



International Conference on Developments in Doctoral Education & Training

Conference Proceedings

Douglas Halliday



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UK Council for Graduate Education

CONFERENCE PROCEEDINGS

INTERNATIONAL CONFERENCE

on Developments in
Doctoral Education & Training

Douglas Halliday

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Foreword

The UK Council for Graduate Education, whilst operating within the UK, is acutely aware of its role in an international arena and the importance of opening up discussion and sharing of good practice in doctoral education worldwide. To this end it is with great pride and pleasure that we report another contribution to the international series of conferences organised and run by the UKCGE. When embarking on the planning and organisation of such a conference it is important that the organising committee exercise rigour and inspiration in equal measures and these were profoundly self-evident in this conference. The plenary papers presented here and the discussion papers in each session of the conference provided insightful evidence that there is a keen and active community of practitioners of doctoral education in the UK that have much to offer to help lead innovation and shape the delivery of doctoral supervision and doctoral training. It is absolutely clear that in order to achieve a doctorate in a timely manner (3-4 years full-time and 5-6 years part-time) requires the personal quality attributes of motivation, determination, inspiration which are fostered to thrive in a well-supported research environment under the mentorship of dedicated supervisors. Most academic institutions recognise the needs of good doctoral research environments but frequently struggle to resource them adequately in all disciplines. The growth in doctoral candidate numbers in many institutions has meant that there is ever increasing demand for deskspace and workspace and institutional capital build projects do not often focus on doctoral student's needs. It is becoming an increasing challenge for research groups, departments and doctoral schools to keep doctoral education at the forefront of institutional needs. For these reasons it is important that the professional educators of doctoral students meet and discuss their ideas, their successes and their challenges so that we continue to strive for excellence in doctoral education and respond to the trans-institutional and trans-national entity that is the modern doctorate. These conference proceedings admirably adds to the debate and discussion of good practice in doctoral education and I congratulate the organising committee and the presenters for their inputs.

Professor Mick Fuller

Chair, UK Council for Graduate Education

Introduction

On behalf of the Organising Committee, it gives me great pleasure to present the proceedings of the first International Conference on Developments in Doctoral Education and Training. In April 2013 we hosted 128 delegates in Edinburgh, Scotland to discuss all aspects of the doctoral qualification. In my welcome to the conference I surmised that the doctorate was "alive and well"; a view strongly supported by those attending this conference.

There was a time when the doctorate was regarded as a highly specialised and niche undertaking to be entered into by a relatively small number of individuals in an atmosphere of cloistered calm and quiet. These days have long gone. The doctorate has, in my view, come of age and is recognised the world over as an immensely valuable and distinct qualification providing a gateway to a large number of career options. The doctorate offers an individual the opportunity to study their chosen field in considerable depth and ultimately to extend their subject with new insights, new understanding or in new directions. In my institution, and in many others, we refer to this as "an original contribution to knowledge". What gives the modern doctorate a sense of purpose and excitement is this element of originality. It is against this backdrop that the UKCGE Executive Committee decided this was an appropriate time to organise this meeting.

The conference had six themes: Policy agendas; Structure of Doctoral Programmes; Training in Doctoral Programmes; Supervisors; Assessing Doctoral Programmes; New approaches. These covered all aspects of the doctorate and provided delegates with an opportunity to benchmark their own provision and share experiences. A particularly strong element of the development of doctoral programmes, which I regard as important, is the need for structured approaches to training within doctoral programmes. These proceedings present clear evidence that changes in the management and support of doctoral programmes has improved the quality and the experiences of those undertaking a doctorate. The papers presented in these proceedings touch on all the themes of the conference and are authored by researchers from Australia, Canada, Europe and the UK. Topics covered include: different approaches to the doctorate in different countries, how to ensure doctoral candidates complete within their allotted time, how to support and develop new supervisors for doctoral programmes, training of researchers during their doctoral programmes, doctorates for professionals, and approaches to assessing doctoral programmes and learning from the assessments. I am confident you will find much to inform and stimulate new ideas. I commend these proceedings confident that you will return to them as a source of valuable information for some time.

I could not finish without acknowledging that running a successful conference is a team effort. I would like to extend my sincere thanks to the other members of the organising committee: Gill Clarke and Pam Denicolo. The UKCGE office team also deserve special mention for successfully managing all aspects of the conference. In particular I would like to mention Angus whose efforts made this conference an outstanding success. I am also grateful to the conference sponsors, Epigeum, without their support this conference would not have happened.

Dr Douglas Halliday

UKCGE Executive Committee Member

Chair, International Conference in Doctoral Education & Training Organising Committee

The doctoral curriculum: An Australian perspective on what? who? And how?

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This paper presents an Australian perspective on the following issues:

- What form skills development takes in Australia, and whether it is similar for all doctoral candidates, or different, depending on the qualification for which they are aiming?
- Whether Australian employers have similar criticisms of doctoral graduates' capabilities as in the UK, even now that skills development is an integral part of doctoral degrees?
- How the doctoral qualification descriptor in the Australian Qualifications Framework is being implemented in universities and what is the impact of their distinction between research and professional doctorates?
- How the 'curriculum' and structure of doctoral programs affects length of period of study and completion rates and whether there are similar concerns to those in the UK about our growing expectations of what doctoral candidates can achieve in their 4-5 years (or equivalent part-time)?
- Whether there are similar organisational groupings in Australia to Doctoral Training Centres (DTCs) for doctoral education, whether these include students who might leave after a year with a master's degree, and whether if such groupings exist, they include all doctoral students, not just those who are publicly funded?

In order to address the above issues I chose to take a doctoral curriculum approach (for example, Gilbert, 2004, 2009; McWilliam & Singh, 2002) so, the "What" in the title is primarily the content of various intended programs that have sprung into existence and are increasing in number. As I will discuss later, there is an ongoing debate as to the nature of the curriculum, particularly learning outcomes and content. Certainly one of the more interesting features of current and emerging doctoral coursework programs is their increasingly broad reach—extending beyond academic and research skills to include a plethora of workplace capabilities and professional attributes.

The "Who" comprises not only the candidates and academics who are directly involved, but also employers, government and professional groups who are influencing doctoral curriculum to a greater or lesser extent.

Finally, the "How" is concerned with pedagogy, structure and delivery of the intended skills and capabilities in the coursework that is being designed and introduced as we speak.

I will start with a brief outline of the Australian context, then address four issues central to the "what", "who" and "how" of the doctoral curriculum in Australia, namely: skills development; employer perspectives; structural development; and emerging strategies.

The Australian Context

Until the 1980s the Australian PhD was very similar to its UK cousin where candidates worked with (usually) one supervisor generally in the master/apprentice model and taking as long as was needed to produce an original contribution to knowledge. Entry was almost exclusively through an Honours program which was based on the Scottish model of one additional year following a successful undergraduate degree. The student undertook a one-year program of approximately one third advanced disciplinary knowledge, a third training in research processes and a small scale research project. Most graduates went on to be academics.

During the mid 1980s and 1990s, Australian higher education experienced fundamental reform along with rapid expansion, bringing about substantial changes in university practices with many institutions introducing structured programs for new candidates along with, supervisor development programs and substantially enhanced candidate support services (Kiley, 2011). Following the enrolment spike in the 1980s the diversity as well as sheer numbers of doctoral enrolments steadily increased so by 2007 we had 5,721 completions including a noticeable increase in female enrolments (Edwards, Radloff, & Coates, 2009).

It should be noted that much of the overall increase in candidate numbers resulted from international candidate enrolments in that 'total research student numbers from 2001 to 2010 increased by 29 per cent, principally due to overseas student growth with the proportion of domestic students decreasing from 86 per cent to 73 per cent' (Larkins, 2012, p. 2).

Of significance in these figures is the average age of doctoral candidates across all universities and disciplines. The median age at commencement of candidature is 33 years. Given this, it is not surprising that at any one time 40 per cent of all candidates are undertaking their doctorate part-time, and this approaches 50 per cent when calculated for domestic candidates only (Larkins, 2012, p. 5).

With the average age of candidates being in their 30s and a substantial percentage being part-time it is not surprising that a recent survey of doctoral candidates found that in the year prior to enrolling in their doctoral program:

- 56 per cent of candidates had been employed (45 per cent FT, 9.5 per cent PT/Casual)
- Almost 21 per cent had undertaken an Honours degree, and
- 16 per cent had been undertaking postgraduate coursework study (Edwards, Bexley, & Richardson, 2011).

Time to completion over the last decade, while varying by discipline, tends to be approximately 4.1 years (full-time) and 6.0 years (part-time) (Department of Innovation, Industry, Science and Research, 2011, p. 19). However, for many years international candidates have consistently completed in less time than domestic candidates and Larkins (2012 p. 2) argues that this is 'principally because there are fewer part-time enrollees' in the international cohort mainly due to Visa requirements.

As with many other countries, a substantial percentage of all candidates are clustered in a small number of universities. In Australia, over 50 per cent of all doctoral graduates come from eight universities, creatively called the Group of Eight.

Of the other 31 universities there are three major, self-identified university groupings. The Australian Technology Network (ATN) involves the five universities which, prior to the 1980s mergers, were Institutes of Technology. The seven Innovative Research Universities (IRU) are what I think in the UK are called Red Brick Universities, mostly established in the 1960s. And finally, the Regional Universities Network which consists of 10 universities which have a particular remit to provide a university education for students in their region and to undertake research that supports that region. Nine universities do not belong to any particular formal grouping.

Two final background factors are important in understanding the Australian context: the Australian Qualifications Framework (AQF) and the Tertiary Education Quality and Standards Agency (TEQSA).

While the AQF was 'first introduced in 1995 to underpin the national system of qualifications in Australia encompassing higher education, vocational education and training and schools' (<http://www.aqf.edu.au/AbouttheAQF/TheAQF/tabid/108/Default.aspx>) it is only recently that the framework has had real influence at the higher education level. One reason for the influence relates to the revision of the framework in 2011, however, a major reason for this increase in influence relates to the introduction in 2011 of TEQSA, Australia's independent national regulator of the higher education sector. With the establishment of TEQSA there were 'teeth' in the system, something which had been missing for the past decade or more.

The following is the AQF statement about Level 10 "the Doctoral Degree" (Research) i.e. PhD and with the slight variations for the Professional Doctorate in italics:

The Doctoral Degree (Research) qualification (leading to the award of a Doctor of Philosophy) is designed so that graduates will have undertaken a program of independent supervised study that produces significant and original research outcomes culminating in a thesis, dissertation, exegesis or equivalent for independent examination by at least two external expert examiners of international standing.

Research in the program of learning will be for at least two years and typically two-thirds or more of the qualification. *The program of structured learning typically will include advanced coursework.* The program of learning may also include advanced coursework to enhance the student's capacity to make a significant contribution to knowledge in the discipline (or cross-disciplinary field) and/or research- integrated practice developed in collaboration with a relevant professional, statutory or regulatory body. The advanced coursework may support but not replace the research outcomes. *The advanced coursework and research-integrated practice will support the research outcomes.* (p. 65)

The AQF has identified six generic research learning outcomes and requires all awards to provide sustainable pathways to, through, and from the degree. Currently at the doctoral level, if candidates withdraw without completing their doctorate they leave with 'nothing' and so universities are examining ways in which they can provide candidates with supportable exit points during candidature and with most universities re-examining their entry qualifications and pathways, this is the focus of much of the following discussion.

Specific issues

For the remainder of this paper I would like to cover the following topics:

- Doctoral skills development in Australia, part of the “What”
- Employer perspectives on doctoral graduates' capabilities, some of the “Who” and broader perspectives on the development of an educated workforce, more of the “Who”
- Structural developments in Australia regarding research strengths and candidate development, one aspect of the “How” and
- The newly emerging coursework in the PhD, a further aspect of the “How”

Doctoral skills development in Australia

Arising from an ongoing debate regarding doctoral skills development a study was undertaken in 2008-9 (Cumming & Kiley, 2009) that examined the many and varied forms of graduate skill development across Australian universities (<http://www.gradskills.anu.edu.au/>). Part of the complexity of the issue related to terminology. For example, we found that a number of terms relating to skills and skill development were commonly used in both academic and professional settings. An issue highlighted by Gilbert et al (2004) and one which we found also was that terms such as competence, capability, attribute, and capacity were used interchangeably. We also noticed that employers, governments and postgraduate students typically used two broad categories—academic and employability skills—to describe skill development.

The project identified a number of different existing frameworks. One relatively recent example is Barrie's 2006 framework which consisted of a hierarchy of four types of skill: Precursory, Complementary, Translational and Enabling (Barrie, 2006 p. 223). Another is Willison and O'Regan's (2007) framework aims to chart and monitor students' research skill development and includes six facets of the student research process including: inquiring, generating information, critically evaluating, organizing, synthesising and communicating.

However, a particular outcome from our project was a capability framework which identified the necessary capabilities needed for *conducting* research and those required to *become* a researcher. From that framework it was possible to develop a way of considering approaches to skills development. The study identified formal approaches such as courses and subjects that work well for some skills development. However, more informal, semi-structured approaches such as journal clubs and writing groups are more appropriate for other learning and an unstructured approach might be better for some skills development. Note that it is not necessarily the activity that is unstructured but rather the provision of that learning opportunity.

As outlined earlier there are four main groupings of universities in the Australian higher education. Why is this important? Well, one way in which these groupings operate is to collaborate to provide various skills development opportunities for research candidates.

The most significant, and longest running, is the e-Grad School (<http://www.egradschool.edu.au/>) run by the Australian Technology Network (ATN) group. Collectively, these universities provide support for candidates, early career researchers and supervisors with each of the member universities contributing through their online provision. Following a learning needs analysis, candidates take the courses that are most relevant for them. A sample of these includes: Information literacy for the e-researcher; Research Methodology Online; Employability Skills Online; and Introduction to Tertiary Teaching.

Possibly the most extensive research undertaken in Australia regarding the development of employability skills was the “Five to seven year out” study (University of Queensland Social Research Centre, 2007). Generally the study found that many candidates had come to their study with a range of skills that the university aimed to develop in them, and that some of the skills they developed during candidature were of limited use in their employment, in other words there was a mismatch between need and provision.

It is of interest, but not a surprise, that much of this paper, and several of the presentations at the conference revolve around employment. Long term data on employment in Australia is difficult to get, however, “in 2008 28 per cent of recent PhD graduates worked in higher education, with the remainder being dispersed across a wide range of public and private industry employment sectors” (Group of Eight, 2013, p 25).

Employer and other perspectives on doctoral graduates' capabilities

Early work in the 1990s on employability skills arose from the Mayer Committee (Mayer, 1992) which provided a list of competencies for higher education. In the mid 1990s Clark (1996), a senior executive of a large pharmaceutical firm and a member of the Australian Business Higher Education Round Table, argued that postgraduates should have a broad and sophisticated mix of qualities. Understandably these

skills have been revised and developed since that time with the current developments in Australia being addressed by two Federal government departments: the Department of Industry, Innovation Science, Research and Tertiary Education and the Department of Education, Employment and Workplace Relations. A working group from the two departments has developed a draft framework titled *Core Skills for Work* (DIISRT & DEEWR, 2012) which covers the following three clusters of skills:

1. Navigating the world of work e.g. work life and career management
2. Interacting with others e.g. Communicating for work and recognising and utilising diverse perspectives
3. Getting the work done e.g. planning and organising, and working in a digital world.

For each of these capabilities the framework moves through five stages from novice to expert and they nest within an understanding of performance features and influencing factors. Much of the early doctoral work for the project was undertaken at the University of Melbourne with the outcomes reflected in the various programs that the University now provides for candidates, for example their UpSkills program which is ‘a comprehensive suite of workshops and seminars specifically designed to support all graduate researchers throughout their candidature’ <http://gradresearch.unimelb.edu.au/handbooks/phd/intro.html>.

But, do all employers think the same? Pitt, Cox and Manathunga (2010) undertook a study of PhD graduates from Australian Cooperative Research Centres. They categorised employers as Private, Public and University and analysed employers' expectations of the performance/proficiency of graduates and then their reported performance in the workplace. While generally the same skills were expected across all three sectors, the extent varied. For example, ‘a significantly higher proportion of university sector employers placed greater emphasis on “preparing reports and articles for publication” whereas ‘public sector respondents attributed more importance to “an ability to work as a member of a team”’ (p.3).

What was significant from the findings is that of the 21 capabilities reported there were very few instances where reported proficiency matched or surpassed expectation. Only the private employers' reported six skills, including teaching, where proficiency *slightly* exceeded expectation. The case was similar when employers were surveyed on graduates' various character traits and ability to exhibit these traits. Personally I find it striking that the university employers reported in every case that performance did not meet their expectations, despite being the institutions that educated those very graduates!

The other side of this coin relates to government and public views on the development of an educated workforce, whether the workforce be academic or other. A Government report in 2011 titled *Research skills for an innovative future* reported that there was evidence ‘of emerging weaknesses in domestic supply channels, deepening concerns regarding the clarity and attractiveness of research careers in Australia, and Australia's exposure to increasingly intense global competition for highly skilled workers’ (Department of Innovation, Industry, Science and Research, 2011 p. xi).

Certainly from the academic perspective, work by Hugo (2005) suggests that as the baby-boomers in our universities retire there will be difficulty in meeting the replacement need if Australia relies on domestic doctoral graduates only (Edwards et al, 2011). However, running counter to this argument is the recent report by the Australian Council of Learned Academies (ACOLA) (2012, p. 25).

Having surveyed 1203 researchers, including very recent graduates, they reported that the system for graduates gaining employment in Australia was criticised for: too-much reliance on short-term contracts, inadequate employment/scholarships, limited jobs in universities/research institutes and scholarships that were not long enough to adequately complete a PhD. In a panel discussion on the report held in March 2013 with one of the authors of the report plus postdocs, senior Research Council leaders and recent graduates, an issue which became obvious very quickly was that while there might well be jobs that would benefit from having someone with research training at the doctoral level, however, during candidature students had been not only encouraged by their supervisory panel to see themselves as researchers, but to consider that they had futures as *researchers*.

A question to consider: are universities, research institutes, funding bodies and governments ensuring that supervisors and candidates are adequately alerted to, and prepared for, alternative career pathways on graduation, that may not specifically relate to research? And should they be?

Structural developments in Australia regarding research strengths and candidate development

In Australia, of particular interest regarding formal structures that build on research strengths, are the Co-operative Research Centres (CRCs). The CRC program began in 1991 with the aim of researching specific issues which were best addressed by a combination of organisations. CRCs must comprise at least one Australian end-user (either from the private, public or community sector) and one Australian higher education institution (or research institute affiliated with a university). Each CRC also includes a substantial number of doctoral candidates. Collaborators apply for funding to establish such structures. There are currently 38 CRCs operating.

Each CRC is tasked with developing, training and graduating doctoral candidates and they have specific programs of training and support. A study reported by Manathunga, Pitt and Critchley (2009) surveyed candidates in CRCs re their graduate attribute development. Unsurprisingly many of the respondents reported that they had already possessed many of the skills the university stated they should develop during candidature. This same point was noted above from the 'five year out study' along with the finding that some of the skills universities aimed to develop were found to be unnecessary in employment.

A number of Australian Deans of Graduate Studies have visited the UK in the past few years and have been quite taken with the Doctoral Training Centre (DTC) idea and are working towards developing something similar in Australia. Harking back to the university groupings, in 2012 the Australian Technology Network (ATN) set up the Industry Doctoral Training Centre in Mathematics and Statistics (IDTC) with seed funding from the federal government. The Centre is operating in each of the ATN Universities. Other DTCs are being discussed with likely developments soon. It will be of interest to note how DTCs might link with/relate to the CRCs.

Emerging strategies for doctoral coursework—especially the MRes

As outlined earlier, other than in the Professional Doctorate, some specific disciplines such as Economics and various 'additional' courses e.g. Graduate Certificate in Entrepreneurship, extensive formal coursework has not been a standard component of the Australian PhD that is, until recently.

In an informal survey of Australian universities conducted very recently 55 per cent reported that they have been actively discussing and implementing some form of doctoral coursework into their PhD and another 20 per cent are considering this action in the near future. An issue which has come through very clearly in the various discussions across universities is the passion with which the university staff involved address the importance of recognizing and accommodating the individual needs of candidates, as well as the school and disciplinary idiosyncrasies which shape the candidate's experience. In several cases, in initial discussions, staff can see no way in which candidates can engage in some form of faculty, let alone university-wide program. However, with the suggestions that individual needs analyses and learning plans might be helpful here much of the concern disappears.

But, what is this coursework and what is its purpose?

Discussions with academic staff suggest that there are a number of perceptions regarding the term "coursework" including lectures, exams, and standardisation. Another set of implications includes "The US model", a need to increase the length of time for candidature, and an anticipated reduction in quality and quantity of the thesis.

Furthermore, there are many different perceptions of what coursework aims and content involve and as I work through these you will note they often overlap in intention and/or practice:

- Enabling courses aim to assist candidates in 'getting off to a good start' and/or to accommodate candidates who are underprepared in research, so they offer a focus on research processes which is front-ended into the first six to nine months of candidature. These courses are often considered as providing exit qualifications e.g. Graduate Certificate or Diploma, for candidates who do not complete the PhD award.
- Enriching or value adding, the second view, can relate to a university providing specific experiences for candidates, particularly those that relate to the nature of the university. For example the values of social justice or ensuring that the candidate's research contributes to the region. Additionally, enriching can relate to inter-disciplinary experiences, internships with industry and government, or advanced disciplinary knowledge.
- Articulating, the third view, relates to skills development to meet the perceived criticisms or needs of employers. These courses are generally made available later in candidature and might include experiences such as teaching, project and financial management. Some of these courses are made available to candidates on completion of their doctorate such as a six-month specialised Graduate Certificate or a fourth year in an industrial/commercial setting that provides skills development in an authentic setting beyond the academy. (With thanks to Professor Alan Dench, University of Western Australia, for the terminology "enabling", "enriching" and articulating"— see <http://chelt.anu.edu.au/doctoral-coursework/presentations>).

In addition to content, cohort building is often seen as an important benefit of coursework, particularly, but not only, to address the perceived isolation of candidates in the humanities and social sciences. Examples of all of these intentions are evident in the new courses being implemented.

Decisions as to the type of approach have been motivated by a number of factors including:

- Size of candidate cohort

- Characteristics of the 'typical' candidate
- Characteristics of the discipline and university.

The following are provided as two quite different examples. In one Australian university where there is a relatively small doctoral enrolment across the university, institution-wide programs have been developed for all candidates within the first year of candidature with a focus on enabling courses. On the other hand, at a university with a considerable enrolment and strong disciplinary traditions the University has invited various discipline groups to work together to develop specific Graduate Research Programs throughout MPhil or PhD candidature. These courses will then be accredited by the University's Graduate Research School.

Some universities are working on the premise that with a sound start to candidature, then it is possible that candidates will complete their program more quickly than at present as the work by Humphrey et al (2012) at Newcastle has suggested. Others are resisting the idea of coursework until the government re-examines the funding model to incorporate more time.

While many universities are considering coursework, one has taken a different path, a path which has interested many others. The path is the development of a Masters of Research (MRes) with up to 50 per cent coursework and 50 per cent research. Within the Australian context this is quite a dramatic move if you appreciate the government funding model that supports postgraduate study. Research degrees (masters or doctoral level) must have at least two thirds devoted to research to qualify for a domestic candidate's tuition to be funded in full by the government. Courses that have a smaller research component than that are classified as coursework degrees and full fee tuition is charged to the student, domestic as well as international. "Fiddling" with the funding model is no light matter, but one which is currently being examined by the Deans.

Summary

In conclusion, the content and delivery of the doctoral coursework curriculum in Australia has become increasingly responsive to a range of internal and external demands and pressures in recent years. Individual universities have been striving to develop a range of customised programs and strategies that are designed to ensure that doctoral candidates are able to demonstrate a broad range of capabilities on graduation that will equip them for work in industry and the professions, as well as in academia. More recently, however, greater attention has been directed towards the development of common structures and approaches to curriculum, such as the MRes, that incorporate sufficient flexibility and rigour to cater for a more diverse cohort of candidates currently enrolling in doctoral programs and yet provide them with the necessary training.

This leads me to the term which I believe needs to be added to the title of the paper and that is "to Whom". To whom are these developments applying? Clearly one major group is the candidates who, as I mentioned, are increasingly diverse in nature (Pearson, Cumming, Evans, Macauley, & Ryland, 2011). A second group is the supervisors. As the reports show in the edited book by Hinchcliffe et al (2007) at the early introduction of the Roberts money and required skill development in the UK, much of the challenge was to convince supervisors of the value of the "additional" training and that while it "took the candidate away from their research" this was not necessarily a detrimental thing.

So, what does all this mean in terms of curriculum and specifically the What? Who? and How? There are a number of issues which I will summarise.

Firstly, the introduction of coursework in the PhD in its many and varied forms and the potential for the development of the Masters of Research as a standard entry qualification into an Australian doctorate. For these two issues, let's just take an instance from one Australian university, and the Sciences only. In Chemistry, for example, which is a discipline which traditionally has younger candidates (nationally with a mean age of 22 years) (DIISR, 2011) and who have come through with a very good Honours degree staff are loath to see the one year Honours disappear and be replaced by the two year MRes. On the other hand, staff in a discipline like Astronomy which takes students from a variety of discipline backgrounds are keen to introduce disciplinary coursework to ensure that all PhD candidates are "on the same page" despite their previous disciplinary experience. Whereas staff in a third discipline, for example Epidemiology which tends to have older candidates (with a mean age of 35) and many returning after some time in the profession, are keen to use personalised learning plans to support candidates with research methods and similar programs early in candidature.

Always a factor in the discussion relates to the requirements of international doctoral candidates and what will be attractive or what might send them in "other directions". This leads into an issue which has arisen strongly in any workshops with research supervisors and that is the need for the customisation of doctoral coursework in response to the highly diverse nature of the candidate population. Given that candidates are coming to the doctorate with so many different backgrounds, experiences, and skills, not only is there little point in implementing a 'one-size-fits-all' coursework program but there is substantial antagonism to the idea from many quarters. Therefore, academics and candidates alike need not only to demonstrate greater flexibility, but also to be much more alert to what is needed and

how and when it is provided/delivered. Much of this thinking accounts for suggestions such as Individual Learning Plans for candidates. Similarly, it is likely that many candidates need to be more pro-active in terms of determining their own needs and required training and development—rather than accepting what academics/institutions think they need.

While the Australian government pays the piper she^a, to a large extent, calls the tune. However, the Australian Deans of Graduate Research are working closely with government to bring about funding changes which will then allow individual universities and/or groups of universities to provide the most effective curriculum offerings to their wide and varied candidate enrolments.

