RDM: An Approach from a Modern University with a Growing Research Portfolio

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Abstract

This article describes the background work undertaken by Oxford Brookes University in assessing how best to position institutional support for Research Data Management. It further discusses the development of our University's research data management policy and its collaborative approach to data management support. Finally, it reflects on the challenges of overseeing policy implementation and providing the required enactment infrastructure. The approach that we take is one that will hopefully be of interest to those institutions who are developing their research base and seeking to offer better data management support to researchers in a time of reduced or declining resource. Overall, we feel that the strategic and institution-wide approach that we have taken has worked well, and may be suited to institutions like ours that are less research-intensive. Finally, we feel that our approach is one that can readily be copied.

Background

Oxford Brookes is a medium-sized university with about 18,000 students, 4,000 of whom are postgraduates of some sort. The University employs around 1,000 academic staff members, who are all located within four faculties: Business; Health and Life Sciences; Humanities and Social Sciences; and Technology, Design and Environment. Roughly three-quarters of these personnel both generate research data and produce research outputs of various kinds on a regular basis. The remainder of our academic staff also produce data and outputs, but less frequently. Yet more data is routinely produced by research students, visitors and others associated with research at Oxford Brookes.

Academic data output in the university ranges from large data files in biological sciences, engineering and computing, through social sciences qualitative research to historical datasets, artworks and sound installations. This is likely to be typical of institutions where some research bases may be world-class, but some are still developing or in their early stages, and where the range of disciplines is diverse but there is less activity in each individual research area than more research-intensive organisations. Issues inevitably arise concerning resource to support these different and disparate activities, which may sometimes lack a comparable resource base to support them.

Some of the impetus for considering research data management (RDM) over the last few years was provided by the impending REF2014 exercise, which also allowed various resources to be found. The 2014 Research Excellence Framework (REF) replaced the RAE. It assessed the quality and impact of research submitted by UK universities across all disciplines. The results were published in December 2014 and will be used by the funding bodies to allocate block-grant research funding to universities from 2015-16. As well as informing funding allocations, the REF provides accountability for public investment in research, demonstrates its benefits, and provides important reputational yardsticks and benchmarking information about the research performance of UK universities.

The Oxford Brookes REF return covered all four Main Panels and covered subjects ranging from Biological Sciences, Allied Health Professions and Engineering through to Business, History and English all the way to Art and Music.

Table 1. Oxford Brookes University Research Assessment Results.

	FTE returned	4*	3*	2*	1*	Unclassified
RAE2008	226.23	8	26	44	21	2
REF2014	269.49	13	42	37	7	1

The FTE from our REF 2014 return and overall (FTE-weighted) quality profile is given in Table 1. As in RAE 2008, 4* work is classified as "world leading", 3* as "internationally excellent", 2* as "internationally recognized" and 1* as "nationally recognized". Those active in research according to the University's TRAC return for 2013-2014 is 556. Income from research funders is around the £4M per year mark, in addition to income from consultancy and other research-related activities. Although

Oxford Brookes University may not have the volume of research of research-intensive universities, we do have the range of subjects.

The main impetus to reviewing the University's data management position was a RDM bid to JISC in 2011. In order to pull together the bid, a working group of staff from academic disciplines as well as colleagues from the Library, IT and research support functions got together to discuss how to respond to data management needs. Key relationships were catalyzed by this process, awareness of the issue of RDM raised and a way forward came into being. A key issue to come out of the work on the bid was just how frustrating a large number of people found issues to do with RDM – frustrations were felt by academic staff unable to do what they wanted, or felt was right, and unable to access the support they felt they needed; support staff frustrated with what they often felt were inappropriate practices but were not empowered to comment on or advise upon. As discussions on the bid coalesced, the University decided that, come what may, the work on RDM would continue in the way outlined in the bid, even if funding were not forthcoming. This proved to be a prescient position as we were not successful in this bid.

