

# Moving Beyond 'If We Build It, They Will Come:' The Invisible User In Digital Library Development

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# Panel Outline

1. Introduce Use and Reuse
2. Present Case Studies
  - Discovery and Use of Digital Collections in Educational Settings
  - Image Use, Users and Usability: Implications for Digital Libraries
  - Understanding Ultimate Use and Its Implication for Digital Library Management: A Case Study
3. Explore Limitations and Common Themes
4. Take Audience Questions
5. Facilitate Discussion on Use and Reuse

# Use and Reuse

- Definition
- Literature Review
- Significance

# **Discovery and Use of Digital Collections in Educational Settings**

## **Qualitative Case Study**

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# Overview

- Presentation of the findings of a case study
  - Investigation of the **actual use** of digital library (DL) resources in an academic environment
    - Focus on unique digital collections created by academic libraries
  - Exploration of faculty and students' perceptions of educational digital libraries
    - Perceptions of **usefulness**
    - Perceptions of **usability**

# Primary Audience of Digital Collections in an Academic Setting

- University students, teaching faculty, and researchers
- Limited empirical research on discovery, adoption, and actual use of digital collections in higher education



# Central Research Question

How do users discover and use digital collections for teaching and learning in a complex and constantly changing information environment ?

# Methodology

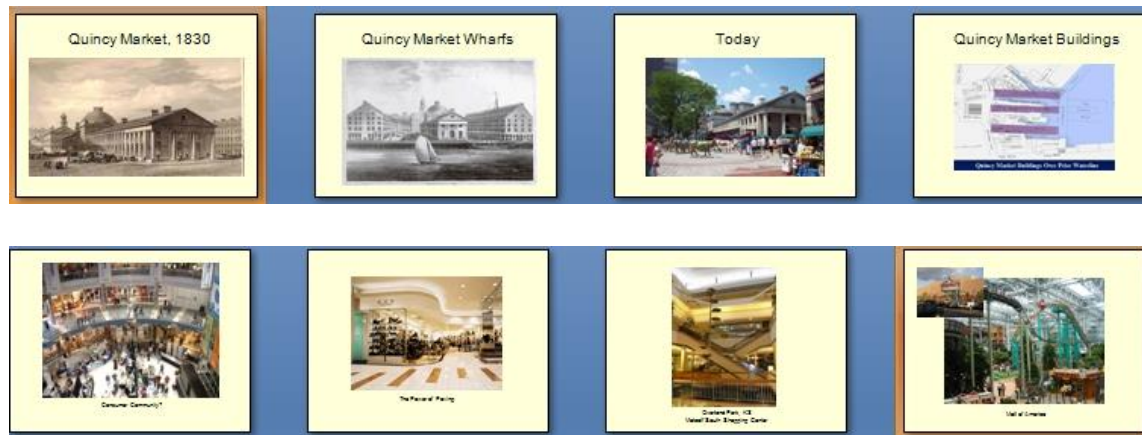
- Naturalistic study
  - Examines discovery and use of DLs in the context of other information resources that students interact with in the learning process
- Designed as a two-case study
  - Two undergraduate geography classes observed for one semester
- Employed qualitative methodology
  - **Phase I**
    - Questionnaires
    - Focused field observations
    - Document analysis
  - **Phase II**
    - Semi-structured interviews



# Findings: Use of Digital Resources

- Dominance of the resources in the digital format
  - The role of print resources in the observed classes was minimal
  - Multiple modes
    - Visual
    - Textual
    - Audiovisual

The notion of **digital resources** includes objects in digital libraries as well as information materials available on the open Web.



# Findings: Use of Digital Resources

- Extensive use of visual resources – maps and photographic images
  - Visual resources were selected primarily from the open Web
  - Students' perceptions of the use of visual materials in their classes were very positive
- The use of digital libraries (DL) as a source of learning resources was limited

“This was the first time I used them [DLs]. I had no idea that they existed and that you could access those old maps online” (Student I, Interview).

