How to maximize research data skills in libraries

Research data is increasingly recognized as a primary research output, complementing established forms such as books and journal articles. The world-wide challenges to curate, publish and sustain access to research data are enormous. Many academic libraries are now extending their century-long track record in the professional management of knowledge resources towards the area of research data and therefore seek to maximize research data skills among staff in their organisations. Training, expert recruitment, learning-on-the-job, online-courses, and degrees have been identified as the five routes to achieve this goal.

In March 2014, the group Libraries for Research Data met in Dublin, Ireland, at the third plenary of the Research Data Alliance, an international organization addressing the challenges of research data management. The group exchanged experiences about research data skills in libraries. The results can be summarized as **five routes for maximizing research data skills** in libraries:

1. **Training** – A plethora of offers, often with ***certificates***, exists for individual staff members or groups to attend. Offers range from specific training events and summer schools or to organize in-house events ([exemplary list of trainings](#)[a]). Contact your regional or national ***professional bodies*** and seek admission to ***local courses*** addressing research data provided by faculty.

2. **Expert recruitment** – Many libraries hire experts from specific fields of research – information specialists, scientists, or humanities scholars. The selection principle of staff is often not so much the degree but the fit with the ***job description*** ([exemplary list of JDs](#)[b]).

3. **Learning-on-the-job** – Engaging in collaborative ***projects*** with researchers or providing institutional research data support are common measures for libraries to get in touch with research data. Involving existing staff with specific pre-qualifications, for example subject librarians, provides opportunities on the job. Related possibilities with a 'real-world' experience are ***internships*** and ***secondments*** embedded in research departments or other libraries.

4. **Online-Learning** – In the free time or as staff development, ***MOOCs*** and other courses are available online to get acquainted with subject specific research topics and methodologies as well as with specific questions of data curation and data science.[c]

5. **Degrees** – [*iSchools*](#)[d] and ***faculty*** of universities offer specific curricula addressing research data management that result in degrees. These can be primary or additional degrees, and might contain online components to allow for professional development during the job

These five routes are not mutually exclusive but rather complement each other. Please seek advice from relevant organisations in your region or field and make sure that staff actually have the skills to deal with research data before engaging in concrete activities: research data are often touching sensitive points in the research process and require diligence and professional knowledge. The library's role often is to support metadata, publishing and longevity for research data.

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[a] http://www.digcur-education.org/eng/Training-opportunities
[b] http://www.iassistdata.org/resources/jobs/all
[c] e.g. https://www.coursera.org/specializations, https://www.edx.org/course-list/allschools/statistics-data-analysis/allcourses, http://www.mooc-list.com/categories/statistics-data-analysis
[d] http://www.ischools.org

For further information please browse the resources list as provided below!

*Engaging with the group **Libraries for Research Data** is simple: Just register at the RDA website and subscribe to the group: https://rd-alliance.org/group/libraries-research-data.html*

Resources for research data skills in libraries

DCC www.dcc.ac.uk

About: The Digital Curation Centre (DCC) is a world-leading centre of expertise in digital information curation with a focus on building capacity, capability and skills for research data management across the UK's higher education research community. The Digital Curation Centre provides expert advice and practical help to anyone in UK higher education and research wanting to store, manage, protect and share digital research data.

Resources: Briefing papers, how-to guides, case studies and other material on RDM practices, training programs, directory of metadata standards, DMPonline and other tools, etc.

- Developing RDM Services http://www.dcc.ac.uk/resources/developing-rdm-services
- Data Management Plans, including DMPonline http://www.dcc.ac.uk/resources/data-management-plans
- Data management and curation education and training http://www.dcc.ac.uk/training/data-management-courses-and-training
- DaMSSI, Research Data Management Skills Support Initiative, http://www.dcc.ac.uk/training/damssi-abc
- Research Data Management training for librarians – links to various courses from the DCC and others tailored to librarians http://www.dcc.ac.uk/training/rdm-librarians

University of Edinburgh / EDINA www.edina.ac.uk

About: The University of Edinburgh hosts the EDINA and Data Library division which provides a range of data resources for University of Edinburgh users as well as the wider academic community.

- **Research Data Mangement Training (MANTRA)** - Do-It-Yourself Research Data Management Training Kit for Librarians, provided by EDINA and Data Library, University of Edinburgh in association with the UK Data Archive, Digital Curation Centre (DCC), and Distributed Data Curation Center at the Purdue University Libraries. http://datalib.edina.ac.uk/mantra/libtraining.html

Research Data Netherlands www.researchdata.nl/en/

About: Research Data Netherlands is an alliance between 3TU.Datacentrum, Data Archiving and Networked Services (DANS) and SURFsara. With this coalition, which is also open to other parties, the three data archives join forces in the area of long-term data archiving.

