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Janine Lockhart
Cape Peninsula University of Technology

Caroline Leiß
TU Munich, University Library, Germany

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LIBRARIANS' SKILLS FOR E-RESEARCH SUPPORT: JOINT PROJECT AT TUM AND CPUT

Dr Caroline Leiss
Technische Universität München, University Library
Arcisstraße 21, D-80290 München
caroline.leiss@ub.tum.de

Mrs Janine Lockhart
Cape Peninsula University of Technology, University Library
P O Box 652, Cape Town, 8001, South Africa
lockhartj@cput.ac.za

Abstract

Many academic libraries are steering Research Data Management (RDM) at their universities. One of the areas this is impacting is to ensure that library staff has the necessary skills to support RDM. Both libraries, Technische Universität München (TUM) and Cape Peninsula University of Technology (CPUT), are in the process of developing skills programmes for librarians in this regard. In early 2014 a joint workshop between these two university libraries took place at CPUT Libraries. Teams were allocated to work on the various aspects of RDM. One of the groups worked on identifying the skills that librarians would need to support researchers by looking at the research cycle, including information retrieval, reference management, funding, data management plan, data storage and long term preservation, and publication process. The authors will share the processes followed within each of the libraries to develop and implement the skills programme, the list of necessary courses identified, the collaboration that took place to share information and course content between these two university libraries, the importance of partnerships with other departments within the university that are specialists in some of these areas. In the future aspects of this process will be continually evaluated. These experiences will be shared as lessons learnt and to improve where needed. Expertise could be shared during training sessions via teleconferencing.

Keywords: *Research Data Management, librarian's skills programme, academic libraries*

Introduction and background

Many academic libraries are providing or planning services for research support and Research Data Management (RDM) initiatives at their universities (Kennan, Corral, & Afzal, 2014, p. 672). One of the areas this is impacting is to ensure that library staff has the necessary skills to support researchers throughout their research activities, including RDM. Both libraries, Technische Universität München (TUM) and Cape Peninsula University of Technology (CPUT), are in the process of developing skills programmes for librarians in this regard. The focus of this paper will be on this one area in particular.

One of the key aspects in all of this is to ensure the buy-in and support from library staff with regards to these new expectations or extension of their roles. The starting point for both libraries was to determine what kind of services will we have to offer? What do we have to know in order to be able to support researchers? Where are the skill gaps and how can we develop those? A skills analysis needed to be done to determine training needs (Auckland, 2012, p. 76). The approach CPUT and TUM libraries chose is described by Brewerton (2012, p. 97): assess researchers information needs, map librarian activities and then assess the required skills and training to bring the two together. CPUT and TUM libraries agreed on working on this together, share their findings and learn from each other when developing new research support services and internal training programmes.

Identifying the skills needed

As indicated by Connor (2009), “an academic library’s single most valuable resource is its workforce”. She goes further by saying that “without educated, well-trained, and motivated librarians and library staff, an academic library programme is ill-prepared” to meet the need of clients and deal with the challenges faced. The development of an annual training plan is essential to ensure that library staff is equipped to offer the best service possible to their clients.

Librarians have been supporting researchers in various ways over the years. However, along with the development or implementation of required software tools (for data storage and sharing), both libraries want to enhance their advisory services to be more comprehensive and better support researchers throughout their research activities.

For this reason CPUT and TUM both set up working groups in order to investigate research support skills for librarians. The working groups developed an excel spreadsheet with a matrix concerning research life cycle components, necessary support services and knowledge areas involved (see annexure). The groups compared possible requirements with the existing service portfolios. They looked closely not only at the library, but also at other units at their institutions. Research support services can only be established as a university-wide collaboration, including (if available) funding units, language centers, IT departments, and patent or inventor consultations. So part of the working groups’ tasks was to intensify network activities throughout the institution.

In March 2014, CPUT invited TUM librarians to a joint workshop in Cape Town in order to investigate new research support services and upcoming librarians’ roles. This workshop was part of the joint eRIC initiative (e-research infrastructure and communication, <http://www.eric-project.org/>).

Following the research life cycle, the working groups listed the following support service areas as important:

- Support for generic skills for research
- Support for information search and processing
- Support for project planning and resources
- Support for data management
- Support for publication and knowledge transfer

With a view to these support services, librarians from both universities investigated skills and competencies needed. The outcomes (see annexure) show that the skill set for research support librarians varies only in minor aspects and is in line with existing research into the question of skills for emerging roles of research support librarians (Cox & Pinfield (2013, p. 302, 308)).