Progress with RDM at Oxford Brookes

A Steering Group was set up, chaired by the Pro Vice-Chancellor, Research and Knowledge Exchange and with a range of members. The Steering Group is not a formal body of the University – it does not have terms of reference, but it can send papers to other, more formal committees. As it is not a formal committee it can also add members as it wishes and range widely in terms of subject matter. As it is chaired by the Pro Vice-Chancellor it has inherent weight, and since he also chairs the University's Research and Knowledge Exchange Committee (RKEC) issues can flow easily to the University's main research debating arena. It was decided early on that support from the highest levels of the university was needed if our RDM strategy was ever to have any chance of succeeding – our subsequent experience clearly showed that an effective RDM policy cannot be driven bottom-up, but needs a good degree of institutional buy-in and support

Once we knew that our JISC bid was unsuccessful, we held the first Steering Group meeting and discussed issues, ways forward etc. It became clear that i) this was a very challenging topic where outright success was unlikely, unless over a very long timescale; ii) that no one area, person, or department had sole or even majority ownership of the issues involved and iii) any resolution would be very costly. Our approach was therefore to embrace our position and decide that this was an opportunity to try to work across support functions, in this area in particular, but a more collaborative approach would be of benefit in the wider field of research support. In spite of our unsuccessful JISC bid, we were able to draw on significant consultancy support from the DCC (Digital Curation Centre), for free. The DCC also allowed us to co-opt one of their members onto our Steering Group for the first few meetings and their external view was extremely helpful in shaping our general approach.

Finally, one resolution that quickly emerged from our initial RDM work was that though a holistic, all-embracing and strategic RD policy was an attractive goal, the general RDM problem was so challenging and multi-faceted that it seemed likely that a pragmatic and tactical approach would actually be much more useful to us. Put bluntly, however strategically and generally we approached the RDM problem, we always found types of data that could not be coped with. We therefore adopted a policy of "starting

with kinds of data that we could handle" and gradually increasing our capabilities and experience so as to widen the research areas whose data management and curation we could satisfy.

Development of an RDM Policy

In the first instance, a fairly rudimentary draft RDM policy document was pulled together, reviewed by the Steering Group, sent to the University's RKEC and then sent to Faculty RKECs for consideration. The DCC advised on the content of the policy and the Steering Group drew heavily on previous examples, particularly that of the University of Edinburgh. A small number of changes were suggested and the policy document was agreed by the University RKEC in February 2013. However, in many ways, the policy is the least interesting part of the process. At the same time as writing the policy, we developed an accompanying document which gave details of how the 11 points of the policy would be delivered. This is expected to be a dynamic document. It currently identifies research areas where we are clear that we know how to deliver our policy, but also highlights other research circumstances where the correct way to proceed is much less obvious. We review our Operational Plan regularly and use such reviews to drive some of the RDM discussions and changes to practice. The Operational Plan contains a range of omissions, gaps and queries, and until these are completely removed, we know that we do not have a complete solution.

Resources, Staffing and Infrastructure for the Implementation for an RDM Policy

A key driver in promoting open research data has been the move by HEFCE to mandate Open Access publications in any future REF exercise. This has had the side effect of helping researchers to appreciate issues connected with Open Data much more, and has helped them to think about how they may respond to the future requirements for open data in appropriate ways.

Areas of support for research and RDM in the Oxford Brookes University lie within three main areas: the Learning Resources (including the Library), Oxford Brookes Information Solutions (OBIS – our IT Department) and the Research and Business Development Office (RBDO). RBDO manages and oversees the processes of funder compliance, bidding for funding and research assessment exercises.

In 2014 the Directorate of Learning Resources underwent a restructuring that would, amongst other things, support the University's strategy for research and knowledge exchange. For the Directorate this meant the introduction of a structure that enables working with the University's researchers to support the growing research agenda. This enabled the creation of a clearly articulated support for RDM across the Directorate. This restructuring represented a move away from a structure based on activities and processes to one that was instead based on service provision. The support for research data therefore changed from being focussed on supporting a repository service to supporting RDM activities, including the appropriate service provision.

