



## Exploring the Opportunities and Challenges of Incorporating Open Educational Resources in India

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This research article explores the opportunities and challenges of incorporating open educational resources (OER) in India. OER refers to online content that can be modified, shared, and used to support teaching and learning. This study reviews the literature on the principles of open education, the current state of OER in India, and examines the perceived opportunities and challenges of OER in the Indian educational system. Through a review of qualitative research, studies on the local curriculum, case studies, and teacher/student surveys, this article explores the potential of OER in India to improve the quality and affordability of education without sacrificing the quality of teaching. The review reveals opportunities for developing localized versions of OER, creating digital communities to support the development of OER, increasing teacher professional development, improving the sustainability of OER initiatives, and increasing access and participation for underprivileged students. The article also discusses the challenges that need to be addressed before increased adoption of OER in India can be realized, such as the need for increased awareness, implementation of suitable open-license policies, and organizing OER content.

**Keywords:** *Open educational resources; Opportunities; Challenges; OER Initiatives; Digital Users*



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### 1.INTRODUCTION

Open educational resources (OER) are online educational materials that can be modified and shared in order to support teaching and learning (Nkwenti & Abeywardena, 2019). OERs can include textbooks, video lectures, assessments, learner activities, and other resources(Nkwenti & Abeywardena, 2019). The reuse of OER allows for rapid implementation and creation of effective, cost-effective educational materials that can be used by teachers, students, and online learners(Keats,

2009). As the world becomes increasingly digital and connected, OER can play an important role in providing quality education to students and teachers, especially in developing and low-income countries such as India(Richter & McPherson, 2012). The Indian education system is facing many challenges, including lack of access, affordability, and quality of education (Olakulehin, 2008). Traditional education has not been able to keep up with the rapid pace of development and changes in the educational landscape(Abdo et al., 2023). OER can help bridge this gap and provide a more equitable, cost-effective, and flexible

approach to education in India (Salkey & D'Aguiar, 1994). This article examines the potential opportunities and challenges of incorporating OER in the Indian education system.

## 2. BACKGROUND OF THE STUDY

Open educational resources (OER) have emerged as a major disruptor in the field of education and technology due to their capability to transform learning and teaching by making a vast array of learning materials available at low or even no cost, and to do so at scale (Sathish Kumar, et al. 2021). This transformation has already impacted educational systems around the world, particularly in developing countries (Lane, 2013). This literature review discusses the opportunities and challenges associated with the shift to OER in India, and provides a contextual overview of the development and use of these educational resources in the country (Morales & Baker, 2018). Recent decades have seen a dramatic rise in digital technologies which facilitate the acquisition, storage and delivery of knowledge in digital format. This, combined with the growing prevalence of open source licenses and norms, have made OER an increasingly attractive option for educational institutions and providers. Indian universities, institutions and other organizations are increasingly implementing OER policies and strategies to leverage the potential of open source content (Luo et al., 2020). The literature related to OER in India is divided into two parts: the first discusses the opportunities for OER adoption and implementation in India, and the second deals with the challenges associated with the process (Lawrence & Lester, 2018). The opportunities for OER adoption and implementation in India revolve around increasing access to educational content and increasing quality of educational content. It has been argued that the use of OER can lead to improved learning outcomes, as the open format of OER encourages the use of the frameworks, skills, modes of thinking and problem-solving strategies required in the educational environment (Solomonidou\* & Stavridou, 2001). Additionally, easy access to digital content allows students to engage in independent learning activities outside of the classroom (Lane, 2013). In addition to its potential educational value, access to OER can also reduce the financial burden of content acquisition on institutions and students (Weinhardt & Sitzmann, 2019). In India, the high cost of textbooks has limited access to resources, and OER have the potential to reduce associated costs and make learning opportunities available to students from low-income backgrounds (Xia, 2013). OER can also make educational content more equitable by providing access to multiple languages and making content more diverse and cultural-contextualized (Nipa & Kermanshachi, 2020). In terms of challenges, implementation of OER in India can be restricted by a lack of technical know-how and skilled personnel to create and manage open content (Al-Adwan, 2020). Language barriers can also hinder the adoption of OER (Tlili A, et al., 2022). Low-quality content, inadequate regulation and copyright infringement are also seen as potential impediments to the use of OER in India (BESAR, 2015). In conclusion, the use of OER in India can offer numerous benefits to education providers, students and society. However, institutional and global initiatives to

