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Digital Scholarship at University of Colorado Boulder

2018 Campus Survey Results

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Executive Summary	2
Current Engagement	3
Methods Interest	4
Tools Interest	4
Beneficial Resources	5
Attitudes towards Best Practices	5
Preferred Learning Format	6
Defining Digital Scholarship	6
Observations and Recommendations	7
Acknowledgements	10
Appendices	10
Appendix A: Survey Instrument	10
Appendix B: Survey Reports by College or Division	28
Appendix C: Survey Response Data	28
Appendix D: Contributor Credits	28

Executive Summary

Within the context at University of Colorado Boulder (CU Boulder), Digital Scholarship is characterized as the utilization of computational and multimodal approaches to research in order to explore and/or answer questions in new and innovative ways, is becoming increasingly integral to modern scholarship in many disciplines. Because the University Libraries at CU Boulder resides within an important nexus of supporting and aiding the development of digital scholarship, especially working in conjunction with the Center for Research Data & Digital Scholarship (CRDDS), librarians and information professionals are in a unique position to offer training, education and outreach in this shifting scholarly ecosystem. However, supporting digital scholarship exploration and creation, whether for research or teaching, requires local context and regular reassessment, since the nature of open and digital scholarship within in the research lifecycle continues to evolve.

As such, a team of CU Boulder librarians developed and distributed a campus survey in April 2018 in order to assess 1) current engagement in digital research methods and tools, 2) which digital research methods and tools CU researchers would like training in, 3) what types of resources they consider to be beneficial for undertaking digital scholarship, 4) what best practices they deem the most important for their research practices, and 5) what training formats they most prefer. Participants were then asked about their familiarity with and definition for digital scholarship with the goal of determining potential outreach avenues; since the term “digital scholarship” is not necessarily used to describe their own research, participants encountered the survey as a needs assessment on “digital research methods and tools.” In asking about these topics, the goals of the survey were threefold: 1) to gain updated information to a previous campus survey on Digital Humanities interests and needs ([2013, Lindquist, et al.](#)), 2) to identify areas of current engagement and gaps of knowledge in digital research methods and

practices in order to improve library services and support, and 3) to better understand how researchers understand and employ digital scholarship to inform how to we might improve outreach, engagement, and communication between the University Libraries, CRDDS, and their users.

Working with the CU Office of Data Analytics' Institutional Research unit, the survey was distributed using Qualtrics (see Appendix A for survey instrument) and sent to 3,612 CU Boulder researchers. We closed the survey after 25 days having received 451 survey responses (a 12.5% response rate). The vast majority of respondents are graduate students (68%, $n=305$), followed by faculty (25%, $n=115$), postdocs (5%, $n=21$), and other (2%, $n=10$). A majority of respondents represent the College of Arts & Sciences (50%, $n=247$) and the College of Engineering & Applied Math (25%, $n=115$). While the survey was intended to capture response data from all disciplinary domains, the data are most reflective of respondents from the sciences (natural sciences, computing, engineering, etc.) due to number of respondents from these areas. To permit analyses across academic units and safeguard confidentiality of the findings, respondents are categorized based on their affiliation with CU Boulder college or school.

Current Engagement

The vast majority (90%) of respondents indicated some previous or current use of digital research methods in their scholarship and/or teaching. Only 10% of respondents ($n=46$) answered "I have not used and currently do not use any digital research methods." The most frequently employed digital scholarship technique is Statistical Analysis (58%, $n=263$). Data/Information Visualization (54%, $n=244$) and Programming Languages (49%, $n=220$) are also among the most frequently reported. One-hundred and forty two people (31%, $n=142$) use Digital Research Workflows such as GitHub or citation management software. Qualitative methods are also common, with 28% ($n=126$) responding that they used qualitative analysis

techniques. Among these forms of Digital Scholarship, respondents most frequently described their skill levels as intermediate.

Methods Interest

Respondents' most often reported an interest in learning Digital Scholarship methods related to data manipulation, management, and visualization. Forty-seven percent ($n=190$) respondents expressed interest in learning about Data/Information Visualization—nearly half of all those that answered the question. Statistical methods and programming/coding also scored highly, with 44% of respondents choosing each of those methods ($n=177$ respectively). Thirty-four percent of people ($n=137$) would like to learn about Data Mining, while 27% ($n=111$) chose Digital Research Workflows. These results underscore that the survey participants are most interested in improving their data manipulation skills.

