Title: Wrangling the literature: Quietly contributing to HDR completions

Authors: Jennifer Warburton ^a * and Peter Macauley ^b

^{a.} *Research and Collections, University Library, The University of Melbourne, Australia.*

^{b.} *School of Business IT and Logistics, RMIT University, Melbourne, Australia*

* Corresponding author: Email: jrwarb@unimelb.edu.au

Abstract

Many Higher Degree by Research candidates find the experience of searching the literature overwhelming and stressful. Experienced researchers draw on deep disciplinary knowledge, prior experience, and their networks to locate relevant information and sources.

Inexperienced researchers may lack access to internal roadmaps of terms, authors and methodologies and require informed guidance. Advanced information literacy is a critical factor for student success, particularly to support the literature review process, and the need for effective information management skills has never been greater. The quality of doctoral candidates' literature reviews, and their ability to undertake substantive and 'do-able' research is linked. Whilst do-it-yourself ICT and 'Google-like' search engines have led to easier information access, are HDR students equipped to effectively navigate through, and manage the plethora of research sources available? This paper shares findings and recommendations of a case study profiling PhD candidate usage of the University of Melbourne Library's research consultation service. The study explored whether consultations conducted at the 'point of need' make a difference in the early stages of PhD candidature and questioned whether consultations contribute to improved research ability and successful outcomes. The paper also questions assumptions made by candidates and supervisors in relation to information-related research skills.

Keywords: research consultations, PhDs, doctoral students, outcomes, completions, 'point of need'

Introduction and context

The provision of library-related services to Higher Degree by Research (HDR) students is not a new concept, however, some candidates (and supervisors) may question the need for such services in today's Google-centric environment. While mediated database searching was necessary in the days of dial-up services and assistance was often requested for trawling massive tomes, including Science Citation Index, Index Medicus and Biological Abstracts, current candidates often use search engines to satisfy their requirements. While undergraduates may survive their courses using this technique, it is doubtful the same can be said for postgraduate research students. This is where tailored library sessions for candidates can assist in information seeking and enhancing their scholarly communication for their thesis, especially for the review of relevant literature.

As mentioned above, the delivery of library services to research students is not new (Barrett 2005, Cooke et al. 2011, Frank et al. 2001, Gratch and York 1991, Harrington 2009, Harris 2011, Lee 2004, Moncrieff, Macauley, and Epps 2007, Robertson 2003, Nimon 2002). Yet contrary to the trend of disintermediation (do-it-yourself), the provision of candidate specific training has increased (Green and Macauley 2007, Jastram and Zawistoski 2008, Korobili, Malliari, and Zapounidou 2011), as has the research on the topic. While very little was published on the subject in the pre-electronic era, this has changed greatly with the implementation of web-based services including bibliographic databases. Studies on the topic include Du and Evans (2011), Mantora (2011) and Warburton, (2012). More broadly, Macauley (2001; 2003; 2006; 2012) and Macauley and Green (2009) have undertaken a number of research projects on the relationship of HDR candidates and librarians. In one

study Macauley (2003) sought to establish whether greater input by librarians, especially in the literature review phase of research, would result in improved outcomes for HDR students. One of the recommendations of the study was that a specific librarian be connected with supervisory teams and act as a conduit to scholarly information and communication.

Much of this study relates to information literacy of HDR candidates. The concept of information literacy can be difficult to define. Perhaps the most quoted and enduring description of information literacy has been provided by the American Library Association (ALA Presidential Committee on Information Literacy: Final Report 1989, p.1). Terms such as library skills, bibliographic instruction, reader education, user education, library instruction, library research skills, and information skills are often used synonymously, but incorrectly, with the term information literacy. However, they are a component of information literacy: they do not equate to information literacy *in toto*. In this study, the skills associated with information literacy relate to the ‘... focus on the intellectual processes of information use ... the skills are described as “information based, not library based” [and] ... recognises that the skills are applicable to the library context, but that they can also be used in other information settings’ (Bruce 1997, p. 24).

In another study on doctoral candidates and information literacy, Macauley (2001) found that librarians have taken to the role of information literacy advocates with a missionary type of zeal, particularly within the university sector. While their efforts could be interpreted as honourable, the librarians’ rhetoric underlying the push for greater information literacy has rarely been questioned from within the profession. The study critiqued the role of librarians from the perspectives of doctoral candidates and doctoral

supervisors and suggested while some librarians are perceived as a hindrance, or not needed, the majority of doctoral researchers were in favour of more involvement with librarians to assist with their information literacy. While the study commenced using the 'deficiency' model of information literacy as a basis, the focus shifted in the latter stages to a model based on empowerment—one clearly focused on the needs of the users. Many candidates acknowledged information literacy deficiencies, which was not surprising as only half (49.6 per cent) of candidates claimed to have ever been trained in information literacy skills. Furthermore, only 31.3 per cent of supervisors claimed to have ever been trained. This reinforces the concept of disintermediation or 'do it yourself'. In relation to this, one supervisor claimed: 'certainly, a supervisor is NOT responsible for [information literacy] deficiencies of a student. It is NOT a supervisor's job to provide training. It is a supervisor's job to diagnose deficiencies and to identify solutions'.

The study also indicated that while the proliferation of information, combined with technological advances including the Internet, had made identifying and locating information easier, evaluating synthesizing, and organising information had become more difficult, thus causing a dilemma for researchers.

A decade on, the view of both candidates and librarians regarding the provision of tailored information literacy appears to have changed in favour of a more collaborative endeavour including guidance to identify key papers, authors and terms associated with a topic (Warburton 2012). An example of this is the recent internal review of the University of Melbourne Library's research consultation service.

