Agenda

- **Introduction:**
  *Evaluating the Effectiveness of Data Management Training*

- **Background:**
  *DataONE Community Engagement and Outreach (CEO) Working Group Educational Activities*

- **Methods:**
  *Literature Reviews and Survey Design*

- **Results:**
  *Best Practices/Guidelines and Current Revision of the Education EVALuation (EEVA) Survey Instrument*

- **Future:**
  *Iterations of EEVA, Testing, and Project Documentations*
Introduction
Introduction

- DataONE Summer Internship Program
  - “Developing a Survey Instrument for Evaluation of Teaching Materials”

- Three key phases:
  - Literature review
  - Design and development
  - Outreach

www.dataone.org/internships
Background: DataONE Education
Online and In-person Training and Resource-based Training
Online Training: DataONE Webinar Series

www.dataone.org/webinars
In Person Training: Sessions and Workshops
Data Management Modules

Resources:

Lesson 10: Analysis and Workflows

Typical data analyses
- Data processing: may include selecting a subset of data for analysis, merging multiple data sets, manipulating data for usability, or data transformation.
- Graphical analysis: makes it easier to see patterns and can aid in the identification of outliers.
- Statistical analysis: conventional statistics are used to analyze experimental data; descriptive statistics are used to analyze observational or descriptive data.
- Repeatability: is at the core of the scientific process. If results are not reproducible, they lose credibility.
- Good documentation of the data and the analysis steps are essential.

Graphical analysis
- Used to analyze observational or descriptive data.
- Makes it easier to see patterns.

Informal workflow
- No special software is needed to create work flows. A work flow diagram includes:
  - Inputs and outputs
  - Transformation rules or analytical processes
  - Decision points
  - Arrows indicating direction of process flow

Workflows
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Hands-on Activity 1: Accessing Data in the Literature

Associated DataONE Lecture: Lesson 1: Why Data Management

Objectives:
- Students recognize the value of accessible archived data, by experiencing the challenges of accessing data from published papers.
- Students can explain why accessible data archiving is valuable.
- Students can provide strategies for getting data from published papers, and anticipate challenges to accessing the data.

Time Needed: One-hour out-of-class, 15 – 30 minutes in-class discussion.

URL: Key resource for searching scientific literature (e.g., Web of Science, Google Scholar, JSTOR, BioRxiv).

Additional Files Needed: None

Key Reading:

Notes and Instructions for Instructors:
- An intended take-home lesson of this activity is that access to valuable original data can become difficult or impossible in a short period of time after a paper is published, but this loss of accessibility is available. How easy it is to access original data depends on the field; some fields have developed a culture of data sharing and data accessibility, including genetics, climate studies, and geography. Others do not have this tradition. Because of these field-specific cultures, students’ access or accessing data will depend on the topic and question they choose.
- It may be worth reviewing with the students the different ways by which scientists access others’ data (data tables or published data appendices within a paper, extracting [estimating] data from published graphs, online data archives or data owners [either restricted to journal subscribers or public], writing the author and requesting the data, etc."

After students have completed the exercise (see Student Instructions, below), have students discuss the challenges that they faced in figuring out how to access data from the published literature that is relevant to their question, and ways the students came up with to deal with the challenges. This can be done as a 15 to 30 minute whole-class discussion or in small groups with a report-out. Things to note include whether accessibility to data varied depending on the question addressed and whether accessibility depended on how long ago the paper was published. Perhaps culminate the discussion with questions about why data underlying

Lecture: Why Data Management

Outcomes:
- (1) Students can explain why accessible data archiving is valuable.
- (2) Students can provide strategies for getting data from published papers, and anticipate challenges to accessing the data.

Hands-on Exercises for Data Management

http://www.dataone.org/education-modules

www.dataone.org/education-modules
Welcome to the DMT Clearinghouse

The Data Management Training (DMT) Clearinghouse is a registry for online learning resources focusing on research data management.

It was created in collaboration between the U.S. Geological Survey's Community for Data Integration, the Earth Sciences Information Partnership (ESIP), and DataONE.

