

Developing future research leaders: designing early career researcher programmes to enhance track record

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Introduction

The core business of universities is teaching and research, and reputations are based on the quality of these activities. There has been an increasing focus on assessment of research quality and linking government funding allocations to research quality and output. Examples include: Excellence in Research for Australia³⁵, the Research Excellence Framework in the UK³⁶, the Performance Based Research Fund Quality Evaluation in New Zealand³⁷, and the Research Assessment Exercise in Hong Kong³⁸, with other regions soon to follow, including the United States, Europe, and Africa.

Universities are focusing efforts on building research capacity and capability; investment in building that capacity is essential for them to remain competitive and to access the government funding that is linked to research quality and output. There are two main ways to invest: recruit researchers who can already deliver high quality outputs; and develop individuals who have the potential to deliver high quality outputs. However, developing researchers does not mean teaching them how to do research – it means teaching them how to build a track record which can lead to a research career.

One of the main challenges for younger universities is to develop the research capability of individuals in an emerging research culture. In particular, early career researchers in young universities may need more than just technical skills learned through research training to develop their track records and shape their careers. These are the skills that doctoral research should provide. Rather, ECRs benefit from working in environments that allow them to interact with other successful researchers.

Young universities with an emerging research culture face additional challenges to those universities which are historically privileged. The older and larger universities remain the first choice for many staff and students, and the challenge for young universities is to attract, promote, and retain the best and brightest. To be competitive, young universities need to build their research capacity and early career researchers need to build their research capability.

Our research has found the developmental trajectory for a successful academic research career usually begins with research training, presenting at conferences, and publishing as part of a programme of postgraduate study. This leads to productivity in the early years post doctorate and the beginning of a research track record which attracts funding and graduate students, leading to more publications, a stronger track record, and more funding. Based on these findings, we developed a programme designed to enhance track record. This paper describes the implementation and early outcomes from a pilot development programme for a cohort of early career researchers in one of Australia's younger universities, Central Queensland University.

During the eight-month programme, the cohort attended ten days of workshops, developed a focused career plan and were mentored by a senior researcher. This programme is a short-term investment and the full benefits and outcomes will not be immediately realised. However, there are already indications that it was successful. During the programme the cohort submitted 73 manuscripts for publication,

and by the end of the year more than half had been accepted. This is more than double the average number of publications reported per academic staff member at the same university the previous year.

Building research capacity is essential for universities to remain competitive in the current environment, whilst investing in developing the research capability of individuals is vital to the future of young universities with an emerging research culture. A programme of this type can assist early career researchers to build their track record and contribute to enhancing reputation and increasing research outputs and funding for younger universities. This paper describes how we are putting our research into practice to build institutional research capacity at Central Queensland University (Australia) by developing our early career researchers; at the same time it demonstrates the value of researcher professional development on research outputs and careers.

Researching researchers

Conducting research on researchers is a relatively new field of study, having developed over the past few decades, with most of the research and publications coming from a small number of countries that include the United Kingdom, the United States, Canada, South Africa, and Australia.

Writing for publication is one of the most fundamental activities of building an academic career, and as early as the last century literary productivity was found to be dependent on being organised and developing good work habits (Downey 1918). Surveys have since identified that academics who do write, have no more free time and no fewer commitments than their colleagues who do not write. It can be argued that much of what is written is inconsequential. Erkut, for example, found that 'some published papers produce no measurable impact on the discipline, while others have a profound effect on the direction of future research' (2002, p.98). Nonetheless, it is accepted that academic staff who do not write, are unlikely to develop fully as scholars, teachers and researchers (Orne 1981; Weaver 1982), and that PhD postgraduate researchers and academics will in fact be 'unable to succeed in their jobs unless they are productive writers' (Gardiner and Kearns 2012, p.237).

Most of the studies undertaken on researchers have aimed to identify factors most likely to influence research performance (for examples see Wood 1990, Linke 1995, Bazeley 1996, and Williamson and Cable 2003). A study specifically on research leadership in higher education found 'the reality of research productivity is that a small proportion of staff produce most of the work' (Ramsden 1998, p.53). It also identified that 'highly active researchers produce on average more than five times as many publications as the least active group' (Ramsden 1998, p.54). In Australia, ten per cent of the research staff were found to produce more than fifty per cent of the output (Ramsden 1998, p.53).

³⁵ <http://www.arc.gov.au/era/>

³⁶ <http://www.ref.ac.uk/>

³⁷ <http://www.tec.govt.nz/Funding/Fund-finder/Performance-Based-Research-Fund-PBRF/>

³⁸ <http://www.ugc.edu.hk/eng/ugc/rae/rae2014.htm>

Being a member of a highly active research group was found to be the best predictor of individual output, and active research departments with a strong culture of research quality and support for staff to develop research careers, produce more publications for their size ([Ramsden 1998, p.54](#)). This is supported by another study which found paper and citation credits are highly skewed, with a few 'stars' producing most of the impact ([Erkut 2002, p.115](#)).

