A Fulbright and a Librarian in Bulgaria: Design of a University of Library Studies and Information Technologies Digital Libraries Course

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Abstract: This paper describes the development of a course on *Digital Libraries* taught in Fall 2018 in the Library Management Department at the University of Library Studies and Information Technologies (ULSIT). The instructor, an Associate Professor and Digital Projects Librarian at Oregon State University in the United States, received a U.S. Fulbright Award to teach and conduct research on digital libraries and open access in Bulgaria. The course focuses on practical methodologies and techniques for creating and managing digital libraries. Topics include digital library evaluation; digital library software systems, technologies and tools; metadata and organization; project management for digitization; digital library workflows; digitization techniques and best practices; access to and use of digital libraries; digital preservation; and copyright considerations, all with a focus on the creation and management of open access repository-based digital libraries. In-class activities, discussions, and assignments that provide hands-on experience in digital library development are described as well as the ways that the course might benefit students in their future work in libraries. The author describes the assignment of readings that focus on real-world practical digital library documentation. The author's background in digital libraries and how that is brought to bear on the course content is also described.

KEYWORDS: instructional design, digital libraries, digital collections, digital repositories, digitization, digital projects, Fulbright Award

INTRODUCTION
What is a librarian's purpose today in this digital age? Last week, in a mock interview that was part of a media training session for U.S. Fulbright awardees working in Bulgaria, I was asked this question by the journalist Ivaylo Vesenkov. I couldn't help but hear the question as a challenge to my profession. With so much information immediately accessible to anyone with internet connectivity--at the flutter of some keys, upon the swipe of our fingers across our phones, and increasingly at the sound of our voices--why, indeed, librarians? What *is* our purpose in today's digital landscape of immediate access to information? I answered him by sharing a personal perspective. I replied that over the course of my library career it has been my passion to make information formerly contained solely within the stacks of physical libraries and archives accessible to the world online, in as open a way as possible. I wish now that I'd have mentioned that librarians and libraries around the world have been engaged in this activity since the very advent of the World Wide Web and in this way, among countless others, have been integral in making research and other unique materials of our institutions available to the world in digital form. We participate and lead in the effort to make information accessible online. Indeed, information access is the very heart of our profession. By teaching a course in Digital Libraries to the class of approximately 30 third and fourth year students in the Library Management department at the University of Library Studies and Information Technologies this fall, I hope to train the students in the class to carry on this important work.

I joined the library profession in 1993, just prior to the birth of the World Wide Web. My cataloguing class in Kent State University's Master of Library and Information Science program was probably the last to require the creation of catalogue cards as a final project. For those of you who do not remember, the

card catalogue preceded online catalogs and discovery systems. They were the sole mechanism, aside from physically browsing a collection, by which library patrons could find out what books were available at a particular library. Clearly, much has changed over the course of my career in academic libraries. I've had an opportunity to work at libraries that have taken on a wide range of new digital library related responsibilities. I established new digital production units responsible for digitization, metadata creation, and digital repository management and training activities, and established a variety of new digital library and scholarly communication related services including data management, open access promotion, copyright, and open access publishing.

I received a five month 2018-2019 U.S. Fulbright Award to teach and conduct research on digital libraries and open access in Bulgaria. Fulbright is "the flagship international educational exchange program sponsored by the U.S. government and is designed to increase mutual understanding between the people of the United States and the people of other countries."[1] The Digital Libraries course focuses on practical methodologies and techniques for creating and managing digital libraries. Students in the course will evaluate existing examples of digital libraries from around the world, including the Europeana Collections (https://www.europeana.eu/portal/bg), the Digital Public Library of America (https://dp.la/), examples of prominent Bulgarian digital libraries, and digital libraries with which I have been involved such as Oregon Explorer (http://oregonexplorer.info/), Oregon Digital (https://www.oregondigital.org/), and the ScholarsArchive@OSU institutional repository (http://ir.library.oregonstate.edu/). Students will learn about the purpose and types of digital libraries; digital library software systems, technologies, and tools; metadata and organization; project management for digitization; digital library workflows; digitization techniques and best practices; access to and use of digital libraries; digital preservation; and copyright considerations, all with a focus on the creation and management of open access repository-based digital libraries.

By learning practical, hands-on methods of developing a digital library, the course will prepare students to work productively and creatively in digital libraries today and in the future. In this paper, I describe in detail the topics covered in the course (Course Content); in-class activities and discussions (Course Activities); course assignments and grading (Course Assignments); and conclude by describing the course goals, intended benefits, and potential issues. My background in digital libraries and how that is brought to bear on the course content is also described.

