

iCAMP: Building Digital Information Curation Curriculum

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“iCAMP: Building Digital Information Curation Curriculum,” (with William Moen, Jeonghyun Kim, Edward J. Warga, and Jenny S. Wakefield) in *Proceedings of the 2012 iConference*. Edited by Jens-Erik Mai. ACM, New York, 2012, pp. 648-650.

<http://dx.doi.org/10.1145/2132176.2132324>

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Abstract:

The iCAMP (Information: Curate, Archive, Manage, and Preserve) project is developing a curriculum in digital curation and data management. The project will design and implement four courses using a competency-based curriculum approach. It also integrates principles of sound pedagogy, instructional design, and a learning environment that emphasizes practical training. This paper summarizes the goals and guiding principles behind the curriculum development and instructional design framework.

Keywords: design | digital curation | data management | curriculum development

Article:

1. Introduction & Project Goals

The evolving landscape of scholarly production presents academic libraries with new opportunities for curating, managing, and preserving the inputs and outputs of research and scholarship. Requirements by federal funding agencies for explicit plans for managing research data [5] offer academic libraries new roles in collaborating with other campus units in providing institutional responses for data management. Reports such as *Harnessing the Power of Digital Data for Science and Society* [3] and those addressing cyberinfrastructure from the National Science Foundation [4] herald a new era in scholarship and research using digital technologies and data. A recent report by Soehner, Steeves, and Ward [7], however, indicates gaps in academic libraries, particularly with appropriately trained information professionals, to act on the opportunities for supporting cyberscholarship in the areas of digital curation and data management.

The University of North Texas has received funding from the U.S. Federal Institute of Museum and Library Services (IMLS) for a project that involves systematic curriculum development and innovative technologies to address the goal: build capacity in UNT's Library and Information Sciences (LIS) curriculum to increase the number of appropriately trained information professionals and disciplinary researchers and scholars for digital curation and data management responsibilities. The iCAMP (Information: Curate, Archive, Manage, and Preserve) Project is a

three-year effort that will deploy a competency-based curriculum approach to the overall curriculum development process. The curriculum takes account of several learning strategies and learning environments, and together with a strong outcomes- and assessment-focus will prepare information professionals with the knowledge, skills, and competencies needed for these new responsibilities.

The proposed initiative leverages the results of recent and existing IMLS-funded projects, builds upon the strengths of several learning theories, and includes a multi-component technical infrastructure in which students can gain practical training. It uses an iterative process of design, implement, assess and evaluate, and revise for the courses and technical infrastructure to continuously improve all parts of the students' learning and practical training experiences. It seeks to answer the following question: In the context of distributed learning and web-based courses, how can LIS education be changed and enhanced to incorporate extensive training and practical experience to result in well-prepared information professionals, scientists, and scholars to take on the challenges and problems of digital curation, data management, and digital preservation?

2. Curriculum Development and Instructional Design Framework

2.1. Competency-based curriculum

Adjusting to the rapid changes in technology and growth of digital information requires information professionals and those responsible for managing and curating digital data to continuously refine their knowledge, skills, and abilities. Correspondingly, we must provide professional graduate education in which students not only acquire appropriate and relevant knowledge, but also skills and abilities through extensive practical training and learning experiences. The development of our initiative will be guided by a competency-based curriculum. Competency refers to an integrated set of knowledge, skills, and abilities that enable students to effectively perform the activities of or function in the field of digital curation and data management. Winterton, Delamare-LeDiest, and Stringfellow [8] state that one “of the key virtues of focusing on competences, is that these relate to learning outcomes or outputs, irrespective of the routes of acquisition involved, rather than on learning inputs (p. 5).”

Following best practices in developing a competency-based curriculum as well as using an established instructional design process (i.e., rapid prototyping [6]) the following five steps will guide our curriculum development:

- Conduct needs assessment
- Identify competencies
- Create instructional roadmap/Design course in LMS
- Implement curriculum
- Assess curriculum

The Matrix of Digital Curation Knowledge and Competencies [2] developed by UNC's DigCCurr Project serves as a major starting point for the development of competencies complemented by an analysis of digital curation job postings and other digital curation

curriculum programs currently offered at universities in the US and other countries. This environmental scan offers a picture of the skills, abilities and knowledge being taught at other institutions and being sought by institutions currently involved in digital curation work.

