Graduating Future Leaders & Innovators:
Generic capabilities development for research degree candidates at RMIT
DISCUSSION PAPER

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July, 2006

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1. Introduction

Research degrees are one of the key drivers of creative and independent thought and therefore have much to offer both individuals and society at large. Of this there is no doubt. But are our research degree candidates really getting the most out of their experience and is society benefiting as much as it could when they graduate?

These are the kinds of questions raised by the Department of Education, Science and Technology (DEST) and others regarding generic capabilities development for research candidates in Australian universities. The argument is that research degree graduates could be better prepared to meet the expectations of industry and the community if research educators attended more overtly to developing generic capabilities. These are qualities, skills and dispositions that are integral to undertaking research and becoming a researcher but are also transferable to other practices and contexts, such as professional work and civil engagement.

The key question raised by generic capabilities development, therefore, is what is research education all about? What do we envisage our research degree candidates are becoming and for what ends?

The position adopted in this paper is that our research degree candidates have the potential to be society’s future leaders and innovators and research education, therefore, should aim at effectively positioning graduates for this role. Overt initiatives aimed at generic capabilities development form a key component of this effort by assisting candidates to realise the full benefits of doing a research degree.

This is also the approach adopted by Rod Wissler (2006), the author of the Council of Australian Deans and Directors of Graduate Studies (DDoGS) guidelines and framework for best practice in generic capabilities for research candidates:
The justification for Generic Capability development has to be seen in the potential impact of HDR graduates in society – if the potential spin-offs of research degree programs are to be fully realised in industry, the public sector and the community, these students must graduate with highly developed capabilities for leadership, and innovation, ie; translation of their research skills and knowledge into economic, social and cultural returns.

2. Aims

The purpose of this paper is to solicit input from those at RMIT involved in research education on generic capabilities development for Ph.D. and Masters by research candidates with the intention of:

Supporting research degree candidates in the development and enhancement of research related skills, qualities and dispositions and positioning them to effectively recognise and articulate the relevance of these to their professional and broader life.

This paper provides a summary of the key issues surrounding the generic capabilities debate as they relate to research education at RMIT.

Its purpose, in the first instance, is to promote discussion amongst RMIT’s research community members on generic capabilities development and, second, to identify an agreed approach and way forward. A framework and guidelines on best practice in generic capabilities for research candidates is provided by DDoGS.¹

3. Background

It is well known by those involved in research education that Government has become increasingly interested in the research education activities of Australian universities. Performance driven funding and management mechanisms, such as those set out in the Research Training Scheme, are now firmly established in the sector. ‘ Generic capabilities’, or the set of skills and dispositions attained by research degree candidates upon completion of their degree, have become a key focus of such mechanisms.

3.1 What is driving the generic capabilities push?

Generic capabilities development is regarded as essential to innovation processes. For example, the Business Council of Australia claims that:

The development within the workforce of not only strong technical and applied capabilities but also the skills and capabilities associated with communication, teamwork, problem solving, ongoing learning, creativity, cultural understanding, entrepreneurship and leadership are vital building blocks for business innovation success. (2006: 15)

The existence of what is being called a knowledge economy has meant that research degree graduates are increasingly being perceived for their potential to contribute to national innovation and prosperity. This, combined with a number of other factors, has led to a re-think regarding the role and purpose of research education. There are three key factors contributing to this:

¹ http://www.ddogs.edu.au/cgi-bin/index.pl
1. **Employability:** A view has emerged in Canberra that employers detect a skills deficit amongst Australia’s research degree graduates and that this must be rectified.

2. **Graduate destinations:** Academia no-longer the dominant destination of research degree graduates: the majority are already in, or will seek work within, industry and the professions beyond the university.

3. **Increasing professionalization:** Research degrees are being re-situated as a form of professional education in the practices of research and scholarship (Pearson, 1996; Gilbert, 2004).

At the same time that views regarding the role of research education have been changing interest in generic capabilities has been gaining ascendancy in relation to higher education generally (from Bowden et al. 2000). This has been driven by debate around two broad claims:

1. **Role of universities:** A view that universities do not just instil disciplinary knowledge but also cultivate qualities in people that will make them good citizens capable of a beneficial contribution to society more broadly.

