

Doctoral education for nurses today: the PhD or professional doctorate?

AUTHORS

Kim Walker

RN, PhD, Professor of Healthcare Improvement,
St Vincent's Private Hospital & School of Health Sciences,
University of Tasmania; St Vincent's Hospital, 2A Oxford
Street, Paddington, NSW, Australia
Kim.Walker@svha.org.au

Steven Campbell

RN, PhD, Professor of Clinical Redesign,
School of Health Sciences, University of Tasmania,
Locked Bag 1322, Launceston, Tasmania, Australia
Steve.campbell@utas.edu.au

Jed Duff

RN, PhD, Senior Research Fellow,
St Vincent's Private Hospital & School of Health
Sciences, University of Tasmania; St Vincent's Hospital,
2A Oxford Street, Paddington, NSW, Australia
Jed.Duff@utas.edu.au

Elizabeth Cummings

RN, PhD, Associate Professor,
Graduate Research Coordinator, School of Health
Sciences, Domain Campus, 71 Brooker Highway,
Hobart, Tasmania, Australia
Liz.Cummings@utas.edu.au

KEY WORDS

doctoral education, research, professional development, nurses, healthcare improvement

ABSTRACT

Objective

This paper seeks to stimulate discussion and debate about the future of doctoral education for nurses in Australia.

Setting

A large Magnet recognised acute care private hospital in New South Wales and a large regional university in Australia.

Primary argument

Healthcare today and into the future is increasingly more complex and requires ever more highly skilled healthcare professionals to meet the challenges of providing safe, quality care. Doctoral research and education based in the workplace and designed to improve healthcare while skilling up nurses and other professionals in research methods has never been more relevant and appropriate.

Conclusion

Nurses have generally not seen the PhD as the best fit for their higher professional development. The professional doctorate offers a compelling and dynamic alternative to the more academic focus of the PhD and prepares 'inquiry-driven leaders' for tomorrow's challenges.

INTRODUCTION

In the context of delegitimation [of the metanarratives of modernity], universities and the institutions of higher learning are called upon to create skills, and no longer ideals. The transmission of knowledge is no longer designed to train an elite capable of guiding the nation towards emancipation, but to supply the system with players capable of fulfilling their roles at the pragmatic posts required by its institutions (Lyotard 1987).

In Australia today nurses confront an ever-increasing complexity of the healthcare services in which they work (Jacob et al 2015). This complexity is driven by a number of intersecting issues such as:

- an ageing population with rising demands and expectations of the healthcare they receive (Dall et al 2013);
- an equally ageing workforce with different desires and needs in terms of the ways they will be able and want to work (Heidemeier and Staudinger 2015);
- a more sophisticated workforce especially in respect of the younger generations of health professionals who will not necessarily live out their work life in the one organisation (Wood 1999);
- rapidly rising awareness that the funding and economic imperatives of constrained budgets but more expensive technologies and treatment modalities are destined to cripple the healthcare system in the not so distant future (Baal et al 2014); and
- a pressing need in light of this uncomfortable reality that new models of care, new and more effective and efficient delivery of services and new ways of thinking and doing healthcare work (Elf et al 2014);

are considerable pressures that must be dealt with. Of course it is the healthcare leaders of the future who will be tasked with addressing these issues and concerns and indeed, many of our current leadership are doing just that (Weberg 2012) as they realise that doing 'more of the same' is simply not good enough anymore (if it ever was).

It is because of the constant need to innovate and improve the quality and safety, as well as the effectiveness and efficiency of healthcare that we feel compelled to advance a case for a new paradigm in the ways in which we prepare our nurses for the looming challenges just outlined. While Australia is fortunate to have a generally well qualified and high functioning healthcare workforce it is imperative to ensure that they are as best equipped as they can be to take healthcare forward in the 21st century, something this paper focus's on (WHO 2016).

