

Lack of information literacy as a barrier to Open Access among students and scholars

Alan Francisco Colín Arce¹

Abstract

Open access seeks to make scientific literature free for readers; however, several obstacles prevent students and scholars from receiving all the benefits it offers. One of these is the lack of information literacy, which is the ability to locate, evaluate, and use information effectively. This essay will explain why the lack of these skills is an obstacle to open access and how this condition excludes students and scholars.

These two groups do not always develop sufficient informational skills, so they make mistakes when accessing and using academic information, which limits the benefits they can receive from open access. Among these cases are, for example, the uncritical use of Google Scholar, the lack of knowledge when using digital scholarly tools or when conducting searches on academic search engines, the sharing of academic papers on academic social networks with disregard for copyright, and the publication in predatory journals.

To address these issues, universities can implement or improve information literacy programs, so they promote open access while ensuring that their communities enjoy the virtues of free access to scholarly literature.

Keywords: information literacy, predatory journals, higher education, higher education policy.

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Introduction

With the advent of the Internet, the movement for open access gained strength in science to make scholarly publications available in digital format at no cost to readers. At the same time, the concept of information literacy increased in popularity to refer to the set of skills for recognizing “when information is needed and have the ability to locate, evaluate and use effectively the needed information” (Breivik, 1989). Although these two phenomena share a similar origin, they are not always related during the promotion of one or the other.

The Budapest Open Access Initiative, one of the first statements on the subject, defines the term as those academic documents with “free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles [...] without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself” (Budapest Initiative, 2002).

According to this definition, the obstacles that must be overcome to consolidate open access are directly related to accessing the Internet; however, this is not the only limitation.

In his book titled *Open Access*, Peter Suber mentions that “Open access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions” (Suber, 2015). Therefore, open access neutralizes most limitations related to cost and copyright; however, Suber clarifies that it does not eliminate barriers related to censorship, language, internet connectivity, and disability. In addition to these four, the lack of information literacy is also a barrier.

On the other hand, information literacy is a skill that is learned over the years. In addition to locating, evaluating, and using information, Breivik (1989) mentions that its objective is for the individual to learn how to learn, which coincides with one of the purposes of higher education institutions.

Various authors have proposed standards to measure information literacy in higher education. One of the most important is the one proposed by the American Library Association, which suggests five standards for its development (American Library Association, 2000):

1. Determine the extent of information needed;
2. access the needed information effectively and efficiently;
3. evaluate information and its sources critically while incorporating selected information into one's knowledge base;
4. use information effectively to accomplish a specific purpose; and
5. understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.

For the open access movement, the second standard is of special importance, since offering access to scholarly literature depends on the resources of each institution, while the rest of the criteria depends on the mere possibility of accessing information. Therefore, if academic resources are behind paywalls, they restrict the development of information literacy.

Lack of information literacy in higher education

Poor information literacy among higher education students and scholars is a barrier to open access as it prevents scholarly information from being available to the largest possible audience. At the same time, authors are likely to make mistakes when sharing their research openly. This constitutes a form of exclusion since, the poorer the informational skills, the lower the benefit compared to individuals who have developed more efficient skills, since

these abilities allow for a more conscientious judgment when searching for information and choosing where to publish.

The difference between this barrier to open access and the others mentioned is that several universities already have programs or policies that seek to promote information literacy among their students and professors, but these are not usually linked to open access policies. For example, Hebrang Grgic (2016) found that 22% of libraries in Croatia do not educate their users on this topic, while Coonin & Younce (2010) found that only 10% of the surveyed academics and graduate students had received information about open access from their institution's library.

The lack of information literacy and knowledge about open access itself has a different effect depending on demographics. Students are primarily consumers of academic information, so they need to know how to find it and evaluate it. Meanwhile, academics are both producers and consumers, so they also need to strengthen their skills in copyright and identification of trustworthy journals.

Open access and lack of information literacy among students

Considering that information is an essential component of society, university students should possess, or acquire during their education, strong information skills to obtain, evaluate and use it; however, there is evidence that this does not usually happen in undergraduate and even graduate students.

Boh Podgornik et al. (2016) applied an information literacy test to 536 students, of which 89% were undergraduates and the rest were graduate students. They found that the majority presented difficulties when designing advanced search strategies as well as

understanding copyright restrictions, which is of the utmost importance when sharing and publishing articles in open access.

In the case of graduate students, it is usually assumed that they have skills for tracking and critically evaluating information, since this is part of the necessary background of any researcher. However, this assumption has been refuted. Uribe Tirado (2010) found that Colombian graduate students use the Internet for different purposes, but they are unaware of academic tools and services, as well as criteria for evaluating information. On the other hand, Beard (2016) points out that graduate students frequently use Google Scholar to search for information without analyzing the results, and without knowing how to identify whether a source is open access or not.

