



## iSchool Partnerships and Practices – information and proposal form

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<p><b>Title of submission:</b>  <b>Learning research data management in an active learning classroom</b></p>
<p><b>Area (please check the applicable area description with an x):</b>  Curriculum  <input checked="" type="checkbox"/> Teaching  Student experience  Research  Administrative management  Other (please enter the applicable keyword):</p>
<p><b>Submission abstract (max 150 words):</b></p> <p>Research data management (RDM) activities are increasingly becoming incorporated in the academic library as well as in iSchool curricula. This paper reports on how active learning classroom (ALC) pedagogy has been successfully used in a blended-learning professional-development course for university staff in RDM support. The course is a collaborative initiative between an iSchool and a national data archive. ALC tasks have been designed to allow participants to combine their respective experiences with learning from course material in order to solve problems, devise solutions, and create reference material. Tasks are focused around cases that relate closely to activities the RDM support staff may meet and allow participants to compare local conditions in their respective institutions. The course combines practical, strategic and theoretical content. Both the use of ALC and collaboration between an iSchool and a data archive can fruitfully be transferred to other RDM training initiatives.</p>
<p><b>Submission description (max 2,350 words):</b></p> <p>Research data management (RDM) and research data services are activities which are increasingly becoming incorporated in the academic library, often in collaboration with other functions in the research institution. This can be seen as a possibility for academic libraries to expand their role but also places some new requirements on librarians and information specialists who become engaged with the knowledge-creation process in</p>

addition to the processes of recorded knowledge (Tenopir, Birch & Allard, 2018). These new requirements often involve a need for professional development. Drawing on experiences from a course offered to Swedish university staff, we propose that for such professional development, an Active Learning Classroom (ALC) approach is highly suitable. Attempts to identify examples where ALC has been used for professional development or for training in RDM have not been successful, which is why we see a value in sharing our experiences.

#### *Education in (research) data management and data curation*

Over the past decade, a number of training initiatives have been designed around RDM and data curation. These have often taken the form of programs and courses at master's or doctoral level, aiming to educate research data professionals, data librarians or data scientists (see e.g. Murillo & Jones, 2018; Harris-Pierce & Liu, 2012). Many other universities around the world are in the process of setting up programs in data science or data curation. Furthermore, several online courses have been designed (e.g. Coursera's *Research Data Management and Sharing*<sup>1</sup> and *MANTRA* from the University of Edinburgh<sup>2</sup>), which target both researchers and information professionals.

#### *The emerging need for RDM training in Sweden*

Sweden, as many other countries, is formalizing an infrastructure for the creation, management and sharing of research data, in line with the European Union Open Science initiatives (European Commission, 2012; Prop. 2016/17:50). An important part of this infrastructure will be functions at Swedish universities for supporting researchers with data access and management (here referred to as Data Access Units, DAUs). There is so far little formal training for the DAU staff, who are primarily librarians, but also archivists, grants managers, and lawyers. Although some of the librarians and most of the grants managers hold a doctoral degree, most DAU staff members have little research experience beyond a master's thesis.

The Swedish National Data Service (SND), a research infrastructure in the form of a consortium with seven of the largest Swedish universities as partners, has conducted training for DAUs since 2016. In 2018, their training program was made into an open online resource, BAS Online.<sup>3</sup> BAS Online is an introductory course which addresses such topics as data management and data management plans, metadata, documentation, and legal issues. However, further training was requested from DAU leadership and staff in network meetings with the 28 universities who have or are setting up support functions.

Consequently, the Swedish School of Library and Information Science (SSLIS) and SND have jointly developed a sequel to BAS Online, offered as blended learning. The aim has been to design a course which will address the issues facing DAU staff, including both practice and theory. As course designers, we wanted to give the course a form which would allow us to draw on the participants' varied but often substantial knowledge of various aspects of the subject. At the same time, we needed to design the course keeping

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<sup>1</sup> <https://www.coursera.org/learn/data-management>

<sup>2</sup> <https://mantra.edina.ac.uk/>

<sup>3</sup> <https://snd.gu.se/sv/bas-online>

in mind that participants would come from different parts of the country. We decided to make use of Active Learning Classroom (ALC) pedagogy. This allows us to flip the classroom: participants are required to come to class well prepared and the meeting time is used for concentrated group exercises which include much interaction among participants and between participants and teachers (Office of Distance Learning, 2011).

#### *Using an Active Learning Classroom approach*

The training package is run as a 12 week blended-learning course with four physical meetings and with preparation and group work conducted via a learning management platform between meetings (participants are expected to put in 120 hours). During the meetings, focus is on an ALC design where participants work actively in groups with instructor-facilitated tasks. In order to secure active and informed discussions, participants are expected to prepare before the meetings. This presentation is based primarily on experiences from the first time the course was offered, in spring 2018, with 21 participants from 12 universities.

The Active Learning Classroom idea combines a collaborative, interactive pedagogical approach with the awareness that the design of spaces influences how learning takes place (Brooks, Walker & Baepler, 2014). The first time the course ran, we could use a newly built active learning classroom at the University of Borås. It has six round tables, all equipped with a whiteboard, a stationary computer and a wall-mounted screen, so that the screen can be viewed by all around the table or broadcast to all tables. The positions of lecterns and the absence of a “main” whiteboard or screen in the room discourage the teachers from lecturing and rather to use their content expertise to support the participants’ engaged learning.

