Design of a participatory supervision support platform for improving higher degree supervision: A feasibility study

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## List of acronyms used

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<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ALTC</td>
<td>Australian Learning and Teaching Council</td>
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<tr>
<td>HDR</td>
<td>Higher degree by research</td>
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<td>LMS</td>
<td>Learning management system</td>
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<td>OLT</td>
<td>Office for Learning and Teaching</td>
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<td>IT</td>
<td>Information technology</td>
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<td>PSVSP</td>
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Executive summary

This OLT seed grant study arose out of the practical need to improve Higher Degree by Research (HDR) supervision, particularly in relation to its current high levels of attrition and lengthy completion times. Technology has the potential to support this endeavour.

Developing and sustaining online communities of researchers involving HDR students may assist in reducing the isolation often experienced by HDR students and may provide HDR students with more support and up to date resources. Ultimately, this may reduce the length of time for completion and decrease the current high levels of attrition. According to researchers, there is potential to transform traditional supervision practices by using digital processes (Beer & Mason, 2009). The long-term aim of our research is the development of a digital platform to support the HDR process, particularly as it moves to more online interface and more team research and co-authored publications.

A robust conceptual framework needs to be developed for the application of social-learning media and the creation of a multi-faceted technology platform to support the HDR supervision process for the 21st century. This study investigated the use of existing technologies in the HDR supervision process internationally through a literature search, and conducted a feasibility study in two Western Australian universities to ascertain the perspectives and willingness among HDR supervisors and students for a supervision platform technology.

In the long-term, further to this small-scale feasibility study, the project proposes the design, pilot study and implementation of a technology-based process for supervisors and students, which we have envisioned as a Participatory Super-Vision Support Platform (PSVSP), (Maor & Herrington, 2011). This platform will adopt participatory methodology and, through technology, support the activities of supervisors and their students as communities of researchers.

To consider a set of criteria for the development of a conceptual PSVSP framework, the project undertook in-depth exploratory interviews with HDR supervisors and students from two universities, and conducted a literature review of eighteen relevant papers.

HDR students are increasingly encouraged to be active and vocal members of their research disciplines, and to establish a professional online presence within networks and professional partnerships in their field. The literature review found that pedagogies of collaboration were facilitated by platforms such as ePortfolio or other website workspaces. The dominant pedagogical supervision approach emergent in contemporary literature is one of ongoing discourse between HDR students and supervisors and the perceived importance of collaborative work. Both approaches are increasingly enabled by the use of technology.
Key findings and recommendations

Key findings

Supervisors and HDR students in the in-depth interviews identified the need for:

- Increased use of technology in the HDR supervision process;
- HDR supervision pedagogy that was integrated with technology;
- More frequent communication between supervisors and their students; and
- Accommodation of family and work commitments of HDR students.

As a result of involvement in this study, supervisors and their students:

- Had more intensive HDR supervision through increased and regular contact between supervisors and supervisees facilitated by technology, such as email, telephone, and Skype;
- Implemented changes in their practices;
- Increased distance supervision;
- Reflected on the Super-Vision Platform (PSVSP) ideas.
- Reduced hierarchical and increased participatory relationships; and
- Increased uptake of online social networks such as Twitter for seeking and disseminating academic research findings.

Recommendations

The project recommends the following:

- A digital pedagogy that supports a participatory model of HDR supervision, in line with 21st century skills requirements, that embraces concepts of connectedness, collaboration, teamwork, community, peer learning, and group supervision;
- A technology platform (PSVSP) that incorporates the complex web of HDR interaction in an ‘eco-system’ approach, as recommended by Cumming (2010). It must be sufficiently flexible to accommodate a range of disciplines and styles of HDR processes, as well as having the technological adaptability for upgrading to include evolving technologies;
- A platform that would support the creation of a community of learners, professionals, and researchers to provide networks and resources for the HDR process, and to reduce isolation and attrition; and
- Training and professional development workshops for supervisors and supervisees within a participatory model using technology, particularly for the increasing number of distance [off campus] HDR students.
This seed grant enabled the project team to explore higher degree supervision and research students’ perspectives on the use of technology for supervision. This resulted in considerable information and stimulated ideas for further research and development in this area. The ground is fertile for more development of the conceptual understanding of research supervision and its tangible application to help improve the process. Higher Degree supervision requires theoretical solutions, such as the development of a pedagogical model, and also a practical software platform to integrate the technology with the pedagogy.
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Chapter 1  Introduction

There is a need to improve supervision of HDR students to reduce lengthy completion times and reduce the high level of attrition (Hammond, Ryland, Tennant, & Boud, 2010). An emerging development in higher education in recent years is the use of Web2.0 technologies for collaborative processes and for the creation of communities of learners, researchers, and professionals. A robust conceptual and theoretical framework is needed for the application of social-learning media and the creation of a multi-faceted technology platform to support the HDR supervision process for the 21st century.

This OLT seed grant study investigated the use of existing technologies with a feasibility study in two universities for the support of supervisors and HDR students. The overarching objective was to enhance the process of research supervision by capitalising on emergent digital technology to make the HDR process a more participatory undertaking by developing an inclusive pedagogy. From social learning theory (Bandura, 1997) and Wenger’s (1998) notion of communities of practice, the project conceptualised a participatory learning practice facilitated by digital technologies (Web 2.0 tools). Thus learners would become co-creators of knowledge rather than passive receivers of expert-created knowledge (Jenkins, 2007).

Background

Most Australian universities do not place in the top 50 in global research rankings, however, according to such rankings, Australian universities’ performance has improved over the last decade (Norton, 2012). Improving doctoral supervision and the production of doctoral thesis based on publications where HDR students and their supervisors jointly publish journal articles could increase the research rankings of Australian universities. To do this, some academics are calling for a more holistic approach to doctoral education (e.g., Cumming, 2010) as well as a ‘re-envisioning’ (Nyquist & Woodford, 2000), ‘reframing’ (McAlpine & Norton, 2006) and ‘rethinking’ (Walker, et al., 2007) current approaches. The project proposes that research outcomes in higher education can be improved by transforming higher degree research training with the incorporation of appropriate technology for this 21st century context.

There were around 56,000 research students in Australia in 2010, including international students (Norton, 2012). Notwithstanding high attrition rates for some doctoral programs, Australia produces around 6,000 doctoral graduates annually, and over 1,000 Masters-by-research graduates. A characteristic of HDR in Australia is the increasing ethnic and cultural diversity of its participants over the past quarter century as international students have become significant contributors to research education in Australia. At least in part as a result of this diversity, research students’ academic literacies are of major concern.

