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LIBRARY RESEARCH SUPPORT IN QUEENSLAND: A SURVEY

Joanna Richardson, Therese Nolan-Brown, Pat Loria, Stephanie Bradbury

University libraries worldwide are reconceptualising the ways in which they support the research agenda in their respective institutions. This paper is based on a survey completed by member libraries of the Queensland University Libraries Office of Cooperation (QULOC), the findings of which may be informative for other university libraries. After briefly examining major emerging trends in research support, the paper discusses the results of the survey specifically focussing on support for researchers and the research agenda in their institutions. All responding libraries offer a high level of research support, however, eResearch support, in general, and research data management support, in particular, have the highest variance among the libraries, and signal possible areas for growth. Areas for follow-up, benchmarking and development are suggested.

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INTRODUCTION

In mid-2011 the Queensland University Libraries Office of Cooperation (QULOC) requested its Research Support Working Party to (1) conduct an environmental scan of best practice, particularly internationally, and (2) report on comparative models for supporting researchers and their universities' research agenda among the member QULOC libraries.

The thirteen member institutions of QULOC are: Australian Catholic University, Bond University, Charles Darwin University, Charles Sturt University, CQUniversity, Griffith University, James Cook University, Queensland University of Technology, Southern Cross University, University of New England, University of Queensland, University of Southern Queensland, and the University of the Sunshine Coast. The State Library of Queensland is an observer.

Although the resultant report, entitled "Research Support Environmental Scan", was designed for internal QULOC purposes, a number of external professionals subsequently expressed interest in its content. This paper expands on the original report submitted in June 2012. After briefly examining the literature on the principal emerging themes relevant to research support by academic libraries, this paper reports on a survey conducted among the member QULOC libraries to determine their respective levels of support for major research activities. The paper concludes with a discussion of key findings and the potential for follow-up benchmarking initiatives.

LITERATURE REVIEW

National and International Drivers for Change

In a world where knowledge, and its application, is seen as a key to global competitiveness, national prosperity is underpinned by knowledge innovation (O'Brien 2010, 1). Fundamental to that innovation is the dissemination of research findings. Within this context the concept of research output has been expanded to include not only the published works but also the research data and techniques associated with the research. Governments worldwide are investing in national research information infrastructures to drive national innovation. Because universities clearly have a central role in the generation of knowledge and innovation, they are major stakeholders in national innovation strategies.

In addition Australian universities—like their international counterparts—are measured in university league tables such as The Times, the Shanghai Jiao Tong, and Webometrics (Ranking Web of World Universities), where rankings have become important in such a highly competitive environment for attracting the best researchers, students, and educators. Similar to initiatives already rolled out in the UK and New Zealand, the Australian government has implemented Excellence in Research for Australia (ERA), a national research evaluation initiative which is designed to provide benchmarking data

for Australian universities compared with international measures. As a result government funding and policy guidelines are placing pressure on universities to increase the accessibility of their research output. Clearly the major objective is to drive substantial growth in national productivity.

These drivers are having a profound influence on the development of institutional research frameworks which can help (1) researchers maximise their use of the resources available for research, and, (2) universities maximise the value of their investments in research so as to increase their research impact worldwide.

Libraries' Response to the Research Agenda

Libraries have traditionally seen their role as "one of collection building for the future as much as about current provision" (Law 2009, 79). This role is now being challenged by a scholarly and communication landscape which has changed profoundly and irrevocably. Certainly the very environment in which research is being conducted and disseminated is undergoing rapid and extensive change. University libraries are faced with the challenge of managing these external changes in order to remain responsive and vital within their organisations. In these transformative times they are re-thinking the ways in which they engage with the research processes within their parent institution.

