

The Researcher's Little Helper: The design of an enabling online resource for postgraduate students and their supervisors

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Abstract

The question of how to support postgraduate students and their supervisors, especially neophyte supervisors, is a challenge faced by many higher education institutions. This paper outlines the early stages of a research study which incorporated a design-based research methodology to inform the planning and development of an online, self-paced resource for postgraduate students and their supervisors. Once the needs of these two groups were identified through regular focus groups, the findings from these collaborations, along with literature review findings, informed the structural framework of an online resource known as *The Researcher's Little Helper*.

Keywords: postgraduate research, research education, heutagogy, instructional design, threshold concepts

Introduction

'... we need to think carefully how we create environments that recognise complexity and fully engage with enabling capability' (Hase & Kenyon, 2003, p. 5)

The question of 'how to support postgraduate students and their supervisors, especially neophyte supervisors, is a challenge faced by many higher education institutions (National Academy for Integration of Research, 2012; Pearson & Kayrooz, 2004) and a range of strategies have been trialled in the past to meet this challenge (Kobayashi, Rump, & Grout, 2012; Ulhøi, 2005; Wisker, Kiley, & Aiston, 2006). Just as academic staff need guidance on how to be effective postgraduate supervisors, postgraduate students also need research training (McCallin & Nayar, 2012) to successfully complete their research degrees. Indeed, the very notion of supervisory pedagogy (Lee & McKenzie, 2011) is a developing form of practice in higher education in which both the supervisor and the supervised have an active role.

The experience of postgraduate supervisors and postgraduate students are sometimes described from 'both sides' (Lee & Green, 2009, p. 615), reflecting their different roles, but the needs and interests of both groups often overlap. Since the process they embark on together is focused on the implementation, analysis and reporting of a research project, they both travel concurrently towards the same outcome, albeit in different roles. Whether the travelling navigates partly familiar territory or not, some aspects of the research embarked upon by both supervisors and students can be seen as detective work (Kelly, 2012), a process that two groups need to steer to some degree. Even so, many of the needs of postgraduate students can be quite overwhelming, as they struggle to develop different ways of thinking, writing and researching (Kiley, 2009), activities that are often more

familiar to their supervisors. Ulhøi (2005) further explains the complexity of the role of the postgraduate student as someone who is producing knowledge while also experiencing self-enlightenment, two outcomes he argues which are not always compatible. In the case of an institution developing its postgraduate student research capacity, the needs of neophyte research supervisors may also need attention. For new academic staff, becoming a postgraduate supervisor can be an additional stress to their workloads (McCormack & Pamphilon, 2004).

Effective supervisory practice is flexible (Pearson & Brew, 2002), as well as acknowledging the breadth and diversity of postgraduate students (Parker, 2009) and is built on a one-to-one relationship (Lee & Green, 2009). However, the processes of supervising postgraduate students has changed greatly in recent years, most often in response to the changes in funding and management (McCallin & Nayar, 2012). Still, the quality of supervision received is often the critical factor in a postgraduate student's experience (Pearson & Kayrooz, 2004) and success.

Institutional background

Avondale College of Higher Education has over a hundred years of history in the tertiary sector. The College is a higher education institution that offers vocational education and training (VET), pre-tertiary, undergraduate and postgraduate degrees. The structure of this College is based on a number of Faculties that offer degrees from undergraduate to PhD levels, in education, arts, business, theology, science, nursing and health. Currently the College is preparing to apply for self-accrediting status. Successful attainment of self-accrediting status will be followed in the coming years by an application for university-college status.

Avondale, by university standards, is relatively new to the area of research degrees, especially PhDs. The College currently has approximately 30 candidates studying at this level across the range of disciplines. Avondale has only offered PhD level studies for the past 10 years after receiving accreditation to do so. Although many staff have PhDs themselves, Avondale's newness to the area of research degrees means there is not a well embedded research culture. The growth of a research culture that translates into a supportive and effective supervision environment requires a strategic approach to supporting neophyte supervisors. In order to support the development of knowledge and skills associated with supervising students, further initiatives are required to support academics as they embrace the role of supervisor.

