Research Data Management Strategy

MARCH 01, 2023

Bow Valley College

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Introduction and background

In 2021 the National Research Council (NRC) and the Canadian Tri-Agency funders (NSERC, SSHRC and CIHR) formalized and released the Tri-Agency Research Data Management (RDM) Policy. The agencies expect the research they fund to be conducted to the highest professional and disciplinary standards, domestically and internationally. These standards support research excellence by ensuring that research is performed ethically and makes good use of public funds, experiments and studies are replicable, and research results are as accessible as possible. RDM is a necessary part of research excellence. The objective of RDM policy is to support Canadian research excellence by promoting sound data management and data stewardship practices. It applies to grant recipients and to institutions administering Tri-Agency funds. Within this policy, it stipulates that each institution will have its own strategy for RDM and that the strategy must be made publicly available on the institution's website, with contact information to which inquiries about the strategy can be directed. Having the strategies publicly available will help the agencies and the broader research community to understand institutions' current and planned RDM capacity, challenges, and needs, and will facilitate ongoing dialogue and collaboration on the advancement of RDM in Canada.

The three main components of the policy include:

- Institutional strategies: By March 1, 2023, research institutions subject to this requirement must post their RDM strategies and notify the agencies when they have been completed.
- Data management plans: By spring 2022, the agencies will identify the initial set of funding opportunities subject to the DMP requirement. The agencies will pilot the DMP requirement in targeted funding opportunities before this date.
- Data deposit: After reviewing the institutional strategies and in line with the readiness of the Canadian research community, the agencies will phase in the deposit requirement.

The policy needs to be updated as the implementation dates for requirements are further specified.

In accordance with this, the College started to develop a team whose task was to outline a RDM strategy and its audience in 2021. In line with the Ownership, Control, Access and Possession (OCAP) standard and the Tri-Agency acknowledgment of Indigenous data sovereignty, the College RDM Strategy will also acknowledge the data management needs of Indigenous peoples, communities, and nations. This strategy will help the College bring awareness not only to the data management lifecycle

but also to the education and needs of the people we serve within research. This strategy is integrative and holistic in its inclusion of RDM for both Indigenous and non-Indigenous populations.

The College will take a long-term view on RDM implementation and capacity building. We realize that it will take time to grow a mature state of RDM supporting infrastructure and resources at our institution in the future years. This version is focused on current activities and will be updated as growing and identifying future areas of priority focus that will move toward the desired state.

Importance of research data and research data management

What are research data?

Research data are data that are used as primary sources to support technical or scientific enquiry, research, scholarship, or creative practice, and that are used as evidence in the research process and/or are commonly accepted in the research community as necessary to validate research findings and results. Research data may be experimental data, observational data, operational data, third party data, public sector data, monitoring data, processed data, or repurposed data. What is considered relevant research data is often highly contextual and determining what counts as such should be guided by disciplinary norms (Tri-Agency Research Data Management Policy - Frequently Asked Questions).

What is research data management?

Research data management (RDM) refers to the processes applied through the lifecycle of a research project to guide the collection, documentation, storage, sharing and preservation of research data.

RDM is essential throughout the data lifecycle—from data creation, processing, analysis, preservation, storage and access, to sharing and reuse (where appropriate), at which point the cycle begins again. Data management should be practiced over the entire lifecycle of the data, including planning the investigation, conducting the research, backing up data as it is created and used, disseminating data, and preserving data for the long term after the research investigation has concluded (Tri-Agency Research Data Management Policy - Frequently Asked Questions).

Why is RDM important?

RDM enables researchers to organize, store, access, reuse and build upon digital research data. RDM is essential to Canadian researchers' capacity to securely preserve and use their research data throughout their research projects, reuse their data over the course of their careers and, when appropriate, share their data. Furthermore, as an acknowledged component of research excellence, strong RDM practices support researchers in achieving scientific rigor and enable collaboration in their fields (Tri-Agency Research Data Management Policy - Frequently Asked Questions).