At the institutional level, libraries will want to work more closely with Research Offices to review their provision of support for researchers (Research Information Network 2010), while "establishing the vital role they play in the knowledge creation process" (Tenopir et al. 2012, 4). In the new paradigm of collaboration and partnerships, libraries should emphasise proactive outreach and engagement by taking an active role as conveners among the different stakeholders (Luce 2008) as well as considering collaborative initiatives with external entities (Potter et al. 2011). University libraries need to position themselves within their parent organisation to demonstrate value (Lougee 2009, Oakleaf 2010,ACRL Research Planning and Review Committee 2012).

Lowry (2009, 6) advocates the "radical reconfiguration of research library organizations and services" along with an increasingly diverse and talented staff to respond to the rapidly changing environment. Libraries may be part of new hybrid organisations which will emerge as a result of tackling new support paradigms (Luce 2008). Library staff have a key role in assisting other information specialists to ensure the adoption and usage of technical innovations for research support (Krafft et al. 2010). In this new world there are opportunities to "reshape the library staff in dramatic fashion" (Sennyey et al. 2009, 255).

Whereas Puente (2010) and Johnson (2010) discuss some of the skills and competencies required in the new roles which are evolving, MacColl (2010) outlines how the strategic role which the library

should play can be aligned to skills which are currently lacking in many universities. In a forthcoming ARL report on transforming liaison roles, Williams and Jaguscewski will focus on "identifying emerging roles, determining what work to let go of, designing supportive institutional structures, and ensuring that liaisons have needed skills and knowledge."

"Academic libraries can support research by developing and aggregating discipline-based tools, providing customized services, and emphasizing user-centered services" (Kroll and Forsman 2010, 18). This may entail embedding information specialists, with relevant subject-based research experience, in departments and research teams (Research Information Network 2010,University Leadership Council 2011). Researchers need to be recognised as both users and creators of an expanding range of digital information (Williams and Pryor 2009, 46). As Borgman (2010, 13) so aptly encapsulates the new paradigm: "The role of libraries in research institutions is evolving from a focus on reader services to a focus on author services".

The Importance of Research Data

As scholarly practices have been changed by the application of advanced information technology, various terms have evolved to succinctly describe the new methods and approaches. In the late 1990s, the UK Research Councils used the term *e-Science* to describe global collaboration in key areas of science and the next generation of infrastructure that would enable it. It encompasses computationally intensive science that is carried out in highly distributed network environments or that uses immense data sets that require grid computing (Hey 2002, 1017). In the US the term *cyberinfrastructure* has been used to describe the new research environments that support advanced data acquisition, data storage, data management, data integration, data mining, data visualisation and other computing and information processing services over the internet (Gold 2007, 4). In Australia and other countries the term *eResearch* extends e-Science and cyberinfrastructure to other disciplines, including the humanities and social sciences, and denotes the use of information technology to support existing and new forms of research (Cook 2010). As Lynch (2008, 74) suggests, it is a more inclusive term.

Governments worldwide are faced with the challenge of creating research e-infrastructures to not only manage but also make accessible and discoverable increasingly large amounts of research data. Universities in turn are under pressure to ensure that their research strategies and support services are aligned with these national imperatives.

Researchers and information professionals struggle to respond to eResearch challenges including the deluge of digital research data, the importance of collaboration coupled with international global competitive pressures to increase research impact. Both governments and funding agencies are promoting freely available,

publicly-funded research findings. Mandates by funding bodies such as the National Institutes of Health (NIH), the Medical Research Council, the Wellcome Trust, the National Science Foundation and—in Australia—the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) demonstrate the recent change in funding rules based on new research paradigms. In addition many major research funders worldwide either currently have or are implementing policies that require grant holders to submit data management plans for formal approval and to manage their data in accordance with those plans. The National Science Foundation (2010), for example, has mandated that data management plans will be subject to peer review.

A report published by The Advisory Board Company (University Leadership Council 2011, xiii) on "Redefining the Academic Library" states:

> New rules from the National Science Foundation and other research funders will increasingly require faculty to think more carefully about organising, storing, and describing their research data. This is a perfect opportunity for librarians at research institutions to play new roles in shepherding researchers through effective stewardship of their work and in connecting various stakeholders on campus (from computing and legal services to grants and administration) in an effort to comply with evolving research standards.