Many nurses are prepared now at the graduate diploma and masters level and many medicos also seek post-graduate training through their speciality colleges or university programs, it is still relatively unusual to see more than only one or two doctorally prepared professionals in the healthcare services themselves (Morgan and Somera 2014). As all four authors of this paper are doctorally prepared nurses, we propose that the professional doctorate degree is an exemplary training program specifically designed to keep our best and brightest working in the healthcare workplace while also adding significant value to their portfolios of responsibility in respect of the application of their learning in these programs. In light of this claim, the authors launched, in 2014 a Doctor of Health program in Sydney as industry and higher education partners and already 14 senior, mid and late career nurses have enrolled and new cohorts in Hobart and Launceston, Tasmania, are due to commence in 2016. This strongly suggests the program is meeting an unmet need for this group of nurse managers, educators and clinicians. In what follows, the authors lay out a discussion about the relative merits (and challenges) of doctoral level education and research training for mid-career and senior nurses

with a view to encouraging more discussion on this important debate. Importantly too, are the implications of the very recently released report on the future of higher degree by research training system in Australia compiled by the Australian Council of Learned Academies (McGagh et al 2016). Essentially, this document puts a strong case for the tertiary sector to collaborate much more strongly with industry to better prepare professionals from all spheres of work for the challenges of life in the 21st century. As stated in the report:

“Research training has the potential to drive closer and broader engagement between industry and the university research sector, and contribute to reversing Australia’s unacceptable international performance in this area. Increased industry linkages during research training through placements with industry partners and undertaking industry-defined research projects, will drive the establishment of long-term relationships between industry and researchers. This will help overcome the cultural differences that stand in the way of increased collaboration (McGagh et al 2016)”.

As discussed in this manuscript, the professional doctorate in health is the exemplary vehicle for achieving such a goal for nursing specifically and healthcare, more generally.

DISCUSSION

Doctoral degrees: the emergence of the professional doctorate

Doctoral education has a long and distinguished history dating back to the 12th century at the universities of Paris and Bologna (Kot and Hendel 2012). The original orientation of the doctoral degree enabled a ‘scholar to become a full participating member of the guild’ and thus it had ‘an explicit professional orientation’ (Buchanan and Hérubel 1995). These days, of course, the PhD is seen as the proverbial ‘gold standard’ of research higher degrees, is marked by independent research training, and is expected to make ‘an original contribution to knowledge’ (Cleary et al 2011). It can be done via the traditional method of a major research project that is written up into a thesis or dissertation; conversely, and increasingly so, universities are also offering a PhD ‘by publication’ comprising a ‘coherent compilation of referred and published research papers with an accompanying document to provide context for the work’ (Cleary et al 2011).

The professional doctorate as distinguished from the PhD, however, has a rather less ancient and august provenance, dating back to the 1950s in the United States of America (USA) (Ellis 2005) although McVicar et al (2006) suggest they date as far back as the 1920s and in Canada even further back to a Doctorate in Education in 1894. In Australia and the United Kingdom (UK) programs only surfaced in the 1990s (Watson et al 2011) although Kot and Hendel (2012) note that the first Australian professional doctorate can be tracked back to 1984 when the University of Wollongong established the Doctor of Creative Arts.

Rolfe and Davies (2009) make two important points in respect of the development of the professional doctorate: ‘Professional doctorates have arisen out of dissatisfaction with the traditional PhD which is perceived as too distant from practice; study at doctoral level is now increasingly relevant to those working outside academe’. Unfortunately however, as Kot and Hendel (2012) comment, ‘unlike the PhD, the professional doctorate seems to have no standard definition’. Hessling (1986) describes the PhD, for example, as ‘a traditional credential attribute of an individual awarded by an institute of higher education after successful defence of a dissertation, recording the candidate’s independent and original contribution to knowledge’. The PhD then, is clearly and not problematically, the degree of choice for someone seeking a career in the academy or as a professional researcher.

Kot and Hendel (2012) note on the other hand, that the development of the professional doctorate in Australia ‘is linked to factors [such as] employability of holders of doctoral degrees, criticisms of the PhD, the growth of the knowledge economy, the changing role of higher education and government involvement’. Importantly, they

further comment on the significant expansion in professional doctorates since the mid-1990s with increases in psychology (267%), health (250%) and administration (200%). This expansion was due to not only the growth in programs but also the number of universities offering the Prof Doc and the numbers of students enrolled in them paralleled this growth. Importantly, for this study, in a report for the Australian Government Department of Education, Science and Training, the author noted that '[d]octoral education in Australia is currently under pressure to become more industry focussed and advocated that professional doctorates may be able to fulfil this role by developing and sustaining closer collaboration between universities and industry (Fink 2006). As noted above, it is timely then that in the ten years that has elapsed since this suggestion was advanced it has re-surfaced in the latest review of higher degree by research training (McGagh et al 2016).

