

Opportunities and Challenges of Open Educational Resources for the Learning Communities

Munir Moosa Sadruddin¹

Abstract

This paper offers overarching insights into the benefits and drawbacks of Open Educational Resources (OER) for learning communities. A semi-systematic literature review (SSLR) is used as a research approach. Data is gathered from research articles, books, and other published work, and analyzed using thematic analysis. OER and Open Educational Practices (OEP) have the potential to support sustainable educational practices, but these have not yet reached their capacities to benefit wider learning communities. It is not yet known if the global academia is prepared towards embracing OEP due to limited pieces of evidence. OE policies have been successfully adopted by a few countries, but others have failed to accept open policies due to a lack of a supportive environment. MOOCs have benefitted the academic community in many ways, but openness, equality, lifelong learning, and liberation remain major challenges. A vast number of open repositories offer free resources, but learners and teachers have been unsuccessful to develop quality learning resources due to a lack of capacity to adapt and re-use OER. Documentary evidence confirms the use of digital licenses by global learning communities, but lack of awareness, incompatibility of Creative Commons (CC) with the traditional copyright laws, and lack of uniform global policy framework have deterred OEP. The strategic implementation model of OER can potentially accelerate communities of practices in academia through capacity building for the recreation of knowledge.

Keywords: Open Education; Open Educational Resources; Open Educational Practices; digital literacy; ownership; Creative Commons.

¹ Assistant Professor of Education, Sindh Madressatul Islam University. Email: mmsadruddin@smiu.edu.pk

Introduction

Open education (OE) is part of a larger movement of open learning. According to Peters and Deimann (2013), the concept of OE emerged during the late Middle Ages. In the 1600s, the invention of the printing press; the launch of coffee houses with access to free reading resources in the 17th century; the establishment of self-education societies in the 18th century; and the emergence of miners' library in the late 19th century, have succeeded the concept of open education. The postwar era of the 1960s and 1970s demanded a new education model to eliminate educational accessibility barriers. Initially, online and distance education through the development of open education universities in the 1970s supported open learning. With the wider diffusion of digital applications and digital literacy, innovative and integrative ideas emerged.

One of the accelerating educational movements of the 21st century is the development and adoption of OER. Organisation for Economic Co-operation and Development defines it as the accumulation of “digital assets that can be adjusted and which provide benefits without restricting the possibilities for others to enjoy them” (2007, p.10). Whereas, the United Nations Educational, Scientific and Cultural Organization describes it as “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” (UNESCO, 2022). In my view, it is an emblem of empowerment that offers open access to resources in varied languages and formats. It encourages the recreation of knowledge via collaboration and networking in diverse settings- subject to socio-cultural and political conditions, availability of technology, accessibility to existing OER, awareness about using open licensures, and creating OER. The primary goal of OER is the removal of financial barriers, and to ensure accessibility to quality educational resources at low or no cost.

OER has introduced new degrees of spatial freedom and has enabled new channels of collaboration, simultaneously, have amplified internal threats. It does not always support equity practices. Hayden et al. (2015) criticized, “Openness of access is coupled with a cultural closeness, and the democratization of media may inadvertently exacerbate the distances between privilege and disadvantage” (p.243).

Concerning the potentials, the following questions arise: Are OER freely accessible to ALL? Does it carry the potential to practice open collaboration? Are people willing to take ownership of learning in an open environment? Is OER a medium for empowering women and persons with disabilities? What are the barriers to realizing the potential of OER to benefit wider communities?

OER has not yet been practiced in a larger context for knowledge-building or sharing purposes due to the boundary between traditional and open education approaches, mounting digital inequalities, socio-economic, political, and cultural barriers. Also, lack of awareness and policy practices are believed to have obstructed OE practices. Previous studies did not present collective views on the benefits and drawbacks of OER. This paper explores the benefits and downsides of OER to confirm if it has the prospect to catalyze educational equity and vice versa.

Review Literature

The global literacy rate currently stands at 87% for people ages 15 and above (UNESCO Institute for Statistics, 2022). In the last few decades, there has been a steady growth in educational accessibility parallel with a growing global learning poverty in low and middle-income countries. The World Bank and the UNESCO Institute for Statistics (2022) underline, “The very high level of global Learning Poverty is a signal that many education systems, despite their progress in the

recent decades at improving access to schools, have not delivered learning” (p.5). The 2022 Gender Report indicates a huge gender disparity in education, particularly in Asia and Sub-Saharan Africa, highlighting the significance of facilitating education through innovative and integrative routes (Global Education Monitoring Report Team, 2022).

The term OER was coined in 2002. It emerged as a promising tool for enhancing knowledge through free and open content. Based on the 2030 Agenda for Sustainable Development, a good number of policy initiatives have taken place. For example, in 2019, at its 40th session, UNESCO adopted OER Recommendation, and all 193 member states reaffirmed to support equitable and inclusive education via mainstreaming OER in their educational systems (UNESCO, 2019a).

Large-scale OER projects like OpenLearn and ISKME are carried out by educational institutions and organizations and funded through various sources like William and Flora Hewlett Foundation, whereas, small OER are produced by individuals, and published through a range of open platforms. Recent approaches to OE include open educational platforms such as blogs, online discussion forums, wikis, cloud-based data storage, podcasting, screencasting, and videocasting; digital pedagogies like personal learning networks, incidental learning, connectivism, and rhizomatic approaches; open research platforms like Zenodo; opensource book platforms like MERLOT, Pressbooks, and Wikibooks; open courseware, and open-source software. With time, more supportive technologies have emerged like virtual meetings, real-time collaborative editing, virtual whiteboards, stream educational games, content-based conversations, and digital peer feedback.

The diffusion of innovations theory, transformative learning theory, and Munir’s taxonomy of digital learning offer a useful framework to understand the adoption of OER. Diffusion of innovations theory describes how new ideas spread through communities, societies, and cultures, and how an individual gain adoption of innovative practices over time (Rogers, 2003). Whereas, transformative learning theory focuses on individual performance and experience via autonomy and self-motivation. It offers a useful framework that considers the shift in beliefs and values- from unknown to known, through critical reflections (Merizow & Taylor, 2011). According to Munir's Digital Taxonomy, “We enter the world of digital learning as a visitor but end up becoming digital residents, subject to passing through all these phases. Digital skills, digital literacy, ownership, and conscious networking are crucial elements to accelerating digital learning” (Sadruddin, 2019). From the OER perspective, a combination of these elements and concepts can lead to open educational practices.

OER is believed to have the potential towards attaining SDG 4-quality education. It has helped transformed educational practices in some countries, including member states of the European Union. It has benefitted females belonging to some marginalized communities. Some Asian, African, and European countries have taken OER policy initiatives via projects and programs with public funding. OERAfrica is one of the best examples of OER initiatives in Africa. While it is interesting to witness the growing power of OER, its contribution to reducing the educational gaps, particularly among socially vulnerable communities is undercover. To transform educational practices, increase accessibility, and propose policy intervention, it is crucial to discover the ground realities by exploring the potential and drawbacks of OER on a wider scale. The purpose of this study was to highlight the benefits of OER for academia and to explore the barriers to realizing the potential of OER

Methodology

SSLR approach has been adopted to look at how research under the study has progressed over time (Snyder, 2019; Wong et al., 2013). It is amalgamated with an argumentative literature review, where applicable. Using a theory-driven/deductive approach, I selected predetermined words in a broad sense, by building on the relevance of the topic and the research question. Strengths and drawbacks of OER are mainly covered in the meta-analysis review through the lens of (1) collaboration (2) accessibility of resources (3) empowering women and persons with disabilities (4) SDG (5) policies and practices. Within Trends and Development, the following themes are studied: Massive Open Online Courses (MOOCs), Open Repositories, Open Textbooks, and Digital License. The literature search was then conducted using search strings and a Boolean search operator (Table 1).