One of the issues relating to HDR candidature can be a supervisor's assumption that students are information literate and that they know how to proceed with one of their first tasks: the review of relevant literature. Research candidates probably have the greatest information requirements of all students; consequently they have the greatest need for information literacy skills. A prime example is that the review of relevant literature is nearly always a standard chapter of a thesis or dissertation. It is often one of the chapters that causes considerable anguish, especially as the literature review is supposed to be undertaken very early in a student's candidature. In her study on the dissertation literature review, Zaporozhetz (1987, p.132) found that 'advisors [supervisors] ranked the literature review lowest of five identified elements of a dissertation in the amount of time and energy they [the supervisors] expended, and in the level of their expertise'. More broadly, the candidate may not possess the in-depth knowledge of other important matters such as scholarly communication. Exacerbating these challenges is, in many cases, the reluctance of candidates to discuss these important skills with their supervisors, as they might appear to lack knowledge in research and associated disciplinary expertise. Fleming-May & Yuro (2009) found that candidates were acutely aware of the importance of presenting themselves as competent researchers and that many are reluctant to ask faculty for assistance with the "nuts and bolts" aspects of research tools, such as the operation or capabilities of a database.

It is also possible that supervisors may lack up-to-date information literacy skills, bearing out Bruce's findings that '... in practice, candidates appear to receive little assistance from their supervisors [in preparing their literature review]' and she further states 'research candidates, apart from the assistance they receive from their library, fend for themselves'

(Bruce, 1991 p. 103). This lack of guidance has implications for library staff who must then fill in some of the gaps left by the potential lack of assistance from supervisors. While we do not argue these practices are the norm, there appears to be a role for experienced librarians in enhancing the research skills and knowledge of research candidates. According to Barry (1997) doctoral students need a portfolio of services, including one-to-one tutorials; instruction that transcends the 'how to use systems' approach and incorporates advanced skills training in how to optimise use; and training in context related to academic subjects rather than generic training. Training should also attempt to target the needs of students (and supervisors) at their time of need and there is a developmental aspect to acquiring information literacy with a necessary progression over time from basic to more advanced skills. Of course, users may need to be convinced there is something worthwhile to be learnt and the effort is justified.

Candidates are wary of investing time in sessions that may be too general or irrelevant (Fleming-May and Yuro, 2009). Du and Evans (2011) found that PhD researchers returning to study after long breaks of between ten to twenty years may find the pace of workshops too fast, whilst younger PhD students may regard generic workshops as 'too slow' and a 'waste of time'. The suitability, timing and convenience of generic classes for the 'invisible' and often isolated part-time candidate is also questioned. A longitudinal study on the research behaviour and information-seeking practices of British 'Generation Y' doctoral students, found that candidates prefer face-to-face support training and support and often use peers to provide informal training. The study found that generic training content, "...not tailored to their subject area or to their own needs, is generally considered ineffective" (JISC and British Library, 2012 p. 7). In their seminal study exploring how Australian PhD Examiners

assess research theses, Mullins and Kiley (2002) found that the quality of doctoral candidates' literature reviews, their knowledge and their ability to undertake substantive and 'do-able' research was linked.

To meet the highly specific needs of researchers a 'boutique' approach to providing personalised, customer focussed research services is advocated (Priestner and Tilley 2012, Secker 2012). Researchers prefer personalised support driven by their needs that is integrated into their workflows and available at the point of need (Auckland 2012, Warburton 2012). Brief library reference desk encounters and stand-alone library instruction programs do not meet the needs of those faced with overwhelming amounts of information and rapidly evolving technology (Yi 2003). Personal context is the key and much of the adult learning literature tells us that the best interventions are problem-centred, flexible, empathetic, practical and responsive to the experience, readiness and needs of adult learners, with 'teachers' as facilitators. While libraries embrace virtual methods such as chat services, online and video tutorials, to reach and support their patrons, the value and impact of face-to-face services and instruction provided at the point of need shouldn't be underestimated (Gale and Evans 2007, Warburton 2012).

As academic libraries increasingly refocus their efforts on supporting research to align with governmental and institutional research agendas and strategic priorities (Auckland 2012, Brown and Swan 2007, Du and Evans 2011, Kroll and Forsman 2010, Mamtora 2011, Onwuegbuzie and Jiao 2000, Rowlands et al. 2008, Schrader, Shiri, and Williamson 2012, Richardson et al. 2012), the authors suggest that the impact of the 'humble' library research consultation on university research be re-examined.

Research consultations are a 'boutique' service offered by most academic libraries. The very nature of individual research consultations contribute to their success for meeting requesters' information needs: relevancy, specificity, depth, and delivery at a time that suits (Yi 2003). Upon request, researchers can discuss their own research projects or their specific information needs with information professionals who provide customised, nuanced advice and individualised training at the point of need (Attebury, Sprague, and Young 2009, Avery, Hahn, and Zilic 2008, Cardwell, Furlong, and O'Keeffe 2001, Donham and Green 2004, Frank et al. 2001, Gratch and York 1991, Jastram and Zawistoski 2008, Lee 2004, Magi and Mardeusz 2013, Reinsfelder 2012, Robertson 2003, Rothstein 1990, Warburton 2012, Yi 2003).

Research consultations have been shown to be effective individual instruction sessions for researchers who are frustrated by inefficient literature searching techniques, or have come up against other impediments (Magi and Mardeusz 2013). Librarians can advise new and returning-to-study researchers seeking assistance with beginning library research, or counsel those who are anxious or overwhelmed, to find solutions or provide reassurance that they are using relevant resources (Jastram and Zawistoski 2008).

What benefits do bespoke research consultations specifically provide for HDRs? How effective is personalised instruction for 'apprentice researchers' who must develop depth to their disciplinary knowledge and learn the tools of the trade on their way to joining the 'academy'. The authors will now focus on the University of Melbourne Library Research Consultation Service and discuss research undertaken to determine service value for the

University's PhD candidates. The University of Melbourne Research Consultation Service is one of the University Library's premium, resource-intensive services, providing 'point of need' tailor-made training and research-specific information support for more than 1200 researchers each year. The service has a long history, is part of everyday library business, and subsequently is often taken for granted. The impact of the service and its contribution to university research outcomes had not been clearly identified nor publicly acknowledged.