# Findings: Multimedia

- A significant presence of audiovisual materials
  - Audio and video recordings at the beginning of every lecture in one of the observed classes



# Findings: Digital Collections

- The potential of digital collections is not explored fully in the educational environment
- Digital collections were **undiscovered** and **underutilized** in the classes observed for the study
  - A collection of digitized maps was used only in one of the classes
  - Academic digital library portals were used primarily for textual resources (journal articles)

“Journal articles that are only available online. I got them off the library website. A lot of journal articles ... But I guess images not so much” (Student A, Interview).

# Findings: Digital Collections

- Lack of awareness
  - Study participants were unaware of digital collections created by libraries
- Limited understanding
  - Most users did NOT distinguish digital collections from other library information systems (catalogs or article databases)
- Positive experience (once digital collections were discovered)

“My dealings with digital map collections are limited to this class, I even didn’t know about this collection before this class. And now that I know it, [...] when I work on a project for a different class, that’s somewhere I would go” (Student J, Interview).

# Findings: Digital Collections

- The limited use of digital collections in this study is related to the following perceptions:
  - **Perceived ease of use**
    - Library systems are not viewed as easy to use, which in turn discourages potential users from trying DLs provided by academic libraries
    - Complexity of library tools is perceived as a barrier to otherwise valuable content
      - If users perceive a system as difficult, they may not even try to use it, despite its potentially useful content
  - **Perceived usefulness**
    - Academic libraries are perceived as places of primarily textual resources
      - Perceptions of usefulness, especially in regard to relevance of content, coverage, and currency have a negative effect on user intention to use DLs, especially when searching for visual materials

# The Impact of Perceptions of Academic Libraries

- Perceptions of academic libraries held among students and teaching faculty had generally a **negative impact** on the discovery and adoption of digital image and map collections
  - Students and instructors in the study didn't associate libraries with visual/audiovisual materials and didn't expect libraries to have digital image/audiovisual collections
  - They didn't even think about checking library websites when searching for images and maps for their classes.

“In my mind, the library is not going to have as much as is out there on the Web, so I would go to that first”  
(Teaching Assistant 2, Interview).

# The Impact of Perceptions of Academic Libraries

## Negative

- Perceived **ease of use**
  - Overwhelming and difficult to navigate
- Perceived **usefulness**
  - Textual materials in print (negative especially when searching for images)
  - Limited
  - Historical

## Positive

- Perceived **usefulness**
  - Permanent
  - Accurate
  - Authoritative



# Web as an Unlimited Source of Visual Materials

- The Web is perceived as the domain of visual/audiovisual resources
  - The open Web as a source of an infinite number of resources
  - Study participants used Google search engine, including Google Image Search and Wikipedia when searching for images and maps for their classes

“There is this blind faith that everybody posted all these great maps out there and it is my job to track them down, so I’ve never relied on the library for those kinds of things” (Teaching Assistant 2, Interview).

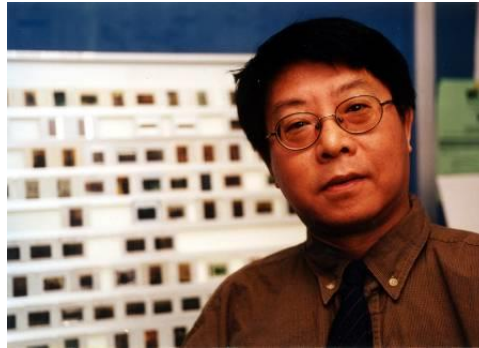
# Discussion

- The importance of research of user perceptions on the acceptance of digital libraries
- Perceptions of DLs need to be considered in a **larger context**
  - Students and instructors don't use DLs in isolation, but in conjunction with other library and Web resources
- Users' perceptions are also shaped by their experiences in using resources on the open Web
  - User perceptions of library systems as difficult to use stand out in contrast to other tools that students use to find resources online, such as Google Scholar or Google Image Search