Table 01

Keywords

Keywords and Categories	Boolean Search Operator	Content Searched	Search String
Open Educational Resources Strengths Drawbacks Massive Open Online Courses (MOOCs) Open Repositories Open Textbooks Digital License Sustainable Development Goals Trends Development Policies Practices	AND	Title or Keywords or Abstract	Open Educational Resources AND Collaboration AND Strengths Open Educational Resources AND Collaboration AND Drawbacks Open Educational Resources AND Accessibility AND Strengths Open Educational Resources AND Accessibility AND Weaknesses Open Educational Resources AND Women Empowerment Open Educational Resources AND Persons with Disabilities Open Educational Resources AND Sustainable Development Goals Open Educational Resources AND Policies AND Practices Open Educational Resources AND Open Educational Resources AND Digital Licensure Massive Open Online Courses (MOOCs) Open Educational Resources AND Open Repositories Open Educational Resources AND Open Textbooks

The literature was identified using repositories, databases, and platforms like Google Scholar, SSRN, Zenodo, Oasis, and Open University Digital Library. The language was limited to English. There was no limitation to source type for the search. I initially gathered 472 resources. To ensure that the concept of OER was cited in the literature, the titles, abstracts, and/or keywords in the documents were screened. It helped reduce the list to 85 articles by focusing on relevancy and excluding duplicates. Time boundaries were set to last fifteen years, and the literature search was conducted from January- December 2021. Data is analyzed using deductive thematic analysis.

Data Analysis

Collaboration. OER places learners' needs at the heart of teaching and learning processes. It has unlocked the potential of open collaboration [mostly on a bilateral basis] (UNESCO, 2019b). For example, OpenCourseWare Consortium is a collaborative platform of more than a hundred higher education institutions, that have created open educational content for wider learning communities. Similarly, OERCommons is a public digital library, where a good number of global educators have teamed up to create and publish OER content. Some teachers and institutions have participated in communities of practices and used/adapted OER to bridge educational gaps recent pandemic (For example, Allen & Katz, 2020; Chen, 2020; Huang et al., 2020; Mishra et al., 2020; Reimers et al., 2020; UNESCO, 2020a; 2020b; Zhang et al., 2020). However, not all global institutions, learners, and teachers have contributed to OER via open collaboration. Farrow et al. (2015) narrated, “OERs are still mainly used by well-educated learners residing in the global north, and most OERs are offered in English”. Many countries are yet to achieve basic literacy. In addition, lack of awareness about OER, lack of availability of learning technologies in many countries, and lack of digital literacy has deterred the realization of open collaboration. One of the reports underlined, “One of the major inhibitors is the current lack of capacities among the various stakeholders to effectively utilise existing technologies to adapt and re-use OER. This in turn has created a community of passive OER consumers who are not contributing to the expansion of the movement” (Abeywardena, 2012, p.3). Overall, evidence regarding the collegial development of open learning materials is inadequate.

Accessibility of Resources. OER offers open access to learning and teaching resources, but not for all. Creative Commons (2019) claims that about 1.6 billion OER on 9 million websites are published across the world. A good number of platforms offer thousands of accessible open educational content and courses. For example, OASIS- COL's Open Access Repository, and OpenLearn- a platform of the Open University UK offers free resources and courses. Similarly, the Massachusetts Institute of Technology (MIT) has published course materials as OER for enhancing learners' knowledge at no cost. However, it is unknown, how many people are informed about the open platforms and have benefitted from OER.

OER has opened up new avenues of accessibility by translating educational-based resources into multiple languages. Although most of the OER is written in English, a growing number of small projects in other languages have extended the territory of open resources. But the unavailability of language and culturally relevant resources continue to be the biggest barrier to adopting and creating OER (Beaven et al., 2013). One of the reports underlined the lack of a diverse cultural and language landscape in OER (Bradley & Vigmo, 2014). Another study highlights the cost as a barrier to translating OER into local languages (Commonwealth of Learning, 2017). My personal experience suggests that most of the OER are not built upon the needs and contexts of learners from varied backgrounds, but rather designed, keeping educated people in mind. It is still not available in many national, regional, and minority languages. Also, there is no single platform, where all the translated OERs are made available. Further, some open resources are outdated, limited for subject areas like social sciences, incur a cost, and lack interaction, besides institutional and technological barriers (Thanuskodi, 2020). A survey from global librarians confirms the lack of OER accessibility mainly due to a lack of adequate funding and a shortage of experts (Schultz & Azadbakht, 2021). Availability of printed OER is a preferable option for those with no or limited access to technology, but printing cost and the profit motive remain barriers to wider accessibility.

Empowering Women and Persons with Disabilities. Perryman and De los Arcos (2016) consider OER as a potential way of empowering women, who are offered the opportunity of using and adapting OER, despite the significant barriers to online participation in Asian and African countries. It has motivated marginalized women to participate in communities of practice and has provided opportunities to connect with peers in their country and across the world. For example, OEP has enhanced women's access to higher education in Tanzania (Ruhwanya, 2013); boosted the scope of learning among females in Bangladesh (Billah, 2013), and has benefitted independent learners and those registered for distance education in sub-Saharan Africa (Wright & Reju, 2012). Pieces of evidence do not confirm OER as a means of women empowerment on a wider scale. Millions of women still can't read and write and are often discriminated against due to patriarchy. They also lack access to technology. Unless educational challenges are resolved at the ground level, women's empowerment via OER cannot be broadened.

OER has accelerated innovation in open education, but not necessarily for disabled people. From an equity point of view, OER offer limited accessibility to persons with disabilities (Brahim et al., 2017; Moreno et al., 2018; Zhang et al., 2020). Open resources in inclusive formats are hardly available. Moon and Park (2021) underlined, "Learners with disabilities are likely to experience challenges in interacting with OER due to their modality constraints (p.314)". Navarrete and Luján-Mora (2018) gathered the experience of users with disabilities on four OER websites and highlighted issues related to web accessibility and usability. Thus, there is a long journey in making OER accessible for persons with disabilities.

OER and SDG. OER is believed to have the potential of achieving SDG number 4- quality education. In the presentation, Green (2017) voiced a connection between SDG 4 and OER that can boost open pedagogy, open collaboration, and form a positive connection between governments and educational institutions. For example, The Transformation through Innovation in Distance Education (TIDE) project created an alliance between the UK and Myanmar universities and improved the delivery of quality higher education learning using OER (Open University, 2021). In the same way, the Commonwealth of Learning established an alliance with six countries and developed course materials in print and online formats as OER (Commonwealth of Learning, 2015).

UNESCO's mandate in OER comprises quality education, gender equality, and partnerships for the goals. In addition to these, OER has the potential to achieve mental well-being, support peace, social justice, and strong institutions, address environmental issues, and reduce inequality. It can further expand higher education accessibility, enhance the institutional image, foster connections, and promote lifelong learning (Berti, 2018; Rory, 2017; Stevenson, 2021). However, evidence from the field is rare to validate these claims. In my viewpoint, the relation of SDG number 4- quality education, in particular with OER is overwhelming, unrealistic, and erroneous folly. For example, countless children and adults remain illiterate; learning resources are not freely available to all; gender insensitivity in education is budding with time; educational technology is not accessible to all. I argue, when traditional education is not yet accessible to many, taking the OER route remains a hasty concept that can reinforce inequalities.

Looking at OER from Fraser's tripartite theory of social justice lens, Hodgkinson-Williams and Trotter highlight, "It offers the broadest transformative potential... [but] unless the economic, cultural and political dimensions of social justice are adequately addressed, amelioratively in the

short term and transformatively in the longer term, the value proposition of OER, and their underlying OEP, will most likely not be fulfilled [in the third world countries]" (2018, p.220).

Policies and Practices. One of the recent progressions in OER is the adoption of open standards policies by different institutions. For example, UNESCO and Commonwealth of Learning (2019) have delivered guidelines on developing OER policies. Some policy-related activities have also been carried out by institutions like the European Commission and OECD. Similarly, a project like the 'Open Education Policy Hub' has fostered collaborative policymaking across the globe. In OER Dynamic Coalition Webinar (UNESCO, 2021), experts shared a few successful experiences of OER policies from Africa, Asia, and Europe. It was also emphasized to focus on OER capacity development before taking up policy development.