A range of initiatives are in place at the College that provide support to postgraduate supervisors. For example, Avondale ensures that every student's supervision team includes at least one supervisor who has supervised a higher research degree (HDR) student through to completion. Also, Avondale conducts forums each semester where supervisors and HDR students come together to discuss the issues they are confronting and to share experiences that have led to success. These forums identify the support supervisors need to better undertake their supervision and the support students need to better complete their research. Outcomes from these forums have led to the implementation of policies or changes to existing policies and processes and a shared understanding of the requirements of an Avondale PhD, Masters by Research or Honours qualification is developing.

The research problem

A recent semester forum identified one issue confronted by most supervisors at Avondale: access to supporting materials relating to research. At Avondale the shortfall between the required and the actual levels of skills held by postgraduate supervisors is even more salient because the majority of the academic staff who supervise postgraduate students do not have extensive experience with supervision. They need support to be available to them as specific needs arise during their interactions with students. The main issue of concern was a question of how to make the required support resources available. In addition to this issue being revealed in a forum, informal requests were received from staff and students for a centralised location from which they could access relevant guidance and instructional resources regarding how to be a good postgraduate supervisor and how to be a good researcher.

The development of a self-directed online resource, *The Researcher's Little Helper*, is the institution's response to this need. Our researchers need more than just a context in which to discuss their concerns; they need what McCormack and Pamphilon (2004) explain as 'processes that enable them to explore and analyse the complexity of the postgraduate experience' (p. 23). *The Researcher's Little Helper* resource has the capacity to provide a space in which research guidance and examples can be explored using a linear or a non-linear approach, by both HDR students and their supervisors.

The resource also supplements the traditional one-to-one meetings between supervisors and their students, which can be time-consuming (McCallin & Nayar, 2012). Even in a small institution, supervisors are not always accessible, so students need just-in-time access to pertinent support materials as they undertake their research activities. Such support may also prevent postgraduate students from experiencing a state of 'stuckness' in their research (Kiley, 2009, p. 293) which can cause much unnecessary annoyance and frustration for both students and their supervisors. An accessible online resource may also prevent some of the anxiety and uncertainty that is experienced by HDR students (Wisker & Robinson, 2012) when they are unable to access help from their supervisors or other support staff.

Theoretical underpinnings of the research

The institution's decision to develop the resource, *The Researcher's Little Helper*, was guided by the needs of two groups: postgraduate supervisors and their HDR candidates. In contrast to Cummings' (2010) claim that 'the voice of research candidates in the skills debate has been largely muted or ignored' (Cummings, p. 408), we wanted to give our postgraduate students a voice to express what they required as they progressed through their HDR degrees. Once the need for the resource had been established, theoretical principles were sought that would inform the design of the resource and acknowledge the specific requirements of the adult learners who would access the resource.

The resource's design was informed by established principles drawn from the theories of online instructional design (Gunawardena et al., 2006; Herrington & Oliver, 2000; Siragusa, 2006), threshold concepts of postgraduate education (Kiley, 2009; Meyer & Land, 2005; Wisker et al., 2006) and the learner-driven, self-directional theory of heutagogy (Hase & Kenyon, 2003). The self-help nature of the resource provides just-in-time support and supports just-in-case training activities, thus being informed by Hase and Kenyon's (2003) theory of heutagogy that 'recognizes that people learn when they are ready and that this is most likely to occur quite

randomly, chaotically and in the face of ambiguity and need' (pp. 3-4). According to heutagogical principles, learning resources may be provided by the teacher but students' learning pathways will ultimately be chosen by the learners themselves. These principles were integrated into the design of the resource, especially in relation to how supervisors and students were provided with access to identical materials.

