The role of research education coordinators in building research cultures in doctoral education

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Abstract

The development of cultures of support has become important in programs for the preparation of research students. The paper draws on in-depth interviews with twenty-one research education coordinators from Australian and UK institutions to identify the strategies that they use to build research cultures and integrate research students into them. Students' research cultures are not always linked to departmental research cultures more generally. Local contexts and conditions and staff (including supervisors') attitudes are found to be critical in how research education coordinators respond and what is considered possible in order to ensure that research students are involved in research cultures.

Key words: doctoral education, graduate education, research development, supervision, culture

Introduction

Significant challenges and changes occurring in higher education have in recent years had a direct impact on the nature of research degree education and its leadership (Boud & Lee, 2009). This has been accompanied by policies and strategies that focus on increasing the number of research higher degree graduates and accommodating a diversity of students' professional and educational backgrounds (Pearson, Evans & Macaulay, 2008). As part of this, doctoral graduates are increasingly expected to be ready to be fully functioning

members of the wider research enterprise so that they can participate in networks and practice beyond graduation and the particular focus of their own necessarily narrow study (see for example, Boud & Lee, 2009; Metcalfe, Thompson & Green, 2002). In addition, changes in research practice brought about by pressure on funding and national research assessment have caused institutions to consolidate areas of research strength to improve research output levels. These changes, both in doctoral education and in research practice more generally, have focused attention on the development of research cultures.

In this environment, institutions have developed a range of strategies to improve doctoral education. For example, emphasis has been placed on structured training programs, supervisor development and new forms of output such as theses by publications, portfolio approaches, multimedia, etc. New institutional structures have been established such as graduate schools, and, more recently, new doctoral education leadership positions in faculties, schools and departments.

People taking on such positions of responsibility are typically called 'student research coordinator', 'graduate convenor', 'research studies coordinator', 'director of graduate studies', etc. In many instances these are newly created roles, or the roles are carried out by a succession of people with an institutional brief to develop them. Generically these people have been termed 'research education coordinators' (RECs) (Boud, et al. 2014, p.440). RECs perform a range of leadership roles.

This paper is concerned with the role of RECs in ensuring that doctoral students are involved in research cultures. Clearly there is a diverse spectrum of practice. At one end, students take their place as full members of research groups and benefit from immersion in the culture of the group. At the other end, they are peripherally located and induction into research culture is a challenge. It is an even greater challenge when a local functioning research community in their specific area does not exist.

The paper first explores the literature on how students are being integrated into research cultures, and the role of research education coordinators in this. Following a discussion of how the data were derived and the methods of analysis, the paper examines the strategies RECs say they have used to address this issue in particular institutional contexts. Interviews with RECs are used to elucidate what they are doing to build research cultures among and for their students. Specifically, the paper discusses the challenges of RECs as they address issues

associated with mobilising students, supervisors and others to take account of existing institutional cultures and the challenges of attempting to involve multiple players. Instances where RECs have been able to establish research education cultures involving groups of students, but unrelated to wider academic research groups, and instances where RECs have been able to integrate research students into wider research cultures beyond the immediate research group are discussed highlighting the institutional conditions that facilitate or inhibit developments.

Background

Recent work on doctoral education has identified the REC as having an important leadership function (Boud et al 2014). Boud and colleagues argue that RECs exercise leadership in a number of different ways. These range from working with and influencing supervisors, to working with students or to carrying out institutional roles such as policy formation or committee contributions. They suggest that RECs have an important role in integrating students into the culture of the department or research group. Indeed, Boud and colleagues (2014) report on a needs analysis carried out with RECs in four Australian universities which rated "Creating a research community/culture for HDR students" top in terms of its importance to their role and in terms of its need to be further developed, This raises important questions for this paper about how RECs are attempting to do this.

However, understandings of 'research communities' and 'research cultures' are by no means straightforward, how they develop is unclear and the place of research students within them is problematic. Indeed there are different understandings of research cultures in the literature. Deem and Brehony (2000) for example, suggest that academic research cultures in the social sciences:

> 'include disciplinary or interdisciplinary ideas and values, particular kinds of expert knowledge and knowledge production, cultural practices and narratives (for instance how research is done, and how peer review is exercised), departmental sociability, other internal and external intellectual networks and learned societies (Deem & Behony, 2000, p.158).