This restructuring resulted in the redefinition of existing roles across the Directorate and also in the creation of a Scholarly Communications Department. This team built upon the support that already existed for the institutional repository, RADAR, and staff

already involved in RDM activities at the University. The remit of the Scholarly Communications team includes the roll-out of RDM within the Directorate and across the University, ensuring that University research outputs and research data are deposited in the institutional repository and carrying out appropriate advocacy work across the University.

Support for RDM is not confined to the Scholarly Communications team alone, and Academic Liaison roles have been revised to specifically include areas of expanding Library activity and, specifically, research support. This ensures that the support for research is embedded as a core activity.

At an institutional level, Learning Resources are engaged in RDM activities and are represented on the RDM Steering Group by both the Head of Resource Development and Delivery and the Scholarly Communications Manager. This ensures that RDM has senior management support within the Directorate and that support is given to University strategy, policy, and resultant activities.

OBIS were restructured in 2011 and one of the outcomes of the review was to set up a partnering relationship between OBIS and the University's Faculties, so that each Faculty has its own OBIS Business Partner. These Business Partners were invited to join the RDM Steering Group in 2014, in addition to other OBIS representation to strengthen their links with Faculties.

RBDO coordinated our original failed JISC bid and representatives from that office have been on the Steering Group from its inception. This includes representation from both pre-award and post-award teams.

The Research Data Audit Process and its Consequences

As a major component of its initial work, the Steering Group oversaw a series of Audits, using the DCC Data Asset Framework (DAF). These were started in the first Faculty in January 2012, completing work in the final remaining Faculty by July 2013. The Audits were managed by RBDO and Library staff from the Steering group but undertaken by others including Subject Librarians, Faculty Research Support Staff, and OBIS Business Partners. This proved a valuable way to disseminate RDM issues and concerns, whilst also exposing some support staff to academic colleagues' research for the first time. Each Audit was preceded by a DCC awareness session on RDM-related issues and a briefing session for those involved in running the audits. In total 90 staff were interviewed. They were asked about their data, both old and recent, their management habits and data types. They were also asked more qualitative questions on any emotional ties to their data, who they trusted with their data and the like. The responses were collated and shared appropriately, but the most valuable part of the exercise was simply the raising of the question in the first place. Many of the good things that have occurred have essentially stemmed from that initial question. The DCC also ran a review meeting after the first set of Audits, using the DCC CARDIO[1] tool to assess where we were on the RDM support life cycle.

In addition to the DAF AUDITS, the University had to develop a Roadmap to demonstrate how it would ensure compliance with the EPSRC data management policy by May 2015. This was developed in parallel with the RDM policy and the development of each document informed the other.

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1 DCC CARDIO: www.dcc.ac.uk/projects/cardio

In addition to the work of the Steering Group, the Pro Vice-Chancellor, Research and Knowledge Exchange, the Research Support Manager from RBDO and the Scholarly Communications Manager from the Library have been working with a range of colleagues on RDM issues. This work includes:

- Instigating regular meetings to discuss how best to respond to funder requirements on open data, such as those of the Engineering and Physical Sciences Research Council (EPSRC), which come in to place in full in May 2015;

- Running roadshows on requirements for the next REF. These focussed mainly on the HEFCE mandates for Open Access of publications, but the opportunity was also taken to gather staff together to discuss issues around RDM. A roadshow was run for each of the 17 Units of Assessment (subject areas) to which we made a return in REF2014. The roadshows ran from the period October-December 2014;

- Setting up a Data Management Plan using the DCC's template, adapted for Oxford Brookes;

- Establishing RDM websites for both RBDO and the Library;

- Running training events for Library staff to highlight already-existing links between their work as librarians of outputs and their skills needed to work with academic staff on support for RDM.

