Google Tools as Teaching Tools

Creating Infrastructure, Assessment, and Saving Time Using Google Tools

Jon Jeffryes
Interim Director of Social Sciences and Professional Programs, University of Minnesota Libraries

Lisa Johnston
Data Management/Curation Lead, University of Minnesota Libraries
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Interim Director of Social Sciences and Professional Programs, University of Minnesota Libraries

Lisa Johnston
Data Management/Curation Lead, University of Minnesota Libraries
Outline of Talk

1. Why we created the course

2. Adopted Google Apps
   A. Google Sites
   B. YouTube
   C. Google Docs
   D. Google Forms

3. Adapting for a Hybrid Approach!

4. New Google Apps We Love

5. Recap and more info
1. Why we created the course...
Engineering Section

This short course on data management is designed for graduate students in the engineering disciplines who seek to prepare themselves as "data information literate" scientists in the digital research environment. Detailed videos and writing activities will help you prepare for the specific and long-term needs of managing your research data. Experts in digital curation will describe current sharing expectations of federal funding agencies (like NSF, NIH) and give advice on how to ethically share and preserve research data for long-term access and reuse.

Students will get out of this course:

- Seven web-based lessons that you can watch anytime online or download to your device.
- A Data Management Plan (DMP) template with tips on how to complete each section. Your completed DMP can be used in grant applications or put into practice as a protocol for handling data individually or within your research group or lab.
- Feedback and consultation on your completed DMP by research data curators in your field.

Participants may join at anytime. Upon registering, you will receive a time-table and reminder emails for completing the course. If you have any questions please contact the instructors.
Our guiding principles for building the course

• Create a sustainable course that could “live-on” for future semesters.

• Create modular content that could be adapted for new courses or other purposes.

• Educate in a multi-modal setting that uses various pedagogy for all types of learners.

• Not reinvent the wheel (e.g. reuse content when available).

• Share the content that we create with the world!
How we adopted Google Apps to build the course...

It’s a.... Google!
Google Apps that we used in our course

- Google Sites
- Google Forms
- YouTube
- Google Docs
Data Management Course

Introduction to Data Management

Taking the time to articulate a plan for managing your data management at the beginning of a research project can pay dividends in the long-term. Having a plan for organizing, storing, securing, and sharing your data can provide benefits such as:

- Saving time
- Reducing confusion
- Facilitating sharing
- Complying with funder mandates

At the end of this module you will be able to:

- describe the benefits of data management, and
- articulate what you hope to get out of this online course.

Video Lesson: Introduction to the Course

Instructions: Watch this video (3 min) to be introduced to the course and sign-up for the data management workshops in this series.

Additional Resources

- Managing Your Data at UMN (a University Libraries Guide)

Comments

You do not have permission to add comments.
Data Management Course

Syllabus

Short Course to develop a Data Management Plan for your research

Flipped Workshop Series Winter 2014

This “flipped classroom” short-course includes seven web-based modules and five in-class workshops that take place over the Winter Break 2014. Participants should be UMN research staff and graduate students, primarily those engaged in the disciplinary concentration of the course. As an outcome of this course, each participant will create a detailed data management plan (DMP) in order to address the specific and long-term needs of managing research data in their lab or research group. This plan can be used by colleagues and future graduate students in the same group.

Download a DMP Template to get started.

Contents

1. Session #1: How to Inventory, Store, and Backup Your Data
2. Session #2: How to Create Data that You (and Others) can Understand
3. Session #3: How to Navigate Rights and Ownership of your Research Data
4. Session #4: How to Share Your Data and Ethically Reuse Data Created by Others
5. Session #5: How to Digitally Preserve Your Data for the Future
6. Complete Your DMP

Data Management Plan

<table>
<thead>
<tr>
<th>Name of student/researcher(s)</th>
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<td>Project Duration</td>
<td>Start: MM-DD-YYYY End: MM-DD-YYYY</td>
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<tr>
<td>Date Written</td>
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1. Introduction
2. Data Types
   - Section 2 Checklist
3. Data Organization, Documentation and Metadata
   - Section 3 Checklist
4. Data Access and Intellectual Property
   - Section 4 Checklist
5. Data Sharing and Review
   - Section 5 Checklist
6. Data Preservation and Archiving
   - Section 6 Checklist

1. Introduction

The research project described in this data management plan (DMP) ...

2. Data Types

This types of data generated and/or used in this project include ...
2. Data to be Managed

The data that we produce in our research can grow dramatically. Without a clear plan on how to manage our data before we begin the collection process, our files, raw data points, documentation logs, and simulations can quickly overwhelm and become a "data deluge." At the end of this module you will be able to:

- define what information you will be managing, and
- describe the importance of appropriate storage and backup solutions to securely house these data.
Lesson 2: Data Types, Storage and Backup

Instructions: Watch this (4 min) video tutorial, and then complete complete assignment 2.

Engineering Data Example
Assignment 2

In your DMP (what’s this?), complete section 2 “Data Types” by creating a data inventory for your research project (data, project files, documentation, etc.) to describe what data you will manage. Also detail your data storage and backup plan to avoid potential loss of data.

