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Work Integrated Research Higher Degree Studies: Experiences, Benefits, Barriers and Coping Strategies

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***Abstract:** Attributed to the changing social, political and economic landscape of the 'knowledge economy', Australian universities are under pressure to produce researchers that have a variety of skills which meet the demands of an increasingly diverse job market. As a consequence, the Australian PhD now includes a range of doctoral degrees. This paper reports on the experiences of two PhD students engaged in an informally managed research higher degree program described in this paper as a Work Integrated Research Higher Degree (WIRHD). Their learning process shares the attributes from both the traditional PhD program and professional doctorates. However, because of the blended nature of the learning contexts, what students need to manage within the WIRHD is much more complicated than the established RHD programs. An exploratory case study approach exploring experiences, benefits, barriers and coping strategies was conducted with the view to develop a preliminary integrative framework that attempts to explain the various contexts that influence the learning experience of WIRHD candidates. The paper concludes with some recommended strategies for helping WIRHD candidates to manage the challenges associated with their learning process.*

Introduction

Both corporate sectors and governments perceive post-secondary education as a strategic tool for the enhancement of the nation's economic health. The doctorate, especially the PhD, is the pinnacle of this large and complex higher education system. Traditionally, doctorate students work within their own units and may hardly seem affected by wider social, economic and cultural considerations (McAlpine and Norton, 2006). Nevertheless, it has been reported that this traditional doctoral training and research mode is facing some challenges in meeting the industry needs in this fast changing economy (Altbach, 2004). To illustrate, there is greater pressure for research to be linked to applied usage, be aligned with private-sector or government objectives and to have shared intellectual property arrangements. In addition, the expanding job market for PhD holders entering entirely new fields (e.g. biotechnology), consulting firms, and government services has put pressure on doctoral training to be

more flexible and aimed at a wider array of jobs than the traditional academic profession. Moreover, universities find it hard to compete with the private sector for the best talent. Many of the best young minds are unwilling to undergo the long, poorly paid, and often disorganised road to a doctoral degree. The problems encountered by PhDs in obtaining academic employment are another deterrent.

In responding to the demands of the knowledge economy that continue to emphasize workers with more flexibility and interdisciplinary skills, in the past fifteen years, there has been a rapid diversification in doctoral degrees to encompass a range of provision (Boud and Tennant, 2006). In addition to the PhDs awarded for original research normally examined by thesis in duration of 3 years full time study (Wright and Cochrane, 2000), there is a growing trend toward tailored professional doctorates in such fields as management studies, education and law. Professional degrees bring together the academy and the workplace with an emphasis on professional practice: PsyD (Psychology), EdD (Education), DBA (Business), JD (Law) and Eng (Engineering). Moreover, project doctorate programmes have evolved which have a greater emphasis on research conducted and directed within the workplace (McAlpine and Norton, 2006). Both professional and project doctorate candidates normally study on a part-time basis on research topics that are closely associated with the context of their workplace (Wellington and Sikes, 2006).

In recent years, demanded by the mounting needs of linking high quality research studies with issues in both public and private sectors, the WIRHD has emerged (Lester, 2004). Similar to the traditional Ph.D., the dissertation is the central element of WIRHD, and is intended to be a significant piece of original research which makes a new contribution to science and the discipline (Altbach, 2004). Albeit WIRHD candidates' research studies are carried out within the context of industrial partners' organisations, they are full-time research students, with no employment relationship with these organisations, which is contrary to the usual cases with professional doctorates (Wellington and Sikes, 2006). Sharing the contextual environment of both the traditional PhD as well as work-based professional doctorates, it is expected that WIRHD candidates face the challenges associated with both forms of research learning provision.

In general, the individualized nature of doctoral study and the need for greater responsibility and creativity on the part of the student are factors that may lead to much of the frustration involved in the doctoral process (Gardner, 2008). It has been reported that lack of supervision, isolation and financial stress are the three primary challenges that are normally encountered by full-time Ph.D. candidates (Gardner, 2008; Haksever and Manisali, 2000; Wright and Cochrane, 2000). Whilst, work-based professional doctorate candidates might find difficulties in mastering knowledge and reconciling conflicting methodologies, locating an intellectual community, gaining sufficient supervision, and balancing roles and responsibilities (Walker, 2008; Wellington and Sikes, 2006). In addition to these multitudes of challenges, WIRHD candidates need to satisfy the requirements and be emotive to the value systems of the two different types of agencies that interact with on a daily basis, namely, the university and the industrial organisations. Due to relatively recent emergence of the WIRHD, targeted studies on the challenges and difficulties faced by the full-time WIRHD candidates, and the development of coping strategies are very limited in the literature. This paper attempts to shed some light on these issues. An in-depth exploratory case study approach involving two WIRHD candidates was adopted to extract the experiences, benefits, barriers and coping strategies adopted by the students during their studies with the view to develop a preliminary integrative framework for understanding these issues; a necessary precursor to a more structured WIRHD approach.