The view that the academic librarian is ideally equipped to support data curation (Furlough 2009, Lowry et al. 2009, Walton 2010, Christensen-Dalsgaard 2012) is gaining acceptance. The role of the academic librarian can be expanded to include involvement in "early planning and data-modeling phase of eResearch" (Luce 2008, 44) as well as curation and access (Borgman 2010). In a 2011 review of the trends and issues affecting academic libraries in higher education in the US, the authors state: "Data curation presents opportunities for finding new ways to communicate the value of the skills librarians already possess and in developing roles that were previously not associated with librarians" (ACRL Research Planning and Review Committee 2012, 312). In a response to the recently initiated National Science Foundation Data Sharing Policy, Hwse and Holt (2010) outline a new leadership role for academic libraries including services such as data consultation.

Within Australia four universities have documented their approaches to rethinking support for research in their respective institutions, with support for eResearch as a primary driver. At the University of New South Wales (Frances et al. 2011), the Academic Services staff have developed expertise in research metadata, open access publishing, and eResearch infrastructure. The Library has strategically focused on data librarianship and positions havebeen created to develop data librarians, and strategies employed to develop data librarianship expertise within the Library's existing workforce.

Burrows and Croker (2012) outline the context and rationale for a new

approach to the management of eResearch services and products, which was introduced within Information Services at the University of Western Australia in 2011. This has involved creating a unit that sits at the intersection of the library and the IT support models. The anticipated benefits include "cross-fertilisation of knowledge and services based on the synergies between research analytics, data management, research outputs and eResearch systems."

Sparks et al. (2012) discuss how Information Services at Griffith University is linking support for research, including eResearch services, within an integrated structure that combines scholarly information and library services. At Swinburne University the Library has established new positions to carry out research support activities, including research data management support. Parker (2012, 12) concludes: "Closing the gap in the research lifecycle, libraries have now found a way to apply their skills in information management to the experimentation, analysis and data collection stages of research."

The Research Support Working Party drew upon the trends and developments discussed above to inform its report to QULOC.

METHODOLOGY

Craig Littler, former Library Services Manager at Southern Cross University, was instrumental in designing an Excel template –entitled Mapping Research Support– for capturing important information about how QULOC libraries deliver services to their respective research communities. The intention was to cover support activities associated with the major aspects of the research lifecycle. While there are many variations depicted in the literature, a useful example is one adapted by Simon Fraser University Library (2012) from the United Kingdom's Joint Information Systems Committee (JISC).

The template contained broad headings ranging from tracking research impact to research collection development to assistance with research grant applications. An additional column entitled "Further Comments / Information" was provided. The expectation was that each Working Party member would provide as much detail in the form of free text as they considered appropriate for each heading. A trial was run with the participation of Southern Cross University, Griffith University and Queensland University of Technology. The headings were further refined to incorporate feedback from the trial.

All QULOC member libraries, through the Research Support Working Party, were then invited to complete the Mapping Research Support template (Appendix A). Responses were received from all thirteen libraries in the first quarter of 2012. A detailed analysis of these results was undertaken by Therese Nolan-Brown (Griffith University), Pat Loria (University of Southern Queensland) and Stephanie Bradbury (Queensland University of Technology).

RESULTS

The percentages provided in this section are calculated on the

actual number of responses entered for each heading in the master spreadsheet. In most cases all 13 libraries entered a response. Each heading below corresponds to the same heading as it appeared in the spreadsheet sent to member libraries for completion.

University Context

In all responding universities, university research planning and management is ultimately the responsibility of the respective Deputy Vice Chancellor (DVC) or Pro Vice Chancellor (PVC) of Research in consultation with the Vice Chancellor and the University Executive. The DVC/PVC (Division of Research) oversees the research structure, management, administration and development of the university's research agenda. The Division of Research provides leadership and direction for all aspects of research, including developing and implementing research policy, supporting research culture, and identifying and fostering research strength. Research offices manage the administration and management of research activities, including funding, grant applications, and the reporting of research performance data for research evaluation exercises such as Excellence in Research for Australia (ERA) and the annual Higher Education Research Data Collection report (HERDC). All university libraries have been an active partner in ERA; some administer HERDC to completion.

