Using the Open Science Framework

Enhancing Your Research Projects
Land acknowledgement:

I acknowledge that I live and work on Treaty 6 Territory and the Homeland of the Métis. I pay my respects to the First Nations and Métis ancestors of this place.
About me

Health Sciences Librarian at the University of Saskatchewan (USask)

Have been supporting open science, reproducibility, data management, and data sharing at NIH, NYU School of Medicine, and USask for >8 years

Chair of the Portage Network Data Discovery Expert Group

Kevin Read, MLIS, MAS
Today’s plan

Examine the Open Science Framework (OSF) tool within the context of open science best practices

Explore the features of OSF and its capabilities

Use case studies to demonstrate how OSF can be used in practice

Highlight the advantages and disadvantages of using OSF
Open Science AKA...

- Open Access
- Open Research
- Open Source
- Equity
- Citizen Science
- Open Data
- Open Education
Research Lifecycle

- IDEA
  - Ask a research question
  - Review existing research
  - Develop hypothesis

- METHODS

- DATA COLLECTION

- ANALYSIS

- PUBLICATION
Research Lifecycle

- IDEA
  - Develop instruments
  - Plan experiments
  - Identify participants and/or subject(s)

- METHODS
- DATA COLLECTION
- ANALYSIS
- PUBLICATION
Research Lifecycle

- IDEA
  - Gather text, numbers, images, etc.
  - Store data
  - Describe data
Research Lifecycle

- IDEA
  - Build analysis plan
  - Use statistical software
  - Analyze/transform data

- METHODS

- DATA COLLECTION

- ANALYSIS

- PUBLICATION
Research Lifecycle

- Present at conference
- Publish in journal
- Share research data
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Open Science

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PUBLICATION
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Study protocol

Codebooks / Data Dictionaries

Data collection plan

Data analysis plan

Software

Code

Equipment

Data

Publication
Why does this matter?

Improve transparency, reproducibility, and reuse of research

Avoid duplication of efforts

Increase the potential for collaboration

Make publicly-funded research products openly accessible
Open Science in Action

IDEA

METHODS

DATA COLLECTION

ANALYSIS

PUBLICATION

Share your methods, instruments, tools

Pre-register your project

Describe your data so it can be understood by others

Share the publication, data, and tools you created

Be transparent about and share your data analysis plan
OSF: Open Science by Design

- Preregistration
- Open Methods / Tools
- Preprints, Data Sharing, Software Sharing
- Reproducibility / Reuse
- Data Management
Poll:

Have you ever pre-registered a research project before you started working on it?
Poll:

Have you ever openly shared your methods, protocols, instruments, or tools before publication?
Poll:

Have you ever shared your research data before or after publication?
OSF Features

Open Science Framework

- Register your work
- Organize projects
- Manage collaborators
- Utilize version control
- Connect to well-known tools
- Share your work
But first! The basics.
The Basics

Example OSF lab project
Contributors: Jaron Piller, Matthew Utz-Dunbar
Affiliated institutions: University of British Columbia
Date created: 2020-03-27 01:21 PM | Last Updated: 2020-03-27 01:05 PM
Category: Project
Description: This is one example of how to set up an OSF project for a lab

Wiki

Example lab OSF project page
Here we are providing one example of how one could organize a lab OSF project page.

If you like the structure, you could fork this as a template.
Each component includes a description. Check them out!

Go to the "Student projects" component to see Jane Doe's example project, and how she has linked to a Manuscripts project page.
She has also provided an example project to...

Components

Lab resources
Piller & Utz-Dunbar
This is where general resources are housed, such as protocols, useful scripts, meeting resources

Student projects
Piller & Utz-Dunbar
This houses individual student projects.

Manuscripts
Piller & Utz-Dunbar
This is where projects, for individual manuscripts by lab members, are housed

Collaborations
Piller & Utz-Dunbar
This houses materials and projects associated with collaborations outside the lab.