A recent Australian Learning and Teaching Council (ALTC) study (Hammond et al., 2010) that examined current research supervision and training provisions highlighted the changing
context of research education for supervisors and students. The report showed that a demand for more professionalism and formalisation of research education resulted in more transparency, and also resulted in practices becoming highly scrutinised. Australian universities, with their multiple missions of research, teaching and community engagement, unavoidably compete for the same limited resources. Most academics are expected to be competent in research, including research-student supervision, teaching, and community engagement, and increasingly expected to be adept administrators. The skills required for each of the four tasks of the generalist academic differ markedly. HDR supervisor and student skills may be enhanced with the use of technology to facilitate a more manageable and sustainable process. In research exploring the use of a blended approach of face-to-face and distance online learning in HDR supervision, the authors suggested that traditional supervision practices be reformed with the inclusion of digital processes (Beer & Mason, 2009). Furthermore, postgraduate students themselves are increasingly aware of the need for greater knowledge, skills and support from technological aspects of research training programs to achieve high-quality research outputs (Phelps, Fisher & Ellis, 2006).

The Project’s overall vision for an HDR digital platform triggered this current feasibility study to understand what technology is currently being used and what the perceived needs are of HDR supervisors and students that technology might assist with. The supervision process of HDR students is complex and demanding and often undertaken in isolation from other supervisors, academics, and students. The project hypothesised that the conceptualisation of a multifaceted platform that supports the HDR process can help to develop a more inclusive pedagogy using social media, for international and local HDR students.

A way forward that offers potential to transform the process and alleviate enduring problems is to make the process more participatory, encouraging supervisors and supervisees to become more active as participants in the process, capitalising on the affordances of social media. To transform the HDR supervision scenario, the project envisioned the use of participatory learning theory and communities of practice (Bandura, 1997; Wenger, 1999), integrated with social learning Web2.0 tools. The aim would be for HDR students to develop their own and others’ knowledge as part of the supervision process. The major change in using the Internet and Web2.0 technologies is that the learner participates by becoming a creator or co-creator of knowledge rather than a consumer of knowledge created by experts (Jenkins, 2007), which is consistent with the objectives of HDR education.
Chapter 2  First step: feasibility study

Study context and aim: Envisioning the PSVSP

The overarching aim of this project is to enhance the process of research supervision by making it a more participatory practice, by combining inclusive pedagogy and technology (Fitzgerald et al., 2009; Maor, 2004). The first step is this feasibility study to establish the needs and criteria for the development of this type of supervision framework.

In the long-term, the project anticipates the design, pilot and implementation of a technology-based process for supervisors and students, envisioned as a Participatory Supervision Support Platform (PSVSP). It is anticipated that one advantage for supervisors of a PSVSP would be that the PSVSP would provide a personal space to organise and track the stages of their students’ research, enabling a transparent process between supervisor and student. Access would also be available for other stakeholders interested in the supervision process. Therefore, the PSVSP could also facilitate rich and sustained conversations about research education through creating a community of supervisors. For students, the PSVSP would provide a reliable framework that could help students to understand the next step in the research scenario, access resources, call upon expert views and examine examples of chapters, theses, proposals and abstracts. Students would be able to interact with each other online to create a community of researchers in the same area of interest, or students could invite external people to online discussions on common procedures, such as the ethical approvals to conduct research.

At the faculty, school or department level, the proposed PSVSP would enable administrators to update documents and collect and collate information. The PSVSP would support supervisors and postgraduate students and would track research supervision automatically to minimise the often time consuming and sometimes confusing administrative processes that currently need to be undertaken at each stage of the process. A better use of technology for supervision is likely to enable a richer and a more participatory environment, leading to a higher profile of research in the individual schools and the universities.

Research supervision is multi-faceted and requires many different resources and activities through collaboration of numerous participants. Figure 1 below conceptualises the complexity of the higher-degree research process. The PSVSP would use Web2.0 technologies to enable supervisors and students working in similar areas to interact as a group, make resources available, update relevant literature, rework drafts of chapters, facilitate one-to-one and one-to-many communications, and include invitations to external experts in the field. Students would be encouraged to share their work through collaborative technologies, such as YouTube and websites that would allow public scrutiny of their work. Other features could include links to the institution’s research office, templates of mutual expectations and commitments with students, examples of styles of
supervision, case studies of feedback from graduates, examples of examiners’ reports, and conference announcements.

Figure 1. Participatory Super-Vision Support Platform (PSVSP©)

Study approach

The project leader and team members in this project are researchers from Murdoch University and Curtin University, Perth, Western Australia. As experienced supervisors, the project team members have often been overwhelmed by the amount of administrative work related to supervision, as well as by the conceptual demands and intensity of feedback that is provided to students. In addition, the workload allocated by schools or universities, in most cases, significantly underestimates the amount of work required to provide high-quality postgraduate research supervision.

Two recent projects on supervision (Hammond et al., 2010; Yarlagadda et al., 2013) reported high levels of dissatisfaction among supervisors regarding existing levels of resources and the challenges that confront them in providing high-quality postgraduate supervision. The University of Technology, Sydney, project (Hammond et al., 2010) has ten recommendations that are worth pursuing. Of interest to this project are their recommendations for targeted resources for supervisors, for supervisor training and for addressing the different needs of new and experienced supervisors. This study has focused on previous research in this area and investigated whether technologies with similar functionality to the conceptual PSVSP are available, and whether they can be used to support the process of supervision (see Maor, Fraser & Ensor, under review).
These technologies can be tested and refined in a future project for the actual design, pilot, and implementation of a PSVSP.

**Methodology**

The study employed qualitative methods largely based on interviews. The initial methodology underwent some variation for several reasons, mostly related to significant university structural and staff changes. For example, throughout the project, the project team proposed to consult with a reference group to clarify the objectives and to reach consensus on the technology criteria for the PSVSP. However, due to these structural and staff changes, making full use of the reference group was limited. Furthermore, changes in supervision and attrition of students who were in the initial sample significantly impeded the progress of this study.

In-depth interviews were conducted using open-ended questions with supervisors and supervisees at the outset of the study in 2013 and then again around eight months later. In the second phase of the study, action research was conducted with participants who indicated that they were willing to participate. Audio reflections were undertaken following Skype or face-to-face meetings between supervisors and supervisees. The interviews and action research audio reflections were transcribed and then coded and thematically analysed both deductively (set questions) and inductively (open-ended questions) in NVivo 10 for Windows.

The Murdoch University Research Ethics Committee approved the research project (Number 2013/083). All study participants were provided with project information, and completed a consent form, and participant data made anonymous to maintain confidentiality.

**First stage: Literature review**

The first stage of data collection included an in-depth literature review of some 300 references (Maor, Fraser & Ensor, under review) to investigate to what extent digital technology is employed in tertiary institutions, particularly to assist with improving the supervision of HDR students and increasing completion times, reducing attrition, and improving output quality. Given the rate at which technology is superseded, the literature review was restricted to the period between 2006-2013. Details of the literature review methodology are provided in the paper, which is currently under review. Appendix B provides a sample from the table of papers.

