

RESPONDING TO THE DARCY MODEL OF RESEARCHER DEVELOPMENT

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Over the years the nature of provision for PhD researchers has changed radically. The original apprentice model was first supplemented by research training, with a focus on research methodology and practice, which itself has been supplanted by a more generic researcher development model, driven by skills acquisition. Research expectations have also changed: collaborative research is encouraged, particularly if interdisciplinary. As the notion of impact becomes established, research increasingly involves collaboration with external organisations. Research has not only become more outward facing, but has also had to deal with complex funding issues.

This shift in emphasis has involved different, and very advanced, skill sets. It is assumed that established researchers, by the nature of what they do, will have developed these attributes, and for many this is the case. For those involved in doctoral education, however, it highlights the wide range of abilities new researchers must seek to develop, especially since the PhD is no longer seen solely as the route to an academic career. To address the changing needs of doctoral education, the academy has focused on a top-down, skills development model, which identifies skill sets and breaks these down into specific skills to be acquired, using tools such as the Researcher Development Framework (RDF).

This paper's title derives from a conversation in *Pride and Prejudice*, in which Mr Darcy states that he only knows six truly accomplished women; following the enumeration of all the skills they must possess, Elizabeth Bennet wonders at his knowing any. The challenge for doctoral education today is similar: how to support doctoral students to develop the vast range of skills and abilities they will need in their future careers. I will explore various approaches to addressing these issues, including the relative roles of supervisor and researcher developers, and with reference to innovations in my own institution, will consider an alternative model that focuses on learning by doing.

KEYWORDS

Researcher development; skills; professional development; doctoral education; career development.

In Jane Austen's *Pride and Prejudice* (Austen, 1813), there is a conversation on the nature of the accomplishments of young ladies. Mr Bingley is amazed that young ladies can be so very *accomplished as they all are* (p35). His sister and Mr Darcy strongly refute this, with Mr Darcy stating that he only knows *half a dozen that are really accomplished* (p35). Elizabeth Bennet thinks he must therefore expect a great deal in a woman, and there follows a long list of the required accomplishments, including a thorough knowledge of music, singing, drawing, dancing, modern languages and literature, accompanied by qualities of wit and elegance. When they finally reach the end of this inventory, Elizabeth responds that she is *no longer surprised at your knowing only six accomplished women. I rather wonder now at you knowing any* (p36).

Doctoral education today could be said to be in a similar situation. Just as Elizabeth Bennet could not comprehend any one woman acquiring expertise in all of the attributes of an accomplished woman, so it is difficult to imagine a researcher of three years (or equivalent) standing developing all of the skills we now associate with an accomplished researcher. Unlike Mr Darcy's expectations, it is not the level of expertise that is the challenge so much as the breadth. While the completion of a doctorate has traditionally involved the

development of abilities such as communication, analytical proficiency and project management, the range and number of skills required of today's students has grown enormously. If we take communication skills as an example, students are expected to develop proficiency in written and verbal communication, to a range of audiences, in a variety of situations; they must develop high level presentation skills in both academic and non-academic settings, as well as the established requirement to defend their thesis.

This shift in emphasis is largely due to the changing nature of the PhD, whose purpose has mutated over the years from the notion of producing original knowledge to the broader remit initially of learning to be a researcher, and ultimately to *preparation for employment in the new knowledge economy* (Taylor, 2012, p130). The modern PhD includes the development of a range of advanced abilities that extend beyond those associated with research, and the emphasis now is on researcher development, and in particular professional development, rather than just research training. Historically, this change has come about as a result both of the increased numbers of PhD students (Lee and Danby, 2012) and the decline in academic posts (Gabrys and Beltechi, 2012). While in the past this situation has compelled a number of students to seek careers outside the academy, there is increasingly a shift towards viewing the PhD as a professional qualification with relevance for a range of careers (Barnacle and Dall'Alba, 2010). Thus has a combination of necessity and opportunity led to many doctoral candidates embarking on a PhD as a means of furthering non-academic aspirations.