COURSE CONTENT
Increasingly, academic libraries in the U.S. and elsewhere are digital libraries. As an example, Oregon State University Libraries has shifted its purchasing from print books and journals to almost entirely digital in the last 20 years. Today, nearly all of the Libraries' journal subscriptions are electronic rather than print, more than half of the monographs budget is devoted to the licensing of electronic books, and multimedia is licensed for streaming. The study of this shift in providing access to licensed electronic resources, and the many ramifications of this shift on access provision, resource description, preservation, and instruction are probably best left as topics for other library science courses today. I elected to focus this digital libraries course on repository-based digital libraries such as digital collections and institutional repositories.

[1] Fulbright | Bureau of Educational and Cultural Affairs. (n.d.). Retrieved September 9, 2018, from https://eca.state.gov/fulbright

In the ten week course, I plan to cover the following topics. In **Week One (Introductions and Digital Library Overview)**, I will share my expectations for attendance and participation, explain grading and the class assignments via the course syllabus, and discuss the purpose of digital libraries. The class will look at some prominent examples of existing digital libraries, and engage in two class activities. In the first, the class will be asked to search and browse Europeana digital collections for documents, photographs, audio, and/or video in an area of their interest (e.g. fashion, music, politics, etc.). Students will be asked to describe: 1) How is the content described?; 2) Who owns the content?; 3) How is the content retrievable?; 4) What are the terms of use, if any, for the objects?; and 5) Is full text available? As part of a second activity, the class will be asked to find and share unique digital library definitions and their sources. We will review and discuss those definitions and how digital libraries are different from physical ones.

In **Week Two (Types of Digital Libraries)**, the class will look at the different types of digital libraries that we will learn about throughout the course, including digital collections, institutional and disciplinary repositories, large-scale repositories and collections, and data repositories. The class will also discuss digital humanities projects. As the focus of the course is digital libraries of freely available resources, this week we will also talk about open access, its benefits, and the role of libraries in promoting openness of digital collections. The class will again look at examples of these different digital library types and consider the following questions in relation to each:
- Who is responsible for running the repository?
- What disciplines does it cover?
- What types of content are included? For example, journal articles, datasets, university publications, photos, other?
- Who is allowed to deposit research? (Institutions, Organizations, Individuals?)
- What are the metadata requirements, if any?
- What are the open access requirements?
- What are the terms of use for repository objects?
- What type of persistent URLs, if any, are used for repository resources? (Handle, DOI, ARK, Other?)

In **Week Three (Digital Library Architecture and Systems)**, I introduce digital library software features and requirements and talk about how software evaluation can be performed to ensure that the software a library chooses to use for its digital libraries meets the needs of the institution and its users. Software features we will cover include community support, integrability; authentication and authorization; digital preservation; administration; licensing and restrictions; metadata ingest/egress and harvesting; discovery; analytics; and usability. In **Week Four (Software Evaluation and Solutions)** the class will evaluate specific digital library software solutions with a focus on freely available, international, open source packages such as DSpace and Samvera.

In **Weeks Five (Introduction to Metadata)** and **Six (Metadata Applications)**, the class will learn how to produce high quality metadata for discovery and preservation. We will learn about common metadata schemas, standards, and controlled vocabularies and discuss metadata applications including linked data for libraries and application profiles. The class will create an application profile for a digital collection as

a group. In **Week Seven (Project Planning)** we will consider the questions that need to be asked when considering and then planning a digital library project. We will discuss roles and responsibilities, project proposals, functional requirements, and the metadata analysis, enhancement, and conversion/crosswalking work that is common to digital library projects. The class will work on an exercise that asks them to analyze a sampling of externally produced (to the library) metadata in order to determine how the metadata may be enhanced to meet the functional requirements of the project. In my experience, externally produced metadata almost always requires enhancement in order for the content to be easily accessible and understood. As is the case with all class exercises, this exercise uses real-world problems to teach applicable digital library solutions and techniques.

In **Week Eight (Collection Development and Workflows)**, the class will talk about how to identify and select content for digitization. Copyright in relation to digital projects is considered as well as digitization and metadata workflow design. Although we will not engage in hands-on digitization in this course, in **Week Nine (Digital Imaging)** we will learn about scanning techniques and best practices for re-formating print resources and multimedia. The class will discuss the handling of production master files, image parameters, color management, and quality control relating to the scanning process. The class will learn about recommended master file formats, file naming guidelines, and best practices for directory structures for the temporary and long term storage of files. I will teach about outsourcing digitization work versus conducting the work in-house. In one of these weeks, I may replace the class lecture with a visit to a local digitization lab so that students can talk with and ask questions of local experts about their digitization processes.

In **Week Ten (Digital Library Futures, Review)**, in addition to a discussion of the future of digital libraries and a final review in which I will share with the class some key questions that should be given careful consideration before taking on any digital project, this final class session will give students an opportunity to work on their final projects and ask questions of the instructor.