The literature review aimed to provide a foundation upon which our conceptual PSVSP could be designed to improve HDR supervision. Two streams of criteria were evident in the literature: technological and pedagogical perspectives. The aim with the PSVSP is to merge these into a digital pedagogy conception, as they are necessarily interdependent for the 21st century higher degree by research process.
Second stage: Interviews and action research for needs analysis

Following the literature review, the project conducted two phases of data collection with participants (supervisors and their HDR students, independently and in confidence). This consisted of in-depth interviews with supervisors and supervisees in the first phase. The second phase, almost eight months later, included brief action research in the form of audio reflections with some of the participants, and follow up interviews with supervisors. Interviews sought information about processes and challenges associated with supervision, the use of technology in the supervision process, perceptions about the ways in which the use of different technology assisted or impeded the HDR supervision process and supervisor-supervisee communications and relationships, and needs that participants thought technology may assist.

Participants were recruited by email, which was circulated to a list of potential participants from Curtin and Murdoch Universities. Five pairs of supervisor-supervisee participants were initially recruited. Reflective of commonly recognised challenges with HDR, there was some participant attrition between phase one and two of participant data collection, and three additional supervisors were recruited in the second phase. Two supervisors recruited an additional HDR student each who expressed interest in participation by brief action research in the form of (confidential) audio reflections. In total, eight HDR supervisors and eight students participated in one or both phases of data collection.

Supervision experience ranged between four and twenty years, and some reported supervising as many as ten HDR students at one time. Supervisors were from the fields of teacher education, educational psychology, and engineering education. All but one of the supervisors indicated that they were co-supervising HDR students. One supervisor was supervising his/her HDR students while working in another country (i.e. all distance supervision). HDR students were in either their first or second year, in either a PhD or Masters of Philosophy. Approximately one-third were enrolled full time and two-thirds part time, and all had family and/or career commitments, and there was a mix of funded and self-funded enrolments. There were five male and three female students. Two students were in other countries, and one was in regional Western Australia, and so there were three distance students, and another (Masters) student who had never met his/her supervisor due to fulltime work commitments, even though the supervisor-supervisee pair is Perth based.

This involved participants undertaking brief audio reflections of their experiences and perceptions about using technology in the supervision process, immediately following an experience of the supervisor and supervisee using technology.
Chapter 3  Feasibility study: Outputs and findings

Data analysis and results

The findings of the feasibility study are presented in three parts: an outline and discussion of the literature review results; the themes that emerged from the interviews and audio reflections; and a list of recommendations that has resulted from this feasibility study, that should underpin the development of a conceptual PSVSP.

Literature review

A literature review was conducted to address whether technology is being used to transform HDR supervision pedagogy and address aforementioned HDR supervision challenges, and to identify if there are higher education institutions using technology as a social medium to support supervision. It was anticipated that the literature review, with the in-depth interview data, would contribute to the development of a list of criteria for identifying appropriate technologies with the potential to enhance the supervision process in higher education.

Explicitly, the literature review aimed to refine our understanding of participatory practices in HDR supervision and the role of technology in facilitating or impeding participatory practices, by asking the following questions: How are web technologies used to enhance the HDR supervision process? What supervision pedagogies have been reported in previous studies? How do supervisors and supervisees engage with each other using technology? What criteria is emergent from the research, that can contribute to identifying appropriate technologies and pedagogies that enhance the supervision process?

Search criteria were confined to refereed journal articles published between 2006 and 2013, given that the pace of technology change dictates that older studies would be likely to be concerned with technologies already superseded, and the emergence of uptake of online social media networks over the past decade. Eighteen papers were eventually determined to be directly relevant to this feasibility study. The concepts used for the search were related to technology, supervision and pedagogical supervision, and supervisor-supervisee relationships. Papers were examined for a synergistic approach to pedagogy and technology, and if this was present, whether it facilitated innovations in supervision conceptualisation and practice. In particular the project team was interested in whether synergising pedagogy and technology translated to participatory supervision. Appendix B shows a sample of papers selected for the literature review for informing criteria for a PSVSP. An overarching outcome of the literature review was identification of the need for digital pedagogies to support dynamic multidimensional changes that are required in HDR research supervision.
Early on, the project team discovered that the field of research into HDR supervision is generally not well conceptualised. This undoubtedly contributes to considerable gaps in the collective understanding of HDR supervision and detailed knowledge about the processes and issues that facilitate successful HDR.

A theme evident in the literature was an emergent transforming pedagogy in HDR supervision, one that supported HDR communities of learners in which supervisors were less distant, and had more participatory roles within these communities. Concepts found in the literature that were analysed included “connectedness, more intense supervision, ecosystem, team, community centre, emancipatory relationship with supervisor, specialised pedagogical intervention, peer learning, and group supervision” (Maor, Fraser & Ensor, under review, p. 8). The emergence of these concepts, which are relatively new to the HDR supervision field, suggest a more participatory approach to supervision.

Significant pedagogies evident in the literature, and tabulated in the literature review, included group learning, reported in terms of: community of scholars, community of learners, or community of researchers. Within such participatory frameworks that involve group discourse and practice, individuals develop their knowledge, expertise and practice in their given field. HDR students are increasingly being encouraged to be active and vocal members of their research disciplines, developing a professional online presence within networks and partnerships in their field. Also evident in the literature were pedagogies of collaboration that were facilitated by such platforms as ePortfolio or other website workspaces. The dominant pedagogical supervision approach emergent in contemporary literature is one of ongoing discourse between HDR students and their supervisors, and the perceived importance of collaborative work, which has previously been a tenet of the ‘hard’ sciences but, increasingly this century, is spreading to the social sciences and humanities.

The literature review suggests that there is a shift towards a more project-based model of research, within which HDR students are further developed as professionals in their field. For example, Stubb, Pyhältö and Lonka (2012) suggest that the HDR journey is transforming from product-oriented (thesis production) to a process-oriented undertaking and from an individualistic to a community-centred approach.

From the literature review, several factors were identified, that can inform the design of a conceptual PSVSP. For example, in response to the added dimension of complexity that online supervision brings to an increasing array of HDR modes, taking an ‘eco-system’ approach has been suggested, which would incorporate the ‘complex web of interactions involving various structures, cultures, discourses, and networks’ (Cumming, 2010, p. 34). Conceptualising the HDR process as part of an eco-system acknowledges the myriad of stakeholders and stakeholder networks involved, uptake of online technology and openness and flexibility in knowledge creation; a pedagogy that is more participatory and less the traditional isolated supervisor-supervisee hierarchy that often cannot meet 21st century requirements. HDR supervision has been moving towards a team approach (e.g., Green & Bowden, 2002), which has existed in some disciplines but was largely absent from others until recently. More institutions are employing a co-supervision model of two or more supervisors, and the arts and humanities are increasingly taking up HDR supervision within project-based HDR groups, reducing isolation, which has been reported as one reason for
HDR student attrition rates (e.g., Bruce, 2009) and was also anecdotally reported of HDR students’ peers, in this current study. Other findings of the literature review that inform the feasibility of trialling a PSVSP are discussed further below in Chapter 3 on outputs and findings.

Technology use and HDR supervision needs analysis

A needs analysis was conducted through in-depth interviews over two phases, as well as brief audio-reflections from some participants in the second phase, to identify the needs of supervisors and students based on their perceptions of the overall HDR supervision experience. These included communication and the development of the supervisor-supervisee relationship, and perceptions about experiences of using technology in the HDR supervision process.