As we have broadened our perspective on the role of doctoral education, so the necessity for dedicated researcher development programmes has grown, and it is generally accepted that while there is still a need for training in research practice, this must now be supplemented by provision for the development of more generic, transferable skills. Not surprisingly, the academy initially turned to specialists, often from professional backgrounds, to manage these programmes, and though more recently, academics have become more directly involved in their delivery, the predominant approach is that of professional development. Researcher developers generally have a different view and experience of professional development, placing emphasis on short, taught courses. This focus has led to the adoption of a skills-based approach, in which, rather than being implicit, skills are articulated and addressed specifically. The skills-based model is widely used in professional organisational settings. In this approach skill sets are broken down into a number of specific skills, usually in the form of a matrix. A training needs analysis helps to identify which skills, and at what level, should be targeted, and the candidate then decides on an appropriate learning strategy. The matrix itself is merely a tool to support an individual's development, rather than the basis for a prescriptive method, though it tends to rely on related courses.

In doctoral education in the UK, the most notable version of this is the Researcher Development Framework (detail may be found here) developed by Vitae (Vitae, 2010). The RDF identifies a set of generic descriptors, organised into four domains, each of which covers an aspect of personal and professional development. Within each domain there are three sub-domains that identify more detailed abilities, and these in turn are made up of a number of detailed descriptors, each of which is ranked in five phases of development. The domain of Knowledge and Intellectual Abilities, for example, includes the sub-domains of knowledge base, cognitive abilities and creativity; the sub-domain of cognitive abilities covers the skills of analysing, synthesising, critical thinking, evaluating and problem solving, each skill being further broken down into more specific proficiencies and organised into five phases. Sometimes the distinctions are quite subtle, as can be seen in Table 1, which reproduces the skills and phases of development for critical thinking. This provides a detailed, and initially daunting, profile (Bray and Boon, 2011) of an *effective and highly developed* researcher.

Table 1 Skills and phases of development of critical thinking in RDF

	Phase 1	Phase 2	Phase 3	Phases 4 and 5
Critical thinking	Able to understand argument (oral and textual) and articulate own assumptions; developing independent and critical thinking. Has the ability to recognise and validate problems. Recognises multiple ways of knowing and alternative paradigms.	Recognises significant and important arguments and can evaluate the assumptions of others. Is capable of original, independent and critical thinking and has the ability to develop theoretical concepts. Makes sound and realistic judgements based on evidence.	Is proficient and confident in applying critical thinking skills. Stimulates critical thinking in less experienced researchers and peers.	Is a creative critical thinker, acknowledged nationally and internationally. Stimulates critical thinking at discipline/research area and policy levels.

The framework is designed to support all researchers' professional development at all stages in their career. For doctoral students, it provides the basis for a self-audit of their skills, which can be measured against the framework, allowing them to plan their developmental journey. While it has been recognised as a potential tool to support personal development planning, Bray and Boon (2011) for example, found that some students found it difficult in the early stages to respond to the level of detail. Students must not only seek to develop all of these skills over time, but must also measure themselves against nuanced levels of capability and match these to supporting evidence. As with the truly accomplished woman, is this a realistic aspiration?

For most doctoral students, this exercise results in the identification of an appropriate course, and it is the responsibility of researcher developers to ensure the provision of an educational programme that meets these training needs. The situation is doubly challenging: on the one hand, students must navigate the complexities of a skills-based process, and on the other, researcher developers must respond to the demands of an increasingly comprehensive system. How then can researcher development be adapted to offer the best support? This paper will explore developments in the PhD, its implications for doctoral education, and the challenges it presents to students, supervisors and researcher developers.

The developing doctorate

Traditionally, the progress of a PhD was a matter for the candidate and her supervisor, and was entirely focused on the production of a thesis: the embodiment of her research and the new knowledge it generated. The supervisor (and more latterly, the supervisory team) provided academic guidance, acted as mentor, and laid the foundation for a future professional career, which, it was tacitly assumed, would be in academia. Academic supervisors generally have well-established research careers themselves, and are therefore highly qualified to guide their students' academic progress, both in terms of developing their own research and progressing in the world of academia. Traditionally, they have adopted the master-apprentice model of delivery, in which the supervisor-student relationship is central. The student, by emulating the supervisor, gradually acquires the professional skills of an effective researcher. In principle, with a good supervisor and a committed student, the system worked well. In practice, the attrition rate was high and many students felt the need for more support (Taylor, 2012). Today's doctorate, with its increased emphasis on professional development, demands an expanded set of skills. The challenge for researcher development now is to respond to the notion of the PhD as preparation for a multiplicity of possible careers (Yachnin and Yetter, 2014).