A few countries have supported open education policies to build global learning networks. Some Asian, African, and European countries have taken OER policy initiatives via individuals and specific projects or programmes with public funding (Commonwealth of Learning, 2012). One of the reports identified 18 OE policies for school education/higher education/adult education and highlighted Europe as a leader in promoting open education policy (Santos et al., 2017). France has introduced a specific education policy 'FUN MOOC' for higher education; Greece has prepared National Action Plan on Open Government, whereas Scotland has initiated the OEP policy for higher education. Similarly, the US and Canada have taken few policy initiatives to support OE (McKerlich et al., 2013). In Asia, China remains the first country to adopt OEP (Zhang et al., 2020). Developing countries like Brazil, the Kingdom of Bahrain, and Nigeria have established OER policies to support a knowledge-based economy and benefit marginalized people. Likewise, countries like Botswana, Cameroon, and Sri Lanka have taken a collaborative approach to develop OER policy (Abeywardena et al., 2018). But not all countries have adopted open policies, as operationalizing open standards remains a challenge (Kesan, 2019). The OER Global Report (2017; as cited in UNESCO & Commonwealth of Learning, 2019) highlighted, "There was some form of support for OER policies in 56 countries, while 61 other countries indicated that they had been contemplating policy development for OER but did not yet have a policy" (p.v). Hoosen and Butcher (2019) seconded, "Some countries, particularly in the developed world, have no national OER policies but have supportive environments and contexts with funding provided for OER initiatives" (p.10).

Miao et al. (2016) cited 15 case studies of OER practices including cases from Australia, Canada, Germany, India, Indonesia, Poland, and Russia. The major driving force to adopting OER is policy development at the national, institutional, and project levels, whereas resistances from publishers, policymakers, and teachers remain a common barrier to adopting OER policies. OER initiatives often lack financial and resource commitment. Besides, the clash between open licensing and traditional copyright law has conceivably hindered the adoption of OER policies (Corbett, 2011). Also, some countries value traditional education policies due to cultural sensitivities. Lane (2016) backed this, "While, in principle, open education in its various guises can help people benefit from learning who may not have otherwise had the opportunity, in practice, it may not be doing much more to emancipate people than closed education is doing. This is because prevailing social, cultural, and economic norms still place greater value on education arising through the existing physical, political, and legal infrastructures" (p. 46). Overall, there is a growing interest in academia and policymakers towards adapting OEP, but the sustainability of OEP is uncertain.

Trends and Developments

CC Licensure. The most topical development in OER is the framework that deals with the issues around intellectual property rights. CC is a digital copyright license system, that “promotes better identification, negotiation, and reutilization of content for creativity, education, and innovation” (Fitzgerald, 2007, p.5). The philosophy of CC licensure is underpinned by a shared understanding of knowledge to benefit society. It supports a broad range of creative work and stimulates consuming and contributing to the openly licensed resources in the developed and developing world (Bliss & Smith, 2017).

CC has been used by learning institutions to disseminate information beyond the university community. For example, educational projects like Open Courseware Lab and the Maricopa Learning Exchange at the University of North Carolina; Center for Open and Sustainable Learning at the Utah State University; Commonwealth of Learning; OER Commons; Connexion by Rice University, and OER Commons have produced CC-licensed resources, which have been reused by individuals and institutions in a variety of ways. Similarly, creative projects like Open Access Publishing in European Networks (OAPEN) and MUSE have delivered open-access resources, particularly scholarly open books to academia and professionals- all under CC licensure. However, a lack of awareness about different types of CC licenses is one of the barriers to its wider use. Bailey (2014) points out, “If Creative Commons is to be the standard-bearer for open access, it’s important to understand both what the organization is and what their licenses are”. Another challenge is the incompatibility of CC with the traditional copyright laws that are inherent to the system. Frankel highlights, “Each country has an independent copyright law. Consequently, an owner of copyright in one country will own a separate copyright in another country” (2015, p.275).

CC has increased the production of openly licensed remixed work, but there is no comprehensive open-access database for all disciplines. With time, a few projects emerged to curate open resources like <https://search.creativecommons.org/>, but due to a lack of awareness, open platforms remain under the carpet (Luo et al., 2020). Creative Commons (2021) explains, “CC does not provide legal services...CC makes no warranties regarding the information provided and disclaims liability for damages resulting from its use”. It is difficult to trace violations of CC licenses because of their weak validity, which increases the chances of stealing creative work. Through an audit system, Amiel and Soares (2016) analyzed five resources from each of the fifty selected repositories in Latin America for open-licensed educational content and found a "high level of incongruity that could lead to a limited impact in OER use and reuse".

It is believed that CC licensors are intrinsically motivated to share work without financial rewards. The pertinent questions are: are individuals and organizations enthusiastic to share work under CC? Hylan (n.d.) expressed, “Although many academics are willing to share their work, they are often hesitant as to how to do this without losing all their rights” (p.7). Corbett (2011) verified, “The flaws in the CC licenses are a symptom of a broader failure of the copyright system itself to engage with the community... community norms and expectations in relation to online works conflict with the legal environment provided by copyright law” (p.503). Mncube and Mthethwa (2022) highlighted the lack of awareness about the licenses underpinning its misuse, transactional purchases, and non-incentives, as potential ethical problems. All these elevate qualms regarding the participation of academics in creating and sharing CC-licensed resources.

MOOCS. MOOCs are rooted in the concepts of OE and OER. This movement was initiated for marketing purposes, followed by lifelong learning, and continuing professional development.

MOOCs are used for formal, non-formal, and self-directed learning purposes. It offers collaboration among institutions, both locally and globally. According to McAndrew and Farrow, “Users take advantage of the ability to follow their path by picking aspects from within structures or by using the content as the trigger for social learning around the content within informal learning groups” (2013, p.65).

Generally, it is believed that MOOCs have benefitted young people, and have also accelerated learning among adult learners and practitioners (Laurillard & Kennedy, 2017; Panda, 2021). During COVID-19, MOOCs platforms witnessed millions of new users (Ossiannilsson, 2021). It is however not known, how many people in actuality have used, produced, or benefitted from MOOCs.

MOOCs have also introduced flexible approaches to assessment. For example, self and peer e-assessment, open badges, and e-certificate (Pérez et al., 2020; Chiappe et al., 2016; UNESCO, 2020c). However, it may be detrimental for learners, who lack digital literacy and ownership and could potentially infuse academic dishonesty. Downes suggested that the focus of assessment should be on “measuring what learners contribute rather than what they collect” (2012, para.22).

Lambert (2020) conducted a systematic review to assess the contribution of MOOCs to learners' equity and social inclusion during 2014-2018. Findings endorsed more equitable learning opportunities for enrolled learners and community members. Contrary, some studies confirm goaded cases of academic malpractices (McGreal et al., 2013; Yuan & Powell, 2014), “high dropout rates...and risk de-skilling the professoriate” (Siemens, 2013, p.9). In the other case, openness remains the biggest challenge, as closed resources within some hosting platforms have diminished the potential for reusing educational resources (Ruipérez-Valiente et al., 2020). Read and Barcena (2019) criticized that most MOOCs are generic, lack inclusiveness, do not fit diverse cultural contexts, and lack facilitating societal change. Bates (2019) criticized, “MIT’s OpenCourseware will radically change learning in Africa and other developing countries is another example of the arrogance of assuming you can just take content from one country and dump it into another, like giving away free coal. Content needs not only to be contextualized but also adapted for independent or distance learning”.

A few organizations have launched MOOCs to market full-fledged courses with high tuition fees, which has barred many learners to experience a culture of open education. Stracke et al. (2019) argued, “On the one hand, openness means open access (no requirement to sign up, no admission requirements, no fee, etc.) but some courses called ‘MOOCs’ are not freely available and so it was argued they should not be labeled open...Disagreement in the MOOC community about the meaning of “open” deepened with the development of MOOC-based business models” (p.335). Secondly, certification, credit transfer, and accreditation practices derived from MOOCs struggle for global recognition. Thirdly, learners are in chase of quantifiable achievements without learning. Thus, lifelong learning, equality, and liberation remain major challenges to MOOCs.

