Understanding Research Support Practices of CEE Researchers

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Carnegie Mellon University
Libraries

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

REPORT

Supporting the Changing Research Practices of Civil and Environmental Engineering Scholars

January 16, 2019

Danielle Cooper
Rebecca Springer

Jessica G. Benner	Angela Henshilwood	Fred Rascoe
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Carly A. Hafner	Colin Nickels	Sarah Young
Whitney Hayes	Ginny Pannabecker	Siu Hong Yu

ITHAKA S·R

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

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Study Participants

Participants: 9 faculty members

Asistant
11.0%

Associate
22.0%

Full
67.0%
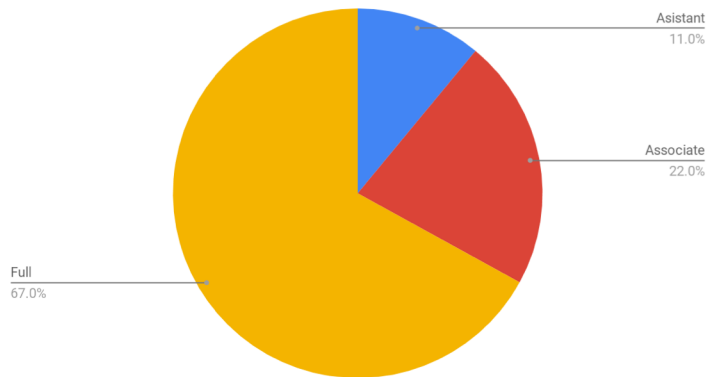
Population: 27 faculty members

Assistant
15.4%

Associate
18.3%

Full
66.3%
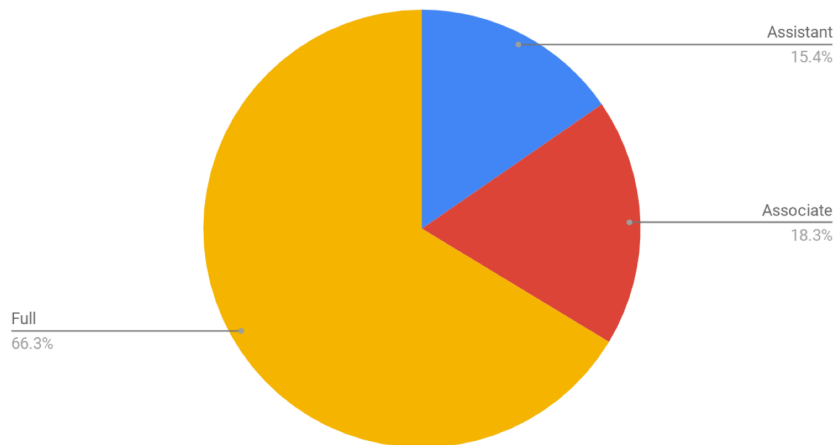
Interview Topics / Topics of Interest