At the same time, the nature of research itself has been changing. Collaborative research has become increasingly prevalent, and interdisciplinary research is encouraged, not least by funding bodies. Assessment exercises such as the Research Excellence Framework (REF) rely on published outputs and emphasise the notion of impact. While it has been argued that this has undermined the primary concern of research as a means of generating original knowledge (Raddon, 2011), it is certainly true to say that the research landscape is now far more complex than previously, and this has posed challenges, not only for established researchers, but also for the development of new researchers.

Partly as a result of these changes, the PhD itself has gradually been taking on a new role. As we have seen, the changing research climate has led to fewer academic positions being available, and the traditional academic route is no longer possible for all. At the same time, the PhD has gained in currency outside the academy, such that the doctorate is increasingly valued in the non-academic professional world (Barnacle and Dall'Alba, 2010). Along with this development, and partly in response to it, we have seen the rise of the professional doctorate, one that is directed towards a specific profession and aligned to its needs. To some extent also, the nature of the professional doctorate developed in the face of criticism of the relevance of the PhD to changes in practice and the context of the knowledge economy (Banerjee and Morley, 2013). They are characterised by a shift towards cohort rather than individual experience, with more emphasis on formally taught content. This has necessarily had implications for PhD education, which has also had to respond to these changing perceptions. The focus of today's PhD, therefore, is broader and more professionally orientated than in the past, and poses new challenges for doctoral education.

Challenges for doctoral education

While the number of PhDs has doubled in the last ten years (Lee and Danby, 2012), the attrition rate has not reduced (Ampaw and Jaeger, 2012). We still have a situation where almost half of students do not complete (Ampaw and Jaeger, 2012). The reasons for this are complex, and include financial constraints (Ampaw and Jaeger, 2012), but one aspect of significance must be the nature of support they receive. The growth in numbers, together with the expanded scope of the PhD (Boud and Lee, 2009), led initially to the introduction of dedicated research training programmes, focused on research practice and methodology, and involving a more formal, cohort-based approach (Lee and Danby, 2012). This in turn was criticised as being inadequate

to respond to the needs of the PhD (Banerjee and Morley, 2013). In particular, the lack of support for professional development was recognised (Gardner, 2012, Raddon, 2011).

As a result, doctoral education has increasingly included more generic, professional skills alongside the traditional research training. Whereas in the past their development was not specifically articulated, and therefore left to chance, the move towards a more career focused PhD, together with the recent rise in collaborative research, particularly with external organisations, has meant that the personal and professional ability of the individual has taken on more significance (Malfoy, 2011). A systematic approach to the development of this aspect is therefore crucial (Raddon, 2011). Students themselves are increasingly aware of its importance. Kahn et al. (2012) found that students had a positive attitude towards the development of transferable skills, and reported positive impact on their performance when these were specifically targeted. The aim now is to support the development of an individual capable of operating effectively in any professional setting, and researcher development programmes have responded by developing multiple courses designed to deliver the different skill areas. Students monitor their own development against the various skill sets, using some form of matrix, such as the RDF. In theory, this approach is systematic and comprehensive. For students, however, it has two limitations: firstly, it tends to be generic rather than discipline specific (Crossouard, 2013), and secondly, students, at least at first, find the use of a matrix complex and overly detailed (Bray and Boon, 2011, using the RDF). While the acquisition of these transferable skills is essential, both to meet the challenges of a changing research culture and to support wider professional development, addressing them individually in a taught environment may not be the most effective approach. Skills often develop as a result of wider participation in complex activities, and perhaps development programmes should seek to emulate this approach by adopting a more multifaceted model.

Learning by doing

The notion of learning by doing is not particularly new; experiential learning is an established educational method (Kolb, 1984). In terms of doctoral education, it is an approach that has not been widely explored, though it has been utilised in specific situations. Both Mercer et al. (2011) and Disney et al. (2013), among others, have adopted the approach through student-led conferences, and the tradition of encouraging doctoral students to teach has clear learning benefits (Nestojko et al., 2014). Perhaps the most significant form is that of students working within research teams (Costello and Shaw, 2013, Pritchard et al., 2009), when they have the opportunity to develop a range of research skills. Working in this way, within a community of practice, facilitates the development of attributes in a context relevant to the wider research process (McAlpine and Asghar, 2010). It seems that skills are more easily accessed through learning experiences such as these than via more structured delivery (Wheeler et al., 2011). While including students in research teams supports the development of research skills, it is arguably less effective with wider, transferable skills. These are unlikely to be fully accessed through the usual research process, and therefore need to be targeted explicitly. However, since there is evidence then that this approach can be effective, and seems to be more appealing to students (Pritchard et al., 2009), its applicability to the wider professional context should be explored. The system has also been called *no training training*¹, a term that well describes an initiative that we adopted to support the development of project-based professional skills.