One final matter: anyone with experience in curriculum studies knows that curriculum development is a highly politicised matter, particularly driven by the hidden curriculum. What is the, not so hidden, curriculum here?

In Australia, learning to be an independent researcher is part of the national innovation agenda funded by the Research Training Scheme. Currently we have 9 doctoral holders per thousand of the employed population (Ewing, Pers Com) an increase from the figure of 7.8 reported in 2007 by Auriol. However, the challenge has been given to universities to educate these future researchers within four years and not only to help candidates be well-rounded researchers, but also to develop the skills suggested by employers that they need/want. Yet, these very educators appear to be among the least happy with their “products”.

While I have endeavoured to portray current and emerging developments in the doctoral curriculum in Australia, there is much to be gained by comparing and contrasting approaches being implemented in other countries. This is indeed one of the benefits of an international conference of this nature—to share, to review and to discuss our activities and plans—while acknowledging differing cultures and contexts.

Acknowledgements

I gratefully acknowledge the assistance of Dr Jim Cumming, Ms Karen Bell, Dr Anna Cowan and Professor Joe Luca in the preparation of this paper.

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Supporting Doctoral Students to Complete On-Time with Impact

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Abstract

The economic, political and personal imperatives of the times emphasise not only successful achievement of the doctorate with generic skills learning along the way, but also require timely completion of projects with discernable impact. This paper develops that theme by considering the views of some experienced supervisors and supervisor trainers, skills training professionals and writers in the field of doctoral education, as well as doctoral researchers themselves. In a conference activity session they explored those practices and processes that inhibit timely completion and achievement of impact and those that support and encourage those outcomes. This took the form of an iterative refining process working on responses provided by a similarly representative group in a preceding large UKCGE workshop. After some discussion of the cumulative results, conclusions are tentatively presented for further research.

Keywords: Assessing Doctoral Programmes, supervision roles, completion, impact, researcher development, supervisor development

Introduction

The rapid and unprecedented change over the last ten to fifteen years in the development of and support for researchers, particularly those in the early stages of their careers, in the UK, Europe and further afield has been well debated in, for example, UKCGE, Vitae, SRHE Postgraduate Interest Network and European Universities Association workshops and conferences as well as in the literature (vide Kiley paper in this volume and Fell and Haines 2009). However, there is a lack of formal evaluation of the results of these initiatives. The UK Impact and Evaluation Group (IEG, formerly the Rugby Team) have provided guidelines for such evaluation, (see Bromley 2009, 2013a & b) but few have taken up the challenge. Nor does this paper purport to provide such an evaluation, but rather it seeks to highlight from practitioners' perspectives potentially fruitful foci of research.

These significant changes in UK doctoral education, used as an example here, have been spurred by the growth in numbers and diversity of participants and also developments in the purpose of the doctorate. Specifically, the doctorate continues to be a main entry qualification for work in the academy itself, but it is increasingly being used for obtaining work at a senior level across the range of sectors, public, private and voluntary, in a wide range of professions. For instance, professional people are now seeking to obtain a doctorate to improve their promotion chances within a specific career pathway while the doctorate, as the superior qualification, is sought by many to indicate exceptional skill within an increasingly competitive employment environment (Duke, 2013).

The nature of doctoral support and training had changed little before the late 1980s, being largely viewed as an apprenticeship in research with students learning by working with an expert researcher, their supervisor, to develop a research project and a thesis in the supervisor's field of expertise. Such apprenticeships were often spread over many years so that in 1987 the Winfield Report articulated concerns from funders about over long completion rates and the subsequent cost of studentships. This led to some disciplines in certain universities seeking to reduce registration lengths by developing training provision for doctoral students, mainly confined to lessons about research methods, although some also provided advice on how to write a thesis and survive the doctoral journey. This report marked the advent of government interest in postgraduate education with the next report specifically related to it being the Harris, 1996.

In the interim, the notion of providing Research Methods Programmes for doctoral students became more widespread across universities and disciplines within them. Indeed, many Research Councils (RCs) demanded that their funded students receive such training and began to institute 'recognition exercises', focussed on the provision of high quality training, that determined which institutions could bid for RC funded research students. After the Harris report universities began to extend this provision to all registered doctoral students, whether required to or not, because of benefits of economies of scale and peer group learning, quality considerations and, quite probably, publicity and recruitment advantages. This was timely because it gave the UK a head start when the Bologna Declaration, published in 1999, sought both to reform European Higher Education systems and produce some convergence across Europe in order to improve employability, mobility and global competitiveness of its graduates. Not only had the UK had already established methods training in its Higher Education Institutions (HEIs), but also many had begun to include broader skills training in their doctoral programmes, albeit mainly related to research communication and dissemination, and to insist that all new academic staff had some supervisor training before taking on that role followed by mentorship by an experienced colleague for their first experience of supporting a doctoral researcher.

Between 2000 and 2010 the UK government increasingly and simultaneously recognised the cost of postgraduate education and its potential to contribute to economic growth and competitiveness in the global market. This, alongside the annual revisions to the Bologna agreement in the education and training of doctoral and early career researchers, led to a proliferation of reviews, reports and recommendations so that at least one and often more appeared annually. By then UK HEIs had all made provision of some kind in relation to transferable skills training, many establishing Graduate Schools of some form or another or creating similar professional teams charged with doctoral and early career researcher (ecr) development. At the same time a new academic/academic-related career pathway, researcher developer, emerged in the field as the training of doctoral and early career researchers became crucial to institutions who then sought out qualified persons to organise, manage and contribute to training programmes of varying degrees of discipline specificity. Similarly, the profile of library staff in relation to researchers was heightened as research information and data literacy (www.rin.ac.uk/) developed as a key skill area.

In more recent times, coalitions within and between universities (Doctoral Training Centres or Partnerships) have been formed under research council initiatives, which aim to provide excellence in research through a training and development strategy of drawing on a wider range of expertise within a context of a critical mass of researchers. Along with these initiatives, attention has increasingly been paid to the development of supervisors enabling them to go beyond mentoring their research students in their specific area to supporting their students' skill and career development as well (e.g. Lee 2010, Rousseau and Eley 2010 and Wisker and Kiley 2012).

It is clear from this historical synopsis that a larger number of people, with diverse roles, have become (increasingly) involved with the support of doctoral students who in turn are expected to achieve more in a shorter time of doctoral study. Further, supervisors have been expected to develop their own role and implement different policies and procedures over this period with little acknowledgement that supervision for today's and tomorrow's doctoral researchers, in climate which continues to be economically challenging, is considerably different from that they experienced themselves.

Specifically, four pervasive themes have threaded through discussions with supervisors and other doctoral student support staff organised by the organisations mentioned in the first paragraph over the last two years. In short, these have been as follows:

- A. a highlighting of the specific requirement that all research should have discernable impact;
- B. an increased emphasis on the timely completion of doctoral candidates;
- C. a concern that support for the development of supervisors has not kept pace with the changing requirements of doctoral student support and training;
- D. disquiet over the apparent lack of research that would provide an evidence-base to support the recent developments and emphases and to evaluate responses to them.

{For a more extensive review of these topics at the national level see the chapters by Bohrer, Bromley, Clark, Reeves, and by Denicolo and Park in Kompf and Denicolo (Eds) 2013 and Denicolo 2013 in the reference list and the work of Jackson and Tinkler (eg 2001) and Park (2003)}. Of particular concern is that higher expectations of impact (A) at a time when there is decreasing flexibility in the time to complete (B) puts added pressure on both the doctoral candidate and the supervisor.

At a local level, as part of our work in supporting researchers at all stages at the University of Surrey, we have established in our programme for doctoral researchers a range of workshops that seek to address issues A and B above. Further, we have begun a process of addressing the needs of supervisors identified as issue C while we have set up a project team drawn from across the university to identify and then collect the data that could form the basis of research, identified as issue D, to evaluate the impact of our interventions at Bromley's (2013) levels 1 to 4, that is: reaction to increased training, learning of new skills, engaging and applying new skills, adequate preparation for careers. However, these are internally focussed activities that we recognised would be supported and improved by drawing on the ideas and enthusiasm of others struggling with the same challenges.

We thus eagerly responded to the UKCGE call to host a workshop in their supervisor-oriented series on effective support of timely and impactful completion of doctoral degrees, the event taking place in October 2012, and thereafter to provide a workshop to the International Conference on Developments in Doctoral Education and Training April 2013, using a synopsis of the outcomes of the earlier event as a springboard for further discussion and elaboration of the role of supervisors in achieving such effective completion for their own doctoral students. The focus for this paper is that debate which reduced the twenty three key activities from the October workshop to a list of essential components around which to structure supervision. It should be noted that the conference workshop also included presentations by Jane Creaton and Maggie Hardman who addressed respectively institutional contributions to the process and how students might both respond to such initiatives and take a lead in self-development as autonomous learners. All of these exercises served to provide information on the perspectives of those most intimately engaged in the task as a simple form of grounded theory research upon which we might build more rigorous research to provide evidence to support future practice.

We will describe first the outputs of the October workshop as an advance organiser for the introduction to the process employed at the conference workshop and the results it produced. We will then discuss these in more detail to show how they contribute to supervision of doctorates completed in a timely manner with impact.

The October Workshop

Participants and presenters who attended the October workshop (about 50 people in total) were not confined to supervisors per se but were representative of the wide range of people who collaborate to support doctoral researchers in their endeavours, including those researchers themselves, and staff who provide teaching, training and resource support for doctoral programmes. This was congruent with the philosophy of the organising team, including the authors of this paper, who believe that there are many who contribute to the process of doctoral study, all of whom having a unique part to play but all of whom could benefit from sharing perspectives and working together as a team.

Thus, interspersed between presentations, small, mixed working groups chaired by doctoral researchers devoted time to identifying what support is required for, firstly, timely completion and, secondly, completion of research that has impact (defined broadly as potential for a worthwhile contribution to knowledge at sometime in the future.) Discussion also ensued about how both could be achieved simultaneously, despite some expressed reservations about the development of worthwhileness perhaps being a rate limiting factor to completion.

Some key concepts, apparently meaningful in this context to all groups represented, were collected that pervaded both the presentations and the group discussions and plenary summaries, notably: trust; provision of wide opportunities; building a supportive environment; collegiality; community; mutual respect; constructive feedback; networking; non-judgemental listening; transparent expectations; mutual recognition of humanity. It was noted at the time that these define a very different milieu and philosophy for doctoral study than common to other degrees, while the relationship between the teachers and learners is notably different also. Thus one key initial activity within a doctorate is the negotiation between participants of this unusual situation.

The main suggestions were collated under three headings from the flipcharts produced by the groups working on the issues: Starting Strongly; Keeping up Momentum; Getting to the Finish Line. The groups highlighted how thinking about impact from the beginning as opposed to right at the end, essentially building in the expectation of worthwhileness at the onset, makes for more clear milestones and reduces the potential conflict between completion time and impact. The main constituent activities under each heading are provided in Boxes 1 to 3 below.

Box 1: Starting Strongly

- Negotiate expectations and a working contract asap- discussing the nature of research and the doctoral process.
- Ensure that the project is practical and capable of achieving an identifiable impact.
- Develop a community of practice – establish links with all involved in the process.
- Identify milestones that have some flexibility.
- Establish support systems.
- Be clear about availability of, support access to resources.
- Encourage an early start to writing.
- Plan potential impact and dissemination strategies (talks, conferences, publications) from the beginning.

Box 2: Keeping up Momentum

- Hand over ownership at a pace tailored to researcher's abilities and needs.
- Embed challenges:
 - Public engagement;
 - Conference presentations;
 - Developing a wider community of practice;
 - Writing journal articles.
- Revisit milestones.
- Re-evaluate the research and potential outputs/outcomes.
- Welcome new ideas but encourage critical thinking.
- Normalise change.
- Maintain confidence levels.
- Continue to encourage writing, giving prompt and constructive feedback.

Box 3: Getting to the Finish Line

- Starting from the projected viva date, plan out the last year.
- Be clear about milestones and deliverables.
- Practise presentations to a wide range of audiences (peer, experts, lay).
- Hold at least one practice viva.
- Continue to provide constructive feedback, introducing more challenge.
- Seek wider feedback through conferences and seminars.
- Encourage planning for beyond the doctorate.

Conference workshop

Best laid plans, as the poet Robert Burns noted, are frequently thwarted, this time by the enthusiasm for the workshop topic shown by conference participants, with over 60 attending the event in a relatively small room. Thus the original plan of engaging them in small groups to evaluate the activities recorded in the boxes above through a form of Delphi technique had to be amended. (The Delphi technique involves a facilitated discussion in mixed groups of stakeholders that allows consensus to be reached through recognition of individual differences and collaboration to reach jointly agreed solutions – see the UKCGE 2011 report on the Postgraduate Symposium). However, the variety of professional groups represented, and their enthusiasm to engage in debate was salutary. Thus, they talked quietly amongst small groups of neighbours to evaluate and decide on the three most important support activities that could produce timely completion with an impactful result. It would have been useful to have recorded the evaluation processes since comments overheard by the workshop leaders indicated that some considerable experience and expertise was applied to the task. This will be borne in mind for future research on the topic.

The small group results were then collated in plenary on to a flip chart with an indication given if a topic in their list of three was already present on the chart. This produced the condensed list presented as Box 4, some of which were seen primarily as the supervisors' duty to incorporate into their role while others were seen as being within the purview of the wider university as support for all engaged with doctoral study. This list was not intended to represent everything that should be done to support doctoral researchers in their endeavours but to indicate those support mechanisms that were absolutely essential. Each item generated some considerable debate to elaborate its meaning and some of this debate is represented in the Discussion that follows in the next section.

Box 4: Essential, effective ways of supporting timely, impactful completion

Universities should ensure:

- More structured and transparent doctoral procedures;
- Careful and efficient selection procedures, choosing only candidates who are passionately motivated to do a doctorate after having been alerted to what they should expect of the procedures and process;
- Only begin registration proper from the point of confirmation of doctoral studies;
- Involve a neutral person in the doctoral process (not a supervisor, perhaps part of training team) with whom the doctoral researcher/supervisor can discuss problems;
- Make efforts to prevent or undo doctoral researcher /supervisor collusion about producing a perfect thesis;
- Supervisor development as a continuing process.

Supervisors should:

- Ensure that doctoral researchers have realistic expectations about the process and support available ;
- Develop clear contracts, lines of communication and provide guidelines, all of which should be reviewed and developed over time;
- Institute a process of making a record of formal supervision meetings to which both researchers and supervisors can refer;
- Encourage an early start to writing and continuous writing throughout;
- Ensure that the project is realistically do-able in the time given;
- Build trust;
- Identify crisis points and bring them out to work on, not ignore them;
- Recognise potential isolation points and prepare for them.

Discussion

What universities should ensure.

The issue of having *more structured and transparent doctoral procedures* was one of the most strongly argued suggestions, with participants of all kinds noting the arcane ways in which official documents describing the process in their own institution were couched. Such documents frequently rely on pat phrases such as ‘contribution to knowledge’ and ‘subject to peer review standards’ with no elaboration or explanation. These contrast with the emphasis on practical and rather mundane issues in recruitment literature such as the class of degree required and the ‘provision of excellent research facilities’. In both recruitment literature and subsequent interviews or preliminary discussions, many students, and some staff, had found that procedures such as annual reviews, ‘upgrades’, progression meetings or confirmations, and expectations about attendance on skills and methods courses had been ignored or skimmed over without explanation. It was noted this may led to students entering a research degree programme with little idea of what is expected of them before enrolling and, indeed, as they embark on and progress through the degree. The notion that a doctorate was simply a ‘bigger masters degree’ was a common starting point, although all those with a current doctorate affirm it as a creature of a different species to any other. Some effort is being addressed to establishing more effective, transparent and universal procedures, for instance readers might consider the vision for doctoral degrees beyond 2010 portrayed in the LERU 2010 position paper referenced by the main author, Bogle, below.

Selection procedures were spoken of with irony, reflective of the pressure that academics are under to support institutional budgets and by prevailing notions in some quarters that an adequate set of criteria consists of the possession of a first class honours, with or without a masters degree or prior professional experience depending on the discipline, and perhaps a germ of a project idea. Participants were eager to emphasise that ‘informed motivation’ was more essential, with candidates able to demonstrate that they were alert to practical implications and could fit the rigours of doctoral study into their lives. Examples were given of the dissipation of supervisor energy resulting from trying to help ill-prepared candidates struggle to complete at all, never mind on time.

Some discussion centred on the suggestion put forward that it would be in everyone’s best interests not to begin the *registration* clock ticking until the confirmation process indicated that a practicable, worthwhile project had been identified with a good idea of relevant methodology and techniques, as is the case in a few institutions. It was felt further that this procedure would help the arts, humanities and social sciences, in which the majority of doctoral researchers devise their own project topic and method, achieve parity of completion rates with the sciences in which project identification is the province of the supervisory team in advance of a candidate’s selection.

Recognition that the main role of the supervisor is to advise on disciplinary and theoretical issues while providing sufficient intellectual challenge seemed to lie behind the suggestion that it would be helpful to have available a *neutral person* with whom the researcher can discuss problems of a more personal or practical nature, such as managing their work/life balance or struggling with writing in an academic mode or balancing alternative views from different supervisors. This led to the provision of examples in which researcher developers had provided excellent support in this respect, taking some of the burden from the supervisory team.

It was interesting that, in the penultimate recommendation for universities, there was clearly recognition of a common problem: *collusion* between doctoral researcher and supervisors *to produce as perfect a thesis* as possible to ensure a pass and limit amendments, regardless of the over-run of registration time – an understandable belt and braces principle that nevertheless was inefficient of resources and caused problems for research funders and the institution. Unfortunately, although it was suggested that institutions should prevent this, no practical suggestions were made about how this could be achieved, other than that there need for greater transparency about standards and criteria applied by examiners and clarity about the meaning of ‘original contribution’, and so on.

Finally, participants discussed the need for *supervisor development* to be established as a *continuing process*, with an explicit expectation from institutions that all supervisors, no matter their previous experience, both remain up to date and share their experience and expertise with colleagues. Indeed, it was noted that some institutions already require evidence from supervisors annually that they have engaged in such development in order that they remain on a list of those able to take on new doctoral researchers. However, participants made it clear that reciprocity should be established in that the effort required and the time taken to supervise a doctoral researcher should be accorded appropriate status and reward in the institution. The issue of giving raised status to the intensive role of supervision, as well as the need to address selection, recruitment and extensive doctoral training, forms part of the recommendations to be found in the ORPHEUS 2012 document produced by a task force representing biomedicine and health sciences research organisations from across Europe. Its recommendations have relevance to the other disciplines.

What supervisors should do.

The first recommendation in this category reflects the one coming first in the previous section: that *supervisors should ensure that doctoral researchers have realistic expectations* about the process and the nature and amount of support that is available, from whom. Too many participants had experienced situations in which they were expected to be all things to their researchers and to be constantly ‘on tap’ (or email or mobile) to deal with issues encountered. The huge transition from student to autonomous learner was slow to take place in those situations, more often because of ignorance of the process than a deficit on the researcher’s behalf. Expectations about the impact of the doctoral research project should also be discussed and agreed upon, whether this is impact on the particular discipline through conference presentations and high quality publications, or impact in a broader sense through public engagement in research or commercialisation and so on, depending on what is appropriate for the researcher and the project.

Linked to this is the importance of *clarity about mutual expectations* about who will do what, when and how which should be explored and recorded as a *contract* that can be revisited and updated over time. In particular, participants felt that *lines of communication* should be established that provide security for the researcher at whatever stage they are at in the process yet demark boundaries that diminish unrealistic expectations on their part about the availability of their supervisor. Alternative resources can be identified in such a contract as can an acknowledgement that doctoral candidates will be expected to develop independence as researchers.

It was generally recognised that establishing a habit of making *a record of formal supervisions* was advantageous both for the supervisors and the supervisee, giving all a reference point and reminder as well as providing a check that understanding was mutual. There were some who favoured the supervisor making the record while others preferred that the researcher did so.

There was consensus in the group that an *early start to writing* was absolutely essential in order to provide a focus for feedback on the development of an appropriate writing style, to help with the articulation of ideas, to ensure that details were captured and to provide a significant basis from which to write the final draft for consideration for submission. Many could remember examples where good research went to waste, was uncompleted because the writing process started too late and the candidate ran out of time. Therefore, writing early can also help to ensure impact of the doctoral research. Once ideas are in written form, the best dissemination paths for the research become clearer. Furthermore, specific targets for the written work, especially linked with a potential dissemination path such as an international conference, can keep postgraduate researchers on track for timely completion.

Similarly, there was agreement that it was important for the supervisor to give due consideration from the onset to the *practical feasibility of the project* and provide guidance on what is realistically do-able in the traditional registration period. This was something that the researcher would be little able to judge for themselves and often resulted in over-ambitious projects undertaken to ensure that a ‘contribution to knowledge could be achieved’ but, often sadly, not in the time allowed.

It is in relation to such matters that an *atmosphere of trust* needs to be developed between the supervisor and the supervisee so that assurance is there for both parties that supervisors will note any enormous faux pas, will provide critical feedback and guidance reciprocated by the supervisee’s dedication to task, best effort, and careful response, both supporting each other with continued enthusiasm.

An important point was raised and then endorsed by others about the importance of supervisors recognising, *identifying crisis points* and raising them with students, rather than hoping they will pass, in order to deal effectively with them before they get out of hand. Similarly, it was considered part of the supervisor’s role to recognise and prepare for potential isolation points, when the researcher may

feel de-motivated but unable to address the problem. It was recognised that talking about what and when these might occur and how they might be dealt with saves many 'disappearing student' problems that surface to elongate the registration time. Interestingly, when discussing loss of motivation or trouble spots in a doctorate, the experienced supervisors identified this as a good time to engage the researcher in specific activities related to increasing impact, such as conferences, public engagement or even work placements. It was generally accepted that over the course of a three or four year degree, there will be times that are less productive, and it may be tempting for a supervisor or a student to then focus even more closely on their day to day research work. However, supervisors suggested that encouraging researchers to take a break from the daily research to do something a bit different, as described above, not only contributed to their professional development, but also had the effect of increasing their motivation levels.

Conclusions

Although not a rigorously structured research exercise, these recent workshops can be taken as a preliminary exploration of the field as a prelude to developing an evidence base for further reflection (Theme D- evidence of discernable impact- in the Introduction). The participants involved in total numbered in excess of 100, recognising some overlap of participation at each event, and included representation from key stakeholders: doctoral and early career researchers, new and experienced supervisors and principal investigators, researcher developers and librarians, directors of postgraduate research and other senior academic staff with research management roles, research council and other funding organisations. Rather than being a representative sample of their professional roles they might be considered as somewhat biased in having a sufficient interest in postgraduate research issues to attend these events. However, such an interest might also be taken to indicate a greater degree of knowledge about germane issues than a more representative selection might bring to bear. Thus their debated and distilled views as 'expert witnesses' can usefully inform the sector about the other themes: A, B, and C (i.e. briefly: achievement of discernable impact; timely completion; development of supervisors.)

Let us address first A and B together since they, at first glance, seemed to work against each other, timely completion being potentially hindered by considerations about impact and worthwhileness being added to a plethora of adjuncts to the doctoral task (broader methods training, generic and transferable skill development, including public engagement and knowledge exchange, and so on) which originally focussed on the completion and writing up of a bounded research project to produce an original contribution to knowledge. It has been argued above and in Denicolo (2013) that, although the term 'impact' in relation to research has been over-used of late, there must have been few researchers in the past who wanted their research to be considered meaningless, not worthwhile, as having no significance, so the task facing current and future researchers is not to do something new but rather to make more explicit the assumptions they covertly hold about the value their research outputs and potential outcomes.

However, the requirement of such precision, theme A, has some implications for the process of research: identifying, through the development of research questions /hypotheses, 'impactful' results certainly mitigates against languishing for long in the exploratory "let's see what's out there that might pique my interest" mode. In contrast, even if counter-intuitively, it focuses the mind on potential milestones and deliverables which, for better or worse, might make the research process more structured overall and thus more readily organised to fit a tight timescale, theme B. This requirement for forward planning, greater management of the research, alongside the demand for greater diversity and amount of learning and training within the doctoral programme, has other implications for the doctoral researchers and their supervisors.

"They must hit the ground running" was a phrase frequently used in discussion about timely completion, again emphasising the rejection of notions about "finding oneself as a researcher" and the inclusion of notions of doctoral researchers arriving prepared for the nature and content of the programme ahead, a concept of readiness, not expressed as a value judgment on the doctorate process of the past or future but rather a recognition of the current socio-political economic exigencies of the day. A less obvious implication is that the programme itself needs to be well managed and organised with identifiable milestones and careful harnessing of previously identified resources, including human resources, on which the researcher can draw at appropriate times for their specific research and individual needs. To illustrate the point in terms of physical resources, efforts to enhance institutional research productivity and reputation by increased recruitment of doctoral researchers paying substantial fees can be thwarted if all of them require access to, say, a literature resource or a specialist piece of equipment, at the same time. Their disenchantment reflects on the institutional reputation while queuing for resources prolongs their registration time.

However larger cohorts can produce economies of scale if well-managed. Although an individual supervisor alone would find it difficult to respond to the intellectual and skill development needs of a large cohort of supervisees, the provision of training programmes and advisory services accessible at different times and serviced by people expert in the diverse range of fields required does allow for the support of an increased number and diversity of researchers. This model, though, not only assumes that supervisors are willing to share their supervisees with other professionals, but also requires them to adopt a different mode of supervision and to become familiar with the range of support opportunities potentially available, when and where, so that they can advise the supervisees appropriately. Further, it opens them to the challenge of their doctoral researchers' learning skills, approaches and methods with which they themselves are unfamiliar. (One might

consider, if not too conceited, that one of the joys of supervision is the 'training' one experiences from doctoral researchers versed in current techniques.) This discussion has led us neatly into considering theme C, the continuous development of supervisors.

It would be fair to say that the transition from apprenticeship model of supervision to one in which a joint or co-supervision model of guidance, drawing on a range of resources and skills from across the university, has not been problem-free although (or because) it has been rapid. Academics have many demands on their time and attention (undergraduate and masters teaching, course administration, examining, departmental management, their own research, outreach and publications to name but a few) so it is not surprising that some national and international regulations and guidelines and institutional codes of practice pertaining to postgraduate research have, on occasion, evaded their attention. This is particularly inevitable in situations in which the requirement to recruit more researchers has preceded any official recognition of the time required for supervision and the skills required of effective supervision.

