Understanding researcher needs and raising the profile of library research support

Researchers at North Carolina State University expect little to no difficulty in discerning how their Library can support their work. At the same time, librarians repeatedly find that researchers are unaware of what our Library has to offer. Within this context, we embarked on a two-year study to help inform the development of outreach strategies to enable new research engagement opportunities that will scale and, at the same time, help us transform our model of research support strategies and engagement. We interviewed both librarians and researchers to gain an understanding of researcher needs from both perspectives. The results of the interviews provided a solid grounding for building our awareness of researchers' behaviors, expectations and workflows as well as presenting a unique picture of both unmet and unarticulated needs. In this article we summarize our results with a specific focus on findings from the researcher interviews. We share our recommendations for evolving library research support and enhancing outreach strategies to provide an easier starting point for different types of researchers to discover relevant research assets provided by libraries such as ours.

Keywords
Researchers; research support; libraries; outreach; interviews

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Introduction

At North Carolina State University ('NC State'), the Libraries support 25,000 students, 2,000 faculty, and 5,500 administrative and support staff. The University offers more than 100 undergraduate programs, 100 masters programs, 60 doctoral programs and a Doctor of Veterinary Medicine program. Research is a major strategic priority for NC State, with over $334 million in research awards (FY 2018) and over 4,700 intellectual property disclosures as of 2016. Supporting researchers is one of the NC State University Libraries' strategic goals. In particular, we focus on having a 'strategic alignment of resources to advance the capacity of our researchers and partners'.[1] This study is an attempt to rediscover and reinforce our support for researchers and partners by interviewing librarians and researchers

across campus. We interviewed librarians and researchers from October 2018 through May 2019. The internal interviews focused on three goals: capturing a complete picture of our research support services, documenting library assumptions about researchers and creating a sense of ownership in our library participants for the results of the study. The external interviews focused on determining the behaviors, expectations and workflows of researchers at NC State to uncover new and unmet needs, inform ways to enhance our outreach methods and test library assumptions about researcher needs. In this article, we intentionally focus more on the findings from the interviews with researchers. Our recommendations for evolving library research support and ways for researchers to discover relevant research assets provided by our library can be applied in other academic library contexts.

'determining the behaviors, expectations and workflows of researchers at NC State to uncover new and unmet needs'

Methodology

We used semi-structured qualitative interviews as our primary research method.[2] Semi-structured qualitative interviews are optimal for situations where you have only one chance to interview a respondent: they are efficient and maximize responsiveness while also keeping a similar structure between interviews so that information can be more easily compared across multiple interviews. The structure of these interviews is based on open-ended questions with the flexibility of being able to probe further and jump between questions and reorder them based on the flow of the conversation. A major benefit of semi-structured qualitative interviews is that they enable investigators to discover the values of the respondents. The interview instruments we used for this study can be found on our Open Science Framework (OSF) project site.[3]

Because this study was not intended to be statistically representative, we were aiming for data saturation, the point at which no new information is observed. According to studies,[4] data saturation can be achieved with 12 to 20 interviews. For this study, we interviewed 22 researchers during individual one-hour-long interview sessions. We also conducted one-hour-long interviews with 24 groups of librarians composed of approximately two to three librarians per group. Library participants were recruited based on availability and reflected distributed representation across library units that interface with researchers. Researcher participants were recruited based on a sample of researchers across all disciplines provided by the library research and planning unit and augmented with additional researchers' names that were recommended by the librarians that were interviewed. Even though we attempted to get an equal distribution across disciplines and researcher types, respondents who agreed to be interviewed were not equally distributed across disciplines and researcher types.

'we were aiming for data saturation'

Demographics

Of the 102 researchers we invited to be interviewed, 22 completed interviews. We interviewed researchers across these four main career stages: student (undergraduate and PhD student), early career (1–5 years post-PhD) mid career (6–15 years post-PhD), and late career (16+ years post-PhD) (Table 1). The researchers came from diverse academic units: humanities, social sciences, arts, textiles chemistry, biology, education, educational technology, engineering, agriculture, natural resources, public and international affairs and statistics. Despite repeated attempts, we were unable to secure interviews with researchers from agricultural extension units.