Although academic staff members have been involved in all stages of our work on RDM, this paper has focused so far on the support side of RDM. In addition to speaking to a range of staff about RDM as part of the DAF Audit referred to above, some academic staff have engaged with the developing agenda, although others have are at a less complete stage of development. Since the initial RDM audits academic colleagues in Biological Sciences have introduced data management as standard items on their research group agendas and the issue of data preservation has risen up the agenda. Two groups in Biological Sciences are to trial a data storage solution for data which is broadly 'complete' and needs to be archived. This will operate through an external company who specialise in this provision for the Higher Education sector. OBIS have agreed to pay for the hardware to facilitate this storage and the first year data charges and future data charges will need to be met by the Faculties which make use of the Facility.

Academic colleagues in the arts have embraced this issue with enthusiasm – not least by discursive and ongoing discussions about what may constitute 'data' in their field. One of our colleagues delivered a paper on 'Research data and Arts practice: a consideration of the relationship between practice-based research in the Arts, documentation, outputs and data management' at the UKSG in November 2014 (Whitty, 2014). He has also secured funding from his Faculty to employ a Research Data Enabler (this post is going to shadow/support/collect data from researchers) to support their efforts in this area – this will be notable in that it will constitute the first dedicated RDM role in the Institution.

RDM now features as part of the induction training that all staff members who are new to the University undergo during their first three years at the Institution. Research Students are pointed to the MANTRA training materials (provided by EDINA, which is the JISC-designated centre for digital expertise and online service delivery at the

University of Edinburgh) which advises on RDM scenarios and the research student training programme now includes a specific training session on RDM. These developments all fell out of staff involvement with the RDM Steering Group.

Both the DAF Audit and the Open Access Roadshows have raised awareness of RDM issues over the period 2011-2014. In addition, funder mandates from the likes of the EPSRC have made more specific recommendations and members of academic staff are increasingly aware of the dangers of obsolescence as technological advances move so quickly. However, there are still a significant number of staff who are not engaged with the issues and who do not consider how to manage their data in anything other than the most basic way. The University's approach still continues to be one of widespread but low-key dissemination, with a much greater focusing of effort on those areas that wish to engage. This has a number of benefits:

- It is generally easier to work with people who want to work with you;

- There is an automatic reduction in resource required to support;

- This gives opportunities to develop, support and manage good practice;

- Support functions in the University can be more readily deployed.

It is worth admitting that there are also problems with this approach – possible slow take-up across the institution and inadequate resources to deal with all issues are but two consequences of the way in which we have chosen to proceed. However, this at least allows the University to respond and support some key individuals/research groups and start to build up expertise which can then be shared more widely.

General Conclusions and the future for RDM at Oxford Brookes

One of the key conclusions of our work in the area of RDM is that a great deal of issues can be resolved by better communication. Some of the issues are familiar, and include:

- Academics genuinely not being aware of what is on offer in the University – especially regarding the IT support that is available;

- Academic colleagues taking a particular (and sometimes unhelpful) form of action to manage their data simply because that is the only way they can think to do the work, rather than because they are convinced it is the best way.

The Steering Group has been working with OBIS to obtain a greater articulation of the service they already provide, so that it is clearer to staff exactly what OBIS are or are not able to provide, what this provision means for them in terms of cover if something goes awry (and what is implied if they do not use University facilities) and who to contact for more information or if there are other requirements. The University now has a standard storage document and the process of discussing what is provided by the University and what is not has in and of itself proved a valuable exercise, as OBIS colleagues are now much more aware of what researchers need and what they do when they collaborate – especially as this collaboration is predominantly with other academics who are not bound by this University's terms and this University's IT systems.

More communication has also been useful in terms of the Business Partnering model used by OBIS. Currently, the flow of information from Faculty to OBIS has been through the Business Partner and back again. Various RDM issues have highlighted the need for the Business Partners to share data more widely between themselves so that the Partner for Humanities and Social Sciences may call upon expertise from the Partner for Health and Life Sciences, where data management, on the whole, is more advanced. The University, at the moment, is predominantly engaging with support staff to encourage them to talk to their academic community before working on any form of skills audit, although this is likely to come.