The collaboration of postgraduate students with their research supervisors generally occurs for the purpose of assisting students to develop as independent researchers who can conduct research and later supervise their own students (Morris, Pitt, & Manathunga, 2012). This process, which does not necessarily follow a predictable path, requires the flexibility afforded by a heutagogical approach. Because postgraduate student-supervisor collaborations typically work towards the development of the students' skills and capabilities and are often dependent on the student's initiative, Hase and Kenyon's (2003) theory of heutagogy is seen as an appropriate theory on which to base the design of a professional development resource such as *The Researcher's Little Helper*.

Research methodology and resource development

The design of this research study, in four stages, was built upon the current and ongoing needs of Avondale's postgraduate student supervisors and the postgraduate students themselves. The design of the study's approach, the selection of participants and methods, and the stages of the study were all aimed at meeting the needs of these two groups by constructing an online resource which was developed within the authentic context in which it was intended to be used.

Research design

The research approach adopted for this research incorporates a design-based research methodology (Anderson & Shattuck, 2012; Reeves, Herrington, & Oliver, 2005) to inform the planning and development of a self-paced resource, *The Researcher's Little Helper*, for postgraduate students and their supervisors. Design-based research interventions are typically introduced to solve a problem within its authentic context. The intervention, or in the case of this study - the resource, has been iteratively developed and refined across a six month period, with plans for future development. Use of the design-based research approach ensures that *The Researcher's Little Helper* resource can be simultaneously developed, used and improved within the natural setting of the research.

The first two stages of the four-stage approach, along with findings from these stages, are outlined in this paper. Plans for the final two future stages of the research are also described. In the final stages of the study, the researchers aim to use the findings from both the first and second stages of the study to inform the ongoing development of the resource, *The Researcher's Little Helper*, and to contribute to the educational theories associated with postgraduate education, heutagogy (Hase & Kenyon, 2003) and researcher development.

Participants

Academic staff from all Faculties at Avondale who are involved in the supervision of postgraduate research students were invited to participate in the research project. All current candidates in postgraduate courses at the College were also invited to participate. Currently, a total of 43 staff members and 17 students are enrolled in the

fledgling site, *The Researcher's Little Helper*, all of whom were invited to contribute to the study via online modes of communication.

Research questions

Guided by the practical and theoretical tenets of design-based research (Anderson & Shattuck, 2012; Reeves et al., 2005), the research questions that steered this study were aimed at gathering information about the research context, the resource users and the resource being developed. Additionally, answers to the research questions may further contribute to our understanding of postgraduate education, heutagogy (the study of self-determined learning) and researcher development. The study is guided by the following research questions:

- How can the needs of postgraduate candidates and supervisors at Avondale be met through the design and development of an online resource, *The Researcher's Little Helper*?
- How should the online resource, *The Researcher's Little Helper*, be structured and presented to provide postgraduate students and supervisors with the instructional materials they require?
- How do the findings of this research contribute to our understanding of the educational theories of postgraduate education, heutagogy (the study of self-determined learning) and researcher development?

Within this design-based methodology, both qualitative and quantitative data gathering and analysis processes are being used. By incorporating a range of face-to-face and online data gathering processes and tools, the research project provides users of the resource with multiple opportunities to contribute to its design and development.

Initial stage of the study

During the first stage of this study, the researchers defined the need for an online resource in consultation with postgraduate supervisors and some of their students. The problem was defined as a lack of self-directed, centralised materials for research and supervision processes that could be accessed by postgraduate supervisors and students at the institution. To further inform the researchers who were charged with the task of finding a solution to the problem, the following questions were posed:

- Location: Where should the resource be located? How should the resource be accessed?
- Content and style of content: What should the resource include and not include? How could it be designed as a self-help resource? In what format should the content be presented?
- Ownership: Who creates and maintains the resource? How will it be evaluated? Who makes decisions about the resource?

In this early stage of the research, advice from previous researchers and educators was also sought through a preliminary literature review of previous research about postgraduate education, online resource design and professional development. Findings from this review formed the theoretical basis of the research and guided the resource development, and were integrated with the defined needs of postgraduate researchers and students

that were detected during the problem definition stage. These data gathered from potential users of the resource and from the initial literature review identified the following characteristics that informed the design of the first prototype of the resource, which has since become known as *The Researcher's Little Helper*.