Sadly however, as Pearson (1999) noted some 15 years ago, 'the continuing debate about the status of professional doctorates shows how the view of the traditional PhD is entrenched as primarily an individual student's research project ... and how inherently conservative the response to change has been despite the extent of innovative initiatives'. Some antagonists of the professional doctorate have pointed to its perceived lack of scholarly rigour compared with the PhD (Maxwell 2011; Wellington and Sykes 2006). As Watson et al (2011) suggest 'it is hard to escape the view that the professional doctorate is viewed as being an easier route to doctorate in the UK.' Clearly then, some confusion persists around the relative merits of the two modes of doctoral education and training and the outcomes they produce in terms of a doctorate. This paper suggests that for healthcare professionals generally and nurses specifically wishing to stay in the healthcare setting, there is really no argument as to which qualification is best fit for purpose.

Doctoral education: from global to regional

In Europe in the 1990s, a process began in Bologna, Italy, to ensure consistency and compatibility in respect of standards and quality of higher educational qualifications across the European countries. In 2003 at a meeting of education ministers, it was decided to extend this process to a so-called third 'cycle': the doctoral qualification. Importantly, it was emphasised at this meeting that doctoral programs be viewed in the wider context of higher education and should be linked more explicitly to the two preceding cycles of the Bachelor and Master programs. Moreover, the character of doctoral programs should be modified, for example, by incorporating more taught courses and training elements, and also broadened, for example, by embracing practice-based PhDs and professional doctorates (Green and Powell 2005).

These shifts in thinking have of course, been informed by wider influences including, but not limited to: The emergence of a so-called 'knowledge society'; globalisation; and other social, economic and cultural transformations internationally. These influences have exerted a number of pressures for doctoral education to change and in the words of Scott (2006), 'the boundaries for doctoral education have become fuzzier – with master programs on the one hand and professional development and lifelong learning on the other, and even the highest levels of adult and continuing education ... the whole higher education system, and also the research system, have been stretched and, at the same time, become more diffuse and permeable' (Scott 2006).

Such fuzziness and permeability at the boundaries of doctoral education suggest that there is an equally confounding blurring of what comprises doctoral education at all. If doctorate holders are to be able to respond to the imperatives and challenges of a globalised, information-saturated and ever more diverse socio-economic and political world then their doctorates need to reflect their fitness for purpose and not be compelled to conform to a 'one-size-fits-all' product as once might have been the case.

Turing our gaze more locally Neumann (2007) remarks that 'for the most part of Australian higher education, doctoral education has been peripheral'. Neumann further notes that policy has often been implicit rather

than the obverse and more often than not merely a 'subordinate component of higher education funding, or incorporated in overall research policy in most major government reviews since the 1950s' (2007). The growth in students undertaking doctoral degrees (from 9,298 in 1990 to 37,685 in 2004) suggests that this has 'effectively led to the massification of doctoral education' (Pearson et al 1997). Consequently, government's response has been to focus on accountability and quality with a more formalised framework of rules and procedures for doctoral studies (e.g. the Australian Qualifications Framework), more regulation of supervisory practices and more overt structuring of the doctoral curriculum. That said it is increasingly recognised that what forms of scholarship as well as the theoretical and practical outcomes doctoral programs produce and what knowledges and skills doctorate holders embody, need to be adaptable to an ever-changing knowledge economy. As Pearson et al (1997) emphasise 'diversity in doctoral research practice is essential for a robust doctoral sector with the capacity to be flexible and productive in a volatile education market and a globally competitive research environment'.

Professional development via healthcare improvement

In healthcare, increasingly it is recognised that professional development (PD) is both a right and a responsibility; a right in that organisations are expected to provide PD opportunities to advance the skills and knowledge of its staff but also a responsibility, on the part of health professionals, to stay abreast of the trends and developments in their area of speciality. The professional doctorate enables staff to become what Bourner et al (2001) have called 'researching professionals' (as opposed to 'professional researchers') or similarly, Gregory's (1997) notion of 'scholarly professionals' (*vis-à-vis* 'professional scholars'). It does this by providing students with the same quality of supervision from a team of doctorally prepared scholars a PhD candidate would expect to receive and during which they learn the rigours of conducting a high-level research project and all the skills that are required to undertake such a challenge. These include, for example, selecting the appropriate methods for data collection, learning the skills of advanced analysis of data, the very important skills of writing for publication as well as writing up the end product of a thesis for examination.

