

## Chapter 7

# The Role of Open Access in Enhancing Equitable Curricula and Research Outputs: Global Context

**Angela Y. Ford**

*Judson University, USA*

**Daniel Gelaw Alemneh**

 <https://orcid.org/0000-0002-0319-0474>

*University of North Texas, USA*

### **ABSTRACT**

*When educators have difficulty accessing peer-reviewed research, it is inequitable to expect them to compete with educators who have access to a plethora of resources. Inequities have been a historically-identified educational problem; however, the forced online learning that occurred during COVID-19 restrictions amplified discrepancies experienced by tertiary educators. Scholars who were forced to work without strong information communication technologies infrastructure and who experienced limited access to online resources struggled more than those that had 24-hour uninhibited access. Education came to a near standstill for those that could not easily move their activities online. Prior to the pandemic, individuals working with curricula were already feeling handicapped by the lack of access. When physical libraries were closed, it became nearly impossible for many to move forward. This chapter explores the changing publishing paradigms, particularly the role of OA and how increasing open dissemination of scholarly outputs can reduce inequities in curricula and research activities.*

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## INTRODUCTION

Educators and researchers continue to adapt to the changes in how scholarly works are published, disseminated, and retrieved. Gone are the days of publications being housed predominantly as print copies of journals and books shipped directly to institutions, organizations, or individuals and stored on library shelves where researchers would spend full days looking through stacks to find specific articles, chapters, or books. Now most educators, researchers, and students use online databases to access digital resources; a process that can be done from anywhere in the world if the correct mechanisms are in place and available for individuals attempting to gain access.

Unlimited and unrestricted access to high quality scholarship is a critical component for effective and efficient curricula building and research in most disciplines. For educators and researchers in developed countries this access is almost a given; something often taken for granted. However, this is not the case for many educators who find themselves in less developed or lower-income countries. For these individuals, attempting to gain access to the desired and even required scholarship is an ongoing challenge.

In high income countries, educators and researchers may occasionally come across an article, chapter, or book that their library does not have immediate access to, and they run into a paywall. Most of these individuals have contacts and resources available to find a free way to gain access. Whether it is through an interlibrary loan, because their library is a part of a larger network, a colleague at another institution who has access, or some other means, this situation is resolved and the article, chapter, or even book are obtained and thus become available for use. This is not the case for individuals in low- and middle-income countries (LMIC). These educators and researchers come across such resource restrictions more often due to the limited nature of their online libraries, and when they do experience such obstacles, they do not always have contacts and resources as readily available to assist them. This increases the chances that they will not gain access to the specific resources they seek.

When educators and researchers struggle to obtain the literature they need, it is not only frustrating, but it can also cause some individuals or even whole departments to be unable to complete the goals they have set for high-quality reviews and even for the foundational grounding of their own studies in the current literature. This may cause scholars to use limited or lower quality articles that are not quite as on target as ones that are blocked behind a paywall. The very nature of educational pursuits depends on access to established knowledge. When peer reviewed research is inaccessible or locked away for only certain privileged scholars, we are perpetuating not only the uneven distribution by blocking the less privileged from working with the information, but also blocking production of future research that could enhance areas of knowledge. This is a concern of equity, social justice, and epistemic justice.

The working definition of social justice to be used in this chapter comes from work examining Open Education, however, also applies in the context of Open Access (OA). The preferred definition of social justice is: “A process and also a goal to achieve a fairer society which involves actions guided by the principles of *redistributive* justice, *recognitive* justice or *representational* justice” (Lambert, 2018, p. 227). These principles will be explored later in this chapter with specific emphasis to issues and potential impacts, as well as the need for OA in particular. As to the understanding of epistemic justice, Fricker (2013) explains this as an area of philosophy that either values or devalues the ability of individuals or groups to be knowers. She goes on to explain that *distributive epistemic injustice* takes place when there is, “an unfair distribution of epistemic goods such as education or information” and further articulates that *discriminatory epistemic injustice* includes situations where individuals or groups experience a “deficit of credibility” and thus experience prejudice when sharing information (Fricker, 2013, p.1318). Both

types are experienced in the case of scholars from LMICs, distributive when there is a lack of access, and discriminatory, when there are undue challenges or even an inability to produce and disseminate scholarly works.

When COVID-19 became a global pandemic in 2020, issues of equity became even more pronounced and amplified. The 2nd Open Science Conference organized by the United Nations in July 2021, saw policymakers, intergovernmental organizations, librarians, publishers, and research practitioners engage in a public dialogue focusing on what Open Science has learned from COVID-19 and how this can be applied to actions addressing the global crisis, at the interface of science, technology, policy, and research. The conference seized the opportunity to collect lessons learned, and identify directions for the way forward, including equity in open scholarship.

During the pandemic restrictions, educators and researchers with access to the Internet, an academic library or resources via OA could continue to obtain materials and move forward with curricula and investigations. Those in locations without the same level of access were limited, if not stopped entirely, from continuing their work. It became apparent that institutions in high income countries were much better equipped than those in LMICs to successfully navigate 100% online teaching and learning activities. Prior to COVID, many scholars could gain access to scientific data if they could simply get to the brick-and-mortar library building, but with COVID restrictions, this was no longer an option as most campuses were shut down completely. Consequently, many programs and initiatives, including collaborative projects in LMICs experienced a complete cessation of activities as online access was limited or unavailable.

When considering equity in access, it is important to also consider educators, researchers, and practitioners who are not employed by institutions of higher education and therefore do not have ongoing access to an academic library. These individuals are often restricted to resources they can access online or those they can obtain if they are fortunate enough to live or work geographically close to a university campus where they can visit and obtain the desired scholarly resources. Keep in mind that physical access has major limitations even for affiliated members, limitations that were highlighted with COVID-19 restrictions.