Further, the rapidity and volume of the changes themselves suggest that 'initial supervisor training' is inadequate and should be enhanced by an expectation of, and time for, 'continuing professional development (CPD) of supervisors'. Most other professions have CPD as a requirement for continued professional registration so it would not be a precedent in the professional world. Like other professions, the emphasis of CPD for supervisors needs to be less on 'training requirements' per se but on professional, personal commitment to:

- remaining up to date with current legislation and practice related to own and adjacent professions;
- becoming more familiar with the roles and remits of those they work with;
- sharing willingly their own expertise with colleagues and their doctoral researchers.

Some quotations from the 2011 UKCGE/Vitae/ NUS/British Library Symposium, Conversations about the doctoral experience, which brought together representatives of the same group of stakeholders, illustrate the value of such opportunities for all participants. We will therefore leave the last words to them.

I enjoyed talking to other students and contributing to the whole debate. (Doctoral Researcher)

There is much more we could offer, if only academics and doctoral researchers knew it. (Librarian)

We want to respond to and provide for the wide diversity of researchers' development needs, not just put on traditional skills courses. (Researcher Developer)

In my overloaded work life I hadn't appreciated the value of sharing the joys and burdens of the doc process with other others – in fact I didn't realise so many others cared. (Supervisor)

Lots of ideas about how to support the PGRs within the institution – revelatory! (Graduate School Director)

I feel a greater sense that many people in the institution are doing their best to support me. (Doctoral Researcher)

Acknowledgements

We wish to recognise the contributions of the original participants at the October UKCGE workshop at the University of Surrey who provided the debating points and to the participants at the Conference workshop who further engaged with the debate, including Jane Creaton and Maggie Hardman whose talks provided additional stimulation and points for reflection.

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New Approaches to CPD and Preparing Academics for Supervision

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Abstract

This paper describes some of the recent research into doctoral supervision, (including work on group supervision) (Fenge 2012, Roed 2012, Lee 2013) and then discusses how universities are using recent research into approaches to doctoral supervision (Lee 2012). It reviews the results of a series of pre-workshop surveys to categorise the attitudes of supervisors to attending workshops and seminars. It looks at the different ways that a number of universities from across Northern Europe and the Middle-East are introducing programmes to support doctoral supervisor development – both for new supervisors continuing professional development (CPD) and for experienced supervisors.

Supervision teams are encouraged in the UK through the QAA code of practice (2012) and there is an international push towards collaboration and encouraging the doctoral process to take place within research active teams. The paper identifies the benefits of using a neutral language to explore and sometimes expose overlaps and gaps in these complex situations.

Finally there is emerging evidence of links between work on supervisor development and leadership development in higher education. There will be a discussion about how this might fruitfully be pursued.

Keywords: New approaches, Doctoral supervision, Continuing Professional Development (CPD), Academic leadership, Leadership in higher education.

Introduction

In this paper I argue that there are many drivers moving us towards the need to examine the role, opportunities and difficulties of working with groups of doctoral researchers and within teams of supervisors. This leads to a new focus on the role of the doctoral supervisor as a team and group leader. There has been a significant emphasis in recent years on the importance of the relationship between the doctoral supervisor and the early career researcher or doctoral student (Roed 2012, Wisker 2012, Lee 2012, Taylor and Beasley 2005, Ives and Rowley 2005 etc) and surveys in the UK suggest that the level of satisfaction with this aspect of supervision is high, in recent Postgraduate Research Experience surveys (PRES) the level of satisfaction has been recorded as moving from 65% to 70% between 2009 and 2011 (this is not necessarily the case in other countries) (Hodson and Buckley 2011).

The challenge has always been to find a neutral language for supervisors to use to explain why they are offering feedback, setting certain tasks, making recommendations or requests and to find a similarly neutral language for students to use to explain their response to certain requests or their need for a particular type of support. A neutral language gives objectivity and a rationale to any requests made by either side. There is now evidence from over 30 universities in Northern Europe and the Middle East, that they are using, at least in part, the language proposed in 'Successful Research Supervision' (Lee 2012) and finding it helpful.

When we consider the number of people that can now be involved in a team of supervisors working with a group of doctoral researchers, the requirement for non-judgemental but usefully explicit terminology to explore mutual objectives is even greater. One outstanding question is whether or not the tools that we have currently developed (both the 'neutral language' and the supervisor development opportunities) are sufficient to cope with this more complex situation.

This paper will describe some of the supervisor development opportunities that are currently being used, offered to both new and experienced supervisors, and the potential benefits and difficulties associated with each of these approaches.

Supervisor development programmes have been running now in some universities for several years, and it is no surprise that these universities find that their experienced supervisors are moving towards positions of academic leadership. Leadership in higher education is exceptionally complex where the reaction to a neo liberal, performative agenda can be strong. The final question that this paper aims to address is whether there are or could be links between the way we have researched and created supervisor development programmes, and the way we are or could develop academic leaders.

The drivers towards supervisors working in teams with groups of students

The numbers of doctoral researchers have grown around the world, in the past decade there has been a steady increase in the number of doctoral degrees being awarded across the OECD (Organisation for Economic Co-operation and Development) rising by 38% from 154000 new doctoral graduates in 2000 to 213000 in 2009 (<http://www.oecd.org/sti/inno/CDH%20FINAL%20REPORT-.pdf>) and this leads to some academic staff feeling an increased pressure on their management of time. One of the ways of handling this pressure is to adopt and extend the model already used by larger research groups and carry out some supervision with small groups of doctoral researchers rather than individuals (Taylor 2013).

The numbers of universities with doctoral training centres (DTCs) or Graduate Schools have also been growing across Europe. They might be based on a whole country or regional (Estonia has a doctoral training centre for IT, Scotland and Wales both have their own social science doctoral training centres), they can be specific to a particular expertise in a particular university. They can be based on one university's centre of excellence in research (the University of Oxford has a Medical Sciences Doctoral Training Centre and a number of other UK universities have a series of EPSRC [Engineering, Physics Science Research Council] funded doctoral centres in specialist topics such as nano technology, energy futures, nuclear engineering etc). Graduate schools can also be thematically based: for example in Germany, the excellence initiative led to 3.6 billion euro being invested over 11 years into 39 graduate schools. One example from this initiative was the interdisciplinary graduate centre established in 2006 at Giessen University which brought together graduates and staff from Sociology, English, Romance, Germanic, Slavic studies, History and Political science (<http://cultdoc.uni-giessen.de/wps/pgn/home/cultdoc/GGK/>). The growth of graduate schools in the UK has been monitored by the UKCGE where it was found that the majority of higher education institutions now have at least one graduate school (67% in 2004 compared with 76% in 2009). (Denicolo et al 2010)

This growth of graduate schools inevitably leads to thoughts about curriculum development and most schools offer more generic research methods programmes as well as some more specific modules. These are usually offered to groups of doctoral researchers.

The Giessen Graduate School also makes explicit its expectation that doctoral researchers will be involved in teaching – another theme that leads us to ask how we prepare early career researchers to teach – and the answer is usually that they work in groups to learn this skill. Where doctoral researchers have a stipend in continental Europe, they are often expected to undertake some teaching as part of their responsibilities. UKCGE has reported on the many different provisions made by UK universities to support doctoral researchers in learning to teach (Lee and Pettigrove 2010).

The formation of groups of doctoral students, where they are encouraged to come together early in their research careers, is a relatively new development away from the 'Humboldtian' idea of the individual researcher working in isolation (Taylor 2013). It is also a development that seems to encourage completion rates. In some countries the growth of the professional doctorate (where the emphasis is on several taught courses and a shorter piece of applied research) is another driver towards groups of doctoral students coming together (Fenge 2012).

The bringing together of teams of supervisors is also actively encouraged by the quality measures being developed. Indicators of sound practice in the UK include an active and supportive research environment (and there is specific encouragement for research students to develop peer support networks). According to the UK Quality Assurance Agency, supervisory teams may include: 'a main supervisor, other supervisors and research staff in the subject, a departmental advisor to postgraduate students a faculty postgraduate tutor and other individuals in similar roles' (QAA 2012 p 18). To this group I would add that the subject librarian and the postgraduate administrator can be key members of some teams. Another member of the supervisory team can be the supervisor based in industry or professional practice.

The supervisory team can be further complicated and enhanced by the encouragement towards international collaborations in research. It is increasingly recognised that global problems require global solutions and collaboration between universities in different countries and continents is important for capacity building. Interesting examples of this work are two projects being led in Africa by a Swedish University, Sveriges Lantbruksuniversitet (SLU). The first project is funded by the Swedish International Development Co-operation Agency (Sida) where the aim is to link tertiary agricultural education more effectively to community and industrial development in sub-Saharan Africa. Part of this project includes strengthening methods for teaching and learning, and research at the doctoral level. The second project is funded by the Swedish Ministry for Foreign Affairs (UD) and will, amongst other things, work to enhance educational development in higher education (including research supervision) at a range of African universities. The European Universities Association has done some important work on mapping some of these collaborations and points out the importance of every partner making explicit gains from such collaboration. There is an important impact for doctoral candidates where they can be exposed to other sectors and academic cultures. The conclusions of the CODOC project point to convergence in the discourse on doctoral education (EUA CODOC 2012 p 7) and this in turn leads us to look at the individual supervisor's needs for support in understanding that discourse.

The attitudes of supervisors attending development programmes

It is common to anticipate (and experience) some negativity from academics attending supervisor development workshops. In anonymised pre-workshop surveys of new and experienced supervisors I have asked participants 'what are your feelings about attending this event?'. In summarising 106 responses from three countries over 90% were positive, saying they were 'interested', 'hopeful' and even 'excited'. This was particularly pronounced when attendance was voluntary and the few who were sceptical all resented any external compulsion to attend. There were, however, contrasting and sometimes conflicting aims. A typical example of this was where one person hoped for 'time to discuss the underlying psychological and philosophical aspects of the role with colleagues' whilst another (attending the same programme) said 'I hope we do not waste valuable time on building a sense of community rather than on the provision of useful content'.

A neutral language within which to explore this complexity

Research with a range of experienced (and highly regarded) doctoral supervisors in the UK and the USA led to the proposal of a neutral language to explore the different approaches to supervision that doctoral supervisors might have. These different approaches are linked to different beliefs about what the priorities are for doctoral education, but they are not mutually exclusive. Indeed, there is emerging evidence that more experienced supervisors will feel comfortable in using most, if not all, of the approaches to supervision, choosing between them and combining them as will best fit every situation. These approaches can form the core of a supervisor development programme, they encourage participants to consider supervisory issues from different, but mutually enhancing, perspectives. Whilst each of the five approaches privileges certain behaviours and forms of feedback, it does not value one more highly than another. A central argument of this paper is that if research supervision is becoming more complex, then the sharing of an acceptable and academically robust neutral language between teams of supervisors and groups of doctoral students will facilitate both the research itself and the development of the researcher.

The first theme that emerged from the original study (Lee 2012) was a **functional** approach: this was demonstrated by supervisors taking doctoral students in a rational progression through tasks and having a series of well-defined milestones in order to monitor progress. There would be good record-keeping and risk analysis, project management techniques would be employed to help the management of time.

Describing the functional approach sometimes prompts a question about the population sample. Were all the interviewees supervising Science PhDs? No, they were not. The University of Surrey (where the study began) is predominantly a science and engineering university but it did have academics people from arts, humanities and social sciences, and they were included. As the study progressed and the population sample became more balanced across the disciplines, it was interesting to find that these approaches to supervision are generic to all disciplines. An example of a typical quotation from someone working from the functional approach would be: "At every meeting we used to write up notes. We both would sign them and I would give them a copy so we'd have a common understanding of what we had talked about".

The next approach, **enculturation**, was about people becoming members of the discipline. Here the supervisor is not necessarily the fountain of all knowledge but acts as the gatekeeper to further information and contacts. The phrase 'gatekeeper' is borrowed from general practitioners (family doctors). These supervisors have an idea of what they want the successful PhD student to look like, so their role is one of diagnosing the gaps or the deficiencies in knowledge and skills and of coaching the person until they reach the appropriate stage of being. Some of the quotations which exemplify this are: "I feel I have failed if they don't stay in the field" and "My students all know their academic grandfather". There is also another whole aspect of this approach when we look at the enculturation of international students, mobility is an important part of many researcher's careers, so giving some priority to their enculturation into a new country and understanding the learning culture from which they come is important.

Enculturation can include: encouraging the student to read biographies of significant academics; encouraging them to attend departmental seminars, linking them to more experienced doctoral or post-doc researchers as 'buddies', creating together the list of essential works to be mastered - that elusive canon - which turns out of course to be an individual exercise but its hypothetical existence creates a challenging discussion.

The third approach that emerged was **critical thinking** and that is what many academics think that doctoral education is really all about. When supervisors described working from this approach, it was possible to see that their thinking appeared to change. It was almost as if they were visualising the brains of the students and completely depersonalising them. Thus, this approach describes a completely different aspect of doctoral education. Supervisors said things like: "They need to explain to me why, what and how", and "I ask them to email me a question about their project every week"; and this supervisor went on to say, "And I told them that if they don't, I will forget them".

One interviewee talked about the idea of giving his students ‘magic words’ to help them to identify the thread in their argument. Magic words, phrases or ways of ‘proving’ in different disciplines need to be understood both from within the discipline and by other disciplines when we start looking at interdisciplinary research. So the critical thinking approach is about encouraging meta-cognition and an ability for the doctoral student to be able to critique their own ideas. “I expect them to learn how to learn, how to reason and how to start into something new” is an interesting quotation from the interviews because it highlights doctoral education as being connected to transferable skills.

The fourth of five possible themes or approaches to research supervision was *emancipation*. This is very different to both enculturation and functional approaches. A supervisor who is working through an emancipatory approach will not be bound by a directive which says that full-time doctoral students have to complete in three or four years, for them it is the journey that is important. It is a radical humanistic perspective where the journey is as important as completion. It is focused on mentoring and supporting and it is *not* focused on saying, ‘You’ve got to become a member of this discipline and you have to act like everybody else in this discipline’. Of course this highlights one particular challenge of research education, that we want people to be good in our discipline but we also want them to be original. The supervisor operating from an emancipatory approach gains satisfaction from facilitating personal growth in students.

This final theme of *relationship building* was much more problematic to synthesise. The other four approaches all have a professional attitude and an identifiable set of skills behind them. But of course we know that when you work with a PhD student intensely, over a period of time, a relationship develops and what is happening when that happens? Relationship building is in the contested land of emotional intelligence and self-awareness. In the interviews supervisors were talking about: the need to enthuse; the need to give more of yourself than was strictly demanded; the need to encourage and inspire; to recognise achievement and to give pastoral support but also the need to recognise the boundary between the personal and the professional. Inexperienced supervisors are frequently particularly interested in how to manage this complex area.

Table 1 summarises the five approaches from the supervisor’s point of view and table 2 summarises the five approaches from the doctoral researchers’ point of view.

Table 1 Neutral language: A framework for concepts of research supervision (Lee 2012)

	Functional	Enculturation	Critical Thinking	Emancipation	Relationship Development
Supervisors Activity	Rational progression through tasks Negotiated order	Gatekeeping Master to apprentice	Evaluation Challenge	Mentoring, supporting constructivism	Supervising by experience, developing a relationship
Supervisor’s knowledge & skills	Directing, Project management	Diagnosis of deficiencies, coaching	Argument, analysis	Facilitation, Reflection	Managing conflict Emotional intelligence
Possible student reaction	Organised Obedience Negotiation skills	Role modelling, Apprenticeship	Constant inquiry, fight or flight	Personal growth, reframing	A good team member Emotional intelligence

Table 2 What do doctoral researchers want? Identifying possible motivations, objectives and needs

	Functional	Enculturation	Critical Thinking	Emancipation	Relationship Development
What students might be seeking	Certainty Clear signposts Evidence of progress	Belonging Direction, Career opportunities, Role models	Ability to think in new ways Ability to analyse, to recognise flaws in arguments	Self awareness Autonomy Self actualisation	Friendship Nurturing Equality

This brief outline of the framework of approaches to supervision is intended to be used to encourage supervisors, doctoral researchers and other supervision team members to understand and describe their own abilities and needs. Supervisors may not have the ability or the interest to move into all aspects of different approaches, but the primary supervisor could assume responsibility for ensuring that they are all covered in one way or another. In making certain doctoral researcher objectives apparent, the researcher may be able to take more responsibility for accessing the type of support that they need at any given time.

Some development opportunities for new and experienced supervisors

In creating opportunities for developing supervisors, we need to think about the key questions that the university or research institute is facing, the types of programmes and workshops that might suit different cultures and the range of activities that might be appropriate.

Universities are increasingly mapping their academic and supervisor development programmes to their strategic plans. They may want to consider, for example, whether completion, interdisciplinarity, recruitment, funding, consistency, collaborations, quality, group supervision, providing an audit trail, time management, relationships and/or research quality are key issues. The answers to these questions will inform the academic developer about the most appropriate orientation to take. Ray Land talks about the different aims of the academic developer and includes phrases such as: managerial (where the emphasis is on developing staff towards to institution’s goals), romantic (where the focus is on the individual practitioner and their personal development and well-being), reflective practitioner (fostering an institutional culture of self-reflection and peer discussion) and modeller-broker (providing examples of good practice, or acting as a model for practice). (Land 2003, 2004). The academic developer needs to be able to negotiate a pathway through the, often conflicting, aims of the university, the supervisor and their own preferred orientation(s).

There are a range of different types of programmes that universities can consider and it may require a considerable amount of research and consultation to create the best combination. Some universities and some doctoral centres or graduate schools are moving towards maintaining registers of supervisors that are in good standing. That good standing can be measured by a mix of being research active, experience in supervision, attending a recognised programme, participating in CPD activities and maintaining sufficient records. I have no evidence that student satisfaction surveys (or doctoral graduate exit interviews) are yet being used for this purpose. Such an approach will be regarded by some as an invasion of their academic autonomy, but in some universities newer academics are keener on making the selection processes for supervisors more transparent. This is just one of the delicate tightropes that need to be traversed.

Accredited or award bearing programmes are being offered, and the UK-based Staff and Educational Development Association (SEDA) is one of the first bodies to offer a named award for staff who supervise postgraduate research (http://www.seda.ac.uk/pdf.html?p=3_1_10_1_13). Roehampton University offers this award to academics who attend two separate workshop days and participate in a range of short assessed exercises. To offer this award universities have to develop a curriculum that meets core development outcomes, specialist outcomes and the SEDA values. The advantages of this award are that there is some consistency of approach, outcomes are more measurable and the accreditation process offers some quality assurance. It does require an academic infrastructure to support it, and the academics who successfully complete the award have a portable qualification to put on their CV. Some universities will incorporate supervision as part of their assessed programmes in academic practice for newly recruited lecturers.

Other universities are offering substantial programmes where attendance is mandatory but there is no final assessed work. Sveriges Lantbruksuniversitet (SLU) provides a programme with a time allowance of three weeks of full-time work (including 7 days of face to face meetings). SLU developed the course in the middle of the 1990s and it was one of the first universities in Sweden to create a programme specifically for doctoral supervisors. It aims to integrate scholarship with practice and promote reflection. There are some taught days, opportunities to observe supervision meetings, forum theatre events and participants share reflections of their own experiences and review scholarly work on the subject. In Australia programmes have been offered for some time that prompt substantial reflection and include a blended learning approach (Pearson and Brew 2002, Pearson and Kayrooz 2004). We wait to see whether the new Australian tertiary education quality assurance agency (TEQSA), established in 2011, which has the power to register and deregister academic programmes, will apply this power to research supervision. This type of longer research supervisor development provision requires constant senior management support and has the advantage of creating an embedded reflective research-driven culture.

More frequently universities offer workshops. These may be residential (the University of Tartu has organised three-day residential workshops for academic staff) or last a day or two (the University of Sussex organised a planned programme of two separate days of workshops followed by a range of continuing professional development activities). These workshops provide an opportunity for sharing experience and offering base line information about quality assurance procedures required by the university. There is usually some scholarly input and they are often more attractive than the assessed or substantial programmes to time-pressed academics. It is difficult to assess the long-term impact of these programmes, the normal method of assessing workshops is to use ‘end of workshop’ evaluation forms, but we know little about the impact of any of these initiatives on practice over time.

Many universities offer lunch-time or short seminar programmes (often followed by lunch to encourage attendance and effective use of time for networking). These are useful for updating academics on recent developments and bringing supervision into focus again as an important activity. Time constraints mean that they are more about information sharing and offering quick tips rather than skill-building and developing practice in depth.

Action learning sets have been shown to have a profound effect on practice (McGill and Beaty 2000) and where research supervisors come voluntarily together in groups of 4-6 to discuss their practice and work on concerns in a structured manner over time, this creates another opportunity for real change and development. They are very appropriate for the academics who are keen to be involved, but can be completely ignored (or derailed) by anyone who is disaffected. Experienced facilitation is key to the success of this sort of programme. The University of Surrey offers action learning sets as a key part of its Graduate Certificate in Learning and Teaching.

Offering awards for outstanding supervisors publicly recognises the importance of this work. In addition to its other work on the subject, the University of Durham accepts nominations from students for outstanding supervisors, and several opportunities are created from this scheme to disseminate good practice: those who are selected are invited to participate in future panels and continuing professional development activities and extracts from the winning statements are published in Durham's newsletter 'Quality Enhancement at Durham'.

The Quality Assurance Agency (QAA) encourages mentoring by recommending a practice that is enshrined in many universities' codes of practice: that a primary supervisor should not be appointed to this role unless they have seen at least one research student to completion as a co-supervisor. This can be a very helpful practice where the mentoring is overt, however there are a series of problems that can arise including leading to a primary supervisor abdicating responsibility and being a supervisor in name only, or both supervisors duplicating each other's work.

Involving experienced supervisors in policy development or evaluation is an important approach that can increase their awareness of recent developments in research supervision. In the UK the bidding process to the research councils for doctoral training centres has meant that many universities have had to have explicit discussions about the programmes they will offer their doctoral students and the support they will offer their research supervisors.

A combination of these programmes is usually required: for example at the National University of Ireland in Galway, the neutral language described above was introduced to all academics through a half-day conference, and then further embedded across the university by becoming a core component of the professional framework in academic practice that is offered to new and existing academics. Many supervisors might take this component even as a standalone module. At the University of Bahrain academic staff were invited to a conference and/or workshops on research supervision and academic leadership so that an informed discussion could be had across the organisation about how to approach the development of research supervisors and leadership in the long term.

Finally there is a role for 'developing the developers' or 'training the trainers'. Seminars and workshops have occasionally been held by organisations such as SEDA and Vitae for academic developers specifically to explore how they could update their own skills in developing supervisors, the Oxford Learning Institute has a regular seminar programme for its own staff and others which from time to time includes topics that are relevant to supervision.

There is a history of a few (mostly experienced) academics resenting what they see as time wasted on training and development activities, and sometimes this attitude can negatively dominate a group. The pre-workshop surveys referred to earlier (p27) can also be used to understand how the participants describe their disciplinary background, the experience they bring with them and their main objectives, and to plan how to include relevant material. The most common issues that have arisen include: seeking clarification about the role, learning how to avoid common pitfalls, supporting the development of academic writing, supporting the student who is demotivated, dealing with ethical issues and working with co-supervisors.

Whatever the structure of the development activity, the topic of supervising groups of students and working with teams of supervisors can be addressed usefully. There are a range of methods for raising this topic: through role plays, forum theatre, case studies, reviews of scholarly work, exploration of neutral languages, therapeutic development of self-awareness, analysis of individual preferences and comparison with the group and other discussion exercises. Each of these needs careful development to make sure it is tailored to be appropriate to different cultures and skilful facilitation. These development activities can be supported (but not supplanted) by comprehensive on-line information (see an example of a supervisor's handbook from the London School of Economics at <http://www2.lse.ac.uk/intranet/staff/teachingAtLSE/phdSupervisorsHandbook/Home.aspx>) and on-line systems for recording and planning supervisory meetings.

Exploring links between supervision and academic leadership

It is a logical extension of the work on supervisory teams to look at academic leadership. As Lumby (2012) has pointed out, many believe that leadership in higher education is different to leadership in any other context. She highlights four ways in which this can be argued. Firstly the strains of providing a public good whilst remaining a viable business are particular to higher education (but this also applies to other public sector organisations). Secondly there is a particular vulnerability to changing government policy (felt acutely across the sector in the UK at the time of writing, but not confined to higher education). Thirdly there are acknowledged challenges in leading highly expert, creative, driven and independent staff (this is perhaps similar to the challenges faced by staff in leading edge technologically-driven companies) and finally there is a challenge to leadership from the degree of autonomy demanded by academic staff (this is a challenge raised by other professions when claiming that their professional code has primacy). Whilst all of these factors can be seen in other types of organisations, their combination does make leadership in universities a particularly complex topic.

An initial review of the literature on leadership identifies an idealised narrative with many exhortations to good practice and the identification of desirable qualities (Bryman 2006 and 2007, Gibbs et al 2009, Owen 2007 Jameson 2012).

In a study of two departments recognised for teaching excellence in each of eleven world-class research intensive institutions, case studies were drawn up from interviews with the head of department, key academics, teachers and students, Gibbs et al (2009) found nine distinct areas of leadership activities – each have a number of sub categories:

1. Establishing credibility and trust
2. Identifying teaching problems and turning them into opportunities
3. Articulating a convincing rationale for change
4. Devolving leadership
5. Building a community of practice
6. Recognising and rewarding excellent teaching and teaching development staff
7. Marketing the department as a teaching success
8. Supporting change and innovation
9. Involving students

One advantage of Gibbs' work is its depth, and the case study approach avoids relying solely on self-report. This report warns that the discipline has a profound impact on forms of leadership of teaching and that there are very different forms of change appearing in different types of subject.

Bryman made a list of six main elements of behaviour associated with effectiveness in higher education:

1. An effective leader is a figure who is trusted, and who has personal integrity.
2. An effective leader is supportive of his/her staff.
3. Effective leadership requires consultation of others.
4. Effective leadership requires the inculcation of values that help others to understand and appreciate the leader's direction.
5. Effective leadership requires a sense of direction.
6. Effective leaders protect their staff.

However it is easy to dismiss these lists as somewhat idiosyncratic when Bryman (2007) comments on his own list that only the first element was mentioned by more than a third of respondents.

Macfarlane looks at leadership in HE in several different ways, he distinguishes between 'transactional leadership' which is an economic exchange based on self-interest and 'transformational leadership' which is about mutuality of interest and it requires inspiration to bring about change, charisma and 'individualised attention'. Charisma can be a dangerous quality, the potential to mislead as well as to lead is well known, so it needs to be combined with integrity.

He also looks at the professoriate as leaders and identifies four orientations for intellectual leadership: the knowledge producer, the academic citizen, the boundary transgressor (going across disciplinary boundaries) and the public intellectual.