The tendency to prefer Google Scholar means that other search engines or databases are not used with the same frequency, especially those whose priority is to return open articles, so students get information but not in the most efficient way. Furthermore, not all the documents compiled by Google Scholar went through peer review, since preprints, books, theses, and other documents also appear on the search results. This is why it is recommended to critically evaluate the information obtained through this particular search engine.

In sum, higher education students could improve their search strategies. However, this premise assumes that they know how to use certain technologies. This is where a bigger problem arises: digital skills. These constitute an essential part of information literacy because a wide range of information today is found on the Internet.

Undergraduate students may lack digital skills when they begin their studies. Although they usually have mastered some basic aspects, such as the use of web browsers or word processors, they are not always aware of issues regarding cybersecurity, privacy, or

ethics when using these technologies. Likewise, students with a high socioeconomic level who are not immigrants, and who have two or more computers at home display more consolidated digital and informational skills (Fraillon et al. al., 2020; Uribe Tirado, 2010). Therefore, if universities do not foster both types of skills in the first semesters of studies, it will be the privileged students who benefit most from open access due to the progressive strengthening of said skills.

Open access and lack of information literacy among scholars

In the case of scholars, there are similar inequalities depending on the information skills they possess. The difference between them and students is that they not only consume information, but they also produce it, usually in the form of scholarly articles, but also in the form of books, preprints, conference presentations, etc. Since scholars aspire for their research to reach the widest audience possible, the mishandling of information is more likely to be noticed, for example by plagiarism or breach of copyright. In this section, I present two cases in which the lack of information literacy excludes certain scholars and harms the open access movement.

The sharing of scholarly articles on academic social media

This first case refers to researchers who share full-text articles on academic social networks such as ResearchGate and Academia.edu. These platforms are “complex heterogeneous networks formed by a large number of entities (publications, scholars, etc.) and their relationships (citations, coauthorships, etc.)” (Kong et al., 2019). Although there are other networks, ResearchGate and Academia.edu are the most used for sharing full-text articles.

It is not in itself reprehensible to share material on these websites, but it is problematic if it interferes with copyright or if the only open access version of an article is hosted on them.

When an article is published in a journal, some (or most) of the copyright is transferred, unless the paper has an open license. With this transfer, the author loses almost any possibility of distributing the published version without the prior authorization of the publisher, especially when it comes to subscription journals. Thus, if the final version is disseminated through ResearchGate or Academia.edu, it is likely that copyright is being infringed, which can translate into legal consequences that will only end when the article is removed from the web. This case illustrates a lack of information literacy since scholars may not always distinguish the circumstances in which it is possible to share published research.

Even when copyright is not infringed, it is not advisable to distribute articles only through these social networks, and this is because neither ResearchGate nor Academia.edu set up preservation mechanisms for the documents collected there, so they are at risk of getting lost or disappearing. Instead, a better option is to back up articles through a repository that guarantees both their preservation and their interoperability.

Developing and improving information literacy among scholars does not seek to discourage the use of any platform, but it is intended that they exercise a conscious judgment in matters of copyright and digital preservation, because "a social networking site is not an open access repository" (Fortney & Gonder, 2015).

For several years, different institutional repositories have been created that cover various thematic contents, with the purpose of hosting full-text articles, even if it is not necessarily their published version. These non-profit repositories do not collect personal

data or harass their users with advertisements because their objective is to safeguard open scientific knowledge in the long term while respecting copyright restrictions.

Despite these advantages, a study found that only 11% of articles produced by researchers from 13 Spanish universities were backed up in some institutional repository, while more than half were available on ResearchGate. In addition, one of the reasons cited for not disseminating their research through institutional repositories was simply the lack of knowledge about them (Borrego, 2017).

In Mexico, a group of sociology researchers accumulated more than 3,000 records on ResearchGate, but only 1,933 were available for download, so they were not all in open access (Lujano Vilchis, 2017). Therefore, the challenge is to persuade scholars of the advantages of repositories so they can prioritize sharing their full-text articles there without depending on for-profit platforms.

Publication in predatory journals

Perhaps the most serious manifestation of weak informational competence is reflected in the publication in predatory journals, a scenario that harms open access while also excluding those who participate in it. This phenomenon tangibly demonstrates the urgency of information literacy, as authors lack tools to assess the fidelity of the sources they retrieve (Lana, 2019).