Two researchers who independently undertook the data analysis identified 11 themes. These themes form the headings of the next sections.

Use of technology in the HDR supervision process

As anticipated, the use of technology among study participants varied somewhat; however, the extent of the variance was not great except when it came to using online social networking, which is discussed later. All participants were using what they considered to be basic technology, such as email and telephone for communication and exchange of information. Most were also using Skype for meetings when unable to meet face-to-face or if distance supervision (supervisor and HDR candidate in different locations) was involved. All supervisors reported the use of Word documents using ‘track changes’ and exchanging these via email, Dropbox or during Skype meetings, for sharing written drafts.

General use of technology reported by the study participants included mobile devices and applications, such as mobile telephones, iPads, laptops, and applications such as those for accessing Twitter, video communications, audio recording, and editing documents. Most reported using Skype at least occasionally, and storage and sharing resources through mediums such as Dropbox. All participants used the Internet for information seeking and sharing, as well as research databases and university specific software. Some used social networking mediums such as Wikis, which is discussed further below.

Only two supervisors reported having recently encountered some students who had very little technology background (unable to format Word documents, for example). This was related to groups of students from particular countries, though it was also noted that in terms of technology competencies among postgraduate students “those gaps are narrowing now” [P4SUP] and that increasingly HDR candidates had sufficient technology experience to be able to easily adapt to new technology requirements. At the other end of the scale, some reported their HDR students were advanced users of technology and could teach their supervisors aspects of technology they found useful. For example, one HDR student reported that he had taught his supervisor how to access and use Twitter, and the
supervisor reported subsequently developed an academic Twitter community following, with supervisor and supervisee recounting the way in which their Twitter engagement involved several overlapping academic discipline communities that were sharing research, disseminating new research findings, and exchanging other useful information such as writing and research methodologies.

**Students’ attitude to technology use in the HDR supervision**

Some postgraduate students were perceived as particularly proactive in technology use, such as recording meetings with their supervisors on their mobile telephone for later reference, using social networking sites to seek out others studying in similar areas, and videoconferencing from other countries for their HDR proposal presentations to university panels. With respect to the students who were reported by their supervisor as presenting their proposals using electronic presentation software Prezi, from another country by videoconferencing, that supervisor noted “The two students who presented this way, they really loved it, and they made a lot of effort to create something that looked really quite impressive...and they were competent...confident” [12SUP].

**Supervisors’ attitude to technology use in the HDR supervision**

All of the HDR students in this study reported that their supervisors had open, positive and flexible attitudes towards using technology. Some reported that they had learned about the use of particular technologies from their supervisors, for example “So for the Wikis and things it was from my...supervisors” [P1STU]. Most students also reported having been guided in useful technological supports for their HDR research, such as online research repositories and databases.

Supervisors themselves reported somewhat more varied attitudes towards the use of technology in their academic work. Some observed that it is increasingly a requirement of their academic position that they be flexible and adaptable given university implementation and ongoing evolution of new technologies in teaching, and increasing use of online learning management systems such as Moodle.

Active academic engagement in emergent online social media forums such as Twitter drew the most divergent attitudes towards the use of technology. For example, in regard to online social media such as Twitter, Facebook and blogging, a couple of supervisors and their HDR candidates (from each of the two universities) reported being active in its use for academic work, such as sharing and sourcing research data and the dissemination of research results to the relevant professions and to other academics. At the other end of the scale, another supervisor expressed ambivalence about the place of such media for academic work, stating that “I wouldn’t do it in a professional capacity...when it comes to Twitter, I don’t think I have anything that is so worth saying that anybody would be interested to follow it...I’m kind of hesitant of the role of social media when it comes to a professional capacity” [P1SUP]. Interestingly, this divergence of perceptions expressed about social media was reported in feedback of two early career supervisors of a similar age.
Progress in the use of technology in the HDR supervision

Supervisors reported on the changes they had experienced in the process of supervision due to the use of technology and their own progress in adapting to emergent technologies both for teaching and for HDR supervision and collaboration with colleagues. Some supervisors noted that, as universities are changing their teaching delivery increasingly towards online offerings as well as ongoing technological changes in administration and governance, there is no choice but for staff to keep up and adapt to change. As one supervisor noted “at the university level they are changing systems all the time which requires flexibility to learn different ways of putting your units up” [P1SUP]. Supervisors also reported very recently (in the past 12 to 24 months) they used platforms such as Google Hangouts to collaborate with colleagues internationally. Again, the main difference in terms of scholars’ uptake of emergent technologies was those using social media platforms such as Twitter to disseminate their research and seek knowledge, and those who felt that such platforms were not for academic use. One participant observed that, whilst there is a growing international academic Twitter community, in Australia it is currently somewhat patchy: “in states like NSW there is a very healthy Twitter community...less so in WA...although it’s starting...” [P2SUP].

As aforementioned, what also came through strongly when participants were responding to the question of their perception of their ‘progress’ with using technology in the HDR process, respondents noted the way in which technology affords them “day to day contact, there’s the basic techs which probably were not used very widely 15 years ago but now we absolutely depend on them and couldn’t do the supervision without them” [P12_SUP]. As little as ten to twenty years ago it would have been unlikely, at least in disciplines where laboratory teamwork is not prevalent, to have weekly, let alone daily, contact. Now, however, participants were making comments such as “We decided to increase the frequency of the supervision to make it a more continuous process...to have Skype sessions between the face-to-face sessions” [P6SUP]. What’s more, there is an expectation among HDR students that their supervisors will be readily available, at least via technology. It is now taken for granted, as the following representative quote indicates: “technology’s really important because you can’t meet up face-to-face all the time” [P1STU]. HDR students often spoke of contacting their supervisors by telephone, texting or email for a quick response to questions, day or night, and supervisors reported the need for boundaries in the context of technological communication.

Barriers perceived

In investigating characteristics of a collaborative platform for supervision, such as the project’s conceptual PSVSP, it is critical to consider perceived barriers associated with technology. It is crucial to take into account the perceptions and experiences of current use of technology in the HDR process for the successful piloting and eventual implementation and uptake of any such PSVSP platform. Concerns raised in the interviews are summarised below.

One supervisor reported perceiving that people are generally “quite nervous and scared and apprehensive” about technology and “about the whole PhD...process. I think if you force
them to...do it online, I think you’re adding another complexity to an already complex relationship” [P2SUP]. This supervisor expressed concern that, if a policy was introduced about taking up a particular technology for the HDR process, it may prove counterproductive.

Another issue raised by supervisors was the potential for working longer hours and the perception of being always available to respond to students’ questions via technology, and the extra vigilance required to maintain a work-life balance. Supervisors spoke of their HDR students sending text messages late in the evening expecting prompt answers to questions, and having to create boundaries around appropriate times for Skype meetings and other requests. HDR students regularly expressed how important it was for them to receive quick responses in the context of having fulltime careers, families, and limited hours to work on their research. Increased accessibility of supervisors as a result of technology was viewed as both positive and negative. For example, “...on the one hand while that accessibility can be great for the student...can be kind of a double-edged sword, can’t it?” [P2SUP].