UK Vitae have developed the RDF (Researcher Development Framework) as a series of competencies that researchers need to develop as their careers progress. They have produced a 'leadership lens' on the RDF which identifies twelve different subsets of behaviours fanning out from four quadrants: engagement, influence and impact, knowledge and intellectual abilities, research governance and organisation and personal effectiveness. Information on the RDF is widely available on the UK Vitae web site, for the purposes of this article it is relevant to notice that leadership in research is being explored in this way.

Combining the research above with a review of the data collected through my own interviews with experienced research supervisors leads me to propose that we should explore leadership in higher education in three key ways. Firstly there is clear evidence that a strategic vision is important, a deep understanding of the context, an ability to make wise strategic choices, define and redefine goals and inspire through communication. Secondly a leader needs to be able to manage resources competently, this probably requires numeracy, cultural understanding, knowledge about the location of key resources, project management and critical thinking techniques. Finally there are three groups of people where sensitivity and leadership need to be deployed: firstly with individuals, including colleagues and students; secondly working face to face but with teams and groups of people (including students, colleague and stakeholders) and finally working in partnership with the providers of resources which might be line managers, vice chancellors, trustees, industry or governments. It is in the requirement to understand and balance all these issues that we can see that Jameson's view that 'negative capability' is an important leadership quality – the ability to 'hold the ring' and avoid jumping to conclusions. Jameson makes a second important point – that without trust and integrity, all of this is a house of cards (Jameson 2012).

Conclusions

We know a certain amount about research supervision and the profound impact that the doctoral supervisor can have on the lives of doctoral students, we know that there are many pressures that are leading supervisors to work in teams and to supervise doctoral students in groups. This leads to an enhanced need for supervisor development programmes and greater awareness of a neutral language to discuss the sorts of difficult issues that can arise. For example: handing over from one supervisor who is leaving or retiring and introducing a new supervisor to the team, the doctoral researcher being given conflicting advice from different members of the team, resentment between two or more supervisors because they feel that there is an unfair distribution of the workload or resources, supervising academic colleagues who are also undertaking their doctoral research, and supervising groups of doctoral researchers where there are dominant or alienated members of the group.

These are all problems where leadership skills can also be developed, and my conclusion is that good work has been done, notably by the Leadership Foundation for Higher Education, but we are still at the beginning of being able to provide usable research-informed tools for academic leaders. We have made great strides in providing usable research-informed tools for research supervisors. So my proposition is that we could usefully explore further linkages between these two worlds of research supervision and leadership in this complex world of higher education. In order to do this we need to consider a longitudinal study evaluating the effectiveness of different interventions.

A good direction for universities to consider for long-term investment is to have a comprehensive, strategic and research-based development programme which moves through training for new supervisors to updating and colloquia for experienced supervisors. This can form the bridge that links both research and teaching initiatives and needs also to be linked to academic career development paths.

Acknowledgements

Many thanks to Stan Taylor (University of Durham), Jan Pryse (University of Sussex), Cecilia Almlöv (SLU) and Iain MacLaren (NUI Galway) for their helpful contributions to early drafts of this paper. Thanks are also due to the anonymous reviewers from UKCGE.

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Researcher Engagement and Development at the University of Aberdeen – A progressive strategy for institutional culture change

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Keywords: Beacon, catalyst, RCUK, progressive, culture change, public engagement, training, career, skills, doctoral programmes and new approaches

Abstract

The Researcher Development Strategy at Aberdeen has undergone significant enhancement over the past 18 months as we promote a strategy driven by the synergy between researcher development and public engagement agendas. This has been reinforced by securing an RCUK Catalyst Award in March 2012 which embeds this approach and develops cross-institutional links.

In this model the day to day training provision for researchers is underpinned by two key drivers: firstly the vital need to place researchers at the centre of their own personal development with an emphasis on career enhancement and secondly, ensuring that researchers are provided wherever possible with tangible opportunities to build evidence to demonstrate new skills through practical experience.

Our approach benefits from the synergy we have exploited between the culture change agendas associated with researcher development and public engagement. Both of these share similar challenge and have undergone comparable transformation over recent years. Furthermore, each is currently subject to nationally endorsed policy drivers and evolving funding landscapes that favour an embedded approach within the core business of higher education institutes.

We present University-wide initiatives to promote the importance of this progressive route from training through to experience, for example in science communication linked to STEM Ambassador status or creative skills leading to research-led impacts in festivals.

Introduction

The higher education scene in the UK has undergone considerable change over the past two decades in two key areas that historically had been regarded as secondary to, and even distracting from, the core research mission. These areas, namely public engagement and transferrable skills development, share many common values. Not least, in order to promote each as part of the fabric of research requires a pervasive change in attitude across a number of levels within higher education institutions. In the case of public engagement, a succession of influential reports and consultations over the past 25 years has promoted the benefits of engagement embedded within the research process (Bodmer, 1985, add) however this has undergone a significant change recently with the advent of the impact and research excellence frameworks (REF2014 & RCUK Impact Framework, 2009). In the case of researcher development, the broad base skills and transferrable attributes so vital for career enhancement were all but missing in the postgraduate and early career researcher pathways of two decades ago – a situation where change was inevitable given the discrepancy between the supply of skilled researchers and the demands of an increasingly skills and innovation based economy. This was exemplified in the SET for SUCCESS report (Roberts, 2002) and the Sainsbury report (Sainsbury, 2007).

Both the areas of public engagement and researcher development require researchers to take a broad, reflective view of their environment such that the excellence of core research remains the primary driver, but where the added value of engagement and development are considered as intrinsic to research excellence. In Aberdeen, we are addressing these needs by exploiting the benefits in tackling the shared challenges outlined above as a whole. We have defined this approach as a Researcher Engagement and Development (RED) strategy. We are currently undertaking a progressive approach to researcher career enhancement whereby skills linked through to practical opportunities which evolve as careers progress. Our strategy formed the basis of our successful submission to the RCUK Catalyst funding call of 2011 (RCUK Catalysts, 2011) where we reflected the views of our researcher community as collected through a series of consultations as illustrated by the word cloud of Fig.1. Moving forward, the barriers and challenges raised by these groups shaped our model for progressive support.

In order to focus on the specifics of our RED approach it is useful to first expand some detail around the key landmarks in the sector that have led to the change in the fields of public engagement and researcher transferrable skills development over the past two decades.

Public engagement and the move from PUS to PER

The 1985 Royal Society report on Public Understanding of Science authored by Dr Walter Bodmer and assembled by an ad-hoc team marked a change in the science and society landscape in the UK (Bodmer, 1985). Among other things it recommended proactive interaction between scientists and the public, improved science in public broadcasting and the setting up of the committee on the public understanding of science (COPUS) which went on to make funding available for public science activity. This landmark report largely advocated the interaction of scientists and the public as a measure to alleviate a perceived deficit in public knowledge around science. In the current climate there are two primary revisions in thinking that departs from this view. Firstly, whereas the Bodmer report was commissioned to concentrate on science, the same principles of public awareness are now seen to apply to any area of research that professes to enrich society, is publicly funded and has the potential to create impact. Secondly, what is now commonly referred to as the deficit model has since been enriched by other modes of engagement that favour dialogue (Department of Business, Innovation and Skills, 2010). Consequently the public understanding of science era of the late 1980s and early 1990s evolved to a public engagement with science period moving past 2000. The present Public Engagement with Research (PER) ethos began in earnest with the Beacons for Public Engagement funding call of 2008 supported by all the major research and funding councils across the UK and the Wellcome Trust (Beacons for Public Engagement, 2008). The emphasis of the Beacons initiative was to engender a culture change across groupings of research organizations in the way the public are regarded in the context of the research process. It also formed the National Coordinating Centre for Public Engagement (NCCPE) based at the University of the West of England which has since shaped much of the culture change agenda in the UK through an extensive programme of cross-institution and partnership geared towards sharing best practice. The guiding principles around public engagement are conveniently summarized in the NCCPE's manifesto for public engagement published in 2010 (Manifesto, 2010) which launched in parallel to the Concordat for engaging the public with research endorsed by the major UK research councils and funders and the Wellcome Trust (RCUK Concordat, 2010).

The reason that this evolution of public interaction with science and research is so relevant in the context of the researcher training agenda is that much of the transformation in attitudes was taking place at the same time as the researcher transferrable skills agenda in UK Universities was being shaped by the publication of the Roberts report. While the reports of Bodmer and subsequent commentators examined academic views on the public, the work of Roberts encouraged academics to shine the spotlight on themselves, and in particular to consider those key skills and qualities fundamental to career progression.

At the University of Aberdeen we took the ethos of the Beacons initiative and launched a public engagement with science strategy (University of Aberdeen, 2008) placing research and researcher-led engagement at the heart of a high profile institutional plan. We also actively engaged with the work of the NCCPE from the outset, signing the 2010 manifesto and providing representation on working groups looking at the culture change agenda across UK HEIs. This strategy effected a transformation in the University's approach to public engagement, securing multiple awards and establishing high impact public programmes. As the University science engagement strategy evolved the link with researcher skills training also strengthened and at a particularly relevant time in view of the changing landscape in both areas, as expanded below for the case of researcher development.

Early career development and the Robert's Years

In the years prior to 2002, the research landscape focused largely on development and delivery of cutting edge research within HEIs across the UK. In 2002 the situation changed as the UK Government requested a review into research careers stemming from concerns outlined above around improving UK innovation and productivity through the supply of high quality scientists and engineers (Roberts, 2002). Primarily the review identified a significant disconnect between the skills of graduates and postgraduates and skills required by employers. Education programmes frequently did not nurture the development of transferrable skills and knowledge that underpin many of the attributes required by research and development employers. Impacting even further was insufficiently attractive career opportunities in research for highly qualified scientists and engineers, particularly in the context of increasing demands from other sectors for their skills. It was becoming increasingly clear that researchers were an essential part of the economic and societal impact of the research they were delivering and yet HEIs were not equipping researchers with the necessary skills or creating the meaningful partnerships required to enhance employability. Subsequent analyses have demonstrated the importance of a successful knowledge exchange landscape in the context of an engaged researcher community (Abreu, 2009).

In the Roberts Report, one of the main recommendations was that postgraduate funding should meet minimum standards relating to researcher training and that all providers of postgraduate education should include at least two weeks per year of transferrable skills training. Specifically relating to research staff was the recommendation for access to internships, clear career progression plans and academic fellowships.

The government responded positively to the recommendations, providing funding of just under £150M in the 2002 Spending Review to the research councils to increase stipends, length of doctoral programmes and provide training for their funded researchers. This also included providing improved career prospects for research staff, including the creation of 1000 academic fellowship positions.

Institutions in receipt of the funds, which became widely known as 'Robert's money' were equipped to put in place a significant range of opportunities for researchers (staff and postgraduates), funded almost exclusively through the Research Council UK route. HEIs implemented their skills agendas in different ways, each demonstrating UK wide impact amongst researcher communities (Haynes, 2009). The model at the University of Aberdeen was based around a team put into place to progress the agenda and to provide skills training for researchers aligned with the Joint Statement of Skills (RCUK and AHRB, 2001) which outlined the guiding framework at the time. Sessions for staff were delivered by external consultants while training for postgraduates was provided largely in-house. The focus was centered on delivery of skills training and although constituted a step change in the landscape for provision, it progressed without robust alignment to other institutional priorities in the period prior to 2010. However against that backdrop, the reception by academics showed promise with engagement levels of typically 15-20% for postgraduates and 10 – 15% for staff.

As the formal ring-fenced Robert's funding period came to an end in 2011, institutions across the UK were tasked with managing the transition to institution specific models. For many this was viewed as a challenge to continue the support within core-funded models (in the majority of cases through increase of postgraduate fees by around £200 per place). For the first time, institutions were explicitly required to place a value, strategic and financial, on the agenda.

Within the University of Aberdeen, we viewed this period as an opportunity to excel, enhance and evolve the provision we already had in place. We started to view researcher development in the context of the wider institutional strategic objectives. Researcher Development was embedded in core business, permanent training posts were created and specific funding streams for activity were identified. At the core of the researcher development strategy 2011-2013 (University of Aberdeen, 2011) was the knowledge that research and researcher careers are fast moving. Employment opportunities for researchers within and outside academia and the requirements of employers are ever changing. A key challenge for our institution was how best to prepare researchers for these opportunities and therefore ensure that all sectors of the economy are open to and benefit from our research talent.

This progression of our researcher development agenda has been further enhanced in March 2012 by our successful proposal to the RCUK Catalyst scheme where our Researcher Engagement and Development strategy was expanded upon in a 3-year plan with institutional commitment for sustainability. Within this approach we established companion Researcher Development and Public Engagement with Research Units with a specific remit to support researchers across all levels. For our researcher development programmes, this included for the first time Principal Investigators, Supervisors and Research Leaders, who previously has been excluded due to the criteria of the Robert's grant. In this new approach, we are able to champion a progressive approach to researcher development where programmes follow researchers as their careers progress and where the opportunities to demonstrate skills are embedded from the outset. For example, we have taken a dovetailed approach to our aspiring, junior and senior Principal Investigator development programmes. This helps provide holistic support for academic career progression that focuses on each stage while taking account of the overarching journeys that academics typically take. Furthermore the drive to involve more experienced researchers provides role model exposure to earlier career researchers highlighting the breadth of broad-base skills developed through research.

Moving forward with a united approach - the future is RED

Our Researcher Engagement and Development (RED) heralded a new direction for researcher skills development at the University of Aberdeen. We are striving to remove all barriers between our public engagement and researcher development teams to co-develop a new strategy delivered against high level institutional objectives. Our operational model is illustrated in Fig.2. Our approach embraces the researcher development framework of Vitae and the current concordats for support of researcher careers and engaging the public with research (RCUK Concordat 2008 and RCUK Concordat 2010).

We have created a range of resources to raise the visibility of researcher development and public engagement across the institution, beginning at staff and student inductions and continuing through information sessions, workshops and road-shows. We have created websites that cross reference our two areas of activity as illustrated in Fig.3.

The emphasis on placing individual career progression at the core of the approach is reaping significant return. Since 2011, we have seen the number of researchers engaging with their own development, through attendance at one or more specific skills training sessions rise from 18% in 2010 to 30% in 2012. Moreover there is a definite move to create a community of "Researchers with Responsibility", through continued conversation with development professionals with the number of face to face career interventions having increased from less than 10 to several dozen in year 2011-2012.

The major trend we are adopting in our RED approach is the move from a traditional training delivery approach to an innovative progressive model that spans the entire institution and thrives upon external partnership. By progressive we mean that training alone is insufficient, and skills must link through to practice. We also intend the support to progress with career level. At the heart of this lies a mission to fundamentally change the way early career researchers value their careers and personal development. It requires an ambitious change in

culture; both within the University but also in the way external organisations view the University and are aware of early career talent it has to offer. It is this culture change that benefits so greatly from the merger of public engagement and researcher development strategies.

At institutional level, researcher development profiles are cross-referenced to institutional measures of expectation and individual excellence, including promotions criteria and our framework for excellence. In full visibility for the researcher community is a support provision that is developmental, experiential and often aspirational designed for success in an increasingly competitive global environment.

We have summarised below six areas of activity that exemplify our RED approach. Within each of these are tangible measures of success and all are accompanied by an ongoing evaluation and monitoring process to ensure our strategy remains relevant and in keeping with national agendas.

- i) **Reputational Endorsement:** One of the most effective ways to change institutional culture to a new approach is to gain high profile endorsement or achieve visible wins early on. To this end, our successful submission to the RCUK Catalyst Scheme around RED, securing one of eight awards in the UK, has consolidated our reputation as a centre of excellence in the UK. This award has enabled us to build our team including researchers seconded from each of our academic colleges to act as RED Coordinators and whose role is to further develop roots into the researcher community. The Catalyst has also opened new channels for sharing of best practice with the companion group of UK Universities, Vitae and the National Coordinating Centre for Public Engagement (NCCPE).
- ii) **Researchers with Responsibility:** We often emphasise that the skills development gradient is greatest during the early career researcher stage. These are when the developmental opportunities with self reflection at the core can be at its most vital for successful career progression. Therefore at every opportunity with researcher groups we return to the researcher journey, engaging our researchers in reflective practice on their career stage, their skills and CV. Related to this we have introduced a suite of measures including Enabling Funds for researcher-led public engagement and skills development, an annual Principal's Prize for Public Engagement with Research (with an early career category) and an annual researcher-led competition to encourage creative approaches to research-led public engagement.
- iii) **Measures of engagement:** As outlined in our summary, comparing the challenges of embedding researcher development and public engagement in HEIs has proven useful. Inspired by the Public Engagement Triangle (Department of Business, Innovation and Skills, Conversation Tool 2010) we have created a similar model for researcher development as shown in Fig.4 making for an easy appraisal of researcher support. The PE modes of transmit, receive and collaborate in our model become core-programme researcher-led and co-developed. A measure of our success is then observing a wider distribution away from the top left corner in turn reflecting a departure from the traditional skills delivery approach and a move towards positive engagement with the researcher cohort.
- iv) **Enhancement through Experience:** Fundamental to our approach is the importance of experience and practice following from gaining new skills be they in leadership, communication, creativity or other areas. To this end our core offering is anchored through the year to a suite of outputs each affording opportunities for early career researchers to evidence their development portfolio. This requires careful planning in order to synchronise training with opportunity as alluded to in Fig.5. These include many projects where Aberdeen has excelled, such as National Science & Engineering Week (largest programme in Scotland), Community Cafe Programme (one of the biggest of its type in the UK), the University's Annual Festival (unique in the HEI sector as being University conceived, funded and delivered), Scottish Parliament visits (through close alliance with our Public Affairs team), Aberdeen Science Festival (the 2nd longest established in the UK) and the Economic and Social Research Council (ESRC) Festival of Social Sciences.
- v) **Pervasive then persuasive:** We have strived to embed researcher development and the importance of early career support in every area of University activity. This means representation at inductions, working groups, senior advisory boards and academic committees and gatherings. Only then can the cases for early career support be made with potential for progression and change. We also need to evidence change and have actively sought to evaluate the impact we are having on the research community. As an example, attitudes towards public engagement and broad base skills development have consistently improved since the launch of our RED approach. An example of evidence can be derived from the Careers in Research Online Survey (CROS), the Postgraduate Research Experience Survey (PRES) and the Principle Investigators and Research Leaders Survey (PIRLS) which all provide convenient longitudinal evaluation and cross-UK benchmarking data. We have embedded specific questions around our RED strategy in these moving forward. An example of public engagement evaluation from the CROS surveys of 2011 and 2013 is presented in Fig.6
- vi) **Beyond Aberdeen:** The Scottish Government's pre-legislative paper, "Putting the Learner at the Centre: delivering our ambitions for post-16 education" (Scottish Government, Putting Learners at the Centre 2011) recognises what has been achieved, and highlights the potential for further enhancement to maximise the impact of research talent on the Scottish economy. Continued innovation in the way researchers are trained and how we support our researchers is essential, as is an on-going dialogue with employers, particularly from sectors or segments of the economy that have not traditionally recruited doctoral graduates. Through our RED strategy we are

actively exploring pan-Scotland collaboration through the Scottish research pooling initiatives. The Scottish Research Pools provide a rich source of early career talent that transcends disciplines and can take advantage of positive engagement and development approaches. Through the RCUK Catalyst Project we are piloting transferrable skills and an accompanying engagement strategy with the Scottish Universities Physics Alliance (SUPA). First workshops have been held in Aberdeen with a web-based toolkit to follow.

Conclusions

We have embarked on an ambitious plan to break down the barriers between public engagement and researcher development at the University of Aberdeen, allowing the shared challenges and positive synergies between these two areas to foster a new direction of travel. This RED approach has motivated development of new and enduring partnerships to provide researchers with a broad spectrum of opportunities for experiential skills development. Internally we benefit from an external employer viewpoint to shape and progress our activities. It also increases our competitiveness in the ever growing number of funding calls that are placing renewed emphasis on engagement and training.

We have established the Researcher Development and Public Engagement with Research Units and a model of cross-working, which anchors core training programmes into opportunities for tangible evidencing of skills. We have also ensured that researchers take responsibility for their career development by encouraging researcher-led and co-developed models for progressing skills training through a range of institutional initiatives and incentives.

Finally, our visionary approach ensures provision tailored to researchers' career stage and evolves with the changing needs of employers and the higher education environment including the pathway beyond the current research excellence framework to 2020.

Acknowledgements

Dr Kenneth Skeldon is Head of Public Engagement at the University of Aberdeen and Dr Lucy Leiper is the institution's lead for Researcher Development. Both led the University's submission to the RCUK Catalyst Call with PI Professor Albert Rodger, Vice Principal for External Affairs. The areas of work described in this paper and our wider RED strategy is supported by University of Aberdeen, RCUK, the Scottish Funding Council and a variety of additional sponsors and supporters including the AHRC, Scottish Government and industry.

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Figures and legends

Figure 1: A word cloud based on researcher community consultations undertaken ahead of our submission to the RCUK Catalyst Call of Autumn 2011.



Figure 2: Operational structure of our RED approach. The Researcher Development and Public Engagement with Research Units exploit considerable synergy from top-level cross-working which feeds into outputs and outcomes for the research community.

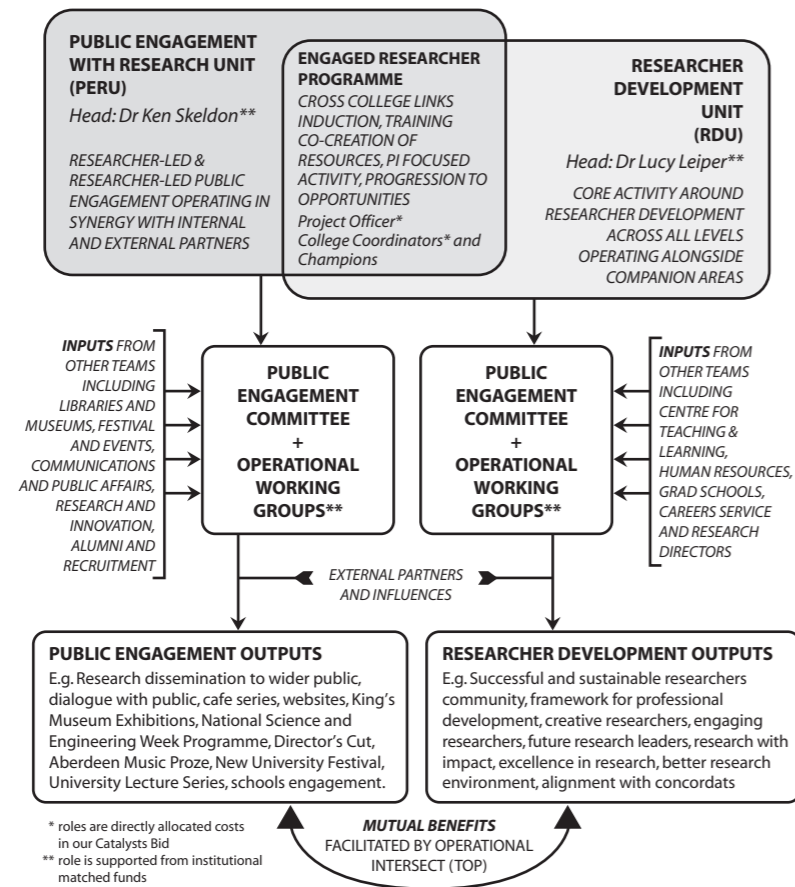


Figure 3: Our web resources for engagement and development are cross-referenced and offer an accessible one-stop shop for opportunities and information. They are also readily available off the home page of the institution at www.abdn.ac.uk/develop and www.abdn.ac.uk/engage

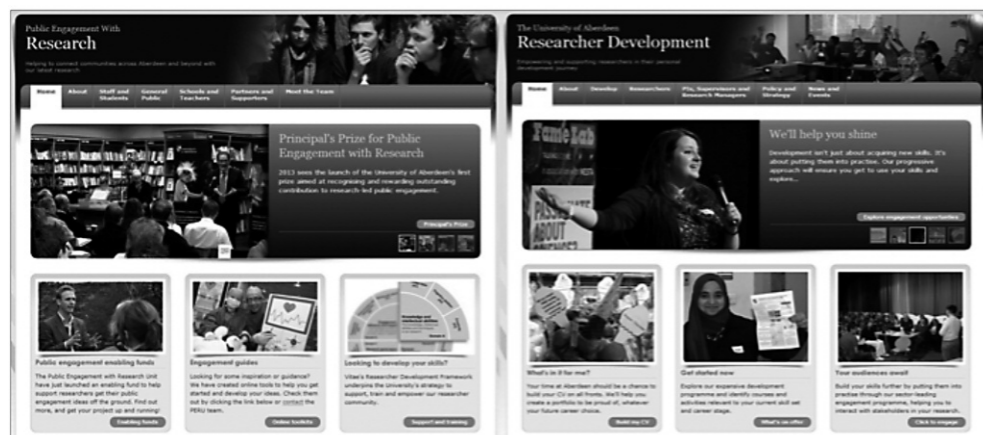


Figure 4: The RED Triangle illustrates the modes of development we are proactively encouraging at Aberdeen categorised across 1) our core programme (centrally created), 2) co-developed (in partnership with the researcher community) and 3) those that are researcher-led (wholly originating from the researcher community). The circles represent activities while the position reflects the mix of approaches applied to the creation and delivery.

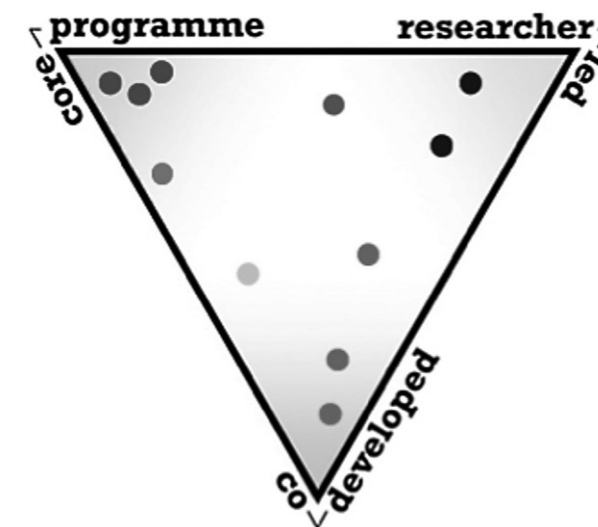


Figure 5: The planning of progressive skills training requires due attention to calendar anchors and activities through which researchers can put new skills into practice. These include opportunities local to our institution as well as further afield.