A Graduate School of Research, Research Students Centre, Office of Research or an Office of Higher Degrees manages the administration of research students and any training opportunities provided to them.

Research Support Plan / Strategy

Library structures for research support services range from individual faculty librarian support for researchers to library representation on university research committees. All libraries engage and liaise with their Division of Research; ERA has forged strong bonds between repository staff and Offices of Research.

The library's research support portfolio either rests with an associate director or is shared across several leaders of the library. Research support individuals and teams are embedded into various sections of library organisational structures, reporting to a director or associate director (or more than one). The names given to research support services also vary, for example, Research Support and Copyright or Research Services, but more often than not, they are offered as part of a wider service, such as Information Services or Academic Services.

Specialised teams or individuals include research support librarians, repository officers, and copyright staff. Specialised services include the provision of support to research offices for ERA/HERDC publications reporting. Libraries also collaborate with other research support stakeholders, including information and communication technologies (ICT) departments, student centres, and commercialisation offices as required. The University of the Sunshine Coast Library, for example,

shares with their Office of Research the position of Research Information Coordinator. University of Southern Queensland Faculty Librarians are embedded one day per week in their respective faculty. Another university has indicated that "ties with Research Services are being strengthened."

77% (10 out of 13) libraries have research support plans in place. Of the remaining three, one has a draft version and the other two have no plans.

Research Support Roles

62% (8) of respondents reported the inclusion of dedicated research positions which could include a research librarian, research coordinator or a research support team. Of these, most have responsibility for the digital (institutional) repository as well as faculty research support; some have responsibility for ERA and HERDC as well. 38% (5) undertake Research Support within Faculty Liaison roles. Research support roles include Copyright and Repository Officers (or librarians), and an eResearch Access Coordinator.

As expected, larger universities have dedicated research support roles, whereas at smaller and regional universities faculty librarians and other library staff provide research support more holistically. As an example, the University of New England stated: "All librarians provide research support to Schools with Faculty Librarians also having a strategic involvement at Faculty level. We do not have a librarian with sole responsibility for research support."

Consultation with Researchers

Most faculty librarians and research support roles consult directly with research students, researchers, and research centre / institute staff. In two cases, librarians in research support roles deal with DVCs, ADRs (Associate Deans, Research), and Directors of Research Offices and have a training and support role with faculty librarians, who deal directly with the stated groups. In one case, it is the Associate Director, Library Services, who liaises with ADRs and institute directors.

Library Liaison with Research Division

Most libraries (92%) report representation on research committees or equivalent boards, or regular engagement through formal meetings. This varies greatly between libraries, reflecting their different organisational structures and priorities. Liaison with university research offices and committees is conducted by a wide array of library representatives, from library executives to liaison librarians. At Queensland University of Technology, the Associate Director Library Services meets regularly with the Director, Office of Research; at the University of the Sunshine Coast, the Information and Research Coordinator attends Office of Research monthly meetings.

Tracking Research Impact

62% (8) of respondents provide a bibliometrics analysis services for individuals, groups and institutional benchmarking. One library is engaged in a trial service and 38 % (5) provide a less formal service that offers advice and training on tools for tracking impact and is supported by the library website, workshops and one-to-one support. Most libraries have the resources and capacity to provide bibliometric analysis at the individual, group, and institutional levels. The emphasis of bibliometric analysis is on traditional citation metrics, such as the h-index.

