Models of Digital Collection Use in a University Community

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Abstract

Digital collections allow university students and faculty to share academic scholarship across their campuses and beyond. Based on interviews, we present cases of faculty, graduate students, and undergraduates to illustrate some factors that seem to determine why they do or do not use collections in their research, teaching, and learning. Findings have implications for the kinds of support structures needed to sustain digital scholarship.

Introduction

Online digital collections have rapidly become venues for entertainment. The popularity of sites like YouTube and Flickr demonstrate the appeal of popular digital video collections of everything from short films to home videos of piano playing cats. However, online digital collections are also growing to support wider and more equitable access to collections previously available only to small, selective audiences. Increasingly, libraries and museums are digitizing their collections art, history, and music to allow a broader and more diverse public to enjoy and use them for research and learning. Digital collections also offer new venues for research and teaching in schools; in the university context, these collections allow students and faculty to share academic scholarship across their campuses and beyond. In this paper we describe the use of digital collections among faculty, graduate students, and undergraduates at two departments at a large public university to better understand what factors influence the creation and use of digital collections at the university level.

What is a digital collection?

A digital collection is any set of documents or multimedia pieces (e.g., images, audio files, videos, etc.) gathered and presented online for the purpose of exchanging resources and ideas.

Information abounds on technologies for assembling digital resources (e.g., Besser, 2002; Yakel, Shaw & Reynolds, 2007) and frameworks for digital collection construction (e.g., NISO Framework Advisory Group, 2004). There has been considerably less attention given to how social context can influence the *cultural practice* of creating and using digital collections. Harley et al (2006) begin to address this issue with their study of faculty use of library and non-library based collections for undergraduate teaching. In this research, they identified a number of factors that influenced digital collection use at one institution, including a desire to improve student learning, the convenience of access to digital materials, and ability to re-aggregate resources. However, this report lacked information about how and why graduate students and undergraduates created and used digital collections—critical to understanding ways of best supporting this practice. We were interested in better understanding why faculty, graduate students, undergraduates do or do not choose to use and create digital collections and the factors influencing their decisions.

Note: This research was funded the U.S. Department of Education Fund for the Improvement of Postsecondary Education (FIPSE Award # P116B040739). The findings and opinions expressed in this report do not necessarily reflect the policies of the U.S. Department of Education.

The *Scholars' Box* project provided the setting to look more closely at digital collection use among students and faculty. A grant-funded research and development project, the *Scholars' Box* was an initiative of the Interactive University (IU) of a large, public university that contributes to research, teaching and learning in part by developing tools that will "enable university faculty, K-12 teachers, and all students and learners to gather, create and share digitized information" (Interactive University Project, 2007). *Scholars' Box* was intended to support this work; we were the projects' external evaluators.

Key to the *Scholars' Box* research was understanding the context in which members of the campus community engage or disengage with creating and/or using digital collections. In this work we looked at the various "communities of practice" within the university -- groups of people who share "a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise by interacting on an ongoing basis" (e.g., those who work in the same field and develop new knowledge through interaction) (Wenger, McDermott, & Snyder, 2002, p. 4). Because we believed that the development of new technologies in higher education requires not only creating functional tools, but also understanding how technology can support and expand communities of practice on individual campuses and broader professional associations, our first step was to understand how its members interact with digital collections. Specifically, we were interested in the following:

- How does social context influence whether or not various academic constituents (i.e., faculty, graduate students, undergraduate students) create and use digital collections?
- What are the factors that influence the creation, use and sharing of digital collections for faculty, graduate students, and undergraduate students?

Based on interviews, we present cases of faculty, graduate students, and undergraduates to illustrate some of factors that seem to determine why they do or do not use collections in their research, teaching, and learning. These cases contribute to our preliminary attempt to model the individual and social factors that mediate the creation and use of digital collections among these participants (see Tables 1 and 2).

Cases of Digital Collection Creation and Use

How does context influence whether or not various academic constituents (i.e., faculty, graduate students, undergraduate students) create and use digital collections?