Career stage	Number of participants
Student researcher (undergraduate and graduate)	2
Early-career researcher (1–5 years post PhD)	4
Mid-career researcher (6–15 years post PhD)	9
Late-career researcher (16+ years post PhD)	7

Table 1. Career stages of researchers interviewed in the study

Overarching challenges

Before we go into the detailed finding areas below, some of the challenges our researchers faced span multiple areas or were endemic to all different kinds of research and career stages. These overarching challenges included lack of time, inconsistent experiences with promotion and credit for scholarly contribution across disciplines, and a general set of challenges as researchers progress through career stages.

Time

Lack of time and being too busy was the most frequently mentioned challenge. One researcher said, 'There's often talk about collaboration, but it's hard to find time because everyone is super busy. People want to do stuff with you, but many opportunities are missed because of lack of time'. Others mentioned maintaining a rotating strategy of neglect between family, research and teaching as how they balance these competing demands.

'maintaining a rotating strategy of neglect between family, research and teaching'

Promotion and credit

Another overarching challenge was related to promotion and tenure. Often researchers have to balance different expectations between what modern scholarship entails and traditional promotion and tenure practices. One researcher reported that he experiences 'problems incentivizing interdisciplinary work. I collaborate with a graduate student in electrical engineering doing stuff that is totally amazing and different and we write an article. I get credit for half of one article'. Institutional promotion and tenure frameworks operate differently across the academic units, resulting in a disproportionate distribution of credit. Likewise, some academic units reward individual contributions via promotion and tenure practices, contradicting recent trends in research funding which favor collaborative, team-based research.

Different challenges at different career stages

Each different career stage articulated a unique challenge. Student researchers felt insecure in their status as a researcher. One wished they could 'make [them]self more confident and have a way to have older scholars have more faith', reflecting a sense of both a lack of confidence in themselves and also a perceived lack of trust in their abilities by their mentors.

'Each different career stage articulated a unique challenge'

Early-career researchers had a different challenge. They reported difficulty getting used to 'that side of the desk' and one commented that 'having library spaces has been a lifesaver – being able to come in and hide from students'. Their role has changed from student or postdoc to early-career faculty and they are still figuring out what exactly that means.

Researchers in the middle of their career emphasized a lack of time as their greatest challenge. They seem to feel comfortable in their role as a faculty member, but one stated, 'Time, eat, sleep, doing things with my family' as their most critical challenges. They consistently reported having lots of responsibilities and feeling overwhelmed trying to accomplish them all.

Late-career researchers' specific challenge was related to a change in their working relationships. Often in late career, they are further away from the actual research and are performing more administrative and managerial work. They have to accommodate and manage their working situation and partnerships. One stated they wished for 'ways to engineer projects to fit the reality of people I work with: I really have to know the limitations'.

Comparing internal vs. external interviews

Interviewing librarians and researchers as two separate groups gives us the opportunity to compare their responses. Overall, it appears our assumptions and thoughts on researcher support were close to what researchers reported themselves, with a few exceptions.

Researcher support and services

In order to capture a complete picture of all the different services we offer to researchers, we asked librarians, 'What type of help do researchers come to you for?' and, 'What are the primary services that the library offers researchers?'. The top answers from librarians were collections, consultations, search strategies, scholarly communication support, data management planning, data visualization support and technology lending. When we asked researchers, 'What kinds of help or resources do you come to the library for?', researchers mentioned all of the above. In this category our assumptions about researcher support were accurate.

'our assumptions and thoughts on researcher support were close to what researchers reported themselves'

Targets for more outreach

We asked librarians, 'What are some things we are doing that researchers might not know about yet?' to get a list of services that librarians thought could use more outreach. Librarians' most commonly listed answers were intellectual property assistance, technology lending, high-tech spaces (like our Teaching and Visualization lab with 270 degree projection), digital media creation, and data and visualization services. Researchers did mention three of these as being support they had received from the library: technology lending, digital media creation, and data and visualization support. They also talked about attending events in our high-tech spaces, but did not report using them for research yet. Finally, none of the researchers we interviewed mentioned intellectual property assistance so this may be a target for more outreach.