Approach and methods

A study profiling PhD candidate usage of the Research Consultation Service was undertaken for the first time in 2012 and explored whether the service could be seen to contribute to improved research ability and better outcomes for candidates: feasible research project topic selection and refinement; better literature reviews, research rigour and quality, which may lead to improved candidate and supervisor satisfaction; student retention; and timely completions.

The exploratory study queried the effectiveness of personalized in-depth research consultations for developing critical high-level information literacy skills and explored whether research consultations conducted at the 'point of need' made a difference in the early stages of PhD candidature when research topics are being selected, when research questions are being developed; when published research, theories, models, research methodologies are identified and analysed; and when gaps, deficiencies and opportunities in prior research are identified to inform the design of research proposals and to avoid research duplication (Warburton 2012).

A multi-method approach including survey methods was used to profile the Research Consultation Service operated by the University of Melbourne Library. The research questions being asked for this exploratory study determined the methodology used. The research methodology was designed to be easily replicated and used qualitative and quantitative techniques.

The study used self-administered online questionnaires to collect qualitative and quantitative data from the three groups of stakeholders: PhD candidates, PhD supervisors and liaison librarians. Survey Monkey was the online survey tool selected due to ease-of-use, reliability and cost effectiveness. Questionnaires were piloted to ensure appropriate wording of questions, to check for any inconsistencies, and to test functionality in the survey design.

Human Ethics approval for this study was obtained and Plain Language Statements were used to fully inform participants of the research being undertaken. No identifiable personal data was collected and participants were assured that responses were anonymous and unidentifiable at any stage of the research. Due to the nature of data collection written informed consent from participants was not required.

Survey data was downloaded from Survey Monkey for analysis in raw and summary forms. Tallied summaries for survey questions were created from the data providing response totals, percentages, and response counts. Responses were cross-tabulated to enable comparison of subsets of variable data with one or more questions. Cross-tabulated data

was used to compare the responses of different cohorts of respondents to specific questions for example, international / local student cohorts. Analysis of data, based on respondents' answers, was undertaken using Survey Monkey's filtering tool. Filtering was used to organize and view subsets of data to find patterns. The filters were created based on a number of specific answer choices to questions. Qualitative analysis of open-ended questions and comments was undertaken by manual text analysis. To analyse the respondents' written comments, words and phrases were categorized providing insights into their motivations, attitudes, experience, behaviours, and concerns.

Research participants

All PhD candidates at the university were invited to participate in the study. From a total population of 3,471 PhD candidates (UoM PhD enrolment data as at March 2012), seventy-nine eligible PhD candidates participated in the online questionnaire, representing a 2.27% response rate. The survey respondents comprised 68.4% local students and 31.6% international students. Their enrolment status included 77.6% full-time students, 19.7% part-time students, one student with a 'lapsed in good standing' enrolment status and another 'recently withdrawn' student. Of the respondents all international students were enrolled full-time, whilst 67.3% of local students were full-time. The response rates broadly aligned with the university's PhD enrolment by Faculty. For example Medicine, Dentistry and Health Sciences (MDHS) candidates comprise 38% of the University's PhD cohort and also represented the largest group of respondents in the survey. The largest groups of survey respondents came from: MDHS 43.4%; Arts 23.7%; Education 13.2%; and Engineering 12.1%. There were low response rates from Architecture, Building and Planning (ABP), Veterinary Science, and the Melbourne Business School. No responses were received from

candidates enrolled in Law; or the Victorian College of the Arts (VCA) and Melbourne Conservatorium of Music (MCM). Possible reasons for a lack of Law PhDs participating in the survey may be due a lack of awareness of the connection between the University Library Research Consultation Service and the Melbourne Law School's distinctive Law Research Service (operated by the Law Library) which conducts Law research consultations seamlessly within the School. There is no obvious explanation for the lack of responses from the small PhD cohort enrolled within the Victorian College of the Arts and Melbourne Conservatorium of Music, even though they are the largest users of the service according to system records.

In 2012 the PhD supervisor population based in faculties, graduate schools, institutes and hospitals, was estimated to be approximately 2540. The response rate was low, with 32 PhD supervisors participating in the survey, representing 1.25% of the supervisor population. This may have been due to survey fatigue. Supervisor respondents were from Medicine, Dentistry & Health Science (40.6 %), Arts (18.8%) Engineering (15.6%); Victorian College of the Arts and Melbourne Conservatorium of Music (MCM) (6.3%); and 3.1% from each of Land and Environments (MSLE), Science; Education, Veterinary Science, Architecture, Building and Planning (ABP) and; Business & Economics. No responses were received from PhD supervisors in Law.

Whilst the low student and supervisor survey response rates are acknowledged as a limitation of the study, the demographics broadly aligned with university PhD enrolments.

Out of an eligible population of forty-three, thirty-one Liaison Librarians participated in the online questionnaire, providing a response rate of 72%. A number of librarians were on

leave at the time when the survey was run during a non-teaching period coinciding with school holidays. The librarian respondents had liaison responsibilities in the areas of Arts (n10); Medicine Dentistry and Health Sciences (n7); MSLE (n4); Education (n4); Science (n3); Victorian College of the Arts and Melbourne Conservatorium of Music (n3); Veterinary Science (n3); Engineering (n2); ABP (n2); Business & Economics (n1), and Law (n1). It should be noted that some librarian respondents liaised in more than one discipline area (e.g. East Asian librarians).

Findings of the study

The discussion centres around individual library research consultations provided at the 'point of need' and their impact on the skills and knowledge of PhD candidates, and examines the data gathered for evidence of the contribution made to better research outcomes for PhD candidates: research topic selection; the development of feasible research projects; quality literature reviews; research rigour and quality; improved candidate and supervisor satisfaction; and implications for timely completions. We suggest that high level information literacy skills are essential in the early stages of candidature. How do commencing doctoral student rate their information literacy skills? Do they start their degrees with the high-level skills required for doctoral research? There was agreement from candidates, supervisors and librarians that the information skills of many candidates at degree commencement need updating to cope with the demands of the research.