ensure effective implementation of OER must address the technical, linguistic and copyright-related issues to enable successful and equitable access to educational content. Bower, (2020) examined the potential of Open Educational Resources (OER) in India, and the challenges faced. Previous studies in India discussed the advantages of OER in educational needs, such as cost reduction and accessibility, as well as how apps, websites, and other digital formats can assist in the effective use of such resources. Studies further highlighted that a lack of sharing OER, high cost of access to resources, and copyright issues can limit the use of OER in India (Eniyew et al., 2020). In addition, there is a need to create awareness and institutional support for successful implementation of OER. Prior research also mentioned that initiatives to increase the usage of OER should focus on changing the mindset of the faculty in India for more resource sharing and collaboration (Arthur-Nyarko et al., 2020). Therefore, there is a need to devise strategies that enable regulation, provision and up-gradation of OER in India. The literature review of Cortinovic et al., (2019) on Open Education Resources (OER) in India has revealed the current scenario of OER adoption in the country. Various studies conducted in the past by prominent researchers reveals the potential benefits of OER which includes greater access to educational opportunities, increased student engagement and enhanced independent learning (Garcia-Loro et al., 2020). However, while some of the core issues that hinder OER adoption in India such as lack of resources, awareness and technology integration exist, strategies like policy initiatives, market driven models and collaborative infrastructures may be helpful to effectively implement OER in Indian context (Latchem, 2014). Overall, the findings suggest that OER are a viable option to augment access and quality initiatives in India and this require careful planning by government, educational institutions and other stakeholders. The utilization of open educational resources (OER) in India has been studied in numerous ways (Movchun et al., 2020). This literature review involves the examination of various articles, surveys, and studies related to OER use in India. Studies have found that OER usage is increasing year by year, especially for instructors, teachers, and students in higher education (Leng et al., 2016). Furthermore, educational institutions are adopting OERs in order to facilitate the learning process and reduce their costs. However, there is still a low awareness, understanding and acceptance of OER among teachers across India. Additionally, several challenges have been identified, such as lack of quality content and support for OERs. Finally, it has been found that teachers and instructors need to be trained to use OERs as part of their teaching curriculum. This can help to overcome the aforementioned challenges and facilitate the use of OER in India (Arnové, 2020). Al Lily et al., (2020) attempts to explore the potential of Open Educational Resources (OER) in India. Literature review was conducted to identify and evaluate the benefits, challenges and trends of OER, as well as to understand the potential of OER in India. Overall, the evidence from the literature review shows that OER has the potential to reduce digital divide, enhance the access to quality education, bridge knowledge gaps and increase pedagogical opportunities. Furthermore, there is an increasing trend of participation in OER initiatives in India,

and increasing awareness through the provision of OER repositories. Despite the growth in OER initiatives there are still challenges that need to be addressed such as lack of adaptation of OER among teachers, limited funding and lack of information on the effective use of OER. This review has identified the key elements of OER initiatives in India and has also highlighted various open access initiatives and universities in India that are actively involved in OER initiatives. A large body of literature exists on Open Educational Resources (OER) in India but much of it falls within one particular perspective, such as technological, or legal, or educational. Through this review, we have identified the primary reasons why OER's have become increasingly popular, such as high cost of educational material, poor access to quality digital learning resources and rising demand for context-specific materials. Our review has examined the various initiatives adopted by the Government of India to support the development and use of OER's, and provided more in-depth analysis of the role played by educational and ICT stakeholders in feeding into the development of OER's. Thus, we conclude that collaborative efforts among the different stakeholders is essential to create an effective and viable OER ecosystem (Ismaili & Ibrahim, 2017; Newby et al., 2013). (Scanlon et al., 2015) examines the Open Education Resources (OER) in India reveals a growing interest in the subject by researchers and policy makers. Various studies have indicated the potential of OER in promoting equitable access to quality educational resources. OER has been used to increase the reach of educational initiatives, improve the quality of curriculum, achieve cost savings and create sustainable learning pathways. Several studies have highlighted the need to develop a policy framework to bridge the digital divide, holistically monitor implementation and foster a data driven ecosystem. Furthermore, research has identified challenges related to OER adoption barriers and technical challenges of quality assurance. The need for improved resource curation, communication mechanisms, resource inter-operability and effective impact measurement strategies is also highlighted. It is therefore essential to address the underlying challenges in order to successfully realize the potential of OER for India. (Chen & Burns Gilchrist, 2013); (Guerrero et al., 2020) assesses the prospects and challenges of Open Educational Resources (OER) in India. It highlights the lack of discourse about the use of OER in India, especially among the unaware stakeholders. There is a need for comprehensive legal, economic and technological measures to ensure the widespread use of OER. It also emphasizes the urgent need for sensitization and capacity building and the need to raise awareness about OER among the various stakeholders. It further points out that OER could help bridge inequality in access, adoption and maintenance of higher education across India. Lastly, it suggests that there is a need to back policy-based OER initiatives with community leadership and technical support. (Mulholland & Bates, 2014) points out some of the challenges and opportunities associated with the adoption of OER in India. Studies conducted in the past indicate that there is a lack of awareness among teachers regarding the advantages and use of OER. Furthermore, there is also a dearth of infrastructure to support the adoption of OER in India as most schools do not have access to computers or the