2. **Limitations of disciplinary knowledge:**
   - A view that graduates need to be prepared to deal with an uncertain future, for which disciplinary knowledge alone is not enough.
   - A view that professionals require more than disciplinary knowledge to successfully operate in the workforce, such as communication skills, organisational ability etc.

4. **What does this mean for RMIT?**

What do we know about our research degree graduates? We know that they have high rates of employment. Results from the Postgraduate Research Experience Questionnaire (PREQ) show that only around 10% are still seeking full-time employment up to 12 months following submission.² Of those working, PREQ results tell us that about half will work in the education sector and the remaining half will be self-employed, working in government or the private sector.

We also know that a good proportion of our current research degree candidates are mature age and already have professional or workplace experience prior to undertaking a research degree, and many continue to work full-time while undertaking part-time study³. At the same time, however, some disciplines, especially in the natural and experimental sciences, have large numbers of younger research degree candidates who anticipate starting their first professional job upon graduation.

What we don’t know conclusively about our graduates, however, is how well they are situated, upon graduation, for the expectations that employers, government, and society more broadly, have of them. Moreover, it is unclear to what extent such issues inform our research education programs and, specifically, supervisory practice. These two issues need to be addressed.

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² ttp://www.rmit.edu.au/rtg
³ Barnacle & Usher, 2003
We need to ensure the preparedness of our graduates for the workplace, or more specifically, for integrating the knowledges, skills and dispositions that they have developed or enhanced through their research experience into their professional lives.

More broadly, we need to ensure our research degree graduates feel prepared to take on a role as leaders and innovators within society. This is the context within which discussion of generic capabilities in research education should occur: in the service of ensuring graduates are effectively situated to effect beneficial social, economic and cultural change.

5. What are generic capabilities?

Generic attributes are the qualities, skills and understandings a university community agrees its students should develop during their time with the institution. These attributes include, but go beyond, the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses. They are qualities that also prepare graduates as agents for social good in an unknown future. (Bowden et al, 2000)

There is a range of terminologies circulating to describe what we are calling generic capabilities, including graduate attributes, generic skills, and research skills. Confusion exists across the sector on the scope of generic capabilities and, specifically, whether they include:

- personal or professional qualities, such as independence and diligence;
- the research skills required for the completion of a degree within a particular discipline;
- specifically employment related skills, regardless of discipline.

The guidelines and framework for best practice in generic capabilities for research students in Australian universities provided by DDoGS defines generic capabilities as the research skills and dispositions generic to research practice that are transferable to the workplace. DDoGS promotes the development and enhancement of generic capabilities:

…for ensuring research graduates attain employability skills relating to immediate and future economic, environmental, educational, and social contexts. (2005)

DDoGS have not developed a set of nationally agreed capabilities, instead referring universities to the Joint Statement from the UK Research Councils and Humanities Research Board on Skills Training Requirement of Research Postgraduates. This identifies 7 key categories:

1. research skills and techniques (recognition of problems; original and critical thinking; concept development; understanding of research methodologies; knowledge of advances in field; evaluation of one’s own findings and those of others; analyse, report and reflect on progress)

4http://www.grad.ac.uk/cms/ShowPage/Home_page/Policy/National_policy/Research_Councils_training_requirements/pleaLxefI#top_of_page
2. **research environment** (understanding of: the research context, both nationally and internationally; the ethical issues and standards relating to research, such as IP; funding and commercialisation processes; and be able to justify ones’ own research principles and techniques)

3. **research management** (project management and design, information retrieval and management)

4. **personal effectiveness** (willingness to learn; demonstrate flexibility, creativity, initiative, independence, self-discipline and awareness, motivation and thoroughness; recognition of boundaries and sources of support)

5. **communication skills** (written and verbal communication; ability to construct arguments and articulate ideas clearly and defend research outcomes; promote understanding of ones own field and support others)

6. **team working and networking skills** (development and maintenance of co-operative networks and understand the role and impact on others)

7. **career management** (manage one’s own career progression, understand the role of professional development and transferability of skills)

The UK Research Council recognises tensions exist regarding the relationship between employment related skills and the wider research skills involved directly in the completion of a research degree. They are emphatic, however, that development of the former should in no way detract from attainment of the latter. This raises the question of how this can be achieved in practice.