- Quick and easy access was preferred within a commonly accessed and familiar online environment.
- Content about the institution's policies and procedures were requested, along with examples of best practice from other institutions.
- Much of the information requested from postgraduate students was similar to the information requested from postgraduate supervisors.
- Just-in-time instructional resources and processes that are accessible when needed were perceived as being more useful than resources and processes of a just-in-case nature that are provided for possible use in the future.
- The resource should be organised and ordered in a manner consistent with the stages involved in the research process.
- A living resource was required, one that grows with and has the capacity to respond to the needs of the researchers and supervisors.

Development of the resource

Data gathered and analysed from the initial discussions with HDR staff and students, along with findings from a preliminary literature review, informed the initial structural framework of the resource and the first prototype of the resource was developed within the institution's Learning Management System or LMS (Moodle) by the two researchers. The first prototype of the resource was completed and made available in December 2013. The decision to locate the resource within the institution's LMS was guided by the success associated with a previous experience of providing professional development resources and information through a similarly named resource, Moodle's Little Helper (see Figure 1). The Moodle's Little Helper resource was specifically designed to enable Avondale's academic staff to develop knowledge and skills about online teaching and learning, and was located within the institution's LMS. As a result, the location and structure of this existing resource were very familiar to the academic staff who were to be some of the main users of *The Researcher's Little Helper* resource (see Figure 2). Hence, a suite of two similarly structured and located resources have emerged from the professional development needs of Avondale's academic staff.

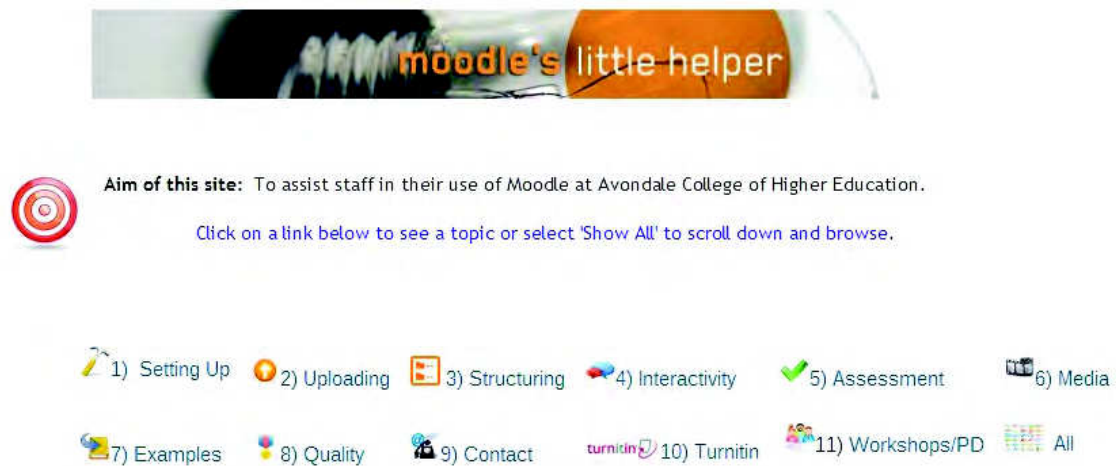


Figure 1: Header of the *Moodle's Little Helper* site

Once the location and basic structure of the resource were established, the content of the resource was determined through consultation with currently enrolled postgraduate students and their supervisors, as outlined above. Since one of the major principles of design-based research is to actively involve research participants in the process of developing the research artefact or product (in this case, an online resource), it was the intention of the researchers from the beginning of the study to provide multiple opportunities for current and potential users of the resource to contribute to the design, development, revision and evaluation processes associated with the development of *The Researcher's Little Helper*. This resource has subsequently grown to become an online repository of examples of best practice, instructions, policies and suggestions about how to conduct postgraduate research and how to supervise HDR students. The resource is available to all postgraduate supervisors and students at Avondale and is accessed through the institution's password-protected LMS. As well as providing access to the institution's research resources and policies, *The Researcher's Little Helper* incorporates links to resources from other universities and organisations. The home page of the resource (see Figure 2) provides the user with a brief description of the purpose of the resource as well as direct links to a selection of topics related to the research process.