Whereas the circumstances surrounding COVID-19 amplified the inequities in access, it also highlighted the benefits of opening up access to resources to solve a common problem. In this regard, very soon after the world realized we were experiencing a global event, researchers were encouraged to share their COVID-19 related research and data openly (Tavernier, 2020), with the hope of quickly developing preventative measures, including a vaccine. Many researchers began to forgo the traditional publishing model and share their research through open platforms (Tavernier, 2020). The wide dissemination of data and findings aided in the development of a vaccine much quicker than would have happened without this shift in norms.

This opening up of scholarly communication does not come without concerns and challenges, many of which are discussed in this chapter. However, even during non-pandemic times, OA can save time, effort, and possibly finances for educators and researchers who would not be forced to gain access through physically going to a research library, through having to find a way around paywalls, or through choosing to pay what are sometimes very high fees to read scholarly literature. The proponents of OA argue that it helps improve scholarly communication by disrupting the way things have been done with traditional scholarly publications. “Researchers need to be able to access, read, test, augment, refine, and refute each other’s work – that is the way research moves forward” (Pinfield et al., 2020, p. 258).

## ***The Role of Open Access***

In this chapter, a brief overview of OA will be provided. Then a deliberation of OA's role in equity and social justice will be discussed to show a clear link between the two. OA has the potential not simply to assist in narrowing the existing gaps but also in equalizing areas of inequities within curricula building as well as research activities. However, the current identified injustices should be considered so as not to perpetuate or even exacerbate the exclusion of scholars from LMICs.

## **BACKGROUND**

This section will begin with a description of the general concepts of OA and then move on to a review of the different types. One critical point to be clarified is that OA is a type of publication leading to free access for the consumer. OA is not a type of content, but rather the means of dissemination of content. OA can also be referred to as Open Scholarship, and can consist of articles, books, data, digital media, notebooks, software, etc. Although much of the material covered in this chapter can apply to several types of content, the focus is on scientific outputs that share empirical research, and review, analyze, and synthesize available literature.

An overview of OA starts with examining the funding paradigms. Even though OA is without a cost to the consumer, costs are still incurred and must be paid by someone. Often the users of scholarly publications are only aware whether or not they can gain access to the source they seek, and they are unaware of how the publication costs were met. Prior to the emergence of OA, the majority of scholarly publishers operated on a subscription model where the cost of publication was mainly covered by institutions, organizations, or individuals who subscribed to the print or more recently the online versions of journals. In the case of books, the purchase was paid for by the consumer in a similar manner. As new publishing models emerge, the types of OA can be distinguished by who pays the publication costs. Currently, existing OA models include but are not limited to Gold, Green, Hybrid, Diamond, and Bronze. For the purposes of this chapter, two of the most popular will be discussed, Gold and Green. Additional jargon surrounding OA publication is defined in the glossary of terms.

Gold OA is normally funded through Author Processing Charges (APC), where the authors, the authors' institutions, or funders pay the publisher to disseminate the articles in an open access format, so readers can gain access freely without incurring a charge. Some traditional publishers that have moved to OA require APCs for every publication; however, some publish by traditional means with an option to make the manuscripts available through OA when the APC is paid; this can be known as a form of Hybrid.

Green OA consists of scholarly publications made available by the authors through their institutional repositories, academic discipline repositories, societies, associations, professional organizations, etc. Authors posting in Green OA do not incur charges to make their work available, however, they must be aware as to whether or not they can legally do so based on agreements they have made with publishers. Sometimes authors post Green OA articles as pre-prints before the published article is available, however many are posted as fully peer-reviewed articles. The articles that are posted as peer-reviewed may have an embargo period by the publisher, which vary based on policies.

Several nuanced differences exist with specific publishers and the contracts they offer, however, the key distinguishing factor between Gold and Green OA is that for Gold, money must be paid to a publisher and for Green such a payment is not required. It is imperative to point out that even with the move to OA, commercial and university publishers, who are almost entirely living and working in high income countries, often control what studies are published. Such approaches, directly or indirectly, intention-

ally, or unintentionally, limit or close out scholarly communication from scholars from LMICs (Roh et al., 2020). The use of APCs often excludes scholars who are unable to pay the fees, and according to Nkoudou (2020), making this model exclusionary, and a form of discriminatory epistemic injustice. OA would be more socially just if mechanisms were in place to not only allow researchers from LMIC to access published research but also make it possible for them to publish and add their voices to the global conversations in their fields.

## **Challenges and Misconceptions**

As with any new innovation, OA faces both challenges and misconceptions. These warrant entire chapters or books, therefore the information covered here is barely touching the surface. Concerns include those about the quality of OA publications, the concept of OA as a viable means of publication for promotion and tenure, confusion surrounding copyright laws, lack of knowledge and participation in institutional repositories, and the concerns about commercial use of research outputs.

### **Quality of OA Publications**

When discussing the quality of OA, there is a misconception that OA automatically means low quality. This is based on inaccurate assumptions that OA manuscripts are not peer-reviewed. Many OA publishers still have rigorous peer-review processes, and just as with traditional publishing, many of these are still high quality. If an article is posted as a preprint, it may or may not be peer-reviewed, but preprints are only one source of OA and many preprints indicate if they have been peer-reviewed or not. If a preprint has been accepted by a peer-reviewed journal this may indicate that it has already been peer-reviewed. Many OA articles, such as those published by Gold OA, have been fully peer-reviewed. Other alternatives to traditional peer-review are emerging. These include open-peer review which entails a significant publication paradigm shift (Tennant et al., 2019).

OA publications are also being monitored for quality outside of traditional peer-review as can be seen when claims being made in articles are challenged by others in the field. During the early stages of COVID-19 when scientists were being encouraged to share their work openly, there were community calls to remove an OA article from the Internet that contained false information about the virus (Tavernier, 2020). This is an example of a form of peer-review which could be developed in other areas of science as an organic system of checks and balances. This could encourage skeptics to embrace OA as a viable, high-quality method of disseminating scientific findings. It could be argued that there are plenty of other worldwide disasters and disruptions that could be alleviated or at least lessened with the open sharing of knowledge through OA.