Definitions of research cultures such as this, focusing on shared values, beliefs and practices of a community engaged in research (see also, e.g. Hill & Haigh, 2012; Lucas 2009; Rizzo Parse, 2007), reflect a sociological approach. These have been called into question since the introduction of national research selectivity

exercises, e.g. the Research Excellence Framework (REF) in the UK and the Excellence in Research Australia (ERA) initiative. Such initiatives and others such as the Roberts Report (2002) and subsequent initiatives by the UK Research Councils, have generated considerable discussion within universities about how to build research capacity and the role of research cultures in strengthening research outputs (e.g. Billot, 2011). Within this context the notion of research culture is not so much about shared values and practices but takes a more instrumental focus, tending to be used as a synonym for building a critical mass of researchers in a given area, and creating expectations of academics towards publishing and obtaining research grants.

Lucas (2009, p.68) acknowledges that the term 'culture' is slippery and ill-defined. Nevertheless, she finds it useful for discussing her study of research cultures in education departments and how they might be influenced. She acknowledges the importance of power relations and recognises that an effective research culture needs both of what MacGregor, Rix, Aylward and Glynn (2006, p.64) refer to as 'research management' and 'research nurturing'.

Many discussions of how to build research cultures focus on benefitting the institution or department and the academics within them. Such work, importantly where this paper is concerned, does not mention the role of RECs in such developments. Much of the literature on building a research culture focuses on disciplines new to universities (Pratt, Margaritis & Coy, 1999; Hill & Haigh, 2012, McRoy, Flanzer & Zlotnik, 2012), institutions new to the university sector (Johnson & Louw, 2014) and early career researchers (Tynan & Garbett, 2007). In Australia, for example, an entire special issue of a journal has been devoted to how to build research cultures in education (Reid, Santaro, McMaugh & Saltmarsh, 2010) and in the US there has been considerable debate about whether the particular culture of educational research is such that its outcomes can influence educational policy (Feuer, Towne & Shavelson, 2002).

This work raises key issues concerning us here, namely, the relationship of students to research culture and the role and status of RECs in building such cultures in institutions and departments. Deem and Brehony (2000) identify three dimensions of a research culture for students: peer cultures, academic cultures and research training cultures. Their study found different access to and unequal involvement in research culture participation of research students, and indeed different desires on their part to be included in particular aspects of research culture.

In exploring the issues associated with the postgraduate research environment, Barnacle (2002) identified critical factors which, it was argued, determine the quality of the research student experience. Foremost was the enthusiasm of academic staff towards research. This, the students believed, would produce a 'vibrant engaging and supportive culture of research' (Barnacle, 2002, p.3). The study also found that research students wanted to be treated as researchers. They wanted sufficient technical, financial and library support and a physical environment that encouraged productive exchanges between fellow students as well as staff.

The most common way of measuring whether students feel they have engaged in the research culture of their department or institution is through the Postgraduate Research Experience Questionnaire (PREQ) in Australia (for example, Graduate Careers Australia, 2013) or in the UK the Postgraduate Research Experience Survey (PRES) (Turner, 2015). These nationally mandated questionnaires are administered to most graduating students in their respective countries. Both instruments contain a number of statements about research culture, for example: opportunities provided for social contact and to discuss their research with other students; integration into the departmental community; provision of a good seminar program; opportunities for students to become involved in the broader research culture; and a stimulating research ambience in the department. While these items reflect a limited notion of research culture, they do provide a set of indicators against which students can express an opinion.

Kiley (2005, p.74) suggests a number of reasons why engaging in a research culture might be important for students, namely: belief that it enhances research outputs; that it enriches their research 'training' including developing generic skills and is helpful in ensuring timely completions.