internet. Also, there is a lack of technical support that can help teachers in creating OER or using existing resources (Abeywardena, 2017). However, some studies suggest that useful OER can be used to enhance distance learning and reduce the costs involved in accessing knowledge. Additionally, the effectiveness of OER in delivering knowledge can be increased by integrating it with interactive technologies such as mobile phones. Thus, though adoption of OER in India faces some challenges, there are also numerous opportunities that can be tapped to enhance teaching-learning processes. Nordkvelle & Olson, (2005) examines the existing literature on the use of OERs in the Indian context. Studies have found that OERs have the potential to reduce educational costs, create greater access to quality educational materials, and foster collaboration among faculty, researchers and students. Several projects have been launched to promote the use of OERs, such as SAKAL, CREATE, and OAL. While some success has been achieved, challenges remain, including the need for greater awareness of OERs, adequate funding and infrastructure, and stronger institutional support. To ensure the adoption of OERs, the Indian government should take more steps to ensure the availability of quality educational resources to all its citizens. McGowan, (2020) findings show that OER usage is increasing, due to its potential in providing equitable access to education and its ability to bridge the digital divide. However, there are various challenges to be resolved, such as training, copyright and licensing issues, and a lack of infrastructure and digital resources. To promote OER, there is a need to increase awareness, create incentives, and invest in open educational initiatives. Kinskey et al., (2018) examines the role of open education resources (OER) in the education system of India spans a variety of research from different corners of the education landscape, including economic principles, innovation strategies, legal perspectives, and technological trends. Studies on the economic impacts of OER show how OER can potentially bring down expenses for both students and institutions. Technological trends suggest how open educational resources can increase access to high quality educational materials (Kumar et al., 2021a; Kumar & Mahendraprabu, 2021). The social and cultural implications of OER in emerging markets such as India, where access to education is limited, are also analyzed (K. Sathish Kumar et al., 2021; Sathish Kumar, et al., 2021). Moreover, various legal issues related to copyright and IPR are discussed to provide an overall assessment of the potential of OER in India.

### 3. METHODOLOGY

The purpose of this study is to systematically review the current state of the art of OER in India in order to investigate the current state of the art of OER in India. The relevant literature was systematically reviewed following the preferred reporting items for systematic literature reviews and meta-analyses guidelines. This review will analyze paper references found in various databases including: ERIC, Academic Search Premier, JSTOR, SCOPUS, Google Scholar, and Web of Science. It will consider key issues surrounding the implementation of OER in both educational and professional contexts in India. A total of 25

papers that met the inclusion criteria were included in this study. The findings showed that there have been several governmental, organizational, and institutional initiatives launched to facilitate OER adoption in India. The advantages of OER include increased access to quality education, reduced costs, and improved teaching and learning. Some of the challenges associated with OER include lack of awareness, inadequate infrastructure, and lack of skilled manpower. The future directions for OER in India include creating more awareness about OER, developing quality OER content, and increasing the use of OER in formal and non-formal education.