### **OA as Records for Promotion and Tenure**

In addition to the concerns about quality, academic researchers around the world are still not considering OA as a first choice in publication due to the lack of value placed on such publications to build a portfolio to be used for promotion and tenure. In other words, if authors need publications for promotion and tenure they may seek a traditional publisher that is also a high-ranking journal. Many OA journals are still not considered high-ranking (Wical & Kocken 2017). This challenge could be addressed through policies put in place by institutions that accept and even encourage publishing in OA. Change in this

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area is hard in general, and for certain disciplines in particular. Institutions could also help pay author processing fees to encourage Gold publishing by their faculty and students with well-established traditional publishers that offer this option. More will be discussed about possible institutional initiatives in an upcoming section of this chapter.

### **Confusion about Copyright**

Much confusion surrounds the legal issues of OA, particularly for authors that wish to post their works on Green OA platforms but are concerned about breaking copyright laws. Authors are not the only ones confused, editors are also often unclear on policies and pass the buck back to the publishers (Roehrig et al., 2018). Confusion about copyright issues, embargo periods, authors ability to share their own work, etc., (Tennant et al., 2019), could be alleviated by training and pushing past the fear of the unknown. Institutions could have liaisons to assist authors as they encourage OA participation. More will be covered in the section on social justice and stakeholders.

### **Knowledge about OA and Institutional Repositories**

OA directly impacts knowledge management and makes scholarly resources available to a wider population of researchers, educators, and practitioners. However, there remains a lack of knowledge about its existence and how to access OA resources, particularly the use of institutional repositories. Several studies have been conducted about knowledge of and participation with OA and institutional repositories with mixed results (Bala et al., 2018; Fussy, 2019; Hoskins, 2020; Ofori & Pomfowaa, 2020). Findings show that many institutions still do not have institutional repositories and that even with those that do, scholars are unaware of the resources made available. This lack of repositories and/or lack of knowledge about repositories is amplified in some LMICs (Fussy, 2019).

As to posting research in institutional repositories, some scholars argue posting one's work as preprints could allow others to 'steal' the idea or negatively affect peer-reviews. Actually, preprints protect against the theft of ideas by documenting authorship of studies before they have been published in peer-reviewed journals which can take a lot of time (Tennant et al., 2019). The effect preprints can have on peer-review is an area that needs more exploration, particularly in disciplines that are small, and where researchers may be familiar with their colleagues' work (Fleming et al., 2021). More education on the topic of OA and an increased use of preprints and institutional repositories could alleviate this challenge.

### **Commercial Use of Information**

The concern about predatory publishing and the commercial use of information are both valid. Predatory open-access publishing is an exploitative open-access academic publishing business model that involves charging publication fees to authors without providing the editorial and publishing services associated with legitimate journals. Other legitimate concerns have been highlighted about journals being mislabeled as predatory, particularly those from LMICs that happen to charge APCs but are not actually predatory (Roh et al., 2020). As OA becomes increasingly popular, less confusion and misinformation will surround this form of publication and these concerns will decrease (Nobes & Harris, 2019; Tennant et al., 2019). Also, as OA expands, and more stakeholders become invested in its success, knowledge

and correct information will make it more difficult for either of these problems to exist as policies are put in place for prevention.

The challenges of OA should be examined in light of the benefits that carry much more weight. Many of the challenges are temporary and will be alleviated through the sustained education, use, and expansion of OA. OA allows for increased global exposure for scholarly outputs. Consumers are increasing and include individuals who have not had access to subscriptions to elite academic journals that have traditionally been locked behind paywalls. The benefits of OA will be described throughout the remainder of this chapter through the lens of social justice and equity for educators, researchers, and society in general.

## **THE SOCIAL JUSTICE PRINCIPLES AS APPLIED TO OPEN ACCESS**

While social justice is not a new concept, it has rightfully gained a spotlight over several decades and is linked increasingly to a wide array of issues. Countries that claim to be fair and equal for all people are continually being challenged to assess their actions against the premises of social justice. Institutions of higher education are also being challenged as producers of knowledge for general good to open up their scholarly outputs. The framework of social justice could be applied to participating and promoting opening access to scholarly outputs (Raju et al., 2020). One could argue that a movement to open access to scholarly literature, whether at the institutional level or the governmental level, is not significantly different from the ongoing global movement to open education to all as a human right. Raju et al. (2020) suggest a movement to “library as publisher” to further shift the paradigm associated with OA and make publication less challenging for those that have difficulty with traditional or commercial OA publishing. This concept will be further explored in the section on producers.

Social justice is based on various principles, including but not limited to, redistributive, cognitive, and representational (Lambert, 2018). Diving deep into each principle is beyond the scope of this chapter; however, a brief description of each and an overview as to how each of these three principles can be addressed through OA will be provided. Redistributive social justice refers to the distribution or allocation of items. In the case of scholarly research, it would be the distribution or allocation of scholarly outputs, mainly with a focus on peer-reviewed articles that have traditionally only been accessible to scholars whose institutions obtained access through subscriptions. The cognitive principle of social justice refers to the act of recognizing entities as legitimate, and representational social justice refers to each group or individual being represented as part of the whole.

As to the redistributive principle, OA by its very nature allows scholarly literature to be made available freely to all, and therefore is distributing resources to those who might otherwise lack such access. Bacevic and Muellerleile (2018) posit that OA is a moral issue and publishing behind a paywall goes against what scholarly writing is meant to accomplish. However, OA publications need to be monitored and evaluated to ensure that these publishing mechanisms are not simply making curricula building and research easier for those that are already at the core of academia. The goal should be to ensure OA is having a positive impact for researchers and educators on the periphery and helping them get closer to the core. Effort will need to be put forth to ensure researchers and educators on the periphery are aware of and able to access the resources that are being distributed through OA.