> *"one of the most important communities with which [doctoral candidates] need to engage is the research community of their discipline and of the university. Such engagement is critical as it leads to the development of a range of skills, understandings and behaviours that are learned implicitly and explicitly, and which benefit the student, the discipline and the community. Of concern, however, is the indication [in the PREQ] that Australian doctoral students report that engagement in a positive research culture is poor in comparison with other aspects of their research experience (Kiley, 2005, p.76).*

As this quotation demonstrates, findings on the PREQ suggested that many students felt they were not adequately involved in the research culture of their department and these figures have not changed much since Kiley's paper was published (Graduate Careers Australia, 2013). More recently, in the UK's PRES many students state that they do not have opportunities to become involved in the wider research community, beyond their department (Turner, 2015). Integrating students into the research community is considered to be a key factor in students' professional development, so this has become a major cause of concern.

This literature raises questions about how RECs are to integrate students into research culture and what kinds of culture; whether it is research culture of academic researchers with its attendant concerns about outputs and funding, or research education/training culture relatively separated from such. Further, we have noted that with the exception of Boud et al (2014) discussions of whose responsibility it is for integrating students into research cultures appear to be lacking in the literature. From the needs analysis carried out by Boud and colleagues, (2014) it is clear that many RECs perceive this to be their responsibility. The remainder of this paper extends this analysis to examine how they are endeavouring to enact this responsibility.

Method
As part of an Australian national project on research education coordination, semi-structured interviews were conducted with 19 Australian Research Education Coordinators (RECs). In addition, to examine Australian practice in a wider context, interviews were carried out with two experienced English RECs. In total, interviewees came from four Australian and two English research-intensive areas of universities and from a wide range of disciplines, e.g. science, engineering, urban studies, health science, education, design, arts and social science, business and information technology. Interviewees were chosen using a cascade approach. Members of the seven person project team suggested whom to interview based on their knowledge of RECs who were engaged in significant developments in building research cultures. The sample was deliberately skewed to maximise the illustration of different ways of involving students in research cultures. The interviews were conducted by members of the project team.

Following transcription of the interviews, the team members analysed each transcript and discussed emergent common themes. Three members then undertook an iterative analysis of the data to categorise themes. Special focus

was given to approaches to building research culture that were deliberate, thoughtful and had been developed over time. These were formed into narratives about how RECs viewed and attempted to develop research culture. The narratives were then checked with the relevant interviewee. A series of state-based workshops for RECs were held to explore the pervasiveness of the ideas coming from the data. Seven brief composite scenarios were devised in order to illustrate particular challenges. The transcripts are identified as coming from a Research Education Coordinator (REC) and are numbered to preserve confidentiality. The narratives (case studies) and scenarios can be found on the "*for Improving Research Supervision and Training* (fIRST)" website at http://first.edu.au/?page_id=1911.

Findings: How RECs are endeavouring to build research cultures

Some areas of universities are taking a number of well-defined steps to develop research cultures for and with students. This section is organised according to key strategies that RECs said they are using, namely: working with and responding to institutional imperatives, building on experiences, involving colleagues; establishing conversations; and working to ensure that students were positioned as researchers. We discuss how initiatives were organised, who was involved and the challenges of the various approaches.

Working with institutional structures and imperatives
Many of the activities reported in our data were driven initially by institutional or reputational imperatives, such as the need to obtain better quality research results, improve completion rates, and create a research environment that would attract and retain research students (Boud et al, 2014).

In some universities the RECs were in newly created positions to focus on improving research programs and managing research degrees. For example, one REC described how taking on the role of Departmental Director of higher degree research was her first large-scale 'administrative' responsibility. She viewed her challenge in the role to be to shift candidates' and supervisors' perspectives on the time frame and scope of a PhD. The university was in a transition phase and a more formal structure for research degrees in the faculties had been established. It was recognised that research students were becoming really important to the university's research effort. More scholarships were made available and the university had decided it was going to 'up' its research output through research training. There was also much more of a sense that what really mattered was timely completions (REC14).