Research Methodology

McAlpine and Norton (2006) suggested that to analyse and understand the issues associated with doctoral education, the influencing factors within the societal/supra-societal, institutional and departmental/disciplinary context should be taken into the consideration. They proposed an integrative framework which incorporates key contexts that have impact on the traditional PhD programme. At the centre of this framework is the student-and-supervisor relationship, whilst the thinking and learning of supervisors and students is situated within distinct academic communities of practice, e.g. department and disciplines. This departmental/disciplinary context is in turn nested within an institutional context that is situated within the social/supra-societal context. According to this

framework, changes in one context may create disequilibrium or be contestable and contested in another context (McAlpine and Norton, 2006). The challenges of WIRHD candidates have been studied with these existing contexts considered. However, the study explores other relevant environmental context that may be faced by such candidates.

As a students' learning experience is the focus of higher education (Biggs and Tang, 2007), particularly doctoral research (McAlpine and Norton, 2006), this study aims to explore the benefits and challenges associated with a WIRHD candidates' learning process within their study contexts, and thus seeks to explore answers to the following questions: (1) What are the key components of the contexts of the WIRHD programme that influence the learning experiences of the candidates?; (2) From the students' perspective, what are the benefits and challenges associated with the WIRHD style of learning process?; (3) What are the coping strategies they currently apply?; and (4) What support do they require to ensure the WIRHD process is effective? Since this study is exploratory in nature, qualitative research methods were used to provide some insights into WIRHD studies. In-depth case studies were undertaken with two on-going WIRHD projects. Data were collected through interviews with the WIRHD candidates, and subsequent focus group discussions with both the supervisor and the candidate in each project. Based on the data collected, an integrative framework was developed to help understand the learning experience of the WIRHD students, and some preliminary strategies were recommended accordingly, which serve to help the candidates manage these challenges.

Case studies

Interviews were undertaken with the PhD candidates of two on-going WIRHD projects being conducted in Queensland, Australia. The interviewees were asked to describe the benefits of the WIRHD to their career development, the challenges that were associated with their learning experiences, their adopted coping strategies to address such challenges and their suggestions for both the university and industry partner to manage these challenges more effectively.

Case A

This PhD candidate is conducting a research project investigating potable water savings attributed to dual reticulation and education measures. The research process involves the installation of high resolution water meters and data loggers into 200 recruited households (four logging periods), an internal and external water audit, two surveys, enactment of water education measures, and interviews with those focus groups. The candidate initially had a largely full time placement within the organisation of the industry partner (80%) to plan the project and undertake data collection. In the second and third year of study, her research time will be divided roughly evenly between the university and the partner organisation. The candidate is supported by an Australian Postgraduate Award (Industry) Scholarship with top-up and does not receive direct payment by the industry partner. However, the industry partner funds all equipment and some miscellaneous expenses.

The candidate perceived the primary benefit of the WIRHD is to gain practical and real world applicability of research as well as strong academic support. This is reflected by comments like: "It is rewarding to know that my research will stem directly into an organisation providing real changes as well as into the academic society. I work with a leading water authority, water management experts and also gain access to resources which ensure that my research is of a high quality. Best of all, I gain experience in both academia and industry for the duration of my research. I believe this significantly improves employability at research completion."

The candidate felt the challenges of a WIRHD student differ from those of a traditional PhD student. She commented: "The issue of isolation, I feel, is not one suffered by students, more over exposure. Lack of supervision could be a potential issue although in this case it has not been. Financial stress can be easier to overcome with WIRHD students by doing a few hours of casual work by the student for the company they are embedded in; however it is difficult to balance the level of casual work at times." On the other hand, she believed that management of 'a project' and 'a PhD' within the same timeframe of a traditional PhD student is the primary challenge. Hence, "time management is a very important skill" for "meeting the requirements of both the university and the company". Obviously the requirements from both facets differ and meeting the requirements from both ends can take

considerable effort and varying skills. The candidate described that performing the duties as an industry practitioner and studying as a researcher at the same time requires the student to perform in two distinctively different mind frames, like “switching hats” and “ensuring the switch happens can be difficult at times”. Additionally, the student expressed that it is easy to get distracted by other interesting projects within the organisation. Approached by others working within the company for assistance can also eat into the student’s time. Hence, determining the level of involvement and time spent in the company is important. The candidate managed these challenges through improving project management skills, especially time management and the prioritising of tasks.