Aim of this site: To support Avondale staff and students to conduct and supervise postgraduate research.

Click on a link below to see a topic or select 'Show All' to scroll down and browse.



Figure 2: Header of *The Researcher's Little Helper* site

Based on the feedback gathered from users to date, along with relevant advice from contemporary literature about the development of such resources, the content of *The Researcher's Little Helper* is structured according to topic categories, including: researchers' skills; how to prepare a research proposal/ confirmation; conducting a literature review; setting up a research study and collaborating with other researchers. The current version of the resource is aimed at meeting the needs of a diverse range of students and supervisors engaged in research topics such as:

- What is the nature of the lived experience of a number of homeless people in one local government area?
- What matters to Australian university accounting academics?
- The Special Character of Adventist education as perceived by one cross-section of the system: A qualitative investigation into philosophy, purpose and practice
- Human body parts and their functions as media of communication in the narratives of Acts
- A people to be gathered: The Seeker clan heritage connections of core pioneers of the Seventh-day Adventist Church

As well as the wide range of topics that are currently being studied by researchers at Avondale, the mixture of research methodologies adopted by the researchers is similarly diverse. Researchers are beginning to use the resource as a consultation point for finding out about the research paradigm that matches their chosen research paradigm (Cohen & Crabtree, 2008; Lather, 2004). The provision of this type of advice can assist Avondale's researchers to maintain a good fit between their research design and methods (Lincoln, 1995; Patton, 2002). For example, the timely consulting of *The Researcher's Little Helper* resource will provide postgraduate students with guidance about utilising the findings from their literature review to inform the development of their research question and their selection of an appropriate methodology (Borrego, Douglas, & Amelink, 2009).

Future iterative prototypes of the resource will be developed by the researchers throughout 2014 and 2015 by integrating findings from analysis of the data gathered through observational field notes, a feedback survey, analysis of system analytics and interviews with users. Findings from these data analyses will be further considered alongside current emerging educational theory on postgraduate education, professional development and online course design. By providing a collaborative space which can be independently consulted and contributed to by postgraduate supervisors, researchers and students, the materials included in the online resource will contribute to the postgraduate research community of practice (Lave & Wenger, 1991; Wenger, 1998) that is forming at Avondale.

Usage of the resource to date

Word of mouth has proved to be a powerful introduction to the resource. Postgraduate students talk amongst themselves and, as a result, the satisfaction of users of the resource is passed onto others who then request access to it. Artefacts from research seminars, showcases and panel discussions are being requested via this resource. For example, an on-campus panel discussion of expert researchers was recently held in the Faculty of Education, Business and Science. Although the content was directed primarily at students from the disciplines represented in the Faculty, the content had broader application and access to it was requested by HDR students from other Faculties. An audio recording of the panel discussion was loaded onto *The Researcher's Little Helper* and has provided support to students and supervisors who were not able to attend the on-campus seminar. In this way, students and supervisors are empowered by being able to access material more flexibly without necessarily having to attend such sessions.

Based on the analytics information available through Avondale's LMS, the resource is being used more and more by both postgraduate supervisors and postgraduate candidates alike, demonstrating how the resource is meeting many of the users' needs. As well as the increase in access by users of the resource, the number of people wishing to access it is growing. This is evidenced in Figure 3 which illustrates a pattern of usage since the first prototype of the resource was created in December 2013 until recently, May 2014. Interestingly the growth in user numbers has predominantly been by students. This is to be expected as the number of supervisors has remained static but student numbers have increased and, more importantly for the success of this project, their desire to access the system has increased.