General knowledge of research processes and policies is important and lays the foundation for the more specific training programme. At TUM and CPUT some of these are still being consolidated or being updated. Knowledge around author identity management (ORCID, Scopus author identifier, etc.), academic networking options like ResearchGate or Academia.edu and guidelines for research integrity and good scientific practices need to be addressed. Familiarity with widely used tools like Mendeley for reference management is mandatory, as well as fluency with communication and collaboration tools like video- or web-conferencing technologies.

When it comes to librarians' core competencies like information searching and processing, librarians need to increase promotion of existing services. Experience shows that researchers are often not aware of library services, including access options to databases, full texts and document delivery. Even fluency with search strategies, reference management and current awareness (RSS, alerting in databases) is not to be taken for granted. This is an area where librarians do have the expertise and can offer support. Promotion of library services needs to be in the focus of all library staff. However, even in this core area of librarianship there are new challenges arising, like for example systematic reviews with their vast amount of literature and the challenges of big data, or highly specialized subject-specific search requests.

Funding, patent and inventor's consultation might be a crucial topic, too, as 2 out of the 9 skill gap areas listed by Auckland (2012) refer to funding options, and this applies to our institutions as well. Support with funding and patents might be covered by a unit outside the library, which is the case at TUM and CPUT. However, librarians should be familiar with patent search and funding options in order to offer an initial consultation.

A further new area that needs to be supported by library staff can be summarized with the term RDM. Data management being at the core of research in most subject areas, both TUM and CPUT acknowledge that major efforts have to be undertaken in order to enable librarians to give substantial support with data management.

Cox and Pinfield (2013, p. 300) mention that "providing RDM advice and training could be seen as a natural extension of existing library work in advice services and information literacy training". They go further by saying that librarians might not currently have the technical knowledge needed and often have limited research experience, therefore the development of a skills programme to enhance the skills of librarians in this regard is imperative. In a study done by Corral, Salo & Street (2013, p. 659), the authors indicated that gaps in knowledge, skills and librarian's confidence were significant constraints in the successful implementation of Research Data Services (RDS). By looking at the top 10 trends identified by the ACRL Research Planning and Review Committee (2014, p. 294), it is clear that every aspect of data is one of the major areas impacting libraries across the world. There are "new demands placed on libraries for cross-disciplinary expertise in data collection access, metadata, curation, and preservation". It is clear that there is an overlap between general research support and RDM support and that the latter be seen as a further extension to the services already provided by libraries.

Successful implementation of RDM needs a culture change in the university, for researchers (Cox, Pinfield, & Smith, 2014, p. 8) and library staff. Both CPUT and TUM agree with this view and see the implementation of RDM services as a challenge, and acknowledge that librarians need support to build expertise.

Both CPUT and TUM have institutional repositories where primary data can be stored and managed. Data management plans, data types and formats, data quality, metadata, data storage and security, data copyright, data sharing, data visualization - even nowadays these topics are only partly covered in most library education programmes. Additionally, due to rapid changes in RDM

handling, training programmes need to be developed and offered on a continuous basis in order to keep track with current developments.

Support for publication and knowledge transfer is a demanding task, and due to existing services there is some expertise available at TUM and CPUT. This applies to different aspects of the publication process: find out where to publish, be familiar with publication procedures and peer review, understand and manage journal and author related metrics, manage one's own visibility on the internet. Support with open access and a respective publication fund, with DOAG.org and Sherpa/Romeo, with author's agreement, licenses and intellectual property rights are already offered by specialists at the libraries or other university units. Writing and editing support, multilingual support services or writing skills are partly covered by units outside the library.

All librarians involved in research support services should be familiar in detail with their own institution and take part in an institution-wide network for research support. However, this knowledge has to be made available to all librarians involved in research support activities and be integrated into an internal training programme. All of the topics given above are rapidly evolving, and it is a major challenge to keep track with current developments.

Processes for implementation being followed at each of our libraries

The case at TUM

The TUM working group was established in October 2013 in order to complement the development of a research data management infrastructure at TUM library. In close collaboration with faculty members and research units computer scientists had started to develop extended features for the institutional repository of TUM (mediaTUM) and implement a comprehensive e-research infrastructure for data management and communication. At the same time, the working group on librarians' skills started to investigate which services and skills would be needed in order to promote and advise on RDM services and research support in general. The working group presented their results in autumn 2014.

They drafted a programme for internal trainings, comprising 13 workshops or hands-on trainings for staff members involved in research support services (see annexure, column 3). For several topics there were experts at the University Library who shared their knowledge and offered internal trainings to the staff. For other topics external experts were or will be invited. The training programme started in January 2015 with one training session per month, and will continue throughout the year. There will be a special training programme for RDM starting in autumn 2015, including – same as CPUT - online training courses such as MANTRA (University of Edinburgh) or RDMRose Project (University of Sheffield). A policy for data management plans and handling will be developed in the near future.