When candidates rated their information literacy skills at commencement there were distinct disciplinary and enrolment status differences. Local students tended to rate their

skills slightly more highly than international students. Slightly more than half (53.3%) of all respondents rated their information literacy skills as 'Less than adequate'. Of these 60% of part-time candidates, Medicine, Dentistry & Health Sciences (63.6%), Education (60%); Engineering (55.6%) rated their information literacy skills as 'Less than adequate'. In contrast Arts students were the most confident of their abilities (66.7%), rating their information literacy skills as adequate or already well developed. Refer to *Table 1 Candidate self-assessment of information literacy skills at commencement of candidature*.

"I thought my skills were well developed but PhD expectations (self, supervisor and institution) much higher than I imagined and hence I have had to learn new skills"

[PhD candidate, Arts, local, full-time]

Seventy-five percent of all PhD candidate respondents reported that they were overwhelmed by the amount of published literature in their field. One hundred percent of Engineering respondents felt overwhelmed, whilst 80% of part-time respondents reported feeling overwhelmed. Library search systems were seen as 'challenging' by 86.7% part-time, 76.2% of international and 78.8% of Medical, Dentistry & Health Science candidates. Some candidates spoke of their experience of information 'chaos', of 'floundering' and of 'random' approaches to locating information. This correlates with the literature on the under-preparedness of some candidates for library research.

"I think it was very hard to find exactly the right information, there is HEAPS of information in general regarding my topic, however nothing specific, so I felt quite overwhelmed by this initially, I think now I have a better handle on the literature

(though still lots of work to do).” ” [PhD candidate, Medicine, Dentistry & Health Sciences, local, full-time]

“I was floundering before I had my library consultations. Excellent at getting me on track.” [PhD candidate, Education, local, part-time]

“Essential service for all students but especially those with AusAid [scholarships] as we come from different experiences and the information is very overwhelming.”
[PhD Candidate, Engineering, international, full-time]

Some candidates weren't overwhelmed but wanted expert assistance, insights or reassurance from information professionals that their search strategies were effective, and that they had not missed important papers.

“A very useful service. The time was well spent. Info chaos sorted. I feel in control of my publications. I am fairly confident that no one else is undertaking my research project.” [PhD candidate, Architecture, Building & Planning, local, full-time]

“Basically because I was worried that I had missed some literature because it seemed odd that so few people had written on my topic, so I went to see what keywords, strategies, databases the librarian would recommend. As it turned out, they didn't find anything.” [PhD Candidate, Arts, local, full-time]

Candidates, supervisors and librarians agreed that individualised instruction at the 'point of need' focused on doctoral candidates' research projects was very effective for assisting candidates to develop required high-level information literacy skills, and provided tangible benefits for candidates such as better literature reviews, research rigour and increased confidence. Other tangible benefits identified included: improved ability to undertake thorough or systematic searching for literature reviews and to formulate or refine research questions.

"It was the best thing I have ever done in helping me identify the appropriate search terms, databases and literature. It helped me move along in my research and get me through the 'literature fog'." [PhD candidate, Medicine, Dentistry & Health Sciences, local, full-time.]

One-on-one project, discipline-specific in-depth training delivered at a pace that suits individual needs and learning styles was highlighted by candidates and librarians. This was contrasted to generic training for multi-disciplinary groups, delivered 'just in case'. Of the candidates surveyed 92.6% said that they preferred one-to-one interactions for personalized assistance over other training formats: group sessions, webinars, recorded presentations.

PhD students used the consultation service at all stages of their candidature, but during Stage One prior to candidature confirmation was the most popular for 82.1% of respondents. Candidates, supervisors and librarians agreed that Stage One prior to Confirmation is the optimal time for consultations and that commencing PhDs should be

encouraged to meet with their liaison librarian within the first six months of candidature commencement.

“At about three months in I am finding my way. The librarians have been very helpful. This survey makes me realise that I need to go back again and ask for more, having made a substantial start on the literature.”[PhD candidate, local, Arts & Medicine, Dentistry & Health Sciences]

PhD candidates reported seeking assistance in consultations for a number of different reasons. More than 50% of all respondents sought help with: library search systems (60.7%); assistance with search terms and keywords (64.7%); identification of key databases (60.7%) and design of a literature searching strategy (55.4%). There were some cohort and disciplinary differences. Education students sought assistance with library search systems (80%) and with search terms and keywords (70%). Whilst Engineering and international cohorts were less likely than other groups to seek assistance with search terms and keywords. Greater numbers of Engineering students sought assistance with the selection of key databases (80%), citation tracking or citation databases (80%), setting up of current awareness strategies (60%), and publishing information (60.0%) than other groups. International students (66.7%) were more likely to seek assistance for EndNote or RefWorks than other cohorts. Refer to *Table 2, Candidate reasons for seeking library research assistance*.

Candidate responses validated previous research, that consulting with librarians can assist with alleviating library anxiety (Cook, 2010; Erfanmanesh, 2011; Onwuegbuzie & Jiao, 2000),

a lack of confidence in library research skills, and difficulties in referencing, or using technology. Off-campus, part-time, 'mature-age' and 'returning-to-study' candidates appreciated the flexible and responsive nature of consultations.

"Returning to study with a gap of ten years. Things had changed greatly." [PhD candidate, Melbourne Business School, local, full-time]

The candidates' most highly rated learnings from research consultations were the ability to: refine their literature searching strategies (96.4%), locate specialized & subject-specific databases (89.3%), track the work of noted researchers (89.3%), identify key journals in the field (85.2%), use current awareness techniques (83.9%) , to undertake thorough or systematic literature searching for the literature review (83.6%). There were no strong disciplinary or cohort differences in the top six. Refer to *Table 3. Candidate views on the perceived benefits and impact of personalized library research consultations*

"Helped me manage the lit search. Without this specialised help I was taking a random approach to locating papers." [PhD Candidate, Melbourne Business School, local, full-time]

The survey asked PhD candidates to reflect on how they had applied the knowledge and skills gained from personalized consultations. Almost three quarters (73.6%) had reported that they had refined their literature searching strategies using Boolean operators and/or used additional search terms and keywords. A high percentage (71.1%) reported increased

confidence that they were undertaking a thorough literature search. Students (67.9%) reported using a wider range of databases and the advanced searching features of those databases (66%). More than half (58.5%) had saved searches and had set up search alerts and table of contents alerts for their key journals, whilst 56.6% had systematically organized their literature and/or bibliographic information.