- **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?
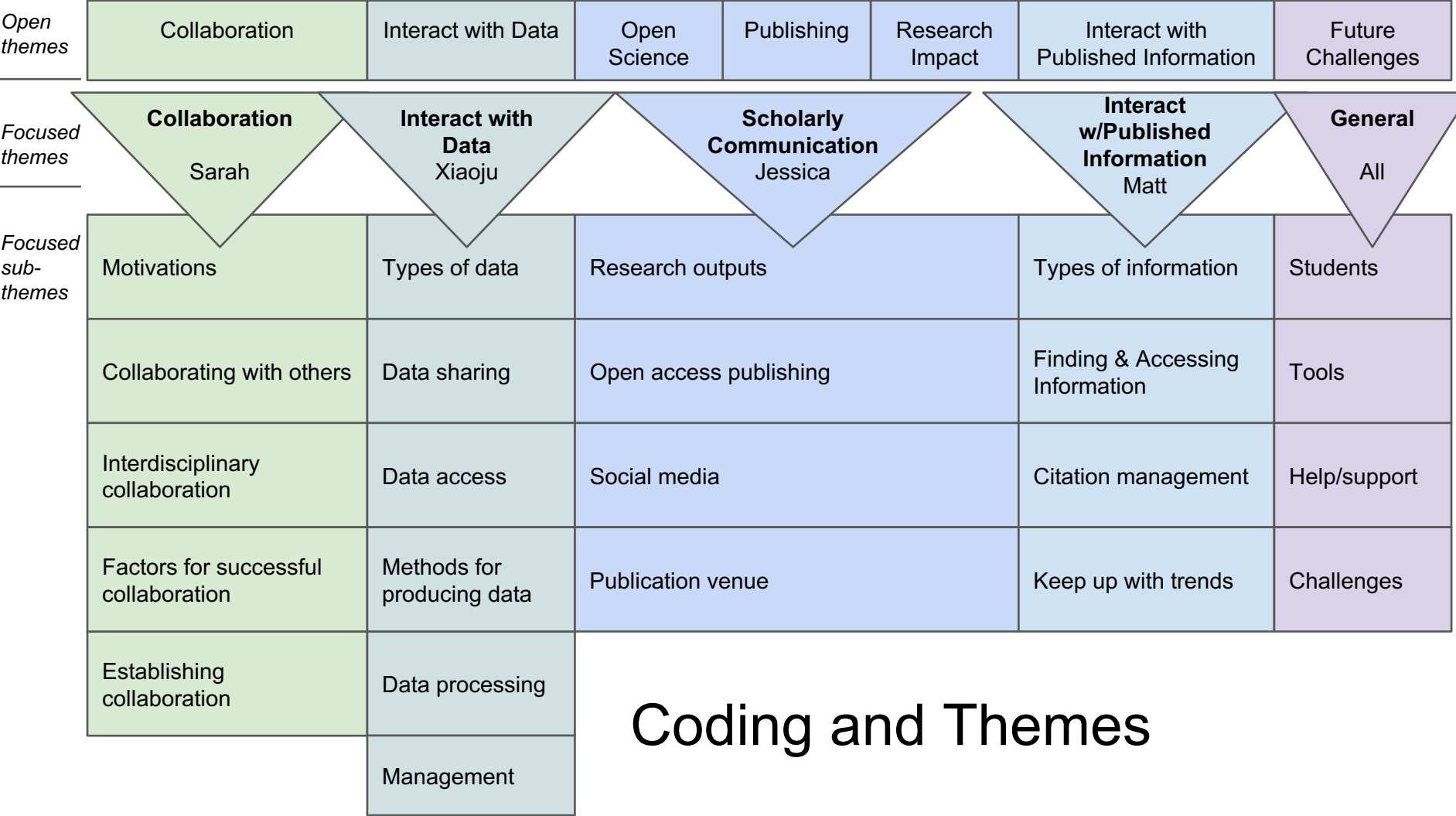
- **Publishing Practices**

E.g. 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

Open themes

Collaboration	Interact with Data	Open Science	Publishing	Research Impact	Interact with Published Information	Future Challenges

Focused themes

Collaboration — Sarah	Interact with Data — Xiaoju	Scholarly Communication — Jessica	Interact w/Published Information — Matt	General — All

Focused sub-themes

Collaboration	Interact with Data	Scholarly Communication	Interact w/Published Information	General
Motivations	Types of data	Research outputs	Types of information	Students
Collaborating with others	Data sharing	Open access publishing	Finding & Accessing Information	Tools
Interdisciplinary collaboration	Data access	Social media	Citation management	Help/support
Factors for successful collaboration	Methods for producing data	Publication venue	Keep up with trends	Challenges
Establishing collaboration	Data processing			
	Management			

Main Themes

Main Theme	Subthemes
Collaboration	Collaborating for expertise and across disciplines Establishing partnerships for access to real-world data Finding collaborators
Data practice	Producing and accessing data Data sharing Data processing Data management
Published information	Information Access Information Management Information Trends Information Types
Scholarly communication	Venue selection Open access publishing Promoting their research

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?]

Future Work

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

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Thank you for your attention!

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