Outreach strategies

The final category of overlap between librarian and researcher interviews was about outreach. We asked librarians, 'Of all the outreach modes you've tried, what has been the most effective?' and we asked researchers, 'How do you discover events or new resources to support your research'. Both groups reported e-mail as being the best and primary form of outreach. Because so much of their work is already based in e-mail, e-mail is the most likely place for a researcher to discover new support. Both groups also mentioned drawbacks to e-mail, primarily that not all e-mails get read, and not all e-mails that *have* been read are acted on. Both groups also highlighted departmental meetings and external events, personal relationships, library workshops and programs, and course-based instruction as being other effective methods of outreach.

Communication preferences

Researchers encountered many challenges related to outreach and communication. They specifically mentioned information overload, information decentralization and timing as being perpetual challenges. Researchers indicated that they receive too much e-mail and the e-mail they receive is often poorly formatted or overburdened with text. They cited irrelevant extra information as the primary problem with e-mail as a vehicle for outreach directed to them. Researchers do not want to see 'walls of text' and they want more images and white space in communications they receive, along with more informative subject lines.

'information is often hard to find because it is siloed'

Respondents overwhelmingly want a centralized place to discover events and helpful resources and to be able to use filters to see only the events and resources relevant to their needs and interests. They said that there were too many different sources of information and that information is often hard to find because it is siloed.

Timing of outreach is a perpetual challenge recognized by the researchers. They cited right before or at the beginning of Fall semester (which equates approximately to autumn or Michaelmas term) or during exams to be the best times to push outreach to them.

Recommendations

Some recommendations based on our findings from these interviews include:

- infuse rich media in all forms of outreach/marketing communication
- attend department meetings to give relevant, library-related updates
- time outreach right before or at the beginning of Fall semester or during exams
- support the aggregation of campus-wide events and helpful resources with filtering to enable personalized search and discovery.

Information-seeking behavior

Information sources

We asked researchers, 'What kinds of information do you rely on to do your research?', aiming to establish the core set of information sources used by these scholars. Researchers reported primarily using journals, books, government data, conference proceedings and their personal network of colleagues (including faculty referring to student colleagues) as information sources. This resonated with findings of the librarian interviews regarding the most popular collections requests from researchers. In addition to the above set of library resources and personal networks, the researchers reported a diversity of sources they rely on including:

- data sources such as Twitter, industrial data, images
- web sources such as the Wayback Machine, blogs, Google Scholar and listservs
- technical sources such as code written by other researchers, software (and manuals) and GitHub (a standard for some fields like climate research)
- dissertations, abstracting and indexing databases, reference works
- special collections such as archival newspaper collections and image collections
- unique sources such as citizen groups in specific regions, courses, large-text corpora, news, and grants.

'Every researcher reported using Google Scholar, with some researchers preferring it over any other search strategy'

Locating information

We asked researchers, 'How do you locate the information sources that you rely on (referred to in the previous section)?'. Every researcher reported using Google Scholar, with some researchers preferring it over any other search strategy while others use it as a last resort. Student researchers reported using web-based search strategies such as Summon and Google Scholar to find the information sources they rely on. Early- and mid-career researchers reported also using physical visits to libraries, personal networks, Twitter and serendipitous discovery (primarily through physical browsing). Late-career researchers reported using journal alerts and journal tables of contents, select library resources (including librarians), Twitter and their personal networks to help them find the information sources they rely on.

Recommendations

Some recommendations based on our findings from these interviews are listed below.

- We need to consider how the library supports researchers' use of the non-library information sources and find ways to incorporate support for those resources.

- The preference for Google Scholar is not surprising, but helps us think about our goal to make researchers aware of library services and resources at their point of need. We have emphasized service centralization to some extent (e.g. Summon search) but services still exist in siloes and we do not offer levels of customization akin to the way researchers use Google Scholar. We need to consider possibilities for adding ways for researchers to customize their experience with library services and collections.