The next two principles, cognitive and representational, should be more purposefully addressed by welcoming and, in fact, *inviting* diverse voices and views. Researchers on the periphery should be invited to participate in the production of studies that would then be distributed through OA channels.

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Simply opening access to resources created by the dominant culture could perpetuate the problems by continuing to push alternative views and researchers from minority cultures to the periphery. Valetsianos (2020) argues that opening access does not always help decrease inequities and that several issues need to be considered, such as who is writing the documents and are citation politics playing a role. If the participants being studied and those conducting the research and authoring the manuscripts are not representative of all peoples, exclusion is still at work. When referencing the paradigm shift that OA brings to publishing, Ola (2018) stated, “This dynamic revolution is built essentially on a shift from egocentrism and self-centeredness that has become the norm in the society and is re-engineering a sharing structure that would bring about a balanced knowledge society” (p. 2).

## **OA and Social Justice: The Roles of Stakeholders**

*“If you have knowledge, let others light their candles in it.”* — Margaret Fuller

### **Consumers**

Most scholars are both consumers and producers of research outputs. However, it is helpful, to examine social justice issues as they pertain to OA from both perspectives. Consumers of scholarly work are predominantly, however not solely, academics. Opening access to educators and researchers would be beneficial, particularly to those who are challenged with gaining access to scholarly works through their institutions because their institutions are financially unable to provide such access. However, for a moment, it is important to mention other individuals who may benefit from having access to scholarly literature, such as researchers not affiliated with an institution and practitioners in a variety of fields. Since only about a quarter of scholarly literature is openly available on the Internet (Roehrig et al., 2018), these individuals without institutional access or other means of obtaining literature would be locked out of 75 percent of available research.

In many disciplines, practitioners, such as medical doctors, engineers, architects, independent educators, etc., might search databases of scholarly output for best practices and hit paywalls or otherwise be unable to get to the required or helpful literature. If these sources were open to them, they would experience fewer challenges locating documents in full-text and learning from increased options in the peer reviewed literature of their domains (Fleming et al., 2021). Practitioners and policy members need access to best practices and the latest findings to benefit the areas of practice in which they participate (Roehrig et al., 2018). OA contributes to a bridge between theory and practice, a bridge that is often considered non-existent. In many disciplines individuals from the public could also benefit from opening access.

When university affiliated individuals come across barriers to access, they can reach out to libraries for assistance. One such service libraries offer is interlibrary loans. These services can be extremely helpful when libraries have connections with several other well-equipped libraries. Not every resource is available through these methods, however, and even when a resource is available, it can take anywhere from a few minutes to months to obtain. Delays and frustrations may cause newer researchers, or even seasoned researchers, to give up on a source that might be exactly what their research needs to solidify their claims. Because not all libraries have the same access to partner institutions, this useful mechanism is still not equalizing access for all.



When researchers face obstacles in obtaining a specific article or book, they may reach out to colleagues to inquire about access to the document they seek. Many times this is helpful, however at times researchers are forced to use methods that are not standard and may be frustrating and even cross ethical lines of sharing (Heller & Gaede, 2016). This is being done not with an intention to steal anything, but in an effort to gain access to research and engage in the scholarly conversation that researchers and scholars have every right to be a part of. Many copyrights allow for this type of one-to-one sharing, however this would require those seeking access to have the social connections that have access, which many may not have.

Heller and Gaede (2016) discussed many times when researchers in LMICs run into obstacles completing research projects based on access obstacles. One example could be a researcher or group of researchers who have received a ‘revise and resubmit’ on a manuscript but are then unable to access the resources to fill in the gaps identified by the reviewers. In a case like this, a study that is mostly complete may go unpublished. How frustrating it would be for these researchers to have invested countless hours and limited energy and still not successfully be able to produce a publishable manuscript due to their lack of access as a consumer. For educators making similar attempts to build curricula, they are putting forth effort to construct or enhance their curricula to better equip their students and are unable to offer all they wish to provide, not due to lack of effort or expertise, but due to lack of access.

Another example could be the attempt to complete systematic reviews or meta-analyses. How can researchers in developing countries without nearly unlimited access to literature, conduct these types of studies that demand the ability to obtain all identified studies on the topic of interest? The limited access as consumers is preventing them from fully participating as members of the academic community in which they belong. Research into this phenomenon may show that these types of studies are conducted only infrequently in developing countries and when they are conducted, the quality may be affected more by lack of access than effort or ability. This is yet another way that consumers with limited access are being excluded from becoming producers and fully engaging in scholarly conversations in their fields.

Heller and Gaede (2016) stated, “Access to information is vital to success in our information economy. Individuals or whole groups of people that are unable to access information through research databases experience a distinct disadvantage” (p. 5). Many of the obstacles discussed for consumers also affect producers as it is nearly impossible to produce scholarly literature, whether for traditional publishing or for OA, if those attempting to produce cannot gain access to the research needed to ground their own work. It is important to consider that limited access, which is directly affected by limited funding, causes a few select researchers to produce the majority of research (Fleming et al., 2021). This in turn causes an Ivory Tower phenomenon rather than research being produced by a variety of individuals within each global community. One example of this is in the field of education, where research from rural researchers and schools are often left out (Tipton et al., 2019). OA can help researchers from less well-known and less funded institutions, as well as unaffiliated practitioners or policy makers, become producers by allowing them to fully examine the findings and literature in their disciplines.

## **Producers**

The focus of this section is on the reasons producers of scholarly research choose or choose not to publish their work in OA. Keep in mind that moving from traditional publishing to OA publishing will not, in and of itself, equalize who is getting published or address the complex information access disparity is-

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sues. The gatekeepers of both types of publication need to recognize and stop the exclusion of academics from the periphery, a discussion that will be expanded in the section on publishers.

