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Open Access and Students in Information Literacy Class: A Quest for Understanding

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Introduction

The author has been an information literacy instructor since 2005. Since that time, open access has provided a new means of scholarly publishing that is free of charge and available online to everyone. Through it, researchers are able to communicate the results of their work in a more direct fashion, without the long waiting periods typically required by traditional academic publishers. And because teaching faculty have gradually embraced open access, it has become necessary to teach it to information literacy students. After all, some of them will someday become graduate students and even college faculty themselves. But what should undergraduate students learn about open access, and what lessons they will take away? Who will explain what open access is? These important questions gave rise to a series of discussions with the students in one of the author's information literacy courses.

Development of open access

There is always resistance when someone proposes a new way of doing things. Many of the academics who were required to publish in established academic journals for tenure and promotion have resisted and even tried to prevent their institutions from adopting open access as an acceptable means of publication. The early adopters of open access have forged ahead nevertheless. Princeton was among the first academic institutions to announce an open access policy for its scholars and researchers. The policy, which was approved by the faculty, grants the university "license to exercise any and all copyrights in their scholarly articles published in any medium, whether now known or later invented, provided the articles are not sold by the University for a profit, and to authorize others to do the same" (https://dof.princeton.edu/policies-procedure/policies/open-access).

The interest in open access at the author's academic institution has grown steadily over the last decade. It was initially generated in a handful of departments by certain enthusiastic faculty members, and eventually resulted in a broad range of open access peer-reviewed publications, both articles and even several journals. The university's library has been supportive of the open access movement from its inception. With the support of the administration, an open access committee has been organizing events during International Open Access Week, which is usually celebrated during the last full week of October. As a result of these efforts in various

quarters of the university, interest in open access has become strong, and the administration has taken steps towards creating institutional policies for open access. The university's libraries have meanwhile created an institutional repository in which faculty members and research associates can upload their research for everyone to see.

Need for instruction on open access: Students and open access

While many professors at the author's institution were becoming advocates for open access, the author's thoughts began to turn to the university's students. How would they learn about open access? Would they understand it, and appreciate its utility? Open access is a publishing tool; it is not an academic subject. And while most of the professors who have adopted it teach, that does not necessarily mean that they are making their students aware of open access, let alone helping them to understand and become advocates for it.

The fact is that most of the university's students do *not* have a clear idea what open access is, especially the undergraduates. They might have heard something, but most of them don't know exactly what it is and what it offers the scholarly community. For example, one of my information literacy students expressed the opinion that if he was charged to access an article, it meant that it was of better quality than one that could be accessed for free. Anecdotes like this suggest that librarians, especially those who teach information literacy, need to explain to students the learning opportunities that a publishing tool like open access provides.

Review of literature

There has been a notable proliferation of publications praising open access, describing it in detail and advocating for its adoption. Open access is often used to publish students' research, in journals that have been created at various academic institutions. For example, in 2010 Peggy Pritchard, an embedded librarian in the University of Guelph nanoscience department, assisted in creation of an open access electronic journal for undergraduate students' publications. The journal, da Vinci's notebook is extant, though the last volume was published in 2016. Hicks (2017) addresses the use of open access publication as an opportunity for students in a library instruction course to write and publish a paper reviewed by a practicing librarian. It provides an excellent opportunity for future young information professionals to voice their opinions, and also improves their CVs. Miller (2013) also writes about using open access as a publishing

opportunity with undergraduates, noting that it "has proved to have pedagogic legs, that is, it is continuing to affirm the students' evolving sense of accomplishment" (2013). Miller also writes of his institution's requirement that undergraduates publish a thesis in an open access repository, noting that it provides an effective way for students to introduce themselves to academic discourse. Char Booth advocates in her blog, Info-mation, for using open access as a pedagogical tool https://infomational.com/2013/07/29/open-access-as-pedagogy/. She argues that by doing this, librarians participate in the application of critical and feminist pedagogy to the instruction process, and help students understand and appreciate the idea of "information as privilege" (Booth, 2013).

Understanding and appreciation of open access by students

It has become increasingly difficult to teach undergraduate students about online scholarly publication because the number and type of such publications is itself increasing. For example, articles can be published in online journals, in online versions of journals that are also available in bound form, and also be made available at their authors' websites. Many undergraduates have a hard time making the simple distinction between a journal article and a book chapter in an edited work, or between a newspaper article found in an online database and one found at a newspaper website. Some students assume that open access publication simply refers to everything they read online.