Tools Interest

Respondents expressed interest in a mix of both code-based and GUI-based tools, but interest in non-specific methodologies was also popular. In terms of data visualization tools, 23% ($n=88$) of the 383 who responded to this question noted that general methodologies would be useful to them. Respondents chose Tableau (GUI-based), Plotly (code-based), Google Charts (GUI), and Excel (GUI) as the specific tools they most wanted to learn for data visualization. Of the respondents that wanted to learn to code, Python was the most popular program language (21%, $n=127$), followed by R (16%, $n=99$) as the second most popular program language. For Statistical Analysis (399 respondents), participants chose R as the tool they wanted to learn the most (28%, $n=113$), with MATLAB (20%, $n=81$) and Mathematica (14%, $n=56$) being popular as well. For data mining, text mining, and web scraping, respondents most often chose Python (ranked 1st highest) and R (ranked 2nd

highest) as the tools they wanted to learn the most. Respondents also indicated interest in learning GitHub and its markdown for their digital research workflows.

Beneficial Resources

The survey asked participants to rank the importance of several potential resources that would be beneficial to their exploration and creation of digital scholarship. Respondents indicated that the most (“very”) important resources are 1) learning new methods and choosing appropriate tools, 2) identifying funding opportunities, and 3) data preparation, cleaning, and wrangling. The top “important” resources include 1) managing projects (benchmarking, iterating, managing collaborators, etc), 2) finding and curating data, and 3) refining project scope. “Somewhat important” resources were ranked as 1) finding collaborators, 2) managing content (storage, file naming and sharing), and 3) identifying and using cloud computing services (e.g. AWS). Finally, respondents suggest that the least (“not”) important resources are 1) finding affordable web hosting services, 2) finding affordable web-hosting services, and 3) increasing impact and recognition for open and/or digital scholarship. It’s important to note that these rankings vary by discipline and status, considering how digital scholarship research manifests itself differently depending on faculty or student researchers’ existing expertise, funding, and priorities.

Attitudes towards Best Practices

With weighted responses, all respondents were most interested in Research Data Management and Open Access, and least interested in Metadata Creation and Standards, and Impact Metrics, including Altmetrics. Open Access ($n=58$) and Project Management ($n=57$) had the most responses for “very interested” (at 14%). Research Data Management had the most respondents either “interested” or very interested” (54%, $n=218$). Respondents were equally “not interested” in Impact Metrics, including Altmetrics ($n=271$) and Metadata Creation and Standards ($n=268$),

with two-thirds (67%) saying they were “not interested” or only “somewhat interested” in these best practices. Only about one-sixth of respondents were “not interested” in Open Access (17%, $n=67$) and Research Data Management (15%, $n=61$).

Preferred Learning Format

In order to determine new areas for training opportunities, survey participants ranked several formats by their least to most beneficial formats. The most beneficial and presumably most preferred formats indicated were 1) one-on-one appointments, 2) single stand-alone workshops, 3) web-based tutorials, 4) workshop series, 5) office hours for on-demand assistance, and 6) fellowships and graduate assistantships. With the exception of webinars, digital scholarship support has been provided in those formats. Considering nearly half of the respondents (45%) indicated they would be interested in web-based tutorials, this is a format that CRDDS and the Libraries should integrate into LibGuides and other online learning resources. The least (“not beneficial”) formats included 1) conferences, such as THATCamps, 2) traditional credit-bearing, and 3) informal monthly meetups.

Defining Digital Scholarship

Since digital scholarship is evolving and different disciplines use a variety of terms to describe “digital scholarship,” survey participants were asked to define “digital scholarship” so that CRDDS and the Libraries could tailor outreach and communication across disciplinary contexts. So as not to significantly influence their answers, participants were provided with our definition after provided their own. Respondents across all college divisions shared definitions that spoke to digital scholarship as being related to applying or leveraging technology and computers, digital publishing, and research that has some digital or data-related inflection. As mentioned previously, the information gleaned from the survey is skewed towards

the sciences and engineering. Given that quantitative methods, statistical analysis, and data manipulation are integral to their work, “digital scholarship” is simply normative scholarship to many respondents and therefore an unfamiliar or unnecessary term. As one natural sciences respondent shared, “it seems to me that today, all scholarship is digital scholarship.”