The University of Southern Queensland Library is developing new indicators to serve the university's specific needs, and moving towards a matrix view of impact in an attempt to capture academic, political, industry, social, and community impact. At the University of Queensland the Library liaises with other units such as the Research and Innovation Division to ensure that the Research Metrics Service is integrated with the research cycle. The librarians work with individual researchers "to provide targeted, contextualised information, and detailed advice about what tools and methods are available for tracking research outputs and their impact." Griffith University's Information Services has launched its "Research Hub", which will be enabled with citation data to help individual researchers to track impact.

ERA / HERDC Support

Libraries have varying degrees of involvement in supporting the two major national research assessment initiatives: ERA and HERDC. Figure 1 identifies the key tasks in which libraries are involved. 38 % (5) utilise data feeds from a repository to the Research Office (OR) with no library involvement.

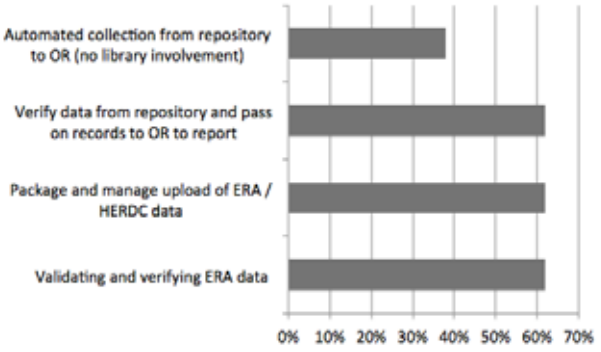

Figure 1. Percentage of libraries that support key ERA / HERDC tasks

Different libraries support ERA/HERDC processes in different ways. Support ranges from full 100% management and responsibility to varying levels of collection, verification and reporting of research

publication data by means of the institutional repository. Many reported that the library manages the "dark repository" used for the ERA peer review process.

Institutional Repository Support

Staffing levels for nine of the responding libraries ranges from 2 to 4 shared roles, managing between 3,600 and 156,000 records (Table 1).

Staffing levels	Number of Libraries	Repository Holdings
2 shared roles	3	3,600 –7,000 records
4 shared roles	1	8,000+ records
2 shared roles	2	11,000 – 11,500 records
3.5 full time roles	1	14,000+ records
3 shared roles	1	36,000 records
3 shared roles and 8 FT assistants (shared with ERA)	1	156,000 records

Table 1: Staffing Levels and Repository Holdings of 9 libraries

Simons and Richardson (2012) have conducted a survey of institutional repository staff in Australasia. The coverage is broader than just QULOC members and provides an in-depth analysis of issues in supporting repository staff.

Publication Support for Researchers

All libraries provide one-on-one scholarly publishing advice to researchers and have developed self-help web based resources, usually based on LibGuides. 77% provide workshops on scholarly publishing strategies. In addition the Queensland University of Technology (QUT) Library, which is an institutional member of selected open access publishers, provides financial support to researchers whose papers have been accepted for publication in selected Gold Open Access journals. The University of New England, for its part, has held a university-wide seminar on Open Access and conducted presentations to senior university personnel.

Bibliographic Management Support

All libraries provide EndNote as the officially supported bibliographic management software. EndNote workshops, one-on-one consultations and self-help from the library website are the standard service for all libraries. In addition to EndNote, 15 % (2) offer RefWorks support and workshops.

HDR (Higher Degree Research) Student Support

All libraries offer HDR support in the form of: orientation sessions; research training workshops; research seminar series; self help

guides and one-on-one consultations. 23% (3) of respondents provide a specific online research training module, e.g. using a learning management system. In some universities, this is compulsory for all HDR students. 23% (3) collaborate with the Research Office or Graduate School of Research in training offerings. James Cook University is planning to offer collaborative study spaces for research students.

Research Skills Training

Libraries provide individual consultations, workshops, and support materials to support research skills training. Topics covered include advanced information retrieval, assistance with writing literature reviews, using bibliographic management software, cited reference searching, current awareness services, creating publication strategies, monitoring research impact, research data management, and tools to facilitate collaboration. Support material is provided in LibGuides and online tutorials.