Supervisors were in agreement that research consultations provided tangible benefits for candidates. Some spoke of the importance of good literature searching, and the relationship to research topic and research question development.

“Good library research skills are essential for nailing a good project in terms of checking out what has already been done and finding a niche to make their own. My students often tell me that nothing has been done in a particular area but I know that they have searched the published lit superficially. The library is a great help in this area.” [PhD Supervisor: Victorian College of the Arts]

“Research questions can change as a result of a good search of the research published.” [PhD Supervisor: Architecture, Building & Planning]

Supervisors valued library research consultations for improving candidate ability to undertake a number of research-related tasks: thorough or systematic searching for literature reviews, find research gaps or opportunities in the published literature, find relevant theories, models, and research methodologies to analyse; formulate or refine their research questions; design feasible research projects; find high impact journals; and to

develop a publishing strategy. A percentage of candidates and supervisors surveyed were unaware of the availability and scope of the current service and the range of librarian expertise.

Interestingly more supervisors (88.9%) than librarians (69.0%) or candidates (46.3%) thought that consultations were beneficial for assisting candidates to develop the skills to find relevant theories, models, and research methodologies to analyse. The research supported prior research that there was an implied expectation that research skill and knowledge would be known at the point of doctoral studies and that some candidates are reluctant to ask their busy supervisors about the 'nuts and bolts' aspects of research.

"Students are loathe to ask me questions about the library research component. I know that some of them struggle to find relevant prior research/studies so I refer them to the Brownless (library) staff. Some students are new to [Dept. name] and have never used Medline or PubMed and need expert guidance to search thoroughly." [PhD Supervisor, Medicine, Dentistry & Health Sciences]

The research explored librarians' views on the effectiveness of individual library research consultations for personalised information literacy instruction. Librarians emphatically agreed that information literacy skill development at the 'point of need' delivered via targeted, personalised consultations based on the candidate's own research topics was very effective. Individualised instruction, librarians reported, could effectively instruct candidates to undertake thorough, systematic searching for their literature review and to locate high

impact journals within their field of research. Most librarians also agreed that candidates would be better able to formulate or refine their research questions, and find research gaps or opportunities in the published literature as a result of enhanced skills. There was less agreement however as to whether candidates could (or should) be helped to find relevant theories, models, and research methodologies to analyse. Librarians were divided over the relationship of consultations and improved candidate ability to design feasible research projects, or to develop publishing strategies and some suggested that this was the role of academic supervisors.

The cultivation of long-term relationships with the PhD cohort is recommended. Indeed some students spoke of ongoing relationships with their liaison librarian who took on a 'coaching' or 'mentoring' role in consultations.

"I still need ongoing support. My librarian is like my mentor." [PhD candidate, Science, international, full-time]

"I have established a good relationship with our Department's librarian, and therefore I readily email a query, it might be quite minor, but it saves me a lot of time to have the support and guidance and best advice." [PhD candidate, Land & Environment, local, full-time]

Insights and understandings

Analysis of the survey data provided valuable insight into service value as perceived by the three stakeholder groups: PhD candidates, PhD supervisors and liaison librarians. Doctoral

candidates are a vital component of the university's research community for between three to six years, even longer if academic or research careers are pursued. Candidates develop research habits during these formative years that will influence their future academic or professional careers. They are one of the user groups with the greatest information requirements in academic libraries and therefore it can be argued that they are a group worthy of targeted research support.

Whilst the resource-intensive nature of 1:1 library research consultations is acknowledged, librarians might consider that they are prioritised over other activities for doctoral students. To be sustainable and to make best use of staff time it may necessitate that consultations for other student cohorts are restricted (e.g. assistance with essay resources for undergraduate and postgraduate coursework students) and that such groups are redirected to online, self-help options.

Effective marketing can improve service profile and visibility. Targeted marketing strategies that highlight expected outcomes for service users and the range of topics that might be covered, are desirable to promote service value to PhD cohorts. The use of real-life user feedback and the promotion of librarian expertise may be useful to build the confidence of potential users.

The value of generic instruction for doctoral candidates needs to be re-evaluated. The appropriateness of such instruction whether in-person or online, delivered at pre-determined times in the year, for groups of candidates with a diverse range of information

literacy skills and varying degrees of expertise and experience, was questioned by study participants and in the literature. The purpose and focus of any generic classes should focus on orientation and induction, highlighting services and resources, for discipline groups and /or be pitched at an advanced level. It is acknowledged however that library 'getting started' orientation sessions may be useful for contributing to a sense of community and addressing isolation for some part-time, international or 'off-campus' students. However, these sessions should be supplemented with personalised 1:1 library consultation opportunities at the 'point of need.'

Face-to-face consultations are highly personalised and shaped by individual communication and presentation style. Regular service reviews and professional development opportunities for librarians should be considered to ensure continuing customer-focussed service quality. Colleagues who understand the complexities of consultations are well placed to be able to offer insights and suggestions drawn from personal experience. Various known as collegial feedback, peer observation or peer-review, the process of pairing with a colleague to review each other's teaching or reference desk work and providing feedback is useful for staff development and delivering quality programs (Farrell 2011; Heinzman and Weaver 2006) and could be useful for improving research consultation service quality.

Librarians providing research consultations to doctoral cohorts need to understand research processes and methodologies, understand how adults learn, and be skilful consultants. Other professional development opportunities for liaison librarians are recommended to ensure service quality.