Another concern raised was in relation to HDR students using social media to discuss their research, and the potential problems this could create in the case of people not yet experts in a particular field being quoted as experts in the media, for example, and “being seen to speak with authority on things you don’t actually know much about” [P2SUP]. A couple of supervisors reported potential problems with HDR students’ online profiles being unprofessional in relation to their status as HDR candidates.

Some supervisors reported sensitivity of their postgraduate students in receiving feedback, and that written feedback could appear not only more harsh, but also overwhelming to see many revisions and comments, and importantly, demotivating. It was perceived that this could be managed better face-to-face, though it was also acknowledged that increasingly, at both undergraduate and postgraduate levels, academics are required to provide written feedback of online assessment submissions and that becoming more accustomed to adapting to this form of feedback is a necessity.

Finally, poorly implemented institutionalised use of technology was reported as a commonly experienced barrier and often influenced negative attitudes towards technology. One example that was repeatedly cited was to do with mandatory administrative forms of HDR supervision, in the form of templates online, which were reported as difficult and time consuming. The following quote represents several complaints of this nature, “The problems we have are more with stupid forms – that’s where people see aaah, frustration rather than useful technology” [P3SUP].

Communication between supervisor and supervisee

Email was reported to be by far the most common and often used form of communication. Supervision meetings were usually arranged by email, which some participants reported was ideal as it also served as a written record of events if retained. HDR students all reported receiving prompt responses to questions from their supervisors.
According to responses from all participants about communication, it was not uncommon for communication to occur several times a week by email. It was noted by one long term HDR supervisor that this was in stark contrast to twenty years ago, when common experiences of the supervision process involved perhaps two or three meetings per year over the term of a PhD, as the following supervisor’s comment reflects on a colleague’s experience of undertaking a PhD some years ago: “He met his supervisor maybe 6 or 8 times throughout the whole degree” [12SUP], noting that HDR supervision had since become a much more participatory process.

In one case, communication also occurred via Twitter two to three times a week, which was reported as serving the function of answering quick questions, referring one another to research or other resources, and also contributed to relationship building. This particular supervisor and supervisee were also very active in referring one another to online blogs of academic communities that dealt with aspects of their research areas. The supervisor reported being able to feed links to relevant useful blogs via a tweet, which was reported as a quick and relatively non-intrusive form of communicating by the supervisor and the supervisee. This supervisor reported that those students who were not on Twitter did not regularly get the benefits, of being fed links to topic-relevant academic blogs, given that they were not active in this form of social media. The supervisee reported, with respect to using Twitter to communicate and share information “At first he’s ‘oh no, a waste of time’ and now he’s on it more than me! [laugh], which is great, and I benefit…He disseminates a lot of information through it and we have quick exchanges that would be awkward over email...too formal” [P2STU].

Though almost all participants reported using Skype in the HDR process at least sometimes, there were differing perceptions about how well Skype replaced face-to-face meetings in the supervision process, with one supervisor suggesting that that the notion of replacing face-to-face meetings with Skype altogether in the supervision process was not something that they would entertain and therefore they would likely not be willing to take on distance supervision candidates. Other supervisors reported that almost all of their HDR candidates were in other countries, and these supervisors reported that they believed Skype was very useful for ensuring regular meetings and for relationship building. For example, one supervisor reported “He and I did not actually meet in person until the middle of the first year so to actually meet and have that connection, then it was easy to spark it back up again through the technology” [SUP12].

**Distance supervision**

Unsurprisingly, participants reported that technology facilitated distance supervision for those supervisors and supervisees who were in different locations, either in another part of the same country or in another country. Some also reported using Skype to meet with prospective HDR candidates prior to making a decision as to whether they would be willing to supervise them, for example: “I have used Skype with some prospective students, so some international students where I felt I want to meet this person before saying yes or no to a supervision...” [P1SUP]. And “I just see it as a fantastic tool when it comes to supervising students who are not in the same geographical space as you are” [P1SUP]. Similar sentiments were reported by all but the one supervisor who expressed disinterest in...
distance supervision, and most reported anecdotes about successful relationship building and successful HDR completions with candidates in different locations. The role of technology in facilitating a sense of community among students isolated by distance was acknowledged as a step forward: “that sort of sense of community can be...a potential positive...absolutely” [P2SUP].

Distance HDR students reported technology use such as email, Skype and Dropbox as not only very helpful, but was instrumental for them to undertake their study. One candidate, undertaking his/her HDR remotely from rural Western Australia, reported that though Skype assisted with the supervision process, they felt very isolated undertaking their HDR at a distance and expressed a heavy reliance on their supervisor for support and communication. The following quote is typical of the participant’s audio reflections: “I was so ready to give up as I did feel at that point quite isolated and I always look forward to the times, the supervision communication that I do have...” [P6STU]. Other student participants, however, reported that distance supervision worked well for them and that they would not have been able to undertake their HDR study otherwise, as it allowed them to find the appropriate supervisor for their particular topic, even though they were in different countries. For example: “To me Skype is a great way to stay in touch...to ensure that I’m making progress...not only putting a name to a face, but...discussing challenges and maintaining...motivation” [P8STU].

**Family and work commitments**

A theme that emerged out of the supervisee interviews and reflections was the way in which technology was instrumental in enabling all of the HDR students in the study to take up postgraduate study even though they already had significant commitments such as full or part time work, often in leadership positions, and families. Participants reported being able to work at different times of the day that suited their schedules, for example “…I’m a mother of a one year old and a three year old, I work part-time and I’m studying full-time...my [HDR] work...is in the evenings...So the technology facilitates that ease of being able to still receive feedback” [P3STU].

Also emergent was the lack of time that some HDR candidates have to do their research due to work and family commitments, and the perception some have that the HDR process would be relatively straightforward similar to prescribed coursework degrees. For example, “…when I first started, I thought I’d be able to get this thing done pretty quickly and out the door, but it is a long process and it’s a long term process as well” [P11STU]. Similarly, some supervisors noted that that they had to manage these sorts of perceptions from busy HDR students, such as the following reflection, which represents similar comments by other supervisors in the study:

“Many of them...they’re part-time, they don’t have the time...And some of them, you can tell in those first few months, their attitude...as to whether they’re really going to be a deep thinker or whether they’re going to try and do it in the quickest possible time they can. And getting that balance I think is quite difficult with the time pressures that we now have” [P3SUP].
The supervisor of the candidate who spoke of having the initial perception of getting an HDR successfully completed 'quickly and out the door' noted that in fact progress had been even slower than was needed for this candidate, and expressed how difficult it was to meet with this student given that the student was constantly travelling internationally for his/her senior corporate role. To address progression challenges, regular Skype meetings to facilitate progress and inspire the candidate’s motivation had been initiated. In an action research audio reflection following their first Skype meeting, the supervisor reported, “via Skype…In half an hour we were able to add new data, to analyse the survey, to see what is next in terms of activities, and to reconnect in relation to the whole process”, and “I think it would be a huge relief to have more frequent, short Skype sessions” [P6SUP]. The student, in the audio-recorded action research, reflected that this process of supervision communication was suitable to a busy travel schedule, “I do a lot of conference calls. I manage a team virtually all over the world, so therefore I am using the technology tools constantly” [P11STU].