All libraries provide one-on-one research training sessions (by request). 54% offer researcher training workshops involving more specific sessions including: measuring research impact; scholarly publishing; and research data management. QUT Library provides a compulsory 4 credit point unit for PhD students. 54% reported that they provide online researcher skills tutorials or guides.

eResearch

23% (3) of responding libraries have embraced eResearch as a potential new area of involvement, and have representation on eResearch working groups. Griffith University's Information Services has a dedicated team that provides advice in data experimentation, visualisation and analysis; builds eResearch solutions; offers support services to manage research data; and provides advice on the national eResearch infrastructure. Other libraries regard themselves as development stakeholders in ANDS (Australian National Data Service) research data projects. For example, Charles Darwin University has partnered with James Cook University on the Tropical Data Hub; QUT has partnered with Griffith University on the Metadata Hub system. QUT has also been funded by ANDS for Seeding the Commons, Data Capture (3 projects), RDA (Research Data Australia) Gold Standard Record Exemplars, and the Metadata Store Project. Some libraries have been collaborating with eResearch organisations, such as the Queensland Cyber Infrastructure Foundation (QCIF). 23% reported that they are working on ANDS-funded projects. 30% (4) of libraries reported that they are monitoring developments in the landscape and waiting to see how the other libraries develop in this area.

In summary 46% (6) have integrated eResearch / library services, or are working closely on specific eResearch services or projects. 15% (2) are working towards greater involvement and 39% (5) have either no or limited involvement.

Data Management

The level of involvement by libraries in this area varies greatly. The University of Queensland, which provides advice and training to researchers on "all aspects of data management", planned to provide advice in 2012 as well to all HDR students on data management requirements. Some libraries are providing advice in the mapping, management, and preservation of research data. Charles Darwin University Library is working with ANDS, their Office of Research and Innovation, and heads of schools to develop practices that meet Australian Research Council standards. Australian Catholic University advises that the Library is "currently involved with Research Services and IT to map our research data collections and will continue to play an active role in research data management." Some libraries also provide training and web guides on research data management. QUT Library was instrumental in the development of its university's research data management policy.

17% (2) of respondents reported having an active role in mapping research collections and participation in eResearch projects. 17% (2) reported having an advisory role and another 25% (3) are developing strategies. 41% (5) libraries reported having either a limited role or no role at all. One library did not complete this topic. Figure 3 graphically illustrates the variance.

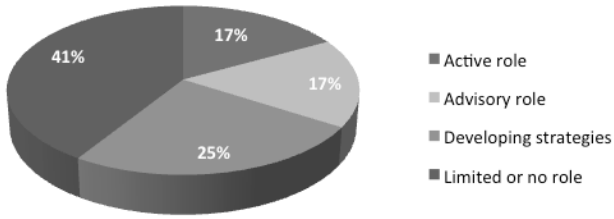

Figure 3. Support for Data Management

Online Collaborative Tools

No formal support is offered, but responding libraries do provide advice on the availability of collaborative tools, via consultations, workshops and web pages. Tools promoted include Adobe Connect, Access Grid, EVO, Collaborate, Skype, Access Grid, ARCS (Australian Research Collaboration Service) Data Fabric, CloudStor, NeCTAR Research Cloud, Mendeley, Google Docs (now Google Drive), and Google Groups.

One library provides support via information sessions and workshops. 39% (5) of respondents provide unsupported self-help online collaborative tools and 54% (7) provide either limited awareness or no support at all.

Web Services for Researchers

The majority of libraries (92%) reported maintaining web services for researchers, including LibGuides on research support, bibliographic management, research impact, scholarly publishing, and research data management. Web services also include access pages to institutional repositories, researcher profile pages, and online research support tutorials. University of Queensland Library has embedded a ResearcherID service into its institutional repository, in which the library can create and manage Thomson Reuters' ResearcherID accounts on behalf of its authors.

Research Collection Development

The model reported by 85% (11) of libraries is one in which a budget allocation is made for research monographs (print and digital) sometimes to targeted research areas and reviewed annually. One library undertakes an annual review based on return for investment, in which usage equates to value; 80% of this library's budget is spent on digital resources.

