Undergraduate researchers report only moderate knowledge of scholarly communication: they must be offered more support

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*Undergraduate students are increasingly participating in the scholarly communication process, mostly through formal research experiences. However, **Catherine Fraser Riehle** and **Merinda Kaye Hensley**, having surveyed and interviewed university students, reveal that undergraduate researchers have only moderate levels of confidence in their knowledge of scholarly communications, especially publication and access models, author and publisher rights, determining the impact of research, and research data management. Moreover, students revealed that to receive specific guidance in these areas was rare. There is much opportunity for faculty members, graduate students, librarians, and research programme coordinators to collaborate and develop learning interventions in these areas.*

Increasingly, undergraduate students are participating in the scholarly communication process; contributing and sharing new knowledge instead of merely consuming it. One way they achieve this is by participating in formal research experiences. As part of these experiences, student researchers may share findings at symposia and publish in undergraduate research journals, honours and capstone theses, and in institutional repositories, often in collaboration with their graduate student and faculty mentors.
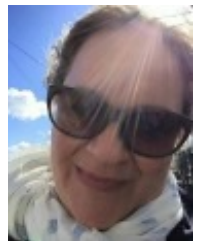
Librarians, in particular, are interested in learning more about undergraduate student behaviour because of our commitment to teaching information literacy, which includes working with student (and faculty) researchers on a range of scholarly communication issues, such as authors' rights and data management. We also provide publication platforms for undergraduate researchers and corresponding programmes through online journal platforms and institutional repositories.
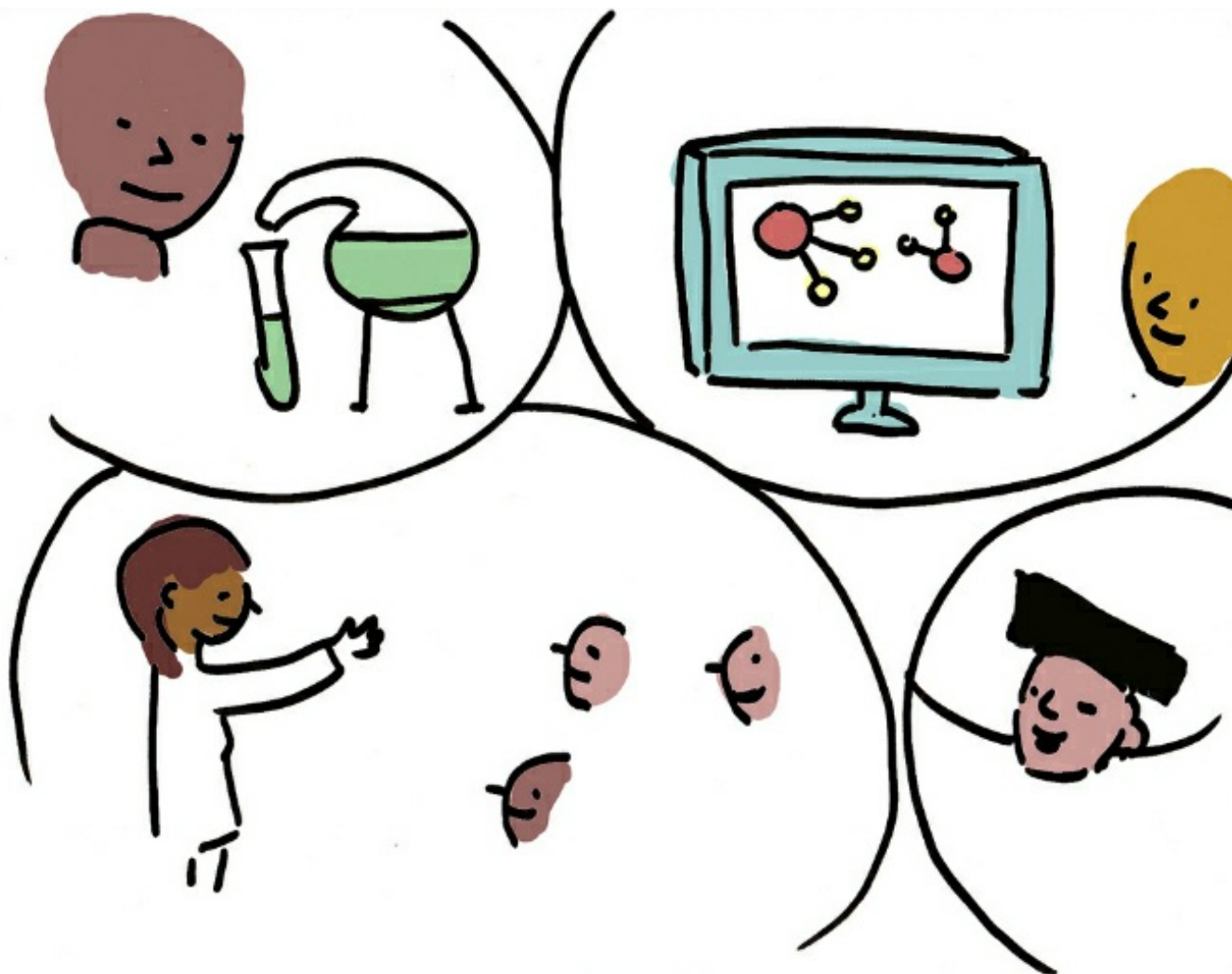
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Reports from the Center for Studies in Higher Education and Ithaka S+R have shed light on the scholarly communication needs and practices of faculty, but few studies have explored students' understandings of scholarly communication topics and issues. To inform the development of programming and interventions to support student researchers in these areas, we surveyed and interviewed students at two US universities, Purdue University and the University of Illinois at Urbana-Champaign. The following questions guided our study: what do undergraduate students report to know about scholarly communication topics and issues? Do they value knowledge about these topics and issues? And when and how do they expect to gain this knowledge, if at all?

