



Contemporary Issues

Interdisciplinary doctoral supervision: Lessons for nurse education and practice

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SUMMARY

Background: This paper concerns a reflection on one interdisciplinary doctorate supervision project. It outlines key elements for success within this supervisory context.**Aim:** The aim of this paper is to present a reflection on interdisciplinary doctorate supervision project experience and examine these experiences in light of literature on the topic.**Methods:** Reflection was carried out using Rolfe et al. (2010) framework for reflexivity.**Findings:** The supervised engineering project aimed to develop, demonstrate and evaluate a new framework for the design of customisable assistive technology (AT) which involved professionals working with AT and users with disabilities. As this research occurs in between disciplines, it required an innovative and interdisciplinary approach, with an ultimate merger between health sciences and design engineering disciplines and external liaison with adults with disabilities and a disability service provider.**Conclusion:** Interdisciplinary research is popular contemporarily and addresses societal needs. In the case outlined, clear understandings were developed, in addition to clear territorial boundaries that helped guide the novel research. Steps to success in interdisciplinary research supervision include selecting the appropriate interdisciplinary team; ensuring open communication; establishing and agreeing boundaries of the research and supervision; keeping an open mind; tolerance of lack of expertise in some areas; regular meetings and communication; keeping the student focused and agreeing publication plans in advance.

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Introduction

Internationally, graduate education programmes for nurses are the gold standard approach, with countries adopting this at various stages throughout the last century (Fealy and McNamara, 2007). In addition to providing a standardised and accredited education for nurses, university status has rendered further education and research possible (Condell, 2004; Treacy and Hyde, 1999), and new graduates are equipped for purpose (Salvage, 2013). One resultant benefit to the profession is the opportunity for nursing practice and research to grow and develop within the multidisciplinary environment of the university, which has the power to influence teaching, research and practice (Mac Lellan and Condell, 2005). Research across the disciplines of nursing and with other health related disciplines is quite prevalent, and its importance has been recognised in recent national research excellence

requirements in the UK (McKenna, 2012). However research with other disciplines such as engineering is less well developed, and is an area that has been highlighted for future development (McKenna, 2012).

However developing interdisciplinary research with disciplines outside of healthcare is not straightforward. Firstly nursing has experienced difficulty finding its feet in the university (Rolfe, 2012, p. 734): "it could be argued that, from the outset, nursing never really fitted into the academic structure of the university". Therefore engaging in interdisciplinary research as a novel academic community, potentially lacking confidence, is challenging. Furthermore each nursing discipline (mental health, general, intellectual disability and children's) has struggled to carve out their distinct identity within the university sector. As such while nursing disciplines may philosophically embrace the notion of interdisciplinarity, practically the initial work of this has become associated with working across nursing and other health care disciplines as these are together as academic disciplines, under the umbrella of the University, for the first time (Rolfe, 2012).

At the same time there are many elements of healthcare practice that are of concern to disciplines outside of healthcare. Indeed these

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concerns have yielded an increased focus on interdisciplinary research over last decade. The effectiveness of patient alarms (Korniewicz et al, 2008), the hospital environment (Drahota et al., 2012; Douglas and Douglas, 2004, 2005) and electronic measurements of nursing work (Bragadóttir et al., 2013) are some examples of the small but growing body of work that reflects a hybrid between nursing and engineering.

However mergers between nursing and engineering are not without their challenges. There are perceived differences between the practice discipline of nursing and the “technical” discipline of engineering (Rolfe, 2012, p. 734)

“The fundamental distinction between technologies and practice as academic disciplines lies in the relationship between education, research and practice. Technological disciplines regard the three as separate and free-standing, and are premised on a straightforward one-way flow of information from research to practice. The knowledge-base of subjects such as engineering is largely propositional; it can be expressed in books and lecture notes, its application can be perfected in the laboratory or practicum, and then applied directly to real-world settings”.

The need for and requirements of interdisciplinary research supervision between nursing and engineering disciplines has not been teased out. Possibly because while interdisciplinary research has been mooted in the literature for over 30 years, it is noted that disciplines struggle with its application (Repko, 2012). Interestingly there is some evidence of innovative nurse/engineering collaborations such as the Hluchyj Fellowship (University of Massachusetts, 2013) in the USA. This innovation emerged from husband and wife engineer/nurse partnership, and supports two graduate students from the College of Engineering and the School of Nursing with annual stipends of \$25,000 to carry out research in the area of clinical healthcare. Similar cross disciplinary initiatives resulting from ad hoc partnerships are observed elsewhere (Douglas and Douglas, 2004, 2005). However other than this, there is very little information available on interdisciplinary doctorate supervision between nursing and engineering disciplines.

