

Vitae Intrapreneurship Phase 2: project paper

An 'Intrapreneurial lens' on doctoral researchers' views of innovation

Alison Mitchell and Jo Cordy

1.0 Summary

This study provides fresh insight into how doctoral researchers perceive themselves to be innovative in undertaking their research, and through an 'Intrapreneurial lens' offers a new viewpoint on the value and potential of doctoral research competencies for organisational benefit. It offers a way for the academic research community to communicate about the value of researcher competencies for innovation to universities and externally to employers in other organisations.

1.1 Background

'Every business needs one core competence: innovation', according to Drucker (1993) and there is high demand for researchers to be innovative both in and out of academia. When Pinchot and Pellman (1999) introduced the term 'intrapreneur', they linked intrapreneurial behaviour directly to innovation and described intrapreneurs as 'those who take hands-on responsibility for creating innovation of any kind within an organisation'. Intrapreneurship is something that already exists within academic communities although it may not be recognised as such. The role of a principal investigator or research group leader, for example, involves the 'business' of academia (managing teams, gathering resources and so on) as well as the research itself; successful academics are very intrapreneurial (Mitchell, 2008). In terms of the transferable skills agenda, to help researchers make the transition to careers outside of academia, intrapreneurship and innovation competencies are regarded as key employee contributions to organisational success in both public and private sectors (Mitchell, 2009). Therefore, for researchers, developing intrapreneurial competencies is of value for successful career paths in both academia and elsewhere.

Under the Engineering and Physical Sciences Research Council (EPSRC) funded theme of 'Enterprise' for researcher development, a Vitae-led project with a group of collaborating universities researched and published the first sector intrapreneurial report 'Enterprise at work – exploring intrapreneurship in researcher development' (Aspinall, Mitchell and Pearce 2008). This report provided a model of intrapreneurial competencies bringing together research and case studies from companies and universities. The main headings under which researcher intrapreneurial competencies were described are:

- Personal motivation
- Creating ideas and opportunities
- Working with people
- Influencing change
- Relating to context

Intrapreneurship Phase 2 comprising a new extended collaboration between universities, has further developed these competencies, identifying what superior researcher performance in academia might look like through an 'Intrapreneurial lens'. Addressing the requisites of the researcher transferable skills agenda, the 'Intrapreneurial lens' highlights the bridge between superior performing researchers and business competencies across which researchers can move from academia into other careers. The 'Intrapreneurial lens' helps researchers to reflect on their intrapreneurial competencies and opportunities to develop these important

transferable skills, and helps trainers to review and introduce intrapreneurial development opportunities into their training provision. The 'Intrapreneurial lens' can be used in conjunction with the Researcher Development Framework being developed by Vitae and the Rugby Team.

As part of the gathering of information on researcher intrapreneurship in practice, the Phase 2 Intrapreneurship team explored doctoral researchers' views of key aspects of innovation and applied the 'Intrapreneurial lens' to look for evidence of intrapreneurship. To this end three extra questions were included by two universities in their PRES 2009 research student survey and around 700 doctoral researchers responded. The comments provided by doctoral researchers are discussed here.

1.2 Project outcomes

It would appear that doctoral researchers consider themselves to be innovative and display intrapreneurial competencies in the context of research oriented activities. Overall, doctoral researchers rated themselves on the combined average scores as innovative and rated their research environment as reasonably supportive in this respect. Specific comments reveal a vibrant picture of innovative activity amongst doctoral researchers. Many doctoral researchers provided examples of themselves being innovative in the context of their research. In addition, it is clear from comments that some researchers step out of their roles to create new ideas and opportunities for themselves and others. Research environments were supportive but supervisors might be encouraged to expand innovation and intrapreneurship opportunities for doctoral researchers to add value to the academic community as well as to provide transferable skills development for the researchers themselves. When the 'Intrapreneurial lens' is applied to comments, there is a good match to the kinds of intrapreneurial competencies of value to all organisations. Whilst the results are preliminary, they pose challenging questions in terms of researcher development:

1. How can we help doctoral researchers recognise and develop competencies for innovation and intrapreneurship to support their transition into different careers?
2. How can universities and researchers create opportunities within the research process and around the researcher's environment to support innovation and intrapreneurship?
3. What other lenses might we apply to the Researcher Development Framework to help researchers understand and develop their competencies for different contexts and purposes?

1.3 Next steps

The Phase 2 team is developing a 'self check through the Intrapreneurial lens' to help doctoral researchers understand their competencies, case study materials and exemplar training resources. This was a small scale study to inform the further development of the 'Intrapreneurial lens' and understanding of the value of doctoral researcher competencies for innovation.

The following next steps are also recommended:

1. Explore ways to gather bigger and broader data sets exemplifying researcher competencies for innovation and interpretation using an 'Intrapreneurial lens'.
2. Create resources to help inform supervisors about how and why to foster innovation and intrapreneurship in doctoral researchers.