# Discussion

- Digital collections co-exist with other information sources
  - Potentially offer high-quality content
  - Difficult to discover in the multitude of other sites
- Libraries are associated with reliability and quality of scholarly materials
  - Potentially a positive role in adoption of educational DLs, especially if users recognize that DLs offer visual/audiovisual resources as well as textual materials
  - This potential is not fully explored in higher education
  - Increasing the amount of audiovisual content?
- Large-scale DLs can potentially address the limitations in discovery

# Image Use, Users and Usability: Implications for Digital Libraries



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# Overview

- Background
- Research Questions
- Methods
- Findings
- Limitations of Study
- Significance of Study
- Future Research

# Background

- What?
  - Image user behaviors, experiences and beliefs
  - Larger study: needs, retrieval and use
- Why?
  - Limited research beyond image retrieval issues

# Research Questions

- How are images used to support users' work tasks?
  - How are images incorporated into their work?
  - Why do they use images in their work?



# Methods (1) - Participants

No. in Group	Gender	Years in Prof.	Position	Setting
<b>Archaeologist User Group</b>				
4	4F	15-40	Instructor, Asst. Prof. & Professor	Small college & large university
<b>Architect User Group</b>				
6	3F - 3M	4-40	Head of Graphic Design, Designer, Architect	Consultant, small to large firm
<b>Art Historian User Group</b>				
4	4F	15-41	Instructor & Professor	Small college & large university
<b>Artist User Group</b>				
6	4F - 2M	7-40	Multimedia, Painter, Printer, Sculptor, Mixed media	Own studio-studio with collaborative



# Methods (2) – Data Collection

- Survey
  - 11 questions
- Semi-structured interview
  - 20 questions
  - Digital audio recording
- Data preparation
  - Transcription with SoundScriber 1.0.0.0 & Microsoft Word



# Methods (3) – Data Analysis

- Factual data - e.g., What tools do you use?
  - Brief responses
  - Case-ordered displays
- Thematic data - e.g., time, frustration
  - Concepts captured
  - Constant-comparative method
- Checks to confirm & verify
  - Inter-coder check - 8 coders, 25 passages
    - 96% & 81% agreement
  - Member check - 1 from each group
    - Executive summary & re-interview

# Findings - Image Use Processes

- Software
- Download
- Scan
- Edit
  - Quality > modifications
- Save



# Findings - Image Use Products

- Archaeologists & Art Historians (academics)
  - **Direct use:** lectures, publications and research projects
- Artists & Architects (creative users)
  - **Indirect use:** modified, combined, or examined
- Architects continued (additional use)
  - **Direct use:** concept boards, contractor booklets, marketing materials, presentations and renderings

# Findings - Functional Role of Images

	Heavy		Moderate			Limited							
	Knowledge	Conceptual Model	Communication	Inspiration	Cognitive recall	Critical thinking	Emotion	Engage Audience	Marketing	Proof	Social Connection	Translation	Trust
Archaeologist	4	-	-	-	2	2	-	1	-	2	-	-	-
Architect	4	6	5	3	-	-	1	-	2	-	1	2	1
Art Historian	4	-	1	-	1	2	-	1	-	-	-	-	-
Artist	3	6	1	4	2	-	1	-	-	-	1	-	-
Total	15	12	7	7	5	4	2	2	2	2	2	2	1