Resources:

- **Essentials for Data Support**, an introductory course for those people who (want to) support researchers in storing, managing, archiving and sharing their research data. http://datasupport.researchdata.nl/en

IASSIST www.iassistdata.org

About: IASSIST is an international organization of professionals working with information technology and data services to support research and teaching in the social sciences.

Resources:

- Jobs repository http://www.iassistdata.org/resources/jobs/all
- IASSIST Annual Conference http://www.iassistdata.org/conferences
- Xia, J.; Wang, M. (2014): Competencies and Responsibilities of Social Science Data Librarians: An Analysis of Job Descriptions, *College & Research Libraries*, vol. 75, no. 3, pp. 362-388, http://crl.acrl.org/content/75/3/362.short – a study based on records in the IASSITS jobs repository

ICPSR www.icpsr.umich.edu

About: The Inter-university Consortium for Political and Social Research (ICPSR) hosts consortially funded data archive for the social sciences, ICPSR also offers a number of resources for data management including guidelines and tools.

Resources:

- Guidance and tools for data management an curation http://www.icpsr.umich.edu/icpsrweb/content/datamanagement/index.html

CODATA www.codata.org

About: CODATA is an interdisciplinary Scientific Committee of the International Council for Science (ICSU), which works to improve the quality, reliability, management and accessibility of data of importance to all fields of science and technology.

Resources:

- Early Career Data Professionals Working Group http://www.codata.org/working-groups/early-career-data-professionals

LIBER www.libereurope.eu

About: LIBER (Ligue des Bibliothèques Européennes de Recherche – Association of European Research Libraries) is the main network for research libraries in Europe. Founded in 1971, it represents the interests of European research libraries, their universities and their researchers in key areas. The Scholarly Communication and Research Infrastructures Steering Committee facilitates exchange of good practices and develops resources to enable libraries to develop new competencies and services for research data management.

Resources:

- Scholarly Communication and Research Infrastructures Steering Committee http://libereurope.eu/committee/scholarly-research/

COAR www.coar-repositories.org

About: The Confederation of Open Access Repositories (COAR) is an international association of repository initiatives and was launched in October 2009. Its mission is to enhance the visibility and application of research outputs through a global network of open access digital repositories.

Resources: recommendations, case studies, workshops, etc.

- Task Force on Librarians' Competencies in Support of E-Research and Scholarly Communication, joint effort by COAR, ARL, CARL and LIBER https://www.coar-repositories.org/activities/support-and-training/task-force-competencies/

iSchools www.ischools.org

About: The iSchools take it as given that expertise in all forms of information is required for progress in science, business, education, and culture. This expertise must include understanding of the uses and users of information, the nature of information itself, as well as information technologies and their applications. The iSchools have organized to pursue common objectives with a collective commitment of resources.

Resources: degrees, curricula, projects, etc.

- For projects see for example DigCurr below and the publications under CLIR.
- Proceedings of the iConferences https://www.ideals.illinois.edu/handle/2142/14872/search

ANDS www.ands.org.au

About: The Australian National Data Service (ANDS) was established in 2008 to help address the challenges of storing and managing Australia's research data, and making it discoverable and accessible for validation and reuse.

Resources: guides, training, support, persistent identifier services, data publication and discovery services, controlled vocabulary service, etc.

- Guides and other resources http://www.ands.org.au/guides/index.html

ARL www.arl.org

About: The Association of Research Libraries (ARL) is a nonprofit organization of 125 research libraries at comprehensive, research institutions in the US and Canada. ARL influences the changing environment of scholarly communication and the public policies that affect research libraries and the diverse communities they serve.

The E-Science Institute was designed in 2011 to help research libraries develop a strategic agenda for e-research support, with a particular focus on the sciences. It was funded by ARL and CLIR/DLF and is managed by the DuraSpace organization in partnership with CLIR/DLF.

Resources:

- Data access, management and sharing http://www.arl.org/focus-areas/e-research/data-access-management-and-sharing
- E-Science Institute http://escience.washington.edu/education, http://escience.washington.edu/blog/teaching-data-science-instead-databases

CARL www.carl-abrc.ca

About: The Canadian Association of Research Libraries provides leadership on behalf of Canada's research libraries and enhances their capacity to advance research and higher education. It promotes effective and sustainable scholarly communication, and public policy that enables broad access to scholarly information.

In March 2014, CARL launched the project ACR. It builds on previous work to build capacity for research data management in Canadian academic libraries and aims is to lay the foundation for the implementation of a library-based research data management network in Canada.

Resources: blog, trainings, briefing papers, etc.