Open Repositories. Another trend in OER is the development of open repositories- dataset repositories, cultural heritage repositories, research repositories, and government repositories. Dspace, OpenDOAR, and Social Sciences Research Network are examples of some common digital repositories. Open repositories allow learners, practitioners, and researchers to access multidisciplinary resources via digital platforms. The United States is believed to have the largest number of repositories followed by the UK and Germany. In Asia, Japan is predominant with the highest number of open-access repositories, followed by Indonesia and India. Repositories are largely sponsored by governments, funding bodies, or institutions. For example, OpenStax CNX-

a project of Rice University, is a global repository of educational content provided by volunteers. Some institutions have self-archived their faculty members' and students' work for visibility and wider research impact. Whereas, a few institutions, for example, Koc University Turkey, The University of Nottingham, UK, Osaka University, Japan, and The University of Adelaide, Australia follow open access institutional repository policy to promote OE culture. In most cases, the availability of a vast number of open repositories has resulted in a growing community of passive OER (Abeywardena, 2012). The real essence of OER, i.e., adapting and recreating resources by teachers and learners is overlooked, possibly due to a lack of awareness about repositories, a lack of searching skills, and a lack of capacities to adapt and re-use OER. Shared resources via open repositories, individuals, and institutions often face the challenge of copyright issues (Baas & Schuwer, 2020; Sahu & Parabhoi, 2019). Lack of data privacy, poor quality, financial obligations, privatization of data repositories, exclusion of under-resourced communities, and unavailability of subject-specific repositories are some potential risks to the sustenance of open data repositories (Goben & Sandusky, 2020).

Open Textbooks. Open textbooks are adaptable, editable, and shareable resources with open licensure. Several open textbook platforms like OER Commons, OpenStax, Open Text Book Repository, BC Campus, and Community College Open Textbook Collaborative are accessible to global learners and teachers.

Open textbooks accelerate collaboration and facilitate learning by making books available at no or low cost, where the creators can collaborate and customize resources as required. Algiers (2020) underlined, “Open textbooks may be tools for enabling teachers to self-regulate their learning through the creation process.” Open textbooks could be the future of higher education. As stated by Rolfe & Pitt (2018), it is an untapped opportunity that encourages the adoption of open textbooks by schools, colleges, and universities. It can be taken as a higher education strategy for openness. It has the potential to reduce the cost of higher education, and bring about pedagogical transformation (Moore & Butcher, 2016; Pitt et al., 2019). Hood and Littlejohn (2017) posited, “[It] can make teaching and learning more collaborative and relevant, reduce costs for students and reach new target groups”. Ozdemir and Hendricks (2017) reviewed sixteen research studies and found that learners and teachers found open textbooks of better quality than traditional textbooks in the state of California. This is just one of the cases. Without the availability of open textbooks for all disciplines, without considering the language and cultural barriers in creating open textbooks, without analyzing the cost associated with publishing open textbooks, and without assessing the experiences of learners and teachers with open textbooks, it is challenging to weigh them over the traditional textbooks.

A good number of university press in developed countries have published open textbooks, but local publishers often feel hesitant to share electronic versions due to no profit. Could it be the lust that has stemmed from intellectual suppression, largely due to the materialistic demand of academia, or the weak legal status of OER? Also, piracy, meager quality, copyright constraints, and inaccessibility remain the biggest barriers to open textbooks (Baas et al., 2019). Veletsianos (2021) warned, “Open educational resources (OER), such as open textbooks, can expand equity and inclusion, but without scrutiny, they may reflect or reinforce, and thus expand, structural inequities” (p.407).

Designing OER for sensitive subject areas could be detrimental as these may be subjected to censorship. It may also pose threat to an individual’s security. In addition, the internet might not be accessible to some areas, and hamper the participation of some learners and instructors in

collaborative activities. There is also a threat that content may become outmoded but may still sit on the internet.

Results and Discussion

The purpose of the study was to unearth the potential and barriers of OER. It has created a profound sense of connectedness and has opened new channels of collaboration and networking, but digital inequalities, lack of awareness, and lack of digital literacy have obstructed open collaboration (Abeywardena, 2012; Almeida, 2017; Ding, 2019). There is a massive growth of passive OER consumers. Localized resources for many disciplines are unavailable. Where accessible, these are not suitable in all sociocultural settings due to the language barrier. Cost and the profit motive have further diminished the actual essence of openness in learning.

OER has inadequately empowered women and persons with disabilities due to modality constraints and a lack of policy attentiveness (Moreno et al., 2018; Zhang et al., 2020). Radically and realistically, the current outlook of SDGs and OER is more regressive than progressive. OER may improve learning resources, but cannot accomplish quality education indicators, as operationalizing ‘quality’ in education is inherently predictive and tactful (Hodgkinson-Williams & Trotter, 2018). A few developing and developed countries have adopted open education policies to advance OER practices, but a lack of a supportive environment and limited financial and resource commitment have deterred to sustain open policies.

CC has supported a broad range of creative work, but it reverberates ‘clipping the wing of a bird in a cage’. There is no uniform global policy framework to protect the intellectual work published under CC. Further, lack of awareness, and incompatibility of CC with traditional copyright laws, are the chief fences (Kurelovic, 2016; Mishra, 2017).

Openness remains the biggest challenge for MOOCs. There are several open repositories, in particular, institutional repositories, but a vast number of them have resulted in a growing community of passive consumers. Open textbooks have the potential to promote openness and reduce the cost of higher education, but piracy, meager quality, lack of OER skills, copyright constraints, lack of availability of subject-specific books, and cost have barricaded using or creating open textbooks.

It is not known how many people have used, produced, or benefitted from OER. Also, it is not yet known if global academia is prepared towards embracing OER. Claims regarding the potential and drawbacks of OER need further validation in the local context. Grounded on field experience and expertise in the field of OER, the strategic implementation OER pilot model is proposed as a guideline for accelerating communities of practices across higher education institutions.

Initially, it is significant to conduct a retrospective and prospective analysis of the socio-cultural, economic, and political conditions; digital and educational policies, and state of education by field experts, and identify opportunities, risks, barriers, and sensitivities to OER. With that, need analysis should be conducted, i.e., identify the availability of resources and technological infrastructure; understand the digital ordeals of institutions, teachers, and learners; highlight the requisite resources; realize the technical issues; potential partnership opportunities, and understand stakeholders’ concerns.