Most survey respondents were juniors or seniors and from STEM disciplines. They were asked to rank, on a 5-point Likert scale, their perceived levels of knowledge as well as how much they value knowledge about these topics. In responses, students reported only moderate levels of confidence in their knowledge of scholarly communication topics, especially publication and access models, author and publisher rights, and determining the impact of research.
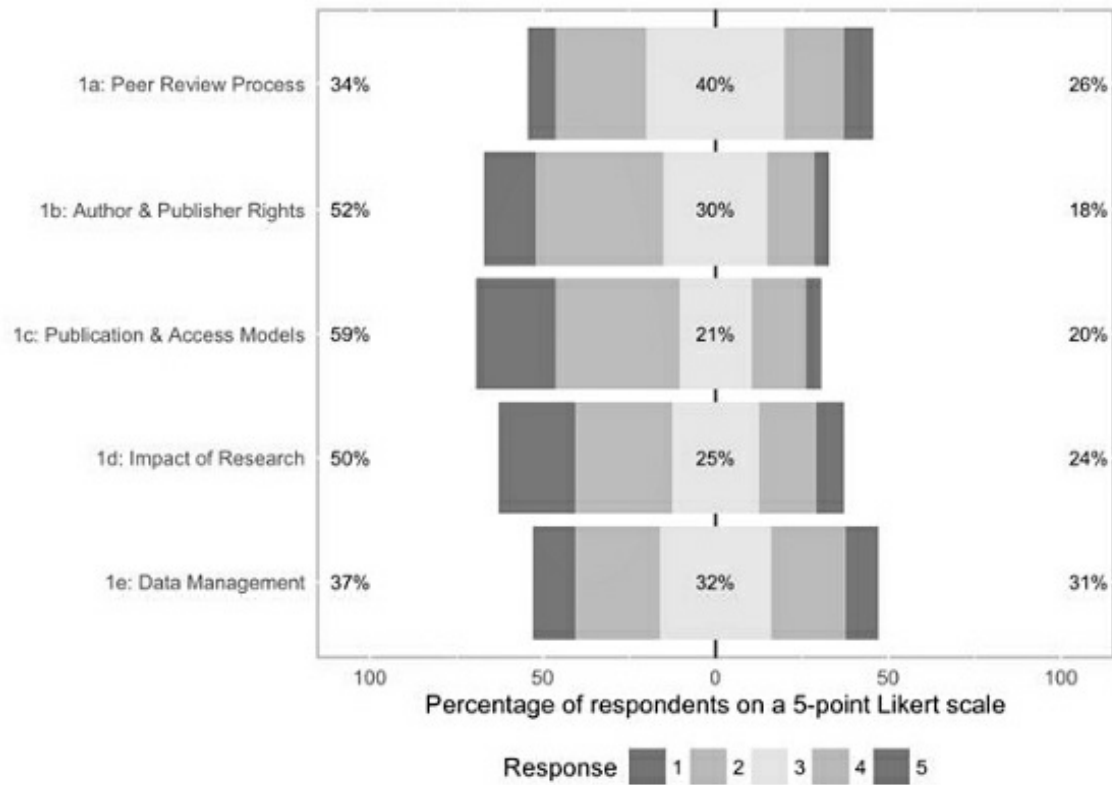
Figure 1 – Respondents' perceived levels of understanding on a variety of scholarly communication topics. (1) not at all knowledgeable; (2) slightly knowledgeable; (3) moderately knowledgeable; (4) very knowledgeable; (5) extremely