# Findings - Functional Role of Images

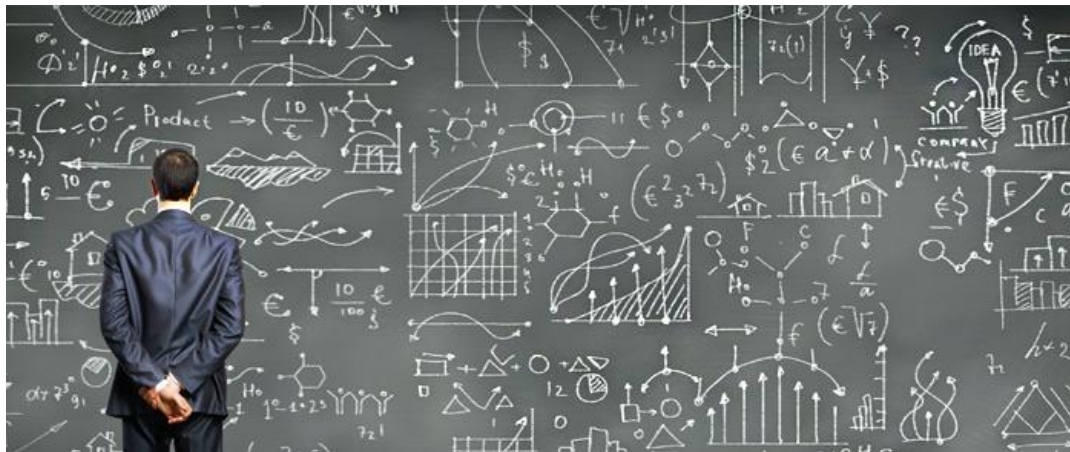
	Heavy		Moderate			Limited							
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Architect	4	6	5	3	-	-	1	-	2	-	1	2	1
Art Historian	4	-	1	-	1	2	-	1	-	-	-	-	-
Artist	3	6	1	4	2	-	1	-	-	-	1	-	-
Total	15	12	7	7	5	4	2	2	2	2	2	2	1

# Findings - Knowledge

## 15 of 20 participants

## All groups

“It’s all about information. It’s very utilitarian. It’s tool-like for the most part. ... But, when I’m in search mode to solve problems, they are all the same. You know, a newspaper ad, an ad in a magazine, a picture from art history ... **I’ve got a question. I’m looking to answer it.**” [Artist 2, 1485-1490]



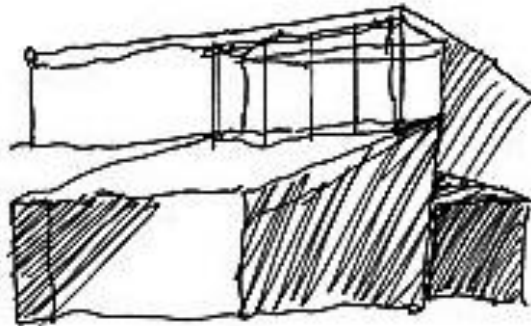
# Findings - Conceptual Model

**12 of 20 participants**

Architects & Artists

“It will start out with one of the partners doing a **sketch**... a hand-drawing... really quick. ‘Build this.’ And **we translate that into a 3-D model** and then print it out and show it to him. ‘Is this it?’ ‘No, no, no, no,’ and then he will sketch back over the image we have just printed out. It is very much a back and forth, iterative process.”

[Architect 6, 599-602]



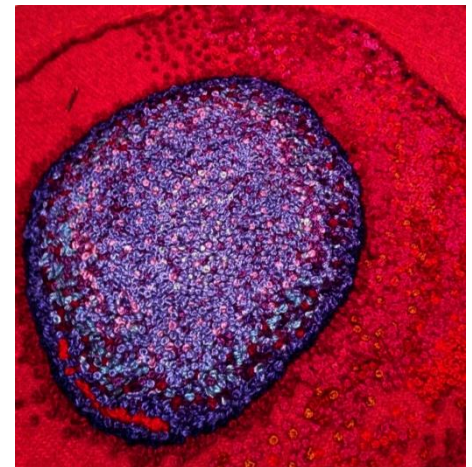


# Findings - Inspiration

**7 of 20 participants**

Architects & Artists

“I usually have **a little spark of inspiration** or a color combination that I have to make, for some reason. Or shape, that I have to put on something. And then I would look at it and look at other things like it and then I would draw on my own.” [Artist 5, 629-634]