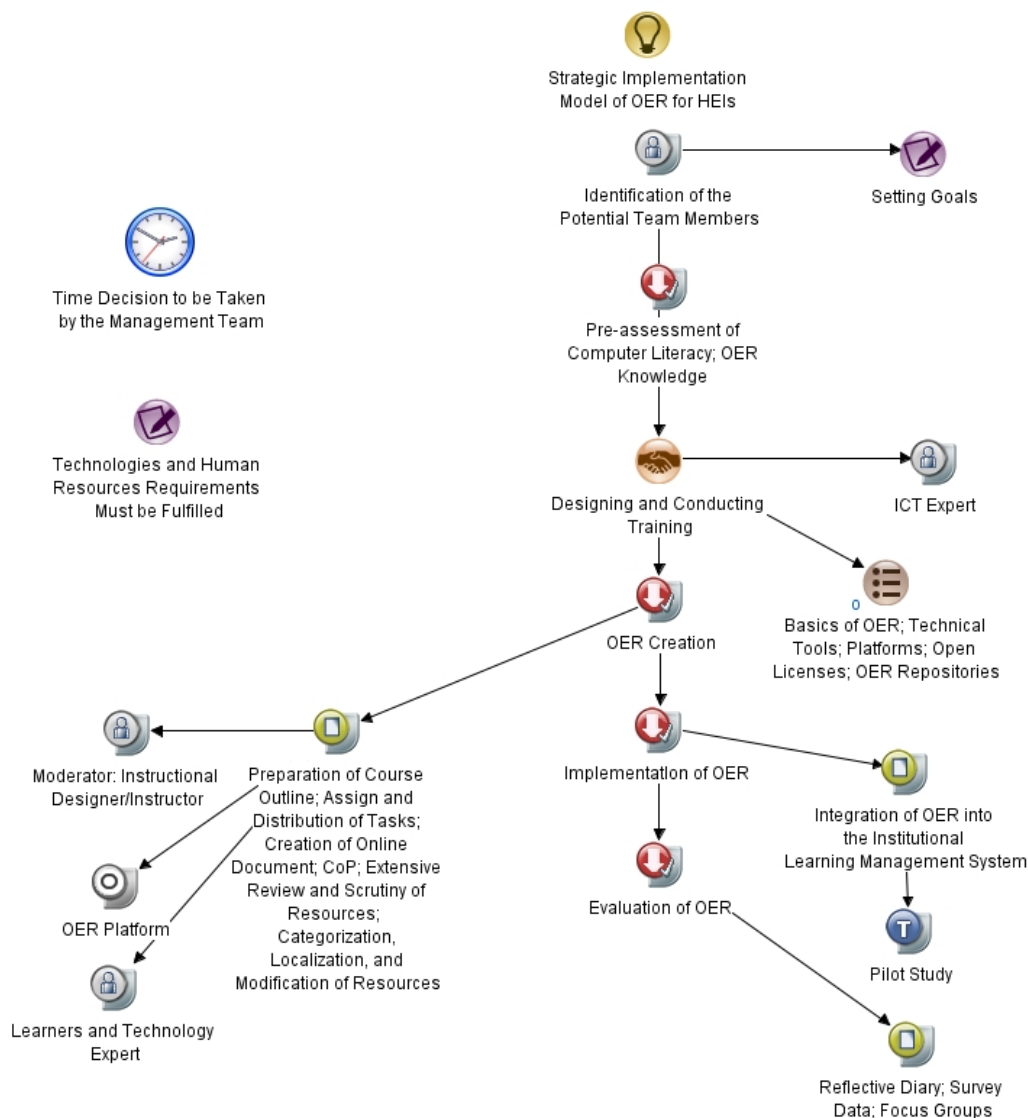


Figure 01: Strategic implementation pilot model of OER for Higher Education Institutions

In the first stage, there is a need to set goals and identify potential practitioners and technical staff members for the OER team. They will then set objectives, implementation strategies, and a feasibility plan, in consultation with various stakeholders.

Dhanarajan and Porter pointed out, “The full potential of OER is only realizable by acquiring: (i) greater knowledge about OER, (ii) the skills to effectively use OER, and (iii) policy provisions” (2013, p.3). The higher education institution must pre-assess the computer literacy and OER knowledge of instructors. Based on the findings, training should be designed and delivered to strengthen OER competencies. They must learn about the basics of OER, technical tools, platforms for designing OER, and open licenses. Learners and practitioners often lack the skills to locate open repositories. Therefore, it will also be introduced for collaborative activities.

The acquired knowledge and skills will then be used to collect and create/adopt OER. First, the instructor will adapt the course outline (any subject). Next, tasks will be distributed among team members. The mentor will then create the online document, and add units and topics along

with keywords. All the team members will be invited to search and list open licensed resource links. It will be subjected to extensive scrutiny and filtration. The selected resources will be categorized, localized, and modified via any online collaborative platform. They will also integrate reading materials, videos, and web-based content as supportive resources. Finally, the instructor will organize the content into an open book and publish it with the appropriate license. Throughout this phase, the technology expert will work in parallel with team members.

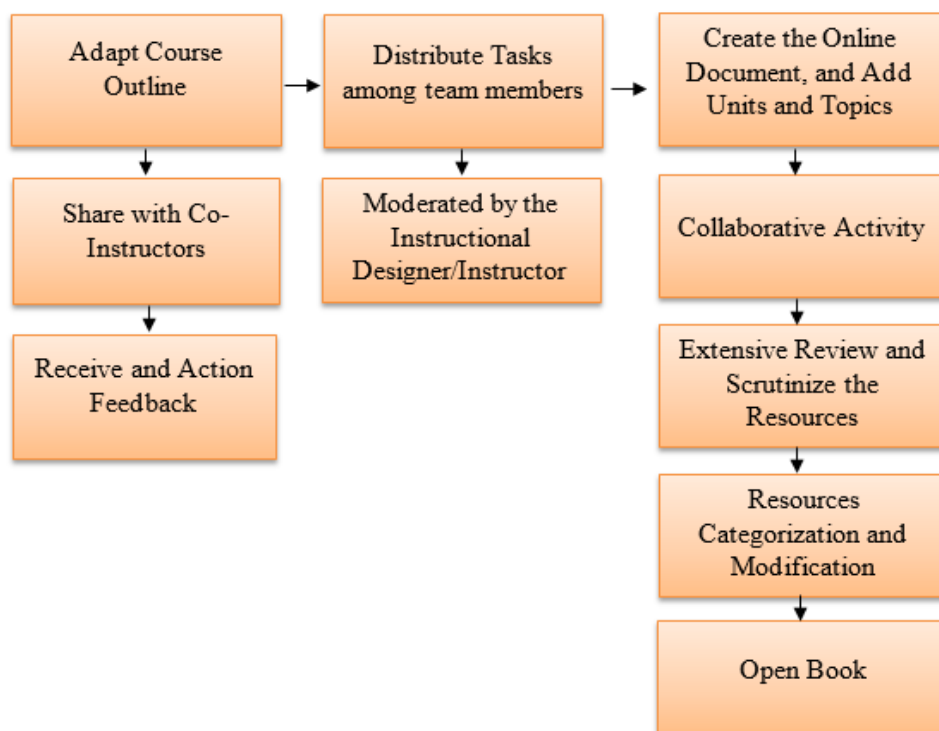


Figure 02: Phases of OER Creation

During the implementation phase, OER will be integrated into the institutional learning management system. Pilot testing will be conducted for a few months on the selected course units with the enrolled learners. During each week, learners and instructors will read and use the developed resources. They will also improve the content via collaborative activities. During the evaluation phase, the quality and impact of the designed OER will be assessed via a reflective diary. Reflections will also be gathered from the participants via focus groups. For each phase, the time would be illustrated by the management.

The technologies required for the pilot project include: (1) High-speed computers and Wifi (2) OER platforms (3) Access to file storage such as Google Drive (4) Software for collaboration such as Diigo and Google docs (5) Credly²- to appreciate learners' participation through badges.

The following human resources are required: (1) Technology Expert to train the instructors about different tools and software; to identify the appropriate platforms for OER; choose the appropriate platform for collaboration, and update online content on regular basis; (2) Research Editor to locate the reliable websites for OER; check and edit the developed content, and filter the copyrighted content along with the practitioners.

² A global Open Badge platform

The suggested model is flexible and can be modified as per need. It will support academic institutions to avoid creating resources from scratch. It will reduce institutional costs; ensure wider accessibility of contextual resources, and strengthen the culture of collaborative learning. The designed OER will be used, reused, and improvised by the upcoming cohorts. However, a lack of diverse language resources may pose risk to linguistically marginalized communities and limit participation in collaborative activities. Small OERs are low in cost and often free, and while that does not necessarily mean they are of poor quality, it may be harder to be confident of the quality value or accuracy. It would be a demanding task for the university to ensure the quality of OER, i.e., constant check and balance of the updated resources and their maintenance.

Conclusion

There are countless myths and prejudices concerning the meaning of OE, OER, and OEP. Therefore, I suggest the new term ‘glogocalize’, which may offer contextual definition, i.e., accepting standard definitions with clarity, locally operationalizing, and then resonating it with global standards.