Locating help

Findings

We asked researchers, 'How do you look for help from others on campus?' and, 'What kinds of help/support/resources do you come to the library for?'. All researchers we interviewed reported using their peer networks as their starting point for looking for help. Student researchers reported seeking help from their faculty mentors and supervisors as well as attending library workshops. Early-, mid-, and late-career researchers primarily sought help from their disciplinary communities (e.g. listservs). Specific units on campus that the respondents also articulated for finding help included the Office of Faculty Development, Office of Information Technology, Distance Education and Learning Technology, Proposal Development Unit, Office of Research Commercialization and the Benefits Office.

'All researchers … reported using their peer networks as their starting point for looking for help'

Library help

Researchers specifically mentioned the kinds of help they seek from the library. These are documented in Table 2.

Help category	Specific ways researchers reported seeking help from the Library
Access to collections and resources	• students reported using databases, journal articles, Lynda.com and books in the collection • all other researchers reported using journals, government documents, standards, special collections, audio recorders, microfilm readers and the DMPTool (for developing data management plans)
Service points	• across all researchers, the most common service points used were Tripsaver (inter-library loan), the Library website, the catalog, chat and e-mail
Consultations	• students reported requesting help with literature searching and using statistical analysis software • early-career researchers reported requesting help with research data management • mid-career researchers reported seeking help with data management and storage, data visualization, web development, special collections, help finding collaborators, literature searching, bibliometrics for promotion and tenure, grant-seeking and systematic reviews • late-career researchers reported seeking help with early-stage prototyping, literature searching, creating search alerts and bibliometric analyses
Course-integrated pedagogy and instruction	• students did not report requesting help for instruction or pedagogical needs • faculty reported using virtual reality and augmented reality services, digital scholarship, data visualization and literature search strategies as part of their instructional needs
Workshops	• faculty reported recommending students attend workshops hosted by the Library
Events	• faculty interviewees were the primary group that reported attending Library events and requesting help from the Library to host and produce events
Spaces	• students reported using study carrels • all other researchers reported using Faculty Research Commons spaces (limited to faculty only) for group project work and individual work, media labs and sound booths, the VR Studio and various Library showcase spaces

Table 2. Ways in which researchers sought help from the library

Challenges

Some of the major challenges facing researchers as they look for help from others on campus center on a major gap in communication about resources and services available to researchers and how to gain access to those resources. One stated there is 'some kind of an information and communication gap … some information is not written anywhere and some information is spread across many different places'. Researchers consistently reported that it is often difficult to access or discover sources for help and that these resources are not organized in a way that is easy to find.

'it is difficult to find experts and …difficult to get them together to forge a path forward'

Researchers also reported that for projects or initiatives that require diverse skill sets and expertise, it is difficult to find experts and, when found, difficult to get them together to forge a path forward. We asked researchers about their experiences attending networking events on campus designed to bring researchers together to spark potential collaborations. The researchers reported that they understand that these events are co-ordinated with good intentions, but that since these networking events are not co-ordinated by the researchers themselves, the incentives to participate are low and that these events are sometimes perceived as irrelevant and potentially a waste of time.

Recommendations

Some recommendations based on our findings from these interviews are listed below.

- Establish and grow relationships with campus partners to develop a shared understanding of complementary services to create a stronger network of support for researchers at different stages of their careers. (Partners include but are not limited to: Office of Faculty Development, Office of Information Technology, Distance Education and Learning Technology, Proposal Development Unit, Office of Research Commercialization and the Benefits Office.).
- Endorse the aggregation of campus-wide services and resources for researchers with filtering to enable personalized search and discovery and enable easy editing to keep the information updated.
- When developing events intended for researchers to network and start new collaborations, involve researchers in the planning process so that they are more likely to be invested in the experience and feel more confident that they will derive benefit from participating in the event.

'When developing events …involve researchers in the planning process'

Data practices

Findings

We asked researchers, 'What kinds of data does your research typically produce (or use)?' and, 'Have you encountered any challenges in the process of working with the data your research produces?'. Researchers reported using small to very large ('big data') data sets, and formats of data varied widely from paper files to digital files. Images and spreadsheets were the most common data types, followed by interview transcripts, survey data and physical data. Researchers reported that they mostly generate the data themselves, but also reported using externally produced data, both only available for a fee and openly available (e.g. government agency data, public health data, supplementary data from journal articles and data from software code generated by other researchers).