How “data” or the “digital” is described illustrates some disciplinary and domain differences in research practices among all respondents. For instance, respondents from Arts & Humanities shared similar definitions but indirectly referred to data as digitized materials, archives, and digital media. Conversely, respondents from the sciences defined digital scholarship in the context of “digital data.”

After defining “digital scholarship,” participants were asked, “Before taking this survey, how familiar were you with the term Digital Scholarship?” Four-hundred and six (406) people participated in this question, with 56% ($n=227$) indicating they were “unfamiliar,” 35% ($n=144$) as “somewhat familiar,” and only 9% ($n=35$) as “very familiar.” Graduate students appear to be the least familiar with the term (41%, $n=116$, although only 21% ($n=59$ of 275) do not consider themselves engaged in Digital scholarship.

Observations and Recommendations

Respondents indicated interest in learning about general methodologies and approaches, which aligns well with needing assistance in choosing appropriate tools and techniques. However, since the application of coding and programming languages rose to the top for many methods, the Libraries and CRDDS could consider offering more methods-specific coding support (e.g. network analysis in Python, text mining in R), in addition to GUI-based tool trainings for non/new coders. These should also be offered in scaffolded degrees of difficulty, since skill levels varied but largely fell into intermediate levels. Additional education might be offered as informational sessions and online resources that speak to respondents’

needs for identifying funding opportunities. Other trainings may be too case-specific and best served through consultations, such as data wrangling and cleaning. Trainings on specific methods and tools that could be offered based on the survey results, which include continued workshops on coding and programming (especially R and Python across skill levels and methodological applications), data and information visualization (from basics with Excel to advanced coding techniques), digital research workflows (e.g., approaches and tools to research efficiency, such as reference managers like Zotero and versioning control systems such as GitHub), and web publishing (GitHub Pages and WordPress).

The vast majority of trainings are currently offered as workshops, both standalone and series, and this should continue. However, it is worth investing our efforts into asynchronous web-based tutorials and online or recorded workshops in order to meet users' needs and demand, since not all are able to gain in-person training. Moreover, credit-bearing courses serve as great incentive for building a community of practice around open and digital scholarship, and the Libraries and CRDDS could serve as a hub and partner in curricular offerings related to digital research methods and data-intensive approaches such as data science and digital humanities. Although only one graduate assistantship in digital scholarship is currently funded for a limited term in the Libraries, these types of opportunities are a valued means of gaining digital scholarship training. Expanding the breadth and length of opportunities, and creating project-based skill-building opportunities, will inevitably foster professional opportunities for graduate students upon graduation, both beyond academe and within the professoriate.

The survey revealed a strong interdisciplinary preference for engaging in digital scholarship via programming and statistical methods among those in the natural and applied sciences. Respondents from Arts & Humanities in the College of Arts & Sciences, however, less interested in computational methods and more interested

in multimodal approaches that facilitate digital storytelling with multimedia. As such, we recommend higher levels of collaborations between the Libraries' subject and functional specialists in order to meet digital scholarship needs in domain-specific contexts. This may necessitate internal trainings in the Libraries and CRDDS for expanding existing skill sets and enabling co-teaching opportunities.

While there may be a difference in thought between graduate students and faculty regarding the importance of best practices in the digital research lifecycle, it is clear that there are education opportunities in the areas of 1) metadata creation and standards and 2) impact metrics. Education may help to emphasize the importance of these areas and how they may complement other best practices. Other areas worth pursuing, however, include 1) research data management and 2) open access. Responses indicate an awareness of the emergent importance of these practices, and further instruction and outreach may help to increase competency as well as identify those engaging in and willing to share their expertise in these practices.