6. **Developing generic capabilities**

The generic capabilities push in research education has proved controversial. It is not that anyone doubts that graduates should graduate with knowledge, skills and dispositions. Debatable is what form these should take and how they should be acquired or engendered.

It has often been assumed that graduates develop a range of knowledges, skills and dispositions by virtue doing a university degree. In other words, that generic capabilities:

…are not a set of additional outcomes requiring an additional curriculum – rather, they are outcomes that can be reasonably expected from the usual higher education experience. (Barrie, 2004: 263)

Moreover, such conceptions also assume that a shared understanding exists amongst University staff as to the nature of the capabilities graduates ought to develop. Such assumptions have been found to be wanting. In a recent study of Australian universities Simon Barrie found that:

…Australian university teachers charged with responsibility for developing students’ generic graduate attributes do not share a common understanding of either the nature of these outcomes, or the teaching and learning processes that might facilitate the development of these outcomes. (2004: 263)
In other words, if an institution expects their graduates to have attained certain characteristics it needs overt measures that ensure this occurs.

7. What's at stake for research education?

While development of generic capabilities has been an issue for undergraduate education for some time, it is only recently that research educators have been called on to address such matters. This raises a specific set of issues, unique to research education, some of which have been explored in the literature.5

1. Is there a role for a pre-defined curriculum in research education? The paradoxical issue of curriculum is underscored by the tensions implicit to the conjunction ‘research education’. If the pedagogical role of a curriculum, at least as normally conceived, is to delimit knowledge, by setting out the parameters of a particular topic, then it would seem to run contrary to the aims of research which seeks discovery rather than merely the transmission of existing knowledge. If research is transgressive by nature, then shouldn’t it seek to exceed prescribed institutional bounds?

2. What is more important in research education, skills development or discovery and originality? Promoting generic skills in research education may encourage uniformity, the very opposite of what we should be promoting in our graduates.

3. What is the best way to learn research capabilities? There is a danger that add-on courses will only abstract research skills from the context in which they should be learnt and applied. Immersion within research communities and cultures is arguably the best way for research candidates to learn research skills and capabilities and therefore ‘add-on’ courses may be ineffective.

4. What will be the impact of research capabilities training on completion times? Increasing the course-work component of research degrees in the context of existing efforts to ensure research candidates complete expeditiously may only increase the pressures they face and has the potential to undermine the quality and breadth of the research undertaken.

5. Does a focus on generic skills promote technical proficiency at the cost of deeper learning? There is a danger that a focus on skills could lead to the adoption of a narrow hands-on apprenticeship type model in research education as opposed to understanding of the ‘craft and artistry’ of the professional practice of research.

6. Just how transferable are research capabilities? The assumption that skills like critical thinking can be effectively transferred from one context to another is questionable. Critical thinking has been found to be more dependent on subject knowledge than reasoning skills.

7. Just how generic are research capabilities? Skills may manifest differently in different disciplines. Criticality, for example, may take different forms within different disciplinary practices.

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5 Lee, 2005; Barrie, 2004; Gilbert et al, 2004; Bothwick & Wissler, 2003; McWilliam and Singh, 2002; Pearson, 1996
8. Can all research capabilities be taught? Skills and dispositions are different things. Sensibilities, qualities and habits, for example, are not skills, and it is not clear that they can be taught through direct instruction at all.

8. What's the view of research candidates?

While there is little research on this question, both locally or nationally, what evidence there is suggests that there is wide support amongst research degree candidates for programs aimed at overt generic capabilities development.