Moreover, the candidate also stated that being primarily embedded in an organisation made it sometimes difficult to maintain a strong attachment with the university. She felt that regular contact and assistance from her supervisor helped to mitigate this, as he stressed the importance of a continued attachment with the “academic world”. She also suggested a supportive system: strong supervision and guidance from supervisors, access to appropriate university systems and resources externally, and ongoing communications between the industry, university and student.

Case B

This PhD candidate was undertaking a research study with Queensland's only corporatized local government water business. The research investigates the impact of an automated meter reading system implemented at a citywide scale. All 22,000 domestic water meters incorporate data loggers that can record water consumption in real time. The project is focused on post meter leakage detection using smart meters and the subsequent optimal approach to rectification. Work is currently undertaken at the macro level, with strategies and guidelines to identify and manage water losses across the total network. This research has implications for a new least cost water demand management scheme.

The candidate indicated that the research imperative is to investigate an issue currently facing the particular industry. As she said: “...The practical experience is invaluable, working with people across all levels of the organisation; involving the application and testing of theories in real situations. ...The company is able to provide access to historical information, relationships and contacts established over many years in Australia and overseas. ...The company is able to provide the actual resources necessary to undertake the study: the equipment, the technology, and relevant personnel. Consequently this alleviates many pressures that traditional university based PhD students face, working independently yet seeking the support and interaction of their invested field of study.”

When describing the challenges associated with the project, the candidate’s comments reflected some degree of confusion about the role and duties of the PhD student in the partner’s organisation. This reality is best described by the comment: “the reason for the placement is not necessarily made apparent to all members of the workforce and this can create uncertainty; the student may be viewed as an extra head count to undertake menial tasks.” In addition, short term pressures in the work environment manifests a preference for quick results. This work related culture factor is reflected by the comments: “...the company primarily focuses on quick translation of research findings into new insights that can be developed into new services. The practical and applied nature of the work can often entail working with new technology and innovative applications: as such there was little previous work conducted in the field.In reality, achieving the desired research findings is not always straightforward and involves lengthy time trials; again this is not always anticipated or incorporated into work schedules and the student might be viewed as a panacea to obtain the results.”

With regard to workplace supervision, the candidate revealed another challenge associated with time pressure in the real industry environment: “...Substantial time is required for interaction between student and workplace supervisor(s) to discuss project challenges and constraints. In reality, there are other demands placed upon the workplace supervisor, and as such this resource is not always available to the student which leaves them in isolation when attempting to anticipate the company’s requirements. Moreover progress and issues are in turn not always communicated to the wider organisation or senior management.” Such limited support is undoubtedly a concern for students.

The candidate is a mature student with over 13 years work experience and understands the demands of business. She has been managing these challenges through establishing relationships with people

identified as key to her research. These people provided time outside of their normal duties and assumed the role of work supervisors, though were not officially recognised for doing so. The candidate suggested a Charter for WIHRD students to clearly indicate the role of the candidate as well as the requirements from both the university and the industrial partner/s. She also suggested training sessions for all concerned parties at the beginning of the project to explain some key concepts for a successful WIHRD program, such as the difference between research and consulting work.

Integrative framework

Based on the findings of the interviews, focus group discussions were undertaken with the two PhD candidates and their supervisors. The framework developed by McAlpine and Norton (2006) for analysis of traditional PhD programs was presented to the groups at the beginning of the discussions. The purpose of the discussions was to guide the groups to link the issues (e.g. challenges and benefits) under investigation with the contexts of the WIHRD provision, and to identify the contextual factors that affect the learning experience of the candidates. The discussions resulted in the development of an integrative framework which reflects the unique composition of the WIHRD contexts. Figure 1 presents a graphical illustration of this integrative framework.