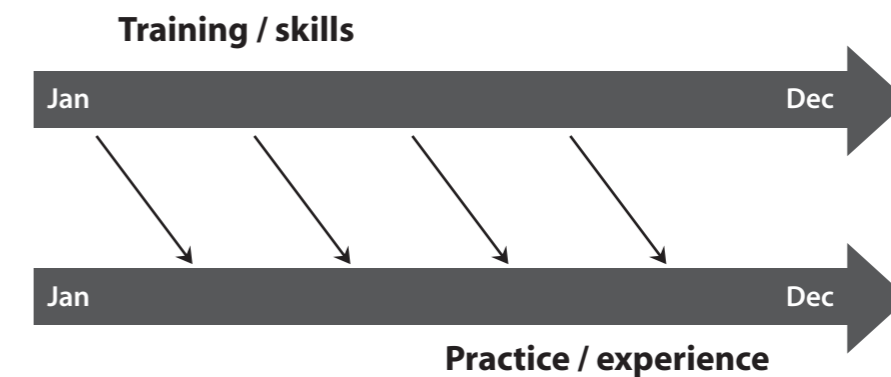
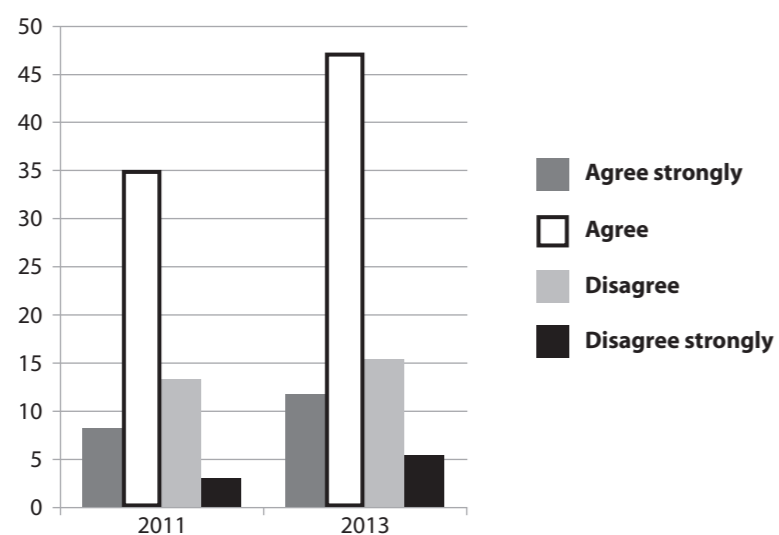


Figure 6: Changing attitudes towards public engagement with research as evidenced by our CROS surveys of 2011 and 2013. Similar trends have been seen in other related areas including knowledge exchange and impact. We are using CROS and its companion surveys PIRLS and PRES moving forward including bespoke questions around our strategy.

To what extent do you agree that your institution recognises and values the contributions that you make to public engagement?



European biomedical and health related PhD education: A tale of two cultures

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Short title: European PhD education

Keywords: Structure of PhD programmes, UK and Continental procedures, Structural considerations, Salzburg principles, ORPHEUS, Standards, Outcomes, Convergence

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Acknowledgements

The authors thank Dr. Johnny Laursen, Department of Culture and Society, Aarhus University for helpful comments on a draft of this article.

Abstract

Although the PhD was traditionally the route to an academic career, the situation has changed dramatically over the past 10-20 years. In many countries, governments and other funding bodies have invested massively in PhD education, and now most professors have several PhD students^E. Thus relatively few PhD graduates find permanent employment in academic research. Yet, the PhD remains a research degree, and indeed institutions have become heavily dependent on PhD students for their research output. In institutions in some countries, including many UK institutions, this challenge, at least in biomedicine and health sciences, has been met by maintaining the traditional concept of the PhD as a degree of individual scientific excellence, but setting it in a structured environment with the offer of courses in generic skills. On the European Continent, consistent with the Salzburg principles, institutions in many countries have placed substantial emphasis on the responsibility of the institution for their PhD programmes, with compulsory time for generic skills development, and for enhancing the employability of their PhD graduates outside academia. This has created, to some extent, two cultures. The aim of this article is to discuss these two cultures, stressing the large areas of agreement, but also the areas where there is disagreement. Finally, the moves to consensus are described. Although the article is concerned primarily with biomedical and health related PhD education, the area in which the authors have experience, most of the points are probably relevant for the majority of scientific fields.

Introduction

The concept that researchers should have a professional training was a European idea, first introduced by the far-sighted Wilhelm von Humboldt at the Humboldt University in Berlin following its founding 1810. His vision was to strengthen research by ensuring training for research under supervision, successful students being awarded the doctor of philosophy degree. Some decades later the concept

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^E PhD students are referred to in some countries as 'PhD candidates' or 'doctoral candidates'.

spread to the USA, where the first US PhD student^f was famously Arthur William Wright at Yale in 1862. During the First World War, the UK government decided to develop national research training, and the first UK PhD student was enrolled at Oxford in 1917. Since then the PhD degree (sometimes referred to in the UK as DPhil, while in other European countries other titles such as 'dr.sci' are sometimes used) spread throughout the rest of Europe. In some countries, notably in Scandinavia, influenced by a strong German tradition there was reluctance to introduce the PhD, since these countries already had a more advanced research degree given to established researchers. However, even there the PhD has been accepted, the PhD being officially introduced for example in Denmark in 1989. Also outside of Europe, the PhD has become widespread, with almost all developed countries now having PhD programmes [1,2,3]. The PhD is thus an internationally recognized qualification, but there are significant differences within Europe in the structure and content of PhD programmes and the outcomes needed to obtain a PhD degree. The aim of this article is to discuss these differences, with emphasis on similarities and differences between UK and the programmes dominant in Continental Europe (hereafter referred to as the "Continent") that follow the Salzburg principles. Clearly, these programmes – both in UK and on the Continent – are diverse, and the article is based on our general impressions gained over many years from our experience within ORPHEUS and our experience as heads of our respective graduate schools. ORPHEUS is an organization founded in 2004 committed to safeguarding the reputation of the PhD as a research degree and strengthening career opportunities for PhD graduates^g. The organization has nearly 100 members from almost all European countries and several countries outside Europe. The article is based primarily on PhD education in the field of biomedicine and health sciences, although many of the points will also be relevant for other fields. The article is a development of a previously published article [4].

Development of the traditional PhD

The traditional PhD developed in Europe followed the apprenticeship model – in keeping with the Humboldt tradition. As discussed previously [4], students would usually enter their PhD programmes as a result of personal contact with a professor. The relationship was informal, the university often only becoming involved when the student submitted his or her thesis. Later, the traditional model was modified at many universities, so that PhD students were registered, but otherwise it was often entirely up to the professor to supervise the student. The training was unstructured but was concluded when sufficient experiments had been made, and the PhD student wrote up the results of the experiments in the classic PhD thesis, a monograph. The monograph was evaluated either with a public examination (usually following a written review), or with a viva^h.

This traditional approach provided solid training in scientific method, hands-on understanding of methodology, and critical analysis of the data. A PhD graduate was recognized as a trained researcher, a member of the academic community and in principle qualified to contribute independently to scientific literature and scientific meetings. A successful PhD was the route to an academic career.

Current procedures for PhD training in most institutions in the UK, but also in several other European countries, are generally speaking still heavily based on the traditional approach, but with important developments. Thus PhD programmes are generally structured with strict rules about admission, supervision, the content of the programme, and the final examination; and with quality control throughout. Increasingly, there is emphasis on the development of generic skills. In the UK, several bodies such as the Quality Assurance Agency (QAA) [5] provide frameworks for ensuring the excellence of the PhD education being provided.

The Salzburg PhD

The development of PhD programmes on the Continent in the past decade has been greatly influenced by decisions made at a meeting of the European Union's Conference of Ministers responsible for Higher Education in Berlin, September 2003, where it was decided to extend the Bologna process from two cycles (bachelor and master's) to include a third doctoral cycle. The ministers emphasised 'the importance of research and research training', and the need for PhD graduates to build the 'knowledge society' that will enable Europe to compete with other economies of the future'. This implied a significant move away from PhD education being primarily a training for an academic career, towards one where PhD education should provide PhD graduates with the competences needed for a wide variety of non-academic jobs. This raised the possibility of a reduction in the research quality of a PhD degree, and the European Universities Association (EUA) responded by holding a conference in Salzburg 2005. Here it was emphasised as the first of ten points that 'The core component of the third cycle is the advancement of knowledge through original research' [6]. Amongst other points, the conference document from the 2005 Salzburg meeting also emphasised the importance of having structured PhD programmes. Thus it was

F In this article the term 'PhD student' is used irrespective of the terms of appointment, where in some countries PhD students are employed as junior academics. Increasingly, on the Continent, PhD students are referred to as 'PhD candidates' or 'doctoral candidates'.

G www.orpheus-med.org

H A viva is an examination where the candidate and the assessment committee sit round a table and go through the thesis often line-by-line. A viva is usually closed.

I See http://www.ond.vlaanderen.be/hogeronderwijs/bologna/documents/MDC/Berlin_Communique1.pdf

recommended that institutions should have structures (e.g. graduate schools^j) which had the responsibility for enrolment, for approving the PhD project, for arranging courses, for monitoring student progress, and for ensuring competent supervision and assessment [6]. To emphasise the importance attached to doctoral education, the EUA set up a Council for Doctoral Education (EUA-CDE) which in a second 2010 Salzburg ('Salzburg II') document [7] provided more details about how the ten points could best be achieved.

More recently, the European Commission has published a set of 'Principles of innovative doctoral training' [8]. This emphasised the need for research excellence as the basis for all doctoral training and the need for interdisciplinarity. It indicated that PhD students should have career development opportunities through being exposed to industry and other relevant employment sectors during their training. International networking was also advocated. Importantly, PhD programmes should also include training in generic (transferable) skills. The overall aim of the document was to describe the conditions that can ensure that PhD education makes a valuable contribution to the European knowledge society while maintaining the quality of the essential research component. Other organizations such as the League of European Research Universities (LERU)^k, Coimbra^l and ORPHEUS (specifically in biomedicine and health sciences) have also prepared documents describing the main features of PhD education. In many countries these initiatives were followed by increased financial support for PhD education with government support for more PhD stipends and for the establishment of structured PhD education.

Across Europe there is widespread support amongst policy makers and heads of graduate schools for the principles enunciated in the Salzburg and EC documents. In particular as regards the need for structured PhD programmes with a content that provides competences that are appropriate for PhD graduates regardless of whether they choose careers within or outside of academia. In Scandinavia, the PhD programmes followed are almost universally consistent with the principles. In other countries, such as Spain, national regulations were changed so that the traditional open-ended PhD programmes were replaced with structured PhD education, with programmes limited to three years full-time ('exceptionally' four years). Portugal is following suit. However, despite official support for the Salzburg principles, support on the ground is not so widespread. In Germany, although *Graduiertenkolleg* have been established to provide structured PhD education, these exist alongside traditional apprenticeship programmes, students having the choice about which to choose. In many other European institutions, despite official support for structured PhD programmes, the traditional apprenticeship form of PhD education still survives, in some cases due to lack of funds for a structured programme. However, it is our experience that this is also due to opposition from supervisors who have a strongly held belief that the classical apprenticeship model provides the highest quality with its focus on individually acquired scientific skills and competences. There is, however, perhaps also an underlying view that PhD students should *quid pro quo* provide laboratory assistance in return for the training they receive, and not participate in other activities dictated by a graduate school.

Comparison of traditional and Salzburg procedures

European diversity is reflected in the diversity of approaches to PhD education. However, it has been the authors' experience through their work with ORPHEUS^m that there is a surprising degree of agreement (see Table 1), at least in biomedicine and health sciences. Thus the principles of PhD education introduced by von Humboldt are in general followed throughout Europe (including the UK), and there is increasing agreement that the research excellence is the *sine qua non* of PhD education. The crucial role of supervision is recognized, successful supervision being a two-way process, with responsibilities on both sides. Formal contracts are made in many graduate schools between supervisor and PhD student upon enrolment, underscoring the need for qualified supervision with relevant courses for supervisors, and also students [9]. Increasingly there is also agreement about the need for interdisciplinarity, and in some instances giving PhD students career development opportunities through being exposed to industry and other relevant employment sectors during their training. There is agreement that the thesis is the primary basis for determining whether a PhD degree is awarded, the decision being made on the recommendation of an independent assessment committee. There is growing agreement that PhD students should be involved in the leadership of the graduate school.

There are, however, significant differences, Table 1. Thus according to the Salzburg principles, entry to a PhD programme is usually a master's degree (which is the traditional final degree on the Continent before possibly moving on to a PhD), whereas for more traditional programmes, such as the UK, a good 3-year bachelor degree has normally been sufficient. As discussed further below, this difference is becoming less clear-cut. For example, 5-6 year medical degree programmes are widely accepted as qualification for enrolment for a PhD programme. Another difference concerns generic skills, where according to the Salzburg principles, the emphasis on the development

J In this article the term 'graduate school' is used to describe the structure within which PhD education takes place within the institution. On the Continent this is frequently referred to as a 'doctoral school'. In some institutions 'graduate schools' include both PhD students and master's students. In some institutions, PhD education is decentralized with Research Schools having the main responsibility, with the graduate school having a loose co-ordinating function.

K http://www.leru.org/files/publications/LERU_Doctoral_degrees_beyond_2010.pdf

L <http://www.coimbra-group.eu/DOCUMENTS/Doctoral%20Programmes%20CG%20Position%20Paper.pdf>

M Organisation for PhD education in biomedicine and health sciences in the European system

of generic skills (or 'personal development' as recommended by Vitae^N) is greater, with about 6 months being set aside for activities not directly related to the PhD project. Where these activities are courses, they are held at PhD level, not master's level. In more traditional programmes, it is our impression from conversations with UK colleagues that considerably less time is devoted to these activities in most institutions. As regards the thesis, it is now common in programmes following the Salzburg principles for this to be based on articles/publishable manuscripts together with a 'review', whereas in more traditional programmes the monograph is normally retained. Finally, concerning the examination of the thesis, in institutions following the Salzburg principles, the oral examination is a public examination following a written assessment of the thesis, in contrast to the closed viva still used in some countries.

International PhD programmes

Outside of Europe, PhD programmes are based typically either on the traditional model (especially in those countries that were part of the British Empire), or on the US tradition. In the US, enrolment is on the basis of a bachelor degree but the first two years of the programme are spent following advanced learning courses and in choosing and preparing for the research project to be pursued. Entry to the PhD project usually requires passing a qualifying exam. The research project is performed in a structured environment, but in practice it is often open-ended such that PhD programmes can last 6 or more years (indeed much longer in some cases^Q). Generic courses are usually available, but not normally compulsory. Countries following the UK tradition are in some countries also beginning to emphasise the development of generic skills, where for example Monash University has introduced the 'new Monash PhD' and 200 hours are set aside for activities not directly related to the PhD project (courses, seminars, participation in conferences, etc.)^P.

Structural considerations

In comparing European PhD programmes, account needs to be taken of structural differences, where in particular UK structures differ significantly from those generally found on the Continent. Thus, while it is probably generally recognized in UK that research experience would be an advantage before enrolment in a PhD programme, a requirement for a master's degree would impose a financial burden on the student, since, fees for a master's course have to be paid by the student up front. Some UK foundations are dealing with this challenge by extending PhD stipends to four years^Q, but this is not general. Furthermore, for PhD students coming from outside of the EU, who pay a substantial annual fee, an additional year would have considerable financial implications. Students from the UK and EU normally receive a stipend at the level of €1500-2000 per month (non-taxable); for those coming from outside of the EU, stipends may be available, but students may choose to pay their own way. Full-time PhD students normally retain student status in the UK; this has certain advantages (e.g. non-taxable stipends, student housing), but they do not have the employment conditions of academic staff.

On the Continent, in most Western countries at least, there is no fee for PhD education for nationals (or EU nationals). Furthermore, master's programmes are an integrated state-financed continuation of bachelor programmes, and normally include a 6-12 month research project. However, the stipends which PhD students receive vary widely from the substantial Scandinavian stipend (e.g. €3000-4000 per month, but taxable) to other countries where few stipends are available, and even these are low. PhD students coming from outside of the EU may in some countries have to pay an annual fee, while in others (as in Scandinavia) this is not the case. Stipends may be financed by the state (in Scandinavia this is typically the case for about one third of the stipends), by foundations or by the supervisor's grant money. In Scandinavia (and in several other countries), PhD students have appointments as junior academic staff. The seemingly generous remuneration of PhD students in some countries, and good employment conditions, should be set against their research production which typically in biomedicine and health sciences is three articles; the sizeable stipend also implies commitment from the student. Although hard statistics are lacking, the research output of PhD students probably amounts to 30-50% of the institution's publications. And since publications are often part of the algorithm by which universities are funded (at least in Scandinavia), and for obtaining external resources, this production provides funding for the institution.

Taken together, and to put it crudely, in some countries (in particular the UK and some Eastern European countries) PhD students, especially those from outside of the EU, are a direct source of income. While elsewhere, in those institutions where state funding is dependent on publication output, a major part of the income is indirect through the publications that the students provide. Inevitably, these considerations have influence on the PhD education provided.

N <http://www.vitae.ac.uk/CMS/files/upload/Vitae-Report-Achievements-2008-2012.pdf>

O TRANSDOC survey: <http://www.coimbra-group.eu/transdoc/uploads/TRANS-DOC%20Survey%20findings.pdf>

P <http://med.monash.edu.au/news/2012/new-phd.html>

Q E.g. Wellcome Trust, <http://www.wellcome.ac.uk/Funding/Biomedical-science/Funding-schemes/PhD-funding-and-undergraduate-opportunities/WTD004384.htm>

Demographic considerations

As long as it was only some professors who occasionally had a PhD student, and as long as there was a modest increase in the number of academic positions, the system was sustainable: there was space in academia for the successful PhD students. However, now that most professors have several PhD students, the number of PhD students worldwide has increased rapidly. In Europe, there has been a 50% increase over the past 10 years [10]. In the USA there has been a doubling in biomedical PhDs over the past two decades [11]. In some countries, such as Denmark, the rate has been even greater with more than a doubling over 10 years. In China, the number of PhD students increased almost four-fold between 1999 and 2007 [12]. Thus the careers followed by PhD graduates has changed radically. In the UK, for example, according to a Royal Society 2010 report [13], around 50 per cent of PhD graduates go immediately to non-research positions outside of academia, 30% to postdoctoral positions, and around 17% to non-university research positions. Of those who move to postdoctoral positions, only around 4 per cent find permanent academic research posts, the majority of the remainder going to non-research positions. Thus, only about 25% of PhD graduates use their talents in research activities (Figure 1). The statistical basis for this report has been questioned, but the general trend is accepted. This is supported by a firmly based survey in Norway, where using a nationwide register it was found that in 2009 of all Norwegians who had received a PhD between 1970 and 2009 only 18% had a research position [14]. A report in Nature showed similar figures across the world [15]. On the other hand, a survey covering most of the member states of the European Union (EU), of EFTA as well as some of the most important other members of the OECD, such as the United States and Australia indicated that around 50% of PhD graduates are in research positions [16]. This was also a recent finding of Vitae [17], who found that after 3 years 30-50% of PhD graduates were in research positions (either academic or non-academic). Some of the discrepancies may be due to the definition of 'research positions' and the time window being examined. However, overall, the data suggest that only a minority of PhD graduates find permanent employment in conventional research positions and, with the current enrolment rates, even fewer are likely to do so in the future.

A possible solution to the demographic challenge would be to cut the number of PhD students, so that there was a better balance between the number of PhD students trained and the number of research positions available. However, as indicated above, developments over the past years have resulted in perhaps up to half the research output of biomedical institutions being performed by PhD students. Cutting enrolment of PhD students to a level consistent with the number of academic positions available would therefore greatly affect the research output of institutions, and is not therefore seen as an option. Thus, it is generally accepted that a large proportion of PhD graduates will go to non-academic positions or indeed non-research positions. This emphasises the importance of ensuring that PhD training is also relevant for such employment.

A corollary of the demographic challenge posed by Figure 1 is that it is not only PhD graduates who are competing for jobs. Universities have now to a great extent to compete for the best PhD graduates to carry their research forward providing a natural incentive to ensure the excellence of their PhD programmes.

Criticism of the PhD

Perhaps because of the continuation of traditional approaches in some institutions, PhD training has received substantial criticism. The Economist [18] suggested that doing a PhD was often a 'waste of time' and that 'dissatisfaction' among PhD students was widespread. This view was opposed^R, but a few months later Nature had a series of articles outlining current problems with PhD training [15,19-22]. It was, for example, intimated by a distinguished US author that 'Most doctoral programmes conform to a model defined in the middle age' [18]. The criticism has continued in 2012 [23,24]. To a large extent, the criticism has been directed at the more traditional forms of PhD programmes, and not to the more modern forms of PhD training that have been developed in UK and the Continent. However such criticism is not conducive to enhancing the image of PhD training. If the PhD is to maintain its historical reputation as a degree of excellence, and if PhD training is to remain attractive to the brightest and best, some action is needed. As we have suggested recently, it should be ensured that "PhD students remain a mainstay of current scientific research, the source of our future scientists, and a basis for providing persons with the skills needed to build knowledge societies" [25].

Standards for PhD education

Most countries have more or less detailed regulations and guidelines for their PhD programmes and most emphasise the need for quality assurance. The European Commission's 'Principles of innovative doctoral training' referred to above [8] also emphasises that quality assurance procedures are essential to ensure that the principles enunciated in the document are implemented. Similar comments are found in the EUA-CDE Salzburg II document [7]. Such procedures can either become very detailed if all regulations are to be fulfilled, or

R Bogle D, Economist 6 January 2011, page 5.

else diffuse if the intention is only to determine agreement with the overall principles. In the field of biomedicine and health sciences, the present authors have worked within the organisation ORPHEUS (see above) to develop a practical basis for such quality assurance. Here the intention has been to define the essence of PhD education across Europe in a set of standards for PhD education all of which can be readily tested. This work, conducted as a collaboration between ORPHEUS, AMSE (Association of Medical Schools in Europe) and WFME (World Federation for Medical Education), has recently culminated in the publication of a document entitled 'Standards for PhD education in biomedicine and health sciences in Europe'[26]. The brief document has eight one-page sections covering: research environment, outcomes, admission policy and criteria, PhD education programme, supervision, PhD thesis, assessment, and institutional structure. Each section is divided into Basic Standards (items that should be fulfilled) and Quality Development (items indicating good practice) and Annotations (explanations, recommendations and indications of flexibility). It is a feature of the document that it combines specificity with the flexibility needed to ensure that all good graduate schools across Europe are covered.

It can be discussed if standards are needed for PhD education. There are some who say that it is the reputation of the institution that should set the standards for that institution. However, there are others, the present authors included, who see the PhD as an international degree and that it is therefore important for transparency that prospective students and employers can determine if the PhD programmes offered comply with certain minimum standards.

Outcomes

Given that there have been 200 years of autonomous development of PhD programmes in universities throughout the World, it is not surprising that there is substantial diversity in their content. However, perhaps more agreement can be obtained about the expected outcomes of PhD education (Table 2). Here opinion leaders are in no doubt that PhD education must be both a research degree and must prepare for employment within or outside of academia. For example, the UK Quality Assurance Agency has written [5]:

The importance of acquiring research and other skills during research degree programmes is recognised by research students, academic staff, sponsoring organisations, employers and doctoral graduates. These skills improve the research student's ability to complete the research programme successfully. The development and application of such skills is a significant element in the research graduate's capability for sustaining learning throughout his or her career, whether in an academic role or in other employment. Research students are encouraged to take ownership and responsibility for their own learning, during and after their programme of study, and to recognise the value of developing transferable skills'.

The demonstration that a PhD programme has involved 3-4 years of research at international level is normally assessed on the basis of the PhD thesis. Increasingly on the Continent the classic monograph is being replaced by a review and a number of papers, where ORPHEUS has recommended (Table 1) that the level in biomedicine and health sciences should be 'equivalent' to three first-author published papers in good, internationally recognized, peer reviewed journals (either published or manuscripts that the assessment committee finds to be publishable). The key word is 'equivalent'. Fewer papers would be acceptable if published in high-ranking journals, more papers would be needed if they for example were just short case reports. The criterion also covers publishing the work as the traditional monograph, providing the scientific content has the indicated level. Although elastic, the criterion does give the assessment committee an indication of the level that is expected, and under all circumstances it is the independent assessment committee which makes the scientific judgement as to whether the thesis is acceptable.

While the thesis must remain the prime outcome, the thesis in itself is unlikely to be of major importance when PhD graduates are seeking employment outside of academia. Here it will be the generic competences that have been developed, of which some are shown in Table 2. Thus PhD students at an early stage of the programme should have full responsibility for their projects from hypothesis generation to presentation of the results. PhD students need to be provided with skills that will allow them to set up protocols, ensure these are carried out, manage their project according to time-lines, obtain financing, establish networks, interpret and publish the results, and present the results to scientific and non-scientific audiences, nationally and internationally. It should be emphasised that although these skills will be relevant for non-academic employment, all of them will also be extremely relevant in any subsequent academic career. The set of particular skills required could vary depending on the career plans of the student. It has therefore been suggested that the final PhD diploma should indicate the competencies achieved and the activities performed during the PhD programme, perhaps in the form of a documented portfolio (Table 3) [27] or 'diploma supplement', as also recommended by Vitae⁵. Indeed it could be considered whether such achieved competences should be evaluated by the assessment committee together with the PhD thesis when considering whether a PhD student should receive a PhD degree, and could even be part of the oral examination. It is important to emphasise that the quality of the research should in no way be compromised by the other components of such programmes. Rather these other components should enhance the quality of the research and the motivation of the students.

⁵ <http://www.vitae.ac.uk/researchers/192731/Evidence-of-your-skills.html>

Doing all this within the framework of a 3-4 year PhD programme is not easy. However, by viewing PhD students as managers of a project team, who are able to enlist the expert assistance of other colleagues and technicians it is our experience that the scientific level is at least as good as for programmes where PhD students do all the work. To allow PhD students time to do all the suggested activities not directly related to the PhD project, in our view, the PhD students should not themselves necessarily do all the work presented in their thesis. Such a view is still considered anathema by some, but one needs to consider whether the requirements for a PhD in the new demographic situation do not make this unavoidable [28]. Fortunately for the less convinced supervisors, experience shows that provision of structured PhD education that gives PhD students not only research proficiencies, but also generic skills, improves the research performance and allows PhD programmes to be completed successfully on time.