As Ellis (2005) notes in her research 'the professional doctorate [in health] was introduced for the advancement and improvement of practice, indeed this being their 'hallmark''. In later research Ellis (2007) also reports that Prof Doc 'enthusiasts saw [them] as a *real* alternative to PhD that offered a program of study highly relevant to professional practice with the benefits of shared learning'. Moreover, in respect of the emphasis on improvements in practice noted above, in the conclusion to her paper she points out that '[the] application of knowledge to clinical practice is at the core of clinical or taught doctorates and explains why increasing numbers of clinicians are interested in pursuing this form of doctorate over the more traditional PhD'. While many nurses are qualified at the masters level, a doctorate takes their knowledge and skills to a much higher plane and it opens career opportunities now increasingly more sophisticated such as the academic embedded in the practice setting.

Exactly what is a professional doctorate then?

McVicar et al (2006) provide some useful defining criteria as follows:

- the research focus is 'the solution of problems in practice and the generation of new knowledge to inform improvements in practice (Galvin and Carr 2003). Importantly this criterion recognises 'practice as scholarship' (Ramcharan et al 2001; Newman 1997; Pearson et al 1997);
- it is interventionist in relationship to the topic being investigated; and
- it adopts an applied, problem-focused, or action-based approach to proposing or implementing change in the organisations in which the candidate is involved.

They further note that while these features could equally appear in a PhD the differentiation between the two is that ‘the focus on addressing the needs of the candidate’s own organisation is *the* critical factor’ (McVicar et al 2006). Bourner et al (2001) further note that ‘a student commences the research by an understanding of their practice, leading to an identification of an issue for investigation, and finishes by applying their learning in resolving the issue’ (McVicar et al 2006).

McVicar et al (2006) also point out that ‘although the professional doctorate commences from a different position to that of a PhD, the end-point in terms of the critical benchmarks observed in doctoral theses are comparable, including originality, depth of analysis and level of synthesis. Similarly, there is an expectation students will publish their findings’. Trafford and Lesham (2002a; 2002b) echo these sentiments by suggesting that while their design may differ, the PhD and professional doctorate ‘should share similarities that characterise scholarship, enquiry and externally verified standards, and of course lead to an original contribution either by filling a gap in, or by extending, knowledge’ (McVicar et al 2006). In conclusion to this section, the Australian Qualifications Framework (AQF 2011) defines the two dominant forms of the Australian doctorate as follows:

*The research Doctoral degree (typically referred to as a PhD) makes a significant and original contribution to knowledge; the professional Doctoral Degree (typically titled Doctor of (field of study)) makes a significant and original contribution to knowledge in **the context of professional practice** (AQF 2011: emphasis added).*

Further epistemological considerations and refinements

Several commentators (Maxwell 2011; Rolfe and Davies 2009; Crasswell 2007; Wallgren and Dahlgren 2005) have advanced the work of Gibbons et al (1994) as a very helpful taxonomy of knowledge-production in distinguishing the epistemological contours that differentiate the PhD from the professional doctorate; in the interests of the pedagogy of doctoral education more broadly we think it is a useful heuristic to draw on.

This paper argues the ‘traditional’ PhD is more marked by Mode 1 knowledge-production than the professional doctorate, which conversely, derives its epistemological (as well as socio-political) capital from Mode 2 knowledge-production. As Rolfe and Davies (2009) explain Mode 1 knowledge production is ‘driven by an academic agenda, categorised by the associated disciplines ... residing in the University, where they are guarded by an academic elite’. Furthermore, under this mode ‘students are inducted into the disciplinary knowledge and practice of the University and to be successful they must align themselves to the theoretical and methodological frameworks which characterise these’. It is not hard to read from this set of distinctions that the PhD is a product of and for the University rather than any other place; this is reinforced by Maxwell and Kupczyk-Romanczuk (2009) who acknowledge that the ‘focus of professional doctorate work is the community of practice, as opposed to the community of academics ... an important distinction’.

In contrast, suggest Rolfe and Davies (2009), Mode 2 knowledge-production is characterised by:

A constant flow back and forth between the fundamental and the applied, between the theoretical and the practical. Typically, discovery occurs in the contexts where knowledge is developed and put to use, while results – which would have been traditionally characterised as applied – fuel further theoretical advances.