A recent study conducted by Jill Borthwick and Rod Wissler (2003) examined the nature and extent of generic capabilities programs in Australian universities and included an evaluation of an ATN generic capabilities program, offered to candidates online, of which RMIT is a part. The researchers found that the vast majority of Australian universities offer their research degree candidates non-compulsory, tailored, generic capabilities programs, such as communication skills and project management. While the researchers note a lack of systematic data on candidates’ perception of these programs, based on information gained from various sources, they concluded that:

Generic capabilities activities were recognized to be valuable and deserving of a place in the research candidature. A major concern for all parties was how to incorporate these worthwhile activities while supporting completion of the research project within the timeframe allowed. (2003: 3)

International studies support this finding, including a study conducted by the UK’s Engineering and Physical Sciences Research Council, which found that PhD candidates considered generic or transferable skills to be of value, specifically: presentation skills; research methodology; planning and control; academic writing; time management; innovation and creativity; initiative and flexibility; job applications and CV’s; network and career planning; and interview techniques.6

A key question, of course, is whether RMIT’s research degree candidates would value initiatives aimed at explicit, or overt, generic capabilities development.

While research candidates have not been consulted directly regarding this, their views can be gauged indirectly from a number of university-wide sources. The current provision of stand-alone modules and workshops addressing generic capabilities have proved popular. The on-line generic skills development modules that RMIT has been offering in conjunction with the ATN have been attracting demand which consistently outstrips supply.7 Participation in the Postgraduate Research Discussion Forum is also high, and feedback indicates that research candidates value the opportunity to discuss research related issues and topics in stand-alone, cross-disciplinary, forums.8

Feedback from candidates regarding how well they have developed research skills through the course of their degree is mixed. Questionnaires such as the Ongoing Postgraduate Research Experience Survey (OPRES) indicate around two thirds of respondents were satisfied with their attainment of research skills. Some items, however, such as development of collaborative working skills, attracted significantly

8 www.rmit.edu.au/rtg/forum
lower levels of satisfaction. Moreover, longitudinal OPRES data indicates that levels of satisfaction with research skills development is declining. Feedback from graduating research degree candidates bears this out. PREQ results indicate low levels of satisfaction with research skills development, particularly in comparison with other ATN universities.

One area in which we have little university-level feedback is regarding candidates’ perception of the skills and capabilities that they obtained through their degree some years after graduation. A pilot study of part-time research degree candidates who were undertaking full-time professional work in the areas of social science and architecture and design indicated strong recognition of the relevance of the research experience to the workplace, albeit often in an indirect way. However, further research in this area is needed as it may not be until graduates have been in the workplace for some years that they will begin to realize a deficit in regards to their preparation for the workforce. Indeed, commentators have argued that it cannot be assumed that graduates will be automatically equipped to translate the benefits of their research degree for the workplace.

Clearly, what is known about the views of RMIT’s research candidates as a whole indicate there is at least some need and demand for generic capabilities improvement. However, portfolios, schools and specifically programs are better placed to gauge the extent of demand amongst their own cohorts and what areas of improvement are being sought. It would be useful to know whether feedback on this already exists locally and what, if any, measures have been adopted in response.

9. Research pedagogy

If preparing research candidates for employment, career enhancement or a broader social role through a focus on capabilities development is a worthy endeavour, the issue is how to do this effectively and without detrimental effects. To answer this question requires understanding how research candidates learn. It is clear that supervisors play a key role but that, overall, research candidate learning is largely self-directed. As scholars have noted, HDR candidate learning is distributed, rather than hierarchical, in that it largely occurs through doing research, such as, conducting experiments, interacting with peers, going to conferences etc, and only occasionally through the direct instruction of a supervisor.

This poses obvious challenges for overt generic capabilities measures as opportunities for tailoring a curriculum to suit such development are limited. However, it also points to the significance of supervisors in this endeavour. There is a consensus in the literature that generic capabilities are learnt best when integrated into actual contexts of learning.

Many researchers have consistently identified that high-level graduate attributes are most effectively developed in the context of discipline knowledge, embedded within disciplinary curricula rather than addressed by stand-alone strategies that are divorced from discipline content. (Barrie, 2004: 271)

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9 http://www.rmit.edu.au/rtg/opres
10 see Postgraduate Research Experience Questionnaire (PREQ) at www.rmit.edu.au/rtg
11 Barnacle & Usher, 2003
13 Barrie, 2004; Bowden etal, 2000; Boud & Lee, 2005.
Supervisors and their supervisory practices, therefore, need to be at the centre of efforts to promote research generic capabilities. It is not necessarily that stand-alone, generic, programs will be of no benefit, only that they will be of limited value because they leave to candidates the difficult task of integrating and translating what they have learnt in such forums into the context of disciplinary knowledge and practices where deeper learning occurs.\(^\text{14}\)