Under all circumstances, whether PhD graduates find employment in academia or in other fields, they should take heed of the recent statement from NIH Director Francis Collins: 'I worry that a number of them are receiving the message that if they don't get a tenure-track position, they have failed. The good news is that nearly all [PhD graduates] are likely to be employed in interesting positions, but many will not travel a narrow academic path.' [29]

Towards a consensus

When viewing UK (and other institutions following more traditional PhD programmes) and Salzburg (especially Scandinavian) PhD programmes, the similarities far outweigh the differences. Significant differences do, however, remain as indicated above, Table 1. Some such as enrolment requirements (bachelor v. master's) are structural, while others like the need for courses and the format of the final oral examination are within the remit of the graduate schools.

As regards enrolment, from the discussions that have taken place between ORPHEUS and colleagues in UK, it seems that increasingly 4-year PhD programmes are being introduced, with the first year being set aside for advanced studies, research and preparation for the PhD project with entry to the PhD project being based on a qualifying exam. On the Continent, e.g. in Denmark, '3+5' models are being introduced, where students can enter a combined 5-year master's and PhD programme directly from bachelor. The extra cost has to be set against the extra research output (and thus benefit for the institution).

As regards the inclusion of activities not directly related to the PhD project (Table 3), these are usually optional in UK programmes but compulsory in programmes following the Salzburg principles. Here there seems to be increasing recognition, as recommended by e.g. QAA and Vitae, that these activities not only prepare for subsequent employment, but can also improve research performance. Conversely, in institutions following Salzburg principles, it is our impression that there is a movement away from set academic courses towards other activities such as short courses in generic skills, making presentations at conferences, attending seminars, teaching (Table 3). Here, therefore, there appears to be a convergence of views.

A third difference concerns the thesis that traditionally is a ca. 80,000-word monograph, but which in institutions following Salzburg principles consists increasingly of published papers or publishable manuscripts together with a review. Nevertheless in the UK there seems to be a move towards including papers/manuscripts as chapters in the thesis. Conversely, in institutions following Salzburg principles, there appears to be growing agreement that the 'review' consists of a broad introduction including an extensive review of the literature, critical analysis of the methods used, possible inclusion of data not in the accompanying papers/manuscripts and discussion of the results of the project in the context of the literature, broader than in the accompanying papers/manuscripts. Here again there appears to be a convergence of views.

A fourth difference concerns the final oral examination. The traditional viva is a tough exam, and perhaps tougher than the public examinations held in some institutions following Salzburg principles, at least in biomedicine and health sciences. On the other hand, the viva does not test ability to give a public lecture and to stand up to scrutiny in a public environment, both essential features of being a scientist. Additionally, in some smaller scientific communities in Europe it would not be easy to organize vivas because the number of independent and competent peers is limited, and national regulations and/or tradition are against involvement of foreign experts. Thus in such countries the public examination (and published international papers) is at present the best safeguard for quality. At the 2013 ORPHEUS conference in Prague⁷ it was emphasised that for theses containing papers, the assessment should be based not only on the accompanying papers/manuscripts, but also – and perhaps particularly – on the other parts of the thesis as described above. Furthermore, the oral examination should be detailed enough to ensure that the thesis has been written by the candidate, that the candidate understands the methodology, and that the candidate is able to put the results into scientific context. Thus either this should be done in a separate session before the public examination, or else the public examination should be considerably more detailed than is often the case at present, certainly in biomedicine and health sciences, where the public examination can in some countries have ceremonial character. The ORPHEUS standards, however, indicate that there should be a real possibility of failing the public defence (with possibility for a new defence later).

⁷ Consensus documents available on www.orpheus-med.org

The chances of failure will be greatly reduced if the development of the thesis is regularly monitored during the PhD programme by the supervisor(s) with a formative feedback to prevent not properly prepared students reaching the stage of the thesis defence.

Conclusion

Worldwide, as in Europe, PhD education is grappling with the need to maintain the PhD as a research degree of excellence, while at the same time ensuring that PhD education provides PhD graduates with the competences needed to obtain stimulating employment either within or outside of academia. In general, the UK view (as also seen in many institutions in other European countries) seems to be that the traditional product of PhD training, the PhD thesis, has an established value as a measure of scientific excellence. Thus our conversations with UK colleagues indicate that the UK has addressed the challenge of subsequent employment by offering some training in generic skills, and by strengthening the structure of the programmes within which the PhD is performed to ensure the quality of the training and the thesis. On the Continent, institutions following the Salzburg principles provide compulsory emphasis on the development of generic skills, with weight being given to e.g. dissemination, project management, networking and teaching. The differences between the two approaches – or cultures – are however becoming less distinct, and with increased interaction between UK and the Continent, both approaches can develop, with the best parts of each approach being adopted by both [30].

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Table 1. Comparison of some points in more traditional PhD programmes (such as UK) and ORPHEUS-based PhD programmes

Points on which there is agreement

- PhD programmes should be performed in a strong research environment.
- PhD programmes should train for both academic and non-academic employment.
- PhD programmes should be structured and based primarily on a 3-4 year hands-on, original research project.
- PhD students should have qualified and regular supervision.
- There should be arrangements to allow PhD students to have time at another laboratory.
- The PhD thesis should be evaluated by an assessment committee consisting of active scientists, who should be independent of the student and the supervisor
- PhD students should interact with the leadership of the graduate school regarding the management of PhD programmes.

Points on which there is not full agreement

- Admission
 - ORPHEUS: Admission to a PhD programme requires a level corresponding to a bachelor and 2-year research-based master's. For countries not following Bologna, corresponding research experience should be obtained by other means.
 - UK: Admission can be on the basis of a bachelor degree, although increasingly either a research master's or an extra PhD year is required.
- Activities not directly related to the PhD project
 - ORPHEUS: PhD programmes should include activities not directly related to the PhD project. These activities should cover about 6 months, and can include courses on ethics and transferable skills, project-related courses (e.g. methodology), participation in conferences and seminars, teaching.
 - UK: course work is in general optional, although some institutions are now introducing compulsory courses.
- Thesis
 - ORPHEUS: A PhD thesis should demonstrate an intellectual ability to be expected from completion of a 3-4 year research project at international level. This level is assessed in biomedicine as being a research output corresponding to the equivalent of 3 papers/manuscripts in good, peer-reviewed, international journals. Here 'equivalent' signifies that fewer papers in high-ranking journals would be needed; the definition also covers a monograph, if the scientific level corresponds to the level indicated. It is the assessment committee that decides whether the level has been reached.
 - UK: It is generally considered that the evaluation can be left to the assessment committee, given their long tradition for appraising theses.
- Defence
 - ORPHEUS: Following acceptance of the thesis by written assessment, there is a PhD defence that includes a public lecture and examination. The examination should be detailed enough to ensure that the thesis is the candidate's own work.
 - UK: The defence is usually in the form of closed viva.
- Assessment committee
 - ORPHEUS: Increasingly, this should include an international member (as a practical measure to allow countries to compare standards).
 - UK (but also many other countries): International members of the assessment committee are not normal, since all expertise is to be found locally. Particularly in the UK a reason is that UK assessors will be more familiar with the viva procedure.

This list is based on discussions held at the 2013 ORPHEUS conference, Prague^U, where there was intensive discussion of the standards listed in the ORPHEUS/AMSE/WFME PhD standards document, Aarhus University Press, 2012. [26]

Table 2. Suggested outcomes of PhD education

Scientific competences

- have developed the ability as a scientist to conduct responsible, independent research, according to principles of good research practice.
- have demonstrated the ability to conceive, design, implement and adapt a substantial process of original research with scholarly integrity at a level that merits international refereed publications.
- have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field.

Generic competences

- have developed specific competences relevant to specific employment opportunities (e.g. in the pharmaceutical industry).
- have developed the ability to communicate with their peers, the wider scholarly community and with society in general about their areas of expertise.
- have developed the ability to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge-based society.
- have developed further competencies including leadership, ability to supervise work of others, project management and ability to teach.

This list is based on discussions held at the 2013 ORPHEUS conference, Prague^V, where there was intensive discussion of the standards listed in the ORPHEUS/AMSE/WFME PhD standards document, Aarhus University Press, 2012. [26]

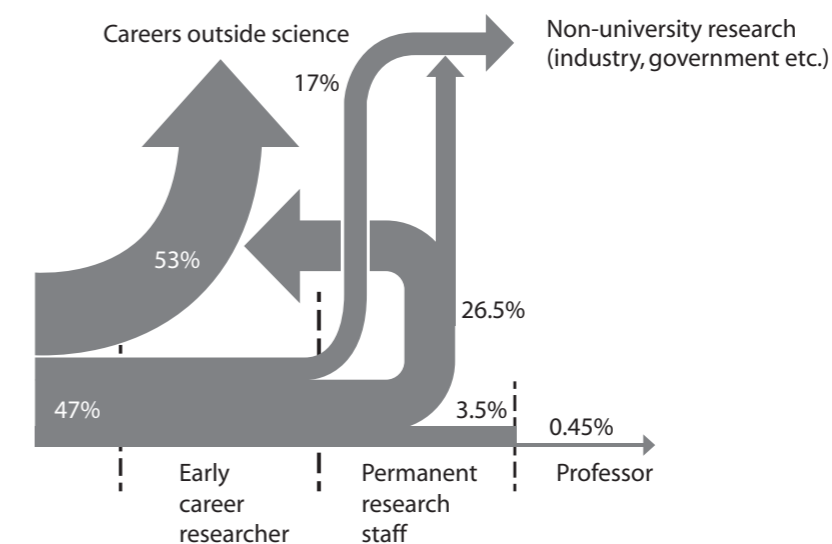
U See consensus documents on www.orpheus-med.org
 V See consensus documents on www.orpheus-med.org

Table 3. Suggested items that could be included in a portfolio for PhD graduates

- Presentation
 - Articles, reviews, abstracts
 - International conferences: participation, posters, lectures
 - Local meetings, department, national
 - Lectures to non-scientific audiences
 - Patents
- Courses
 - project related
 - generic skills
- Team management
- Grants received
- Time in other laboratories, time abroad, time in industry or job placement
- Networks established
- Teaching

The table lists some of the scientific activities that a PhD student could cover during his/her PhD programme in addition to the work on the PhD project. It has been suggested that documentation for this portfolio (by some called a 'diploma supplement') should be provided to the assessment committee, and that these activities could also form part of the decision by the assessment committee as to whether a PhD degree should be awarded.

Figure 1



Legend to Figure 1

Careers in and outside science in the UK. The diagram illustrates the transition points in typical careers following a PhD and shows the flow of scientifically-trained people into other sectors. It is a simplified snapshot based on recent data from Higher Education Funding Council for England [33], the Research Base Funders Forum [34] and from the Higher Education Statistics Agency's annual Destinations of Leavers from Higher Education (DLHE) survey. It also draws on Vitae's analysis of the DLHE survey [35]. It does not show career breaks or moves back into academic science from other sectors. Figure based on figure 1.6 in *The Scientific Century* securing our future prosperity, 2010 Report of the Royal Society, London, 2010 [13]. Reproduced with permission from the Royal Society.

A Synthesis of the Professional, the Academic, and the Personal in the Professional Doctorate: A Framework for Applied Research

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Keywords: structure of doctoral programs; professional doctoral programs; student adaptations to work and study; doctoral studies and work-life balance; interdisciplinarity and doctoral studies; epistemology and professional doctoral studies.

Abstract

The Doctor of Social Sciences program at Royal Roads University has been in existence for four years and the first cohort of students will graduate in 2014. The program is designed for highly placed professionals who are working full time and who are pursuing doctoral studies full time. Given the seemingly daunting task of balancing work and life, the students work to blend their dissertation research with their professional lives. The ideal is for students to engage in research that enhances their professional work, either at the behest of their organizations or based on their own administrative initiative.

The structure of the program is somewhat unique for several reasons. It is based on a cohort model in which students who enter the program together remain as a working cohort throughout the four years of the program. In addition, the course delivery is based on a blended model of delivery; the program consists of two required three-week residencies based on intensive seminar-based classes separated by periods of web-based distance learning. The combination of online courses and small-group residencies on campus allow the students to take a full stream of courses while working full-time in their chosen professions. Finally, the supervisory model is one in which we find the best supervisor from within or outside our university. If the supervisor is external, we place that person under contract with us to guide the student through the four years. Often times, the external primary supervisor is located in accessible proximity to the student, a case that allows for both online and face-to-face contact between the student and supervisor.

The program includes a total of six required courses, a candidacy exam, and a dissertation. The first two years of the program are quite structured, and as a consequence, the student cohort maintains intermittent face-to-face contact and continual online interaction. Because the early stages of the program involve a good deal of collective and collaborative work amongst the students, they seem to build naturally a sense of togetherness and cooperation that persists throughout the four years of the program, despite the fact that the students come from an incredible diversity of professional backgrounds and geographic locations. In fact, it may be this diversity of experience and location that helps blend the cohort into a group of individuals who look to each other for new knowledge and ideas. The blended model of learning, in concert with the cohort system, seem to create the conditions under which students tend not to isolate themselves, a risk that is always imminent especially in the later years of conventional doctoral programs.

In this paper, I explore the importance of applied research to professional doctoral studies and discuss the theoretical and epistemological issues that seem rather unique to applied research in the workplace, in addition to the practical issues faced by students. I employ case studies that illustrate how applied doctoral research meets the ideal of melding professional and academic interests in a research-based degree program. The case studies illustrate several foundational issues that frame a successful program including: a) the importance of a well-founded epistemological framework that explains and defends a particular way of knowing, incorporating culture and ethnicity-based knowledge systems; b) the importance of maintaining an approach to research that is curiosity-driven despite the demands from organizations for targeted research; c) the need to develop a writing style that meets the demands and audience requirements of policy and academic interests as well as the general public; and d) the significance of developing a research program that extends well-beyond the time frame of the doctoral program. In the end, I provide a framework for professional doctoral studies that responds to the professional, academic, and personal interests of the student.

Introduction

The **Doctor of Social Sciences** (DSocSci) program at Royal Roads University is Canada's first applied research doctorate designed exclusively for working professionals. The program was developed in response to a growing demand nationally and internationally for

scholar-practitioners who are leaders in their professional fields and who want to incorporate dedicated research and writing into their professional lives. Given the diversity of backgrounds and interests of persons in the program, the DSocSci focuses on interdisciplinary applications of the Social Sciences to researchable issues in the workplace, issues that have both local and global relevance. The program is designed to enable students to integrate professional experience and academic scholarship to produce policy-relevant research that is written in a widely accessible way. The program has been in existence for four years; the first cohort of students will graduate in 2014. Because of the seemingly daunting task of balancing work and life, the students work to blend their dissertation research with their professional lives. The ideal is for students to engage in research that enhances their professional work, either at the behest of their organizations or based on their own initiatives.

Students in the DSocSci program come from a diversity of professional origins; the public and private sectors, international and national non-government organizations, private consultancies, and the cultural sector (primarily the administration and development of Aboriginal communities), the military. The mix also includes people driven by personal energies and passions. This complex and diverse gathering of students is made more complex by generational diversity and all of the peculiarities that attend multi-generational endeavours, including disparities in attitudes, IT competencies, and linguistic skills.

Significantly, most of our students are pursuing doctoral studies directed at a research mandate that incorporates a commitment to issues that resonate in a social justice framework. This is particularly true of applicants who have formally retired and want to devote their continuing intellectual energies to issues related to post-retirement in areas such as health, access to information technology, and contributions to society from senior citizens. Their primary focus is to become experts in areas related to gerontology and social justice, and their desire is to produce publishable works that have an impact on a wide audience and that have significant public policy potential.

In this paper, I explore the importance of applied research to professional doctoral studies and discuss the theoretical and epistemological issues that seem rather unique to applied research in the workplace; additionally, there are the practical issues faced by students. I employ case studies that illustrate how applied doctoral research meets the ideal of melding professional and academic interests in a research-based degree program. The case studies illustrate several foundational issues that frame a successful program including: a) the importance of a well-founded epistemological framework that explains and defends a particular "way of knowing" unique to cultural and ethnicity-based knowledge systems; b) the importance of maintaining an approach to research that is curiosity-driven despite the demands from organizations for targeted research; c) the need to develop a writing style that meets the demands both policy-making and academic audiences, as well as the general public; and d) the significance of developing a research program that extends well-beyond the time frame of the doctoral program. In the end, I provide a framework for professional doctoral studies that responds to the professional, academic, and personal interests of the applied doctoral student.

The Developing Intellectual Framework

The Nature of Research

While all of the students in our program begin with a fairly well-defined research program, most often directed to specific issues in the workplace, they typically change the critical and substantive focus of their research as a result of interactions with their colleagues in the DSocSci program. The students have all expressed the importance of the virtual and face-to-face relationships they establish; they note that their research programs evolve in response to comments and ideas from others. Because this program is devoted to interdisciplinary work, the collegial comments and suggestions often take the students outside their professional worlds and provide guidance that gives their research unanticipated directions. This melding of ideas is, in part, the result of the diversity of global experience of our students, many of whom work in international settings. Other students have little international experience but substantial local involvement. For example, a student in our first cohort came to the program with a research agenda devoted to understanding children rights and child protection in war zones. Her methodological goal was to establish human rights-based protocols for interviewing child soldiers. She discussed her work over a period of time in our onsite residency with a student colleague who, as an Aboriginal judge, is interested in First Nation's traditional law and the safety of children. Their discussions resulted in both students altering their research to include traditional epistemologies in the study of child rights and the blending of local and global cultural considerations. What this kind of cross cultivation of ideas has created for the students has been an evolving recognition of the importance of epistemology to social sciences research and the importance of alternative ways of knowing.

The Melding of the Professional and the Academic

One of the foundations of our program is the importance of the professional lives of our students to their research programs. All of our students are conducting research relevant to their workplaces and their research is a fundamental part of the institutions in which they work. This has, for the most part, created a protracted awareness amongst the students that their research is not abstract but does have

real world relevance that cannot be ignored or given short shrift. The practical offshoot of this awareness is that employers are quite willing to give the students the latitude and time to conduct their research as part of their professional activities. One of our students is the CEO of a prestigious national environmental organization who has managed to use much of his literature review and some of his course-derived writing in his oral and written communication for his institution. He will describe this somewhat natural blending of his academic and professional work in a chapter in his dissertation.

Lifelong Learning, Career Development and Doctoral Research

The majority of our students are mid- to late-career professionals and are devoted not only to lifelong learning, but also to other professional lives after their immediate careers. That new professional life will clearly involve research either in a formal or informal capacity. Our program seems to reflect the demographic tendencies of the “boomer” generation to want to work in some capacity well past retirement. The training and experience that they receive in their doctoral research are vehicles for them to prepare for professional research as part-time continuing employees or as consultants. There is a clear symbiosis between their academic, curiosity-driven passion for research and the practical and financial demands of post-retirement.

Networks of Learning, Interdisciplinarity, and Research

While I have alluded to this before, it is worth clarifying here the importance of student networking and the sharing of ideas. I believe that this persistent desire amongst our students to continue their “ongoing roundtable of shared ideas” stems from their intellectual isolation in the workplace. What they receive in the doctoral program is a protracted opportunity to share and discuss, a place in which their ideas evolve. It is interesting in this context of cross-pollination of ideas that our students end up to some degree involved in issues of social and ecological justice, whether or not they started from a generic justice paradigm.

Clearly, the complexity of the program, the uniqueness and heterogeneity of the students, and the interdisciplinary framework all present formidable challenges for our doctoral program. They also make the program exciting; students need to be creative in how they adapt to work-life balance issues and to the financial realities that working full time and studying full time present. The demands on the students seem insurmountable at times, but the program and the students have been innovative. The following discussions explain the innovations and adaptations that have allowed for this success.

The Competing Demands

Because our program is a full-time doctorate for working professionals, student work-life balance presents ongoing challenges, not only for students, but also for program administrators. The difficulty of finding the balance that students need to be happy and successful is compounded by the duties and responsibilities that adults in their forties and fifties and sixties face, duties that were not necessarily part of their younger years. The reality for many of our students is that they are members of extended families, their professional lives are often at a high point on the trajectory of occupational mobility, and despite their earning power, their financial resources are typically under stress. The competing demands on their lives as high-profile professionals mean that professional commitments can necessarily take priority over their academic work. The competing demands on their personal lives often present as time that has to be dedicated to child and/or elder care. Many of our students in their mid-life years are caring for elder parents, children in school and university, and also require for themselves more immediate health care than they did in their younger years. Some of our students face competing demands on their time from their cultural communities. Our Aboriginal students, for example, come from communities that are supporting them to become highly-educated and for that support require them to hold allegiance to their communities and cultures as they advance intellectually. A First Nations student in the program is pursuing research in environmental sustainability in the context of traditional ways of knowing and is ethically bound to be accountable to the needs and the voices of her culture and ancestors. Many of our students work for organizations that have a foundational social justice mandate, and those organizations expect their highly-educated members to be public intellectuals. One of the students in our program is the director of a non-governmental organization (NGO) who works with high-risk children and youth; she is part of a public intellectual network that advocates for young people. Another student is working as a public advocate for the preservation of sensitive ecological zones, is involved in the politics of ecological advocacy, and is conducting her research on the administration of sensitive environmental areas. Such individuals are indeed public intellectuals.

The role of the public intellectual bears some discussion here because it has particular resonance for students like many of those in our program who have been out the academic world for many years. A recent poll of Canadians by the polling company Edelman Trust Barometer in 2012 indicated that 80% of the Canadian public trusts academic experts as credible spokespeople; however, by contrast only 35% of the public trusts corporate executives and only 45% trusts government officials. Interestingly, trust in academia and lack of trust in the corporate and political worlds have grown significantly in the last two years. As a consequence, corporations are tapping into the credibility of academia to enhance their own credibility and are encouraging and supporting managing employees to pursue

increasingly high levels of formal education. For many of our students the expectation of them is that they will become pillars of academic credibility for their organizations, and that they will be on-site academics. The demands that accompany this expectation for doctoral students in private companies are that they will do all or some of the following: produce rigorous, research-based policy documents; publish in academic venues; present their work at both academic and industry conferences; and speak in public venues as academic employees. The diversity of expectations and roles for such students creates considerable competing demands not only on their time, but also on them occupationally and intellectually. The assumption is that such employees can do sound academic work and maintain allegiance to the philosophical and pragmatic demands of the organization, a potentially untenable position that challenges many of our students, especially as they begin to study in classes that focus on critical interdisciplinarity, globalization and global justice, and epistemology.

The Contradictions of Professional Research

The following issues represent the contradictions that seem to be inherent in doctoral studies for professional students who are working full time and who combine professional allegiance with their academic curiosity.

1. Because most of our students are conducting research directly relevant to their places of work, it is not difficult to imagine that their allegiances are somewhat divided. They are doing doctoral level research which presupposes that they are working within a paradigm of academic freedom. Standards of research rigour demand that they put aside the attachments to their organizations, the allegiance that years of employment have engendered, and their socialized way of viewing the world through the lens of the organization and adopt a neutrality that is somewhat new to them. One of our students, for example, is the corporate responsibility officer for a major multinational corporation and is pursuing research related to environmental sustainability and resource extraction. While her research mandate is progressive and is based on an environmental/social justice paradigm, the mandate of her corporation is to pursue research within the confines of a corporate paradigm that is based on the principle that the maximization of profit is inviolable and pre-emptive.
2. Many of our students are conducting research embedded in rather cloistered cultures. Such contexts are both restricting and provocative in that they demand epistemological approaches that are at once confining but also justifiable. First Nations communities in Canada have suffered the ill effects of colonization for hundreds of years and have also been the focus of academic prurience. Most First Nations communities in Canada now demand an approach to research that is respectful of culture and communities and is driven by epistemologies that incorporate and acknowledge alternative ways of knowing. Many of our Aboriginal students and non-Aboriginal students working in Aboriginal communities are working towards culturally inclusive epistemologies that often are at odds with traditional methodological approaches to social sciences research. Some of our faculty members, trained in conventional doctoral programs, struggle to understand epistemologies that seem outside the academic world and to incorporate alternative knowledge systems into their teaching.

At the other extreme, students working within cultures like the military and the police are confined to epistemologies that are very conventional and maintain a highly modernist notion of progress. Traditional approaches to research are based on the pragmatic need to understand how, for example, the military works and the effectiveness of military strategy especially in international conflict zones. However, there is a growing desire within military and police research cultures to engage in more participatory forms of research that begin with understanding the world through the eyes of different cultures.

In the end, the cultural communities in which some of our students live present challenges to traditional research and traditional epistemology. While both students and faculty confront such challenges, the resulting academic work has been rewarding, to say the least. Our class discussions are fraught with issues of research sensitivity, ethical conduct in relation to contemporary community-based research, and the humility needed to engage in research on cultures that have the right to demand alternative worldviews.

3. Most of our students are conducting social and environmental justice research and this presents a political problem for students who depend on public funding, including the university tri-council funding program in Canada. More and more, funding seems to be tied to targeted research. In the current Canadian conservative political context, funding is diminishing and the extant funding is directed to issues of economic efficiency and viability and away from issues such as environmental sustainability, environmental stewardship, and social justice. Together with our students we are trying to be innovative in a climate of fiscal and social conservatism to access funding while preserving the critical justice studies foundational to our program.
4. The social and environmental justice framework provides another contradiction that stems from the nature of our students as experts in their particular professional fields. Some students come to us with what might be construed as a natural stridency that stems from their professional demands. As I mentioned earlier, many of our students are expected to act as public intellectuals, often within the political confines of their work. They are used to speaking in unqualified, definitive terms and this often stands in the way of the demands of academic research and thinking that ask for reflection, distance, and a willingness to see the world in opposition to “established” knowledge.

5. The final contradiction for our students and our program stems from the professional need to write in a style that is highly accessible, certainly to an audience beyond the academy. This fundamentally fair demand is countered by the sometimes requirements of academic writing that depends on a language that is not always universal. Most of our students have a desire to publish their dissertations in book formats that have resonance for their organizations and the non-academic policy world. We encourage the publication of books and the use of accessible writing in our program. One of the most difficult aspects of the professional doctorate is writing style; it is relatively easy to fall back on the strict language of academia, but much harder to transform sound academic writing into publicly-accessible writing. Interestingly, many students bring with them a style of professional writing that is as, or more, esoteric than orthodox academic writing. Our program is built on encouraging writing that is neither professionally nor academically bound. An applied doctoral program is built on rigorous research that has profound and extensive policy consequences. While, writing to a generic audience is the cornerstone of such a program, it is also one of the greatest challenges.

Survival Strategies

The final section of this paper is devoted to the strategies that students use to manage the contradictions of a professional doctoral program during which they work full time and in which much of their research is circumscribed by their professions. By using examples from students within our program, I highlight their coping strategies for managing a triple life—the academic, the professional, and the personal—and the contradictions inherent in the professional doctorate.