The Library, supported by the DCC, ran a workshop with the then Subject Librarians (created Academic Liaison Librarian posts in the restructure), which included sessions on how they could relate their existing knowledge/skills to the RDM environment. It was agreed that these individuals would benefit from a greater understanding of how research worked, both generally and at Oxford Brookes, and two sessions are being run in January 2015 to try to address this.

It would also be fair to say progress in this area has been slow. The collaborative approach taken by the University is one that takes time to develop and requires a lot of work behind the scenes in discussing with staff ways to add this support to the work they already do. We have been reliant on goodwill in some instances and dogged persistence in others. In institutions with large teaching portfolios, it is much harder to get general support staff to engage with research-related activities and although progress has been made, there is still a long way to go. Some staff do view the RDM work as an 'addition' to their role, as other work has not been removed in order for them to undertake this. The Steering Group is trying to promulgate the view that this work is a standard component of research good practice, but as it is sometimes viewed as an 'addition' by the members of academic staff who are generating the data, one can hardly criticise support staff for sharing this view. The general opinion, though, has been of acceptance of the additional responsibility, even if this has mostly been in the form of goodwill towards the issues, rather than concrete change.

We have not worked alone. We have had a good deal of contact with the University of Oxford and have benefited from discussing a range of data management issues with them. We have seen demonstrations of emerging systems from their work (some of which is JISC-funded) and as a general principle we are very happy to use systems/processes developed by other Universities, rather than wishing to develop everything for ourselves.

Another emerging area concerns research project websites. The University's central web team is very focused on delivery, support and marketing of the student experience and we are working with them to find the optimal way to set up individual researcher's pages to ensure that they have the most appropriate showcase for their project and that the data displayed there is presented, curated and preserved in the best way possible. Work in this area is just beginning.

We also need to do a great deal more to properly embed our RDM policy. We are in the process of rolling out a Current Research Information System (CRIS). We currently have all externally funded project details held in one database but we do not yet have a central record of internally funded projects. The CRIS will allow us to have that and so we can then start to contact academic staff and ask them about their plans for data as their project start s to draw to an end. This will serve also to flag up the policy requirements for data and act as a dissemination mechanism as well. The CRIS could also allow us to contact Line Managers when a member of staff is leaving, to check that arrangements are being put in place for management of data when that person leaves.

Beyond the strategic, practical work at the University has, thus far, has been focussed on RDM as an issue of storage and its management, through the creation of appropriate guidelines. Further work now needs to be done in order to move to a better understanding, and implementation, across the University of data curation. The activities of data curation need to be embedded as an on-going active engagement with, and processes for, research data. The skills for this already exist within Learning Resources where small-scale digital preservation activity is already in process using appropriate open source tools.

The University now needs to move beyond an RDM policy framework, with small-scale projects, to a full-grown digital preservation and curation environment. The work previously done using the DAF methodology has provided a solid understanding of curation needs that now need to be mapped to a data curation lifecycle, which includes access, use and re-use, preservation, retention and disposal.

Finally, properly embedding a pervasive culture of carefully-managed digital preservation and curation will need to be achieved through academic engagement and in the understanding of researcher behaviours. This dove-tails with the current activities of the University in the JISC-funded Making Sense[2] OA Good Practice Pathfinder Project, which is centred around the development of a researcher-centred methodology.

References

Whitty, P. (2014). *Research data and arts practice: A consideration of the relationship between practice-based research in the arts, documentation, outputs and data management.* Presentation given at the 2014 UKSG Conference, London, UK. Retrieved from http://tv.theiet.org/channels/corporate/41238.cfm

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[2] Making Sense project blog: http://sensemakingopenaccess.blogspot.co.uk/