RECs used institutional initiatives and new structures such as these to kick-start a deeper engagement in learning:

> *First there was a university working party … and then there was the pilot … the drafting of the documentation and then rolling it out. What that did was to give me … a kind of an external structure to try and get people to engage in thinking about their own learning in a more formal way (REC 9 p.4-5).*

There was also a sense of freedom to invent new initiatives;

> *When I was first appointed, [my supervisor] told me 'We'll have to make this up as we go along because you're the inaugural director and nobody really knows what you have to do' (REC 7 p.2).*

An English REC describes how initiatives were slotted into existing structures. The following extract illustrates one of the challenges of providing educational opportunities for students:

> *Doctoral researchers do play quite an active part in all of our research centres in terms of organising seminars and those kinds of things … but trying to do it as a generic doctoral community it's not straight forward and maybe in the end there are good reasons for that and it just can't work. But I think that's another important role that the PhD Director takes over (REC 20 p.14).*

However, in some cases before RECs are even able to start to implement strategies to develop research culture, the necessary infrastructure needed to be established. Often there appeared to be only time to react to an existing situation and to do the administrative work rather than taking a pro-active stance in developing a research culture. This was the case with our English interviewees, but in our institutional and state-based workshops, we noted that it was also true of Australian RECs.

> *maybe in the end I felt a little bit frustrated that in all … that you read in terms of generating communities … I didn't feel like I'd really pushed that as far as I could because it [was] much more about almost just getting the ship in order so to speak (REC 20 p.18).*

> *there wasn't any infrastructure here to build on so I had to create*
> *everything in this tiny department . (REC 21 p.3).*

There is a challenge to the development of a research culture when a REC needs first to put in place administrative procedures. This appeared to arise from the REC position often not being clearly delineated, often lacking handover procedures when a new person takes over, as well as from the undefined nature of the role and the need for it to be further developed (Boud et al., 2014).

Building on experiences

RECs who had worked to build a research culture over several years spoke about the importance of regular monitoring and reflection on what worked in their context, what needed refining, and where gaps still existed. Interviewees talked about how initiatives were put in place to address a problem, then monitored and changed several times until a better solution was found. In a faculty of education, coursework was provided to help transition the many part-time and mature age students into their research study. However students still had difficulty with successfully completing their research and many withdrew. It wasn't until one academic leader developed a completely different approach which involved a move away from traditional block activities to a more integrated program with continuity and oversight from one coordinator, that the program became much more successful. It ended up becoming an introductory program for all doctoral students in the faculty. This responsiveness to a problem and a willingness to abandon a former initiative and replace it was more apparent in faculties or centres with some continuity of key staff who had tracked progress.

A REC in a research institute spoke of how she tried to involve students and supervisors in reflections about what is working and what could be improved. Monthly meetings were set up where plans for retreats were discussed and changes to processes made:

> *We changed the progress reporting form …..because there was a reflection*
> *on the structure of the progress reports and a discussion about what was*
> *good and what was bad (REC 9, p.6).*

Involving colleagues

RECs stressed the desirability for a program to be widely accepted and in particular to be actively recognised by senior staff. They underscored the importance of ensuring that new initiatives are embedded in traditional practices. One REC explained how senior staff in the faculty identified a gap: although certain research groupings were very active, there wasn't a strong community beyond the immediate players and certainly not with students. The REC explained how by embedding new practices in the 'normal' process, the advantage was that when people changed or moved, or when they changed role, there were other people who understood what the issues were and what needed to be done so that 'we're not continually reinventing the wheel' (REC 11 p.4).

While RECs may be expected to play a leadership role, all interviewees stressed the importance of engaging multiple players. For example, in one case the REC role was determined by a leadership group. There was a formal structure of senior staff to oversee the programs and activities for all researchers including research students. Strong input from the leadership group helped to define the role of the REC and determine key strategies and events. All decisions for research education programs were made by the leadership group who also coordinated activities, organized a master-class menu and guided improvement of the program based on reflective feedback from master-class convenors, postgraduate students and an advisory board. Both the director and the REC did much to ensure that events happened, however everything was guided by the group and its strategic direction (REC13).

In other contexts such pre-existing structures did not exist and some RECs perceived a need to integrate students in a research culture, but then found implementation difficult without the assistance of others in the department. Indeed, it is clear from the strategies found successful, that arriving at a good solution takes time and involves many people. In many cases a number of developments and iterations had been necessary to achieve a successful program.