Several factors are at play when researchers consider where they will publish their articles. Many choose not to publish their works in OA due to the misconceptions discussed earlier and the financial burden of Gold OA. Many are concerned about OA being predatory in nature, or the work published in OA being used commercially. Concerns for faculty researchers also include the weight of a publication in OA for tenure and promotion. When discussing how faculty choose publishers, Arunachalem (2017) stated,

*(A)ll aspects of their professional career—tenure, research grants, election to fellowship of academies, invitations to conferences, getting bright students, reputation among colleagues, all of these and more—are intimately linked to the journals in which they publish and the impact factors of those journals. (p.15)*

As the misconceptions are being dispelled and as increasing value is being placed on OA dissemination, authors are increasingly choosing OA as a means of publication. Authors are discovering that OA can assist in getting their work released more quickly, as they are able to promote their work prior to the release dates of some of the publishers that have historically taken months and even years. This more rapid and widespread dissemination increases impact and visibility by allowing authors to promote their work on various platforms. This in turn increases the chances of gaining citations. Since researchers work in a “reputation economy” with citations being one of the best ways to build that reputation (Pinfield et al., 2020), this aspect of OA is attracting authors who are seeing through the challenges.

In addition to the aforementioned reasons for choosing OA for publication, there is the moral reasons of making scholarly outputs open to all, as is being posited throughout this chapter. As authors are encouraged to use OA to disseminate their work and as more authors make that choice, it will become more commonplace, and the publishing norms will change. Raju et al., (2020) make a call for supportive systems to be in place throughout the continent of Africa to create a network of publishing peer reviewed studies through libraries. This could enhance or expand what is already being done with some repositories and encourage engagement with OA publishing. Raju et al. (2020) encourage “advantaged” institutions to provide the human element for editing and peer-review, as well as the platforms necessary to make this possible. They label this effort “library as publisher” and state that this could create a “seismic shift in thinking around the benefits for the production and dissemination of research” (p.60). Several South African university libraries are actively engaged in these activities, offering services of traditional publishers but without charging APCs (Raju et al., 2020). As the challenges of APCs are addressed for authors globally, regardless of their geographical and financial advantages or disadvantages, OA may become the optimal choice for authors.

## **Other Stakeholders When Considering Open Access**

Since a large majority of research is produced from university affiliated scholars, it is critical to examine the role university administrators and policy makers can play in the promotion of OA. Research funders are another important group of stakeholders to consider as they fund research both for university researchers as well as independent researchers and those researching through organizations loosely or even unaffiliated with institutions of higher education. Finally, when examining stakeholders, the publishers

of scholarly literature must be considered, as they are directly affected by and directly influencing the movement from traditional publishing models to OA models.

## University Administration and Policy Makers

Universities and colleges wield much weight in promoting dissemination of scholarly works through OA. Heller and Gaede (2016) posit that if an institution wants to be known as promoting social justice, OA is one avenue, and for those that take this route, faculty can be encouraged to be involved that would otherwise not have considered OA. McKiernan (2017) posits that in order to live out their mission statements, which include sharing information, many institutions should place a higher value on OA and making the scholarly outputs of their scholars available to the general public.

Institutional policy can encourage publishing in OA as a viable method to move toward tenure. Universities and colleges can appoint committees to assess the current policies in place for retention, promotion, and tenure (RPT) and to examine the current outputs of faculty that are or are not using OA methods. Vandagriff (2020) conducted one such study and found that, whereas peer-reviewed publications were emphasized by universities and colleges for RPT, OA was not mentioned in documentation, and neither were predatory journals. Senior researchers or tenured-track faculty could be encouraged to use their positions to publish in OA and to push for changes in their universities' tenure and promotion policies for less senior scholars (Roehrig et al., 2018). Vandagriff (2020) posited that more clarification about RPT requirements regarding types of publishing might make OA less mysterious and result in promoting greater educator and researcher involvement.

Another powerful way that institutional administrators can promote the work being done by their scholars and promote Green OA publishing, is by encouraging the use of institutional repositories both as a place-to-store completed scholarly works online and as a place to seek out others' works. University policy could require all work counted toward tenure and promotion be shared in their institutional repositories (Roehrig et al., 2018). According to Roehrig et al. (2018) many institutions have mandates or suggestions on using repositories, however, these are not enforced and are often not followed. Unfortunately, authors are often plagued with apathy and fear when it comes to exploring publishing options outside of traditional avenues. Roehrig et al. (2018) provided data from interviewees being asked about OA repository participation, "It's not my job. I don't have time. I won't get rewarded. I don't want to rock the boat."

Higher education scholars can be encouraged by administration, faculty senates, and policy makers to consider the moral reasoning for OA publishing, in addition to the personal career benefits (Roehrig et al., 2018). To further promote the tenets of social justice, institutions can evaluate repositories for altruistic impact. This will align with the missions and visions of many and will also align with the Budapest Open Access Initiative Declaration (2002) (Heller & Gaede, 2016). One way this can be done is to examine whether the users of the content include researchers from LMICs. Heller and Gaede (2016) found that repositories of institutions in the American Midwest which emphasized social justice or similar goals in their mission statements all reported users from LMICs.

Institutions could also promote the use and production of OA by offering small grants to faculty and students that utilize and or produce OA resources. For those building curricula, they could be encouraged to utilize OA and Open Educational Resources (OER) as key components as opposed to high-cost textbooks. This would benefit students who struggle to finance textbook purchases and would promote the use and creation of open source materials.