(If universities wish to become involved in this ongoing project then further details can be found at www.vitae.ac.uk/intrapreneurship.)

2.0 Doctoral researchers' assessment of being innovative, spotting and developing opportunities and their research environment

2.1 Overall results

Table 1 shows that doctoral researchers, on combined average scores, only slightly agreed with the statements. However the comments in the following sections illustrate examples of innovative and intrapreneurial activity amongst researchers.

(1 = strongly disagree and 5 = strongly agree)	Combined average score
I consider myself to be innovative	3.8
I spot opportunities and follow them through	3.85
In my research environment I am encouraged to come forward with new ideas	3.3

Table 1

2.2 Comments on being innovative and spotting and developing opportunities

Comments revealed that many regarded being innovative and spotting opportunities as part of the process of 'doing research', this is where doctoral researchers naturally see the main focus of their innovative, opportunity spotting and ideas generation activity. The comments were categorised as follows and examples provided in italics:

'I consider myself to be innovative' in the processes:

Undertaking novel research

- *'My research project involves a fairly new field of research which requires innovative ideas to create experiments and to solve problems that arise'*

Using innovative methods/techniques

- *'I have single-handedly set up a new postgraduate lab in my field. I have ordered, designed and manufactured equipment for this lab'*
- *'I have developed new methods within my subject area'*

Working independently

- *'All my success is because I overcome obstacles myself'*

Innovating to develop research related skills

- *'In order to get to grips with the literature on a topic, which will form an important part of my literature review, I gave an informal seminar to (and provided a handout for) members of my department'*

'I spot opportunities and follow them through' in the process of:

Spotting research opportunities

- *'Following a visit... I have set up a meeting with the director to discuss possible project grant applications, and collaborations with others'*
- *'I am presenting a proposal for student led initiativesthat can empower my theoretical framework as well as strengthen the collective research in my department'*

Spotting or organising training and development opportunities

- *'Regarding seminars, I tried to develop the course and help students learn differently.In short, rather than only sticking to textbooks and literature, I tried to enable students to think more broadly and include more sources in their learning'*
- *'The department was fully supportive of my efforts and gave me a good degree of discretion in setting up the events'*
- *'My suggestions/ideas for topics and themes for PhD research (away) days and PhD forums have been welcomed and assimilated into programmes'*

Making/using connections

- *'I thought seminars for research staff/students would be beneficial, so I suggested starting them and was then tasked with organising them too!'*
- *'Used business contacts to obtain research materials (for the university)'*

Winning funding/conference attendance

- *'Agreed to take over a conference talk, and therefore was able to attend an international conference, and took the opportunity to network with some interesting and knowledgeable scientists I would not otherwise have met'*
- *'I have secured funding for and organised a symposium on a research area of interest to me'*

2.3 Encouraging research environment

Other comments indicated the impact of the environment, supervisor and departmental support on ideas generation and personal development, and are categorised as follows:

'In my research environment I am encouraged to come forward with new ideas' through:

An encouraging environment at the university

- *'Being encouraged to enter industrial competitions aimed at coming up with new ideas that would benefit the organisers'*
- *'Fortunately my supervisors have welcomed my new idea about the thesis, although a previous plan was set'*

Encouragement from department/supervisor

- *'The department and my supervisor have been extremely supportive of my project – I have been given 'enough rope' and very much appreciate the opportunity to develop a new field'*
- *'My innovation comes solely through the encouragement of my supervisors, who are very adept at allowing the generation of new ideas and methods to enhance my research productivity'*

New ideas generation in group/lab meetings

- *'We have had a data swapping group where this is strongly encouraged and I am being pushed and encouraged to write papers (even though I want to anyway) with me as first author to disseminate my new ideas'*
- *'We regularly hold lab meetings to discuss each other's research, or other people's papers, and we all feed off each other's ideas. Sometimes I have abstract lines of thought that would be really intriguing to investigate'*

3.0 Researchers' comments through the 'Intrapreneurial lens'

The 'Intrapreneurial lens' was applied to the comments which were categorised according to the competencies identified in the report. In this analysis comments below provide examples of behaviours during and beyond the research process in which doctoral researchers show intrapreneurial competencies. Comments were categorised using the 'Intrapreneurial lens' and some examples are provided:

A. Personal motivation

- *'Personally I found that without the opportunity of innovation, I would not have chosen to pursue a research degree'*
- *'My research project has completely transformed since I started three years ago, and I was encouraged to follow my passion for what I thought was important to research - then within that, to follow what seemed to be most relevant'*