> *All the changes are hard won; none of them occur easily, none of them occur through just doing one thing, none of them occur through a policy, and none of them occur through setting up an activity. They've got to be continually reinforced. ...Whoever is in the position of authority can't do it all; no one person can do it all. The great success of the initiatives ... has been the diversity of people involved. (REC11, p14).*

RECs have a role in resolving problems between supervisors and students (Boud, et al 2014). Many RECs both in the interviews and in the state-wide workshops,

indicated that supervisors were often reluctant to be involved. So faced with the daunting task of knowing where to begin, many said that they chose to focus on students to ensure that they have the skills needed to be proactive in approaching academics and understanding what is possible in terms of engaging in the research culture of the department or school (Boud et al 2014). For example, a UK REC indicated that a series of events she set up called "Managing a Supervisor" was overwhelmingly popular.

> *I do this and it's standing room only, … I must have done this session fifty times because people ask me to do it and I do it about five times a term, absolutely incredible (REC21 p.11).*

Focusing on getting students to interact and engage in a student research community can be implemented because it may be seen as the primary role of the REC, but also because it is easier than engaging supervisors, which:

> *is one of the hardest parts of the job because people aren't used to being managed and most academics are ungovernable (REC15 p.1-2)*

> *So much of what we're trying to do is absolutely logical to the students, it may not be so logical to the supervisors (REC21 p.8).*

We do not know whether reluctant supervisors are engaging in a rich academic research culture separate from students. One suspects not, because in a climate where there is a regular and free exchange of ideas, it is likely that the attitude towards students would be different. In some institutions, supervision is still seen as occupying a private space. This UK REC sums up the difficulty that many Australian RECs experience:

> *in this university academics hold on very, very dearly to their individual autonomy, their academic freedom and they don't want to be told what to do or even guided, they certainly don't want to come to supervisor training or anything like that (REC21 p.3).*

Without the involvement of supervisors, students are likely to learn that research cultures are fragmented, or that as students they do not truly belong. This inevitably undercuts efforts to create research culture among students. It also raises the question of whose responsibility it is for developing research culture and involving students in it. Focusing on the quality of supervision may

not be the responsibility of the REC who may be seen as more involved with students.

In the state-based workshops, a number of suggestions for overcoming supervisor reticence to engage in development were made. However, the widespread nature of this concern illustrates the need to involve as many people as possible in developing research culture. RECs' informal contacts play an important part in that process, but institutional strategies and attitudes may need wider attention.

Establishing conversations about research

A number of RECs described the importance of developing a research culture that created opportunities for different kinds of conversations and relationships. An annual retreat for both staff and students is one way RECs have tried to do this.

> *We go somewhere where we prepare food together and share the food that we prepare and we have to cook and clean for* ourselves (REC 9 p. 3*).*

This approach was intentional as the research group aimed to build a strong community-based model of research education and leadership.

Student research conferences are another way that RECs have found of involving students in different conversations socially and intellectually. One REC describes how students are encouraged to present a paper even in their first year of enrolment, and specific staff are also invited to present. A wider group of staff is encouraged to come along not just to hear the students but to contribute to the sessions by discussing the research process, acting as keynote speakers, or being discussants on panels. In this case, participation was not made mandatory because the intention was to make it like any conference.

> *" the students have the budget and they form a conference committee, there's access to academic faculty if they want to consult any of them, they identify who are going to be their guest speakers and they put out a call for papers and the papers are presented by students or younger faculty or whoever and it's hugely successful so it draws in a range of students both from the College, from outside because it's widely advertised and faculty and other people come because they're drawn to ...[the] theme ... So that's been powerful (REC 21 p,16).*

These environments create a space where students can learn implicitly and explicitly the language and skills of the research culture (Kiley, 2005). The students can play an active part in reviewing papers and organising the event (REC21, p.18).