# Findings - Communication

## 7 of 20 participants

# Architects, predominantly

“It is **very good to inform the public**. So the client can then, in a press release, use an image that we have given them to go to the newspaper or the local cable TV [station] so people can see what the new school is going to look like.” [Architect 4, 1034-1036]



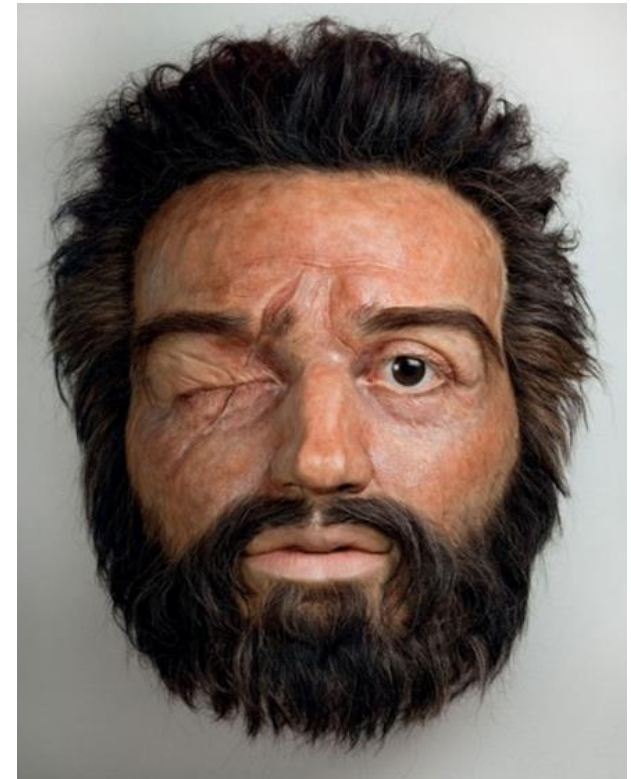
# Findings - Cognitive Recall

## 5 of 20 participants

Archaeologists, Art Historians & Artists

“I show Philip of Macedon. There is his tomb and all this gold stuff Then I have friends who have done a reconstruction of his head from the bones that were found in his tomb. He had one eye at this point from the siege of Byzantium. All of a sudden this color image of this guy looking at them... and **they all remember that.**”

[Archaeologist 3, 113-118]



# Discussion

- Images used to develop knowledge
  - Images as information
  - Dispels negative image connotations
- Provides fundamental details about image users useful to information professionals
  - Image use varies across groups of users
  - Need to know your primary user communities

# Discussion

- Implications for understanding primary users
  1. why images are used (i.e., functional role)?
  2. what is being done with the images (i.e., work tasks)?
    - Both impact image need
      - Types of images sought
      - Quality of images
      - Aesthetics of images
      - Copyright clearance

# Discussion

From larger study:

- Users had modest technical skills
- Struggled to cope with image file management
- Expressed frustration with formal image libraries
  - Suggests a need for:
    - More usable systems
    - Additional tools
    - Guides / tutorials / instructions
    - Contact information
    - Responsive staff





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# Images

Slide 2: Google map of Guildhall School of Music & Drama <https://www.google.com/maps/@51.519876,-0.092893,17z>

Slide 3: Guildhall School of Music [http://www.gsmd.ac.uk/uploads/tx\\_julleevents/Milton-Court-ext.jpg](http://www.gsmd.ac.uk/uploads/tx_julleevents/Milton-Court-ext.jpg)

Slide 6: Victorian woman with net - <http://missmary.com/free-vintage-clip-art/778-clip-art-victorian-woman-net/>

Slide 8: Small Computer Icons 2009.1 <http://www.brothersoft.com/small-computer-icons-324097.html>

Slide 11: Man at chalkboard [http://farm6.static.flickr.com/5277/14496483021\\_dffa373e17\\_m.jpg](http://farm6.static.flickr.com/5277/14496483021_dffa373e17_m.jpg)