Assistance with Grants / Funding Applications

All libraries provide, or are in the process of planning for the provision of, advice and reports that will assist researchers in demonstrating their research impact in grant applicants to major funding bodies such as the Australian Research Council, especially for researchers applying for the relatively new Discovery Early Career Researcher Awards (DECRA), and the National Health and Medical Research Council. This advice and / or reporting are based on the use of traditional bibliometric indicators (citations, h-index). Training in bibliometric analysis for grant writing as well as support for compiling literature reviews for grant writing is provided by some libraries.

62% (8) of libraries provide assistance in the form of bibliometric reports, literature reviews and workshops for grant applicants. 23% (3) provide one-on-one and ad hoc assistance to individual researchers. 15% (2) are looking at options for future (formal) involvement.

DISCUSSION

In assessing the support for research provided by QULOC member libraries against international trends, the overall results indicate that they are performing well in predictable areas, while concurrently evolving a response to the recent demands around eResearch.

Not surprisingly support is strongest in areas in which libraries have already been involved for some time: research impact (particularly bibliometrics), bibliographic management, research collection development, and institutional repositories. All libraries provide one-on-one scholarly publishing advice to researchers and have developed self-help web-based resources (LibGuides). Support for Higher Degree Research students is uniformly high. Most libraries have research support plans in place.

At EDUCAUSE-Australasia 2011, Linda O'Brien, Pro Vice Chancellor (Information Services), Griffith University, reported on the results of a survey (sent to CAUL and CAUDIT members) which examined the nature of their involvement in eResearch within their respective organisation. She concluded that "Most libraries have grabbed the challenges and opportunities offered by e-research. We are rapidly adapting existing capabilities and structures" (2011, 9). Survey results reinforced international findings by highlighting the critical importance of forming partnerships with key stakeholders so as to ensure consistent and high-quality support for eResearch. The results of the QULOC survey confirm that member libraries have not only established medium to strong bonds with their institutional Research Offices but have also ensured representation on key university research committees or equivalent boards.

The literature has suggested that libraries should enhance research support by developing customised support services and, where appropriate, embedding information specialists, with discipline-specific expertise, in departments and research centres / teams. Among the QULOC libraries, 68% have dedicated research support positions and 38% provide research support as part of faculty liaison roles. Only one university has library staff embedded in faculties, albeit one day per week. However libraries have a real opportunity to be more proactive in this area. They could enhance research support by building teams which would utilise the skills of a range of information professionals rather than just liaison librarians. Examples of useful models within Australia include University of Western Australia (Burrows and Croker 2010) and Griffith University (Sparks 2012).

In the area of eResearch, initiatives in the United States and United Kingdom have particularly focused on the role for libraries in data curation and research data management. Walters and Skinner (2011, 11) have suggested that "the strongest future for research libraries is one in which multi-institutional collaborations achieve evolvable cyberinfrastructures and services for digital curation. The alternative, a "go it alone" strategy, will only lead to dangerous isolation for practitioners, yielding idiosyncratic, expensive, and ultimately unsustainable infrastructures."

At a high level, this statement has interesting implications for Australia, given the creation of a national collaborative infrastructure as part of the National Collaborative Research Infrastructure Strategy (NCRIS). A very positive flow-on effect from project funding at the state level, e.g. Queensland Cyber Infrastructure Foundation (QCIF), and national, e.g. Australian National Data Service (ANDS) and National eResearch Collaboration Tools and Resources (NeCTAR) levels has been the involvement of QULOC libraries to varying degrees within their respective institutions.

However, while the majority of QULOC libraries provide assistance with activities such as research grants and funding applications, very few have developed mature support models for other newer activities such as data curation and research data management. In this regard, QULOC libraries are behind many of their international counterparts.