Predatory journals are those that “charge authors to publish, but they offer little or no peer review or other quality controls and often use aggressive marketing tactics.” Despite the alerts and resources that help avoid these publications, such as the Beall's List of Potential Predatory Journals and Publishers (2020) or the Think. Check. Submit website (2020), authors continue to fall victim to their harmful procedures.

This represents a serious problem of exclusion since it is young researchers with little experience and from the Global South who mostly resort to these journals (Xia et al., 2015). These are authors with a genuine interest in sharing their work in open access but suffer when determining the quality of a scientific publication; that is, critically evaluating the information they obtain. This undermines not only the credibility of the research but also of the open access initiative itself. Therefore, it is essential to reinforce its link with the consolidation of information literacy to prevent predatory journals from continuing to benefit at the expense of inexperienced researchers with the need to publish.

However, it is worth noting the case of authors who deliberately submit their work to predatory journals, whose motives, among others, are reduced to academic promotion, profit, pressure to publish, or the inability to publish in indexed journals (Demir, 2018). Hence the emphasis on optimizing information literacy to contain the influence of predatory journals profiting from ignorance and, at the same time, making it easier to identify those researchers who publish in them for reasons other than inexperience. Universities would also benefit by promoting this initiative, since they would reduce these inappropriate practices, especially in countries of the Global South.

Although the phenomenon of predatory journals mainly affects scholars, students with weak information literacy may end up resorting to them during the composition of their own texts. This represents a risk because even academic databases contain a number of publishers present on the Beall's List, which ranges between 0.05% and 2.25% of the total (Nelson & Huffman, 2015). Although not an alarming amount, it is enough evidence to show that even information obtained from academic databases must be critically evaluated before it is used.

Towards open access literacy

When discussing open access, it is important to focus part of the attention on the target audience of academic information: students and researchers. The discussion about the openness of papers is so overwhelming that peer reviewers, readers, and authors themselves are relegated to the background, even though a wide margin of them genuinely recognize the benefit that open access brings to their discipline. (Beard, 2016; Ruiz-Pérez & Delgado-López-Cózar, 2017).

Therefore, the challenge to overcome is no longer so much to preach about the benefits of open access, but to optimize information literacy so that both researchers and students seek those practices that strengthen open access and eradicate the vices that harm it. This means promoting what Hebrang Grgic (2016) calls Open Access literacy, understood as those intermediate skills to track, evaluate, use, and produce information under this paradigm. This set of skills would evolve over time as the characteristics of open access information also change.

Promoting OA literacy would guarantee that students and scholars further their actions in favor of opening academic information. In addition, this would be achieved without universities or funding agencies forcing the texts to be made open. Instead, students and scholars would prioritize openness because they understand the advantages and importance of academic information being publicly available for other people to benefit from it.

Conclusions

The increasing availability of scientific literature in open access requires the training of a community capable of evaluating it and using it effectively if the purpose is to constitute an

open and inclusive ecosystem beyond reducing the cost of articles. Although it is not necessarily the responsibility of the open access movement to resolve the wide spectrum of conflicts that accompany the promotion of information literacy, it is also not possible to assume that scholarly content is within everyone's reach given the profound inequalities in the use of information addressed in this essay.

It is urgent to introduce or strengthen information literacy programs in higher education. If carried out, students and scholars would prioritize the retrieval and publication in open access sources, since they would understand the importance and benefits of accessible and high-quality information while limiting the influence of questionable content, including that of predatory journals. It is especially important to restrict researchers from publishing their work in these journals, beyond any justification. Rewarding and promoting scholars who publish there not only wastes resources on people with unethical practices but also encourages this behavior to spread while hurting the open access movement.

On the other hand, the benefit for universities would be tangible since a good part of the budget they have is destined to obtain specialized information resources, develop repositories, maintain open access journals, and even finance article processing charges. This investment is certainly important, but its effectiveness will not be complete until students and scholars acquire the information skills they need.

In open access discussions, publishers and editors have been the main focus, relegating both readers and users to the background. It is therefore forgotten that scientific publications need as many readers as possible. Thus, the universities, and especially their libraries, have been exclusively responsible for developing information literacy in their

community, so open access promoters have been exempted from actively participating in this training that aims to include more people in the benefits of openness.

The benefits of open access as a tool to promote knowledge have been more than demonstrated, but its aspiration of universality continues as an ideal. However, considering that large numbers of both researchers and students still can learn and improve their knowledge of open access through information literacy, there is good reason to conclude that we have not yet witnessed all the potential that lies in open access to scientific literature. To achieve this, it is urgent to overcome the barrier created by the lack of information literacy.

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