Slide12: Rafi Segal, Villa 003 Ordos, Mongolia [http://rafisegal.com/wp-content/uploads/2010/06/14\\_ordos\\_elevation-sketches.jpg](http://rafisegal.com/wp-content/uploads/2010/06/14_ordos_elevation-sketches.jpg) ; 3D Architectural Renderings - New Orleans Teleplex <http://www.howardmodels.com/Architectural-Renderings/TeleplexExt/pic1.jpg>

Slide 13: James Turrell, Skyspace, University of Texas at Austin <http://www.utexas.edu/cofa/turrell/> ; Spark of Inspiration <http://myjewishdiscovery.org/wp-content/uploads/2012/06/spark-b.jpg> ; Teresa Westkaemper textile design, personal photo


Slide 14: Communication <http://3.bp.blogspot.com/-2LdeBgq2exA/UYxb7J1E8QI/AAAAAAAAAFKg/PmUAIoO6w30/s1600/living+in+wellbeing+social+communication.jpg>

Slide 15: Zarko Baseski sculpture of Philip of Macedon <http://artofday.com/wordpress/?p=2171>

Slide 19: Thank you in many languages [https://c1.staticflickr.com/7/6206/6025381559\\_cf679e3d25\\_z.jpg](https://c1.staticflickr.com/7/6206/6025381559_cf679e3d25_z.jpg)

# Understanding Ultimate Use and Its Implication for Digital Library Management: A Case Study

Michele Reilly, Central Washington University  
Santi Thompson, University of Houston

Search [advanced search](#)[HOME](#)[COLLECTIONS ▼](#)[ABOUT ▼](#)[HELP](#) **4 items**

## Highlights



## Request Form

Fullname \*

Phone \*

Email \*


Email Confirm \*

Affiliation \*

Intended Use \*

Description of  
Project/Publication \*

## Requested High-Resolution Images

Thumbnail	Title	Description
	View of Science Building from Reflection Pool	The Science Building houses parts of the College of Natural Sciences and Mathematics. The building's cornerstone reads "Erected 1939 AD Federal Emergency Administration of Public Works." The building was originally occupied in 1939. The architects were Alfred C. Finn and Lamar Cato.

Cancel

Submit Request

## Image Requests - Reports

Look at statistics using a custom date range.

Date from:	Date to:	Export:
<input type="text" value="2014-03-17"/>	<input type="text" value="2014-04-17"/>	<input type="button" value="Submit"/> <input type="button" value="Download CSV"/>

Requests: <b>70</b>	Intended Use:	Affiliation:
	Scholarly Article <b>6</b>	Faculty: <b>2</b>
	Scholarly Book <b>3</b>	Staff: <b>11</b>
	Thesis <b>2</b>	Student: <b>7</b>
	Class Project <b>9</b>	Alum: <b>13</b>
	Personal <b>20</b>	Visitor: <b>37</b>
	Book <b>3</b>	
	Magazine <b>4</b>	
	Other <b>23</b>	

Name	Email	Affiliation	Intended Use	Project	Items	Date
		Alum	Personal	I wish to request a copy of the photo of my wife, Debra Danburg, with former Congressman Mickey Leland. If that is not possible, please send the entire page. Thank-you!	1	03/17/2014 21:49:16
		Staff	Other	Frontier Fiesta Gazette	3	03/18/2014 10:13:39
		Visitor	Magazine	Elizaebeth Warren feature/Esquire Magazine	1	03/18/2014 14:33:04
				I am in a class at Yale University doing research on current and previous		



