A Scalable Approach to Data Management Education of Graduate Students

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Case Study: Structural Engineering Graduate Student Needs

<table>
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<tr>
<th>DIL Need</th>
<th>Backup and Security</th>
<th>Documentation</th>
<th>Ownership</th>
<th>Sharing</th>
<th>Long-term Access</th>
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<tbody>
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<td>Evidence</td>
<td>Students stored data on laptops that do not always include backup strategies.</td>
<td>Students graduate and passed their data to the next student without context.</td>
<td>State-funded research projects created ownership confusion.</td>
<td>Students did not recognize the reuse potential of their data.</td>
<td>Some data was collected using proprietary file formats.</td>
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Anatomy of the Online Data Management Course

Learning objectives were identified from graduate student needs assessment.

- 7 modules map to Data Management Plan requirements of NSF and NIH.
- Resources point to services outside the library.
- Lesson video is self-contained and can be viewed on multiple devices.

Enrollment in the First Year of the Data Management Course

<table>
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<th>Online Course Enrollment and Completion Rates (Fall/Spring 2012-13)</th>
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<tr>
<td><strong>Fall 2012</strong></td>
</tr>
<tr>
<td>Enrolled</td>
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<td>---------</td>
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<td>11</td>
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Methodology

Part 1. In-Depth Interviews (Spring 2012)
- 90-120 minutes
- 4 graduate students
- 1 faculty member

Interview tools: z.umn.edu/dil

Based on our findings\(^1\) and an extensive literature review and environmental scan, we developed online course in Data Management.

Part 2. Online Course (Fall/Sp 2012-13)
- ScreenFlow and YouTube
- Google Docs, Forms, and Sites

Our e-learning approach\(^2\) to teaching data management skills can be scaled to a variety of disciplines - made easier with tools such as Google Sites allowing us to reuse the content.

Results

The open online-course format provided a platform to launch a scalable data information literacy curriculum across the STEM disciplines.

- 58 STEM graduates students enrolled
- 14 academic departments represented
- 11 students completed a written DMP

An evaluation survey of graduates (64% response) demonstrated a high-level of satisfaction in the course:

“This course gave me good techniques which I will not only be able to implement in my current research in addition to what I have already been doing, but also use them in the rest of my career.”

Six-month Follow-Up Assessment
Two Fall graduates have responded (100% response) to a follow-up survey to help determine how the DIL skills were applied.

- 2/2 created a file-naming structure
- 1/2 employed a metadata schema
- All modules of the Data Management Course were found to be either “Useful” or “Very Useful”

Next Steps

Fall 2013 Workshop Series: “Flipped Classroom” Approach

- Five sessions focus on Module topics 2-6
- Ready to use online content
- Hands-on training with actual data sets
- Questions and feedback opportunities

Notes:

Want more? http://z.umn.edu/datamgmt