For each of the participants we interviewed, we generated a specific model of their use of digital collections, identifying factors that facilitated or inhibited that person's work. We saw several commonalities among groups, leading us to cluster the results by user group (faculty, graduate student, or undergraduate) and level of use of digital collections (high-end vs. low-end use). We defined a "high-end user" as someone who has embraced digital collections and integrated them into scholarship, and a "low-end user" as someone

who has done some work with digital collections, but either expresses reservations about the value of digital collections or has relatively less experience than his or her peers in creating and using collections.

What follows are examples of high- and low-end users in each group (faculty, graduate, and undergraduate). By comparing models, we illustrate what appears to be the most salient factors differentiating the use of digital collections among faculty, graduate student, and undergraduate students in this study.[1] We then discuss what this means for developers of university or department-based digital collection projects.

Faculty

The faculty members we interviewed appeared to be influenced by a vision of how to use digital collections in their teaching and research, and by the availability of materials that met their needs. Jane[2] is a full professor in an Anthropology department; Luke is an assistant professor of History. As seen in their logic models (Figures 1 and 2), both have a personal interest in digital collections and have used them in their teaching. In Jane's courses, undergraduates create their own digital collections and make comments about others' digital materials. Luke "cherry-picks" digital information from various online collections and uses these in PowerPoint presentations for class lectures. He says that the majority of these collections are images and/or video that he would otherwise not be able to make available for students. Both professors also have a commitment to community service and have shared their collections with K-12 educators. Jane created sixth-grade instructional modules about the Neolithic period, while Luke gave lectures to high school teachers through a collaboration between his department and a local school district.

[1] Elaborated cases and diagrams from all six stakeholders appear in ROCKMAN *ET AL* (2006).
[2] All names are pseudonyms.

