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Evidence of Patron Library Space Usage: A Pilot Project using GIS in an Academic Library in the United States

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Evidence of Patron Library Space Usage

A Pilot Project using GIS in an Academic Library in the United States

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ABSTRACT

Objective: Academic libraries are creating and experimenting with developing more diverse learning spaces for students. Measuring how students use these new spaces can be a challenge. This paper will report on a pilot project that uses web GIS to gather evidence of library space usage. The pilot project seeks to answer these questions: What evidence can GIS provide about library space usage? What challenges and opportunities does GIS provide for library space assessment?

Methods: The pilot project uses a mobile tablet and a program called ArcGIS Collector to gather information on how students are using library spaces. Data was gathered during the Fall 2016 and Spring 2017 terms. Library space usage was mapped to different learning space types and supplemented with additional quantitative and qualitative data.

Results: Initial data and participant feedback indicates that this GIS pilot project gathers meaningful evidence to begin talking about how students use library spaces.

Conclusion: Tablet and desktop based GIS programs such as ArcGIS Collector are an innovative way to gather and display evidence of library space usage.
24/5

Hours Model
Anticipate...

1. Are the new library spaces being used?
2. How do patrons use the library during the new night time hours?
Iterative Cycles are Rad!
Guiding Questions

What types of learning activities happen in your spaces?

Where / When do these activities occur?

What spaces are not being used as intended?

What new unanticipated activities are happening in spaces?
What do I already know?

“Themed Designs” for 1st Floor
  Collaborative Learning Area
  Group Study Rooms
  Classroom
  “Living Room”
  Student Computer Lab
  Presentation Space
  Reflective / Individual Studying Spaces
  Makerspace
What local evidence is available?

Gate Counts

But…
These numbers don’t tell us where patrons go in the library or what they do.
A word about gate counters...

New appreciation for their cold unfeeling machine gathered numbers:

- Consistent
- Work 24 hours
- Everyday
- Inter-rater reliability
Study Limitations #1

Humans are the worst...

- They change jobs
- Forget to do things
- Delegate - Aren’t trained properly
- Weak at inter-rater reliability
- Different bosses prioritize different things
What does the literature say?

Assemble

http://learningspacetoolkit.org
What does the literature say?

University of Miami Libraries - Learning Commons

From: http://library.miami.edu/learningcommons/
What does the literature say?


What do I already know?
What does the Literature Say?

Assemble

sumatext
An open-source, mobile tool enabling observational data collection and analysis

http://go.ncsu.edu/Suma

NCSU LIBRARIES

University of Idaho Library
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Reasons for using GIS

1. GIS Librarian: leverage available expertise
2. Off the shelf technology: tablet / web application
3. GIS is a proven tool
4. Learning opportunity for student workers / staff
5. Can share via GitHUB
6. Potential consortium collaboration
What other information do I need?

GIS
Geographical Information System
What other information do I need?
Observed Learning Activities

- Browsing Stacks
- Individual Studying
- Lounging
- Meeting / Group Study
- Service Point
  (Circulation / Reference / ITS Help)
- Using Library Computers

- Interacting with subject content
- Self-directed Learning
- Informal Spaces
- Collaboration / Teamwork
- Research Help (Co-Learning)

- Technology Interaction
SUMMARY

Background: The main library’s first floor and the curriculum center in College of Education were both recently remodeled. The main library also moved to an open 24 hours model. The library needed to track space usage beyond gate counts and include time stamps to assess usage in the new spaces.

Project: Staff periodically collect data using ArcGIS Collector on a tablet. Staff note the number of students and activities being performed in designated learning spaces.

Phase One: Fall 2016 Phase Two: Spring 2017 Phase Three: Fall 2017

Geographic Information System (GIS): Any information system that integrates, stores, analyzes, and displays geographic information such as x,y, and z coordinates and dates/times of occurrence.

Desired Outcome: Being able to track library usage by patrons and map library learning spaces to campus learning outcomes.
How does information apply to context?

Anticipated Questions:
1. Are the new library spaces being used?
2. How do patrons use the library during the new night time hours?