1. Professional Immersion

Several of our students have arrived at a point in their lives in which their commitment to their professional work is so enmeshed with their personal lives that the two are indistinguishable. For their academic work, the transition from the personal and professional to the academic is relatively easy. The three worlds come together in an almost organic way. This somewhat natural affinity is exemplified best by a student who is conducting research on child soldiers in Africa. Prior to her enrolment in the program, she did consultancy work with child soldiers and with victimized and marginalized children in the developing world. As one might expect, her life as an activist consultant, was subsumed within her work and her social justice commitments, so by choice, her personal and professional lives merged very well. The incorporation of a research program within the same professional context was quite easy and demanded nothing more than the emotional and time commitment that she was already making. Interestingly, this professional immersion approach to life and work seems rather innate and relatively unproblematic in her rather representative case.

2. Personal Immersion

Several of our students have committed their lives to personal issues that become the framework for their short and long term research agendas. This method of managing the complexity of their doctoral work is often related to issues of post-retirement, exemplified by a student who has devoted her life to elder care and access to IT. Another student is pursuing research related directly to a life-altering traumatic event. In this case, the student's parents were killed by an impaired driver and she and her sister were seriously injured. She has, as an advocate for law reform, devoted her life to justice and vehicular homicide. Clearly, when scholarship is based on something so personal, problems of objectivity and distance from the focus of the research are ever-present. In fact, all of our students who have taken the personal immersion approach to research constantly find themselves in the position of soul-searching, self-reflection, and uncertainty with respect to their ability to do rigorous research. Interestingly, the students in question seem to have improved their intellectual skills dramatically because they have had to come to terms with their personal quest in the paradigm of rigour that attends good academic research.

3. Immersion in a justice paradigm

The previous discussions on the role of the public intellectual frame this particular form of doctoral adaptation. Many of our students work in professional roles that demand that they speak on behalf of their organizations in the contexts of social and environmental justice. This type of adaptation to doctoral work is really about taking on the role of political advocate and staying within that role as part of the doctoral research. One of our students comes to us from a major international environmental organization where he is the CEO. He approaches his academic work as part of his public advocacy and uses his research and his newfound knowledge to expand his credibility and his ability to speak as an informed public intellectual. Such an approach demands that the research program very specifically focuses on the person's role within the political/advocacy organization and somewhat restricts the inductive potential of the research. It also threatens the ability of the researcher to remain at least somewhat dispassionate and reflective. The intellectual balancing act is one of maintaining a commitment to academic rigour while continuing to act as a public advocate for social and environmental change.

4. Immersion in the future

Some of our students are engaged in what might best be described as a form of anticipatory research. They are conducting research that is not immediately relevant to their professions or personal lives, but are doing so in anticipation of career changes or future career demands. Their research focus is a direct result of calculated decisions to become experts in new areas that will facilitate new

or changed careers. One of our students is currently working for a non-governmental organization devoted to a particular social justice cause. Her work involves fundraising and accessing volunteers; in that context, the world of charitable donations and voluntarism is changing rapidly because of online charitable work. As a consequence and in anticipation of her changing role in the organization, she is conducting research on online volunteering and generation-based commitment to civic affairs. Her research is analytical, applied and relevant to her anticipated future career demands.

Another example of this type of anticipatory research involves a student whose professional work is directed to gerontology and mental health. In anticipation of the future demands of her work, she is conducting research on access to information technology and social networking amongst senior citizens. Her work is devoted to understanding the linkages between the welfare of senior citizens and their access to the internet. The expertise that she will gain has direct implications for her evolving professional life. Her research decision and that of the previous student are pragmatic decisions based on anticipated future career demands.

5. Immersion in two worlds

A common conundrum faced many students is that the demands of their professional work in the context of existing organizational structures and politics stands in contradiction to their work as advocates for social justice work and policy. While many organizations do have a commitment to social responsibility, their mandates are often constrained by accountability to shareholders, by government bureaucracies, or by the demands to maintain organizational reputations in political contexts. Several of our students are caught in the contradictory position of being accountable to organizations that are funding their employment and research and being accountable to their commitment to sound academic research, especially research that is community based and is based on an action research epistemology. One student, in particular, is studying waste disposal, community health, and environmental sustainability in the developing world. Her research is funded by a multi-national corporation which has a corporate responsibility mandate but is also constrained by issues of shareholder accountability and profit. The student's research melds with the corporation's need to study waste disposal, river ecology, and community health, but departs from the corporation's foundational position that the research needs to take place within a context of industrial development. To reconcile the philosophical and ethical rift, the student has taken the strategy of producing two research streams, one that meets the mandate of the corporation and one that maintains fidelity to the epistemological and ethical demands of community based research. The liability of such a strategy is that the researcher is essentially producing two research products: one based on corporate conformity and one based on conformity to the wishes of communities and individuals who are participants in community-driven research typified by participatory action research. Another major challenge for such a strategy is that because the researcher needs to write to different audiences, the polemical tone of the writing is dependent on the audience and is, in part, dependent on the skills and politics of the audience.

6. Organizational immersion

Several other students are working so closely within organizational frameworks and the demands of their work are so rigid that they are literally compelled to conduct research with a pragmatic organizational agenda. While the conduct of the research is not dictated by the organization, the focus of the research is. The research questions are based on organizational need and the organization not only funds the research but also provides the research context and access to research subjects. Arguably, this is the most difficult type of research strategy to manage in the professional doctorate program. Students working within this context have the most difficult time breaking free from what they presume to already know and have further difficulty in conceptualizing a research strategy that is analytical rather than descriptive, and that is theoretical and applied rather than just applied. One student who has adopted this strategy is conducting research on recruitment of clients for her institution and came to the program with a very concise, unyielding focus on the best strategies for recruitment as her doctoral research focus. Professors and advisors have worked with her to establish an analytical focus with a theoretical premise and this has proven to be difficult given the organizational demands on the students. Several other students who are doing specific, goal-oriented research for their organizations struggle similarly with the task of placing their research in a larger theoretical and analytical context than would be demanded by the organization.

7. Cultural Immersion

Lastly, we have a growing number of students who are working within traditional cultures typified by Aboriginal communities. Our students of Aboriginal ancestry especially tend to choose research strategies that have somewhat unusual epistemological and ontological bases. Their positionality is based on their membership as cultural citizens, first, and intellectual citizens second. They make the deliberate choice to maintain cultural membership and to hold true to the cultural and social needs of their communities. The epistemological position for such students is that they necessarily pursue and acknowledge ways of knowing that are not common in academia, knowledge bases that tend to be cultural and traditional rather than scientific and academically defensible. The approaches that such students adopt are based on honouring traditional knowledge by placing that knowledge on an intellectual plane equal to or above that of existing academic knowledge. While this approach is quite new and presents challenges for the larger, traditional academic world, it has a currency that is gaining respect and that has an increasingly important role to play in social and environmental policy.

One of our Aboriginal students is working on a project that focuses on environmental sustainability and education. Her professional role is to develop education and tourism programs for her particular First Nation by developing a model of environmental sustainability based on an ancestral ontology that foundationally holds the earth to be alive and that all animate and inanimate beings possess inalienable rights. She is working with her community to hold to this ancestral belief system while establishing and evaluating a model of ecological sustainability that is not associated with a development and economic growth philosophy. The cultural immersion that such an approach demands is particularly challenging for a relatively new scholar who is working within a world that is very different from the modern world within which academic and policy research exists.

Final Thoughts

As the program head of the Doctor of Social Sciences Program and as someone new to this form of doctoral studies, I am constantly amazed and heartened by the synergy among the students and by their willingness to co-operate and not compete. I am sure this is partly a function of professional maturity and partly a function of their realization that especially in an interdisciplinary program, while they may be professional specialists, they need others to help them develop their ideas. It is also a function of the diversity in experience of our students. In short, it appears that interdisciplinarity creates an intellectual humility that by no means detracts from research development. In fact, this approach to intellectual work seems to create openness to new ideas and paradigms and awareness that knowledge acquisition is never a finished project. Most importantly, however, our students have been active and creative in adapting to the contradictions of working full time in often intellectually constrictive environments, pursuing doctoral work full-time and working within the guidelines of rigorous research, and maintaining a commitment to their personal lives that is often pre-emptory of the professional and academic demands.

An Alternative Approach to the Final Assessment of Professional Doctorate Candidates

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Keywords: professional doctorate, assessing doctoral programmes, oral examination, viva, practice-led doctorate

Abstract

This paper presents a case study to explore an alternative approach to final assessment within a professional doctorate. The case study is of a doctoral programme which uses the traditional oral examination; however the examination is also novel in two respects. Firstly, the programme designers were keen to emphasise, and assess, the practice-led nature of the candidates' research and thus require each candidate to be examined by a team which includes a practitioner examiner. The examination team comprises two (rather than one) external examiners, and one internal examiner. The two external examiners are: an academic who is experienced in examining doctoral candidates; and an experienced practitioner, who is there to explore the professional nature of the candidate's research, and the impact which they have demonstrated within their broader community of practice. The second element of the assessment approach which is explored is the requirement for the candidate to present a portfolio of work, accompanied by a reflective report, rather than the more traditional thesis. This paper uses a mixed method approach to collect and analyse data from a set of 20 examinations, including the views of the examiners, the independent chair, and the candidates. We analyse the differences in the approaches taken by the academic examiner and the practitioner examiner, highlighting how these different perspectives on the submitted work are resolved during the examination process. We explore how these views come together to produce a final agreed outcome, the data set providing examples of a range of outcomes from Pass (and award of the degree) to the requirement for different levels of further work to be undertaken. We also reflect upon the portfolio-based approach, and the reaction of examiners to a submission of this nature.

1 Introduction

The PhD is traditionally assessed by an oral examination, or viva, in which a small examination team questions the candidate on the work presented in the thesis. In some countries, the oral examination is a public event, whereas in others, including the UK, it is closed. In recent years, standards have been developed to ensure consistency of approach in the oral examination (for example; QAA, 2008). Much has been written about the nature of the PhD Viva. Research in this area covers doctoral standards (Morley et al, 2002; Carter and Whittaker, 2009), the nature and variability of the oral examination (Tinkler and Jackson, 2000), selection of doctoral examiners (Joyner, 2003), and the analysis of personal experiences of doctoral candidates (Wallace, 2003). Recent work has also begun to question the nature and form of doctoral assessment, and the applicability of current practices with respect to practice-led, or professional doctorates (Johnson, 2005).

Morley et al (2002) explore the relationship between doctoral assessment and regulatory and quality assurance procedures. They argue that while attempts are being made to ensure quality and consistency within doctoral assessment processes, considerable variation remains. Carter and Whittaker (2009) argue that the individual nature of the PhD means that the process of examining a doctoral thesis "remains challenging and is surrounded by different agendas, ideologies and practices". Tinkler and Jackson (2000) attempt to shed some light on the PhD examination process and focus upon institutional policy from a sample of 20 British universities. Their research reveals some consistency across institutions in terms of their regulations, but also suggests that the operationalization of regulations and policies may lead to significant diversity.

Joyner (2003) writes on the important role that the external examiner plays in the assessment process. Joyner concludes that there are two main characteristics that should be required of any potential external examiner: firstly subject expertise in order to judge academic standard and whether or not the work makes a contribution to the subject; and secondly “they should also be mature adults, of enough humanity to ensure that the examination process is a worthwhile and developmental experience for the candidate, irrespective of the outcome.” Wallace (2003) undertook research into the actual conduct of PhD vivas by analysing the language that successful candidates use to describe their oral examination. This research found that some candidates used the metaphor of sport and competition, while others employed imagery relating to imprisonment and interrogation. Wallace then went on to relate these metaphors to the viva, and the examiners themselves, and argued that neither models of sporting competitions or interrogation were appropriate within the context of doctoral assessment. Trafford and Lesham (2008) examine the very nature of “doctoralness” and what is really meant by the scholarly nature of the degree.

Johnson (2005) begins to examine doctoral assessment and the oral examination within the context of the professional doctorate. This paper raises points of concern relating to the ability and appropriateness of academic examiners in assessing the practice-led nature, and professional contributions, of professional doctorate candidates. Pearce’s book (2005) explores the entire PhD assessment process and discusses the procedural and scholarly role of examiners, how they examine a thesis, and their relationship to the thesis, candidates and to other examiners.

“Professional doctorate” is a generic term which covers a wide range and type of doctorates. Costley and Lester (2012) differentiate between the occupation specific professional doctorate and the practice-led professional doctorate. Practice-led professional doctorates are focused on the development of work-based practice. There are many similarities between professional doctorates and the practice-led PhD, as found in the arts (QAA, 2011). Increasingly practice-led professional doctorate schemes are using portfolios of evidence, accompanied by a report or dissertation. The traditional PhD thesis tends to be highly structured and is presented as a coherent body of work; in contrast a practice-led professional doctorate submission may be a more eclectic body of work and less formally structured, but it is equally important that it is presented in a focused and coherent manner. Different professional doctorate programmes will have their own structure and regulations which will detail the specific structure of the portfolio; however as a generic definition Walker (1998, p94) defines the portfolio in the context of the professional doctorate as: “A selection of products of research which best establish(es) the candidate’s claim to have carried out research of a doctoral standard.”

The portfolio of evidence allows the candidate to select appropriate evidence to demonstrate their impact on professional practice. Portfolio compilation is a very creative act which allows the candidate to shape and refine the evidence and to identify areas for development. In this context it is akin to the artist’s portfolio. Maxwell and Kupczyk-Romanczuk (2009) use the metaphor of the Greek temple to describe the concept of the portfolio in the professional doctorate (Fulton et al, 2013). The floor can be seen as the portfolio; the pillars represent the themes within the portfolio and the roof represents the overarching report. This is a useful metaphor which illustrates the integrated nature of the portfolio. Portfolios are often used in the professional doctorate as “a way of tracking and reflecting upon individual learning, a document to analyse career history as a means to determine future direction” (Martin, 2006, p4).

In the practice-led professional doctorate, where the focus is on work based development, it is appropriate that representatives of the profession are involved in the final assessment. Johnson (2005) poses the questions: “Should universities actively seek ways to engage with the professional community and get its involvement in the supervision and assessment process? Will academics be prepared to accept non-academics as equal partners in the supervision and assessment process?”

This topic was initially discussed in the 1990s when DBA and EdD programmes were being developed, and at that time some attempts were made to introduce the concept of practitioners as examiners. However, to date this practice remains under-developed, and the authors feel that it is time to revisit the inclusion of practitioners on the viva panels of this form of doctorate. In this paper we are concerned with the nature of the oral examination within the professional doctorate (also termed the practice-led doctorate), and present a case study which explores and analyses the inclusion of a practitioner within the assessment process.

2 Methodology

This paper uses a case study approach as proposed by Yin (2008). Yin defines the case study as: an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (Yin, 2008). This particular case study explores the assessment of practice-led doctoral work and in particular the use of a practitioner examiner as part of the assessment process, and the appropriateness of a portfolio-based submission. The case study is of a relatively small scale; however this is not unusual for research of this nature (Knight, 2002).

The case study was based upon a single case of a professional doctorate programme within one university in the United Kingdom. The case is explained in detail in the next section of this paper. A mixed method approach to data collection and analysis was taken in order

to explore the issues outlined above. First, the results of a group of 20 recent doctoral graduates were examined, in order to set the context for the remainder of the study. Second the examiner reports for those 20 graduates were analysed with respect to the issues expressed above. This is a similar approach to that taken by Holbrook et al (2004) who analysed examiner reports for common themes. Finally a group of 8 candidates, selected from the group of 20 graduates, were asked to write a narrative account of their experiences of the oral examination. These narrative accounts were analysed for themes in relation to the issues identified above.

3 The Case Study

The professional doctorate at University A is a cross-faculty programme that enrolls candidates from a range of professions. It is cohort-based (with enrolments at set times of the year) and has a taught first year, where candidates are assessed in modules on Reflective Practice, Research Methods, and Contextualisation and Planning (a module which supports the candidates in defining their project, putting it into context and planning how to undertake that project). Following successful completion of this taught element the candidates embark upon the research phase of the programme, which follows a traditional model of the candidate meeting with a supervisory team on a monthly basis until completion. This section presents the background to the professional doctorate at University A, drawing from the programme specification, regulations and guidance for examiners (material taken from published material of University A is in quotation marks, and in italics).

As with any doctoral programme there is a requirement to produce new knowledge (Tinkle and Jackson, 2000). However, in the professional doctorate programme this may also be interpreted as contribution to, or impact upon, practice. In terms of most professional doctorates the aim of the work-based research project is not to generate mode 1 academic knowledge; but mode 2 knowledge (Gibbons, Limoges, Nowotny, Schwartzman, Scott & Trow, 1994) that is “theoretically sound, original, and of relevance to their practice area” (Carr, Lhussier, and Chandler, 2010). Candidates must demonstrate a deep understanding of the relevant academic literature, and in the case of a professional doctorate, relevant professional policy and practice, and the systematic application of appropriate research methodology. It is expected that the candidates will undertake a very substantial piece of work in order to be able to demonstrate the appropriate level of achievement, and their submission must also show evidence of good communication skills (both written and oral), application of sound judgement and ethical principles, together with demonstration of skills of criticality, synthesis and evaluation.

The programme aims to “develop candidates as reflective practitioners, to enhance their professional practice and enable them to innovate, and make informed judgements.” It further sets out to: “develop the ability to synthesise ideas, concepts and approaches from their profession with relevant theoretical frameworks to create solutions, innovate and produce impact within their workplace.” Candidates must demonstrate the ability to select appropriate research approaches and to apply these to issues and dilemmas which they encounter, and hence by doing so make a contribution to the practice within their profession.

The final submission takes the form of a doctoral report accompanied by a portfolio of evidence, rather than a thesis. This approach is now recognised and used in several doctoral programmes (Maxwell and Kupczyk-Romanczuk, 2009). In this programme the use of a portfolio was introduced to enable the candidate to assemble and critique work-based evidence as part of their final submission, and to enable their doctoral project to mirror their professional development. Together the report and the portfolio must make an original contribution to professional practice and contain elements of publishable quality. Through this submission candidates must demonstrate that they have met the formal learning outcomes, which are:

- “Demonstrate a deep understanding of the recent developments in their profession nationally and internationally
- Demonstrate a deep understanding of current theoretical frameworks and approaches which have direct relevance to their own professional context
- Make a significant contribution to practice within their chosen field
- Apply theory and research methodology within the workplace, and feel comfortable in integrating different approaches to address “messy” multidisciplinary problems in a rigorous yet practical manner
- Recognise budgetary, political, strategic, ethical and social issues when addressing issues within the workplace
- Reflect on their own work, and on themselves, and thus operate as a truly reflective independent practitioner
- Present and defend an original and coherent body of work which demonstrates, reflects upon, and evaluates the impact upon practice which they have personally made”

Assessment of the outcomes is made by an examination of the doctoral report and portfolio and by oral examination. The length of the report depends upon the specific output of the research project and is negotiated on an individual basis with the candidate’s supervisory team. Taken together the report and portfolio are normally expected to be between 60,000 and 80,000 words. The report consists of a reflective account of the research undertaken, a critical review of the current state of the art in the areas of the profession which are relevant to the work undertaken, and the academic theory relevant to the work. The report is also expected to draw out, evaluate, and reflect upon the contribution made by the research.

The portfolio provides the evidence and data to support claims of contribution to the profession made in the report. It should be concise, focused and clearly cross-referenced with the report such that it is clear to the reader how the content supports the claims to contribution. Where the evidence provided in the report is drawn from team or collaborative work, it should be clear what level of individual contribution was made by the doctoral candidate.

O'Mullane (2005) has ranked the actual achievements of the professional doctorate in terms of recognition from the profession to determine if it rates as a significant contribution:

- 1 "Findings" Incorporated into Professional Practice
- 2 "Findings" Incorporated into Professional Knowledge Repertoire
- 3 Dissemination of Outcomes to Members
- 4 Outcomes Acknowledged by Profession
- 5 Profession Informed about Outcomes from a Particular Project
- 6 Profession Aware of Doctorate and Aims

Examples of evidence (though not exclusive) which could be included within the portfolio, are: "strategic organisational reports, reports of projects that have been carried out as part of the work programme, published conference or journal papers, work of clearly publishable quality, strategic policy documents, evidence of dissemination to, and evaluation by, the community of practice, reflections on professional practice. The portfolio, taken as a whole, will make an original contribution to professional practice." It is also essential that the submission as a whole (that is the report and the portfolio together) make a scholarly contribution that demonstrates that the candidate has undertaken a piece of rigorous research and has drawn from appropriate theory in constructing their "thesis" and the accompanying arguments (Trafford and Lesham, 2008), and aligned these with the academic discourse of the subject (Perkins, 2006).

The oral examination follows the practice and regulations of those for PhD candidates, with one very significant difference, which is the addition of a professional examiner. All candidates are examined by an examination team which consists of an internal examiner, an external examiner (academic), and an external examiner (from the profession/community of practice). The examination is chaired by an independent chair.

The regulations of University A state: "A PhD candidate will be examined by at least two and normally not more than three examiners. One of these will be an external examiner and one other will be a member of staff of the University (including Emeritus Professors) and not a member of the supervision team. An Independent Chair will preside over the examination but will not take part in the examination process itself. A Professional Doctorate candidate will be examined by three examiners. One of these will be an internal examiner, and two external examiners, one of whom will be an academic and the other from the profession." They also state that: "Examiners will be experienced in research in the general area of the candidate's thesis and, as far as is practicable, have experience as a specialist in the topic(s) to be examined. At least one examiner will have substantial experience, that is, normally three or more previous examinations, of examining PhD/DProf candidates within the UK system." and that: "An external examiner will be independent both of the University and of any Collaborating Establishment. An external examiner will normally not be either a supervisor of another candidate nor an external examiner on a taught course in the same Faculty at the University....Potential examiners are normally required to declare any personal, financial or professional relationships to the candidate."

The overall role of the examining team is to confirm that the candidate has met the learning outcomes of the programme. However each examiner has a distinct contribution to make in this decision where candidates have worked across discipline boundaries within a professional context. The intention is to ensure that the examination panel comprises the appropriate skills, knowledge and experience to make a fair and rigorous judgement of the candidate's work, and sets out to address some of the issues raised by Johnson (2005) about the complexities of assessing practice-led work. The motivation for including a practitioner as an examiner within the viva panel was to ensure that the practice-led elements of the candidate's work are fully explored and tested.

In broad terms, the role of academic examiners is to make a judgement on the academic integrity of the work – for example, does the candidate demonstrate a thorough understanding of the relevant and current academic literature on the subject? Has appropriate methodology been applied? Does the work make a contribution to knowledge? The academic external examiner is expected to be a subject expert, to hold a doctorate themselves, and to have experience of examining doctoral candidates, including ideally professional doctorate candidates.

The role of the professional examiner is to explore with the candidate their understanding of the state of the profession, consider the relevance of the *application* of their work, and make an overall judgement as to whether the candidate's work makes a genuine and original contribution to professional practice. The professional examiner is also asked to judge whether the work has been carried out competently in professional terms, and according to the professional norms of the relevant community of practice. The professional examiner is expected to be an experienced practitioner, and a recognised expert within the candidate's community of practice, but may not hold a doctorate.

Examiners are normally proposed according to their expertise by the candidate's supervisory team. Once they have agreed to be considered for the examination panel their appointment must be approved firstly by the relevant Faculty and then by the University. A key requirement is that no examiner must have close personal or professional links with the candidate or the supervisors. All examiners are asked to provide initial comments on the work prior to the examination. These are used in the preliminary meeting, prior to the viva, to inform and prepare a provisional sequence for the questioning process.

On the day of the examination the panel meets in private with the independent chair to agree key lines of questioning and allocate responsibilities for taking the lead on each topic. The candidate is then invited to join the panel to commence the examination, which normally lasts approximately two hours. Most candidates will be accompanied by their supervisor, who takes no part in the examination process and is there only as an observer.

On completion of the questioning the candidate is asked to leave whilst the panel consider their decision. The panel is asked to consider the following questions.

- "Do the doctoral report and portfolio represent a significant contribution to knowledge of the subject by: the discovery of new facts and/or the exercise of independent critical powers?"
- Do the doctoral report and portfolio provide evidence of originality?
- Are the doctoral report and portfolio satisfactory as regards literary presentation and succinctness?
- Is the abstract acceptable?
- Has the candidate satisfied the learning outcomes of the programme?"

The panel will then agree a recommendation. Possible outcomes of the examination are:

- "Pass and award the degree of DProf
- Conditional Pass (with minor corrections)
- Conditional Pass (with more major amendments)
- Referral for DProf
- Offer award of MProf"

4 Results

The case study was based upon a single case of a professional doctorate programme within one university in the United Kingdom. As outlined in Section 2, a mixed method approach to data collection and analysis was taken. First, the results of a group of 20 recent doctoral graduates were examined, and these are presented in the next section.

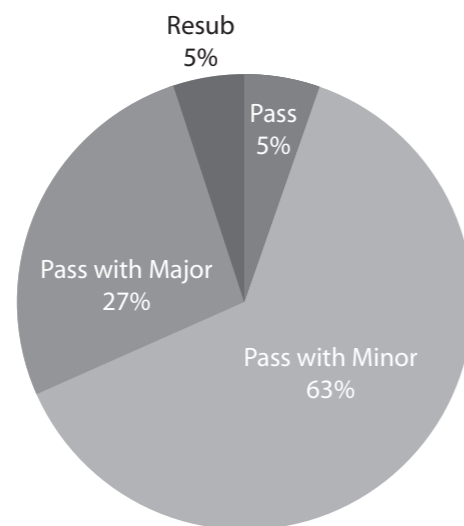
4.1 Examination outcomes

First, the results of all doctoral candidates who had reached examination stage are presented, for information. The backgrounds on the candidates are shown in Figure 1, and the examination outcomes for the 20 candidates are shown in Figure 2.

Figure 1: Professional Doctorate Candidates

Candidate	Profession	Candidate	Profession
1	Retired Town Planner	11	University Lecturer
2	Senior Academic	12	Senior Administrator
3	Pharmacist	13	Financial Auditor
4	Senior Manager in a College	14	Senior Manager in a College
5	Pharmacist	15	Chief Executive of a Social Enterprise
6	Business Consultant	16	University Lecturer
7	HR Manager	17	Pharmacist
8	Assistant Principal of a College	18	Quality/IT Consultant
9	Senior Nurse	19	Senior Nurse
10	Senior Manager in a College	20	Research Assistant

Figure 2: Examination outcomes



4.2 Examiner Reports

The examiner reports for those 20 graduates were analysed with respect to the issues expressed above. This approach was taken by Holbrook et al (2004) who analysed examiner reports for common themes. This textual analysis was also supplemented by asking the independent chair of each examination to comment upon the examination with respect to the issues under exploration. The group of staff who had acted as independent chairs were also asked to reflect upon the examinations which they had chaired, and to report any issues and themes they had observed.