The mandates from funding bodies such as the National Science Foundation (US) and the Wellcome Trust (UK) have acted as a catalyst to galvanise support initiatives by academic libraries in those countries. In Australia universities have not uniformly addressed these activities as a priority because there has not been, until very recently, a compliance issue. The change in policy by the National Health and Medical Research Council (2012) regarding the dissemination of research findings can be expected to have a flow-on effect as academic and research libraries reassess their role in assisting their parent institution to meet compliance regulations.

Finally, in looking towards future initiatives based on the results of the QULOC survey, it is clear that there are excellent opportunities for benchmarking progress among member, as well as with other Australian, libraries. In 2013 the Research Support Working Party will assess recent reports from the Association of Research Libraries (Soehner et al. 2010), Association of College and Research Libraries (2011) (Tenopir et al. 2012), and JISC (2011) for their potential adaptability to the Australian university landscape.

LIMITATIONS

The survey was structured based on broad headings which allowed responses to be quite open-ended. If a follow-up survey were to be conducted, consideration should be given to expanding it to cover greater granularity. For example, skills required by library staff plus collaborative arrangements between the library and IT services to deliver research support would be topics of likely interest. Nevertheless it has been possible to observe some trends in research support among the QULOC libraries.

CONCLUSION

In recent times relationships between researchers and traditional library and university support for research have shifted radically. Faced with the problem of a continuously changing context, often referred to as “permanent white water” (Vaill 1991, 2), the response from most university libraries, and associated bodies, has been to be proactive and innovative rather than reactive. Like their international counterparts, QULOC libraries are beginning to rise to these new challenges. However whereas research support is strong in areas such as research impact, publication support for researchers and institutional repositories, the two areas which the survey has highlighted as exhibiting a high level of variance in support among member libraries are eResearch support in general, and research data management in particular. While not unexpected, this will help provide a focus for future potential initiatives by the Research Support Working Party.

Since the submission of the original report to QULOC in mid-2012, the Working Party has realised the importance of two new important trends: social media optimisation and alternative impact metrics (altmetrics.org). Recently several QULOC libraries have begun providing advice, links and demonstrations to social media

web services, such as Academia.edu and ResearchGate, as part of supporting the development of a researcher's online profile, as well as promoting the use of altmetrics services, such as ImpactStory.org, to measure the social impact of research outputs across various social media platforms.

This paper has explored the ways in which QULOC libraries are responding to the current university research agenda as well as challenges experienced in striving to provide best-practice research support. It has highlighted the importance for member libraries to continue to collaborate in order to respond effectively to the rapidly changing research landscape.

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APPENDIX A

This appendix contains the headings—and explanatory notes—which comprised the Excel template used for entering free-text responses.

University Context (University research planning and management)	Research Support Services Structure (Library structure for research support services in relation to other University units)	Research Support Plan/ Strategy (Does the library have a formal research support plan/strategy? (YES/NO)	Research Support Roles (Library staff with designated research support roles)	Consultation with Researchers (Consultation processes with individual researchers, research centres, institutes etc.)	Liaison with Research Division (Library liaison processes with University unit responsible for research management)
Tracking Research Impact (Bibliometric analysis and other library services for tracking research impact)	ERA/HERDC Support (Library's role in supporting ERA and HERDC)	Institutional Repository (Administration and management of repository; staffing levels; key repository statistics)	Publication Support (Library services to assist researchers to publish)	Bibliographic Management Support (Library's role in supporting bibliographic management software (EndNote etc.))	HDR Student Support (Library programs and services specifically to support HDR students)
Research Skills Training (Library's role in the provision of research skills training for students and staff)	eResearch (Library's involvement in eResearch developments at an institutional level)	Data Management (Library's role in managing research data)	Online Collaborative Tools (Library's role in supporting online collaborative research tools)	Web Services for Researchers (Services for researchers available on library website)	Research Collection Development (Processes for developing research collections (print and digital))
Assistance with Grants / Funding Applications (Library's role in providing assistance with grant and funding applications)	Further Comments / Information				

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