Learning needs analysis [November 2012]

This short report for discussion summarises the scope, content, level and delivery methods which are suitable for a 15 credit PGT level module on Research Data Management for LIS professionals, based on a) the RDMRose project vision b) the literature c) existing curricula d) project focus groups and e) other sources and discussions.

Project vision

In initial project planning meetings it was recognised that the area of RDM is rather forbidding as a set of new ideas, unfamiliar organisations and concepts and jargon and in terms of the technicalities of research data itself and specifically data curation methods, metadata schemas etc. The module was to be designed to overcome LIS professionals' fears and give them confidence to operate effectively in a challenging and changing environment. This implies the need:

1. To establish understanding of core issues such as the policy context, the diverse and complex nature of research data and theoretical concepts such as the DCC lifecycle.
2. To have practical understanding of core methods and tools, such as aspects of writing data management plans or auditing.
3. To develop an understanding of how to keep knowledge up to date.

The project proposal also stated that the module would have a strong element of inquiry based and problem based learning. This recognises, in a context of complexity and change, the value of encouraging participants to learn through active investigation of real world experiences and examples and the exploration of complex and open-ended case study material. Consistent with this we also said we would take a highly reflective approach: participants are offered a space in which to reflect on changes around them and to think about the implications for themselves, those they work with and the organisation – rather than simplistically propounding "best practice".

Given the vast amount of already existing open content on RDM, the project seeks to select and repurpose content rather than, primarily, create new material from scratch.

The material being developed is specifically for liaison librarians, to upskill existing professionals and expand the knowledge base for new entrants to librarianship. We hope to accommodate the perspectives of any information professional, but the scope is not intended to encompass a syllabus for a data management specialist role (following the distinction made in Corrall (2012)).

We anticipate there being five user groups:

1. Liaison librarians and FT learners taught primarily face to face by the iSchool, who will take the whole module.
2. CPD users who may want to work their way through all the material systematically, or perhaps more likely, study one theme particularly relevant to their own role in depth, having absorbed an overview of the topic. To some degree these might also see the course as a set of reference resources, more than a learning resource.
3. Other LIS educators who are likely to want to reuse small chunks of material or learning activity ideas.

4. Liaison librarians themselves wishing to reuse material for teaching researchers and others about RDM. Other subject specific training materials exist, but it could be that some of what we produce is useful for such teaching.
5. Professional staff outside the library wishing to understand the library and other stakeholder perspectives on RDM.

Literature

Librarians seem to be well positioned to play an important role in RDM (Alvaro et al. 2011, Corrall 2012, Gabridge 2009, Henty 2008, Lyon 2012) because of their:

- Knowledge of and networks within disciplinary communities
- Liaison and negotiation skills
- Strong LIS professional network to copy best practice across institutions
- Generic knowledge of good information management practices
- Understanding of research data management as a form of IL
- Experience in explaining things and making them accessible
- Existing data and open access leadership roles

Nevertheless there are many challenges, such as:

- Existing roles are demanding; to support RDM may mean down rating other priorities
- Lack of personal experience of research
- Lack of domain specific knowledge
- The marked disciplinary differences in information and data practices
- Complexity and scale of RDM issues in institutions
- Difficulties translating library practices (e.g. in metadata) to research data contexts
- The technical knowledge required
- Problems engaging users with LIS services
- Resources, infrastructure, policy and management/governance structures are still in flux

Lewis (2010) as updated by Corrall (2012) identify a number of potential roles for librarians in RDM (see also Gabridge 2009 and Lyon 2012). Focussing specifically on local institutional roles, and on those for liaison librarians in particular, the table below lists the main roles that have been proposed, and points to links in existing library practices (Brewerton 2011, Auckland 2012) that may explain why the roles are appropriate (both to practitioners themselves and to their users/customers).

Role	Alignment with existing roles	Competencies required
Policy and advocacy		
Lead on institutional data policy	Advocacy role e.g. in the area of open access	Strategic understanding and influencing skills
Support and training		
Bring data into undergraduate research-based learning, promoting data information literacy	Information literacy training	Understanding of RDM best practices as they apply to relevant disciplines; pedagogic skills
Teach data literacy to		

postgraduate students		
Develop researcher data awareness		
Provide an advice service to researchers (and research administrators) Eg on writing Data Management plans or advice on RDM within a project. Advice on licensing data. Advice on data citation. Perhaps measurement of impact of data sharing.	Reference and enquiry roles; producing print and web based guides; copyright advice.	Reference interview, knowledge of RDM principles
Provide advice as above through a web portal	Library web site	Knowledge of institutional and extra-institutional resources
Signpost who in the institution should be consulted in relation to a particular question	Role of library as point of enquiry and the reference interview	Knowledge of institution
Promote data reuse by making known what is available internally and externally; explaining data citation	Marketing of library resources	Knowledge of researchers' needs, knowledge of available material
Auditing and repository		
Audit to identify data sets for archiving, create a catalogue of materials or to identify RDM needs	Metadata skills	
Develop and manage access to data collections	Collection development, digital library management and metadata management	Audit interviews, knowledge of RDM principles, metadata, licensing
Develop local data curation capacity	Open access role. Preservation role.	Knowledge of RDM principles, relevant technologies and processes, metadata

