Understanding Research Support Practices of CEE Researchers

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Ithaka S+R Project

Studying research practices of Civil and Environmental Engineers

Previous studies in other disciplines, e.g., chemistry, art history

13 university libraries in a cohort using qualitative methods

Each institution produced a local report and Ithaka S+R produced an aggregated report
Methodology

Required by Ithaka S+R

- Training from Ithaka S+R
- Semi-structured interviews 1:1
- Qualitative coding using Grounded Theory

Unique to our study

- Equally distributed interviewing, analysis and writing
- Guided by group member involved in Ithaka S+R study on Agricultural researchers
Phase 1: Team organization and training
- Approached by Ithaka S+R
- Team is formed
- Off site training by Ithaka S+R
- IRB is submitted
- Continued training within the team

Phase 2: Recruiting and interviewing participants
- Recruited participants
- Set up interview schedule
- Conducted interviews
- Recorded interviews transcribed by third party

Phase 3: Analyzing and Coding the transcripts
- Open coding of the transcripts
- Generated coding document
- Focused coding of the Transcripts

Phase 4: Sharing the results and our findings
-Outlined report and divided sections
- First draft
- Second draft
-Submit to repository and Ithaka S+R
Study Participants

Participants: 9 faculty members
- Full: 67.0%
- Assistant: 11.0%
- Associate: 22.0%

Population: 27 faculty members
- Full: 66.3%
- Assistant: 15.4%
- Associate: 18.3%
Interview Topics / Topics of Interest

- Research focus and methods
  Eg. Describe your current research focus and projects.
- Working with others
  Eg. Do you regularly work with, consult or collaborate with any others as part of your research process?
- Working with Data
  Eg. What kinds of data does your research typically produce?
- Working with Published Information
  Eg. What kinds of published information do you rely on to do your research?
- Publishing Practices
  Eg. Where do you typically publish your scholarly research?
- State of the Field and Wrapping Up
  Eg: What future challenges and opportunities do you see for the broader field?
Coding and Themes
# Main Themes

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<td>Collaborating for expertise and across disciplines</td>
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<td>Establishing partnerships for access to real-world data</td>
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<td><strong>Data practice</strong></td>
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Collaboration

Motivation - Needed expertise, Establish partnerships for data access

Extent - No lone researchers (common across all interviewees)

Challenges - Disciplinary language barriers, Need for networking (e.g. government conferences)

Finding collaborators - Google searches and/or using their established networks
Data Practices

Two typical research practices - Data produced by the researchers themselves; Locate and collect data produced by third parties

Locating data - Via literature searches (often using Google); Knowing their network; Challenge of no single repository to check

Sharing data - Most don’t share unless required; Researcher to researcher sharing typically involves discussions on uses and limitations; Reluctance owing to misinterpretation, loss of ‘research power,’ human subject concerns or data ownership; Methods include GitHub, Zenodo, their own servers;

Data processing - Researcher who use ‘found’ data often create models as output; Create their own data from real world sensors; Analyzed with COTS software or self-developed scripts

Data management - Often left up to grad students; Variety of sizes; Hard drive usage is common; Library’s data repository starting to see usage; Underestimate library/campus support
Published Information

Locating literature - Echoes of earlier studies (asking colleagues, citation chasing and citation databases); Reliance on grad students for the literature search with faculty in an editorial role; Grey literature with intent; Grey literature owing to archaic publishing practice

Personal bibliographic software - among our 11 interviews we had 4 different products used

Keeping up-to-date - Conference attendance (or conference reviewing to save money); Social media had mixed reviews; Google Scholar update feature;

Information types consumed - Peer reviewed journal highly valued; Conference papers if related to computer science; Some use of books, grey literature, patents and policy documents
Scholarly Communication

Publishing venue - Impact factor (prestige ladder used); Tendency to use a small set of journals; Audience; Tap opinion of professional network; Data driven (what are the journals being cited)

Open access - Wide variety of experience (OA textbook, journal with open reviews, almost all had published at least one OA journal article; Many had a positive view of OA; Some reluctance owing to quality concerns, cost and restrictions on APC funds; OA venues in CEE are few, so grad students are steered to quality for career considerations

Social media use - Self-aggrandizing; A generational thing; Blog fatigue; Twitter views varied widely
Summary

Bridge the collaborations - Raise awareness of collaborative reference management and train the grad students; Aid in discovery of potential collaborators; Provide access to and training on collaborative research platforms like the Open Science Framework

Strengthen data practices - Data sharing can drive collaboration interest; Provide education to grad students; Improve the data repository perhaps by continuing to strengthen ties to the Pittsburgh Supercomputing Center

Provide sufficient published information - Collection building should reflect the variety of information types used; Maintain proficiency with tools offered by the University Libraries

Supporting scholarly outputs - Continue support with locating traditional journal metrics; Continually monitor and recommend emerging metrics such as alternative metrics; Help the CEE faculty generate audience descriptions for trusted venues; When APC funds can’t be used, encourage institutional repository use for author’s manuscripts; [Help debunk the myth of low quality?]
Currently collaborating with the team at University of Colorado Boulder to further explore the data practices of graduate students conducting CEE research.

Planning to use a similar methodology within the next 2 years to study researchers in other disciplines locally at CMU, e.g., math and computer science.


• Chen, Xiaoju Julie, Jessica Benner, Sarah Young, and Matthew Marsteller. Understanding the research practices and services needs of civil and environmental engineering researchers-a grounded theory approach, 2018. Available at: https://doi.org/10.1184/R1/7253303.v1
Thank you for your attention!

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