL	**142**		**329**		**330**		**793**	
Narrative Research	**Not at all**	48	34.0%	48	2.2	90	27.6%	90	2.24
	Low to average expertise	17	12.1%	34		67	20.6%	134	
	Above average to high expertise	76	53.9%	228		169	51.8%	507	
	TOTAL	**141**		**310**		**326**		**731**	
Participatory Research	**Not at all**	27	19.0%	27	2.39	59	17.8%	59	2.44
	Low to average expertise	32	22.5%	64		69	20.8%	138	
	Above average to high expertise	83	58.5%	249		204	61.4%	612	
	TOTAL	**142**		**340**		**332**		**809**	
Phenomenology	**Not at all**	57	41.0%	57	2.11	113	35.2%	113	2.18
	Low to average expertise	10	7.2%	20		38	11.8%	76	
	Above average to high expertise	72	51.8%	216		170	53.0%	510	
	TOTAL	**139**		**293**		**321**		**699**	
Discourse Analysis	**Not at all**	46	32.2%	46	2.2	89	27.2%	89	2.22
	Low to average expertise	22	15.4%	44		76	23.2%	152	
	Above average to high expertise	75	52.4%	225		162	49.5%	486	
	TOTAL	**143**		**315**		**327**		**727**	

		Not in an Education school, faculty or unit (n=147)				Education school, faculty or unit (n=345)			
		Count	Sub-table N %	Weighted scores	Mean	Count	Sub-table N %	Weighted scores	Mean
Case Study Research	**Not at all**	15	10.3%	15	2.4	18	5.3%	18	2.42
	Low to average expertise	57	39.0%	114		162	47.5%	324	
	Above average to high expertise	74	50.7%	222		161	47.2%	483	
	TOTAL	**146**		**351**		**341**		**825**	
Mixed Methods Research	**Not at all**	17	11.9%	17	2.43	35	10.4%	35	2.47
	Low to average expertise	48	33.6%	96		107	31.9%	214	
	Above average to high expertise	78	54.5%	234		193	57.6%	579	
	TOTAL	**143**		**347**		**335**		**828**	
Survey Design	**Not at all**	12	8.3%	12	2.46	38	11.6%	38	2.52
	Low to average expertise	55	37.9%	110		81	24.7%	162	
	Above average to high expertise	78	53.8%	234		209	63.7%	627	
	TOTAL	**145**		**356**		**328**		**827**	
Experimental Design	**Not at all**	54	37.8%	54	2.06	144	44.4%	144	1.98
	Low to average expertise	27	18.9%	54		38	11.7%	72	
	Above average to high expertise	62	43.4%	186		142	43.8%	426	
	TOTAL	**143**		**294**		**324**		**642**	
Online Research Methods	**Not at all**	44	31.0%	44	2.25	107	32.9%	107	2.25
	Low to average expertise	18	12.7%	36		31	9.5%	62	
	Above average to high expertise	80	56.3%	240		187	57.5%	561	
	TOTAL	**142**		**320**		**325**		**730**	
Descriptive Statistics	**Not at all**	34	23.8%	34	2.26	113	34.5%	113	2.07
	Low to average expertise	38	26.6%	76		80	24.4%	160	
	Above average to high expertise	71	49.7%	213		135	41.2%	405	
	TOTAL	**143**		**323**		**328**		**678**	
Data Graphing	**Not at all**	50	35.2%	50	2.06	139	42.9%	139	1.96
	Low to average expertise	33	23.2%	66		58	17.9%	116	
	Above average to high expertise	59	41.5%	177		127	39.2%	381	
	TOTAL	**142**		**293**		**324**		**636**	
Power Analysis	**Not at all**	82	58.6%	82	1.72	215	67.0%	215	1.60
	Low to average expertise	15	10.7%	30		21	6.5%	42	
	Above average to high expertise	43	30.7%	129		85	26.5%	255	
	TOTAL	**140**		**241**		**321**		**512**	