Although most of the research output is produced by a small percentage of academic staff in universities (Ramsden and Erkut), there has been little research that looks at strategies for individuals to increase their research output, and it has been suggested that 'the study of exceptional or highly productive researchers may yield strategies that help researchers move beyond an average productivity level' ([Ito and Brotheridge 2007, p.17](#)).

To gain a better understanding of how leading researchers become research leaders in the higher education context, and how universities can design strategies to attract, retain, develop and promote researchers and research leaders, we carried out a study of research leaders in Australia ([Browning, Thompson et al. 2011](#)). Our study involved thirty senior research leaders from organisations which receive government funding. These leaders had achieved professor status and led research teams, and their disciplines were diverse. As expected, they had research doctorates and had secured grants, published and supervised postgraduate students. Some had held senior management roles with responsibility for the research portfolio in public universities, some were leading government funded Cooperative Research Centres (CRCs), and some were leading research institutes and groups ([Browning, Thompson et al. 2011](#)).

The data collected on these research leaders came from three sources: a one-hour face-to-face semi-structured interview; information on their research outputs; and their CVs. These research leaders have significant track records. One has published twenty books and another has published more than 250 journal articles. Many have supervised at least twenty postgraduate researchers to completion, with one having supervised eighty. Although they were not asked to provide details on how much funding they have been awarded so far, some volunteered this information, and the amounts mentioned varied from around three million to more than thirty million Australian dollars. Many of these research leaders have excelled in their careers, and some of the awards received include the Nobel Prize, Commander of the British Empire, the Order of Merit of France and the Order of Australia. Some have patents, some have published in Nature, and some have done both. They are exceptional and highly productive researchers, which is consistent with the literature cited above.

Our research has identified seven factors that contributed to the success of these research leaders:

1. having a research doctorate
2. being mentored
3. attending conferences
4. supervising postgraduate students
5. being part of an active research group
6. receiving assistance to develop grant applications
7. receiving support for staff to develop their research careers.

These success factors are consistent with the findings of earlier studies ([Wood 1990](#), [Linke 1995](#), [Bazeley 1996](#), [Williamson and Cable 2003](#)). We found that research leaders are highly likely to come from active and supportive research cultures with mentoring support.

They supervise and publish with their research students, participate in collaborative research, and have good international connections and networks. They are passionate about their research and highly motivated. From our data it is reasonable to conclude that leading researchers and research leaders are highly likely to come from the small proportion of researchers identified by [Cole](#), [Ramsden](#), and [Erkut](#) as producing most of the work.

For researchers to develop their careers and succeed, the early years post doctorate are critical. Our study found that on average those who have become research leaders gained their first grant around two years after doctorate and they were leading a research team within five. They then spent the next ten years building their research track record and their teams, and became professors within approximately fifteen years of completing their postgraduate studies. From this we can see that the developmental trajectory for a research career is:

**PhD publications → postdoctoral research → more publications
→ track record → grants + students**

**Grants + students → even more publications → better track record
→ and so on ...**

Our research has shown that there is a 'tipping point' in a research career trajectory, around five years post doctorate, where gaining some funding and supervising postgraduate students can lead to more publications and a better track record, which can take them on the path from early career to leading researcher to research leader. Investment in researchers and the research leaders of the future is essential, and institutions need to nurture and invest in their researchers from very early in their careers. They need to provide resources, not only for formal professional development, but also for the other activities essential to developing a track record. Such activities include: presenting at conferences, developing grant applications, supervising postgraduate students and being mentored. The best predictors of individual output are: being part of a research culture that supports supervising and publishing with students, and being a member of a highly active research group with a strong culture of research quality ([Ramsden 1998, p.54](#)).

Following the completion of their PhD studies, the current environment for researchers starting their careers in Australia is one of uncertainty, precarious employment and strong competition for funding and resources. The academic workforce in Australia, similar to some other countries, is dominated by babyboomers who were hired during university expansions in the late 1960s. More than half of Australia's academic workforce is more than fifty years old, and more than forty per cent are expected to retire in the next decade (see for example [Winchester, Lorenzo et al. 2006](#); [Browning, Thompson et al. 2011](#); and [Gewin 2012](#)). So how can institutions provide effective development and support for early career researchers – the next generation of research leaders?

Almost a decade ago, a desktop audit found that only ten per cent of Australian universities offered development programmes for early career researchers. Now forty per cent have them in place, with nearly three quarters of those having started within the past five years. That is a four-fold increase over the past decade. Programmes range in scope and complexity from a two-day 'boot camp' to more extensive programmes over one to two years. Based on our research, we developed a comprehensive programme to assist early career researchers to develop a focused research career plan and build their track records.