2.2. Learning strategies and instructional methodologies

The competency-based curriculum needs to articulate how students will acquire the competency – knowledge, skills, and ability. At this early stage in the project, we are developing a curriculum development and instruction design framework that will guide all instructional design choices. Specific instructional strategies will be determined based on their efficacy in producing the learning outcomes.

We envision a robust and unique learning environment inspired by the teaching hospital model that is characterized by extensive hands-on experiences and expert/student relationships. In this learning environment students receive sound instruction and extensive hands-on experience in a safe simulated real-life environment modeled from the day-to-day practice of academic librarians engaged with digital information management, curation, preservation, and the technologies in use.

We also assume that as students move through the curriculum and specific courses, they will take on increasing responsibilities for their learning based on the following three learning strategies:

- Learning experiences will be based on course content and activities that fully explain the concepts and procedures students are required to learn. Emphasis will be given to instruction, active presentation of information, step-by-step progression from topic to subtopic, etc.
- Learning experiences will be based on case studies, real world challenges, problem solving, and critical thinking. Students gain experience in recognizing and identifying problems and exploring possible solutions through application of technologies and concepts, in a cycle of experience, reflection, conceptualization, and action [1].
- Learning experiences will engage the student to develop theories about how the problem might be solved through experimentation and discussions with experts in the field.

These three strategies will be implemented in a three-tier infrastructure to support student learning and allow students to gain practical experience with the tools and processes of digital curation. Student learning will be supported by faculty and library professionals. The learning environment infrastructure includes

- A Learning Management System (Blackboard Learn) where students are provided clear expectations and interactive online activities to support those expectations.
- A Virtual Teaching Environment built on an open source platform of Drupal, Fedora and Islandora where students can engage in extensive hands-on experiences and real world problem solving.
- A Digital Curation and Data Management Sandbox which contains typical tools for use in digital curation as well as computational resources and storage. Students will have a chance to interact with digital content using real world applications and systems. This tier

will be supported by the UNT Libraries employing locally hosted servers, tools, applications, data, etc.

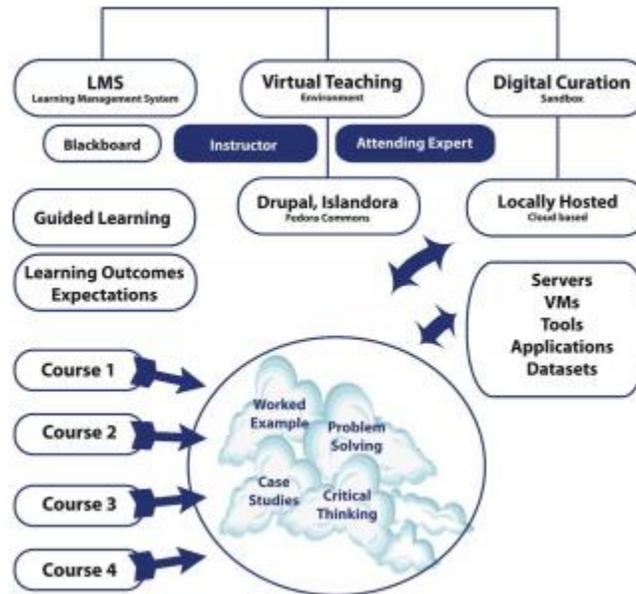


Figure 1. Learning Environment Infrastructure

3. Conclusion

Four courses in digital curation and data management along with an innovative technical learning environment are the key deliverables for this initiative. The priority outcome, though, will be a set of information professionals well-prepared to take on the unfolding challenges of curating, archiving, managing, and preserving digital information in all its multiple forms.

4. Acknowledgements

This work is supported by a generous grant from the U.S. Federal Institute of Museum and Library Services, Librarians for the 21st Century Program, RE-05-11-0073-11, with additional support from the University of North Texas, College of Information and UNT Libraries. We also express our thanks to two other project team members for their contributions: Cliff Whitworth, Research Scientist; Joseph Helsing, Graduate Research Assistant.

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