There is a growing awareness that pedagogies are most effective when they take a holistic approach by seeking to address the whole person rather than the intellect, or a particular skills set, in isolation. This has led to a number of scholars arguing for a re-engagement with the ontological implications of learning, which have tended to be subordinated to epistemological or other, instrumental, concerns.\(^\text{15}\) In a similar vein, Mary Kalantzis and Bill Martin argue for a conception of learning:

…which is less about imparting defined knowledge and skills and more about shaping a kind of person: somebody who knows what they don’t know; knows how to learn what they need to know; knows how to create knowledge through problem solving; knows how to create knowledge by drawing on informational and human resources around them; knows how to make knowledge collaboratively; knows how to nurture, mentor, and teach others; and knows how to document and pass on personal knowledge.\(^\text{16}\)

In addressing research degree candidates’ generic capabilities we need to attend not merely to the accumulation of skills but instead to forming and informing the various ways of being appropriate to a researcher.

10. Aligning with existing policy

RMIT has been involved in generic capabilities initiatives at the undergraduate level for some time. In this time a movement has occurred from the adoption of University-wide generic capabilities to the abandonment of prescribed capabilities, or in other words, leaving it to those at the local level to identify a set of capabilities unique to individual courses.\(^\text{17}\) This paper proposes that the University also adopt this approach when addressing generic capabilities development at the postgraduate research level.

11. Identifying a way forward

The above discussion suggests that there are a number of key principles that should underpin generic capabilities development to ensure that it:

1. is in the service of realizing core research education outcomes: leadership and innovation
2. is grounded in disciplinary based ways of knowing and being
3. promotes ‘ways of being a researcher’ rather than narrow technical proficiency
4. is embedded within day to day research practice, where possible

\(^\text{14}\) Dall’Alba & Barnacle, 2006.
\(^\text{15}\) See Dall’Alba & Barnacle, 2006; Barnacle, 2005; and Barnett, 2004 & 2005.
\(^\text{16}\) See http://www.borderknowledges.info/research/global%5Flearning.html
\(^\text{17}\) Reeder, 2002: http://www.rmit.edu.au/browse;ID=0pn8adctqsp9z
5. recognises the central role of supervisors

6. reflects disciplinary differences and is communicated in disciplinary specific language

7. at the policy level, maintains institutional coherence while enabling disciplinary differences

This paper proposes an approach to generic capabilities development at RMIT that:

1. Encourages discussion and debate amongst RMIT’s research community about the role and purpose of the research degree, and in particular, what becoming a leader and innovator means for different disciplinary communities and individuals.

2. Ensures that candidates are effectively positioned, upon graduation, to realise their potential as society’s future leaders and innovators, through:
   - Attainment of key disciplinary knowledge
   - Development of key generic capabilities through:
     i. Supervisory guidance
     ii. Immersion in dynamic research communities
     iii. Tailored events and programs, including conferences, workshops, modules etc

3. Makes participation in generic capabilities development a compulsory component of all research degrees (while recognising that the nature and extent of participation would reflect the needs of individual candidates).

11.1 Frameworks for generic capabilities development

It is proposed that RMIT give each candidate the opportunity to address generic capabilities development through a customized program undertaken in consultation with supervisors. This would involve a process whereby the candidate would subject their expectations, experiences, etc to examination throughout candidature and tailor a program of activities, events etc in response. Progress would be recorded and documented as part of the biannual progress review process (this would also enable the University to fulfil its reporting responsibilities to DEST). A framework to guide both candidates and supervisors through this process would be provided centrally through the creation of a website by The Research Training Group.