The analysis revealed that the “professional” external examiners treated the task very seriously indeed. They prepared well for the viva, and in many cases requested additional guidance from the university as to standards and regulations. In some cases they were quite nervous about the task, yet felt confident in assessing the practitioner aspects of the work. They could be quite critical, in some cases more critical than academic examiners and quickly grasped the concept of “contribution” and could relate it to the work of the candidate in terms of the contribution which they had made to practice. In general, they enjoyed doing it, were pleased to be asked, and thanked the university for involving them in the process. It was very clear that these examiners explored practitioner areas of the work that academics would not, or could not.

In terms of the academic external examiners, the analysis revealed that it is important to appoint examiners who are familiar with the concept and structure of a professional doctorate. Examiners who had no experience of a professional doctorate found the concept quite new and difficult to grasp at first. The examiners focussed on the relationship to theory, the use of literature, methodology, and contribution to knowledge, and they tended to look to the professional examiner for advice on impact on practice. Indeed, they welcomed the presence of a professional examiner to help with consideration of the practice-led elements of the submission. These findings suggest that the panel is collectively addressing “doctoralness” as explored by Trafford and Lesham (2008) alongside practitioner elements of the work as discussed by O’Mullane (2005).

The independent chairs felt that the academic examiner and the professional examiner worked together well as a team, and tended to complement each other in their approach to the exam.

In terms of the appropriateness of the portfolio approach, some examiners found the structure difficult to follow; others readily accepted it, or were used to it. The structure of the report and portfolio was very important, and sequencing the two documents and referring from the report to the portfolio in a sensible way was seen to be key. Structuring was seen to be better where it mirrored the candidate’s work and methodological approach: this could be chronological, based on projects, a model, or individual cases. These findings are supported by those of Walker (1998) and Maxwell and Kupczyk-Romanczyk (2009).

4.3 Candidate Narratives

A group of 8 candidates, selected from the group of 20 graduates discussed above, were asked to write a narrative account of their

experiences of the oral examination. These narrative accounts were analysed for themes. The themes which emerged from this analysis are discussed below, accompanied by some selected quotes (in italics) from the narrative accounts. It is recognised that the sample of candidates is small. Knight (2002) argues that a pragmatic approach where limited data collection is aligned with reflection and clear research questions can provide useful lessons for practice.

Mixed feelings. Several of the candidates expressed nervousness, even though they were experienced professionals and used to making presentations in stressful situations. Yet ultimately they all enjoyed the experience. *“I was really nervous about the viva, so I had prepared very well. On the day of the viva I met my supervisor and she came into the viva with me for support. My viva lasted for two hours and afterwards I had to wait outside for a few minutes (which seemed like an eternity).”* *“I was a little disappointed at the end of this session as I was really enjoying the experience.”* *“I thoroughly enjoyed every second of the viva.”* *“Uncharacteristically, I felt very nervous, but my supervisor said that the panel could not detect it; she only knew because she could see my hands shaking under the table! I think the reason that I was so nervous was the thought of failure; all that work that had been done over a number of years and the thought of the panel not thinking it was worthy added to my anxiety. The dread I had was that I would be asked questions that I couldn’t answer. In hindsight, I don’t know why I inflicted this on myself. I thoroughly enjoyed the ‘discussion’ and felt very confident during the process because this was my work that I felt very passionate about and the time flew past!”* The language used by candidates in this study is largely positive and to some extent less polarised than that which was observed in the study undertaken by Wallace (2003).

At home with a practitioner. The candidates welcomed the presence of the practitioner and their role in the examination. They accepted the criticism of a peer, perhaps more so than that of the academic external. *“From my point of view, it was good to approach the viva as an opportunity to engage and have an informed discussion with interested colleagues rather than as a rabbit in the headlights exam. By being prepared I was able to defend my rationale if required but, and this was actually the case, was also ready to be enthusiastic about the subject and to enjoy the discussion.”* *“I saw the viva as an opportunity to showcase my work and speak with people, including a fellow practitioner, who are interested in the work I had undertaken.”* The apparent feelings of empathy between candidate and examiner have some similarities to the conclusions of Jayner (2003) who highlighted the importance of humanity in examiners.

Practice till perfect. The candidates raised the importance of preparing for the viva and having a mock practice session prior to the real event. *“It followed a rigorous almost torturous practice viva a couple of weeks prior during which I learnt many lessons.”* *“A couple of weeks beforehand I had a practice viva with my supervisors asking the types of questions that they felt would come up. This process gave me confidence on the one hand, but also made me realise that I had to really revise and read up on the theoretical concepts before the big day. This preparation paid off as indeed several questions on theory did come up.”* This aligns with the views of Tinkler and Jackson (2002) who highlight the importance of preparing for the viva.

Mixed views of the portfolio. Some candidates welcomed the approach as it enables them to build a submission over time based on material which they are producing as part of their practice. Other candidates found it confusing and preferred to think of a single thesis. They found getting the balance between what goes in the report and what goes in the portfolio to be complex, and needed quite a lot of support from their supervisors in compiling the portfolio. *“Sequencing the two documents and referring from the report to the portfolio in a sensible way is seen to be key, but was very time-consuming.”* *“Structuring the portfolio took a lot of thought, but once I had agreed to structure it around with my supervisor that I structure it around my model, the structure almost fell into place.”* These issues are similar to those discussed by Martin (2006).

5 Conclusions

This paper set uses a case study approach to explore one particular approach to final assessment with a professional doctorate. In particular the programme under study uses an additional practitioner examiner to assess the contribution to practice made by the candidate. The analysis has explored the issues which this raises, and we conclude that the examination team and candidates saw merit in this approach.

It is, of course, vital that doctoral standards are maintained. In particular it is important to ensure that the concept of the “contribution to knowledge” is upheld in our assessment processes and practices. The approach discussed adds to the examination team, rather than detracts from it and enables the “contribution” to be explored along two dimensions. Firstly the academic examiners assess the contribution to the subject made by the work and how it can be situated within the academic discourse which relates to that subject as highlighted by Trafford and Lesham (2008) and Pearce (2005). The practitioner examiner is asked to assess the contribution to practice which the work makes. The authors assert that both aspects are important within the context of a professional, or practice-led, doctorate. There, is of course, a potential issue in that in doing so we could potentially be over-assessing the candidates. Our analysis, suggests that the candidates recognised the importance of both views of “contribution” and welcome the opportunity to discuss and demonstrate how their work has achieved this.

Returning to the questions which Johnson (2005) raised: “Should universities actively seek ways to engage with the professional community and get its involvement in the supervision and assessment process?” This paper uses a case study to illustrate how one

programme has engaged with the professional community in assessment process. Further, in answer to Johnson's question: "Will academics be prepared to accept non-academics as equal partners in the supervision and assessment process?", this exploration suggests that academics welcome the inclusion of practitioner within the assessment process as it enables a deeper and more comprehensive assessment of the candidate's contribution, in terms of the practical nature of that contribution, and the way in which it may impact upon the work of other practitioners.

The other aspect of the assessment which has been explored is that of the portfolio. A portfolio of evidence is an integral part of the professional doctorate scheme and it is important that thought is given to the overall portfolio content and structure and it should be presented in such a way as to maximise its overall impact. It is also very important to consider the portfolio in a formative sense as well as summative. It is a final product, but the act of compiling a portfolio is in itself very creative, and leads to a much deeper appreciation and understanding of innovations and changes; which are the basis of the professional doctorate.

In this era when academic research is required to demonstrate impact, as characterised by the UK REF2014, or Research Evaluation Framework (REF, 2013), the Professional Doctorate offers a way to bridge the academy - practice divide, bringing academic researchers and practitioner researchers together to produce research that has direct and immediate impact in the 'real' world (O'Mullane, 2005). It is important that the assessment reflects this and enables the candidate to demonstrate the impact which their research is having on professional practice, as well as meeting the academic standard required to demonstrate "doctoralness" (Perkins, 2006; Trafford and Lesham, 2008).

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Improving Doctoral Research by Learning from Doctoral Vivas/Defences

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Abstract

Each doctoral viva explicitly involves the presentation, assessment and judgement of scholarship within a thesis and its defence by a candidate. At the same time, vivas implicitly assess the appropriateness of developmental education and development strategies through which a university, supervisor and candidate have respectively 'prepared' for the viva. However, debriefing after a viva to learn from that experience is uncommon in doctoral education processes. As a result, a belief that the doctoral viva should be demystified continues to prevail. Literatures concerning the doctoral experience, continuing professional development, communities of practice and episteme are introduced to show how they involve learning from direct experience. These approaches to learning demonstrate how feedback and debriefing of experience can be used to demystify the viva process. Achieving that will increase collective understanding of the wider doctoral process. These insights can improve evidence-based doctoral education practices for candidates, supervisors and universities.

'To know the road ahead, ask those coming back.' Chinese proverb.

Introducing a typical post-viva situation

Let's consider the room in a university where a doctoral viva has just ended. The examiners have recommended that the candidate be awarded their doctorate with a clear pass. Instantly, everyone in the room congratulates the candidate who reciprocates with happy smiles.

After some pleasantries, the candidate and supervisor(s) leave the room. The examiners draft their consolidated report on the viva and the Independent Chair deals with any remaining administrative matters. Then they too leave the room.

The examiners travel home to file away the thesis and their notes as thoughts of the viva gradually recede in importance. The Chair returns to the day job recalling the viva only if asked. Supervisors are pleased to have helped another candidate to achieve their doctorate as they also move on to other things. The candidate celebrates.

The candidate will discuss what transpired in the viva with family and their immediate friends or those who are genuinely interested and ask about it. Inevitably, such accounts will present the candidate's personal perspective on the experience usually without the benefit of collaborating points of view or other forms of evidence.

However, if the examiners recommended that amendments had to be made to the thesis or that the candidate had failed then the candidate and supervisor will attend to those matters. In the meantime, wider speculation will encourage partial and inaccurate accounts of the event and the various outcomes that followed.

Later, the examiners' consolidated report will arrive at an administrative office in the university, where the outcome will become part of the doctoral statistics for an item on a future research committee agenda.

Trusted and accurate news about the outcomes from doctoral vivas is therefore normally limited to a small number of people in a university. Despite being a significant academic achievement the outcome from a doctoral viva is not usually viewed as a newsworthy item.

It was against this background that Burnham observed: *The viva is one of the best kept secrets in British higher education. To all but the initiated what occurs in the lengthy judgely huddle from which nervous postgraduates emerge either victorious or distraught is a mystery* (1994: 30).

So what?

Universities provide a range of doctoral education programmes, workshops and support services for their candidates and supervisors. These activities are directed at developing research capabilities and improving doctoral completion and success rates. The information exchanged during these programmes and activities goes some way to demystify what happens at vivas. Murray (2003:10) suggests that a component of such programmes is to explain what happens 'behind the closed doors' of a doctoral viva.

However, a significant contributor to understanding this process is the research-based evidence on which the Researcher Development Framework (RDF) is founded (VITAE, 2010). The RDF provides a quadrant model that enables universities and their candidates/supervisors to visualise and then to develop appreciative capabilities in:

- engagement influence and impact;
- knowledge and intellectual abilities;
- personal effectiveness;
- research governance and organization.

The various indicators of performance in the RDF model offer a detailed and comprehensive picture of skills, attitudes and abilities that doctoral candidates could display prior to submitting their thesis for examination.

Given that the VITAE model, or an equivalent comprehensive framework, is widely used to prepare candidates for their viva, then the various experiences of those candidates in their vivas deserve to be explained and understood. Viewed in this way, then capturing those experiences would represent positive feedback on a viva with the potential to be used developmentally for the benefit of others. Thus, there are opportunities to learn after the event (a viva) and use that learning for the benefit of those who are currently undertaking their research prior to submitting their thesis and attending their own viva.

Overlooking the viva

Examiners seek evidence of originality, scholarship and contribution(s) to knowledge by doctoral candidates. This occurs twice. The first occasion is when they assess a thesis before the viva and prepare their respective independent reports. The second occasion is during the viva when they pose questions, receive answers and assess a candidate's ability to defend their research and their thesis. These summative assessments are conducted by examiners within the regulatory frameworks of a university.

My attendance at over 100 doctoral vivas/defences as examiner, supervisor or Independent Chair has highlighted critical success factors that transcend regulations and (inter)national examination systems. Noting examiners' reports, their questions and the ensuing discussions provides rich data across disciplines and within university systems. Observation, plus cumulative data analysis, shows consistency in the generic form and content of examiners' questions (Trafford and Leshem, 2002; 2008: 20-21). By understanding what occurs in vivas and in particular what questions examiners ask, plus how those questions are asked can illuminate 'the end game'.

The summative assessment process conducted by the examiners at each viva ~ the end-game ~ is a judgement on outcomes from the cumulative development, thinking and academic writing of candidates. At a secondary level, the outcome is also a reflection on the efficacy of development and support provided by universities for candidates and supervisors alike. Thus, the outcomes from a doctoral viva are pluralist and extend beyond a 'pass/refer/fail' judgement by the examiners.

Perhaps, Eliot was not necessarily thinking about doctoral vivas when he wrote:

*'What we call the beginning is often the end,
And to make an end is to make a beginning.
The end is where we start from'*
(Eliot, 1974: 208).

This verse implies that understanding what 'the end' involves can enable candidates and supervisors to start their respective doctoral journeys more confidently (Geertz, 1973: 5). Thus, appreciating the varieties of examiners' questions and the dynamics in which they are asked during vivas offer practical frameworks that 'conceptualise contribution, originality and scholarship' (Hillix and L'Abate, 2012: 4).

These are prerequisite features that university regulations require theses to possess before a doctoral degree can be awarded. This places the viva at the centre of strategies for doctoral learning, development and the cumulative preparation by supervisors and their candidates for forthcoming vivas.

Appreciating a candidate's cumulative doctoral development

Universities have access to a constant supply of experiential and documentary evidence on how theses are presented, examined and defended. Understanding how examiners judged the quality of research that was submitted may confirm or challenge prevailing orthodoxies of research training and doctoral curricula. Similarly, knowing how candidates actually defended their research may also confirm or challenge how they were prepared for that relatively-short-time academic role.

The learning which candidates draw on during their viva is obviously gained prior to that viva. It starts at their initial registration and displays how they:

- understand and comply with the summative assessment criteria;
- compile a thesis to comply with academic and technical protocols;
- presented evidence and arguments in their thesis to justify the originality of their research, gaps in knowledge, coherence in their arguments and claims for having made a contribution to knowledge;
- raise their levels of thinking to display scholarship in their thesis and then also throughout the viva;
- respond to examiners' questions in defending their research.

These are features to be found in their thesis and then defended in their viva.

Examiners' independent and joint reports usually contain comments and conclusions about these features. This documentary evidence represent before-and-after judgements on the scholarly quality of a submitted thesis. The latter report usually offers valuable insights by examiners on what subsequently transpired in the viva through their questions and the ensuing discussion. The joint reports also inform those who were not present how candidates performed through highlighting their perceived strengths or the difficulties that were encountered ~ from the examiners' perspectives.

Candidates' critical instances experienced in the viva, as well as during the day, could be recalled or noted. Similarly, supervisors' views on what transpired would extend understanding of the viva from their perspectives. Together, these accounts would illustrate the ability of candidates to cope with examiners' questions, the acceptability by examiners of the thesis as a written research account, how examiners approached the questioning process of the thesis and how candidates handled such questions. This would provide a triangulated real-time appreciation of how the viva commenced, proceeded and concluded.

By so doing the university can avoid extensive and usually uninformed hearsay about vivas by providing evidence from direct experience that was generated by the available participants themselves.

Evaluating direct doctoral experiences

Supervisors at vivas can note examiners' questions and critical instances. Along with candidates' recollections of what transpired, one or more case studies can be assembled to portray a single viva. Although such material from vivas is widely used in doctoral workshops this is not always based on contemporary direct experience, feedback or debriefing.

If the opportunity for a debriefing was available for candidates and supervisors soon after the viva then it could include:

- explaining the type and distribution of examiners' questions via scholarly, philosophical and technical clues;
- identifying the pluralist roles of each examiner showing how experienced and less experienced examiners relate to each other, and the patterns of their respective questions;
- identifying and clarifying significant differences in practices, questions and dynamics between vivas across the disciplines;
- sharing experiences in the wider faculty/university doctoral communities of practice (Wenger, 1998).

Knowledge about what happens in vivas is still not as well-informed as everyone hopes it to be (Murray, 2002 and 2003; Tinkler and Jackson, 2004; Pearce, 2005). Some candidates admit to being unaware of simple non-contentious details and academic protocols such as:

- how to handle certain types of problematic questions;
- how to respond to a question on an issue that is unconnected with the research that has been submitted for examination;
- whether they can ask questions of the examiners;
- the likely duration of their viva in their discipline;
- if there is a preferred way to address examiners on entering the room;
- what happens when the examiners have no further questions to ask;
- where, when and how will they know the outcome from their viva.

Answers to most of these issues are normally provided in the university regulations that, perhaps, candidates may not have read recently. Other answers would be explained during doctoral workshops. Nevertheless, debriefing after a viva could clarify these points and indicate what needs to be done to raise collective awareness of these matters.

Continuous research development

Preparing to submit a doctoral thesis and its defence commences at registration. When that is appreciated, then candidates and supervisors can accept that development is a longitudinal and integrated process. The activities which contribute to that process will depend on the discipline, the methodological approach(es) and the topic itself.

The evidence from debriefing vivas would be available to extend the materials that are used in scheduled workshops at university, faculty and departmental levels. It would complement the current doctoral curriculum by introducing contemporaneous insights on the viva and how to prepare for it (Carter, Kelly and Brailsford, 2012). This would provide evidence-based materials in the form of cameos and case studies that focus on:

- understanding the nature of doctorateness and raising the level of thinking for candidates as they progressed through their research, drafted their thesis and defended it in their viva;
- appreciating the pluralist roles that experienced and less experienced examiners display during the viva through the questions they ask and their relationship to candidates;
- deconstructing the questions that examiners asked into layers of meaning and patterns of philosophical, disciplinary or technical enquiry;
- confirming appropriate styles of academic writing that are particular to various disciplines and any emerging preferences in those styles;
- choosing how to respond to certain questions when candidates defended their research.

In this way universities would acquire the capacity to constantly develop doctoral practices that were in line with examination best practice and within discipline-specific contemporary evidence.

Candidates who display episteme

Evidence shows that successful candidates who emerge from a viva with their doctorate have demonstrated to examiners that they think like researchers (Trafford and Leshem, 2008: 90, 189-190). In this context, Perkins (2003) uses episteme as a collective term for the ability to identify, explain, solve problems, conduct enquiries and design or validate various types of research outcomes.

Exhibiting episteme is therefore dependent upon possessing understanding of something and having the capability to apply that understanding in appropriate ways. Thus, if a thesis is submitted that shows a confident choice and use of research approaches, and links between the research components are explicit, then readers (examiners) will recognize and accept its scholarly merit. In such cases, the candidate will have satisfied Perkins' notion of thinking like a researcher. Doing that will also (normally) satisfy the examiners.

When candidates successfully resolve such issues it shows that they do not view research as a series of unrelated technical activities. Instead, they appreciate how research components interrelate and so create synergy between those components.

If candidates display episteme then their research arguments will have been explicitly defended within the text of their thesis. This prepares them to answer questions to the satisfaction of examiners because they:

- understand that research is an integrated process rather than a series of unrelated tasks;
- undertake and report on their research so that others instantly recognise its scholarly merit;
- make the linkages between key components in the research process explicit within their thesis;
- understand and address the expectations that others have of doctoral level research;
- defend originality and justify their claim(s) for making a contribution to knowledge through arguments and a lexicon that are expected by examiners.

Doctoral success is more than just doing high level research. Referring to personal achievement and success, Gladwell argues that '*Practice isn't the thing you do once you're good. It's the thing you do that makes you good*' (2008: 42). Similarly, doctoral supervision should enable candidates to learn more about, extend their existing ability in and demonstrate understanding of high quality research. Therefore when supervision is effective it develops candidates' epistemic potential. Thus, obtaining perspectives on, and learning from stakeholders' expectations (examiners' questions) represents scholarly engagement with ways of thinking, forms of writing and modes of defending scholarly claims in theses. As van de Ven (2007: 284) implies, such a process would provide outcomes-related learning for candidates and supervisors alike.

Overlooking research as a cyclical process

Doctoral study involves knowledge creation. This is evident in theses that gain a doctorate and by their candidate-authors who produced and defended that work. Debriefing what transpires in vivas would give overdue attention to the explicit relationships between tacit and explicit knowledge about doctoral preparation and defending the thesis.

The tacit knowledge about the doctoral process and a viva, is personal, subjective and the result of continuous attention to the research topic over an extended period. In contrast, explicit knowledge is formal, easy to explain to others, often codified and is 'nurtured and cultivated from the seeds of tacit knowledge' (Choo, 1998: 8-9). In developing his argument and applying it to the concept of learning organizations, Choo suggests that: 'Organizations need to become skilled at converting personal tacit knowledge into explicit knowledge that can push innovation and new-product development' (1998:8).

In these words, Choo makes a clear link between collecting and then using that knowledge. The purposes for that use are developmental and this implies that they are located in the medium or longer-term future rather than being instant or short-term and reactive. The purposes would also bring colleagues together into 'common purpose' that then endorses understanding and learning within communities of practice.

Similarly, universities via their Graduate Schools could collect and use such knowledge for use in their doctoral education medium-term strategies. Outcomes from a viva can be traced to a variety of earlier features during a candidates' doctoral journey. These will include induction programmes, compliance with regulatory procedures, supervisory provisions and developmental workshops. Alongside these features will be the respective academic and personal support systems provided within each university. For supervisors the same features will apply, as adapted. Thus, initiatives to improve doctoral research and outcomes from doctoral vivas will depend on how various components within those initiatives relate one-to-another.

It is possible now to pose three questions that draw these issues together:

1. What evidence exists to explain why a candidate passed, was referred or failed in recent vivas?
2. How reliable is that evidence and does it contain views beyond those of the examiners to provide both hard and soft perspectives on what transpired?
3. How has that evidence been or will be incorporated into the current doctoral education activities for candidates and supervisors?

These issues can be combined into a model to show four linked stages of (1) how learning from past viva events could (2) provide experiential evidence via debriefing that was (3) relevant to the continuous development of both candidates and supervisors and (4) be apparent in the episteme of candidates and forthcoming vivas in the future.

Implicit within this model is the notion of the learning company. Pedler, Burgoyne and Boydell (1991:1) chose to use 'company' which is one of the oldest words for a group of people engaged in a joint enterprise. The term embraces the associated meanings and practical implications of collective endeavour and accompaniment with others in a common purpose. Supporting this model is the evidence that, in the entrepreneurial sector, companies can and do consciously learn from their experiences.

In their model, Pedler, Burgoyne and Boydell argue that learning processes are pluralist in practice and consequence. They show that each stage within effective learning processes feeds into a subsequent stage and so adds cumulatively to the learning that occurs. Although company experiences are technically different from that associated with doctoral vivas the model, in Figure 1 below, is a concept of development with generic applicability. Thus, it can perhaps help us to visualize and appreciate ways in which doctoral education provision could be viewed and evaluated.

Figure 1: The cyclical process of doctoral development

Adapted from: Pedler, Burgoyne and Boydell, 1991

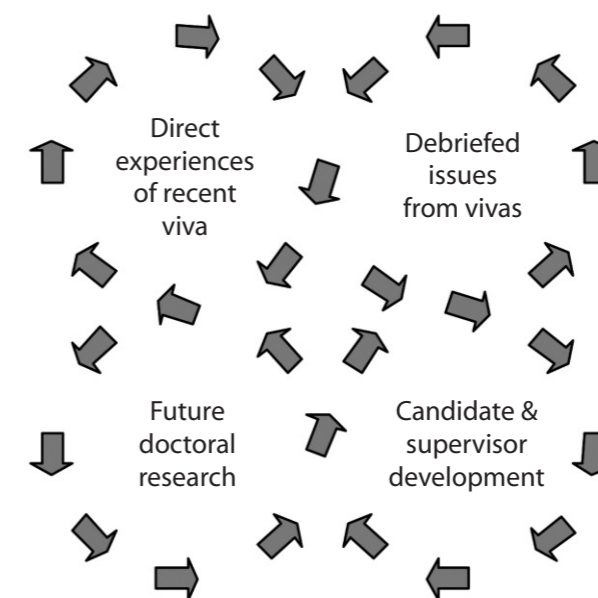


Figure 1 portrays how debriefing directs doctoral experiences, learns from the past and has the potential to improve the future capabilities of candidates and supervisors.

A thought and an argument

When Burnham wrote about the mystery of the doctoral viva, he offered other observations that are germane to the argument that is being advanced here. He mentioned candidates who ask: 'What do I have to do to pass?' or 'Is it an exam?' (Burnham, 1997: 193). His view on surviving the final test was that: 'The PhD process is as much about professional socialization as it is about producing an original contribution to knowledge' (Burnham, 1997: 197) and 'Surviving the viva depends fundamentally on preparation and on students' ability to demystify the examination procedure' (Burnham, 1997: 199).

Burnham's observations imply a lack of knowledge about the operation and process of an event that is significant for a candidate as well as for a university. His conclusion about this situation is quite direct: 'Secrecy surrounding the viva both humiliates the examinee and diminishes the credibility of those who examine' (1997: 193). Such situations may still apply if the comments of candidates, supervisors and examiners are to be believed.

However, a more optimistic view does exist. Doctoral research involves personal development, it thrives on academic feedback, it displays learning and is judged against levels of understanding. The potential for everyone to learn from previous vivas so that future viva outcomes can be improved firmly resides in university strategies for doctoral education (Trafford and Leshem, 2008: 181-191).

Doctoral education, training and development are all intended to improve research practice for candidates and supervisors. This becomes evident when 'good' and 'successful' research is undertaken and recognized by examiners and others. But, it can be argued, these outcomes depend upon candidates' understanding of research and the viva process plus support from appropriate procedures that are found in learning environments and professional communities of practice. When that happens, the viva is no longer a mystery because candidates as well as their supervisors understand its purpose, process and professional dynamics. Possessing such understanding has then prepared them in their respective ways for the viva.

Appreciating just how central understanding is to the act of learning has been captured by Perkins (2011) who suggested that '*Understanding must rank far up on the short list of high priorities*'. Thus, debriefing after a doctoral viva could replace the mystery that currently surrounds it by open knowledge, positive learning and greater understanding for everyone who is associated with the viva process.



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