'Storage was by far the biggest challenge faced by the researchers'

Challenges

Storage was by far the biggest challenge faced by the researchers we interviewed. Some researchers said that they were aware of storage options on campus, while others indicated that they did not know what storage resources were available to them, often funding storage solutions themselves. Some researchers reported using commercial storage (e.g. Dropbox) noting that they did not have confidence in the long-term viability of those commercial

storage-hosting solutions. Finding the optimal storage solution that all collaborators can use was noted by multiple researchers, often opting for tools such as GitHub, Dropbox or Google Drive.

Data analysis was cited as a challenge, especially for researchers who were incorporating new methods that are outside of their skill sets into their research, such as statistical methods, text mining, or using tools unfamiliar to them. Data quality was also noted as a particularly vexing challenge for researchers working with data sets generated by other entities, due to missing data, lack of metadata and errors.

Recommendations

Some recommendations based on our findings from these interviews are listed below.

- Develop outreach materials to help researchers understand how they can use various data storage options (with or without grant funding, for sensitive data and with outside collaborators).
- Promote data analysis skills workshops to researchers who are incorporating new methods or tools into their work that are outside their skill sets.
- Promote our data consultancy service to departments that are more likely to lack existing data science skill sets (e.g. humanities, social sciences, education).

Skills for success

Findings

We asked researchers, 'What are the most important skills that you and/or your research team need in order to be successful?'. This was followed with questions about how those skills are typically acquired, as well as a set of questions about what skills the researcher is looking to develop and those skills the researcher expects their collaborators (or in many cases, members of their research group) to develop.

Specific skills

Researchers from every career group mentioned specific skills they sought to learn next. These were skills they needed either to conduct a new kind of research or to complement their existing skills. Skills reported by the researchers included Python, R, GIS (geographic information system), AI (artificial intelligence), the Internet of Things, Crimson Hexagon and other specific tools (see Table 3). One trend of note was that earlier-career researchers often listed more specific skills, while later-career stages often emphasized soft skills. Researchers mentioned personnel management, interpersonal skills, communication, project management, reproducibility and leadership as being very important.

Research skills	**Library skills**
• collecting and analyzing qualitative data	• building a search strategy
• reproducibility vs. patentability	• finding data from articles
• entrepreneurial research	• application development
• identifying topics for research	• market research
• IRB process	• citation management
• reading an article	• tracking news
Programming and coding	**Communication and data visualization**
• commenting on code	• how to write an abstract
• database development	• personal branding
• web development	• how to deliver an effective presentation
• intro to programming (R, Julia, Python, Go, SAS, Stata)	• how to justify your research
• AI and machine learning	• animation
• contributing to open source	

(contd.)

Programming and coding

- contributing to open source
- Internet of Things
- machine-text analysis

Communication and data visualization

- community engagement
- infographics
- data storytelling
- graphic design
- how to write a business plan
- grant writing
- how to talk to the press

Specific tools

- Atlas.ti
- Dedoose
- Crimson Hexagon
- Excel and Pivot Tables
- Voyant
- Unity
- Twine
- GIS
- Github
- Microsoft Word tips
- Omeka

Statistics and methods

- basic statistics
- agent-based modeling
- clinical interviewing
- dealing with large data
- semi-structured interviews
- survey design
- graph analysis

Teams and interpersonal relationships

- conflict management
- power dynamic ethics
- project management
- Saying 'no'
- sharing articles with a group
- agile methods in research

Personal development

- memory skills
- imposter syndrome
- networking confidently

Table 3: Skills and related training topics described by researchers as important to their work

Changing technology

One challenge that surfaced in our discussion of skills was the rate that technology changes. Our researchers reported feeling that technology changed too quickly, or that they could not count on a tool or data type lasting more than a few years before going obsolete. Some researchers responded to this shift by planning to learn one or two new things every year. Others said that instead of maintaining a list of skills to learn, they let their project dictate what skills they need next. This way they can avoid investing too much effort into learning a skill that will no longer be relevant in a few years.