To introduce students to open access the author used a couple of strategies. One of them was to facilitate a classroom discussion in which I explained the idea(s) behind open access, followed by an exercise wherein the students searched open access databases such as Directory of Open Access Journals and ArXiv. I also introduced students to examples of research by academics like David Hogg, a professor of physics at the New York University, who reports on his research in his blog, Hogg's Research (available at http://hoggresearch.blogspot.com/). Another important attempt to expand students' familiarity with open access was the team project assignment in one of my classes in fall 2017.

Class project fall 2017

By way of observing International Open Access Week 2017, students in the author's Information Literacy in Mathematics and Statistics course were tasked with creating electronic

posters using open access materials. Students in this class traditionally research topics related to mathematics and statistics or related interdisciplinary subjects, and then compile their sources into annotated bibliographies. For the posters students had to find either scholarly journal articles or e-books available in open access. There were five teams in the class, each consisting of four or five students. The topics included biographies of famous mathematicians Jean–Pierre Serre and Karl Friedrich Gauss, the latest developments in cryptocurrency, the mathematics of Tetris, and mathematics education.

As it turned out, open access did not provide an abundance of information on every topic. For example, cryptocurrency proved to be a difficult topic to research in open access publications such as e-books and scholarly journal articles. The majority of materials were in subscription-only journals. There was also a lot of current information available on the websites of companies that were involved in the development of cryptocurrency. Other teams managed quite well at discovering needed materials. For example, the mathematics of Tetris proved to be an "open access friendly" topic.

In addition to creating annotated bibliographies from their research, students wrote reflections on open access and on their projects. Mathematics can be described as an open access friendly subject; many scholars in the field publish their articles in open access, as they are not concerned with keeping their research secret. This subject-wide attitude seems to have facilitated the students' understanding and appreciation of open access and open source applications. For example, one student wrote, "In my opinion, access to textbooks and scholarly information is a direct allegory for education in our country. The wealthier people in our country get more educated while the people with the less money miss out. In a time when technology and the Internet are viewed as a negative symbol of our generation, I think open access is a way for our generation to use the Internet to make a positive impact and spread information to those who cannot afford it." Another student explained, "My understanding of open access is that anyone can access it, whether you're an average person or a scientist."

Students were also required to read "Cracking Open the Scientific Process" by Thomas Lin, which describes how open access was adopted by scientists at New York University. Almost all the students reacted positively to the idea making research available to everyone. For example, one of them wrote the following: "Open access definitely aids in grasping a variety of information to the academic world. You are no longer limited to your professor's notes or your

university's resources. You no longer have to actually take a class at MIT (i.e. [*sic*] complex numbers) when there's a professor who posted an article on his work for MIT about complex numbers on a database that is open to anyone with the Internet at reach."

When asked if open access would improve science literacy, the concept that is one of the course's topics, one of the students responded, "Open access would most likely improve science literacy. People interested in science who do not have access to databases would benefit the most from open access." Another student opined, "as far as open access for science literacy, there will be people who share their works and never read others' work, there will be people who only use it to research for their work, and there will be people who use it for references and post their work as well. Either way open access makes the Internet a global classroom of academic exchange."

However, when asked how they felt about their own intellectual property, such as a possible patent application, some of the students were ambivalent. For example, one of them wrote, "Of course as a young scientist I would want access to as much scientific data as I could. However, if I were to want to patent something I found, I have the right to own that for myself. These ideas are contradictory to one another. I [want] free scientific data, yet want to own my own data after I patent something. Though I am unaware of what the solution would be, I believe and hope that these two ideas will not remain mutually exclusive forever." The students in my class were majoring in mathematics and related subject areas, and as I previously mentioned, the subject of mathematics is open access friendly. However, when the issue of intellectual property is considered in subjects such as computer science, then the legal issues might complicate the openness of the research due to patenting and other matters of intellectual property.

Conclusion

Open access is important to the future of scholarly communications, and it is a well understood, though not always well supported, concept within the scientific community at this time. It is, unfortunately, less so with undergraduate students. For many of today's students, finding an article through Google simply proves that a library database isn't needed for conducting academic research. Such students don't understand *why* the article is available in full text through an online search engine. Introducing students to open access as a new mode of scholarly communication is extremely important.

The question is, who will develop entire academic courses – not just hour-long workshops – on open access as a new model of scholarly communication? Should it be the librarian, whose area of expertise is the process of academic publishing? The law professor, whose area of expertise is the legal implications of open access? The policy maker, whose area of expertise is the possible consequences if open access is approved and established as policy? These questions have yet to be answered. At this point, it is safe to say that they should be considered by everyone who appreciates and understands the ideas and principles that gave rise to open access, and who has a vested interest in improving scholarly communication for the betterment of society.

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