Table: Librarian roles in RDM mapped to existing roles and required competencies

As the table above suggests, the different roles in RDM imply different types of knowledge, but many align with existing roles (and the corresponding professional knowledge base). Any one individual may take on a number of these roles or none. While all RDM activities align in some way to existing roles, some do not do not in a simple way. Effort may be needed to sell services based on such roles.

Implicit in all the roles is the need to keep up-to-date on latest developments, in itself a significant challenge. Within LIS teams one person might play a maven type role, keeping others abreast of wider developments.

A number of exemplars of RDM support already exist in UK institutions.

Auckland (2012) identifies a number of other roles related to support of research in general, as well as establishing librarians' current confidence about their ability to fulfil such roles (see also Garritano & Carlson 2009, Brewerton 2011):

- Offering advice on funding sources
- Embedded or support roles conducting literature reviews or current awareness alerts for research projects or groups
- Bibliometrics and impact measurement
- Support to REF
- Bibliographic software training
- Advocacy for open access/ institutional repository
- Data analysis advice
- Advice on copyright issues
- Advice on archiving of research records (e.g. correspondence)

Such support may be offered in a variety of ways: through liaison teams, workshops, one-to-one training or even embedded roles. The role in RDM cannot be considered without reference to these functions - for example the open access agenda has sometimes been conflated with RDM in some institutions - and how the library as an organisation responds to such needs. Measuring the impact of data sharing naturally aligns with other work on impact.

Focus groups

The focus groups with liaison librarians in Leeds, Sheffield and York brought a number of key factors to the fore:

1. The need to demystify research for librarians. Most librarians have limited personal research experience; the module should seek to encourage participants to actively engage with researchers they support to discuss the nature of their research. Understanding the diversity of "research data" itself, within the context of different disciplinary and sub-disciplinary cultures and information/data practices is essential.
2. The need for librarians to understand the perspective of researchers in relation to RDM. Best practices must be promoted in a way sensitive to the pressures on researchers and a realistic assessment of the diverse drivers and barriers to RDM. This implies learning activities that help librarians understand researchers' viewpoints from the inside.
3. Focus groups often saw the value of activities or evidence to persuade researchers to recognise the value of RDM.
4. The importance of understanding the role of supporting RDM in the wider context of evolving library service provision and organisation in a context of changing institutional and sectoral policy. To some degree the module can be a place where participants can discuss change as it happens; discussion will inevitably be open-ended. Participants need to engage with existing institutional activity, such as identifying contacts in other support projects and local projects.
5. In particular, the relationship between the library role and that of the Research support service and computer service is essential context.
6. There was always interest in examples of what other libraries are already doing, with a view to adapting that experience to practice.

7. The need to move beyond abstract discussion of potential roles to gaining hands on experience. Few focus group participants had actually ever looked at a Data Management Plan. Some participants in the focus group were a little frustrated by having been to many meetings to discuss possible roles in RDM; they felt the time had come to start providing real services. The module will be based on principles of active learning, both in hands on experience of using DCC tools, for example, but also seek to support participants in reflecting on how what they are learning about RDM can be applied in their own personal role.

8. Staff need the module to be offered in a flexible way, with scope to catch up if they miss a session. Some staff may wish to gain accreditation; others may wish to opt out of assessment.

Other sources

The workshop "Academic Liaison Librarians of the Future" was a White Rose Libraries event held to discuss the Auckland report (2012).

1. Liaison librarians have a range of roles (such as collection development, information literacy training, enquiry handling, marketing, committee work, informal networking, management roles). Different individuals have quite different task sets, linked to seniority and background. Depending on how they conceive their role would depend how far RDM sits naturally in their remit. Different individuals will probably play different roles within the team. The approach of just lists of skills that professionals should have is limited in the sense that librarians have to be able to make sense of their role as a whole for themselves and also in order to present a coherent image to others. Moving from one type of role to another is a major shift of identity.

2. The discussion of the role within RDM is linked to a larger discussion around the role to support researchers, which has seen to be neglected in the past. There was a degree of uncertainty about certain research support roles, for example "bibliometrics" was mentioned a number of times, but it was clear that not everyone understood what it was.