knowledgeable. Source: 'What Do Undergraduate Students Know about Scholarly Communication? A Mixed Methods Study', *portal: Libraries and the Academy.* © 2017 Johns Hopkins University Press; reproduced here with permission.
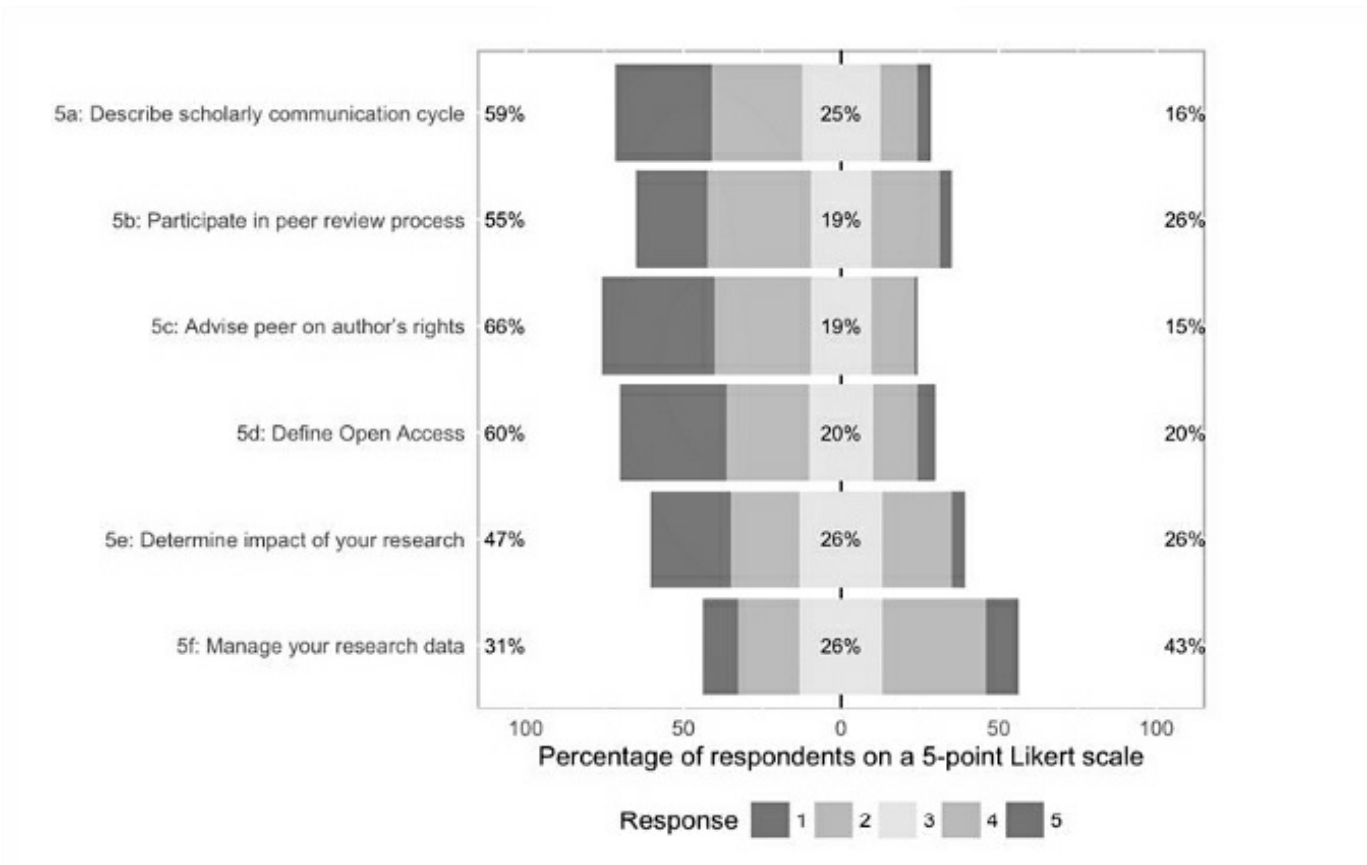
Figure 2 – Respondents' perceived levels of confidence in engaging in scholarly communication-related activities. (1) not at all confident; (2) slightly confident; (3) neutral; (4) very confident; (5) extremely confident. Source: 'What Do Undergraduate Students Know about Scholarly Communication? A Mixed Methods Study', *portal: Libraries and the Academy.* **© 2017 Johns Hopkins University Press; reproduced here with permission.**