On the other hand, put a slightly different way by Nowotny et al (2005) in contrast with Wallgren and Dahlgren (2005):

- In Mode 1 problems are solved in a context governed by the largely academic interests of a specific community. By contrast, in Mode 2 knowledge is produced in the context of application.
- Mode 1 is disciplinary while Mode 2 is transdisciplinary.
- Mode 1 is characterised by relative homogeneity of skills while Mode 2 is characterised by heterogeneity of skills.

- In organisational terms, Mode 1 is hierarchical while in Mode 2 the preference is for flatter organisational structures.
- Mode 2 is more socially accountable and reflexive than Mode 1.

The AQF level 10 (Doctoral Degree) criteria (graduate attributes) specify:

Summary	Graduates at this level will have systematic and critical understanding of a complex field of learning and specialised research skills for the advancement of learning and/or professional practice
Knowledge	Graduates at this level will have systematic and critical understanding of a substantial and complex body of knowledge at the frontier of a discipline or area of professional practice
Skills	Graduates at this level will have expert, specialised cognitive, technical and research skills in a discipline area to independently and systematically: <ul style="list-style-type: none"> • Engage in critical reflection , synthesis and evaluation • Develop, adapt and implement research methodologies to extend and refine existing knowledge or professional practice • Disseminate and promote new insights to peers and the community • Generate original knowledge and understanding to make a substantial contribution to a discipline or area of professional practice
Application of knowledge and skills	Graduates at this level will apply knowledge and skills to demonstrate autonomy, authoritative judgement, adaptability and responsibility as an expert and leading practitioner or scholar

Who does a professional doctorate rather than a PhD?

It is important to note that the types of candidates for the two doctoral programs tend to vary both in kind and in degree (pun intended). The PhD as Fink (2006) has suggested, and ironically in light of the discussions herein, is a 'professional doctorate for academics'.

Typically, in many disciplines (less so in nursing and midwifery), candidates enter the PhD through a 'fast-track' route of three-year bachelor degree and straight on to a fourth year Bachelor with Hons degree and then straight in to PhD. This means many graduates have very little 'life experience' and are very knowledgeable about an often very narrow topic; science, engineering, arts and other more traditional university disciplines feature prominently in this type of PhD candidate and graduate. These processes as Fink (2006) asserts are 'linked to and driven by the university'.

Professional doctorate candidates on the other hand, usually possess a 'higher degree [such as a master in clinical nursing] that is not necessarily research-based, and importantly possess professional experience ... The candidate maintains links with the university as well as industry and works collaboratively with a group from industry' (Fink 2006: 37). Additionally, in contrast with other professions, these students have considerable professional and life experience that contributes to their doctorate experience, as well as the doctorate itself.

Neumann's (2005) student informants made it very clear that 'in nearly all cases students had deliberately elected to enrol in a professional doctorate, despite maintaining that they could have undertaken their research within a PhD program. The closer affinity, promoted in recruitment brochures, between research requirements and the profession was particularly appealing'.

Last words

Olson and Clark (2009) have written cogently about the concept of a 'signature pedagogy' in doctoral education and the creation of what they call a 'leader-scholar community'. Taking the term from Shulman (2005) 'signature pedagogy' describes 'the characteristic forms of teaching and learning ... that organise the fundamental ways in which future practitioners are educated for their new professions' (Olsen and Clark

2009). In respect of doctoral education then, signature pedagogies 'are credited with socialising doctoral students into the discourse community of the profession, providing practice in articulating a summary and critique of research literature, helping faculty and students keep up with the latest literature and with active controversies in their fields, making connections around disciplinary boundaries and helping doctoral students discover and claim a topic and direction for their dissertation projects' (Golde 2007).

CONCLUSION

The authors believe this paper demonstrates a clear disparity between the two main forms of doctoral education and research training for healthcare professionals generally, and nurses, specifically. While the very long history of the PhD has positioned it as the so-called 'gold standard', for education and training at the highest level, it is not necessarily the best suited to healthcare professionals and nurses who wish to remain in the healthcare workforce but elevates their repertoire of knowledge and skills to the same level as, say, a professor in a university setting.