3. Liaison librarians are already over-taxed with many roles; there was a sense of change in many areas and therefore also a need to make difficult decisions about priorities among different roles. Discussion of RDM has to be set in this wider context of evolving roles. Support for RDM was perceived to be "daunting"; the area "undefined".

Material from the workshop "Perspectives on Research Data Management"
1. This reading reinforced our understanding that the role of LIS in supporting research has to be seen in the wider context of work with other professional services, particularly the Research office, Computing Services, University Archives, as well as within the infrastructure of research – and of institutional research governance. The module has to address the debate about how these services work together and think about the specific competencies required to operate effectively in a collaborative service delivery environment.

2. Some discussions suggested resistance among some librarians themselves to a role in RDM, particularly if it meant deprioritising existing roles.

Existing curricula

Existing curricula target either students of LIS, practitioners/librarians, or researchers. Comprehensive overviews can be found in Bailey (2012), Corrall (2012), Digital Curation Center (2012), DigCurV (2012), Digital Curation Exchange (2012), Keralis (2012), and Pryor & Donnelly

(2009). Training in digital curation at UK LIS schools is sparse but five US institutions offer courses in Data Management.

Corrall (2012) identified three key issues in the teaching provision in LIS schools in the UK and US:

1. The importance of using the digital lifecycle as a basis for the curriculum. Subsequently, simplified models are now available (e.g. as developed by the Incremental project)
2. The importance of technologies for digital curation, although most teaching provision focuses on *learning* skills rather than *technical* skills
3. Practical field experience as an essential part of the curriculum

Tendencies in current curricula are a focus on the nature of data and the nature of the research process, and the importance of data management plans as part of the curriculum (Borgman 2010, 2012, McLeod 2012). Because of the varying nature of the research process and the data that is produced, a number of Open Education Resources with discipline specific RDM training have been developed with JISC (2010) funding, as are teaching materials provided by some data centres (e.g. UK Data Archive 2012). Given their focus on the researcher perspective, it is not necessarily simple to adapt them for librarians.

A Dutch curriculum that trains practitioners/librarians in data curation (UT3.Datacentrum 2012) not only aims to increase insight into data and the research process, but also 'to increase the ability to advice researchers effectively'. They use a *Stages of Change* model to determine the kind of intervention that is needed by the data librarian, and cover arguments and conversation techniques that can be used to overcome researchers' resistance. Role playing types of argument that researchers might use, and counters to them would be a good exercise.

Conclusion

There are potentially important roles for liaison librarians in supporting RDM as well as in supporting research more generally. Although the role and competencies required align with existing liaison librarians' roles, there are some major gaps in current knowledge and areas where the direction of development is unclear. The theories, technical jargon and key players in RDM are unfamiliar. It is important for librarians to increase their understanding of what research data means for researchers and to understand from the inside the viewpoint of researchers towards RDM. Practical skill development (eg in relation to understanding of relevant systems or the technicalities of metadata) must be balanced with strategic perspectives (in relation to advocacy). Because the context of policy and response to RDM needs is dynamic much of the learning must be exploratory, discursive and reflective, providing a space in which librarians can explore developments as they relate to their individual/team role. This will help avoid the material becoming dated too quickly. Equally hands on practical activities with documents and tools in real or realistic scenarios is important. The need to work closely with other support services, especially research offices and computing services and in a context offered by university research governance, should also be discussed within the module.

It is concluded that the learning outcomes of the proposed module will be to develop the ability to:

1. Explain the diverse nature of research across academic disciplines and specialities and discuss different conceptions of research data
2. Analyse the context in which research data management has become an issue

3. Discuss the role of a range of professional services, including libraries, in RDM
4. Reflect for themselves as individuals and for information professionals in general on the role and priority of supporting research data management
5. Explain and apply the key concepts of research data management and data curation to real world case studies and professional practice
6. Understand how to keep knowledge acquired on the module up-to-date

The module will be developed in short highly interactive sessions, with a stress on discussion and group work and applying principles to personal experience. Although the module is offered as OER, it seems improbable that other educators would reuse very large blocks of material, rather the most reusable content is probably short multimedia content that stimulates discussion or sets up activities. Flexibility about which sessions to emphasise in any particular delivery of the material, will allow the material to be customised to local needs. Versions to enable full time learners to catch up will also suit delivery to self supported CPD. For CPD in addition to the option to move through the material session by session, pathways through the material based on each library role as identified in the table above will be created in the form of an index. The module will encourage participants to engage in real world examples and explore the perspectives of other stakeholders through complex, open ended case study material – packaged in a variety of engaging and realistic forms.

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