'Every skill students said they needed was also mentioned by faculty, but faculty mentioned many more'

Student skills

Students we interviewed mentioned several basic skills, including general knowledge of their field, how to read an article, editing, communication and core research skills. Because we interviewed both faculty and student researchers, we were able to compare the skills students mentioned with those that faculty thought were necessary for success. Every skill students said they needed was also mentioned by faculty, but faculty mentioned many more. One possible explanation is that faculty, after performing research in their field, are thinking in terms of their whole career based on what skills they have already needed. Students, on the other hand, are often thinking on a shorter timeline, e.g. how to finish this project or their degree.

Recommendations

Some recommendations based on our findings from these interviews are listed below.

- Continue to develop and deliver new workshops related to skills specifically mentioned by researchers.
- Develop and deploy new outreach strategies to help our workshops reach larger audiences.
- Partner with other campus entities such as the Office for Institutional Research and Planning, Human Resources, and the Office for Institutional Equity and Diversity to offer workshops on management, human subject research protocols and frameworks for the ethical application of power dynamics in educational settings.

Collaboration

Findings

We asked researchers, 'Do you regularly work with, consult or collaborate with others as part of your research process?'. This was followed up with questions about challenges experienced in the process of working with others as well as what makes for a successful collaboration. Every one of our participants reported collaborating with others and most people collaborated both on and off campus. These collaborations ranged from being solely within their department or their cluster to collaborating with NGOs (non-governmental organizations), government agencies, or industry partners. Our respondents reported that seeking complementary skill sets was a key driver for collaboration and that securing funding for multidisciplinary work was easier if they were engaged in a collaboration with others. Finally, researchers reported that dedicated space was necessary for successful collaborations. Many reported physical collocation as being conducive to collaboration. Groups that included long-distance or international collaborators also stressed the importance of virtual space for collaboration, relying on platforms like GitHub and Trello to keep everyone up to date and involved.

Challenges

'Participants found scheduling difficult, especially in groups that included international collaborators'

Some challenges related to collaboration were finding collaborators, logistics and setting expectations. Faculty noted that pre-arranged networking events rarely spark collaborations because they are put together by a third party, lack a focused agenda and can create awkward situations. One stated, 'I'm not going to go to a pizza party, but if there was an event to learn SAS [a statistical software suite], I would go to that', highlighting that networking, by itself, was not enough to get them to attend an event. Student researchers reported feeling differently, stating that they may benefit from networking events because finding other student researchers is much more difficult. Logistics was an additional barrier to collaboration. Participants found scheduling difficult, especially in groups that included international collaborators, noting that there might not be a single hour that falls inside every participant's work schedule. Researchers dealt with issues such as dropped calls, missing audio, or delays. They also expressed difficulty with online conferencing platforms like Skype, Google Hangouts and Zoom.

Additional challenges researchers experienced related to collaboration was a lack of clear expectations and a lack of administrative support. Many researchers said that when they engage in interdisciplinary work, they have to play the role of project manager: they need to 'hunt people down, schedule them, add in buffer time, and facilitate communication so that everyone knows what is going on'. At the same time, many researchers commented that they did not feel adequately trained in project management best practices. Where possible, researchers preferred to hire a project manager to provide logistical co-ordination and project oversight so that they (the researchers) could focus on conducting the research.

Recommendations

Some recommendations based on our findings from these interviews are to:

- involve faculty researchers in the planning of networking events meant to spark new collaborations
- investigate and codify best practices surrounding online collaboration platforms
- offer training on project management tools and strategies.

Sharing and publishing

Findings

We asked respondents, 'How do you typically share or publish your research?', and, 'Are you doing any non-traditional publishing?'. Examples of non-traditional publishing include publishing data sets, video abstracts, blogs and digital scholarship projects. Most researchers preferred publishing in traditional journals, books and conference proceedings because that is how they get credit for their work, but they also reported seeking out non-traditional publishing opportunities based on the same research. Those researchers who had engaged in non-traditional modes of publishing reported posting research updates on their lab or personal website; publishing data visualizations, white papers, and posting reports on ResearchGate or Mendeley; authoring newspaper articles or blogs; posting data, code, and articles on GitHub; producing webinars and podcasts; and leading public town hall meetings.