Although the majority of respondents (90%) have engaged in some digital scholarship methods in their research or teaching, most were unfamiliar with the term "digital scholarship," possibly because it is more frequently (if not exclusively) used by libraries, while other discipline- and context-specific terms such as "data science" and "digital humanities" are more meaningful to researchers. Our team intends to conduct further analysis of the disciplinary differences of the survey respondents' definitions, but meanwhile, outreach for digital scholarship support continues to require domain contextualization.

Acknowledgements

We are grateful to Bebe Chang (now at Nova Southeastern University) for her contributions to the development of our survey instrument, Frances Costa in CU's Institutional Research for managing the survey distribution and data gathering, and Thea Lindquist for her guidance and advice throughout this project. We would also like to thank Leigh Bonds at The Ohio State University for sharing questions from her campus survey on digital humanities as inspiration.

Appendices

Appendix A: Survey Instrument

This is also available on our [project repository](https://osf.io/fj7qk/) [<https://osf.io/fj7qk/>].

Survey instrument preferred citation: Melissa Cantrell, Frederick Carey, Nickoal Eichmann-Kalwara, Stacy Gilbert, Katherine Mika, and Philip White (2018). "2018 Digital Scholarship Campus Survey: Data Gathering Instrument."

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[Authors are listed in alphabetical order; each contributed to creating this survey questionnaire equally.]



Participant Information

Survey of Digital Scholarship at CU Boulder

The information you provide in this survey will assist the CU Boulder University Libraries and [Center for Research Data & Digital Scholarship](#) (CRDDS) in developing trainings, education, and outreach efforts for campus scholars who are interested and/or involved in any scholarly activity that makes use of digital research methods, data, media, and technologies in their research and teaching, i.e. digital scholarship. This includes but is not limited to digital humanities, computational social sciences, and data science.

Thank you for participating!

We look forward to better supporting members of our scholarly community with their digital scholarship.

Please submit your survey by Sunday, April 22, 2018.

If you have any questions about the survey, or technical problems while completing it, please contact Fran Costa at [303/492-8633](tel:3034928633) or frances.costa@colorado.edu.

Please click *NEXT* at the bottom of this page to begin the survey.

What is your primary CU Boulder affiliation?

- 1 Faculty
- 2 Graduate Student
- 3 Postdoctoral Scholar

4 Other:

Doing Digital Scholarship

Please tell us which digital research methods you have previously used or currently used in your research and/or teaching.

- 3D Printing /Scanning / Modeling
 - Audio & Visual Production and Design
 - Database Design
 - Data / Information Visualization
 - Data Mining
 - Digital Research Workflows (e.g. managing citations with Zotero, documenting with GitHub)
 - Digital Scholarly Editions / Text Encoding
 - Geospatial Analysis (GIS, mapping)
 - Image / Audio / Media Analysis
 - Network Analysis (e.g. social media networks)
 - Programming / Coding / Mark-up languages
 - Qualitative Data Analysis (e.g. interview data)
 - Statistical Analysis
 - Text Mining
 - Virtual Reality and Simulation
 - Web Publishing and Digital Storytelling (includes Electronic Literature)
 - Web Scraping
 - Other:
 - I have not used and currently do not use any digital research methods.
-

You selected the following digital scholarship methods. What is your skill level?

	1 Beginner	2 Intermediate	3 Advanced
3D Printing / Scanning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Audio & Visual Production & Design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Database Design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data / Information Visualization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data Mining	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Digital Research Workflows	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Digital Scholarly Editions / Text Encoding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geospatial Analysis (e.g. GIS, mapping)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Image / Audio / Media Analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Network Analysis (e.g. social media networks)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Programming / Coding / Markup Languages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Qualitative Data Analysis (QDA)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Statistical Analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text Mining	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Virtual Reality and Simulation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Web Publishing and Digital Storytelling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Web Scraping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input style="width: 150px; height: 15px;" type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which of these digital research methods are you interested in learning more about?