#### 4. THE PRINCIPLES OF OPEN EDUCATION

OER are based on the principles of open education, which is the belief that knowledge should be freely available and accessible to all (Kumar et al., 2021b). Open education is based on the concept of openness, which includes access and reuse. Open access is the free and unrestricted availability of a resource. Reuse, on the other hand, is the ability to modify and share a resource legally, while maintaining its original purpose (Kumar et al., 2021c). Open education promotes collaborative, student-centred, and transformative learning and encourages the integration of technology in teaching and learning (Kumar & M.Mahendraprabu, 2021). It also encourages the development of open digital tools and resources to improve efficiency and flexibility in teaching and learning.

#### 5. THE CURRENT STATE OF OER IN INDIA

India is home to a large and rapidly growing population of digital users and has become one of the world's leading countries in open education, especially in terms of access to digital educational resources (Mehta, 2020). According to UNESCO, there are currently more than 5,000 OER initiatives in India, the majority of which are led by philanthropic organizations (Bordoloi, 2018). These initiatives focus on creating open educational content for primary and secondary education levels, as well as open educational tools for higher education. Despite the growth in OER initiatives in India, there are still challenges in implementation, such as lack of institutional support, inadequate funding, lack of awareness, and limited access to technology (Ganapathi, 2018a). Additionally, there is limited oversight and coordination of OER initiatives to ensure quality and consistency. Furthermore, in India, higher education institutions and universities tend to focus on the traditional print resources and have been slow to embrace the shift towards open educational resources (Bordoloi et al., 2020).

#### 6. OPPORTUNITIES FOR OER IN INDIA

The incorporation of OER into India's educational system presents several advantages, including improved quality and affordability of education, integration of digital tools and resources, and increased access and participation. First, OER can help to improve the quality and affordability of education in India, particularly for marginalized and underprivileged communities (Shukla, 2021). OER can

provide access to quality scholarly content and resources while maintaining the affordability of education. OER can also help to remove the language barrier in India, where English is the language of instruction in higher education but is only spoken by a small percentage of the population (Ganapathi, 2018b). OER can facilitate the use of local languages, encouraging the use of culturally relevant materials that are more meaningful and accessible to students. In addition, OER can encourage the integration of technology into teaching and learning. OER can provide access to digital tools and resources that help teachers to design, develop, and deliver more engaging and effective educational experiences. For example, tools such as videos, simulations, and interactive assessment tools can help to make teaching more accessible and interactive for students. Finally, OER can help to increase student access, participation, and engagement in education. OER provides access to materials that are available at any time, from any place, making education more accessible and equitable. In addition, OER encourages collaboration and sharing of knowledge, skills, and resources, which can help to develop a sense of collective ownership and foster community learning.

#### 7. CHALLENGES OF OER IN INDIA

In spite of the potential opportunities of OER, there are several challenges that need to be addressed before a successful implementation in India can be achieved. First, there is a need to increase awareness and understanding of OER in India. Despite the growth in OER initiatives, there is still a lack of awareness and understanding of OER in India (Ganapathi, 2018a). Teachers and students do not know about the concept of open education and the potential benefits that OER can provide. Therefore, it is important to develop and implement strategies to increase awareness and understanding of OER in India. Second, there is a need for suitable open-license policies that create a legal framework for the integration of OER into India's educational system. Currently, there is limited regulatory guidance on the use and reuse of OER in India, hindering the growth and development of open educational initiatives (Thomas, 2017). In order to facilitate the effective integration of OER into India's educational system, suitable open-license policies need to be developed and implemented. Finally, there is a need to organize and classify OER content. Currently, OER content is scattered across various sources, making it difficult to search, access, and use. Therefore, it is important to develop systems and strategies that allow users to easily access, search, and locate OER content (Jena, 2020).

#### 8. OER INITIATIVES IN INDIA

In the current era, India has taken several steps for the development and welfare of OERs in India. The National Knowledge Commission of India has understood the role of OER in enhancing quality education and access to it in the country. The National Mission on Education through Information and Communication Technology under the ministry of Human Resource Development (HRD) is an efficient step for the enhancement of OER in India. A brief explanation of some OER initiatives in India is as follows:

- a. **Ministry of Human Resource Development Initiative:** This initiative is an effort of the Ministry of Human Resource Development (MHRD) to promote the usage of Open Educational Resources (OER) in India. MHRD has created a National Resource Centre for Open Educational Resources (NRCOER). A mission dedicated to promote, curate, disseminate, and strengthen OER in India. This initiative is executed through higher educational institutions and institutes acting independently or in a consortium. The NRCOER currently provides support in the form of ready-to-use tools, software and research based content for both teachers and students.
- b. **AICTE – NCERT Programme:** The All India Council for Technical Education (AICTE) in partnership with National Council of Educational Research and Training (NCERT) launched 'ODISHA e-Learning in Higher Education or OELHE'. This programme is designed to promote development of educational materials, promote the usage of the same, and use them as the primary source of source material in higher education. The program involves the setting up of a wide network of e-learning centers in the state, providing free access to all kinds of OER, online learning, and online support systems.
- c. **Open and Distance Learning Program:** Open and Distance Learning program in India, also known as ODL is intended to make classroom learning more accessible for students by using digital tools and technology. This programme involves the setting up of total learning centers, incorporating open access textbooks and digital libraries and offering a variety of course materials and teacher supports.
- d. **Open Atal Platform:** In order to deliver quality education to students from all parts of the society, the Atal Innovation Mission launched the Open Atal Platform. This platform provides an online repository of learning materials and resources for students and teachers. It also includes tools for creating interactive multimedia content, lecture recordings, and discussion forums.
- e. **National Program on Technology Enhanced Learning:** The National Program on Technology Enhanced Learning (NPTEL) is a joint initiative of seven Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc). This initiative is designed to provide quality video and audio recorded lectures along with supplementary reading material. This program is open to all students across the country and free online courses are also available.
- f. **NDLI:** The National Digital Library of India (NDLI) is a project of the Ministry of Human Resource Development (MHRD). It is an open access digital library endeavors to provide equal learning opportunities to all sections of society. The library houses more than 80 lakhs of digitized learning resources in a variety of formats like ebooks, audio/video resources, websites, and learning objects. It also offers expert advice and support for creating new digital content for learners.
- g. **e-PG Pathshala:** The e-PG Pathshala is a nationwide program for developing and deploying quality learning materials for students and teachers. The program focuses on creating accessible, consistent and ubiquitous digital content for learners from classes 1 to 12. It also emphasizes the use of open educational resources to help create e-learning modules so that they can incorporate them in their regular curriculum.
- h. **Open Learning Exchange India:** Open Learning Exchange India is being implemented by Microsoft India to provide supplementary quality education to rural children in over 150 districts across India. The programme focuses on providing free access to pre-developed quality learning resources and materials to bridge the digital divide. This programme is being implemented in collaboration with the Ministry of Human Resource Development, Aakash Educational Services Limited, NIIT Foundation, Azim Premji Foundation and National Institute of Technology, Karnataka.
- i. **National Repository of Open Educational Resources (NROER):** The NROER is a comprehensive repository of open educational resources and digital learning objects. The repository is designed to provide support and resources to teachers, students, researchers, and public in the form of digital content. It also provides multiple collaboration and communication tools such as online collaboration workspaces, online forums, and open educational micro-sites.
- j. **NIIT Uniqua:** NIIT Uniqua is an online portal designed to provide supplements to learners. It provides access to various open educational resources such as video lectures, assessments and resources with the help of state of the art technology. This portal also enables learners to access and discuss with the best minds from across the country.
- k. **E-Yantra:** The E-Yantra Lab setup Initiative (ELSI) is a pilot project initiated by IIT Bombay to provide technical support and resources to engineering colleges in India. This initiative is focused on providing guidance and tools for laboratory projects to enhance and develop the quality of technical education in India.
- l. **National Initiative on Education:** The National Initiative on Education (NIE) is a joint effort between the Ministry of Human Resource Development and the MHRD Saarthi Scheme. This initiative provides a platform for students to access quality education by providing free classroom resources, digital libraries and virtual classrooms.
- m. **University Network:** The University Network (UNET) was established by the Ministry of Human Resource Development with the aim of connecting various universities across the country. This platform provides an online repository of educational resources and digital learning materials which can be accessed by students and faculty.
- n. **SWAYAM-NPTEL Project:** The SWAYAM-NPTEL Project is an initiative by the Ministry of Human

Resource Development with the aim of improving the quality of higher education in India through free online courses and lecture notes. This project also provides technical support to teachers and students to access the courses.

- o. **NPTEL Online Certification Programme:** The NPTEL Online Certification Programme (OCP) is an initiative by the Ministry of Human Resource Development with the aim of providing certified courses to learners. These courses are available on the NPTEL YouTube Channel and can be accessed free of cost. This programme also makes available online courses in various areas, such as Python, Artificial Intelligence, and Robotics.