Figure 1. Digital collection model for a high-end faculty member

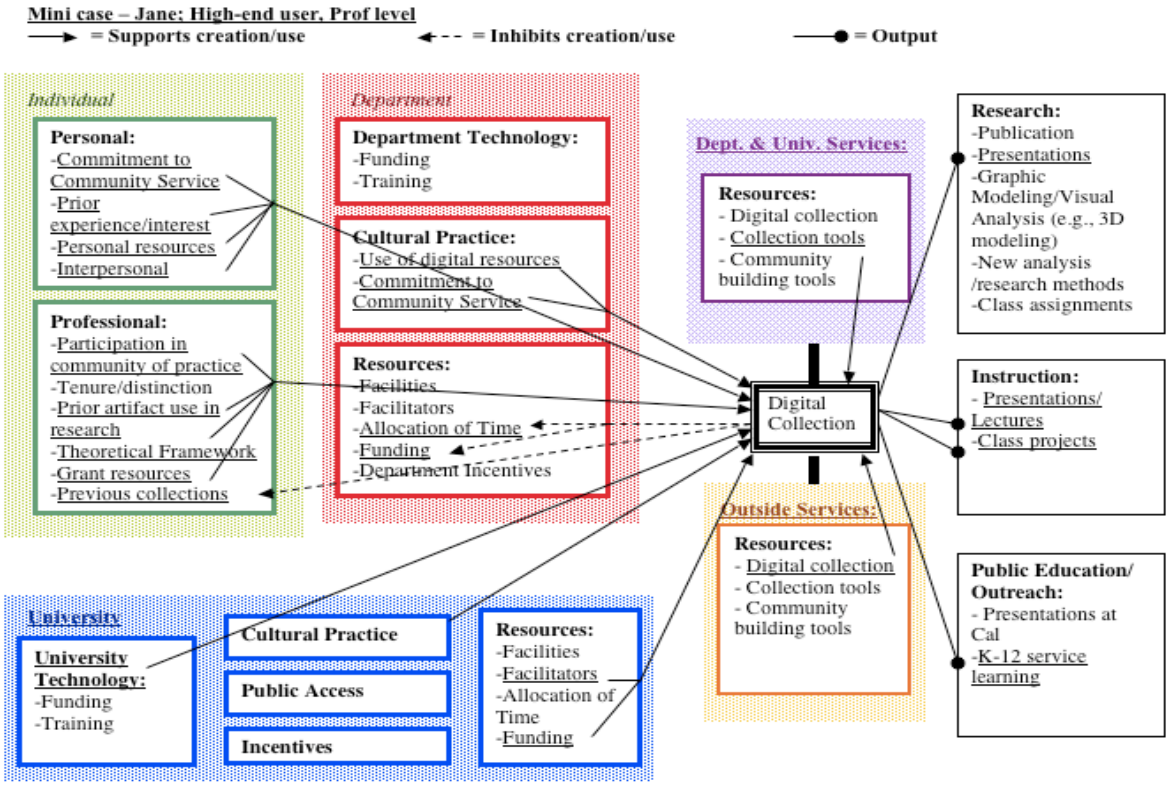
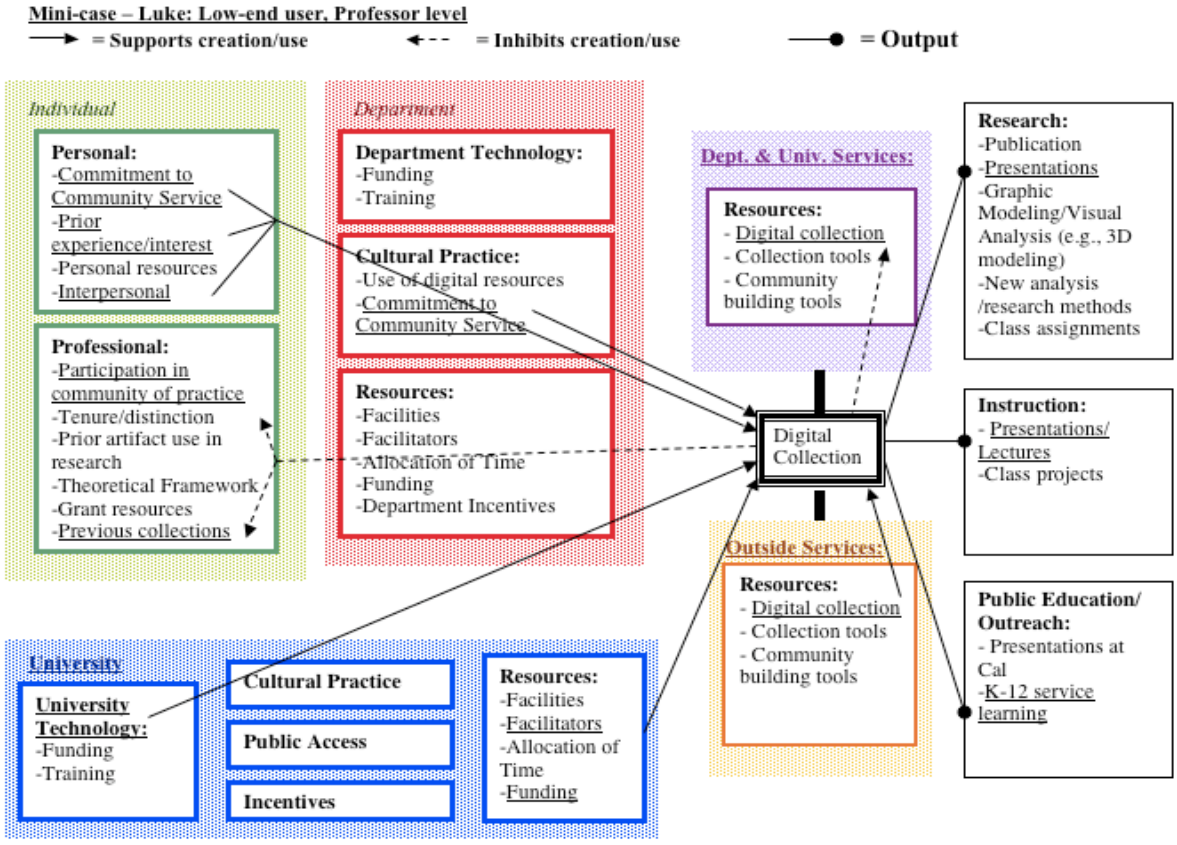


Figure 2. Digital collection model for a low-end faculty member



Jane and Luke are supported in their work by a university infrastructure that provides them with access to the technological resources for creating and sustaining their collections. Nevertheless, they are limited by the accessibility of digital information. Jane lacks time to personalize her collections – that is, to add meta-tags that would be meaningful for her when she is searching for material. Luke said that for his classes, it would be helpful for the university libraries to create an annotated bibliography that he could make available for his students; such a resource is currently unavailable.