**HDR supervision pedagogy**

The project team was interested in exploring supervisors’ perceptions of their supervision pedagogy, particularly in relation to aspects such as whether they saw the supervision process as a participatory partnership, and a professional relationship, and the extent to which they perceived technology could facilitate or inhibit these relationships. In relation to pedagogical discussions, the sub-themes of community and relationships more generally, emerged. Supervisors also pointed out that individuals differed and that to an extent, personalities and other individual factors such as work and family commitments, contributed to how supervisor-supervisee relationships and pedagogical approaches were negotiated. Individual diversity was reflected in the responses to questions about supervision pedagogy.

Some supervisors foregrounded the importance of developing in their HDR students initiative for taking control of their work, and adopting a professional approach to the HDR process. For example “one big issue is to enhance their initiative and accountability in the process…the more they show the ability to self-direct the process, the more I withdraw” [P1SUP]. Supervisors reported that some of their HDR students were already professionals in their own fields, and that these relationships were more collaborative than hierarchical. For example, “I have one student…who’s completely self-motivated…works best at a more collegial kind of, you know, sit beside the supervisors as an equal, right?” [P2SUP]. Some supervisors referred to the apprenticeship model: “They’re sort of an apprentice almost, it’s almost an apprenticeship in becoming an expert in a field. And in one sense you are a mentor to them” [P3SUP].

Participants reported different ways that technology facilitated their academic collaborations within their area of research. One supervisor reported that using online communications technology was “absolutely critical” to “feel that you’re a part of that community of researchers” [P1SUP]. Another supervisor reported that an online presence was instrumental in their academic work, “I run my own website, I’m on Twitter…I’ve got over 1,300 followers…which has been really useful for me as a strategy to both connect with other academics and other institutions” [P2SUP]. This supervisor also reported using social
media as a way to generate awareness of, and voluntary participation in their research, as well as being part of online social media professional forums which ensured that research findings could be disseminated in a way that reached those for whom it was intended to make an impact, in a timely manner, rather than remaining in academic circles: “the research should make an impact on...the sort of field in which you work...if it’s not, it’s a waste of time...If you’re only writing for academics...a big ‘who cares!’” [P2SUP].

Some students reported spouses or peers who had withdrawn from PhDs due to feelings of isolation, either social isolation due to being in remote Western Australia, or though city-based, isolation due to a particularly unique research topic. The evidence we saw of recently emerging, and growing, academic uptake of online social media forums may help to arrest such attrition in the future.

**Changes in perceptions or practices**

There was evidence of changes that had been initiated as a direct result of reflecting on technology, pedagogy, and HDR supervision, as an outcome of participation in this feasibility study in the second phase of data collection. Some supervisors reported that it had prompted them to reflect on how they interact and develop relationships with their HDR students, in particular how they provide feedback, and the role of technology, heightening their awareness of how they interact and the impact it may have on the HDR process. One supervisor advised that, as a result of the first interview, they had initiated technological changes to make the HDR process a more participatory one:

“It made me aware...self aware of what I’m doing, and looking into the questions you asked...starting Wiki was the outcome of this interview...Had you not interviewed me that day I don’t think I would have thought of starting this Wiki with students” [P4SUP].

This supervisor reported on the value of the Wiki space for the HDR students, in creating a community of researchers who were sharing methodologies for researching and writing, and having ongoing discussions. It had become “a learning space for these students”, as well as a motivational space, for example that “one student saw that student number two is progressing, and they started talking to each other, it proved to be a motivational factor for other students as well” [P4SUP].

This supervisor reported that the first interview had prompted him/her to consider the use of a Wiki space that he/she could use to invite feedback and constructive criticism about their supervision and communication approach and that this technology may provide a non-confrontational means through which his/her HDR students could be honest and open in a way that some would find difficult face-to-face. The supervisor placed this strategy in the context of the role that developing a good rapport with students may have towards achieving the university’s graduate attributes for career skills required of a professional in the 21st century, noting that the majority of the university’s listed graduate attributes were around “interpersonal skills, people skills, or values based” [P4SUP].
Another supervisor reported that he/she had been reflecting on “the pedagogy of feedback...and whose work it is...how much is co-constructed...and how much is correcting” [P3SUP] with his/her HDR student, who subsequently carried that reflection back to his/her own teaching practice in providing feedback to students.

**Thoughts about participatory super-vision support platform (PSVSP)**

In response to questions and probes about what technologies may assist in the HDR supervision process, though most participants expressed interest and suggestions about how they might envision a platform such as the project’s conceptual PSVSP, a couple of participants were cautionary in their interest. That is, they expressed concerns that additional software being developed as yet ‘another place to go’ and an additional burden of unnecessary and repetitive administrative work to do, could be counterproductive, particularly if it did not have the sophistication for flexibility to cater for the diversity of supervision modes and individual approaches.

Specifically, suggestions for envisioning a PSVSP included the following needs and ideas:

- Address the needs of research writing methodologies and process [all supervisors reported this as a problematic area for some HDR students].
- Provide a platform with co-writing functionality, to include showing revisions in a way that is more efficient than the current ‘track changes’ in MS Word software.
- Provide support to distance HDR students such as online workshop delivery of the kind of workshops that HDR students on campus benefit from.
- A resource repository for HDR students and HDR supervisors: Resources such as how to understand the examination process and what examiners look for in a thesis; resources specific to non English speaking background and international HDR students including social network forums; resources for early career supervisors; links to quality and contextually relevant online candidate blogs and other online resources.
- Links to online HDR research community forums.
- Assistance with motivational and focus strategies.
- An area such as a blog space only for supervisors to interact to be able to discuss challenges and share strategies and support.
- A dynamic repository for all related administrative forms, including research ethics forms, related to the HDR process, in order of requirement according to particular degree being undertaken, always up to date and in the case of forms such as ethics applications, with the functionality to load into co-writing mode and circulated as drafts and edited prior to submission.
- Electronic storage repository for individuals (i.e., previous drafts; submitted forms); supervisor-supervisee communications.
- Project management functionality including time management tools, with milestones and markers able to be set, agreed and adjusted between student-supervisor, adaptable for individual contexts.
- Access to the wider community, in particular, relevant professional stake holders.