Scope

The target audience for the College RDM Strategy are the Faculty, Staff, Students, Partners, and External/Internal Researchers, who involve within the fields of both applied and academic research. The overall objective is to develop, promote, bring awareness to, and maintain a RDM Strategy for the College. Components of this strategy will highpoint the key roles involved in consultation and development of the key activities related to where the College will head in the future years. Major components of this Strategy follow the data lifecycle as specified by the Digital Research Alliance of Canada. Additionally, the principles of OCAP are followed with respect to the Indigenous Data Sovereignty aspects of this strategy. This Strategy reflects the scope of all types of research data handling and generation at Bow Valley College.

Oversight and review

This Strategy will be monitored regularly by the to-be-formed RDM Advisory Committee, and the strategy will be updated on an annual basis. Annual reporting on progress will be provided to the VP Academic and Special Advisor, Academic and Research.

The RDM Advisory Committee will:

- Continuously update the RDM Strategy, gather the information required to evaluate gaps between current and desired state.
- Make a workplan with timelines, roles and responsibilities to implement this RDM Strategy to address gaps between current and desired state.
- Organize a series of RDM workgroups as needed.
- Provide suggestions to the Vice President, Academic and the Special Advisor, Academic and Research on next steps for RDM Strategy.
- Seek input from academic, administrative, and industry partners through on-going liaison and consultation.

Institutional support

To support the adoption of the College's RDM Institutional Strategy and the implementation of RDM practices for our researchers, the College will continue to move forward to reaching our desired RDM state.

Over the future years we have committed to focus on the following strategic priorities and activities:

I. Enhance Awareness of RDM across the College

- Continue to develop and implement communications plan, develop and disseminate RDM education to the College community.
- Build and promote Library's RDM Guide & RDM Tutorial to the College community.
- Develop a targeted faculty and student engagement strategy.

II. Enhance RDM Training and Capacity-building for Faculty and Staff

- Finalize and disseminate "RDM Best Practice Guidelines".
- Provide internal training and education like workshops and information sessions for faculty, students and staff about RDM.
- Offer OCAP training to enhance understanding and competency of participation in research within Indigenous communities.
- Provide access to tools to enhance better data management practice.

III. Strengthen RDM Governance:

- Evolve the to-be-formed RDM Advisory Committee to implement the College's RDM Strategy, including engaging other stakeholders across the college.
- Socialize Data Classification Policy 300-2-18 and Records Management Policy 200-1-8 and the other new Data Governance Policy and Procedures that will establish institutional standards related to RDM.
- Update other College policies as required to reflect RDM practices.

IV. Provide and Support Access to RDM Tools, Resources, and Infrastructure:

- Recognize repository storage option for the College's faculty and staff for data deposit.
- Implement data management planning, discovery and access tools, including offering training on the DMP Assistant Tools from the Digital Research Alliance of Canada.
- Explore new tools for data deposit, discovery and access like Dataverse (Borealis), and the Federated Research Data Repository (FRDR).
- Collaborate with the College's Research Ethics Board to update application form and other tools to capture RDM practice details.

Stakeholders

There are several stakeholders key to the success of the College RDM Institutional Strategy including:

- Academic and Research
- Research Ethics Board
- Library
- Information Technology Services
- Data Labelling Governance Committee
- Academic Schools, faculty members, and Administration
- Iniikokaan Centre
- Student Services
- Students
- External research partners, including industry and community organizations.

As our priorities over the future years, we will develop an engagement strategy to guarantee that all the stakeholders are aware of and contributing to a better RDM environment.

Ethics considerations

Research projects involving human participants are reviewed by the College Research Ethics Board which also includes an ethical review of RDM strategies as part of the REB submission. In addition, the Tri-Agency's Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans - TCPS2 (2018) is a resource for researchers to consider ethical conduct in research involving human participants. The inputs from the College counsel & data protection officer will also be collected and included with ethical, legal, and commercial obligations.

Indigenous data considerations

The College will comply with the OCAP principles (Ownership, Control, Access, Possession). The First Nations principles of OCAP establish how First Nations' data and information should be collected, protected, used, or shared. Standing for ownership, control, access and possession, OCAP is a tool to support strong information governance on First Nations data sovereignty. Considering the diversity within Nations, the principles will be expressed and asserted in line with a Nation's respective world view, traditional knowledge, and protocols.