Other questions to consider include:

- How will data be collected? In what file formats?
- How to document issues/problems in the data collection process?
- Will it be reproducible? What would happen if it got lost or became unusable later?
- How much data, and at what growth rate? How often will it change?
- Are there tools or software needed to create/process/visualize the data?
- Will you use pre-existing data? From where?
Easily create new versions of your course
Using Google Sites, we created an Instructors’ version to share our approach

http://z.umn.edu/teachdatamgmt

Data Management Course

Introduction to Data Management

Please note: This content is not connected to an in-class session. It is only to act as an instructor’s guide in teaching the content. To see a site that could be copied (or adapted) to send to your students visit: z.umn.edu/datamgmt14

Instructors Note: We sent the following email to participants a week before the series started, or for those that registered late, we sent it as they registered. The email includes a link to this introductory video.

Sample Email

Hello,
Thank you for signing up for the Data Management Workshop Series that will take place from [start date] - [end date].

We have a website for the course at [website link] and we ask that you watch the introductory video to the series. This course will be a "Flipped Classroom" and each week we will send out a short (4-9min) video lesson for you to watch before
Google Apps

Google Sites

Google Forms

Google Docs

YouTube
Step #1

Script + Presentation = Lesson Video

Step #2

YouTube Video
Track stats and create a playlist.
Easily create close captioning for videos

Each web module will explore an aspect of DM

3. Organization and Documentation

When you use someone else's data, how do you know they collected it accurately? How do you ensure the quality of your data? Is your own data organization too unmanageable that YOU no longer understand it? The way that the data is organized and documented can help or hinder future use, even years after the initial collection. This module will help you plan how to organize your data, track versions, metadata, and document data collected for reuse. Outcomes of taking this module, you will be able to:

6. Preservation Techniques

What happens to your data after the project is complete? Will you be able to use the data 10 years from now? Who is going to maintain the data for future use? This module will introduce preservation and curation techniques used by information professionals who manage digital information for long-term access. After this module you will be able to:

- Explain the lifespan of potential use for your data in order to recognize the long-term value of your data.
- Identify the relevant preservation-friendly file format for your research data in order to ensure long-term access to your digital information.

Formats in module 6. We will also look at other data management skills such as how to share
We used Google Docs in our assessment strategies

Three-Pronged Approach:

1. “Formative Assessment” of the DMP throughout the class.
2. Post-Course Satisfaction Survey
3. Six-month Follow-up Assessment
Data Management Course

Syllabus

Short Course to develop a Data Management Plan for your research

*Flipped Workshop Series Winter 2014*

This “flipped classroom” short-course includes seven web-based modules and five in-class workshops that take place over the Winter Break 2014. Participants should be UMN research staff and graduate students, primarily those engaged in the disciplinary concentration of the course. As an outcome of this course, each participant will create a detailed data management plan (DMP) in order to address the specific and long-term needs of managing research data in their lab or research group. This plan can be used by colleagues and future graduate students in the same group.

Download a DMP Template to get started.

**Contents**

1. Session #1: How to Inventory, Store, and Backup Your Data
2. Session #2: How to Create Data that You (and Others) can Understand
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5. Session #5: How to Digitally Preserve Your Data for the Future
6. Complete Your DMP

**Data Management Plan (DMP) TEMPLATE**

- Name of student/researcher(s)
- Name of group/project
- Funding body(ies)
- Partner organisation
- Project Duration
- Data Written

**Table of Contents**

1. Introduction
2. Data Types
3. Data Organization, Documentation and Metadata
4. Data Access and Intellectual Property
5. Data Sharing and Review
6. Data Preservation and Archiving

**1. Introduction**

The research project described in this data management plan (DMP) ...

**2. Data Types**

These types of data generated and/or used in this project include ...
1. Introduction

The research project described in this data management plan (DMP) tracking the data information literacy needs of civil engineering graduate students.

2. Data Types

This types of data generated and/or used in this project include ...
# Data Management Plan

**V1 last updated MM-DD-YYYY**

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Google Apps

Google Sites

Google Forms

Google Docs

YouTube
Data Management Course Evaluation

Thank you for completing the Data Management Course (http://z.umn.edu/datamgm). Your feedback will help us to improve this course.

Course content was delivered in a clear manner.
- Yes, I strongly agree
- Yes, I agree
- Neutral, unsure
- No, I disagree
- No, I strongly disagree

Course content was appropriate for my research area/focus.
- Yes, I strongly agree
- Yes, I agree
- Neutral, unsure
- No, I disagree
- No, I strongly disagree

What did you find most useful about the course?

How might we improve the course?
Data Management Course: Follow up

We're interested to learn if participation in the Fall 2012 Data Management Course (z.umn.edu/datamgmt) impacted your data management behavior in the months following your participation.