Summary of the thematic findings

Although most supervisors referred to the diversity of their HDR students (e.g., cultural, ethnic, international or local, fulltime, part time, independent thinkers or requiring more support and scaffolding, ranges in competence levels and initiative, adept or somewhat nervous about using new technology) the results of this (albeit small) sample showed that, though there is a range of technology competency among student cohorts, the gap appears to be narrowing. At times, the differences among supervisors and supervision styles, as well as among HDR students, were raised directly in relation to technology, and, although not explicitly expressed except by one participant, some appeared to be cautious about a technology developed expressly for HDR supervision. These participants stated that it would be crucial that a PSVSP have the flexibility to suit a range of diverse contexts, and should not inadvertently create homogenisation of research supervision and the HDR process. It is clear that a PSVSP would need to have inbuilt flexibility, and be adaptable and dynamic rather than something that represented ‘fitting square pegs into round holes’, and technology determining the process rather than positively supporting a participatory pedagogical model.

A few participants reported changes as a direct result of participation in this small feasibility study, which indicates that taking the time to reflect was instrumental for some in making positive change, and that a secure supervisors’ online space, where discussion could continue as and when individuals’ time and needs dictated, may be worthy of consideration.

The findings that emerged from the interviews and reflections align with most of the findings of the literature review. For example, supervisors and supervisees referred to community of researchers and community of learners throughout the study. Several concepts that were present in the literature, such as the increased connectedness among supervisors and supervisees and the more intensive supervision, teams of learners, professionals, and researchers, peer learning, and group supervision, were also evident in the interview data.

Similar to the established yet few collaborative online communities of researchers that were found in the literature review (Danby & Lee, 2012), some individual supervisors from this study were initiating their own online academic communities that included their HDR students, without institutional or departmental support.

Where the interviews and reflections the project undertook at the two universities diverge from the literature, however, is that, in this small study, all eight of the HDR students reported that their supervisors were competent and willing to use technology, sometimes initiating the uptake of new technologies, and at other times learning and adopting new
technology from their HDR students. However, a large longitudinal research project (Carpenter, 2012) that was examined in the literature review showed that, according to most of the Gen Y doctoral students in the study found that their supervisors were not very interested or competent in using Web2.0 technologies. The reason for this anomaly may be that in the project’s smaller sample, supervisors volunteered for the study due to confidence and interest in the use of technology, and thus they were more willing to be part of such a study. They were also from a small but diverse number of fields of study (teacher education, educational psychology, and engineering education). Further, technology appears to be evolving exponentially in terms of its uptake in global industries and among individuals, to the extent that what can be seen now is that within 2-3 years, uptake of new technologies increases significantly as people are required to use digital technologies more and more in their everyday lives. Therefore, these findings can be tested in bigger studies in the future.

In brief, interviews showed:

- There is significantly increased and regular contact between supervisors and supervisees that has been facilitated by technology such as email, phone, Skype (more intense supervision).
- The supervisor-supervisee relationship is less hierarchical and more participatory.
- There is an emergent uptake of online social networks such as Twitter, to seek and disseminate research findings.
- There is an increasing necessity for flexibility and willingness to adapt to emergent technology, as tertiary institutions are making ongoing changes in technology for administration, governance, and teaching and learning.
- Some changes were made in supervision pedagogy as a result of participation in this study.
- Most supervisors and HDR students have at least a basic level of IT competency, therefore the higher education environment is ready to adopt a more technological system to support HDR supervision.

**Project dissemination and impact**

**Dissemination and impact to date**

In brief, to date, the following have contributed to the dissemination and impact of this pilot feasibility study:

- Literature review [Paper one]: Maor, D., Fraser, B., & Ensor, J. (Under review). Participatory pedagogy and higher degree supervision: A review of research on the
use of digital technology in doctoral studies. See Appendix D for a sample of the table from the first paper.


- Western Australia Network for Dissemination, Sharing Day, October, 2014, Hosted by Curtin University, OLT.

- The Conversation at Murdoch University, A Celebration of Learning, Poster presentation, September, 2014. *Design of a participatory super-vision support platform for improving higher degree supervision: A feasibility study.* (See Appendix D).

Most significantly, and as aforementioned, as a direct result of participation in the study, some participants have reflected on the supervision process and the role of technology. For example, some participants reported reflecting about how they provide feedback to students, and specifically how best to provide feedback when using technology given that face-to-face feedback is increasingly not possible as more HDR students have work and family commitments and are studying off campus.

One supervisor reported developing a community of researchers with a Wiki space for his/her HDR students. Given that isolation has been reported as one of the reasons for HDR attrition (Bruce, 2009), it may be that institutional support for the emerging online academic social media forums would assist with current challenges of HDR attrition.

More specifically, these findings emerged from the seed grant and are worthy of note based on the literature review and the small-scale study:

- A need for a systematic approach in the use of technology to improve supervision integrated with the development of a participatory methodology for supervision.

- A necessity for flexibility to adapt to emergent technologies, as higher education institutions make continual technological changes in the areas of administration, governance, and teaching and learning.

- With increased IT competency, supervisors and HDR students should be ready to adopt a more technological system to support HDR supervision.
Further dissemination and future impact

This pilot study has shown that there is a climate of readiness for change in relation to the use of digital technology in the HDR supervision process, at least among some supervisors, albeit with some caution that technology does not ‘drive the process’ but, rather, that it can support the process and address some of the current challenges of HDR supervision such as the HDR attrition rate. To this end, future plans for further dissemination and impact include:

- Develop a digital pedagogy to support a participatory model of HDR supervision, in line with 21st century skills requirements, that embraces connectedness, collaboration, teamwork, community, peer learning, and group supervision.

- Develop a technology platform (PSVSP) with industry partner that incorporates the complex web of HDR interaction in an ‘eco-system’ approach, as recommended by Cumming (2010). It must be sufficiently flexible to accommodate the range of disciplines and styles of HDR processes, as well as having the technological adaptability for evolving technologies.

- The PSVSP must support the creation of a community of learners, professionals, and researchers to provide networks and resources for the HDR process, and to reduce isolation and attrition.

- Pilot the PSVP with a faculty or department from one university in Western Australia and one university in Eastern Australia.

- Design, implement and evaluate a professional development program to include supervisors and their students within a participatory model and use of technology.
Chapter 4  Conclusion

It must be noted that there were some limitations to this seed grant study. First, the dependency on a small sample of participants, with some attrition and replacement of participants, means it cannot be considered a representative sample of the wider HDR population. Nevertheless it is a snapshot of one year of experiences and perceptions of our participants in the supervision process, and has provided some important insights into how the HDR supervision process is necessarily changing to adapt to this new millennium, and how these changes can be capitalised on to reduce attrition and meet other challenges in the HDR process. Second, as aforementioned, the body of work researching HDR supervision and the HDR process lacks unified widely agreed theoretical and conceptual frameworks with which to examine phenomena encountered, and draw comparisons across studies.

New approaches to HDR supervision are emerging alongside changing technology and, as Dron (2012) has argued, pedagogy and technology are to a degree entwined and pedagogies in a real sense are technologies. As the project concluded in the literature review, a robust conceptual and theoretical framework is needed for investigating the use of social-learning media in supporting the HDR process. This project examined on a small scale what supervision processes exist that conceptualise participatory learning practices that are facilitated by digital technologies. Cumming’s (2010) ‘eco-system’ approach underpins the conceptualisation of our PSVSP.