# Digital Library Use



# Research Questions

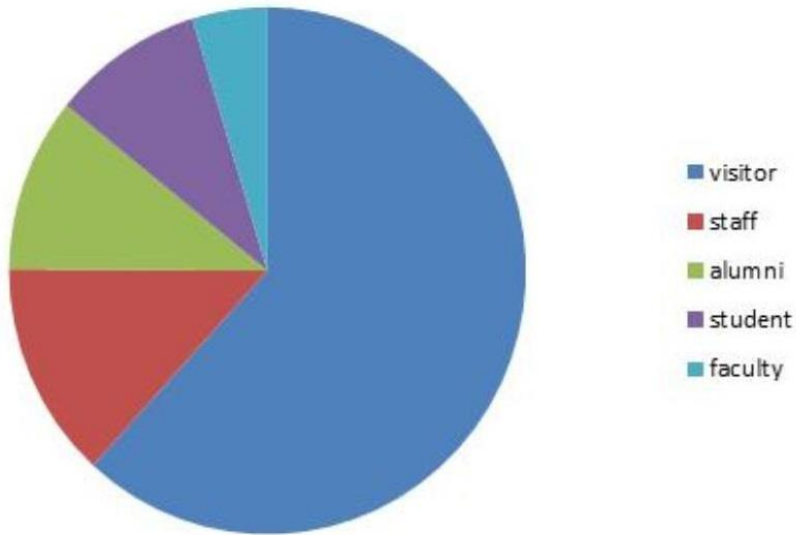
- How are UHDL images ultimately used?
- What products are being produced using these images?
- What implications do these ultimate uses have on other facets of digital library management?

# Methods

uhdl-folderlog.csv - Microsoft Excel								
<div>FileHomeInsertPage LayoutFormulasDataReviewViewAdd-InsAcrobat</div> <div><div>PasteCutCopyFormat PainterClipboard</div><div>Calibri11A AFont</div><div><div>Align CenterMerge &amp; Center</div>Alignment</div><div>CustomNumber</div><div>Conditional FormattingFormat as TableCell StylesInsertDeleteForm</div><div>StylesCells</div></div>								
D33/18/2014 10:13:39 AM								
	A	B	C	D	E	F	G	H
76	Alum	Personal	Eta Mu Chap- A Phi A History	3/24/2014 21:49	Houstonian Yearbook Collection	Houstonian 1972 - Greeks		
77	Staff	Other	2014 Annual Scholarship Banquet African American Studies 45th Year Celebration Honoring the Legacy of Dr. Marguerite Ross Barnett	3/25/2014 15:10	University of Houston People	Marguerite Ross Barnett - Formal posed portrait of Marguerite Ross Barnett		
78	Visitor	Other	We are at 410 main st and we want to hang the old pictures in the building	3/26/2014 15:30	Historic Houston Photographs	800 block of Main Street facing north at night		
79	Visitor	Other	We are at 410 main st and we want to hang the old pictures in the building	3/26/2014 15:32	Historic Houston Photographs	800 block of Main Street facing north at night		
80	Visitor	Other	We are at 410 main st and we want to hang the old pictures in the building	3/26/2014 15:41	Historic Houston Photographs	800 block of Main Street facing north at night		
81	Alum	Thesis	My project deals with the bayou system as an alternative to movement. I would like to use this picture to argument for the bayous	3/26/2014 18:19	Historic Houston Photographs	Ziegler and Company's cotton warehouses		