The aim of the process would be to enable candidates to:

- Understand what it is that doing a research degree has / will enable them to do;
- Articulate the value and possible transferability of the knowledges, qualities, skills and dispositions developed during a research degree, and;
- Recognise and rectify perceived gaps

The framework for guiding candidates in a process of reflection would comprise a 5-step process, aimed at enabling them to:
• Identify what they hope to get out of their research experience
• Plan how they might get there
• Document and reflect on the process

Such a process can be summarised as follows:

1. Expectations:
   o Candidates would be encouraged to reflect on what they are seeking to become through the experience of doing a research degree, what sort of things they would like to do, and what kind of person / professional they aim to become.

2. Becoming an innovator:
   o Candidates would be encouraged to identify how knowledge transfer and breakthroughs are made in their field and what conditions support such occurrences, including the social, institutional, financial and other circumstances as well as the knowledges, capabilities, and dispositions that are involved.

3. Becoming a leader:
   o Candidates would be encouraged to identify what forms leadership takes within their field and, again, what conditions support leadership, including the social, institutional, financial and other circumstances as well as the knowledges, capabilities, and dispositions that are involved.

4. Needs analysis:
   o Candidates would be encouraged to reflect on how they might situate themselves to meet their future aspirations, including the knowledges, capabilities and dispositions required and how they might be acquired, enhanced, engendered, or promoted, as appropriate.

5. Reflection:
   o Finally, candidates would be encouraged to reflect on their progress, any set backs and revisions, and evaluate future needs.

It is anticipated that engagement with this process of questioning, examination, and planning will be continuous as expectations and needs change, evolve, and are re-evaluated throughout candidature.

11.2 Support measures

Provided centrally:

There is a role for university wide events and programs, specifically in regards to providing a vehicle for cross-disciplinary exchange.

- conferences & public lectures:
  - biennial research on research conference
  - proposed R&I lecture series on research innovation and leadership

- generic skills modules and workshops
  - on-line skills development modules: ATN LEAP (Learning Employment Aptitudes Program) & MORE (Modules On-line for Research Education)
Post-grad Research Discussion Forum

There is also a role for centralised supervisor development programs.

- Supervisor development
  - Supervisors will need support and skill development to enable them to effectively address generic capabilities development. The guidance of content and instructional experts will be required to support supervisors with this pedagogical responsibility.

At the school / program level:

School and program level research teams will need to address and communicate:

- How leadership and innovation manifest within the particular disciplinary community or communities within which research candidates are a part.

- How candidates can be effectively situated to take on such roles and achieve such outcomes, ie; through:
  - Immersion within innovative communities: participation within local research communities; conference attendance etc
  - Understanding the kinds of knowledge, skills, qualities and dispositions that researchers in the field utilize or exhibit and what sorts of things that enables them to do.

12. Actions arising for project group

1) Finalise and endorse project documents: this discussion paper and the project framework document, for approval by the RMIT Research Committee and subsequent circulation.

2) Agree on a university wide approach to the following:

   a) Whether to adopt the capabilities identified in the UK Joint Statement on generic capabilities or, alternatively, identify a unique set for RMIT (bearing in mind that all capabilities will be translated into disciplinary specific language)?

   b) Decide on the quantity and type of participation in generic capabilities development activity required by research degree candidates – should this be specified?

   c) Decide whether different generic capabilities are required for different candidates, ie; PhD, Masters?

3) Establish working groups at portfolio and school levels in order to:

   a) Translate the agreed generic capabilities into disciplinary specific language for relevant research degree cohorts.

   b) Undertake an audit of existing generic capabilities development programs, workshops or events.
4) Establish agreed timelines for the portfolio working parties to report back to the project group.

5) Identify duration until next project group meeting.

Outstanding issues:

1) Development of HDR generic capabilities policy, procedures and guidelines for approval by Academic Board by end 2006.

2) Establishment of online resources, centrally, to support graduate capabilities development, including guidelines for supervisors and candidates.

3) Compilation of an inventory of current generic capability development activities offered across the university in order to evaluate future need.

4) Decision on how records of individual participation in GC activities will be maintained and how candidates will be able to record their own history of participation.

References


Dall’Alba, Gloria & Robyn Barnacle (2006) Embodied knowing in higher education, currently under review with Studies in Higher Education.


Wissler, Rod (2006) Embedding Generic Capabilities Development in Australian Research Degree Programs, Discussion paper for DDoGS Council meeting, Adelaide, April.