New technologies provide an opportunity to enhance face-to-face services, and would assist doctoral students located 'off-campus' or 'out in the field', or to assist with immediate needs. Web-based consultation sessions using collaboration media tools would complement other virtual reference services.

Concluding Comments

In a competitive university environment, and as funding for university services is squeezed, it is advantageous for academic libraries to hone their research-support services and articulate their contribution to institutional research outcomes, research income and reputation (Warburton 2012) . Resource-intensive services are scrutinised for return on investment, whilst failure to provide relevant and effective researcher support may marginalise libraries and their services, and ultimately impact on university outcomes (Auckland 2012; Frank et al. 2001; Streatfield, Allen, and Wilson 2010)

As universities aim to improve doctoral completion rates, it is strategic for libraries and indeed other research support services to highlight their contribution to improving candidate outcomes. Personalised or carefully targeted programs and services can contribute to improved student retention (Haddow and Joseph 2010; Mezick 2007). Problem-oriented research consultations based on real needs, scheduled when needs arise, provide greatest impact and efficiencies for researchers. Personalized research consultations focussed on HDR's specific research projects are very effective for developing information literacy competencies needed to undertake and complete higher degrees. Targeted library research support can also assist candidates to develop their disciplinary knowledge, undertake quality research and publish strategically. Academic libraries would

do well to raise the profile of research consultation services. Services should be targeted to all researchers, but aim to get HDRs in the first stage - prior to Confirmation/Formal Review. This is time well spent.

Acknowledgements:

The study discussed in this paper was undertaken for a thesis in 2012 for the Master of Information Management course at the School of Business, IT and Logistics, RMIT University.

References

- American Library Association Presidential Committee on Information Literacy. 1989, *American Library Association Presidential Committee on Information Literacy. Final Report*, Chicago: American Library Association.
- Attebury, Ramirose, Nancy Sprague & Nancy J. Young. 2009. "A Decade of Personalized Research Assistance." *Reference Services Review* 37 (2):2 07-220. doi: 10.1108/00907320910957233
- Auckland, Mary. 2012. *Re-Skilling For Research: An Investigation into the Role and Skills of Subject and Liaison Librarians Required to Effectively Support the Evolving Information Needs of Researchers*. 112, <http://www.rluk.ac.uk/files/RLUK%20Re-skilling.pdf>
- Avery, Susan, Jim Hahn & Melissa Zilic. 2008. "Beyond Consultation: A New Model for Librarian's Office Hours." *Public Services Quarterly* 4 (3): 187-206.
- Barrett, Andy. 2005. "The Information-Seeking Habits of Graduate Student Researchers in the Humanities." *The Journal of Academic Librarianship* 31 (4): 324-331. doi: 10.1016/j.acalib.2005.04.005
- Barry, Christine A. 1997. "Information Skills for an Electronic World: Training Doctoral Research Students." *Journal of Information Science* 23 (3): 225-38.
- Brown, Sheridan & Alma Swan. 2007. *Researchers' Use of Academic Libraries and Their Services: A Report Commissioned by the Research Information Network and The Consortium of Research Libraries* 2007. [cited 4 May 2012]. <http://eprints.soton.ac.uk/263868/>
- Bruce, Christine S. 1991. "Postgraduate Response to an Information Retrieval Credit Course." *Australian Academic & Research Libraries* 22(2): 103-10.
- Bruce, Christine S. 1997, *The Seven Faces Of Information Literacy*. Adelaide: Auslib Press,

- Cardwell, Catherine, Katherine Furlong & Julie O’Keeffe. 2001. "My Librarian: Personalized Research Clinics and the Academic Library." *Research Strategies* 18 (2): 97-111.
- Cooke, Louise, Michael Norris, Nial Busby, Thomas Page, Ginny Franklin, Elizabeth Gadd & Helen Young. 2011. "Evaluating the Impact of Academic Liaison Librarians on Their User Community: A Review And Case Study." *New Review of Academic Librarianship* no. 17 (1):5-30.
- Cooke, Nicole A. 2010. "Becoming an Andragogical Librarian: Using Library Instruction as a Tool to Combat Library Anxiety and Empower Adult Learners." *New Review of Academic Librarianship* 16 (2): 208-227. doi: 10.1080/13614533.2010.507388
- Donham, Jean & Corey Williams Green. 2004. "Perspectives on ... Developing a Culture of Collaboration: Librarian as Consultant." *The Journal of Academic Librarianship* 30 (4): 314-321. doi: 10.1016/j.acalib.2004.04.005
- Du, Jia Tina & Nina Evans. 2011. "Academic Users' Information Searching on Research Topics: Characteristics of Research Tasks and Search Strategies." *The Journal of Academic Librarianship* 37 (4): 299-306. doi: 10.1016/j.acalib.2011.04.003
- Erfanmanesh, Mohammadamin. 2011. "Use of Multidimensional Library Anxiety Scale on Education and Psychology Students in Iran." *Library Philosophy and Practice (e-journal)* . Paper 563. <http://digitalcommons.unl.edu/libphilprac/563>
- Farrell, Kelly. 2011. *Collegial Feedback on Teaching: A Guide to Peer Review*. Centre for the Study of Higher Education, University of Melbourne.
- Fleming-May, Rachel & Lisa Yuro. 2009. "From Student to Scholar: The Academic Library and Social Sciences Phd Students' Transformation." *Portal: Libraries and the Academy* 9 (2):199-221.
- Frank, Donald G., Gregory K. Raschke, Julie Wood & Julie Z. Yang. 2001. "Information Consulting: The Key to Success in Academic Libraries." *Journal of Academic Librarianship* 27 (2): 90-96.