The working group shared their discussions and findings with the CPUT group, exchanged information materials and experiences or indicated best practice via e-mail or on Skype.

The case at CPUT

Annual training plans for library staff are developed. The development of training plans is informed by Performance Management Contract (PMC) discussions between line managers and their staff members, skills audits and newly identified trends.

At CPUT a pilot project was initiated during 2014 with one of the research units at the university. It was envisaged that this project might indicate further areas or skills that will be needed by librarians to support the RDM process and policies within the university. Only once the pilot phase is completed and all processes within the university are in place for RDM, will the more detailed training plan for librarians be implemented. In the interim however, librarians have already received training on some of the tools such as Mendeley and Academia.edu as well as compiling Bibliometric reports for their researchers. Some librarians have attended and will continue to attend workshops, webinars

and talks offered with regards to RDM and Open Access (OA) that has been made available by professional bodies such as the Library and Information Association of South Africa (LIASA) and/or other universities. This provides an important foundation for a basic knowledge and understanding as well as building support among library staff. There are already some excellent online training courses available as well, such as MANTRA, RDMRose Project and New England Collaborative Data Management Curriculum (University of Massachusetts Medical School). It is envisaged that some of these already existing online training courses could be incorporated into our own training interventions.

The National Research Foundation (NRF) (2015) of South Africa recently released a statement regarding NRF-funded research:

From 01 March 2015, authors of research papers generated from research either fully or partially funded by NRF, when submitting and publishing in academic journals, should deposit their final peer-reviewed manuscripts that have been accepted by the journals, to the administering Institution Repository with an embargo period of no more than 12 months. Earlier Open Access may be provided should this be allowed by the publisher. If the paper is published in an Open Access journal or the publisher allows the deposit of the published version in PDF format, such version should be deposited into the administering Institutional Repository and Open Access should be provided as soon as possible.

The statement further indicated that “data supporting the publication be deposited in an accredited Open Access repository” and that a Digital Object Identifier (DOI) be provided. This leads to researchers developing and submitting data management plans and library staff needs to be prepared to support this. During 2014 two policies, named CPUT Research Data Management Policy and CPUT Open Access Policy, were approved. With the above statement in mind and the approval of two key policies at the university, training for librarians will be focused during 2015 on the general understanding of research data management, supporting the development of data management planning and awareness and understanding of the two key policies as well as issues around copyright and ethics.

There are also practical considerations that need to be taken into account when implementing a training plan. Due to the number of library branches at CPUT, eleven in total, it is challenging to arrange training interventions. Challenges are distances between the branches, travelling time and cost, aligning dates as well as ensuring operations continues with limited staff at the various branches. Therefore, four Librarian Days per year has been implemented where all user services librarians and senior librarian assistants come together for a day and these days are often used for information sharing and training in identified areas. We would also consider online training interventions.

Conclusion and future possibilities

The development and implementation of research support services including RDM is a challenge and an opportunity for libraries. Research data management is, in most cases and at this time, not part of library education programmes, and new roles for research support librarians need to be defined. At the same time, this is a great opportunity for libraries to re-position themselves within their universities and strengthen their purpose and roles. This is also emphasized by (Auckland, 2012, p. 77).

CPUT and TUM libraries are quite similar in structure and size, and face similar challenges for implementing research support services. It is important not to rush into implementing a training plan in this regard. The implementation should be in line and in time with the policies and processes that are in place for RDM within a university. Buy-in and awareness from librarians and faculty is crucial. To find training providers in some of these very specialized areas is not an easy task and therefore sharing expertise between other departments within our universities or from other universities is essential.

Both libraries see their collaboration as a great benefit and will continue to share information and strategies in order to support their staff with necessary training sessions for comprehensive research support services, including RDM support.

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Annexure

The research life cycle follows the description on the eRIC project webpage <http://www.eric-project.org/services>

Working Group Librarians' Skills at CPUT and TUM			
Research Life Cycle		Situation at CPUT	Situation at TUM
Generic Skills			
Academic Identity Management	ORCID, Researcher-ID, Google Scholar Account, Scopus Author management, etc.	Workshops offered by librarians, expertise and consultation available. Further training is needed.	Part of library course on visibility and impact of research (http://ub.tum.de/en/course-bibliometrics); expertise available, further training needed
Scientific Writing	Guidelines for Research Integrity and Good Scientific Practices at institutional, national and international level	Various courses, workshops and seminars available for this within the university. These are mostly offered by other departments within the university, for example the universities Research and Teaching & Learning departments. Also shared courses between different universities in the region.	Number of courses available for this within the university, offered by other department (for example Graduate Schools). Partly covered by joint workshops of University Library and ombudsperson for research integrity at TUM, and in courses at University Library (http://ub.tum.de/en/workshops); workshops will be extended; expertise available, but further internal training needed
Communication / Collaboration	Video-, tele- and web-conferencing technologies (instant messaging, wikis, blogs, social bookmarking)	Limited uptake at this point, tools and expertise available.	Web-conferencing tool used for information literacy webinars and online-events; expertise available
Academic Networking	Researchgate, academia.edu, LinkedIn, ...	Included in some research support workshops offered by librarians to researchers, but further internal training needed	Part of library course on visibility and impact of research; expertise available, but further internal training needed
Legal Issues	Author's agreement, citations and plagiarism, data management issues, etc.	Limited services, further internal training needed. Shared with other specialized units in the university.	Partly covered by courses at University Library; workshops will be extended; further internal training needed