		Not in an Education school, faculty or unit (n=147)				Education school, faculty or unit (n=345)			
		Count	Sub-table N %	Weighted scores	Mean	Count	Sub-table N %	Weighted scores	Mean
Treatment of Missing Data	**Not at all**	68	47.9%	68	1.91	181	56.2%	181	1.81
	Low to average expertise	19	13.4%	38		21	6.5%	42	
	Above average to high expertise	55	38.7%	165		120	37.3%	360	
	TOTAL	**142**		**271**		**322**		**583**	
Data Mining / Secondary Data Analysis	**Not at all**	52	36.1%	52	2.13	157	48.0%	157	1.94
	Low to average expertise	22	15.3%	44		31	9.5%	62	
	Above average to high expertise	70	48.6%	240		139	42.5%	417	
	TOTAL	**144**		**306**		**327**		**636**	
Data Analysis Using SAS	**Not at all**	106	75.2%	106	1.46	267	82.9%	267	1.33
	Low to average expertise	5	3.5%	10		4	1.2%	8	
	Above average to high expertise	30	21.3%	90		51	15.8%	153	
	TOTAL	**141**		**206**		**322**		**428**	
Data Analysis Using Ethnograph	**Not at all**	118	86.8%	118	1.24	266	82.6%	266	1.33
	Low to average expertise	3	2.2%	6		5	1.6%	10	
	Above average to high expertise	15	11.0%	45		51	15.8%	153	
	TOTAL	**136**		**169**		**322**		**429**	
Data Analysis Using ATLAS	**Not at all**	127	90.7%	127	1.16	290	89.5%	290	1.21
	Low to average expertise	2	1.4%	2		1	.3%	2	
	Above average to high expertise	11	7.9%	33		33	10.2%	99	
	TOTAL	**140**		**132**		**324**		**391**	
Data Analysis Using SPSS	**Not at all**	49	34.0%	49	2.11	119	36.6%	119	2.1
	Low to average expertise	30	20.8%	60		56	17.2%	112	
	Above average to high expertise	65	45.1%	195		150	46.2%	450	
	TOTAL	**144**		**304**		**325**		**681**	
Data Analysis Using MPlus	**Not at all**	132	95.0%	132	1.10	286	88.8%	286	1.21
	Low to average expertise	0	.0%	0		3	.9%	6	
	Above average to high expertise	7	5.0%	21		33	10.2%	99	
	TOTAL	**139**		**153**		**322**		**391**	
Data Analysis Using LISREL	**Not at all**	125	90.6%	125	1.18	283	87.9%	283	1.24
	Low to average expertise	1	.7%	2		2	.6%	4	
	Above average to high expertise	12	8.7%	36		37	11.5%	111	
	TOTAL	**138**		**163**		**322**		**398**	

		Not in an Education school, faculty or unit (n=147)				Education school, faculty or unit (n=345)			
		Count	Sub-table N %	Weighted scores	Mean	Count	Sub-table N %	Weighted scores	Mean
Data Analysis Using AMOS	**Not at all**	121	87.1%	121	1.22	271	85.8%	271	1.27
	Low to average expertise	6	4.3%	12		6	1.9%	12	
	Above average to high expertise	12	8.6%	36		39	12.3%	117	
	TOTAL	**139**		**169**		**316**		**400**	
Data Analysis Using STATA	**Not at all**	124	89.9%	124	1.17	293	92.4%	293	1.15
	Low to average expertise	4	2.9%	8		1	.3%	2	
	Above average to high expertise	10	7.2%	30		23	7.3%	69	
	TOTAL	**138**		**162**		**317**		**364**	
Data Analysis Using R	**Not at all**	123	89.1%	123	1.2	290	90.3%	290	1.19
	Low to average expertise	3	2.2%	6		1	.3%	2	
	Above average to high expertise	12	8.7%	36		30	9.3%	90	
	TOTAL	**138**		**165**		**321**		**382**	
Correlation and Canonical correlation Analysis	**Not at all**	73	52.5%	73	1.81	208	64.4%	208	1.64
	Low to average expertise	19	13.7%	38		24	7.4%	48	
	Above average to high expertise	47	33.8%	141		91	28.2%	273	
	TOTAL	**139**		**252**		**323**		**529**	
Mulitvariate Significance tests and MANOVA	**Not at all**	71	50.4%	71	1.83	193	59.2%	193	1.74
	Low to average expertise	23	16.3%	46		26	8.0%	52	
	Above average to high expertise	47	33.3%	141		107	32.8%	321	
	TOTAL	**141**		**258**		**326**		**566**	
Predictive / Descriptive Discriminant Analysis	**Not at all**	87	62.1%	87	1.64	219	68.0%	219	1.59
	Low to average expertise	17	12.1%	34		16	5.0%	32	
	Above average to high expertise	36	25.7%	108		87	27.0%	261	
	TOTAL	**140**		**229**		**322**		**512**	
Cluster Analysis	**Not at all**	74	53.2%	74	1.83	200	61.2%	200	1.73
	Low to average expertise	15	10.8%	30		15	4.6%	30	
	Above average to high expertise Total	50	36.0%	150		112	34.3%	336	
	TOTAL	**139**		**254**		**327**		**566**	
Latnet Class Analysis	**Not at all**	108	78.3%	108	1.38	272	85.0%	272	1.3
	Low to average expertise	7	5.1%	14		1	.3%	2	
	Above average to high expertise Total	23	16.7%	69		47	14.7%	141	
	TOTAL	**138**		**191**		**320**		**415**	