Positioning oneself in research as a researcher

Many RECs emphasised the importance of creating in students a sense of belonging, particularly where there is not a strong research group that they are part of. For example:

> *the PhD process is … a highly challenging personal journey, because these students don't necessarily have a topic. This is in contrast to other places where I've worked where there's a lab group or there's some topic community '… We have support groups. We have reviews in a community kind of way, like a shared group meeting. What we try to do is to make sure that new people get a chance to connect with the people who have been around a bit longer and are a bit further along in their PhD* (REC 9 p.1-2).

RECs recognised that scaffolding is needed if students are to participate in pre-existing research cultures. Students need to understand the cultures and learn how to find their ways into them. It cannot be assumed that they can navigate this complex terrain on their own at the outset.

Another strategy for developing students' sense of belonging was to provide opportunities for students to teach:

> *We've introduced Teaching Assistance Provision where members of staff can apply to have [a doctoral student] and then we advertise and that's been really good … it gives them an opportunity to feel more a part of the department* (REC20, p.13).

One interviewee described an integrated approach to enriching the intellectual climate which positioned doctoral students as researchers alongside post docs, researchers and academics. He explained that the research centre is made up of a federation of independent research laboratories encompassing a fusion of disciplines. Research groups affiliate voluntarily with the research centre. There are about a hundred research students and about thirty-five academics involved each year. Since 2005, the centre has run an enrichment program for all research students. The director, who has a US background, introduced the concept for the program, partly based in his belief that although the American style PhD system

goes over a longer time period, students get a broader range of experiences than in the Australian context. The director was keen to get all students inspired by letting them see a broader range of cutting-edge research (REC13, p.1).

With its stated aim to augment postgraduate learning so that it produces the next generation of research leaders, this centre aimed to give participants a broad outlook intellectually and socially. It was intended that students feel part of a distinctive, supportive and nurturing community. Researchers gave their time voluntarily and the program was devised cooperatively. A dedicated part time paid convenor manages the program. Activities are open to academics, postdocs as well as doctoral students. They include master-classes on different topics offered principally by the academics but also by postdocs and sometimes by students. They can run for 1-3 days and focus on developing different skills (disciplinary and more generic), and various aspects of disciplinary knowledge. The master-classes on scientific topics are given by researchers active on the world scene (REC13).

Discussion

These explorations have highlighted the ways that RECs undertake what in many instances is a challenging new role or at the very least one that in some institutions has yet to be well defined. Our data have suggested that there are a number of contextual factors that affect the extent to which RECs can be successful in integrating research students into research cultures.

The first of these is the extent or type of research cultures already existing or being developed and staff views about the relationship of students to them. Where a vibrant and sustainable research culture exists, there may be recognition of the need to involve research students and the REC may well be involved. However, the needs of research students may be neglected and the REC may need to bypass the ways that academics and researchers do or do not communicate with each other and focus on bridging the gap. This happens when, for example, supervision of research students is kept separate from attempts to involve students in wider groups, when doctoral students are not embedded in research teams, or when students' research is unconnected to the research of departmental academics or specific research teams. When there is not a critical mass of researchers in a particular field, creating a strong research culture can be difficult and then students are very likely to miss out on networking and opportunities to exchange ideas unless there is capacity for online networks (Abrandt Dahlgren , Grosjean, Lee & Nyström, 2012).

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We have noted that some RECs and others endeavour to build a research culture where research students are brought together for the exchange of ideas and for socialising. Here the differences between a research culture which prepares students for the world of research; and an educative culture where the purpose of student exchange is to enhance learning are blurred. In some institutions a plethora of events of an academic nature happen in departments, faculties, the university as a whole and even within society (e.g. in museums) and it is assumed that everyone who chooses can voluntarily participate. Here the REC not only has a role to smooth students' transition, whatever their background and enrolment status, (Deem & Brehony, 2000; McCulloch & Stokes, 2008; Pearson, Evans & Macauley, 2008), but also in advocating that strategies be provided, for example, for transition guidance.