- 3D Printing / Scanning / Modeling
- Audio & Visual Production and Design
- Database Design
- Data / Information Visualization
- Data Mining
- Digital Research Workflows (e.g. managing citations with Zotero, documenting with GitHub)
- Digital Scholarly Editions / Text Encoding
- Geospatial Analysis (e.g. GIS, mapping)
- Image / Audio / Media Analysis
- Network Analysis (e.g. social media networks)
- Programming / Coding / Markup Languages
- Qualitative Data Analysis (e.g. interview data)
- Statistical Analysis
- Text Mining
- Virtual Reality and Simulation
- Web Publishing and Digital Storytelling (includes Electronic Literature)
- Web Scraping
- Other:

Which of these 3D printing/scanning/modeling tools would you like to learn more about?

- [3ds Max](#)
- [3DF Zephyr](#) (photogrammetry)
- [Agisoft](#) (photogrammetry)
- [SketchUp](#)

-
- [Tinkercad](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of the following Audio and Visual production and design tools would you like to learn more about?

- [Adobe After Effects](#)
 - [Adobe Illustrator](#)
 - [Adobe Photoshop](#)
 - [Adobe InDesign](#)
 - [Audacity](#)
 - [Avid Media Composer](#)
 - [Final Cut Pro](#)
 - [GarageBand](#)
 - [iMovie](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of these database tools would you like to learn more about?

- [MySQL](#)
 - [Excel](#)
 - [Google Sheets](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of these Data / Information Visualization tools would you like to learn more about?

- [D3.js](#)
 - [Excel](#)
 - [Google Charts](#)
 - [Plotly](#)
 - [RAWGraphs](#)
 - [Tableau](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of the following Data Mining tools would you like to learn more about?

- [Knime](#)
 - [Orange](#)
 - [Weka](#)
 - [RapidMiner](#)
 - [R](#)
 - [Python](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of these Digital Scholarly Editions / Text Encoding tools would you like to learn more about?

- [Oxygen XML tools](#)
- [TEI \(Text Encoding Initiative\)](#)

Other:

I'm not sure, but I am interested in general methodologies.

Which of these Digital Research Workflow tools would you like to learn more about?

[GitHub](#)

[Hypothes.is](#)

[Mendeley](#)

[OpenRefine](#)

[Open Science Framework \(OSF\)](#)

[Trello](#)

[Tropy](#)

[Zotero](#)

Other:

I'm not sure, but I am interested in general methodologies.

Which of these Geospatial Analysis tools would you like to learn more about?

[ArcGIS](#)

[Carto](#)

[Google Earth Pro](#)

[Leaflet](#)

[Palladio](#)

[QGIS](#)

R spatial analysis packages (e.g. tmap, ggmap)

Other:

-
- I'm not sure, but I am interested in general methodologies.

Which of these Image / Audio / Media Analysis tools would you like to learn more about?

- [Cinemetrics](#)
- [Image J](#)
- [NVivo](#)
- Other:
- I'm not sure, but I am interested in general methodologies.

Which of these Network Analysis tools would you like to learn more about?

- [Cytoscape](#)
- [Gephi](#)
- [nodegoat](#)
- [NodeXL](#) (for Excel)
- [Pajek](#)
- [Palladio](#)
- [VOSviewer](#)
- Other:
- I'm not sure, but I am interested in general methodologies.

Which of these Programming / Coding / Markup Languages and tools would you like to learn more about?

- [GitHub](#)
- [HTML and CSS](#)

-
- [Javascript](#)
 - [JSON](#)
 - [Perl / Markdown](#)
 - [Python](#)
 - [R](#)
 - [Regular Expressions \(regex\)](#)
 - [SQL](#)
 - [XML / XSLT](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of these Qualitative Data Analysis software would you like to learn more about?

- [Atlas.ti](#)
 - [Dedoose](#)
 - [MaxQDA](#)
 - [NVivo](#)
 - [QDAminer](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of the following Statistical Analysis tools would you like to learn more about?

- [JMP](#)
- [MATLAB](#)
- [Mathematica \(Wolfram\)](#)
- [PSPP](#)

-
- [SAS](#)
 - [SPSS \(IBM\)](#)
 - [STATA](#)
 - [R](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of these Text Mining tools would you like to learn more about?

- [AntConc](#)
 - [DataBasic](#)
 - [IBM Watson Analytics](#)
 - [Juxta Commons](#)
 - [Lexos](#)
 - [MALLET](#)
 - [Orange](#)
 - [Python](#)
 - [R](#)
 - [Sketch Engine](#)
 - [Voyant Tools](#)
 - [WordStat](#)
 - [WordSeer](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of these Virtual Reality and Simulation tools would you like to learn more about?