Chapter 9 of the TCPS2 details considerations in research with Indigenous Peoples. Bow Valley College recognizes that a distinctions-based approach is needed to ensure that the unique rights, interests and circumstances of the First Nations, Métis and Inuit are acknowledged, affirmed, and implemented (Tri-agency RDM Policy, Government of Canada 2021).

Other relevant strategies and policies

As part of the regular policy review cycle at the College, the policies identified below will be considered for updating, as needed, to ensure consistency with RDM expectations. Please visit the College Policy page and applied research policies and procedures to search and access the policies.

Some of them are:

500-3-2 Ethical Conduct for Research Involving Human Participants Policy
500-3-2 Ethical Conduct for Research Involving Human Participants Procedure
500-3-4 General Research Fund Policy
500-3-4 General Research Fund Procedure
500-3-5 Research Administration Policy
500-3-5 Research Administration Procedure
300-2-4 Acceptable Use of Information Technology Resources Policy
300-2-9 Information Management Policy
300-2-11 Information Security Breach Procedure
300-2-18 Data Classification Policy
300-1-8 Records Management Policy

Definitions

Data Management Plan: A 'data management plan' (DMP) is "a living document, typically associated with an individual research project or program that consists of the practices, processes and strategies that pertain to a set of specified topics related to data management and curation. DMPs should be modified throughout the course of a research project to reflect changes in project design, methods, or other considerations" (Tri-Agency Research Data Management Policy, Frequently Asked Questions, Government of Canada 2021).

Research Data: 'Research data' are data that are used as primary sources to support technical or scientific enquiry, research, scholarship, or creative practice, and that are used as evidence in the research process and/or are commonly accepted in the research community as necessary to validate research findings and results. Research data may be experimental data, observational data, operational data, third party data, public sector data, monitoring data, processed data, or repurposed data. What is considered relevant research data is often highly contextual and determining what counts as such should be guided by disciplinary norms."
(Tri-Agency Research Data Management Policy, Frequently Asked Questions, Government of Canada 2021).

Research Data Management: "Research Data Management refers to the storage, access and preservation of data produced from a given investigation. Data management practices cover the entire lifecycle of the data, from planning the investigation to conducting it, and from backing up data as it is created and used to long term preservation of data deliverables after the research investigation has concluded. Specific activities and issues that fall within the category of data management include: File naming (the proper way to name computer files); data quality control and quality assurance; data access; data documentation (including levels of uncertainty); metadata creation and controlled vocabularies; data storage; data archiving and preservation; data sharing and reuse; data integrity; data security; data privacy; data rights; notebook protocols (lab or field)" (Committee on Data, International Science Council).

Timelines

The Strategy will be socialized and implemented over the future years, after which it will be updated with new priority focus areas for continually moving towards our desired end state. The strategic priorities and activities in the future years were mentioned in detail in point 5 **Institutional Support**.

Looking ahead

Recognizing RDM is new within all colleges across Canada, it will take time to establish staff expertise, researcher understanding and capacity, and infrastructure to address the gap between current and desired states. This Strategy outlines planned activities over the future years to keep the College moving towards the desired state. We will plan future areas to address based on evolving requirements from Tri-Agency, the needs of the College's researchers and the type of research undertaken at the College. This will include associated working groups to target specific topics such as data management planning, data classification, privacy, IT infrastructure, repositories, archiving, data security best practices and data reuse, among other topics identified by the Committee.

References

- Tri-Agency RDM Policy: https://www.science.gc.ca/eic/site/063.nsf/eng/h_97610.html
- Digital Research Alliance of Canada RDM: https://alliancecan.ca/en/services/research-data-management
- Ownership, Control, Access, and Possession (OCAP): https://fnigc.ca/ocap-training/
- Research Involving the First Nations, Inuit, and Métis People of Canada: https://ethics.gc.ca/eng/tcps2-eptc2_2018_chapter9-chapitre9.html
- The CARE Principles for Indigenous Data Governance: https://datascience.codata.org/articles/10.5334/dsj-2020-043/
- Research Data Management Terminology: https://codata.org/initiatives/data-science-and-stewardship/rdm-terminology-wg/rdm-terminology/