Principle Investigator
Piller & Utz-Dunbar
This is where the P.I. for the lab has their main project page.

Recent Activity

- Jaron Piller made Example OSF lab project public
  2020-03-27 01:09 PM
- Jaron Piller updated wiki page: move to version 1 of Example OSF lab project
  2020-03-27 01:04 PM
- Jaron Piller changed the title from Example OSF lab project to Example OSF Lab project
  2020-03-27 00:10 PM
- Jaron Piller removed Sheryl Adam as contributor(s) from Example OSF lab project
  2020-03-27 01:13 PM
- Jaron Piller removed Sarah Parker as contributor(s) from Example OSF lab project
  2020-03-27 01:12 PM
- Jaron Piller removed Heather Storinger as contributor(s) from Example OSF lab project
  2020-03-27 01:11 PM
The Basics

Title and project information
The Basics

Wiki

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She has also provided an example project to...
The Basics

Files, linked tools, and storage directory
The Basics

Activity log
The Basics

Project components
The Basics

Citation information
The Basics

Menu bar
Key OSF Features

Open Science Framework

- Register your work
- Organize projects
- Manage collaborators
- Utilize version control
- Connect to well-known tools
- Share your work
Register your work

Preregistration:
Make your hypothesis, analysis plan, and/or your entire project public before peer review

Creates a timestamped immutable version of your project

Improves transparency, reproducibility, and discoverability of your research

Can develop brand registries for an entire research community (fee-based)
Can group files and content into specific sections called “Components”

Components serve as sub-categories within a hierarchical project structure

Components become their own independent projects

Each Component can have specific collaborators
Manage collaborators

Assign different permission levels for contributors to a project

All contributors must have an OSF account

Can decide whether or not to include collaborators as “Bibliographic Contributors”
Utilize version control

OSF Storage:
- 5 GB for private projects
- 50 GB for public projects

Track all versions of files that utilize OSF-specific storage

Must upload files with the same name and within the same folder on OSF

Activity log tracks every change made to an OSF project
Connect to well-known tools

OSF syncs with many other tools that are used to find, store, and analyze data.

Can import data from any of the tools shown.

Changes made in those tools will be reflected on OSF.
Can share any type of research output

OSF provides the ability to assign digital object identifiers (DOIs) to projects

Can apply a license to projects to dictate terms of use

All projects are citable in any format

A pre-print server is available to publish research before peer review
OSF Demo
Case Studies
Case Study 1: My Research

**Study:**
Analyze CIHR-funded publications to scope the landscape of data sharing practices.

- Study protocol
- Code used to extract data from PubMed
- Raw data
- Data collection instrument used to extract data
- Data analysis plan
- Analyzed datasets
Project: Develop software to make research data more discoverable for the purpose of widespread implementation.

Case Study 2: Software Project

- Project Description and Marketing
- Code from GitHub
- Documentation
- Publications and Presentations
Wrap-up
Pros & Cons of OSF

**PROS**
- A one-stop-shop for making your project open
- Intuitive, flexible, and easy to use
- Ability to apply DOIs and licenses to projects
- Easily manage collaborators and project components
- Version control and free storage capacity a big plus

**CONS**
- Requires adaptation from most research workflows
- Analytics are poor
- Working with add-ons make versioning unstable
- Discoverability of projects not as good as it could be
OSF Summary

OSF is one of the only tools that enables open science practices at every stage of the research process

Useful as a sharing or project management tool

Ideal if you want to make research products open, control terms of use, and have your work cited

Before using OSF, seriously consider your research needs and workflows
Poll:

Would the Open Science Framework suit your research needs?
Resources

Open Science Framework Guides: https://help.osf.io/hc/en-us

OSF 101: https://youtu.be/dLEIhJESIQA

Nosek BA. Improving my lab, my science with the open science framework. APS Observer. 2014 Feb 28;27(3).


Questions?
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