- [3DF Zephyr](#)

-
- [Agisoft PhotoScan](#)
 - [NetLogo](#)
 - [Story Spheres](#) (and other 360 degree image tools)
 - [Unity](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of these Web Publishing and Digital Storytelling tools would you like to learn more about? This includes tools for Electronic Literature creation.

- [ArcGIS Storymaps](#)
 - [Drupal](#)
 - [GitHub Pages](#)
 - [Inform](#)
 - [Jekyll](#)
 - [Knight Lab](#) tools (TimelineJS, StoryMapJS, SoundciteJS, JuxtaposeJS)
 - [Neatline](#)
 - [Omeka](#)
 - [Scalar](#)
 - [Twine](#)
 - [Wordpress](#)
 - [Wikipedia](#)
 - Other:
 - I'm not sure, but I am interested in general methodologies.
-

Which of the following Web Scraping tools would you like to learn more about?

- [Import.io](#)
- [OpenRefine](#)
- [Mozdeh](#)
- [Beautiful Soup \(Python\)](#)
- [Twython \(Python\)](#)
- [Webometric Analyst](#)
- [Web Scraper \(Google Chrome\)](#)
- [Wget](#)
- Other:
- I'm not sure, but I am interested in general methodologies.

Resources and Best Practices

What resources and assistance, if available, would be beneficial to your exploration or creation of digital scholarship? 'Not applicable' was coded '0'

	1 Not important	2 Somewhat important	3 Important	4 Very important
Data preparation, cleaning, wrangling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding and curating data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding collaborators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning new methods and choosing appropriate tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning command line interface and language	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not important	Somewhat important	Important	Very important

	Not important	Somewhat important	Important	Very important
Managing content (storage, file naming, file sharing, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managing projects (bench-marking, iterating, managing collaborators, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identifying funding opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Refining project scope	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing, designing, and/or maintaining a project website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not important	Somewhat important	Important	Very important
Finding affordable web hosting services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identifying and using cloud computing services (e.g. AWS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increasing impact and recognition for open and/or digital scholarship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On which of the following topics related to your research and publication work-flows would you be interested in sharing and learning best practices?

	1 Not interested	2 Somewhat interested	3 Interested	4 Very interested
Copyright, Fair Use, Creative Commons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not interested	Somewhat interested	Interested	Very interested
Research Data Management (retention, use/reuse, publication)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Impact Metrics, including Altmetrics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Metadata Creation and Standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not interested	Somewhat interested	Interested	Very interested
Open Access (publishing, self-archiving in repositories)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online Professional Profiles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Project Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Training format

Which of the following formats would be beneficial training opportunities for you?

	¹ Not beneficial	² Somewhat beneficial	³ Most beneficial
Single, stand-alone workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workshop series	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Webinars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Web-based tutorials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seminars and speaker series	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not beneficial	Somewhat beneficial	Most beneficial
Office hours for on-demand assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not beneficial	Somewhat beneficial	Most beneficial
Open workshopping hours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One-on-one appointments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monthly informal meet-ups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conferences (e.g. THATCamp)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curricular integration (e.g. labs or single class session)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Traditional credit-bearing courses (3 credits)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not beneficial	Somewhat beneficial	Most beneficial
Short credit-bearing courses (0.5-1 credits)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Certificate programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fellowships and graduate assistantships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Defining Digital Scholarship

All of the digital research methods covered in this survey are considered forms of *Digital Scholarship*.

How do you define *Digital Scholarship*?

Digital Scholarship is generally defined as an extension of traditional research and pedagogical methods, whereby scholars leverage new technologies and digital data and/or media in order to explore and answer questions in new and different ways that previously wouldn't be possible.

Approaches to *Digital Scholarship* may be computational in nature (such as text and data mining, geospatial analysis, information visualization, social network analysis) or they can be multimodal explorations and presentations (such as digital storytelling, e-literature, digital exhibits). In essence, *Digital Scholarship* results in new forms of collaboration and publications, and new methods for visualizing and analyzing data. Some may refer to this as digital humanities, computational social science, data science, research data management, and/or e-science.