		Not in an Education school, faculty or unit (n=147)				Education school, faculty or unit (n=345)			
		Count	Sub-table N %	Weighted scores	Mean	Count	Sub-table N %	Weighted scores	Mean
Network Analysis	**Not at all**	99	71.2%	99	1.54	257	79.6%	257	1.4
	Low to average expertise	5	3.6%	10		3	.9%	6	
	Above average to high expertise	35	25.2%	105		63	19.5%	189	
	TOTAL	**139**		**214**		**323**		**452**	
Multiple Regression Analysis	**Not at all**	76	54.3%	76	1.75	204	63.8%	204	1.64
	Low to average expertise	23	16.4%	46		27	8.4%	54	
	Above average to high expertise	41	29.3%	123		89	27.8%	267	
	TOTAL	**140**		**245**		**320**		**525**	
Logistic Regression Analysis	**Not at all**	90	64.3%	90	1.59	250	77.2%	250	1.72
	Low to average expertise	18	12.9%	36		15	4.6%	30	
	Above average to high expertise	32	22.9%	96		59	18.2%	277	
	TOTAL	**140**		**222**		**324**		**557**	
Log-linear Modelling	**Not at all**	101	71.6%	101	1.5	258	80.9%	258	1.37
	Low to average expertise	9	6.4%	18		3	.9%	6	
	Above average to high expertise	31	22.0%	93		58	18.2%	174	
	TOTAL	**141**		**212**		**319**		**438**	
Longitudinal Data Analysis	**Not at all**	69	48.6%	69	1.93	174	53.9%	174	1.83
	Low to average expertise	14	9.9%	28		29	9.0%	58	
	Above average to high expertise	59	41.5%	177		120	37.2%	360	
	TOTAL	**142**		**374**		**323**		**592**	
HLM / Multilevel Modelling	**Not at all**	114	80.9%	114	1.35	261	81.8%	261	1.34
	Low to average expertise	4	2.8%	8		7	2.2%	14	
	Above average to high expertise	23	16.3%	69		51	16.0%	153	
	TOTAL	**141**		**191**		**319**		**438**	
Path Analysis / SEM	**Not at all**	102	72.3%	102	1.5	245	75.9%	245	1.44
	Low to average expertise	8	5.7%	16		13	4.0%	26	
	Above average to high expertise	31	22.0%	93		65	20.1%	195	
	TOTAL	**141**		**211**		**323**		**466**	
Rasch Analysis / IRT	**Not at all**	109	77.3%	109	1.45	254	78.2%	254	1.41
	Low to average expertise	0	.0%	0		9	2.8%	18	
	Above average to high expertise Total	32	22.7%	96		62	19.1%	186	
	TOTAL	**141**		**205**		**325**		**258**	

		Not in an Education school, faculty or unit (n=147)				Education school, faculty or unit (n=345)			
		Count	Sub-table N %	Weighted scores	Mean	Count	Sub-table N %	Weighted scores	Mean
Other	Not at all	18	51.4%			46	56.8%		
	Low to average expertise	14	40.0%			23	28.4%		
	Above average to high expertise	3	8.6%			12	14.8%		

A joint report of the Australian Association for Research in Education and the Australian Council of Deans of Education