The professional doctorate is a combination of rigorous coursework and a major piece of research. Together these activities have the express aim of producing what others, and the authors have called 'researching professionals' as opposed to professional researchers. The distinction is important insofar as it recognises the primary aim of the professional doctorate is to improve healthcare through the actions of the researchers undertaking their doctorate. A PhD can, but does not usually, have such an emphasis on the context *in situ* of healthcare and the systems and processes required to deliver that health care to the very highest standards possible. The professional doctorally prepared nurse, however, is able to do exactly that.

RECOMMENDATIONS

A robust and sustained discussion and debate should be conducted by our current healthcare leaders as to the merits of the professional doctorate versus the traditional doctor of philosophy degree for nurses. Health academics and senior managers, educators and clinicians should meet in a series of forums nationally in order to elevate the profile of the two main forms of doctoral education and stimulate others to consider their own professional development needs in response to these colloquia.

REFERENCES

- AQF (Australian Qualifications Framework) 2011 *Australian Qualifications Framework*. Retrieved from <http://www.aqf.edu.au/> (accessed 10.03.14).
- Baal, P., Meltzer, D. and Brouwer, W. 2014. Future Costs, Fixed Healthcare Budgets, and the Decision Rules of Cost-Effectiveness Analysis. *Health Economics*, 25(2):237–248.
- Bourner, T., Bowden, R. and Lang, S. 2001. Professional doctorates in England. *Studies in Higher Education*, 24(2):75-93.
- Buchanan, A.L. and Hérubel, V.M. 1995. *The doctor of philosophy degree: A selective annotated bibliography*. Westport, CT: Greenwood press.
- Cleary, M., Hunt, G. and Jackson, D. 2011. Demystifying PhDs: A review of doctorate programs designed to fulfil the needs of the next generation of nursing professionals. *Contemporary Nurse*, 39(1):273-280.
- Crasswell, G. 2007. Deconstructing the skills training debate in doctoral education. *Higher Education Research & Development*, 26(4):377-391.
- Dall, T.M., Gallo, P.D., Chakrabarti, R., West, T., Semilla, A.P. and Storm, M.V. 2013. An aging population and growing disease burden will require a large and specialized health care workforce by 2025. *Health Affairs*, 32(11):2013-2020.
- Elf, M., Fröst, P., Lindahl, G. and Wijk, H. 2015. Shared decision making in designing new healthcare environments—time to begin improving quality. *BMC Health Services Research*, 15(114):1-7.
- Ellis, L.B. 2005. Professional doctorates for nurses: mapping provision and perceptions. *Journal of Advanced Nursing*, 50(4):440-448.
- Ellis, L. 2007. Academics' perceptions of the professional or clinical doctorate: findings of a national survey. *Journal of Clinical Nursing*, 16(12):2272-2279.