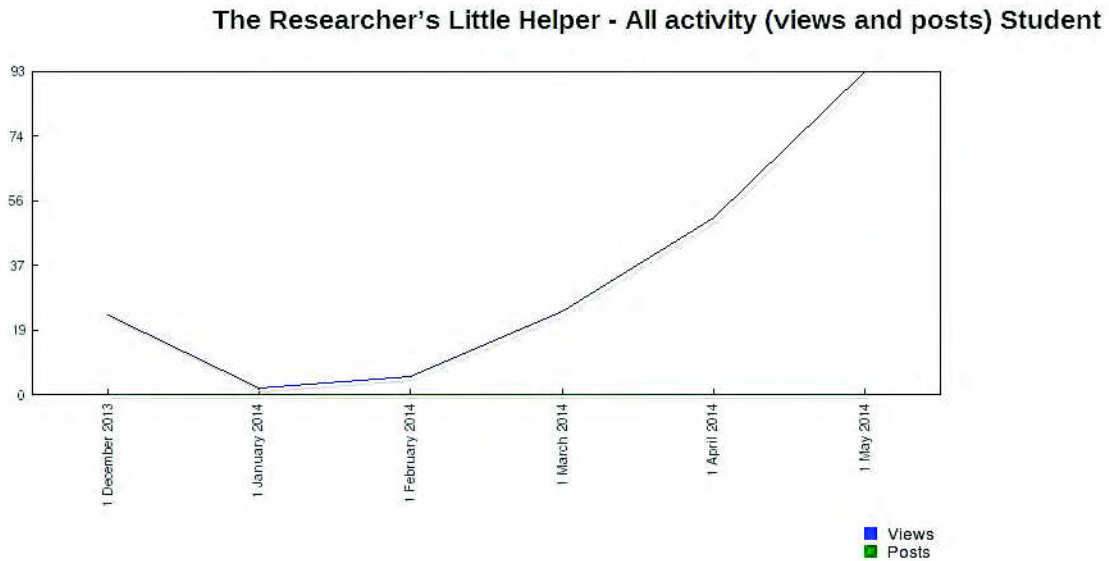


Figure 3: Access of the resource between December 2013 and May 2014

Current stage of the study

Now that the first prototype has been created and made available to users, the researchers have met with participants in focus groups to further determine their ongoing needs. During these meetings data were gathered via verbal conversations and a short survey was conducted in which participants were asked to respond to the following question:

Based on its current state, what else would you like to see included in this online resource, *The Researcher's Little Helper*?

Once the gathered data were analysed, the following feedback emerged:

- More examples are required to illustrate processes such as how to write a research proposal, how to write a literature review and how to apply for research funding and scholarships.
- Guidance on different styles of referencing is required.
- Staff showed interest in learning about the methods used by other institutions to examine PhD and Masters theses
- The order of the topics in the resource should reflect the typical stages of the research process (setting up the study, selecting questions, conducting a literature review, etc.).

Feedback received to date, such as the above, has been used to further develop the resource by making additions, changing the sequencing of content, modifying wording for greater clarity and removing unnecessary components. Some content was reorganised to be nested within other related components of the resource, to

avoid what one research participant referred to as 'the scroll of death'. Ongoing feedback from staff and students continues to be used in this way.

According to the principles of design-based research which enables the evolution of 'multiple iterations' (Anderson & Shattuck, 2012, p. 17) of a developing intervention or resource, this process of meeting regularly with users of the resource to gather formative feedback about its use is currently underway and will continue throughout the remainder of 2014 and into 2015. Furthermore, alternative sources of data are being sought to inform the development of the resource, in addition to the on-campus meetings with postgraduate supervisors and their students. Future plans for gathering data from additional sources are outlined below and comprise the final two stages of the study.

Further stages of the research and future development of the resource

In the spirit of emergent research design (Garraway, 2010; Rogers, 2012), the initial two stages of this research project have informed the design of the future two stages of the study. In the next stage of the study, the third stage, the resource will continue to be developed. During the final stage of the study, the fourth stage, the iterative process of continually developing the resource will be implemented, as will the production of the resource itself. The findings of this study will be gauged against recent theoretical frameworks to inform practical instructional design of online resources, and postgraduate and researcher education. It is anticipated that the parallel consideration of the study's findings with current research may further contribute to the development of these recent educational theories. This final stage of the study will enable further integration of robust theory about learning and teaching into the implementation of the resource. This helps to ensure that the resource will meet the needs of HDR students and their supervisors, while adding to the theories of researcher and postgraduate education.