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Virtually all U.S. institutions have received Higher Education Emergency Relief Fund (HEERF) funds, and some institutions have already invested these COVID relief funds in OER programs in ways that support their efforts to leverage OER as a strategy to ensure all students have access to course materials. SPARC (2022) has published a new blog post highlighting how campuses in the US are using COVID relief funds for OER activities that reduce textbook costs, expand access to materials, and support remote learning, among other impactful ways to build long-term capacity for meeting basic student needs (Steen, 2022).

Institutional librarians are positioned to be highly involved in the move to encourage OA. Due to rising subscription costs for many publications, “the article paywall problem has increasingly come to affect even researchers at affluent institutions in the developed world” (Roehrig et al., 2018, p. 465) and since institutional libraries have finite budgets, creative ways to meet needs without additional costs are continually being sought. Librarians make choices about where to invest funds, which means high-cost subscriptions are not often started or maintained (Ola, 2018). Library funds freed up by the movement to OA can be invested in additional materials to help extend the disciplines that libraries can include in their collections. Their extensive work with subscriptions equips them with the expertise in copyright issues, such as those that feel mysterious to authors. This makes them a great point of contact for inquiries from scholars interested in publishing in OA. When it comes to university scholars trying to negotiate publishing contracts for OA, librarians may work in the role of liaisons between authors and publishers and leverage their understanding as well as their financial dealings with publication administrations (Roehrig et al., 2018).

### **Funders**

Research funders also hold influence as to where and how recipients of their funding can publish findings. Funders are increasingly implementing mandates that recipients must disseminate their findings through OA. Examples of mandates that encourage and even require using OA have come from the National Institute of Health, the U.S. Department of Education, and the National Science Foundation, in the U.S. Whereas these policies, as well as those established in the United Kingdom and European Union policies are helping with OA engagement (Roehrig et al., 2018), even when mandates are established, researchers are not always following them because they are not generally enforced (Arunachalam, 2017). Those funders that already have mandates could implement ways to monitor and enforce their requirements (Roehrig et al., 2018), and other funders could be encouraged to establish and initiate similar policies. Funders and institutions could negotiate with publishers so that articles are posted in repositories when embargos end, without authors being responsible to do this on their own (Roehrig et al., 2018). Cutting out this step could increase the use of institutional repositories without additional work for the authors.

### **Publishers**

Publishers are a unique set of stakeholders in this discussion. Commercial publishers, those trying to make a substantial profit, may not feel a moral obligation as do many non-commercial publishers such as university presses and scholarly societies. Commercial publishers have much to gain financially from restricting access to publications unless subscription fees or APCs have been paid. With OA publishing there may not be subscription fees to contend with, however the APCs may be exorbitant and therefore challenging or even out of reach for authors from LMICs to fund. In essence, the restrictions of access

may be lifting, but the restrictions on engagement in scholarly communication through publishing still tend to be more exclusionary to the scholars from LMIC.

When a publication is only available through a paid subscription, it limits who can consume or use that resource and when a publication requires a fee to be published, it limits who can share and promote their research. Either way, the traditional publishing model and the Gold OA publishing model maintain disparities as to who can participate in scholarly communication when these financial barriers are in place. Several publishers associated with large organizations, such as those working with American Education Research Association (AERA) make journals available to members through membership fees. However, this still limits access to those that can afford annual membership.

Many of the changes that would need to occur from the publishing standpoint may not come from within the publishing community, but rather may come from outside of it through the changes in mindset toward OA, the changes in policies about publishing, and the general movement toward opening of scholarly literature. Many argue that traditional publishing is run by academic elites at the exclusion of scholars that find themselves on the periphery of the academic landscape and that academia cannot claim to be a meritocracy given this method of sharing knowledge (Demeter, 2020). Others posit that traditional publishing hurts the advancement of research, and proponents of OA argue that publishing needs to move from the for-profit paradigm to one that shares openly for the good of society (Buranyi, 2017; Chattopadhyay et al., 2017). As was discussed earlier, there could also be a move to publish by different means while still maintaining quality, by using “libraries as publishers” (Raju et al., 2020).

## **OA as an Equalizer and Enhancer in Higher Education**

*“Education...beyond all other devices of human origin, is a great equalizer of conditions of men --the balance wheel of the social machinery...It does better than to disarm the poor of their hostility toward the rich; it prevents being poor.” — Horace Mann*

The Internet has changed how written scholarly communication is published and disseminated. Therefore, most peer-reviewed literature is housed electronically and can be accessed through the Internet from anywhere in the world. Most academics no longer search through stacks in libraries to find articles, but rather use Google Scholar or digital academic libraries. Unfortunately, even though a large portion of peer-reviewed or scholarly literature is online, it is still not open and readable, but rather requires one to be affiliated with a subscribing institution or requires a fee to obtain full access.

Given the changes in information science and knowledge management, what would Horace Mann say about opening access to scholarly communication? Would he argue that access to scholarly information is part of equitable access to education, especially in tertiary endeavors? Would he say that OA is a ‘great equalizer’ for academics around the world? In this chapter the proponents of OA are highlighted to show that it could be an achievable equalizer to support teaching and scaffolding of research practice in most if not all disciplines of higher education.

## **Enhancing Global Equity**

The rapid expansion of higher education in developing countries, such as those found in sub-Saharan Africa, has come with innumerable challenges. New and young institutions face obstacles creating in-

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frastructure and building human capacity. Many are working hard to expand without the benefit of full access to available research outputs. For training the next generation of researchers, the right tools are needed, and tools such as OA could significantly assist in these endeavors. By increasing free access to scholarly works, the argument could be made that this will enhance and expand the human capacity of institutions through the ability to expand the curricula, research activities, and research outputs of affiliated scholars.

Although OA will certainly not be a panacea for equity, if all researchers around the globe had unrestricted access to peer-reviewed research, the playing field would become more equitable. Many would argue that since much of the research conducted by academics is done so with public funding, there is a moral argument that the publications coming from such research should be open for public use (Pinfield et al., 2020). Making regional, national, and international research available could support researchers and educators around the globe, particularly in developing regions.