- Data Management Sub-Committee http://www.carl-abrc.ca/en/scholarly-communications/data-management-sub-committee.html
- Canadian Community of Practice for RDM in Libraries http://data-carl-abrc.ca/
- DMP Builder, University of Alberta, based on DCC's DMPonline, https://dmp.library.ualberta.ca/
- Training resources http://data-carl-abrc.ca/project-arc/project-arc-national-resource-for-data-management-planning/training-resources/

University of Alberta www.library.ualberta.ca/researchdata

A discussion paper provides background information and was used to stimulate a discussion among liaison or subject librarians at the University of Alberta about providing services in support of Data Management Plans. The session was followed by an information forum to answer any questions liaison or subject librarians had about the DMPOnline tool that was recently launched by the library.
https://cancoprdm.files.wordpress.com/2014/07/liaisonlibrariansdmps.pdf

CLIR/DLF www.clir.org

About: The Council on Library and Information Resources (CLIR) is an independent, nonprofit organization that forges strategies to enhance research, teaching, and learning environments in collaboration with libraries, cultural institutions, and communities of higher learning.

CLIR's Digital Library Federation (DLF) program is a robust and diverse community of practitioners who advance research, teaching and learning through the application of digital library research, technology, and services.

Resources:

- Postdoctoral Fellowship Program http://www.clir.org/fellowships/postdoc/info
- Data Curation http://www.clir.org/initiatives-partnerships/data-curation
- Research Data Management Principles, Practices, and Prospects, November 2013, report, http://www.clir.org/pubs/reports/pub160
- Data Curation Education: A Snapshot , August 2012, http://www.clir.org/pubs/reports/pub154/education

DataONE www.dataone.org

About: Data Observation Network for Earth (DataONE) is the foundation of new innovative environmental science through a distributed framework and sustainable cyberinfrastructure that meets the needs of science and society for open, persistent, robust, and secure access to well-described and easily discovered Earth observational data.

Resources: education modules, training activities, software tools, best practices, guides, network of data repositories, etc.

- Training Activities http://www.dataone.org/training-activities
- Education Modules http://www.dataone.org/education-modules

- DataONE outreach kit, specifically targeted at librarians http://www.dataone.org/for-librarians
- DMP Tool https://dmp.cdlib.org/
- Best Practices and Primer on Data Management http://www.dataone.org/best-practices

DigCurv www.digcur-education.org

About: DigCurv (Digital Curator Vocational Education Europe Project) was a project funded by the European Commission. It addressed the availability of vocational training for digital curators in the library, archive, museum and cultural heritage sectors needed to develop new skills that are essential for the long-term management of digital collections.

Resources: training, planning tools, briefing papers

- Training registry http://www.digcur-education.org/eng/Training-opportunities
- Curriculum Framework for Digital Curation http://www.digcurv.gla.ac.uk/

DigCCurr www.ils.unc.edu/digitalcurationcurriculum

About: DigCCurr II (2008-2013), a follow-up project of DigCCurr I, seeks to develop an international, doctoral-level curriculum and educational network in the management and preservation of digital materials across their life cycle.

Resources: Curriculum framework, instructional materials, practicum documentation, etc.

- DigCCurr Professional Institute: Curation Practices for the Digital Object Lifecycle, May 11-16, 2014 & January 5-6, 2015, University of North Carolina at Chapel Hill, http://ils.unc.edu/digccurr/institute2014.html
- Publications and documentation http://ils.unc.edu/digccurr/products.html

JORUM www.jorum.ac.uk

About: Jorum is a Jisc funded Service for UK Further and Higher Education, to collect and share Open Educational Resources (OER), allowing their reuse and repurposing.

Resources:
- Jorum hosts a sub-collection on RDM, http://www.jorum.ac.uk/blog/post/69/research-data-management-a-new-route-for-jorum and http://dspace.jorum.ac.uk/xmlui/handle/10949/18267
- RDM collection on JORUM http://find.jorum.ac.uk/

e-Science Portal for New England Librarians http://esciencelibrary.umassmed.edu

About: This portal is funded through the US National Library of Medicine, and provides a wealth of resources on data management, and associated topics. One of its notable resources is the New England Collaborative Data Management Curriculum.

Resources:
- List of courses for students & researchers http://esciencelibrary.umassmed.edu/courses-for-students

United States Department of Health and Human Services, Office of Research Integrity www.ori.hhs.gov

The ORI is responsible for protecting the integrity of research programs and provides guidance and educational materials on the responsible conduct of research and the promotion of research integrity.

Resources:
- Guidelines for Responsible Data Management in Scientific Research http://ori.hhs.gov/images/ddblock/data.pdf

Literature on Libraries and data management

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