Zhang et al. (2020) expressed, “Accessibility is still in its infancy within OER and that researchers should focus more on considering the four accessibility principles — perceivable, operable, understandable and robust — when providing OER” (p.1). It is a view strongly held by the author, that low digital literacy and lack of ownership have contracted the potential of OER. Therefore, seven accessibility principles are proposed, starting with digital identity, digital literacy, and ownership, followed by the above former stated principles.

Awareness and skills empowerment regarding OER and CC licensure should be ensured to develop a sense of openness toward embracing OEP. For this purpose, customized online courses must be adapted into regional and national languages.

Hands-on experience to create OER should be disseminated to the management, teachers, and learners. This could be made possible by offering mandatory training modules.

Funding is crucial for the survival of OER. According to Friesen, “OER projects [at institutions] face the concomitant challenge of gaining access to the operational funding support that experience shows is necessary for their survival” (2009, p.1). For the sustenance of OER, funding agencies and organizations must invest in research projects on OER to fill in the realistic gaps. For this purpose, dedicated scholarships and institutional funding must be declared.

It is strongly proposed to adopt open education policies and practices, and ensure the production and availability of no-cost contextual resources for emerging subjects like human rights education, gender studies, and peace education. This cost-effective practice can increase accessibility, overcome the financial burden, and invite learners and practitioners to collaborate and adopt OER. OER in inclusive formats for persons with disabilities must be prioritized. In this regard, expert persons with disabilities must be consulted. Open repositories and collaborative platforms for all disciplines must be developed through communities of practice. For this, ownership is pertinent. Language and culturally inclusive resources must be developed to adapt, reuse or create more OER through crowd-sourcing. There is a need to conduct a vigorous assessment and scrutiny of the existing state of education, and its relation to the socio-cultural, economic, and political conditions, before introducing OERs at large.

Acknowledgment. I thank Dr. Leigh Perryman and Victoria Wright from The Open University, UK, for their guidance and support.

References

- Abeywardena, I.S. (2012). *A report on the re-use and adaptation of Open Educational Resources (OER) An exploration of technologies available*. Commonwealth of Learning. http://oasis.col.org/bitstream/handle/11599/233/ExplorationOfTechnologiesAvailable_OER.pdf?sequence=1&isAllowed=y
- Abeywardena, I.S., Karunanayaka, S.P., Nkwenti, M.N., & Tladi, L. (2018). A collaborative approach to OER policy and guidelines development in the Commonwealth: The case of Botswana, Cameroon, and Sri Lanka. *International Review of Research in Open and Distributed Learning*, 19(2), 71-88. <https://files.eric.ed.gov/fulltext/EJ1178637.pdf>
- Algers, A. (2020). Open textbooks: A balance between empowerment and disruption. *Technology, Knowledge and Learning*, 25, 569-584. <https://doi.org/10.1007/s10758-019-09426-5>
- Allen, J.V., & Katz, S. (2020). Teaching with OER during pandemics and beyond. *Journal for Multicultural Education*, 14(3/4), 209-218, <https://doi.org/10.1108/JME-04-2020-0027>
- Almeida, N. (2017). Open educational resources and rhetorical paradox in the neoliberal university. *Journal of Critical Library and Information Studies*, 1(1), 1-19. <https://doi.org/10.24242/jclis.v1i1.16>
- Amiel, T., & Soares, T. (2016). Identifying tensions in the use of open licenses in OER repositories. *International Review of Research in Open and Distributed Learning*, 17(3). <http://www.irrodl.org/index.php/irrodl/article/view/2426/3688>
- Baas, M., & Schuwer, R. (2020). What about reuse? A study on the use of open educational resources in Dutch higher education. *Open Praxis*, 12(4), 527-540. <https://openpraxis.org/articles/10.5944/openpraxis.12.4.1139/>
- Baas, M., Admiraal, W., & Berg, E. (2019). Teachers' adoption of open educational resources in higher education. *Journal of Interactive Media in Education*, 1(9), 1-11. <http://doi.org/10.5334/jime.510>
- Bailey, J. (2014, Sep 4). *Understanding Creative Commons for researchers*. Plagiarism Blog. <https://www.ithenticate.com/plagiarism-detection-blog/understanding-creative-commons-for-researchers#.YYzd5mDMJPZ>
- Bates, T. (2019). OERs: The good, the bad and the ugly. In R. Kimmons, *EdTech in the Wild: critical blog posts*. EdTech Books. https://edtechbooks.org/wild/oer_good_bad_ugly
- Beaven, T., Comas-Quinn, A., Hauck, M., Arcos, B., & Lewis, T. (2013). The open translation MOOC: creating online communities to transcend linguistic barriers. *Journal of Interactive Media in Education*. <https://files.eric.ed.gov/fulltext/EJ1034720.pdf>
- Berti M. (2018). Open educational resources in higher education. *Issues and Trends in Educational Technology*, 6(1), 4-15. https://doi.org/10.2458/azu_itet_v6i1_berti

- Billah, M. (2013). *Access and equity in open education resources: E-learning for girl and women in Bangladesh Open University*. <http://oasis.col.org/handle/11599/2024>
- Bliss, T. J., & Smith, M. (2017). A brief history of open educational resources. In R.S. Jhangiani & R. Biswas-Diener (Eds.), *Open: The philosophy and practices that are revolutionizing education and science* (pp. 9–27). London: Ubiquity Press. <https://doi.org/10.5334/bbc>
- Bradley, L., & Vigmo, S. (2014). *Open Educational Resources (OER) in less used languages: a state of the art report*. LangOER consortium. <http://langoer.eun.org/>
- Brahim, H., Khribi, M., & Jemni, M. (2017, Dec 19-21). *Towards accessible open educational resources: Overview and challenges*. 6th International Conference on Information and Communication Technology and Accessibility (ICTA). <https://doi.org/10.1109/ICTA.2017.8336068>
- Chen, H. (2020). Developing an OER website and analyzing its use during the COVID-19 pandemic. *English Teaching & Learning*, 44(4), 451–461. <https://dx.doi.org/10.1007%2Fs42321-020-00067-x>
- Chiappe, A., Pinto, R., & Arias, V. (2016). Open assessment of learning: A meta-synthesis. *The International Review of Research in Open and Distributed Learning*, 17(6). <https://files.eric.ed.gov/fulltext/EJ1122220.pdf>
- Commonwealth of Learning. (2012). *Survey on governments' Open Educational Resources (OER) policies*. https://en.unesco.org/sites/default/files/survey_on_government_oer_policies.pdf
- Commonwealth of Learning. (2015). *Open education resources: What, why, how?* <https://www.col.org/news/open-education-resources-what-why-how/>
- Commonwealth of Learning. (2017). *Open educational resources: Global report 2017*. Burnaby: COL. http://oasis.col.org/bitstream/handle/11599/2788/2017_COL_OER-Global-Report.pdf?sequence=1&isAllowed=y
- Corbett, S. (2011). Creative Commons licences, the copyright regime and the online community: Is there a fatal disconnect? *The Modern Law Review*, 74(4), 503-531. <http://www.jstor.org/stable/20869091>
- Creative Commons. (2019). *Creative commons for educators and librarians*. American Library Association.
- Creative Commons. (2021). *Creative Commons legal code*. <https://creativecommons.org/licenses/by/1.0/legalcode>
- Dhanarajan, G., & Porter, D. (2013). *Open educational resources: An Asian perspective*. Vancouver: Commonwealth of Learning and OER Asia. https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/pub_PS_OER_Asia_web.pdf