Because the development of *The Researcher's Little Helper*, is currently in its third stage, further data gathering and analysis processes are underway to provide opportunities for postgraduate candidates and their supervisors to continually contribute to the ongoing development of the structure and content of the resource. As both on-campus and distance (online) HDR students are enrolled in various postgraduate degrees at Avondale, the following data gathering processes will be used to include these two groups of students during 2014 and 2015:

- Email interviews with selected HDR supervisors and on-campus and distance (online) students from varied Faculties within the institution.
- Observational field notes recorded in focus groups during on-campus meetings held with HDR supervisors and students.
- Online feedback survey facilitated from within the online resource, completed by HDR supervisors and on-campus and distance (online) students.
- Learner analytics data gathered in an ongoing, monthly basis from the report function within the LMS to determine usage patterns of the resource.

Data gathered through these processes will be analysed using the a constant comparative method, recommended by Thomas (2009), in which data are open-coded using qualitative analysis software to establish themes and relationship between themes. The thematic map that emerges from the data analysis process will be

used to determine the main areas of need for postgraduate supervisors and their students and, subsequently, to further ascertain areas of the resource that require future development and refinement.

In addition to considering the user feedback gained through the data gathering processes above, experts in postgraduate education and researcher development will be consulted to provide external evaluation about the ongoing development of this resource. Colleagues from Macquarie University in New South Wales, Adelaide University in South Australia and Trinity College in Dublin have agreed to be external evaluators. Further integration of information, regulatory frameworks and research resources provided by federal government bodies and their associated policies will be incorporated into future iterations of the resource, including guidelines and information from:

- Tertiary Education Quality Standards Agency's (TEQSA) Higher Education Standards Framework, including Threshold Standards (Tertiary Education Quality and Standards Agency, 2011);
- Australian Qualifications Framework (Australian Qualifications Framework Council, 2013);
- National Statement on Ethical Conduct in Human Research (National Health and Medical Research Council, Australian Research Council, & Australian Vice-Chancellors' Committee, 2007);
- Australian Code for the Responsible Conduct of Research (National Health and Medical Research Council, Australian Research Council, & Universities Australia, 2007); and
- Australian and New Zealand Standard Research Classification (ANZSRC) (Australian Bureau of Statistics, 2008).

Conclusion

Outcomes of the research will continue to inform the design and development of the online, self-directed resource, *The Researcher's Little Helper*, which will in turn assist Avondale's postgraduate supervisors and students to extend their research skills and knowledge. The use of this resource has reduced the demand on current supervisors by their students through the provision of a centralised set of materials that can be independently consulted while preparing for and conducting research projects. Because some postgraduate supervisors at Avondale are less experienced than others, this resource provides a means by which these supervisors can improve their supervision skills and research knowledge. Also the more experienced supervisors can share their skills and tried expertise within the community of practice.

In the short term, participants will be provided with an opportunity to reflect on and monitor their own development of knowledge and skills in postgraduate research. In the longer term, the student-participants in this research project will be able to increase their competence and confidence in conducting postgraduate research. It is also anticipated that the supervisor-participants in this research project will increase their competence and confidence in conducting research and in supervising postgraduate students. The resource provides a point of connection between candidates and supervisors and has the capacity to develop a shared understanding of effective research. Instead of student-supervisor discussions beginning with their supervisor authoritatively outlining the requirements of research, the student is able to initiate discussion about their research project, gained through background reading and exploration of the materials provided on the resource.

What is expected is that the opportunities for researcher education within the resource will continue to grow in response to student and supervisor needs. Data gathered during the continuing stages of the research project will inform the ongoing development of the resource. In terms of the benefits for Avondale as an institution, the outcomes of this project will inform and guide the design and development of an innovative approach to postgraduate education that promises to become an effective component of our postgraduate education program and our professional development program for supervisors.

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