As was established early on in this chapter, OA is beneficial in all parts of the world. It may, however, be most advantageous for researchers and educators in LMICs. Unfortunately, much of the research examining perspectives on OA are coming out of highly developed or high-income countries with few studies having been conducted examining the perspectives of individuals in LMICs. In one notable exception, Nobes and Harris (2019) examined the perspectives of 507 self-selected researchers from LMICs in Africa, Asia, and Latin America. Their findings indicate that, from the perspectives of these researchers, many still have trouble accessing the research they need to complete a thorough review of what has and has not been done in their areas of interest. Only 8.1 percent expressed that they were able to access all the research they felt they needed (Nobes & Harris, 2019).

They also found a lack of awareness and utilization of institutional repositories (Nobes & Harris, 2019). This may also be true of researchers in high income countries; however, this lack of awareness does not carry the same weight for individuals who have the ability to access a high volume of research through their online digital libraries. It is still not clear if being unable to get to the necessary studies is the true challenge for those in LMICs, or if lack of awareness about OA, repositories, etc, is the larger obstacle. More research is needed about awareness of available resources.

When it came to choosing a journal for publication, many participants in the Nobes and Harris (2019) study indicated that Impact Factor and the journal's reputation are still more important than making their research universally available through OA. Some disciplines also specifically recommended publications in specific journals in order to be considered for tenure and/or promotions (Wical & Kocken, 2017). As was discussed in the section on social justice and stakeholders, much can be done to change the views held about OA for all stakeholders including publishers of high ranking or top-tiered journals.

## **Equalizing/Enhancing Curricula Development**

In a variety of disciplines, a big portion of tertiary education is centered around training students to dive directly into empirical studies using peer-reviewed literature with the goal of guiding and teaching students to conduct research of their own. Teaching these skills is challenging under ideal conditions but nearly impossible if access to necessary scholarly literature is limited or blocked. Educators and students need the ability to locate, read, and share example studies in their specific fields. Teaching research without access to high quality examples of research designs and methodologies is an avoidable handicap. Not only that, but if scholars are interested in a narrow field or an emerging field it could be next to impossible for the library funding to be used to order and supply items in all cases.

Even if the libraries are well stocked and OA is available, effective research may require a particular research study to ground or support a direction of research. That particular study could be locked behind a paywall. No amount of other research will be helpful if the one study needed is not available. One study or group of studies does not necessarily replace the exact one being sought. The more research that is made available through OA, the less these occurrences will be experienced by researchers, wherever those researchers are in the world.

## **Increasing Scholarly Outputs**

As stated earlier in this chapter, institutions and funders have a great amount of influence on supporting or thwarting efforts to increase OA. If OA publishing is encouraged by funders and institutions, more researchers would be willing to pursue this avenue of publication. It is possible that publishing in OA could have the effect of encouraging more collaborative work such as interdisciplinary, international, and collaborative projects (Fleming et al., 2021), which in turn would increase research outputs. In some disciplines the circle of researchers producing publications may become more cohesive and less competitive if the mindsets are to engage one another through research as opposed to compete. This could directly and indirectly enhance the scholarly communication surrounding these areas of research.

Collaborations also have the potential to increase scholarly outputs from newer institutions and early career scholars. In particular, several researchers working together to make use of limited resources of time, money, and personnel, can share participation in large-scale, and possibly higher quality studies. By involving researchers from several institutions, it not only broadens who is working on the research and diversifies the perspectives, it also broadens the scope and expands the population being studied. Studies can be expanded from individual researchers or small teams to larger groups from a variety of settings. In cross-cultural research, this may assist researchers from developing countries or less well-known institutions to have their voices and experiences added to the conversations.

Group projects have additional benefits, such as a larger data set and more diverse data being collected in less time across different networks and geographical locations. Group projects also come with challenges, such as being consistent across sites with data collection, participants, and synthesizing the data. Challenges related to ethical reviews can also increase with researchers from different institutions and countries, however with the growth of collaborations, organizations such as SMART IRB are being created and utilized. If the goal of collaborative work is to produce OA research, the benefits could far outweigh the challenges. However, if collaborative work, particularly that involving researchers from LMIC, is not disseminated through OA channels, some of the researchers producing the manuscripts may not have access to the final product once they are published. Collaborative work published in OA allows for scientific reproducibility and all the other benefits of OA publishing.

Another area of increasing outputs would be to make datasets and code available through OA (Fleming et al., 2021). Opening access to datasets would allow for examining and replicating studies and could increase quality and confidence in results (Fleming et al., 2021). Open data expands who can establish and answer research questions by conducting data analysis, rather than the current situation which predominantly consists of researchers who have the finances to collect data and to fund projects. Open data could grant a voice to perspectives and viewpoints that might otherwise remain silent. For the researchers who share datasets, they could find increased visibility for their efforts and their data could be more useful and impactful. All of the challenging work in which they invested to create and make datasets usable may benefit the community at a greater magnitude (Fleming et al., 2021).

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A diverse set of stakeholders (representing academia, industry, funding agencies, and scholarly publishers) jointly endorsed a concise and measurable set of principles commonly referred to as FAIR (findable, *accessible*, interoperable, and reusable) data principles and FATE (fairness, accountability, transparency, and ethics) principles. The FAIR Principles put specific emphasis on enhancing the ability of machines to automatically find and use the data, in addition to supporting its reuse by individuals (Wilkinson et al, 2016).