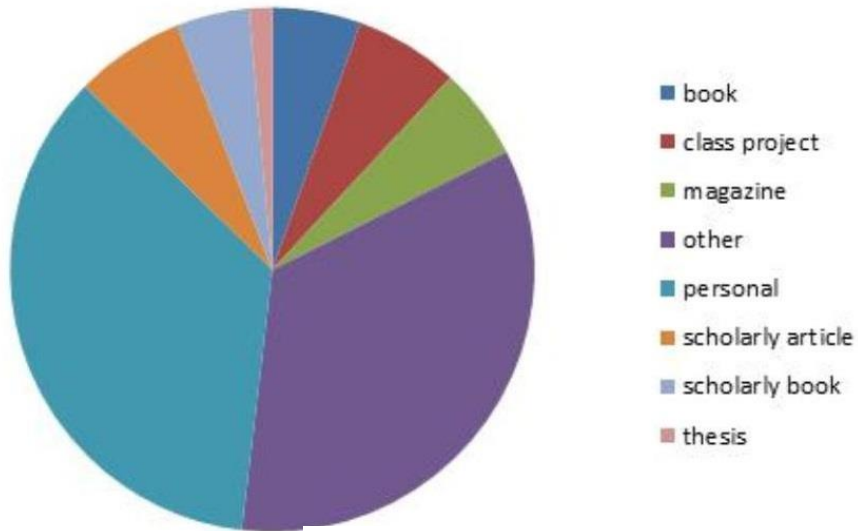
# Results



**TABLE 2** Type of User

Type of user	<i>n</i>	%
Visitor	594	64.8%
Staff	130	14.2%
Alumni	71	7.7%
Student	83	9.1%
Faculty	39	4.3%
Total	917	100%

# Results



**TABLE 3** Intended Uses

Intended uses	<i>n</i>	%
Personal	326	35.6%
Other	315	34.4%
Scholarly article	59	6.4%
Class project	58	6.3%
Book	52	5.7%
Magazine	48	5.2%
Scholarly book	45	4.9%
Thesis	14	1.5%
Total	917	100.0%

# Results

**TABLE 4** Codes from the Free-Text “Descriptions” Field

Description	<i>n</i>	%
Publication	215	23.4%
Research	197	21.5%
Artwork	140	15.3%
Promotional	97	10.6%
Personal	83	9.1%
Video	51	5.6%
Exhibit	42	4.6%
Genealogy	39	4.3%
Presentation	28	3.1%
Instruction	17	1.9%
Gift	5	0.5%
Industry	3	0.3%
Total	917	100%

# Results

**TABLE 5** Research Subcategory

Subcategory	<i>n</i>	%
Personal	132	67.0%
Academic	63	32.0%
Industry	2	1.0%
Total	197	100%

**TABLE 6** Publication Subcategory

Subcategory	<i>n</i>	%
Popular culture book	66	30.3%
Scholarly article	59	27.1%
Popular culture article	46	21.1%
Scholarly book	36	16.5%
Industry book	6	2.8%
Industry article	5	2.3%
Total	218	100%

## Implications for Librarians:

# Metadata

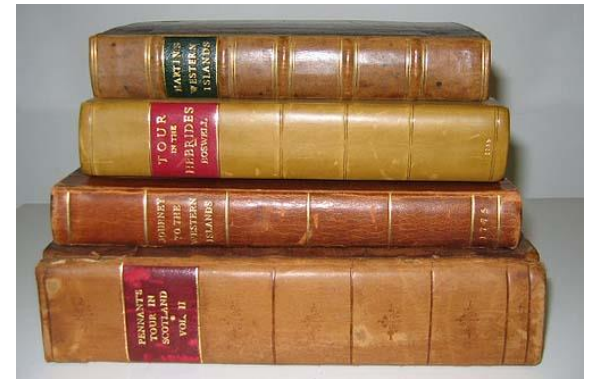


# Promotion



# Implications for Librarians:

## Content Selection





# Implications for Librarians:

## System Design





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# Limitations of Case Studies

- Qualitative research makes it difficult to generalize results to larger trends
- Our investigations are case studies that have limited data sets or specific sample populations
- Studies are focused on images

# Common Themes of Case Studies

- In-depth qualitative studies are needed.
- Difficulties of studying use - what are the best methodologies to study use?
- Use studies will inform collection development and format of content digitized.
- The perception of quality (image and trust/scholarship) differed depending on specific users and uses.
- Lack of awareness of digital libraries and their resources among target audience

Questions?

# Discussion

- What implications do the ultimate uses of content have for digital library system development and collection development?
- What issues concerning content are the most troublesome for digital library users?
- What are the methods of collecting and analyzing use data to inform digital library development?
- What are the barriers to digital library adoption and use?