The similarities end there. What differentiates high-end user Jane from her low-end counterpart is the discipline-specific philosophies influencing their collection use. Jane subscribes to a post-processual approach to archaeology that elicits multiple perspectives to analyze and interpret artifacts. As part of this, she looks for new ways to document, examine, and share information with others. She has published numerous papers about the contents of her collections and the use of new technologies to analyze and display findings. Luke, in contrast, believes that a real historian "does not rely solely on the Internet" for information and that, with the exception of a few primary and secondary resources, participating as a researcher in his professional community of practice does not necessarily include the use of Internet material. Consequently, he does not integrate collections into one of his primary duties at the university, producing scholarly research.

While Jane has the support of her department and field to conduct innovative research using digital collections, Luke's involvement is limited to generating content for his university and K-12 teaching. It is this factor—the perception of their respective academic fields as to what research sources are appropriate—that differentiates their use of digital collections.

Graduate Students

Graduate students tell a different story. Susan, a high-end user in Jane's department, is committed to sharing resources and is writing her dissertation on the creation of a website and educational materials for teachers. Digital collections help her to bring together multiple pieces of information about artifacts to facilitate their interpretation and distribution. For example, she can link images to field notes and to expert interviews about the interpretations of the artifacts. This in turn enables her and other researchers to cross-reference information and guide analyses. Her department has given her the funding, training, and resources necessary to pursue her interests and, like Jane, she only wishes she had more time to customize materials to her liking.

Low-end users appeared to be hindered by pressures within the academic job market. Susan noted that other graduate students seemed less invested in multimedia and digital collections because they did not perceive these skills as marketable. In further discussion with graduate students, this concern became particularly poignant in their final years of study (i.e., 4th year and beyond, including post-doctoral work).

Undergraduate Students

Interviews with faculty and graduate students revealed that undergraduate participation in the creation of digital collections was a significant rationale for their own creation, use, and sharing process. However, the most salient factor differentiating high-end and low-end undergraduate student users appeared to be the extent to which digital collections were used in their courses. This use was determined by faculty who, as in the case of Luke, appeared to make choices about using digital collections in teaching based on whether or not he or she believed the use of digital collections to be acceptable practice within their particular discipline and thus adding to students' disciplinary knowledge and skill.

In Jane's undergraduate courses, students are expected to use digital collections as a way to learn data analysis. Jane's students include high-end user, Ellen, who in addition to her coursework, has also participated in the university's Undergraduate Research Apprenticeship Program (URAP), which funds students to participate in faculty-sponsored research. As part of her URAP project, Ellen has participated in the creation of digital collections of artifacts. She has also sought and received mentoring around the technology, and produced her senior thesis on a new form of analysis using 3D modeling.

In contrast, due to his perception that a real historian does not necessarily rely on Internet-based digital collections, Luke's students are not expected to use digital

resources. Instead, they are asked to use paper-based primary sources provided in their course readers and the library. Luke's main teaching strategy is to model "what a real historian does" by: 1) presenting his students with primary sources for review prior to a lecture, and 2) modeling an interpretation of the primary sources during class (using digital images in PowerPoint). He expects his students to learn how to interpret primary sources and assesses this skill in their course assignments and exams, using primary source documents from their readers and/or library archives. Since he believes that historians primarily use library resources, he does not model the use of the Internet for seeking out primary sources.

Discussion

What are the factors that influence faculty, graduate students, and undergraduate students' creation and use of digital collections?

Our case studies suggest that the highest-end faculty user of digital resources had both a vision for how to incorporate collections into teaching and research and the departmental support to do so. Low-end users questioned the complete integration of digital collections in their teaching and research and chose to use them in singular situations (e.g., in-class presentations). Graduate students may have had departmental encouragement, but questioned the marketability of digital collection use. Undergraduate engagement with digital collections appeared to be determined by the level of department support and faculty facilitation.

