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Implementing a Graduate-level Data Information Literacy Curriculum at Oregon State University: Approach, Outcomes and Lessons Learned

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While I did employ several active learning approaches throughout the term, I
This is another student suggestion that I really like. They said, “I think having a day in
significant improvement to the course thus far.

Approach

| outcomes-centered course design | to develop effective teaching strategies | for DL core competencies |

Course Characteristics

Description

Careful examination of all aspects of research data management best practices; open to students of all disciplines. This 2-credit course was
designed to incorporate substantial active learning approaches; lecture was punctuated
by individual and group activities. Significant student participation was expected. This
midterm exam was an abbreviated Data Curation Profile, and the final exam was
a data management plan. See supplementary materials for course syllabus (detailed course
description, assignments, grading methods, weekly schedule and readings), lesson plans and evaluation content.

Demographics

11 students, including three faculty members. The disciplinary range of the students was broad:
six students from the College of Public Health and Human Sciences, two from the College of Forestry, and one each from
the Colleges of Veterinary Medicine, Science, and Agriculture. Student degree paths ranged from non-thesis master’s to Ph.D., with
some of the students having a very well defined research project already planned and others much less so.

Assessment

Students were anonymously surveyed (Qualtrics) twice during the course: once at half-way through, and
again during the final week of classes. I asked targeted questions about how well sessions prepared them
to meet specific learning outcomes, and requested written feedback on what they liked most
and least about the course. Based on what they thought would be the single most significant improvement to the course thus far

What Students Liked

- File-naming and folder organization strategies
  "...was very practical and useful."

Best practices for data storage, backup and security, including local resources
  "I would have liked to have more on this."

Hearing examples and case studies from real-life
  "I liked hearing about other people's data, their stories, and successes.

Hands-on activities in class and in the computer lab
  "I liked the active laboratory sections.

Metadata, lesson and hands-on activities
  "I liked learning about metadata, issues, and strategies they're in struggle with the most."

Guest speakers
  "I liked having the guest speakers share about their area of expertise.

Where I Can Improve

- Communicating purpose and expected outcomes of the Data Curation Profile
  "I'm still not quite sure I understand what they are for and about."

Reducing redundancy between lectures, perhaps by explaining important
corollary concepts in different ways.
  "Some of the topics were redundant.

Be more cognizant of student knowledge and experience levels
  "This is an additional new information to me and others, and tools.

Balancing needs of students from disparate disciplines
  "Have separate small sections for social and natural sciences.

Add more hands-on activities in class and in the computer lab
  "I personally enjoyed the hands-on elements the most.

Incorporate more case studies
  "Doing case studies with various datasets could be helpful..." This would allow us to see how others archive their data and

More active learning
  "I think active learning and skills in data management that apply directly to their research workflow. Their final assignment,
a data management plan (DMP), was the culmination of the class and was intended to provide them with a
guiding document for the remainder of their graduate research. While verbally related course content to the DMP
throughout the course, they did not create it until the end. A better approach may be to have them create sections
of the DMP as we go. This would better facilitate the self-reflective process of applying largely discipline-agnostic
course content to their highly individual research.

How will I change the course next year?

Connect students & content to the “real world.” Not surprisingly, the students most
enjoyed aspects of the course that involved the “real world”...this included hands-on activities in
class, opportunities to learn about software tools and resources in the computer lab, examining case
studies in data management success and failure, and having guest lecturers visit the class. I need
more ways to incorporate more real-world case study content. One student suggested that if I use a
real research project as a case study that we follow across topics throughout the course. Great idea!

More hands-on time with metadata
  Students were eager to learn about metadata, both in terms of theoretical concepts and the tools and methods for creating it. We had a computer lab period devoted to metadata
tools (Celestica and Datapal, taught by our Metadata Librarian), but the students wanted more. Metadata format and creation are very discipline-specific; this is one area where I was less successful in meeting the learning needs
of my discipline-diverse students. Next year, I’ll add another computer lab to give the students more time and
experience with the tools, and design an assignment that will clarify the creation process and products.

Use the data management plan as framework
  The goal of the course is to give students knowledge and skills in data management that apply directly to their research workflow. Their final assignment,
a data management plan (DMP), was the culmination of the class and was intended to provide them with a
guiding document for the remainder of their graduate research. While verbally related course content to the DMP
throughout the course, they did not create it until the end. A better approach may be to have them create sections
of the DMP as we go. This would better facilitate the self-reflective process of applying largely discipline-agnostic
course content to their highly individual research.

Have a “data day”
  I think having a day in which we bring in our data set (if possible) and be able to incorporate some of the concepts we talked in class
together with management, naming, security, etc. I'm considering whether to have a class session devoted to this,
or if I should set aside a weekly "office hours" in a library computer lab to give students this kind of opportunity.

Split the course?
  There were a few suggestions to offer [at least] two versions of this course, each one for
humanities/social sciences and natural/applied sciences. This makes sense in many ways, but involves doubling my
teaching workload. It’s not clear that this is realistic at this time, but I open to the idea.

More active learning
  While I did employ several active learning approaches throughout the term, I
recognize that I can make improvements in this area to get students more engaged.