Before taking this survey, how familiar were you with the term *Digital Scholarship*?

- 1 Unfamiliar
- 2 Somewhat familiar
- 3 Very familiar

To what extent do you consider yourself engaged in Digital Scholarship?

- 1 Not at all
- 2 Some engagement
- 3 Engaged (integral to my work)

Contact

Are you interested in partnering with us? (e.g. assist researchers on a method/tool, offer trainings or talks)

- 1 Yes
 - 2 Maybe
 - 3 Not at this time
-

Is there anything else you would like to share with us?

Thank you for your time in answering this survey. May we contact you with follow-up questions?

- 1 Yes
 - 2 No
-

Please share your contact information so that we can get in touch.

Name

Email

Phone Number

Appendix B: Survey Reports by College or Division

Please see our project repository for individual reports:

- [All Responses](https://osf.io/4qdzc/) [https://osf.io/4qdzc/]
- [College of Arts & Sciences, Natural Sciences](https://osf.io/25bsz/) [https://osf.io/25bsz/]
- [College of Arts & Sciences, Social Sciences](https://osf.io/23jzq/) [https://osf.io/23jzq/]
- [College of Arts & Sciences, Arts & Humanities](https://osf.io/4bkwh/) [https://osf.io/4bkwh/]
- [College of Engineering & Applied Science](https://osf.io/c3zfe/) [https://osf.io/c3zfe/]
- [School of Education](https://osf.io/7pj3g/) [https://osf.io/7pj3g/]
- [Leeds School of Business](https://osf.io/zpnax/) [https://osf.io/zpnax/]
- [College of Media, Communication & Information](https://osf.io/cbmaq/) [https://osf.io/cbmaq/]
- [Inter/Multi-disciplinary](https://osf.io/ngksy/) [https://osf.io/ngksy/]
- [Other](https://osf.io/v65y8/) [https://osf.io/v65y8/]

Appendix C: Survey Response Data

Please see our project repository to view our [data](https://osf.io/ak8fm/) [https://osf.io/ak8fm/]. If you would like to conduct analyses using our Qualtrics data specifically, please contact Nickoal Eichmann-Kalwara (nickoal.eichmann@colorado.edu).

Appendix D: Contributor Credits

This is based on the [CASRAI CRediT](http://dictionary.casrai.org/Contributor_Roles) Contributor Role Typology. Details of what most of these terms mean can be found at http://dictionary.casrai.org/Contributor_Roles.

Contributors, in alphabetical order:

- Melissa Cantrell (**mc**)
- Frederick Carey (**fca**)
- Bebe Chang (**bc**)
- Frances Costa (**fco**)
- Nickoal Eichmann-Kalwara (**ne**)
- Stacy Gilbert (**sg**)
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-
- Katherine Mika (**km**)
 - Philip B. White (**pw**)

Authors are listed in descending order by significance of each contribution (**xx, yy**).

- Conceptualization: **ne, tl**
- Methodology: **ne, sg, pw, fca, mc, km, bc**
- Survey instrument design: **mc, fca, ne, sg, km, pw (equal), bc**
- Data preparation: **fco, fca, pw, ne, mc**
- Data publishing: **km**
- Formal Analysis: **fca, mc, ne, sg, km, pw (equal)**
- Writing – Original Draft Preparation:
 - Final Report: **ne (lead), pw, mc**
 - All responses: **pw (lead), mc, ne, fca**
 - AS-AH: **ne (lead), mc**
 - AS-SS: **sg (lead), ne, mc, fca**
 - AS-NS: **ne (lead), mc**
 - CMCI: **sg (lead), mc**
 - ENGR: **km (lead), mc**
 - BUSN: **ne (lead), mc**
 - EDUC: **sg (lead), ne, mc**
 - INTERD: **ne (lead), mc**
 - OTHER: **ne (lead), mc**
- Writing – Review & Editing: **ne (lead), fca, mc, sg, mk, pw (equal), tl**
- Visualization: **pw, ne**
- Survey Administration: **fco**