- Fink, D. 2006. The professional doctorate: Its relativity to the PhD and relevance for the knowledge economy. *International Journal of Doctoral Studies*, 1(1):35-44.
- Galvin, K. and Carr, E. 2003. The emergence of professional doctorates in nursing in the UK: where are we now? *NT Research*, 8(4):293-307.
- Golde, C. 2007. Signature pedagogies in doctoral education: are they adaptable for the preparation of education researchers? *Educational Researcher* 36(6):344-351.
- Green, H. and Powell, S. 2005. *Doctoral Study in Contemporary Higher Education*. Maidenhead: Open University Press.
- Gregory, M. 1997. Professional scholars and scholarly professionals. *The New Academic Summer*: 19-22.
- Heidemeier, H. and Staudinger, U.M. 2015. Age differences in achievement goals and motivational characteristics of work in an ageing workforce. *Ageing and Society*, 35(04):809-836.
- Hessling, P. 1986. *Frontiers of Learning: The PhD Octopus*. Dordrecht: Foris.
- Jacob, E.R., McKenna, L. and D'Amore, A. 2015. The changing skill mix in nursing: considerations for and against different levels of nurse. *Journal of Nursing Management*, 23(4):21-426.
- Kot, F.C. and Hendel, D.D. 2012. Emergence and growth of professional doctorates in the in the United States, United Kingdom, Canada and Australia: a comparative analysis. *Studies in Higher Education*, 37(3):345-364.
- Lyotard, J-F. 1987. *The postmodern condition: A report on knowledge*. (Bennington, G. and Massumi, B. Trans.). Manchester: Manchester University Press. (Originally published in 1979).
- Maxwell, T.W. 2011. Australian professional doctorates: Mapping distinctiveness, stress and prospects. *Work based learning e-journal*, 2(1):24-43 (<http://wblearning-ejournal.com>).
- Maxwell, T.W. and Kupczyk-Romanczuk, G. 2009. Producing the professional doctorate: the portfolio as a legitimate alternative to the dissertation. *Innovations in Education and Teaching International*, 46(2):135-145.
- McGagh, J., Marsh, H., Western, M., Hastings, P., Mihalova, A. and Wenham, M. 2016. *Review of Australia's Research Training System Report for the Australian Council of Learned Academies*, www.acola.org.au.
- McVicar, A., Caan, W., Hillier, D., Munn-Giddings, C. Ramon, S. and Winter, R. 2006. A shared experience: an interdisciplinary professional doctorate in health and social care. *Innovations in Education and Teaching International*, 43(3):211-222.
- Morgan, D. and Somera, P. 2014. The Future Shortage of Doctoral Prepared Nurses and the Impact on the Nursing Shortage. *Nursing Administration Quarterly*, 38(1):22-26.
- Neumann R Doctoral differences: Professional doctorates and PhDs compared. *Journal of Higher Education Policy and Management*, 27(2):173-188.
- Neumann, R. 2007. Policy and practice in doctoral education. *Studies in Higher Education*, 32(4):459-473.
- Newman, M.A. 1997. The professional doctorate in nursing: a position paper. *Image*, 29(4):361-365.
- Nowotny, H., Scott, P. and Gibbons, M. 2005. 'Rethinking science': Mode 2 in societal context. In E.G. Carayannis and D.F. Campbell (ed). *Knowledge Creation, Diffusion, and Use in Innovation Networks and Knowledge Clusters: A Comparative Systems Approach Across the United States, Europe and Asia*. Praeger, Westport, CT.
- Olsen, K. and Clark, C.M. 2009. A signature pedagogy in doctoral education: The leader-scholar community. *Educational Researcher*, 38(3):216-221.
- Pearson, A., Borbasi, S. and Gott, M. 1997. Doctoral education in nursing for practitioner knowledge and for academic knowledge: the University of Adelaide, Australia, *Image*, 29(4):365-368.
- Pearson, M. 1999. The changing environment for doctoral education in Australia: Implications for quality management, improvement and innovation. *Higher Education Research & Development*, 18(3):269-287.
- Ramcharan, P., Ashmore, R., Nicklin, L. and Drew, J. 2001. Nursing scholarship in the British university system. *British Journal of Nursing*, 10(3):196-206.
- Rolfe, G. and Davies, R. 2009. Second-generation professional doctorates in nursing. *International Journal of Nursing Studies*, 46(9):1265-1273.
- Scott, P. 2006. The Global Context of Doctoral Education. *EUA Bologna Handbook: Making Bologna work*, European University Association.
- Shulman, L.S. 2005. Signature pedagogies in the professions. *Daedalus*, 134(3):52-59.
- Trafford, V. and Leshem, S. 2002a. Anatomy of a doctoral viva. *Journal of Graduate Education*, 3:33-41.
- Trafford, V. and Leshem, S. 2002b. Starting at the end to undertake doctoral research: predictable questions as stepping-stones. *Higher Education Review*, 33(4):43-61.
- Wallgren, L. and Dahlgren, L-O. 2005. Doctoral education as social practice for knowledge development: Conditioning and demands by Industry PhD students. *Industry & Higher Education*, 19(6):433-443.
- Watson, R., Thompson, D.R. and Amella, E. 2011. Doctorates and nurses. *Contemporary Nurse*, 38(1-2):151-159.

Weberg, D. 2012, Complexity leadership: A healthcare imperative. *Nursing Forum*, 47(4):268-277.

Wellington, J. and Sykes, P. 2006. 'A doctorate in a tight compartment': Why do students choose a professional doctorate and what impact does it have on their personal and professional lives? *Studies in Higher Education*, 31(6):723-734.

WHO, 2016. Global strategic directions for strengthening nursing and midwifery 2016–2020. http://www.who.int/hrh/nursing_midwifery/global-strategic-midwifery2016-2020.pdf

Wood, M. 1999. "The move towards a different career pattern: are women better prepared than men for a modern career?" *Women in Management Review*, 14(1):21-22.