For questions or feedback, please contact clearinghouseEd@esipfed.org

Filter

Keywords
- data management (25)
- data sharing (16)
- data management planning (12)
- data life cycle (11)
- data access methods (8)
- data citation (7)
- data literacy (5)
- data preservation (5)
- Federal agency data management requirements (U.S.) (5)
- metadata registries (5)

Organizations
- Federation of Earth Science Information Partners (ESIP Federation) (34)
- DataONE (10)
- DataONE Community Engagement and Outreach Working Group (10)
- Mozilla Science Lab (2)
- Australian National Data Service (1)
- Oak Ridge National Laboratory (1)
- SlideShare (1)
- U.S. Geological Survey (1)

Search

Your search: data management plan

49 results

Data Management Plans: Elements of a Data Management Plan
... of Earth Science Information Partners (or ESIP Federation's) Data Management for Scientists Short Course. The subject of this module is...

DataONE Data Management Module 03: Data Management Planning
This 30-40 minute module introduces the concept of data management planning, discusses requirements for data management plans (DMPs),...

Data Management Plans: Why Create a Data Management Plan?
... of Earth Science Information Partners (or ESIP Federation's) Data Management for Scientists Short Course. The subject of this module is "Why ..."
Why Evaluate?

Evaluating the effectiveness of training enables:

- Continued engagement with the community to understand current and emerging data management needs
- Enhancement of existing resources as well as the planning and creation of future resources
- Higher value offerings community wide through shared experiences and lessons learned
Methods
Research and Design

Comprehensive literature review exploring:

- How training is delivered and assessed; modalities and effectiveness
- Types of surveys and best practices for implementation
- Existing survey instruments and tools

Prototype development:

- Usability testing at DataONE Users Group and with CEO Working Group

Implementation
Results: Tool for Survey Development
Recommended Survey Structure

1. Title
2. Introduction
3. Instructions
4. Evaluation Questions
   - Objectives
   - Content/Substance
   - Reasoning/Topic Knowledge/Argument
   - Organization/Structure
   - Style/Language
   - Visual Aids
   - Interactivity/Technology
   - Timing/Time Management
   - Additional Comments
   - Demographic/Personal Reaction
5. Thank You
6. Related Links/Supporting Resources
Recommended Survey Structure

Level 1: Reaction
To what degree participants react favorably to the learning event

Level 2: Learning
To what degree participants acquire the intended knowledge, skills, and attitudes based on their participation in the learning event

Level 3: Behavior
To what degree participants apply what they learned during training when they are back on the job

Level 4: Results
To what degree targeted outcomes occur, as a result of learning events(s) and subsequent reinforcement
Anatomy of a Question

Survey Question

Question Obligation
- Mandatory
- Recommended
- Optional

Kirkpatrick Evaluation Area
- Reaction
- Learning
- Behavior
- Results

Question Type
- Scale
- Open-ended
- Multi-choice
- Dichotomous

Suggested Response Variable

Is the purpose of the resource clear?

Mandatory Learning Scale

Strongly Disagree (1), Disagree (2), Neither Agree nor Disagree (3), Agree (4), Strongly Agree (5)
89 Survey Questions
Example *.doc download

Training Evaluation

1. Is the purpose of the resource clear?
   - Strongly Disagree
   - Disagree
   - Neither Agree nor Disagree
   - Agree
   - Strongly Agree

2. Are the learning objectives of the resource easy to locate?
   - Strongly Disagree
   - Disagree
   - Neither Agree nor Disagree
   - Agree
   - Strongly Agree

3. Did the coverage of topics addressed by the resource meet your expectations?
   - Strongly Disagree
   - Disagree
   - Neither Agree nor Disagree
   - Agree
   - Strongly Agree

4. Is the content of the resource relevant to your current data management situation?
   - Strongly Disagree
   - Disagree
   - Neither Agree nor Disagree
   - Agree
   - Strongly Agree

5. Is the difficulty of the resource content appropriate to the level of your data management knowledge/expertise?
   - Strongly Disagree
   - Disagree
   - Neither Agree nor Disagree
   - Agree
   - Strongly Agree
Future
Future Work

- Track usage of the tool and solicit feedback
- Enhance user documentation
- Generate google version for use in google forms and for integration into SurveyMonkey
- Explore additional functionality including ability to generate filtered Qualtrics downloads

www.dataone.org/education-evaluation