Knowledge Exchange in Design

The Knowledge Exchange in Design scheme was designed to enhance the career development of doctoral and early career researchers through engagement with external organisations. While the scheme operated around aspects of design research, the primary focus was on the application and development of professional skills in a wider context, and involved the pairing of a researcher with an individual from a partner organisation to work on a discrete project. The primary aim of the scheme was to provide researchers with an opportunity to gain practical experience of utilising their knowledge and experience at an early stage. Specifically, the scheme was designed to promote skills in collaborative working, project management, communicating to non-academic audiences, and applying research skills, such as problem-solving, analysis and synthesis, to novel situations.

Collaboration took the form of residencies: partnerships between researchers and individuals from host organisations to address a specific issue. These residencies are fundamentally different from placements, in which a researcher works for an organisation, sometimes on a specific project, but more typically integrated into the organisation's ongoing work. While this allows students to experience many aspects of professional work, it does not address the spectrum of skills involved in running an autonomous project. KED residencies

1 | I first heard this term used by Sarah Kerr at an Arts and Humanities Research Council meeting in December 2013.

involve short, focused projects, with an identified outcome and tangible outputs. The duration is 3-5 days; whether this is a continuous period or individual days spread over a lengthier period is a matter for negotiation, though clearly informed by the nature of the project.

The project is developed through a process of negotiation. Initially, organisations produce an outline brief, which is then refined into a viable project that is achievable in the timescale. The scheme is open to all doctoral and early career researchers in the faculty, though individuals must apply to a specific project/organisation. Once accepted, researchers take ownership of the project, working directly with their partners, from initial design to implementation, managing the project to completion. At the conclusion of the project, researchers produce some form of tangible output, for example, a report, presentation or set of recommendations, for the organisation. The opportunity to develop and manage a small project such as this, allows them to develop a broader perspective on their own area of work in a situation that involves novel skills and brings new responsibilities, particularly for researchers who previously may only have worked on their own research or as part of a research team.

Evaluation of the initial pilot of the scheme included analysis of data gathered from the 19 researchers who took part. In addition to the report or other output provided to partners, all researchers provided a report to the KED scheme on the residency itself – how the project brief was addressed, the approach adopted and how it was implemented, and specific outcomes. They were also asked to identify the broad competencies involved in the project. Clearly, there is a difference between the application of an acquired skill and the development of a new one. In this instance, we were not concerned with teasing apart these differences, nor with specifying the level of development, though we hope to address these aspects in future iterations. Our concern was more to provide an opportunity where these would be brought into play, explicitly and identifiably. The most significant outcome for researchers was the opportunity to engage as equals, in a meaningful way, with external organisations, and bringing their own project to a successful conclusion. The specific skills that were most identified were:

- communication in various forms and to a range of audiences
- project management
- problem-solving
- collaborating with others.

In general, projects followed a similar pattern: the researcher would have an initial meeting with the partner organisation to negotiate the scope of the project; this would be followed by a period of observation and reflection; the work would be concluded; and finally, the researcher would produce a report or presentation, usually with recommendations, depending on the nature of the brief. Communication was at the heart of this process, not merely in the production of the final report or presentation, but notably during the early stage when negotiation could sometimes prove difficult. One researcher, for example, worked on a project that included a third partner who was not entirely happy with the approach that had been agreed, necessitating sensitive negotiation on the part of the researcher. In many cases, the output of the project involved information sharing or other communication to the general public, and in one case, feedback to a funder. For most researchers, communication was multifarious, and required flexibility on their part.

Because of the timescale of the projects, project management was a significant issue. Some addressed this better than others. Typically, those who succeeded best produced a daily schedule at the outset. For others, some compromise was necessary to complete the project on time, but their proficiency improved as a result. One project seriously overran, though the student concerned made a conscious decision to make a bigger commitment since it related to her own proposed future career. Apart from this one student, all projects were completed on time, achieved their agreed outcomes, and produced appropriate outputs.