Interdisciplinary research is popular contemporarily and addresses societal needs. However no consensus exists regarding definitions of interdisciplinary research. It is generally accepted as an integrated approach to research and supervision, between distinct disciplines. It differs from multidisciplinary research by virtue of its overt integration of approaches, understandings and methods. However the conceptual understanding of nursing, engineering, disability services (and other disciplines) as distinct disciplines is unclear and further complicates the blurred boundaries and confusion that is inherent within interdisciplinary research. Steps to success in these ventures includes selecting the appropriate interdisciplinary team, ensuring open communication, establishing and agreeing boundaries of the research and supervision, keeping an open mind, tolerance of lack of expertise in some areas, regular meetings and communication, keeping the student focused and agreeing publication plans in advance (Lyll and Meagher, 2012; Repko, 2012; Graybill et al., 2006; Arthur et al., 2004).

The aim of this paper is to reflect on relevant aspects of one interdisciplinary doctorate supervision experience and compare this to the literature on the topic in order to explore effective ways of developing integrated interdisciplinary supervision in nursing education. Ultimately ways of working better to effectively navigate interdisciplinary supervision and working will be outlined.

The aims of this paper are as follows:

1. To reflect upon relevant aspects of one interdisciplinary doctorate project supervision experience.
2. To consider this aforementioned reflection in light of contemporary relevant literature on the topic.
3. To explore and develop effective ways of developing integrated interdisciplinary supervision.

Methods

The Conceptual Framework

Reflection may be considered as a component of a broader concept of critical thought (Barnett, 1997). Critical thought requires that disciplines not only critically self-reflect but also critically analyse and take action on their practice (Barnett, 1997). Rather than focusing on individual learning, Barnett (1997) emphasises the importance, within disciplines, of broadening out the narrow lens of critical thinking or reflection, to a more inclusive, collaborative model of critical thought. Ultimately, He describes three classifications of ‘criticality’ which together outline the ‘scope of critical being’ (Barnett, 1997: 69) (emphasis authors own). These are critical reason, critical self-reflection and critical action (Table 1).

These operate within what Barnett (Barnett, 1997) describes as the domains of criticality – knowledge, self and the world (Table 1). Critical reasoning involves the questioning of established doctrine, policies, procedures and knowledge using critical thinking skills. Critical self-reflection encompasses reflection that is critically reflective and ultimately involves self-realisation. Critical self-reflection occurs wholly in the domain of self. Critical action occurs in the world, that is, in the practice environment often the most crucial and neglected area of reflection (Barnett, 1997). These three aspects of criticality echo the aims of this paper:

1. To reflect upon relevant aspects of one interdisciplinary doctorate project supervision experience (critical analysis).
2. To consider this aforementioned reflection in light of contemporary relevant literature on the topic (critical reason).
3. To explore and develop effective ways of developing integrated interdisciplinary supervision (critical action).

Critical frameworks in action also require a conceptual framework. Developing practice theory needs consideration of the use of appropriate frameworks with the development of suitable estimations of rigour (Rolfe et al., 2010). Just as there are differences in opinion regarding definitions, there are divergent views regarding model use (Rolfe et al., 2010). Indeed, there is sparse direction regarding how to select an appropriate model. Rolfe et al. (2010) suggest selection depends on the personal requirements of the situation.

In this project, Rolfe et al. (2010) framework for reflective practice was utilised as a conceptual framework. The Rolfe et al. (2010) guiding questions (based upon Borton’s 1970 developmental model) were:

- What?
- So what?
- Now what?

This framework provides for critical analysis (what), critical reason (so what) and critical action (now what) in this context.

Although traditionally reflection and reflective practice do not aim to estimate validity of either the process or the results, it is useful to ascertain how useful the framework may be for the purpose. Credibility, logical congruence and theory generation are considerations when selecting appropriate models for use in practice (Fawcett, 2005). In terms of credibility, many prominent academics and universities recommend this model for use in development of practice theory (Rolfe,

Table 1

The three domains of the critical being and their associated forms of criticality (Barnett, 1997).

	Domains	Forms of criticality
1.	Knowledge	Critical reason
2.	Self	Critical self-reflection
3.	World	Critical action

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