Developing early career researchers in an emerging research culture

Based in regional Australia, Central Queensland University is one of the fastest growing universities in Australia. Established as the Queensland Institute of Technology in Rockhampton in the mid-1960s, the University has around 1,000 staff and 19,000 students across more than ten campuses, institutes and study centres, and studying via distance education. Around a quarter are international students from more than sixty countries.

The inaugural Early Career Researcher Program at Central Queensland University commenced in April 2012 with participants from nine geographic locations around Australia. This was a cohort-based career development programme to address some of the strategic research skills through face-to-face workshops, practical exercises and mentoring, and included the development of a focused research career plan.

Unlike most degree programmes and many researcher development initiatives, this programme is not discipline specific and provides an environment where attention is focused on developing a research career through quality outputs. The first running of the programme included elements which are now standard across similar programmes: face-to-face workshops and a formal mentoring programme. It was different from similar programmes in that participation required a commitment to specific accountabilities in addition to attending at least eight of the ten one-day face-to-face workshops; these were:

- development of a research career plan
- submission of at least two publications
- preparation of a grant application
- participation in a formal mentoring relationship.

The Early Career Researcher Program at Central Queensland University is led by a senior researcher with an impressive track record, Professor Drew Dawson. The manager, Lynette Browning, has a background in organisational development and research management. In the April 2012 inaugural programme, the workshop speakers came from a range of organisations, universities and disciplines. The focus of the first day was to provide the context and set expectations. The Vice Chancellor's session 'Why we are investing in you' was especially appreciated as it demonstrated support from the highest level of the University. The second workshop centred around building a track record and introduced the concept of a focused research career plan. The third workshop looked at publishing and showcased an early career researcher; this session was considered one of the most relevant. The focus of the fourth workshop was on getting funding: it introduced an exercise called 'Dragon's Den' based on a popular television series. In this session participants were given three minutes to pitch an idea for a grant and receive feedback from a panel of 'dragons' with a successful track record in securing competitive research funding. The theme for workshop five was 'Writing better papers for better publication' and included a session on storytelling. Workshop six focused on collaboration across disciplines and international borders to solve real world problems. Engagement with industry and government was the theme of the seventh workshop, with speakers approaching the topic from different perspectives, including input from a venture capitalist and a research leader. Workshop eight covered a range of topics: a mid-career researcher spoke about dealing with rejection of manuscripts; and a senior researcher

addressed the issue of trying to 'have it all'. This resonated with the participants, especially the take-home message that you can have it all – just not all at the same time.

The final two days were held consecutively to conclude the workshop programme and focused on communicating the importance of research, including using media to increase an academic profile. The Vice Chancellor attended the final workshop, this time to hear about the achievements of the cohort and host an informal dinner, again demonstrating senior level support.

All face-to-face workshops were held on Fridays at regular intervals throughout the year because of the travel distances involved, and the cohort met for an informal dinner on the preceding Thursday evenings. At the beginning of each of the workshops from days two to nine, the participants gave a verbal update on their achievements, progress on their research career plans and challenges they may have faced; these sessions generated useful discussion and opportunities for group learning.

Evaluation

Given the typical turnaround times of publications and national grant submissions, a programme of this type is a short-term investment for long-term returns, but a formative evaluation indicates that it has already had an impact on research productivity. The outputs of this programme have been measured in terms of manuscripts submitted for publication and the development of grant applications. Between April and December 2012 the cohort of 14 early career researchers submitted 73 manuscripts for publication including three book chapters, 68 journal articles and two refereed conference papers. Not only is this a significant increase per individual, it is more than double the average number of publications reported per academic staff member at the same university in the previous year. They also developed and submitted 29 grant applications, most for external funding. Many of these early career researchers had significant undergraduate teaching loads while they were participating in this programme.

Overall, the positive feedback on this pilot programme far outweighed the number of suggestions for improvement. Early on we were asked to ensure that we provided women guest speakers, in particular those who have effectively juggled a research career and a family; by the end of the programme almost half of the speakers had been women. Attending ten one-day workshops at various locations required considerable travel and time commitment, so the final two workshops were held consecutively to reduce the travel time at the end of the year. Feedback was provided formally and informally, and formats adjusted accordingly. The participants felt that some sessions did not allow enough time for questions and discussion, so the workshops were refined to reduce the number of guest speakers and allow more time for interaction.

The range and breadth of experience of the guest speakers at the workshops was greatly appreciated. While receiving advice from senior people was a great opportunity, it was considered a refreshing change to hear from speakers who have recent experience, especially from early and mid career researchers, and those with current experience in being awarded competitive grant funding. All the participants found it invaluable to meet regularly with other early career researchers, to learn from their experiences, and to realise that there are others in similar situations facing similar issues.