COURSE ACTIVITIES
A principal assumption behind this course is that students learn through practice. Therefore, a key element of each class includes activities related to the topics covered. Each activity provides an opportunity for students to exchange strategies and ideas with each other and with the instructor, recognizing that the work involved in creating and maintaining digital libraries requires creativity and collaboration. Digital libraries must evolve in order to be seen as relevant and useful. The tools, processes, mechanisms, and theory of digital libraries must be constantly challenged. Realistically, and optimistically, best practices in the field are so new that they are more aptly called emerging practices, or, "the best we have come up with so far" practices. Through discussion and critical thinking, and by challenging existing models, the course provides an outlet for the students and the instructor to figure out ways of doing things on their own, rather than being told how things must be done. The shape of digital libraries is not set in stone. Any analysis of existing digital libraries will demonstrate that there is more than ample room for improvement.

Discussions and class activities derive from digital library projects with which I have been involved over the course of my career. These activities provide students with experience working through issues and problems that are regularly encountered in the course of digital library creation, and the course activities

will prepare students to work productively and creatively in digital libraries, the key objective of the course. I expect that roughly half of the class time will consist of activities, exercises, and project work.

COURSE ASSIGNMENTS

Students will have class time to work on the three major course assignments, which will give me an opportunity to gauge how well the students are learning the content, help the students with the assignments, and answer questions as they work on them. The first assignment is a **Review of An Existing Digital Library**, which accounts for 25% of the grade for the course. For this assignment, students will work in groups of two to four people. Group work in the class is intended to facilitate discussion in the students' native language, recognizing that not all students speak and write English at the same level. Each group will review an existing digital library and present the results of their review to the class in a 10-15 minute presentation. A list of potential digital libraries to review will be provided on the first day of class (only one group may review each digital library). The review will include (but does not need to be limited to): discussion of management, content, technical infrastructure, and access/usability. Groups will be graded on the degree to which they cover each of a number of assigned elements of the digital library, not on their presentation or language skills.

For a **Metadata Assignment**, which also accounts for 25% of the students' grade, each student is required to create a Metadata Application Profile (MAP) for a collection of objects. The Metadata Application Profile will consist of a spreadsheet that includes the labels, properties, sub-properties, usage, controlled vocabulary/syntax scheme, and obligation (whether the field is repeatable, whether the field is required). The grade will be based on the degree to which the metadata application profile includes the information that is necessary for fully describing the objects and making them accessible.

The final project, a **Digital Library Plan**, may be completed independently or in groups of two-four and the work should reflect the efforts of the number of people working on the project. It accounts for 40% of the students' final grade. For the project, students are required to create a digital library plan that is in-depth and includes concepts that were learned throughout the term. Each plan must include the following elements:
1. A title and description of the collection or repository.
2. The repository or digital content management software that will be used and why.
3. The intended audience and how the content is expected to be used by that audience.
4. A description of the content including the number of items and their format(s); digitization specifications if applicable.
5. The benefits of making the content available in digital form.
6. Workflows that cover object acquisition through publication and who would be responsible for completing each aspect of the work.
7. A metadata application profile that includes how the content will be described, the metadata scheme used, controlled vocabularies, and whether properties are optional or required.
8. Terms of use for objects in the collection.
9. How the content will be preserved.
10. A home page template.

Students are expected to attend every class unless they are excused, and participate in class discussions and activities. To emphasize this, class participation will account for 10% of the students' grade.

CONCLUSION

Rather than assign academic texts as readings, I primarily selected readings and videos that focus on digital library documentation that will help students understand how other digital libraries have done things. Even though digital libraries have been in existence for more than a quarter century, there are few examples of digital library coursework on the open web, and nothing for an undergraduate course with a practical rather than theoretical focus. This left me to rely on my own experience in developing and managing digital libraries, from creating boutique digital collections of unique research objects and archival resources to larger scale projects of digitizing the entire corpus of Oregon State University theses and dissertations and extension and experiment station publications, from overseeing and engaging in metadata analysis for digital projects to selecting, managing, migrating, and overseeing digital repository software. The experiences, methodologies, and tools that I and countless colleagues around the world have put in use serve as the basis of this course, and provide a taking off point for this class to figure out ways that digital libraries might move forward in the future.

In the interest of openness and transparency, I have used Google Drive to make all of the course materials, including the syllabus, slides, lecture notes, and assignments available online to the students of the class and to my colleagues at ULSIT. I recognize the challenge that some students will have with the class being in English, and hope that by making this content available to them online they will be able to use translation services, especially Google Translate, to read and consult the materials in Bulgarian. All of the courese content is available from the course syllabus: https://docs.google.com/document/d/1Dr13qj2bVWC8KarxuyPV-BlVyCEt2OjoQbdzR5KA-hA/edit?usp=sharing.

REFERENCES

Fulbright | Bureau of Educational and Cultural Affairs. (n.d.). Retrieved September 9, 2018, from https://eca.state.gov/fulbright