Most of the researchers reported doing some sort of scaffolded publishing. We define scaffolded publishing as a process whereby researchers present at a conference, then submit a journal manuscript or short-form book manuscript for publication, as well as create additional non-traditional scholarship such as a digital project or blog post allowing them to explore other ways to express their scholarship. This scaffolding of publications approach enables researchers to meet institutional expectations while also leveraging more creative avenues to share and grow potential for next steps in their research.

Challenges

An overarching challenge was related to promotion and tenure. Often researchers have to balance different expectations between what modern scholarship entails and traditional promotion and tenure practices. Referring to the incentives for interdisciplinary work, one researcher commented that 'the incentive structure is built around publishing articles, not chapters, blogs or social media engagement'. Still, non-traditional publications are seen as critical because, as one researcher put it, non-traditional publications do 'influence your reputation as a scholar even though it doesn't weigh on P&T [promotion and tenure]'. Some researchers mitigate this by writing an article based on a digital humanities project, getting the credit they need for their career while producing compelling research for their disciplinary community of scholars.

'This scaffolding of publications approach enables researchers to meet institutional expectations while also leveraging more creative avenues'

Some researchers reported that publishing work via open access (OA) and open data channels is seen as a practical next step, but that they were limited by a lack of incentive, funding, concern about journal quality and, in some cases, a feeling that their work is not 'up to the level' to be considered reproducible.

Recommendations

Some recommendations based on our findings from these interviews include:

- provide examples and support for scaffolded publishing
- provide guidance and infrastructure for non-traditional publications by helping to adopt and apply citation guidelines for non-traditional forms of scholarship (such as data sets)
- aid researchers in leveraging alternative metrics such as web visits and social media mentions

- enhance outreach and support structures to help researchers find pathways toward OA
- offer incremental support for building researchers' confidence for open research, specifically to enable reproducibility.

Next steps and conclusion

This study has given us deep qualitative data and insights to act on. While creating a comprehensive set of findings and recommendations constituted a valuable outcome, we also have a set of next steps to take this research further.

One of our next steps is to generate a set of interview questions for our librarians who regularly support researchers to employ in order to help them stay abreast of emerging researcher needs. While we found some high-level, recurring issues throughout the researcher interviews, we also found that with every interview, a new perspective and new need or insight was revealed. Because each interview provided new information, we want to create a way to make this process more continual.

Throughout the interview process we received substantial feedback and heard a variety of challenges that are not directly related to the library or our services. One of the next steps of this effort is to find a way to share this feedback with external stakeholders by playing the role of advocate for researchers on campus.

'playing the role of advocate for researchers on campus'

Another next step is packaging these challenges and tasks with which researchers need help into a set of 'research tracks'. A research track is a multi-step process that spans multiple departments and uses resources that the library offers. An example would be the case of a researcher needing to find help to create a video to showcase their research. Our library offers workshops on video editing, we have a Digital Media Studio with software and computers to do the editing, we have librarians and staff who offer consultations, we have collections that describe the process as well as include examples of video abstracts, and we also have online training for users who are unable to come to the library for help. We want to gather these intersectional tasks together in one view, or 'track' as an easier starting point for different types of researchers to discover relevant research assets provided by the library. Finally, we will also work with our Acquisitions and Metadata and User Experience units to develop new ways to offer these research tracks at the user's point of need, with a goal of creating an automated solution for pulling these pages together.

Data accessibility statement
This study is documented fully with the interview instruments as well as the coded, anonymized data set available at https://osf.io/akd2v/ and occasional posts and updates on the process can be found at medium.com/raising-the-profile.

Abbreviations and Acronyms
A list of the abbreviations and acronyms used in this and other *Insights* articles can be accessed here – click on the URL below and then select the 'full list of industry A&As' link: http://www.uksg.org/publications#aa

Competing interests
The authors have declared no competing interests.

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