- Gale, Crystal D. & Betty S. Evans. 2007. "Face-to-Face: The Implementation and Analysis of a Research Consultation Service." *College & Undergraduate Libraries* 14 (3): 85-101. doi: 10.1300/J106v14n03_06.
- Gratch, Bonnie G & Charlene C York. 1991. "Personalized Research Consultation Service for Graduate Students: Building a Program Based on Research Findings." *Research Strategies* 9 (1): 4-15.
- Green, Rosemary & Peter Macauley. 2007. "Doctoral Students' Engagement with Information: An American-Australian Perspective." *Portal: Libraries and the Academy* 7 (3): 317-332.
- Haddow, Gaby & Jayanthi Joseph. 2010. "Loans, Logins, and Lasting the Course: Academic Library Use and Student Retention." *Australian Academic & Research Libraries* 41 (4): 233-244.
- Harrington, Marni R. 2009. "Information Literacy and Research-Intensive Graduate Students: Enhancing the Role of Research Librarians." *Behavioral & Social Sciences Librarian* 28 (4): 179-201. doi: 10.1080/01639260903272778
- Harris, Colleen S. 2011. "The Case for Partnering Doctoral Students with Librarians: A Synthesis of the Literatures." *Library Review* 60 (7): 599-620. doi: 10.1108/00242531111153614
- Heinzman, Mary & David Weaver. 2006. "Floating and Idea: Peer Observations Across the Mississippi." In *Reference Assessment and Evaluation*, edited by Tom Diamond and Mark Sanders. New York: Haworth Information Press.
- Jastram, Iris & Ann G. Zawistoski. 2008. "Personalizing the Library via Research Consultations." *The Desk and Beyond: Next Generation Reference Services*, 14-24. Chicago, IL: Association of College and Research Libraries.
- JISC & British Library. 2012. *Researchers of Tomorrow: The Research Behaviour of Generation Y Doctoral Students*. <http://www.jisc.ac.uk/publications/reports/2012/researchers-of-tomorrow.aspx>.

- Korobili, Stella, Aphrodite Malliari & Sofia Zapounidou. 2011. "Factors That Influence Information-Seeking Behavior: The Case of Greek Graduate Students." *The Journal of Academic Librarianship* 37 (2): 155-165. doi: 10.1016/j.acalib.2011.02.008
- Kroll, Susan & Rick Forsman. 2010. *A Slice of Research Life: Information Support for Research in the United States*.
<http://www.oclc.org/research/publications/library/2010/2010-15.pdf>
- Lee, Deborah. 2004. "Research Consultations: Enhancing Library Research Skills." *The Reference Librarian* 41 (85):169-180. doi: 10.1300/J120v41n85_13
- Macauley, Peter. 2001. *Doctoral Research and Scholarly Communication: Candidates, Supervisors and Information Literacy*. PhD thesis, Deakin University.
- Macauley, Peter. 2003. *Evaluation of the Higher Degree by Research (HDR) Pilot Project*, Geelong: Deakin University Library.
- Macauley, Peter. 2006. "The Librarian -The Candidate's Forgotten Friend" In *Doctorates Downunder: Keys to Successful Doctoral Candidature in Australia and New Zealand*, edited by Carey Denholm, and Terry Evans, 50-58. Melbourne: ACER Press.
- Macauley, Peter. 2012. "Collaborating to a Higher Degree: Challenging Practitioners and Academics to Research Together." *Keynote Address to RAILS8, the Research Applications in Library and Information Studies Conference*, June 2012, Adelaide.
- Macauley, Peter & Green, Rosemary. 2009 "Can Our Relationships be Reconceptualized? Librarians, Information Literacy, and Doctoral Learners", *Journal of Education for Library and Information Science*, 50(2), pp. 68-78.
- Magi, Trina J., & Patricia E. Mardeusz. 2013. "Why Some Students Continue to Value Individual, Face-to-Face Research Consultations in a Technology-Rich World." *College & Research Libraries*, 74(6), 605-618.
- Mamtora, Jayshree. 2011. "Thinking Big Picture: Meeting the Needs of Researchers In Northern Australia." *Australian Academic & Research Libraries* 42 (2): 88-102.

- Mezick, Elizabeth M. 2007. "Return on Investment: Libraries and Student Retention." *The Journal of Academic Librarianship* 33 (5):561-566. doi: 10.1016/j.acalib.2007.05.002
- Moncrieff, Joan, Peter Macauley & Janine Epps. 2007. "'My Universe is Here': Implications for the Future of Academic Libraries From the Results of a Survey of Researchers." *Australian Academic & Research libraries* 38 (2): 71-83.
- Mullins, Gerry, & Margaret Kiley. 2002. "'It's A Phd, Not a Nobel Prize': How Experienced Examiners Assess Research Theses." *Studies in Higher Education* 27 (4):369-386.
- Nimon, Maureen. 2002. "Developing Lifelong Learners: Controversy and the Educative Role of the Academic Librarian." *Australian Academic & Research Libraries* 33 (1): 14-24.
- Onwuegbuzie, Anthony J. & Qun G. Jiao. 2000. "I'll go to the Library Later: The Relationship Between Academic Procrastination and Library Anxiety." *College & Research Libraries* 61 (1):45-54.
- Priestner, Andy & Elizabeth Tilley, eds. 2012. *Personalising Library Services in Higher Education : The Boutique Approach*. Farnham, Surrey, England: Ashgate.
- Reinsfelder, Thomas L. 2012. "Citation Analysis as a Tool to Measure the Impact of Individual Research Consultations." *College & Research Libraries* 73 (3): 263-277.
- Richardson, Joanna, Therese Nolan-Brown, Pat Loria & Stephanie Bradbury. 2012. "Library Research Support in Queensland: A Survey." *Australian Academic & Research Libraries* 43 (4): 258-277.
- Robertson, Sabina. 2003. "Designing And Delivering Information Services to Postgraduate Students: A Case Study." *New Review of Information and Library Research* 9 (1):123-134. doi: 10.1080/13614550410001687963a
- Rothstein, Samuel. 1990. "Point of Need/Maximum Service." *The Reference Librarian* 11 (25-26): 253-284. doi: 10.1300/J120v11n25_11.
- Rowlands, Ian, David Nicholas, Peter Williams, Paul Huntington, Maggie Fieldhouse, Barrie Gunter, Richard Withey, Hamid R. Jamali, Tom Dobrowolski & Carol Tenopir. 2008.