We noted that many RECs choose to focus on providing opportunities for students to meet and exchange ideas often without supervisors being present. Our data have suggested that supervisors do not always perceive the learning benefits to students of talking informally about their research, and sharing ideas with others in seminars and conferences; a point that came out strongly in discussions with RECs in the state-based workshops mentioned above. These attitudes affect the capacity of RECs to integrate students into existing research cultures and in many cases make developing such cultures almost impossible. However, without the involvement of supervisors, it is pertinent to question whether a true academic community can ever be built. Without supervisors, students are bound to see the academic community as fragmented and their student role as less important. Efforts of RECs to integrate and provide opportunities for them to connect, then become little more than creating learning communities. Creating a sense of belonging to a cohort of students is not the same as belonging to or being embedded in an academic research culture. Indeed it can be argued that where students are a cohort separate from academics and other researchers, then they are likely to develop a sense of <u>not</u> belonging to the research culture. Again, as Deem and Brehony (2000) show, research *education* cultures help students to feel more part of the department or the university as a whole, and may help them in their learning, they do little to foster the wider research culture nor integrate students into it. Importantly they deny students the opportunity to fully participate in and contribute to the intellectual climate of the local, national and international research community. Further, they perpetuate the idea that research students are unable or unworthy to participate. This is exacerbated with coursework requirements confining students to a subordinate role in the institution.

We have drawn attention to fact that RECs do not work alone and stressed the importance of them working with and involving colleagues. Many others including heads of department, professors, supervisors and other researchers all have a role to play. Yet our data suggest that some RECs have difficulty in persuading these others to participate. Clearly it is important to provide a learning context where students can grow as researchers. Such learning does not typically come from engaging in formal coursework. So as we have seen, RECs have considered it important to create learning environments beyond such structures. Such learning environments have some features of research cultures. But they are also in many respects quite different. In our final example, it was viewed as everyone's responsibility to contribute to the research culture: academics including professors, research staff, postdocs as well as students. If a research culture is to be successful, this is what has to happen. Within such research communities the power dynamic shifts. Students become colleagues and together with other researchers share responsibility to develop the intellectual climate. Therefore, looking at the work of RECs in the other cases presented, we can see that many are working towards this, but can be hampered by the lack of involvement of established researchers.

While drawing attention to some of the organisational and attitudinal limitations and the ways in which RECs have responded it must be recognised that this is an evolving role. In some instances, administrative procedures necessary to carry out the role are lacking and some RECs are unable to focus on integrating students into research culture because they lack the basic administrative framework to do so. As Boud et al (2014) have highlighted, RECs tend to focus either on the institution, or on students or on supervisors, yet if students are to be fully integrated into research cultures this needs to be a community concern. We see in our study, evidence of the evolving role of RECs as they, and the institutions in which they work come to realise the implications.

Conclusion

Establishing research cultures where none exist or in the face of opposition has led RECs to find the most appropriate way in their context to ensure that research students engage in appropriate research cultures, and in many cases this has taken a great deal of hard work over successive iterations with many people involved. This will no doubt continue. As one said:

> *It's always going to be fragile, always going to be individually dependent, but if the overall climate in the faculty is supportive and appreciative of initiatives in this area, then worthwhile change is possible* (REC11, p.16).

RECs have an important leadership role to play in ensuring that research students have the opportunity to participate in a community of researchers. At the very least they must ensure that graduates are not isolated. Engaging in a research education culture with other doctoral students can assist student learning, create a sense of belonging, and may lead to timely thesis completion. In some contexts this is all RECs have found possible. However, it may confine students to a sub-ordinate role, distance them from other researchers and deny established researchers the opportunity to engage with fresh ideas from up and coming researchers.

The academic community has a responsibility to work with RECs to remove structural and attitudinal barriers to the full integration of research students into research cultures. By participating in this way, students not only develop their own understanding, they also make positive contributions to furthering disciplinary knowledge and they contribute to enhancing the intellectual climate. Institutions need to establish structures that support RECs in working towards enabling research students to fully participate in research cultures so that they are able on graduation to take their place in the wider world of research practice.

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References

Abrandt Dahlgren, M., Grosjean, G., Lee, A. & Nyström, S. (2012). The graduate school in the sky: emerging pedagogies for an international network for doctoral education and research. In A. Lee, & S. Dandy, (Eds.) *Reshaping Doctoral Education (*pp.173-186). London: Routledge.