B. Creating ideas and opportunities

- *'Myself and one post doc have developed a novel process, which is new in my institute'*
- *'.....lacking some of the experiment-specific facilities that I normally use, have made for some creative thinking and alternative procedures that, luckily, turned out to be almost just as good as the traditional ones'*
- *'I have proposed novel ways of using commercially available components to solve new problems'*
- *'My research has led to patent applications'*
- *'Development of new grant ideas'*
- *'I am working to help start a journal'*
- *'I have secured funding for and organised a symposium on a research area of interest to me'*
- *'I have been involved in organising research activities in my department'*

C. Working with people

- *'I have had a number of opportunities to network and to learn about grants and about trying to develop products for commercialisation'*
- *'My supervisor and research group have been supportive and appreciated my input into group troubleshooting meetings'*
- *'I have joined groups in other universities to deal with this'*
- *'Meeting new people who know and have access to different things'*
- *'My supervisor has been very helpful with regards to networking'*
- *'Constant discussions and bouncing ideas with supervisor and group members'*
- *'I try to take part in scholarly activities outside my department'*
- *'I have co-founded student societies and joined related societies in an effort to network and compensate my lack of publications, in order to help me achieve some sort of decent career'*

D. Influencing change

- *'I thought seminars for the forensic research staff/students would be beneficial, so I suggested starting them and was then tasked with organising them too!'*
- *'I have been involved in the design and implementation of new teaching programmes and have presented about these internationally'*

- *'I have single-handedly set up a new post grad lab in my field. I have ordered, designed and manufactured equipment for this lab'*
- *'I like to bring different (and interdisciplinary) perspectives to my research and teaching'*
- *'I suggest ways in which the work can be done faster, yet efficiently'*
- *'Negotiated widened access to material'*
- *'I am presenting a proposal for student led initiatives that can empower my theoretical framework as well as strengthen the collective research in my department'*

E. Relating to context

- *'If I could change one thing, it would be to form alliances with local universities so that I could use their facilities freely'*
- *'There is a lot that goes on - some sterling efforts - from both departments and central groups. However, policy and politics tend to strangle most ideas before they get off the ground'*
- *'The department as a whole is a bit foreign to me as my topic does not fit in well with the department overall'*
- *'Innovation emanates from individuals and possibly research groups. I am in a research group.it took a while before I became fully integrated into the research group'*
- *'The university encourages innovation'*
- *'The university seems keen and able to take good ideas forward in terms of securing funding for innovation and ultimately forming spin-out companies'*
- *'I don't know of any forum where innovation is rewarded or showcased!'*
- *'I feel the department is innovative and I have been encouraged to flourish this way'*

F. Managing self

- *'Worked with a Fellowship which includes course content on commercialisation of research work for one year'*
- *'My creative writing has been encouraged by participating at public events'*
- *'I have been given 'enough rope' and very much appreciate the opportunity to develop a field'*
- *'I have been encouraged to look at starting my own company'*
- *'All my success is because I overcome obstacles myself'*
- *'I do much of the work on my own'*
- *'I am a hypothesis tester, but looking for easier/quicker ways to get better results is something I do regularly'*
- *'Taking the lead on current research project with only minimal supervision'*
- *'Have managed to find a way to continue with a PhD without a great deal of help from the department when I lost my funding'*
- *'I discovered a skill I lacked and found a way for the university to offer a course to teach it'*
- *'I have taken the opportunity to seek out courses outside my department that support my research and the skills necessary to conduct research'*
- *'When my original supervisor warned me that he was leaving, I was very quick to look for an alternative supervisor and a new university with less than two weeks left to apply before the close of applications'*
- *'I find conferences and submit papers and that is how I get noticed outside'*

- *'I was quick to spot the benefits of using qualitative data analysis for my research, booked a training course and set up a database'*
- *'I am very much in command of my project'*

4.0 Conclusions

Whilst these should be regarded as preliminary results and worthy of further more detailed study, they suggest that although doctoral researchers as a whole consider themselves fairly innovative and their research environment reasonably supportive in this respect, comments suggest that many doctoral researchers can see themselves as being innovative as part of the research process in a variety of different ways such as:

- undertaking novel research
- using innovative methods/techniques
- working independently
- innovating to develop research-related skills.

Doctoral researchers also spot opportunities and follow them through, a key aspect of successful innovation, by:

- spotting research opportunities
- organising training and development opportunities for themselves and others
- making/using connections
- winning funding/conference attendance.

These competencies are important aspects of successful career development in any work environment. When an 'Intrapreneurial lens' is applied, there is a good match between comments and intrapreneurial competencies. The challenge is to help doctoral researchers appreciate the value of these competencies and how competencies can be adapted and applied successfully in different working environments.

Taking an innovation or intrapreneurial viewpoint on the research process helps researchers to reflect on their activities in a different way, and could help to prepare them for transition into other careers. Looking at the research environment as a means of supporting innovation and intrapreneurship might help researchers to have more opportunities to develop these competencies and to recognise their value in developing their careers as well as their research.

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