One of the challenges of the course development was to design a curriculum and ALC tasks that would scaffold the desired learning. The course has three main objectives: for participants to develop data management skills; to increase the participants’ understanding of the institutional conditions for managing and providing access to research data; and to strengthen the national network through interpersonal connections and collegial ties. The approach taken to address the objectives was to focus the tasks around cases that relate closely to activities the DAU staff may meet, and on tasks that allow participants to exchange experiences and compare local conditions in their respective institutions.

The course makes use of case and role-playing methods (Office of Distance Learning, 2011) in various ways. For instance, in one task participants are asked to take on the role of researchers and design a data management plan (DMP) for a DAU-run research project. This serves as both a practical assignment which requires participants to grapple with the challenges that arise when constructing a DMP, and to think about the plan’s potential use and the level of detail needed. This exercise also uses a technique common in ALC pedagogy, where participants work in groups and then change groups to share what they have done. In this case, it is used to peer review the DMPs, and it requires participants to take responsibility for presenting the group’s decisions for other participants. A similar design is used in several of the other tasks, where new groups are formed during the task and participants are required to re-tell and continue the previous group’s work in a new group setting. This is intended to encourage participants to share

with each other what they have learnt. It also serves to form new constellations and getting participants to work with new sets of people.

The course also contains more practical work around datasets. Examples include anonymizing a test dataset, describing resources according to a particular metadata standard, and using a tool for searching suitable registers for register-based research. These tasks are done in groups, with group sizes varying within and between tasks, and are then followed up jointly with the whole class. During all of these activities, several teachers from both SND and SSLIS circulate between the groups and can answer questions or steer the discussions, if necessary.

Another practical task is intended to make the participants better acquainted with data types and with how software can be used to produce and extract metadata and documentation. In these tasks, which start before the meeting and extend to after the meeting, the participants work in groups to produce “quick guides” to data-analysis software packages intended to provide DAU staff with instructions on how software features can be used to document work with data and export metadata. The outcome, the quick guides, will be available as a resource within the DAU network. Guides are presented and receive feedback during the meetings, before being finalized by the group. This exercise was perceived as quite challenging and time consuming by some of the participants, especially for those who tackled GIS analysis tools. It also required getting acquainted with the basic features of the software before the groups were able to focus on the documentation aspects. However, it forced participants to consider the characteristics of various data types as well as how data-analysis software can be used for documentation, at the same time as the group members became skilled at working together.

Preparations for the meetings take the form of reading, listening, watching and doing. Participants read various types of texts, including descriptions of best practice, documents on international standards and guidelines, and some academic articles, and listen to audio recordings of lectures and podcasts. Furthermore, following the example of e.g. MANTRA, we produced filmed interviews with researchers from various disciplines who speak about how they create and manage different types of data. The role filled by these interviews became apparent when a couple of interviews fell through and participants expressed that they felt less well prepared to approach those data types which were not supported by interviews.

#### *Supporting training through collaboration*

Combining the expertise of the research data managers at SND, some of which have research experience, with the research and educational experience of faculty at an iSchool (SSLIS) has proven fruitful. We have drawn on our various types of expertise and experience in identifying the objectives of the course, designing the learning activities, and providing feedback in class and in the learning platform. We believe that the collaboration between the two institutions has also contributed to the course’s legitimacy among the DAUs.

### *Participant reactions*

The first time the course was offered, in spring 2018, participants' opinions were solicited through a questionnaire. Participants almost unanimously agreed that they had gained knowledge which would be useful in their DAU work. The vast majority appreciated the ALC work. However, some participants have found that the fairly intricate group changes, along with the group work and other preparations between the meetings, were occasionally confusing and made it difficult to keep track of what was expected.

When asked about particular ALC tasks which were appreciated, participants pointed to the ones that were close to practical DAU work, such as on legal issues, writing a DMP, and anonymizing datasets. Least appreciated were the "quick guide" tasks, partly because they required much work in between meetings and in some cases were unnecessarily challenging.

One of the objectives of the course was that participants would build their network for future support and collaboration. This objective is part of building a sustainable DAU network and RDM environment in Sweden. Most participants fully agreed that they had made valuable contacts through the course. Some expressed in free-text answers that they had come to know and respect each other's expertise in various areas and felt that they could draw on each other in the future.

### *Transferability to other institutions*

An increasing number of institutions of higher education are adapting active learning designs, including ALC. This means that there are good chances to implement ideas presented in this paper in other settings. One potential problem we have faced when trying to offer the course in a different Swedish region is a difficulty to locate suitable ALC-prepared classrooms. This may be worth bearing in mind when designing a course on RDM in ALC form, as the joint use of screens, for instance, may provide a challenge in some settings.

Another area where experiences from the course may be transferred concerns the collaboration between an institution of higher education (an iSchool) and a data archive. We believe that the collaboration between these two types of institutions, which combine strategic perspectives and hands-on experience of RDM with a researcher perspective and educational skills, is beneficial, as was also concluded by the Research Data Workforce Summit in 2011 (Weber, Palmer & Chao, 2012).

### *Benefits of the ALC approach when teaching RDM*

Some clear benefits with using ALC and blended learning in a professional developments course on RDM are that participants are active learners both during and between meetings. They can make use of their existing knowledge and experience while at the same time being provided with many opportunities to learn both from other participants and from the teachers. The format is well suited to follow up on questions and problems within particular institutions. ALC offers participants a possibility to do scaffolded work on tasks close to the everyday services of the DAU. Tasks can also address issues of strategic importance for the development of DAUs, with an opportunity for participants from different institutions to compare experiences. Through its combination of practical

tasks, active learning and exchange of experiences, ALC is well suited for teaching both strategic, user-oriented, and practical, hands-on, issues that is RDM.

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