Our preliminary model of digital collection use raises a number of issues. We recognize that the exact nature of influences and outcomes varies across departments and universities, and additional research is needed to verify or adjust the model. As that work emerges, we expect that contextual factors will increasingly inform the design and implementation of new digital collection technologies. This has implications for the kinds of support structures, (e.g., mentoring), needed to sustain communities of practice and their collection work.[3]

In short, with the increasing use of digital collections outside of academia, university departments should decide whether or not to leverage this practice to support academic discourse both on campus, as well as off campus. On campus, a close consideration of the needs and current practices of all constituents is necessary for departments, and eventually whole universities to leverage their resources and strengthen their academic communities. While these digital collections may never get quite as many hits as the latest viral video on YouTube, if they are integrated into cultural practice they have the potential to increase the level of discourse and productivity of academic communities.

[3] See Kim (2000) for recommendations of how to support web-based communities of practice.

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Table 1. Definitions of Categories, Input Factors

Category	***Definition***
Inputs	
Individual	
1. Personal	a) Commitment to community service
	b) Prior experience/interest with digital tools (not work-related)
	c) Personal resources: Personal financing and tools (e.g., camera, scanner)
	d) Interpersonal resources (i.e., family member to scan images).
2. Professional	a) Participation in community of practice: What is involved (i.e., prerequisite knowledge, skills, practices) in being part of their professional community.
	b) Tenure/distinction
	c) Prior artifact use in research (digital/non-digital artifacts)
	d) Theoretical Framework(s) that inform professional work.
	e) Grant resources
	f) Previous (digital or non-digital) resources used for work.
Department	
1. Technology	a) Department-wide funding available to support technology.
	b) Department-based training to support technology.
2. Cultural Practice	a) Use of digital resources in the department
	b) Commitment to Community Service: Department support for (and/or requirement for) community service
3. Resources	*Other resources available by Department, including:*
	a) Facilities available to support technology use (e.g., Computer lab).
	b) Facilitators made available support technology use.
	c) Allocation of time: Policies concerning allocation of time that support and/or inhibit technology use.
	d) Funding sources that support/inhibit technology use.
	e) Department Incentives that support technology use.

University	
1. Technology	a) University-wide funding available for support of technology use.
	b) University-based training available for support of technology use.
2. Cultural Practice	*University-wide practices that support technology use (i.e., conferences, requirements for public outreach, etc.)*
3. Public Access	*Accessibility of University resources to public audiences.*
4. Incentives	*University incentives (or lack thereof) for technology use.*
5. Resources	*Other University resources, including:*
	a) Facilities available to support creation/use of digital resources (i.e., University libraries, etc.).
	b) Facilitators that support creation/use of digital resources.
	c) Allocation of time: Policies about the allocation of time that support and/or inhibit creation/use of digital resources.
	d) Funding sources that support creation/use of digital resources.
Department & University	
1. Resources	*Any resources provided as a combination of Department and University Services, including:*
	a) Digital resources made available through both University and Department support.
	b) Collection tools made available through both University support and Department resources.
	c) Community building/networking tools available through both University support and Department resources.
Outside	
1. Resources	*Resources available outside of the Department and University:*
	a) Digital resources made available outside the Department and University (e.g., Library of Congress).
	b) Collection tools made available outside the Department and University (e.g., Flickr).
	c) Community building/networking tools made available outside the Department and University (e.g., MySpace).

Table 2. Definitions of Categories, Output Products

Category	***Definition***
Outputs	
Research: *Any research connected to or resulting from the use/creation of digital resources*	
1. Publications	
2. Presentations	
3. Visual analysis	
4. New methods	
Instruction: *Teaching connected to or resulting from the use/creation of digital resources*	
1. Presentations/lectures	
2. Class assignments	
Public Ed: *Public sharing of research through use of digital resources*	
1. Univ. presentations	
2. K-12 service learning	
3. Online sharing	