The 'Dragon's Den' sessions were considered extremely useful, if confronting, and many said that the feedback from their three-minute pitch was the most insightful part of the programme. One participant said, "the discussions regarding the likelihood of success for early career researchers in nationally-competitive grants forced me to re-evaluate the current grant strategy of myself and my team". The group discussions at the beginning of each workshop were considered especially useful, as another participant said, "peer pressure and public shame is a good motivator". The alumni of the 2012 programme are working within their schools and institutes to develop others, participating in follow-up meetings to focus on making their publications count, applying for external grant funding, and building on their research career plans.

This programme was repeated in 2013 with another 16 early career researchers across the same university with some minor changes to the format. Instead of ten one-day workshops, there were five workshops of two days to reduce the amount of travel required. The focus was on writing publications that count for government funding, writing grant applications for external funding, developing a track record, and preparing a focused research career plan to inform performance management discussions. Between May and December 2013, this second cohort of early career researchers submitted 25 grant applications and more than 100 manuscripts for publication. They gave 24 conference presentations, half of those at international conferences, and they supervised 22 postgraduate students.

Conclusion

Our research indicates that there is a 'tipping point' in a research career trajectory approximately five years post doctorate, where gaining some funding and supervising postgraduate students can lead to more publications and a better track record, which can take researchers on the path from early career to leading researcher to research leader. Therefore the development of a research career plan should underpin professional development programmes for early career researchers.

We have learned from our research and the early career researcher programme that developing early career researchers does not mean teaching them how to do research – it means teaching them how to build a track record which can lead to a research career. Based on feedback provided by participants, and our observations, we consider the success of these programmes is due to the regular face-to-face workshops, the supportive research environment provided by the programme, and the development of a research career plan. Future research will include an annual follow-up of these cohorts of early career researchers to track their progression over time.

As noted earlier, there are two ways to invest in building research capability. Our advice to younger universities with an emerging research culture is that recruiting research academics who can already deliver high quality outputs should happen in combination with a comprehensive strategy of developing individuals who have the potential to deliver high quality outputs. The role of development programmes for early career researchers is not to teach research skills, but to ensure a track record is developed within the first five years of completing a doctorate. A development programme for early career researchers is a short-term investment for longer-term returns, but these programmes do have immediate impact on research productivity for the individual researchers and for the organisation. The investment in Central Queensland's Early Career Researcher Program clearly

demonstrates the value of researcher development on research outputs and research careers, which will impact on the University's ability to remain competitive and access government funding that is linked to research quality and output. Over time, this will contribute to economic prosperity, the knowledge economy and the quality of life of our society.

References

- Bazeley, P 1996. "Waiting in the Wings: A Study of Early Career Academic Researchers in Australia", Aust. Government Pub. Service.
- Browning, L, Thompson, K and Dawson, D 2011. "Developing the next generation of research leaders: understanding the path to shaping the future." *Acta Academica Supplementum* 2011(2): 127-148.
- Cole, JR 1981. "Views: Women in Science: Despite many recent advances, women are still less likely than men to be promoted to high academic rank, and few have full citizenship in the informal scientific community." *American Scientist* 69(4): 385-391.
- Downey, JE 1918. "A program for a psychology of literature." *Journal of Applied Psychology* 2(4): 366.
- Erkut, E 2002. "Measuring Canadian business school research output and impact." *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration* 19(2): 97-123.
- Gardiner, M and Kearns, H 2012. "The ABCDE of Writing: Coaching high-quality high-quantity writing." *International Coaching Psychology Review* 7(2): 237.
- Gewin, V 2012. "Retirement: Sticking around." *Nature* 483(7388): 233-235.
- Ito, JK and Brotheridge, CM 2007. "Predicting individual research productivity: More than a question of time." *Canadian Journal of Higher Education* 37(1): 1-25.
- Linke, RD 1995. "Evaluation of research performance: A review of selected input and output characteristics", Australian Government Pub. Service.
- Orne, MT 1981. "The why and how of a contribution to the literature: a brief communication." *International Journal of Clinical and Experimental Hypnosis* 29(1): 1-4.
- Ramsden, P 1998. *Learning to Lead in Higher Education*, Routledge.
- Weaver, FS 1982. "Teaching, writing, and developing." *The Journal of Higher Education* 53(5): 587-592.
- Williamson, IO and Cable, DM 2003. "Predicting early career research productivity: the case of management faculty." *Journal of organizational Behavior* 24(1): 25-44.
- Winchester, H, Lorenzo, S, Browning, L and Chesterman, C 2006. "Academic women's promotions in Australian universities." *Employee Relations* 28(6): 505-522.
- Wood, F 1990. "Factors influencing research performance of university academic staff." *Higher Education* 19(1): 81-100.