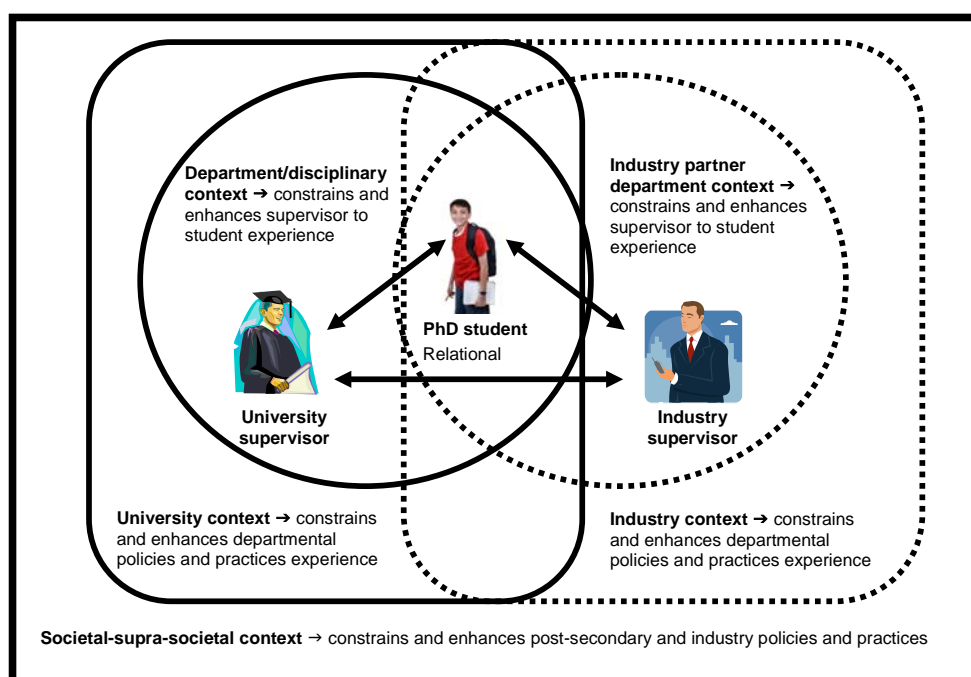


Figure 1: Multiple nested contexts for the WIRHD student

The groups agreed with McAlpine and Norton's (2006) proposition that the powerful supervisor-student relationship should be the central context, which is nested within three-tiers of department/discipline, University/Organisation and social/supra-societal contexts. As illustrated in Figure 1, the student's learning process involves both academic and industry supervisors, and is occurring within multiple nested contexts of both the university and the industry dimensions. Therefore, WIHRD candidates' learning is social and complex in nature. The organisational policies and culture of these contexts interact with each other and have potential to enhance or constrain the learning experience of both the student and the supervisors.

Based on the understanding of these contexts of the WIRHD, the groups recommended a more structured approach to help the student and the supervisors to manage the WIRHD study. They suggested the establishment of a project based partnering arrangement between the university and the industry partner to facilitate enhanced communication and co-operation between the two parties. According to the discussions, a partnering charter needs to be drafted and agreed by both parties as an expression of intent on how to behave in a spirit of mutual trust and co-operation. The charter specifies the objectives of the WIRHD project, outlines the duties and roles of the student, supervisors, as well as the department context of both university and industry dimensions, and sets the principles and

structures for performance monitoring, information exchange and dispute resolution. More specific partnering activities were also suggested, including: (1) an induction workshop for the student, supervisor and industry partners; (2) technical training for the student where required for the project; (3) quarterly progress report supplied to relevant members; (4) based on the quarterly report, quarterly meetings are organised wherever necessary to discuss the progress of the project; and (5) high level bi-annual meetings with all project stakeholders which features research updates, issues, constraints etc.

Conclusions

The WIRHD is perceived as a vehicle for contemporary research students to develop both high-level professional capabilities in a real industry environment as well as strong research skills which create knowledge through original research of academic rigour. For this very reason, the WIRHD study is both a rewarding and challenging journey for its candidates. Like Lester (2004) pointed out, that on one hand, they need to engage with the knowledge-in-use that thinking practitioners develop and use in the course of their work; whilst on the other hand, they need to meet an academic requirement that normally rests on notions of advanced scholarship and extending the boundaries of knowledge. The case study on the two on-going WIRHD projects in Australia revealed that the students experienced unique challenges caused by the complicated contexts of the WIRHD. Factors such as organisational policies and culture issues in both the university and industry contexts could enhance or constrain the learning experience of the students. The study suggested the development of a well structured partnering approach for facilitating enhanced communication and co-operation between the university department and the industry partner organisation. In addition, the study determined that strong skills in project management, interpersonal communication and time management are essential for successful WIRHD studies. Future research is required in this area. The authors propose to seek and map the experiences of other Australian and overseas PhD students undertaking an informal/formal WIRHD project. Based on the outcomes of this study a formal policy framework and program of study can be developed and implemented. Research can then be conducted to examine the effectiveness of the WIRHD program and how this compares with traditional RHD and professional doctorate programs.

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