* Required

How useful was the storage and back-up plan portion of your data management plan? *

- Very Useful: I employed the plan in storing my data
- Useful: I employed aspects of the plan in storing my data
- Not Useful: I did not employ this portion of the data management plan in storing my data

Comments

Which of the following describes your experience with organizing and documenting your data? *

Check all that apply

- I created and employed a file naming structure that is clear and easy to understand
- I created and employed a file naming structure that only I can understand
- I did not use structured file naming
- I employed a metadata schema for my data and applied it consistently during my research
- I employed a metadata schema for my data and occasionally applied it during my research
- I did not use a metadata schema
<table>
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<tr>
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<th>Course content was delivered in a clear manner.</th>
<th>What did you find most useful about the course?</th>
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</tr>
</thead>
<tbody>
<tr>
<td>12/7/2012 11:01:52</td>
<td>Yes, I agree</td>
<td>Brought up a lot of considerations before I started gathering data so I would be ready for problems that could come up. I feel more prepared to collect the correct data and organize it for future use.</td>
<td>The submission processes for the first and last assignment, as well as the assignment calculator, were not really clear. Perhaps more information on what a participant needs to submit and how they can check on these submissions would help. The Google document format works well, it's the site submissions that are less clear.</td>
</tr>
</tbody>
</table>
3. Adapting for a **Hybrid Approach**: Case Study of a Re-Use Win

[Photo from U.S. Embassy Tel Aviv](http://www.flickr.com/photos/usembassyta/5163966029/sizes/z/)
Hybrid Course

Before Class

• Hands-on, group activities
• Clicker quizzes
• Direct application to their own projects
• Minute papers

During Class

Lesson 2: Data Types, Storage and Backup

Instructions: Watch this (4 min) video tutorial, and then complete complete assignment 2.
Outline of the Five Sessions in the Data Management Course

Session 1: Data Types, Storage and Backup
- Scenario "Dr. Trucks studies traffic"
- Data Inventory Worksheet
- Storage/Back-up Activity

Session 2: Documentation, Organization and Metadata
- Scenario: "Dr. Poly Psi"
- File Naming Convention Activity
- Data Documentation Methods Handout
- Dublin Core Metadata Worksheet

Session 3: Data Access and Ownership
- Scenario: "Data Request"
- Data Ownership Activity
- De-identification Handout and Worksheet

Session 4: Data Sharing, Citation and Reuse
- Scenario: "Data Publishing"
- Audiences for Reuse Activity
- Citation Worksheet

Session 5: Data Archiving and Preservation
- Scenario "Fifty Years Later"
- Long-term Value Activity
- Preservation friendly file-formats
- Worksheet

"Flipped Classroom"
Prep: Students watch a short video lesson before class (4-8 min each).

In-class: Multiple hands-on activities with example scenarios reinforce concepts and provide students the opportunity for direct application to data.
Online Course 2012-13
19% completion rate

Fall 2012
✓ 11 enrolled (out of 20)
✓ 5 (45%) completed

Spring 2013
✓ 47 enrolled (STEM)
✓ 6 (13%) completed

Hybrid Course 2013-14
38% completion rate

Fall 2013
✓ 49 attended (50 seats)
✓ 16 (33%) completed

Spring 2014
✓ 23 attended (25 seats)
✓ 12 (52%) completed
Course Statistics

Since Sep 2012

- Module 1 “Introduction” 831 views
- Module 2 “Data Types and Storage/Backup” 676 views
- Module 3 “Metadata and Documentation” 467 views
- Module 4 “Data Access, Privacy and Intellectual Property” 332 views
- Module 5 “Data Sharing” 309 views
- Module 6 “Data Archiving and Preservation” 735 views
- Module 7 “Complete Your DMP” 301 views
4. New Google Apps (That We Want to Use!)
Realtime Board

Whiteboard. Finally in your browser.

RealtimeBoard is your regular whiteboard, re-thought for the best online experience.
Need Ideas

Google Tools

Ideas

Data Management Class
Merge by MailChimp

Using Google Docs creating “customized” generic emails to a group or class.
Flubaroo

Read More:
http://tapintoteenminds.com/2012/01/11/google-docs-the-clicker-killer-almost/
WeVideo

- Edit Video Clips
- Combine existing media
- Record Voiceovers
- Add music
Doctopus

“Use your class roster to create and manage pre-shared student copies of a master Doc of any type (document, presentation, spreadsheet, PDF, etc.)”

Optionally generates a handy folder structure in Drive for each roster of students you work with...
5. Recap...and discuss
Google Apps Recap

• Google Docs allow for formative assessment in an asynchronous online class

• Google Docs comments feature allows the instructor to add a face to feedback

• Google Forms provides a user-friendly platform for creating summative surveys
Google Apps Recap

• YouTube allows you to create learning objects that students can access on-the-go.
  • Easy transcription
  • View Statistics

• Websites that are easy to format
  • Include pre-formatted templates.
  • Can be “cloned” to create new sections easily.
Now...what are YOU thinking?
Further Reading

• http://www.googlegooru.com/7-of-the-best-new-add-ons-for-google-docs-and-sheets/

• http://tapintoteenminds.com/2012/01/11/google-docs-the-clicker-killer-almost/


• http://mashable.com/2014/05/12/google-drive-tips/