- Ding, Y. (2019). Is Creative Commons a panacea for managing digital humanities intellectual property rights? *Information Technology and Libraries*, 34-48.
<https://ejournals.bc.edu/index.php/ital/article/download/10714/9695/>
- Downes, S. (2012, August 27). *New forms of assessment: Measuring what you contribute rather than what you collect*. <https://halfanhour.blogspot.com/2012/08/new-forms-of-assessment-measuring-what.html>
- Farrow, R., de los Arcos, B., Pitt, R., & Weller, M. (2015). Who are the open learners? A comparative study profiling non-formal user of open educational resources. *European Journal of Open, Distance and E-Learning*, 18(2), 49–73. <https://doi.org/10.1515/eurodl-2015-0013>
- Fitzgerald, B. (2007). *Open Content Licensing (OCL) for open educational resources*. OECD.
<http://www.oecd.org/education/ceri/38645489.pdf>
- Frankel, S. (2015). The International copyright problem and durable solution. *Vanderbilt Journal of Entertainment and Technology Law*, 18(1), 1-25,
<https://www.law.columbia.edu/sites/default/files/2021-07/09-international-copyright-problem-durable-solutions.pdf>
- Friesen, N. (2009). Open educational resources: New possibilities for change and sustainability. *The International Review of Research in Open and Distributed Learning*, 10(5).
<http://www.irrodl.org/index.php/irrodl/article/view/664/1388>
- Global Education Monitoring Report Team. (2022). *Global education monitoring report 2022: gender report, deepening the debate on those still left behind*.
<https://unesdoc.unesco.org/ark:/48223/pf0000381329>
- Goben, A., & Sandusky, R.J. (2020). Open data repositories. *College & Research Libraries*, 81(2),
<https://crln.acrl.org/index.php/crlnews/article/view/24273/32092>
- Green, C. (2017). *SDG4 + OER: Working together to mainstream open education*. [Oral Presentation]. Open Education Consortium <https://conference.oeglobal.org/2017/presentation/sdg4-oer-working-together-to-mainstream-open-education/>
- Hayden, M., Levy, J., & Thompson, J. (2015). *The SAGE handbook of research in international education*. SAGE.
- Hodgkinson-Williams, C. A., & Trotter, H. (2018). A social justice framework for understanding Open Educational Resources and practices in the Global South. *Journal of Learning for Development*, 5(3), 204-224. <https://jl4d.org/index.php/ejl4d/article/view/312/339>
- Hood, N., & Littlejohn, A. (2017). Knowledge typologies for professional learning: educators' (re)generation of knowledge when learning open educational practice. *Educational Technology Research and Development*, 65(6), 1583–1604. <https://doi.org/10.1007/s11423-017-9536-z>

- Hoosen, S., & Butcher, N. (2019). *Understanding the impact of OER: Achievements and challenges*. Institute for Information Technologies in Education, UNESCO. https://iite.unesco.org/wp-content/uploads/2019/04/Understanding_the_impact_of_OER_2019_final.pdf
- Huang, R., Tlili, A., Chang, T., Zhang, X., Nascimbeni, F., & Burgos, D. (2020). Disrupted classes, undisrupted learning during COVID-19 outbreak in China: application of open educational practices and resources. *Smart Learning Environments*, 7(19), 1-15, <https://doi.org/10.1186/s40561-020-00125-8>
- Hylen, J. (n.d.). *Open educational resources: Opportunities and challenges*. <https://www.oecd.org/education/ceeri/37351085.pdf>
- Kesan, J.P. (2019). Open standards. In J. L. Contreras (Ed.), *The Cambridge handbook of technical standardization law further intersections of public and private law* (pp. 159-176). Cambridge University Press.
- Kurelovic, E. (2016). Advantages and limitations of usage of open educational resources in small countries. *International Journal of Research in Education and Science*, 2(1), 136-142. <https://files.eric.ed.gov/fulltext/EJ1105180.pdf>
- Lambert, S. (2020). Do MOOCs contribute to student equity and social inclusion? A systematic review 2014–18. *Computers & Education*, 145. <https://doi.org/10.1016/j.compedu.2019.103693>
- Lane, A. (2016). Emancipation through open education: Rhetoric or reality? In P. Blessinger & T.J. Bliss (Eds.), *Open Education: International perspectives in higher education* (pp.31-50). Open Book Publishers.
- Laurillard, D., & Kennedy, E. (2017). *The potential of MOOCs for learning at scale in the Global South- Working paper no.31*. Centre for Global Higher Education. <https://discovery.ucl.ac.uk/id/eprint/10043664/>
- Luo, T., Hostetler, K., Freman, C., & Stefaniak, J. (2020). The power of open: Benefits, barriers, and strategies for integration of open educational resources. *Open Learning*, 35(2), 140-158. 10.1080/02680513.2019.1677222
- McAndrew, P., & Farrow, R. (2013). Open education research: from the practical to the theoretical. In R. McGreal, W. Kinuthia & S. Marshall (Eds.), *Open educational resources: Innovation, research and practice* (pp. 65–78). Vancouver, Canada: Commonwealth of Learning and Athabasca. <http://oro.open.ac.uk/37756/1/OER-IRP-mcandrew-farrow.pdf>
- McGreal, R., Kinuthia, W., & Marshall, S (Eds.). (2013). *Open educational resources: Innovation, research and practice*. Commonwealth of Learning and Athabasca University. https://www.oerknowledgecloud.org/archive/pub_PS_OER-IRP_web.pdf

- McKerlich, R., Ives, C., & McGreal, R. (2013). Measuring use and creation of Open Educational Resources in higher education. *The International Review of Research in Open and Distributed Learning*, 14(4), 1–6. <https://doi.org/10.19173/irrodl.v14i4.1573>
- Merizow, J., & Taylor, E.W. (2011). *Transformative learning in practice: Insights from community, workplace, and higher education*. John Wiley & Sons.
- Miao, F., Mishra, S., & McGreal, R. (Eds.). (2016). *Open educational resources: Policy, costs and transformation*. UNESCO and Commonwealth of Learning.
- Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, 1. <https://doi.org/10.1016/j.ijedro.2020.100012>
- Mishra, S. (2017). Open educational resources: Removing barriers from within. *Distance Education*, 38(3), 369-380 [10.1080/01587919.2017.1369350](https://doi.org/10.1080/01587919.2017.1369350)
- Mncube, L.S., & Mthethwa, L.C. (2022). Potential ethical problems in the creation of open educational resources through virtual spaces in academia, *Heliyon*, 8(6), E09623, <https://www.sciencedirect.com/science/article/pii/S2405844022009112>
- Moon, J., & Park, Y. (2021). A scoping review on open educational resources to support interactions of learners with disabilities. *International Review of Research in Open and Distributed Learning*, 22(2), 314-341. <http://www.irrodl.org/index.php/irrodl/article/view/5110/5549>
- Moore, A., & Butcher, N. (2016). *Guide to developing open textbooks*. Commonwealth of Learning. <http://oasis.col.org/handle/11599/2390>
- Moreno, N., Caro, E., & Cabedo, R. (2018). *Systematic review: OER and disability*. IEEE 5th International Congress on Information Science and Technology (CiSt), 21-27 October 2018 <https://doi.org/10.1109/CIST.2018.8596659>
- Navarrete, R., & Luján-Mora, S. (2018). Bridging the accessibility gap in open educational resources. *Universal Access in the Information Society*, 17 (4), 755-774. <https://link.springer.com/article/10.1007/s10209-017-0529-9>
- Organisation for Economic Co-operation and Development. (2007). *Giving knowledge for free-The emergence of open educational resources*. Paris: OECD. <https://www.oecd.org/education/ceri/38654317.pdf>
- Ossiannilsson, E. (2021). *MOOCS for lifelong learning, equity, and liberation*. [10.5772/intechopen.99659](https://doi.org/10.5772/intechopen.99659)
- Ozdemir, O., & Hendricks, C. (2017). Instructor and student experiences with open textbooks, from the California open online library for education (Cool4Ed). *Journal of Computing in Higher Education*, 29, 98-113. <https://doi.org/10.1007/s12528-017-9138-0>