The project concluded from the literature review that in the long-term goal of designing a technological platform to improve supervision and meet some of its challenges, an understanding is needed of the factors that facilitate or impede successful good quality and timely HDR completions. Without this understanding, any future implementation of technology for HDR supervision would run the risk of only succeeding in transferring the same problem to a new format rather than positive transformation of the supervision process through the use of relevant emergent technologies.

One requirement that Hammond et al. (2010) also highlighted is the demand for more professionalism and formalisation of research education. Being competent with the use of technology to the extent that individuals can adapt to emerging technologies is now necessary in most professions. Increasingly, as observed in this study, scholars in higher education need to be competent in a range of technologies to be part of their communities of learners, professionals, and researchers. As more people take up distance and part time HDR opportunities, universities will need to meet their needs with more online resources to match the opportunities provided to those on campus.

Although there was some perception in interviews, that universities would be ill-advised to ‘force’ HDR students into using technology, it is increasingly a requirement for professional practice and for those undertaking HDR for a career as academics. Higher education institutions as well as the professions are increasingly reliant on adapting to emerging technologies in order to stay competitive. Beer and Mason’s (2009) study of HDR supervision in a South African university found that supervision needed to evolve to embrace emergent technologies.
Further, as more people take up international education opportunities, institutions need to respond to language needs as well as academic writing needs, which participants of both universities suggested needed to be addressed institutionally. During the study, it emerged that a supervisor from one of the participating universities is developing and piloting an online module for research writing. This will serve HDR students across the university. The supervisor reported that participation in this study had inspired the development of the writing module.

As stated in Chapter 2, the University of Technology, Sydney, project (Hammond et al., 2010) has ten recommendations that are worth pursuing. Of interest to this project were their recommendations for targeted resources for supervisors, for supervisor training and for addressing the different needs of new and experienced supervisors. This seed project aimed to examine the use of technology for the supervision of HDR students. A future project will involve a longitudinal study to evaluate the whole cycle of research education from enrolment to completion over a four-year period. It will involve the design, distribution, implementation and evaluation of innovative uses of eLearning and social media technologies for individual and community use in supervision by building a prototype platform to pilot, and conducting a comprehensive evaluation of it in a number of institutions nationally and internationally.
References


Maor, D., Fraser, B., & Ensor, J. (Under review). Participatory pedagogy and higher degree supervision: A review of research on the use of digital technology in doctoral studies.


Appendix A

Certification by Deputy Vice-Chancellor (or equivalent)

I certify that all parts of the final report for this OLT grant provide an accurate representation of the implementation, impact and findings of the project, and that the report is of publishable quality.

Name: .......................................................... Date: 4/12/2014

Sara de Freitas
### Appendix B

**Description of Review Articles**

<table>
<thead>
<tr>
<th>Publication</th>
<th>Purpose</th>
<th>Methods</th>
<th>Field/Country</th>
<th>Technology</th>
<th>Supervision pedagogy</th>
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<tr>
<td>3. Carpenter (2012)</td>
<td>Study over three years of information-seeking and research behaviour of doctoral students in ‘Generation Y’ (born between 1982 and 1994), educated with limited access to computers and internet.</td>
<td>17,000+ doctoral students, three annual surveys; longitudinal student cohort study.</td>
<td>Interdisciplinary</td>
<td>Social media: Wikis, VOIP, Micro-blogging, Social Bookmarking.</td>
<td>Doctoral students’ take-up of technology, web-based applications, and information services. Supervisors not very interested or competent in latest web technology collaboration applications. Most work alone.</td>
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Appendix C

Interview questions for Phase 1 and Phase 2

Interview Questions

Personal Characteristics

Age:

Gender:

Are you fulltime or part-time?

What is your research discipline?

Are you registered as doing:

Traditional PhD,

PhD by publication,

Professional doctorate,

Do you work on your own in your doctoral research or as a member of a collaborative research team?

Which year of your research are you in?

How are you funded?

HDR training

What types of training in finding or using research information have you received over the past academic year?

Which department or unit of your institution organised and ran the most recent training?

What did this most recent training cover?

What difference has this most recent training made to you and your research?

What type of training would you like to get?

Information technology use

What kind of information technology user are you in your everyday life?

(Internet, mobile phone with applications, social networking, online communication)

Which technologies, provided by your institution, have you used over the past academic year?

- For communication with your supervisor:
- For your own research:

What influenced your decision to use these technologies?

(Suggestions from peers, instruction or suggestions from supervisors, suggestion from library or other staff, saw demonstration about the technology).
Which of the following technologies available on the open web have you used in your research over the past academic year? The students will be given the next two questions on a card for them to tick the answers, allowing them also to comment if they want to.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Passive Use</th>
<th>Active Use</th>
<th>Total Use</th>
<th>Not Used</th>
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<td>Wikis</td>
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<td>Mailing list</td>
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<td>Consumer social networks (Facebook)</td>
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<td>Internet discussion forums</td>
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<td>Academic social network</td>
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<td>Blogs</td>
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<td>Academic social networks</td>
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<td>Social book marking</td>
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Passive Use - participates but not contributes.
Active use - active participation, initiate

Have you had any hands on training in using any of these technologies over the past academic year? (From supervisors, library staff, peers, others – explain)

What is your perception about the use of technology in the supervision process?
In what ways did the use of technology benefit your supervision?

How would you characterise the attitude of your supervisors towards the use of technologies?

What characteristics do you think the technology should include to potentially enhance the supervision process?

What technology would you like to see that will support you in the supervision process?
Interview Questions for supervisors

Needs analysis: What do supervisors need?

A list of criteria for identifying appropriate technologies with potential to enhance the supervision process

Investigate and conduct mapping of available Web2.0 technologies that can assist the supervision process

Can you talk about your particular situation as a supervisor?

Can you give an example of technology that you have used with your HDR student/s. Can you reflect on particular student or two?

What was your purpose in using this application? And how did you use it? Was it helpful, more time consuming or not?

Can you think about particular issue that technology helps you in the supervision?

In what ways has the use of this technology benefited or impeded the supervision process or you as a supervisor?

How does the student benefit from the use of the technology?

How would you characterise the attitude of your students towards the use of technologies for the supervision?

Is that the preferred way of supervision for you?

If we want to introduce particular supportive system that will cater for HDR students and their supervisors, what characteristics do you think the technology should include to potentially enhancing the supervision process?

Are you aware of any pedagogy that you are using in your supervision (not related to technology

Thank you for your participation
Design of a participatory supervision support platform for improving higher degree supervision: A feasibility study

Project leader:
Dr Dorit Maor, Murdoch University
D.Maor@murdoch.edu.au

Changes in the supervision perspectives

Supervision has moved from:
• A model of individual relationships to a team approach.
• Reduces periods of solitary research.
• Provides a panel of supervisors with various forms of expertise
• Evolution from a product-oriented thesis to a process-oriented one, and
• A person-centred to a community-centred approach.
• Emancipate students from supervisory relationship into research relationships.

reflect the views of the Australian Government Office for Learning and Teaching