Students in our sample do consider knowledge about scholarly communication to be important, however, and expect to learn about these topics in courses, as part of extracurricular or research activities, and from faculty mentors.
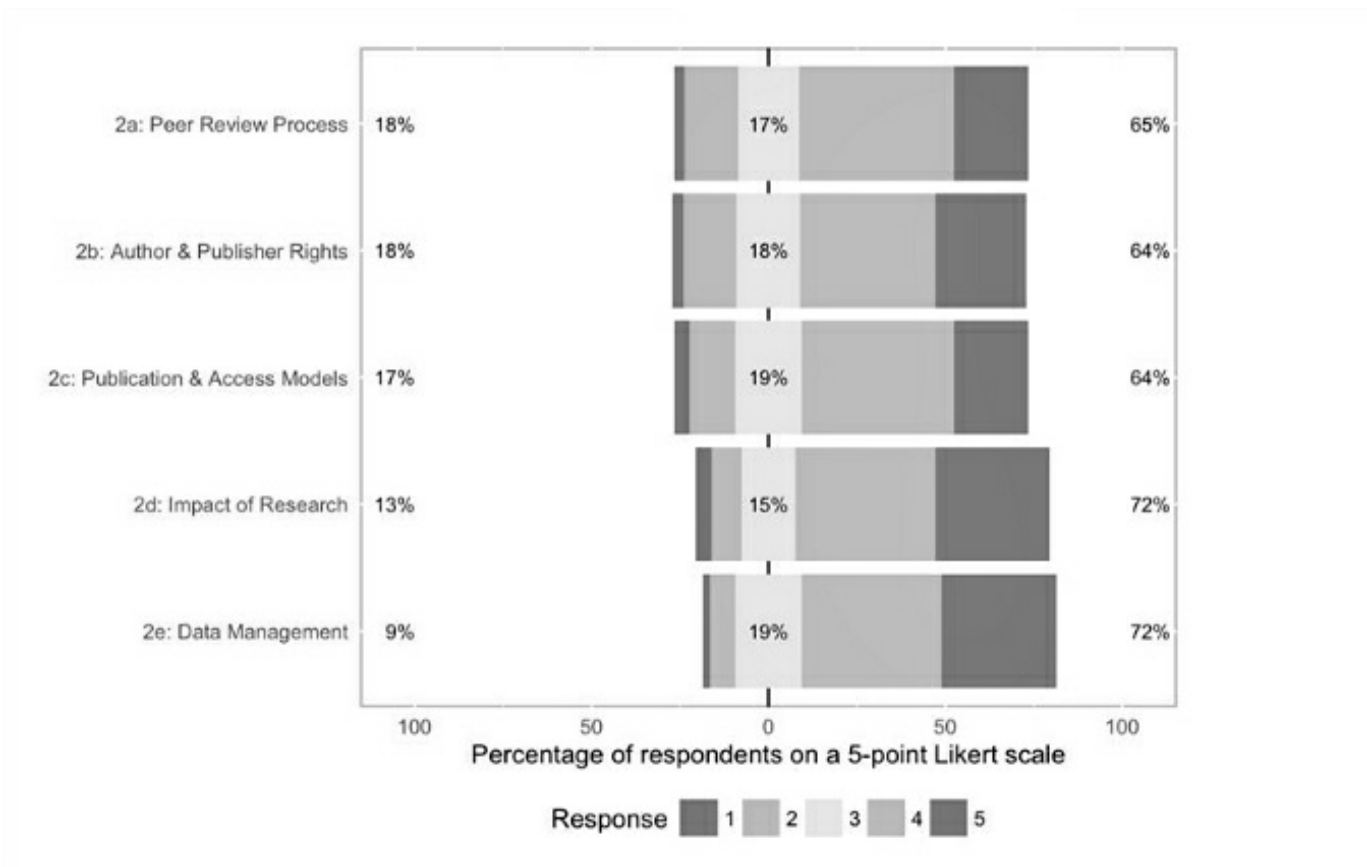
Figure 3 – Respondents' reported value of knowledge of scholarly communication topics. (1) not at all important; (2) slightly important; (3) neutral; (4) very important; (5) extremely important. Source: 'What Do Undergraduate Students Know about Scholarly Communication? A Mixed Methods Study', *portal: Libraries and the Academy.* **© 2017 Johns Hopkins University Press; reproduced here with permission.**