Barnacle, R. (2002) Exploring Issues Associated with the Postgraduate Research Environment at RMIT. Melbourne, VIC., Research & Graduate Studies Committee, RMIT University.

Billot, J. (2011). The changing research context: implications for leadership *Journal of Higher Education Policy and Management,* 33(1), 37–46.

Boud, D., & Lee, A. (Eds). (2009). *Changing practices in doctoral education*. London: Routledge.

Boud, D., Brew A., Dowling, R., Kiley, M., McKenzie, J., Malfroy, J., Ryland, K., & Solomon N. (2014).The coordination role in research education: emerging understandings and dilemmas for leadership. *Journal of Higher Education Policy and Management*, 36(4), 440-454.

Deem, R. and Brehony, K J. (2000). Doctoral Students' Access to Research Cultures - are some more unequal than others? *Studies in Higher Education*, 25 (2) 149-165.

Feuer, M. J., Towne, L. & Shavelson, R.J. (2002) Scientific Culture and Educational Research, *Educational Researcher,* 31, (8), 4–14.

Graduate Careers Australia. (2013). Postgraduate Research Experience 2013. Melbourne: Graduate Careers Australia. Available http://www.graduatecareers.com.au/research/start, Accessed 25th February 2015.

Hill, M.F. & Haigh, M.A. (2012). Creating a culture of research in teacher education: learning research within communities of practice, *Studies in Higher Education*, 37(8) 971-988.

Johnson, B. J. & Louw, A. H. (2014) Building a research culture from scratch at a University of Technology, *Mediterranean Journal of Social Sciences*, 5(1) 151-164.

Kiley, M. (2005). Engaging doctoral candidates in research communities. In *Proceedings of the 2005 Australian Universities Quality Forum: Engaging Communities.* (pp. 73-77). Sydney, NSW: Australian Universities Quality Agency.

Lucas, L. (2009). Research management and research cultures: power and productivity. In A. Brew, & L. Lucas (Eds.), *Academic research and researchers* (pp. 66-79). Maidenhead, UK: McGraw Hill, Society for Research into Higher Education and the Open University Press.

MacGregor, R., Rix, M., Aylward, D. & Glynn, J. (2006). Factors associated with research management in Australian commerce and business faculties, *Journal of Higher Education Policy and Management*, 28(1) 59–70.

McCulloch, A. & Stokes, P. (2008). *The Silent Majority: Meeting the Needs of Part-time Research Students,* Issues in Postgraduate Education: Series 2. London: Society for Research into Higher Education.

McRoy, R. G., Flanzer, J. P., & Zlotnik, J. L. (2012). *Building Research Culture and Infrastructure.* Oxford Online Scholarship. Available: DOI: 10.1093/acprof:oso/9780195399646.001.0001

Metcalfe, J., Thompson, Q., & Green, H. (2002). *Improving standards in postgraduate research degree programmes: A report to the Higher Education Funding Councils of England, Scotland and Wales*. London: Higher Education Funding Council for England.

Pearson**,** M.**,** Evans, T. & Macauley, P. (2008). Growth and diversity in doctoral education: assessing the Australian experience. *Higher Education*, 55, 357-372

Pratt, M., Margaritis, D. & Coy, D. (1999). Developing a research culture in a university faculty, *Journal of Higher Education Policy and Management*, 21(1) 43-55.

Reid, J-A., Santoro, N, McMaugh, A. & Saltmarsh, D. (2010). Building and sustaining a research culture in teacher education, *Asia-Pacific Journal of Teacher Education*, 38(1) 1-3.

Rizzo Parse, R. (2007). Building a research culture. *Nursing Science Quarterly,* 20(3), -197-8.

Roberts Report. (2002). *SET for Success: The supply of people with science, technology, engineering and mathematics skills*. London: HM Treasury.

Turner, G. (2015). *The research students' journey*. York, UK: Higher Education Academy.

Tynan, B R., & Garbett, D.L. (2007). Negotiating the university research culture: collaborative voices of new academics, *Higher Education Research & Development*, 26 (4) 411-424.