Guiding Questions:
3. What types of learning activities happen in your spaces?
4. Where / When do these learning activities occur?
5. What spaces are not being used as intended?
6. What new unanticipated activities are happening in spaces?
Study Limitations #2:

Dataset is incomplete...

- Changed recorded actions Phase 1 to Phase 2
- Emphasized 6pm-6am due to staffing
- Faulty technology - tried 3 tablets
- Inter-rater reliability still suspect
  - “0” or “no data” recorded often for locations
1. Are the new spaces being used?

1st Floor Library Spring 2017

- Cafe: 920
- Classroom: 70
- Computer: 2851
- Collaborative: 3724
- Study: 436
- Study: 462
- Study: 276
- "Living": 2832
- Landing: 619
- MILL: 20
1. **Are the new spaces being used?**

- **What can we say...**
  - Collaboration area is most heavily used space
  - Computer Lab is 2nd most used
    - (Note: 2 other labs in building)
  - “Living Room” is just as popular as computer lab
  - Overall the most popular Study Room is #2
    - (Note: study rooms have different furniture and sizes)
2. How do patrons use the library at night?

Spring 2017 - Night - 1st Floor - Patron Counts (10pm-7am)
How do patrons use the library at night?
How do patrons use the library at night?

- **What can we say:**
  - Collaborative Area, Living Room, and Computer Lab used almost equally in the Day -- but at Night - Collaboration Area the most heavily used.
  - Study Rooms average 3 at night and 2 in day
  - Study Room #1 used slightly more at Night (97) than Study Room #2 (93).
    - However Study Room #2 (100) is used slight more than Study Room #1 (91) during the Day.
    - Study Room #1 is smaller -- perhaps indicating smaller groups at night or solo study.
3. Types of learning happens in spaces?

- Browsing Stacks
- Individual Studying
- Lounging
- Meeting / Group Study
- Service Point (Circulation / Reference / ITS Help)
- Using Library Computers

- Interacting with subject content
- Self-directed Learning
- Informal Spaces
- Collaboration / Teamwork
- Research Help (Co-Learning)
- Technology Interaction
3. Types of learning happens in spaces?

Spring 2017 - 1st Floor - Overall - Patron Activities

- Solo Studying: 5102
- Lounging: 199
- Group Study: 4294
- No Data Recorded: 1610
- Services Point: 31
- Using Library Computers: 652
3. Types of learning happens in spaces?

Where we want to go...

The University of Idaho Library supports the campus learning outcome of teamwork by offering spaces that encourage collaboration and group interaction. In 2017, the University of Idaho Library had ___ patrons who used our Collaboration Area and the Library observed ___ patrons interacting in groups.

Not quite there yet with the dataset and collection method.
Data not strong enough to answer yet...

4. What spaces are not being used as intended?

5. What new unanticipated activities are happening in spaces?
What is the best decision(s) based on evidence?

1. GIS can offer a tool for library space assessment.
2. Move forward with this project into Phase 3.
3. Preliminary data indicates that our spaces are being used. The 1st floor redesign and move to overnight hours have been successful.
4. Phase 2 data suggests that students frequent different spaces depending on time of day.
5. The pilot project showed that library staff can collect data on a tablet without disrupting workflows.
6. More training will need to be undertaken to improve reliability of data-gathering.
7. More adjustments will be needed to collection tool design to make clearer for the data-gatherer and to better capture observed learning activities.
What can be improved?

Phase 3: Fall 2017

1. Consistency of data gathering
   a. Training
   b. Monitoring of data gathering
   c. Creating stronger buy-in from supervisors

2. Clarity of data categories
   a. Redesign of the ARC-GIS app layout
   b. Re-examination of learning activities and more direct mapping to campus learning outcomes

3. Add a new data dashboard
The University of Idaho Library supports the campus learning outcome of teamwork by offering spaces that encourage collaboration and group interaction. In 2017, the University of Idaho Library had ___ patrons who used our Collaboration Area and the Library observed ___ patrons interacting in groups.
Questions...