In addition to the products of research studies, creating Open Education Resources (OER) has the potential to greatly expand curricular options. OER has not been the focus of this chapter although warrants a great deal of attention and future studies. OER has the potential of expanding the options educators have when building curricula (Ford & Alemneh, 2020) and bringing together colleagues both within and between institutions. OER has the potential to close the gap between students with the financial means to purchase the most updated textbooks and support materials and those that have to use what they can beg or borrow (Valentsianos, 2020). Creating and using OER as texts and support material for curricula design, especially in the field of research education could reduce the time and finances used in searching for the perfect textbooks and resources. Ford and Alemneh (2021) highlighted the benefits of OER, and among other points, they noted that OER has the potential to be updated rapidly and adapted for use by instructors for the specific needs of students within their own context.

In sum, open access to peer-reviewed literature, data, code, and open educational resources has the potential to make designing research curricula and practicing research at the tertiary level much more equitable, no matter where an academic finds themselves located in the world. With increased OA, one can access the necessary text, documents, datasets, etc. to teach a variety of methodologies across unlimited disciplines and conduct high quality research.

## **FUTURE RESEARCH DIRECTIONS**

As has been articulated throughout this chapter, authors are increasingly choosing OA dissemination which is in turn making access to scholarly literature more equitable. Future research could focus on dispelling the myths and finding solutions to challenges surrounding OA. Research could also be conducted that examines the benefits to individuals, institutions, and society in general as this will help to promote OA as a viable choice for publication, which would further increase engagement. Additional areas that research could investigate are OA resource consumers and producers, meaning, is OA dissemination reaching researchers, educators, and practitioners in LMICs and are their voices and participation being included in studies. Epistemic justice was only briefly mentioned in this chapter as one form of social justice; however, future research could also be conducted that would further examine OA publishing through this lens.

## **CONCLUSION**

OA is a social justice issue affecting researchers around the globe. Often researchers find themselves unable to access the scholarly literature needed to build the best possible curriculum or to expand knowledge on a research topic. Researchers in both LMICs as well as high income countries are affected by



this phenomenon, however, those in LMICs are more likely to hit access roadblocks that they are unable to overcome and less likely to have alternative workarounds available to gain access.

COVID-19 interrupted global education, however it also highlighted the critical importance of adopting OA as a method to share scientific output openly and more quickly so as to resolve global issues, such as a pandemic. This increased openness to research outputs proved a good example with vaccines being produced quicker than was historically the case. Of course, there were challenges, but the benefits of OA can be felt at the personal, professional, and societal levels. In the current data-intensive eScience ecosystem, beyond improving access to scholarly and scientific research for all stakeholders, OA supports implementation of guiding principles, including the FAIR (findable, accessible, interoperable, and reusable) and FATE (fairness, accountability, transparency, and ethics) principles.

The growth in OA is helping to reestablish who can access scholarly outputs. OA is an equalizer that can be promoted and embraced as the paradigms around knowledge management and scholarly publishing continue to change. OA is not the only equalizer necessary to consider, as there are several other factors contributing to academic inequality globally, both those geopolitical and societal. However, if access to scholarly outputs were less limited, some of the other inequities might also experience relief.

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## KEY TERMS AND DEFINITIONS

**Article Processing Charge (APC):** A publisher's fee paid by an author (or their lab or grant) that is used to support the process of publishing a journal article. The result is usually gold (immediate) open access to the research output.

**Copyright:** A legal right created by the law of a country that grants the creator of an original work exclusive rights for its use and distribution.

**Copyright Transfer Agreement:** A legal document containing provisions for the conveyance of full or partial copyright from the rights owner to another party.

**Creative Commons (CC):** A nonprofit organization that offers freely available copyright licenses that provide a legal framework for giving users the ability to freely view, download and distribute content. Creative Commons (CC) licenses are not an alternative to copyright and work alongside copyright to reserve certain rights for themselves and those to whom they grant permission. Authors might be required or advised by their funders to choose particular CC licenses, such as CC-BY, when publishing their research as Gold OA.

**Embargo:** Restriction of access to the content of a copy of a work for a defined period of time.

**Epistemic Injustice:** When individuals or groups experience prejudice as knowers. This is experienced through the inability to access knowledge through scholarly works and the inability to produce and disseminate new knowledge.

**Gold OA:** A publishing model in which the official publication of research article is freely and immediately available for all to read and licensed for reuse by others. Typically, gold open access publishing models require an article processing charge (APC) paid to the publisher to make the item freely available to read through the publisher website. The model of not charging APCs at all (with publication supported through some other means, like the model in which this book is published) is sometimes called *platinum OA* or *diamond OA*.

**Green Open Access:** A version of a journal article or other work of scholarship which is made available through open access in a location other than the official publication of record, such as an institutional repository, a subject or disciplinary repository, or the author's personal website or other web-accessible digital archive, that is compliant with the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). Publishers usually stipulate the version of manuscript that can be self-archived and the length of embargo period following publication before the paper is made open access.

**Institutional Repository:** A repository affiliated with a specific institution. In addition to preprints and published works, most allow members of the institution's community to submit other forms of scholarship, such as presentations, working papers, reports, etc. (e.g., UNT's institutional repository: <https://library.unt.edu/scholarly-works/>).

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**Metadata:** Data that describes other data. For items in open access repositories, this usually consists of a full bibliographic information that facilitate access and use (e.g., title, creators, abstract, keywords and similar information).

**Open Access License:** The license outlines what a person may do with a third-party copyright work. An example of an open license is a Creative Commons (CC) license, which combines 4 basic elements: the attribution, the derivatives, the commercial use, and the ‘share-alike’ principle.

**Open Educational Resources (OER):** Teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.

**Post-Print:** A manuscript draft after it has been peer reviewed, often with the publisher’s design and page numbers.

**Pre-Print:** Preliminary version of an article that has not undergone peer review but that may be shared for comment.

**Publishing Agreement:** A legal contract between publisher and author(s) to publish written material by the author(s).

**Self-Archiving:** The process of depositing your research output to a repository along with bibliographic metadata.

**Subject Repository (Also Known as Discipline Repository):** A digital collection that archives and makes available works of scholarship in particular fields.