Research Life Cycle Stage 1: Conception, Proposal, Information Search			
Awareness of University Library Services	Access to local library and electronic media from campus and off campus; awareness of library services, incl. document delivery services, photocopy and scan services, etc.	Covered in the Information Literacy Certificate available to students and staff. Further customized workshop offered by librarians to postgraduate students and researchers. Expertise available.	Part of different library courses and consultation services; expertise available
Information Searching Strategy	Generic search strategies, incl. Systematic reviews and subject specific techniques	Covered in the Information Literacy Certificate available to students and staff. Further customized workshop offered by librarians to postgraduate students and researchers. Expertise available. Extensive consultation available.	Covered by courses at University Library; expertise available. Extensive consultation available.
Keeping up to date	Current Awareness (Alerts, RSS)	Mostly addressed by workshops to postgraduate students and researchers. Expertise available.	Part of library course on visibility and impact of research (http://ub.tum.de/en/course-bibliometrics); expertise available
Reference Management	Basic knowledge of common and widely used reference management software (End-Note, Zotero, Mendeley, ...); In-depth knowledge of software with campus license	Mendeley (free ware) is used and promoted. Workshops offered. Expertise is available.	Covered by several library courses and consultation services; expertise available.
Research Life Cycle Stage 2: Project Planning and Acquisition of Resources			
Funding	Sources of research funding; Complying with the various mandates of funders	Covered by specialized units at CPUT. Consultation will be extended at CPUT Libraries, further internal training needed.	Partly covered by specialized unit at TUM. Consultation will be extended at University Library, further internal training needed.
Patent consultation	Patent search strategy, inventor consulting	Covered by specialized unit at CPUT. Consultation will be extended at CPUT Libraries, further internal training needed.	Partly covered by specialized unit at TUM. Consultation will be extended at University Library, further internal training needed.

Research Life Cycle Stage 3: Research Data Management			
Research Data Management	<ul style="list-style-type: none"> • Discovery and Acquisition of Data • Data Types, Formats, Stages • Data Quality, Documentation, Metadata • Data Processing, Analysis, Mining • Data Storage, Long Term Preservation, Security, Availability • Data Conversion, Migration, Interoperability • Data Copyright and legal, ethical Issues • Data Import, Export • Data Sharing, Publishing • Data Visualization, Representation 	RDM issues will be supported by CPUT Libraries. Internal training needed for all librarians involved.	Partly covered by consultation services of TUM institutional repository mediaTUM. Consultation and services will be extended, further internal training needed for all librarians involved.
Research Life Cycle Stage 4: Publication and Transfer of Knowledge			
Open Access	Green / gold, funding options, author's agreement, legal issues	Limited coverage in workshops by librarians. More training needed. Will be included in the Advanced Information Literacy Certificate currently being developed.	Partly covered in library course on visibility and impact of research; specialized course on scholarly publishing literacy to be developed
Intellectual Property Rights	Citing, referencing, avoiding plagiarism	Covered in the Information Literacy Certificate and will be included in the Advanced Information Literacy Certificate currently being developed.	Partly covered in library courses; specialized course on scholarly publishing literacy to be developed

Publication Process	Find out where to publish (journal, publisher), peer review, ISSN/ISBN/DOI/URN etc., print services, marketing, funding options	Expertise and consultation available, internal training needed for all librarians. Some coverage by specialized units at CPUT.	Partly covered in library course on visibility and impact of research; specialized course on scholarly publishing literacy to be developed
Bibliometrics, Scientometrics	Impact factor, h-index, altmetrics, possible ways of influencing own metrics, strategic options for publication processes	Workshop, consultation. Expertise available. Internal training needed for all librarians.	Part of library course on visibility and impact of research; consultation services will be extended; expertise available, but further internal training needed
Sharing of publications	Academic networking, visibility of own bibliographic record and publications, online presence	Workshop, consultation. Expertise available. Internal training needed for all librarians.	Part of library course on visibility and impact of research; expertise available, but further internal training needed