- Panda, S. (2021). Technology-enabled learning: OER, MOOCs, and other TEL designs. *Journal of Learning for Development*, 8(1), 1-9.
http://oasis.col.org/bitstream/handle/11599/3763/2021_Panda_JL4D_Vol8No1.pdf?sequence=1&isAllowed=y
- Pérez, M.C., Vidal-Puga, J., & Juste, M.R. (2020). The role of self and peer assessment in higher education. *Studies in Higher Education*, 47(3), 683-692.
<https://doi.org/10.1080/03075079.2020.1783526>
- Perryman, L., & Arcos, B. (2016). Women's empowerment through openness: OER, OEP and the Sustainable Development Goals. *Open Praxis*, 8(2), 163–180.
<http://doi.org/10.5944/openpraxis.8.2.289>
- Pitt, R., Jordan, K., Arcos, B., Farrow, R., & Weller, M. (2019). Supporting open educational practices through open textbooks. *Distance Education*, 4 (2), 303-318.
<https://doi.org/10.1080/01587919.2020.1757411>
- Read, T., & Barcena, E. (2019). A role of inclusive MOOCs in societal change. In G. Ubachs, L. Konings & B. Nijsten (Eds.), *The 2019 OpenupEd trend report on MOOCs* (pp. 6-9). Maastricht, NL: EADTU. <https://tinyurl.com/2019OpenupEdtrendreport>
- Reimers, F., Schleicher, A., Saavedra, J., & Tuominen, S. (2020). *Supporting the continuation of teaching and learning during the COVID-19 pandemic annotated resources for online learning*. OECD. <https://www.oecd.org/education/Supporting-the-continuation-of-teaching-and-learning-during-the-COVID-19-pandemic.pdf>
- Rogers, E.M. (2003). *Diffusion of innovations* (5th Edition). Simon and Schuster.
- Rolfe, V., & Pitt, B. (2018). Open textbooks - an untapped opportunity for universities, schools and colleges. *Insights*, 31(30), 1-6. <https://doi.org/10.1629/uksg.427>
- Rory, M. (2017). Special Report on the role of open educational resources in supporting the sustainable development goal 4: Quality education challenges and opportunities. *International Review of Research in Open and Distributed Learning*, 18(7), 292-305.
<https://files.eric.ed.gov/fulltext/EJ1163203.pdf>
- Ruhwanya, Z. (2013). Use of mobile phones and OER to enhance women's access to higher education in Tanzania. In C. Schoole., & J. Knight, *Internationalisation of African higher education* (pp.115-131). Springer.
- Ruipérez-Valiente, J., Martin, S., Reich, J., & Castro, M. (2020). The unMOOCing process: Extending the impact of MOOC educational resources as OERs. *Sustainability*, 12 (18), 7346.
 10.3390/su12187346
- Sadrudin, M.M. (2019). *Munir's taxonomy of digital learning*. Social Science Research Network, <https://dx.doi.org/10.2139/ssrn.3754995>

- Sahu, R., & Parabhoi, L. (2019). *Open access repository: A comparative study of Germany, Switzerland and Austria*. Library Philosophy and Practice. <https://core.ac.uk/download/pdf/215162255.pdf>
- Santos, A. I., Nascimbeni, F., Bacsich, P., Atenas, J., Aceto, S., Burgos, D., & Punie, Y. (2017). *Policy approaches to open education: Case studies from 28 EU member states (OpenEdu Policies)- JRC Technical Reports*. Publications Office of the European Union. <http://dx.doi.org/10.2760/283135>
- Schultz, T., & Azadbakht, E. (2021). Open but not for all: A survey of open educational resource librarians on accessibility. *College & Research Libraries*, 82(5), <https://crl.acrl.org/index.php/crl/article/view/25018/32895>
- Siemens, G. (2013). Massive Open Online Courses: Innovation in education? In R. McGreal, W. Kinuthia & S. Marshall (Eds.), *Open educational resources: Innovation, research and practice* (pp.5-17). Commonwealth of Learning, Athabasca University. https://www.oerknowledgecloud.org/archive/pub_PS_OER-IRP_CH1.pdf
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333-339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Stevenson, C.N. (2021). *Enhancing higher education accessibility through open education and prior learning*. IGI Global.
- Stracke, C., Downes, S., Conole, G., Burgos, D., & Nascimbeni, F. (2019). Are MOOCs open educational resources? A literature review on history, definitions and typologies of OER and MOOCs. *Open Praxis*, 11(4), pp.331-341. <https://files.eric.ed.gov/fulltext/EJ1251318.pdf>
- Thanuskodi, S. (2020). *Challenges and opportunities of open educational resources management*. IGI Global.
- Open University. (2021). *TIDE - Transformation by innovation in distance education*. <https://www.open.ac.uk/about/international-development/projects-and-programmes/tide-transformation-innovation-distance-education>
- The World Bank and the UNESCO Institute for Statistics. (2022). *The state of global: 2022 Update*. <https://www.unicef.org/media/122921/file/StateofLearningPoverty2022.pdf>
- UNESCO & the Commonwealth of Learning. (2019). *Guidelines on the development of open educational resources policies*. https://www.unesco.de/sites/default/files/2020-01/Guidelines_on_the_Development_of_OER_Policies_2019.pdf
- UNESCO Institute for Statistics. (2022). *Literacy rate, adult total (% of people ages 15 and above)*. <https://data.worldbank.org/indicator/SE.ADT.LITR.ZS>

- UNESCO. (2019a). *Recommendation on Open Educational Resources (OER)*.
<https://www.unesco.org/en/legal-affairs/recommendation-open-educational-resources-oer>
- UNESCO. (2019b). *Understanding the impact of OER: Achievements and challenges*. UNESCO Institute for Information Technologies in Education. https://iite.unesco.org/wp-content/uploads/2019/04/Understanding_the_impact_of_OER_2019_final.pdf
- UNESCO. (2020a). *Fighting COVID-19 through digital innovation and transformation*.
<https://en.unesco.org/covid19/communicationinformationresponse/digitalinnovation>
- UNESCO. (2020b). *2020 Global Education Monitoring Report- Inclusion and Education- All means all*.
<https://gem-report-2020.unesco.org>
- UNESCO. (2020c). *Open badges: New opportunities to recognize and validate achievements digitally*.
<https://iite.unesco.org/highlights/open-badges-new-opportunities-to-recognize-and-validate-achievements-digitally/>
- UNESCO. (2021). *OER policies: A global perspective on what works [webinar]*.
<https://www.unesco.org/en/articles/oer-policies-global-perspective-what-works>
- UNESCO. (2022). *Open Educational Resources*. [https://www.unesco.org/en/communication-information/open-solutions/open-educational-resources#:~:text=Open%20Educational%20Resources%20\(OER\)%20are,adaptation%20and%20redistribution%20by%20others](https://www.unesco.org/en/communication-information/open-solutions/open-educational-resources#:~:text=Open%20Educational%20Resources%20(OER)%20are,adaptation%20and%20redistribution%20by%20others)
- Veletsianos, G. (2021). Open educational resources: expanding equity or reflecting and furthering inequities? *Education Tech Research Dev*, 69, 407-410.
<https://link.springer.com/content/pdf/10.1007/s11423-020-09840-y.pdf>
- Wong, G., Greenhalgh, T., Westhorp, G., Buckingham, J., & Pawsom, R. (2013). RAMESES publication standards: Meta-narrative reviews. *BMC Medicine*, 11. [10.1186/1741-7015-11-20](https://doi.org/10.1186/1741-7015-11-20)
- Wright, C., & Reju, S. (2012). *Developing and deploying OERs in sub-Saharan Africa: Building on the present*. <https://www.irrodl.org/index.php/irrodl/article/view/1185/2161>
- Yuan, L., & Powell, S. (2014). *MOOCs and open education: Implications for higher education*. JISC.
<https://publications.cetis.org.uk/wp-content/uploads/2013/03/MOOCs-and-Open-Education.pdf>
- Zhang, X., Tlili, A., Huang, R., Chang, T., Burgos, D., Yang, J., & Zhang, J. (2020). A case study of applying open educational practices in higher education during COVID-19: Impacts on learning motivation and perceptions, *Sustainability*, 12, 9129. <https://doi.org/10.3390/su12219129>

Sadruddin, M. M. (2022). Opportunities and challenges of open educational resources for the learning communities. *Pakistan Journal of Distance and Online Learning*, 8(2), XX-XX.