In all cases, the project brief presented a problem to be addressed. One researcher was asked to research a particular artist, and her findings shed new light on the artist's work. Another was asked to explore the working practices of a small consultancy which was struggling to meet all its commitments. She produced a set of recommendations for roles and responsibilities that resulted in a more streamlined approach. For many researchers, the solution involved adapting their own research methods to a new situation. Thus, a researcher investigated the potential to improve the display of artefacts in a museum by modifying her own research approach. She devised what she called *The Curation Game*, in which visitors were invited to create their own display using a selection of objects; through a combination of observation and interview she was able to highlight key aspects of significance and make recommendations for future development. This aspect of the scheme was particularly useful to students. Often they struggle to see the application of their research to a different, perhaps non-academic environment. Taking part in the scheme allowed them to demonstrate their expertise in a different context, to themselves as well as to the organisation.

At this stage, it is too early to evaluate the impact of the scheme on completion rate of PhDs or subsequent career choice. Of the 19 researchers who took part in the pilot scheme, 7 have successfully completed their research degrees on time; two students have continued beyond their completion date. With such small numbers, it is impossible to make a judgement on the effect of the programme. Of those who have completed, two have chosen a non-academic career route; again, it is not possible to draw conclusions from these numbers, though unofficial feedback from one student suggests that her decision was made as a result of the residency.

Clearly, collaboration was integral to all projects. Researchers worked as equal partners with individuals from the partner organisations. In almost all cases, it was the responsibility of the researcher to design the project, ensure its completion, and produce the final output, the ongoing management and delivery was a joint enterprise. For some, collaboration involved working in a team setting. One researcher took responsibility for one aspect of a research project that was then integrated into the whole. Another worked with two organisations, contributing to a larger, joint project. For others, the process of collaboration was unique to the project. One student nearing completion was asked to devise a plan to generate publicity for a newly set up design company. Not only did she develop a plan to raise the company's profile using social media, but she was also inspired by the example of her partner to set up her own design company. The two subsequently worked together to promote both companies, developing a system of peer to peer support.

Our aim with this scheme was to focus on the experience as a whole, to allow students to appreciate their research area, as well as their own work, in a wider context. The form of evaluation was designed to help them reflect on the professional aspects. Self-evaluation of this kind can be problematic; Nabi and Bagley (1999), for example, found that graduates' assessment of the significance of their skills often exceeded their own ability. While the limitations associated with self-assessment can be ameliorated through training (Ross, 2006), self-reporting carries its own limitations. The extent of involvement may have been exaggerated, some competencies may have been wrongly identified, while others may have been missed. Students do not always have sufficient awareness of what skills they need to develop (Golovushkina and Milligan, 2012). However, in this case the evaluation was supported by evidence in the form of the outcome of the project, and the report or other output associated with it.

Having run the scheme successfully for two years, there are a number of recommendations for its continuance. Future iterations of the scheme should be more explicitly embedded in our doctoral education programme, with a more specific identification of potential competencies at the outset of the project, and reflection on the level of development at its conclusion. This process may be built in to the professional development planning process, with the Director of Studies or professional mentor. This kind of evaluation does not preclude the completion of a matrix of skills, but the focus on areas of expertise rather than a number of specific skills is less frustrating for the student, and more successful in assisting career planning.

This scheme involves students in art and design, and partner organisations are mainly museums, galleries and other cultural organisations. The nature of the scheme should mean that it does not need to be discipline specific, since the associated skills are generic and transferable. However, we have found that it is difficult to engage students in the scheme if they do not see the relevance to their own area of research. This reflects other findings, that the acquisition of these skills is apparently more appreciated within a discipline specific context (Crossouard, 2013), and indeed, that it is also more effective when so grounded (for example, Saunders, 2009). Generic skills training, however practical the delivery, will inevitably deliver skills in isolation from the students' context. Foote (2010), for example, has pointed to the disparity that can occur between the implicit knowledge embedded in certain disciplines and topics addressed explicitly through generic skills training.

CONCLUSION

As a means of professional development, then, this approach has two distinct advantages. Firstly, it addresses the Darcy phenomenon of overwhelming students with long lists of skills. Students are focused on areas of competence, and are developing a range of abilities simultaneously in a realistic situation. Secondly, while the focus of the project is the application of transferable skills in a professional setting, they are operating within their own discipline, and as we have seen, this makes the scheme more effective. Since projects can involve a range of related skills, it seems entirely possible that a programme of researcher development could be organised around a small number of schemes that together would address all of the significant professional and research skills, and their acquisition and development could be monitored through a process of self audit and negotiation. In this scenario, the student has the opportunity to develop a range of skills in a realistic situation without attending a variety of short courses.

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