"The Google Generation: The Information Behaviour of the Researcher of the Future." *Aslib Proceedings* 60 (4): 290-310.

Schrader, Alvin M., Ali Shiri & Vicki Williamson. 2012. "Assessment of the Research Learning Needs of University Of Saskatchewan Librarians: A Case Study." *College & Research Libraries* 73 (2):147-163.

Secker, Jane. 2012. Digital Literacy Support for Researchers: The Personalised Approach. In *Personalising Library Services in Higher Education: The Boutique Approach*, edited by Andy Priestner and Elizabeth Tilley. Farnham, UK: Ashgate/Gower.

Streatfield, David, David Allen & Tom Wilson. 2010. "Information Literacy Training for Postgraduate and Postdoctoral Researchers: A National Survey and its Implications." *Libri* 60 (3): 230-240.

Warburton, Jennifer. 2012. *Making a Difference: Library Research Consultations and Their Contribution to Better Outcomes for Phd Candidates*. Thesis, School of Business IT and Logistics, RMIT University.

Yi, Hua 2003. "Individual Research Consultation Service: An Important Part of an Information Literacy Program." *Reference Services Review* 31 (4):342-350.

Zaporozhetz, Laurene E. 1987. *The Dissertation Literature Review: How Faculty Advisors Prepare Their Doctoral Candidates*, Thesis, University of Oregon.

Table 1. Candidate self-assessment of information literacy skills at commencement of candidature

Candidate self-assessment of information literacy at commencement	% of all PhD respondent s (%)	Internat'l PhD respondent s (%)	Local PhD respondent s (%)	MDHS PhD respondent s (%)	Arts PhD respondent s (%)	Engineering PhD respondent s (%)	Education PhD respondent s (%)
Already well developed	16.0	8.7	19.2	6.1	16.7	33.3	30.0
Adequate	30.7	26.1	32.7	30.3	50.0	11.1	10.0
Need updating	40.0	47.8	36.5	48.6	16.7	44.4	40.0
Very out of date	9.3	13.0	7.7	6.1	11.1	11.1	20.0
Non-existent	4.0	4.3	3.8	9.1	5.6	0.0	0.0

Table 2. Candidate reasons for seeking library research assistance

Reasons for seeking library research assistance	% of all PhD respondents	Internat'l PhD respondent	Local PhD respondent	MDHS PhD respondent	Arts PhD respondent	Engineering PhD respondent	Education PhD respondent
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Assistance with search terms & keywords	64.3	41.7	70.5	64.0	57.1	40.0	70.0
Assistance with library search systems	60.7	66.7	59.1	52.0	50.0	60.0	80.0
Identification of key databases	60.7	58.3	61.4	56.0	57.1	80.0	50.0
Design of a literature searching strategy	55.4	41.7	59.1	64.0	42.9	60.0	50.0
EndNote or RefWorks	48.2	66.7	43.2	32.0	57.1	40.0	60.0
General orientation to library services & resources	39.3	41.7	38.6	32.0	42.9	20.0	40.0
Citation tracking or citation databases	39.3	41.7	38.6	36.0	28.6	80.0	30.0
Setting up current awareness strategies	37.5	33.3	38.6	24.0	42.9	60.0	40.0

Locating specific resources	32.1	16.7	36.4	12.0	42.9	60.0	40.0
Locating specialized collections, e.g. theses, data sets	19.6	8.3	22.7	12.0	21.4	40.0	10.0
Publishing information: key journals in field, impact factors, identifying quality publishers	17.9	33.3	13.6	16.0	14.3	60.0	10.0
Referencing style assistance	16.1	25.0	13.6	12.0	21.4	20.0	10.0
Information management strategies	12.5	16.7	11.4	8.0	21.4	40.0	0.0

Table 3. Candidate views on the perceived benefits and impact of personalized library research consultations

Individual consultations can assist you to (agreed)	% of all PhD respondents (%)	Internat'l PhD respondents (%)	Local PhD respondents (%)	MDHS PhD respondents (%)	Arts PhD respondents (%)	Engineering PhD respondents (%)	Education PhD respondents (%)
Refine literature searching strategy	96.4	100.0	95.5	100.0	100.0	80.0	90.0
Located specialized & subject-specific databases	89.3	83.3	90.9	88.0	92.9	80.0	60.0
Track the work of noted researchers	89.3	83.3	90.9	88.0	92.9	80.0	90.0
Identify key journals in the field	85.2	100.0	81.0	83.3	100.0	80.0	70.0
Use current awareness techniques	83.9	83.3	84.1	76.0	85.7	80.0	90.0
Undertake thorough or systematic literature searching for the literature review	83.6	75.0	86.0	88.0	92.3	80.0	60.0
Find gaps or opportunities in the published literature	59.3	66.7	57.1	62.5	69.2	60.0	50.0
Formulate or refine your	57.4	75.0	52.4	54.2	61.5	60.0	50.0

research questions							
Develop a publishing strategy	53.7	50	54.8	47.8	50	60.0	60.0
Find relevant theories, models & research methods to analyse	46.3	68.3	42.9	45.8	53.8	60.0	30.0
Design feasible research projects	44.4	58.3	40.5	29.2	76.9	60.0	40.0
Write the literature review	44.4	58.3	40.5	41.7	53.8	60.0	30.0

Minerva Access is the Institutional Repository of The University of Melbourne

Author/s:

Warburton, J;Macauley, P

Title:

Wrangling the Literature: Quietly Contributing to HDR Completions

Date:

2014-01-01

Citation:

Warburton, J. & Macauley, P. (2014). Wrangling the Literature: Quietly Contributing to HDR Completions. AUSTRALIAN ACADEMIC & RESEARCH LIBRARIES, 45 (3), pp.159-175.
<https://doi.org/10.1080/00048623.2014.928992>.

Publication Status:

Accepted

Persistent Link:

<http://hdl.handle.net/11343/40992>