Our interviews with students revealed three primary themes:

1. Interviewees could not accurately address copyright and authors' rights as it applies to their scholarship. When asked who owned the copyright of their research products, they guessed, without confidence, the university.

2. Interviewees reported they rarely receive specific guidance, but tend to rely on faculty and graduate student mentors' leads, especially when managing research data. While they reported relatively high levels of data management knowledge, anecdotes shared during our interviews revealed haphazard learning experiences in this area. For example,

> "I was keeping track of it [the data] in my notebook, basically. And the person in the lab that took over after me took that notebook, so I think she is writing a thesis on it now actually" (molecular cellular biology, senior).

> "I wish the guy I worked for would have at least said, 'yeah, you are doing it fine'. Or anything. That kind of feedback. But he kind of just let me go, and said 'if you have any questions, ask.' And I didn't want to ask him, 'how do I store this data?' After the fourth or fifth time of trying to organize…I finally got a good method down" (engineering, senior).

In addition, none of the interviewees could describe a long-term plan for the data they worked with for their projects. They said the data were "filed away," "for three of four years maybe," and interviewees were not aware of any plans for long-term management or access.

3. Interviewees struggled to articulate how they determine the impact of their research. When prompted to describe how they assess impact, interviewees referred to the importance of traditional citation metrics with only basic understanding. Others interpreted this question to be specifically about the value of the research itself – its novelty, relevance to individuals, or influence on daily life. For example:

> *"I think there's a general impact factor…the more cited it is or the fact that the journals that people have cited on, for example Nature, and so that's one factor I'm very familiar with" (biochemistry, senior).*
>
> *"Yeah, because I want to make work that will have a higher impact factor. So I guess I would try to make it more accessible to more people so that it would be more cited" (biochemistry, senior).*

Our findings reveal there is much opportunity for faculty members, graduate students, librarians, undergraduate research programme coordinators, and others who support student researchers to collaborate and develop learning interventions in these areas. Study participants reported they believe knowledge about scholarly communication is important, yet they also report only moderate levels of confidence in their own knowledge and abilities, which, as our findings suggest, is problematic as students consider their rights as authors and knowledge producers and the long-term storage, accessibility, and impact of their research data and findings. Opportunity to publish one's undergraduate work in a journal or institutional repository indexed in Google Scholar can provide a fantastic learning opportunity and boost a CV or graduate school application, but guidance about the process and implications is important. Who owns the scholarship when working with/without faculty mentors? What permissions from mentors and collaborators, if any, should a student obtain before sharing data and findings?

> *"I think a lot of students don't look at it from a legal perspective and they have no idea what rights they have after publication…I just think that it is really important for them as we move more and more to the digital world … I mean it is flattering to get published [but] you also don't think of the ramifications" (liberal arts / health and human sciences, senior).*

Let's support our undergraduate student researchers, many of them future academics and full-time scholars, in the important factors that shape the scholarly communication process.

This blog post is based on the authors' article, '[What Do Undergraduate Students Know about Scholarly Communication? A Mixed Methods Study](#)', published in portal: Libraries and the Academy (DOI: 10.1353/pla.2017.0009).

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