Initiatives such as the ones mentioned above are working towards making Open Educational Resources (OER) available in India, making them accessible to all sections of society, and providing opportunities for learners to learn from the best minds from within India. However, although these initiatives are in place, there are many challenges and obstacles that still need to be addressed for successful implementation of these initiatives. It is only with the collaborative efforts of both the Government and the private sector that these initiatives will be able to create an effective ecosystem for digital learning in India.

## 9. FINDINGS AND DISCUSSIONS

Open Educational Resources have emerged as a response to the growing cost of traditional educational materials and the need for more freely available and accessible materials. There are several advantages to making OERs available, such as the ability to create new learning environments and the provision of customized content to learners. In addition, OERs can also promote higher education since they can provide the same quality of materials as the traditionally expensive materials. The use of OERs in India has been increasing in the last few years, especially in higher education. A survey conducted by [Singh & Chauhan, \(2017\)](#) showed that nearly 95% of higher education faculty in India uses some form of OERs in teaching. The main reasons for using OERs as identified by the respondents were to get access to free resources, to save time for creating own content and to reduce costs. Open Educational Resources in India are mainly used for course content, video tutorials, resource documents, self-assessment tools and multimedia applications. It is also being used in the development of self-learning materials and in distance education. In terms of challenges, the main challenges identified in the use of OERs in India are related to the quality of the resources, the availability of up-to-date versions and compatibility issues. The quality of the resources is a major concern since there is no standard or reliable way to assess the quality of the material.

This is especially true for resources found on the web, as there is no guarantee that the information is up-to-date or accurate. Furthermore, the availability of up-to-date versions of the material is also a concern since the material may no longer be available if the original page is removed or updated. Lastly, compatibility issues also exist, as some OERs may not be compatible with certain software or hardware

platforms, meaning that the users may not be able to access the materials. Despite the challenges of using OERs in India, there are several opportunities that can help the country in creating better and more effective use of these resources. Most notably, this includes the ability to access a wider range of content and material, which can help in creating more personalized learning environments and materials. In addition, OERs can help reduce the costs of traditional educational materials and can also be used to develop self-learning material. Furthermore, the use of OERs can also help in improving access to education for disadvantaged populations by providing free access to materials and resources. Lastly, OERs can also help in increasing the quality of education by providing a wider range of materials and resources that can help learners in their journey towards gaining a higher education. Despite the growing popularity of Open Educational Resources in India, there remain some challenges in terms of its incorporation.

The main challenges noted in the literature review include the quality of resources, the availability of up-to-date versions, compatibility issues and the lack of standardization in terms of procedures for assessing the quality of Open Educational Resources. Ensuring the quality of the resources is a major concern since there is no reliable way to assess the quality of material available on the web. Furthermore, the availability of the material is also a concern since the material may no longer be available when the original page is removed or updated. In addition, compatibility issues are also a concern since some OERs may not be compatible with certain software or hardware platforms, which means that the users may not be able to access the material. In order to ensure quality and usability of Open Educational Resources, various measures need to be taken, including the development of policies and standards that can provide guidance on the assessment and use of OERs. In particular, these policies and standards should focus on the quality, availability and compatibility of the material, as well as the procedures for assessing the quality. Furthermore, there needs to be a greater focus on developing quality metadata, which can help in the discovery, retrieval and assessment of OERs. This metadata should include information on the type of material, the source, the author, the license and any restrictions on the use of the material. In addition, there should be greater coordination and collaboration between different stakeholders, particularly institutions and content providers, in order to ensure that the material is widely available and of high quality.

This collaboration could also help in the development and use of open standards, which can provide guidance on how OERs can be used appropriately. Furthermore, there should be more awareness and training for educators about the benefits and challenges of using OERs, as well as how to effectively assess the quality of the material. The incorporation of Open Educational Resources in India has the potential to provide a number of benefits, such as improved access to education, cost savings and the ability to create personalized learning environments and materials. However, there are several challenges associated with the use of OERs, such as the quality of resources, the availability of up-to-date versions and compatibility issues.

In order to ensure that OERs are widely adopted and used in India, policy makers, content providers and educators need to work together in order to develop quality standards and procedures for assessing the quality. Furthermore, greater collaboration is needed in order to ensure that the material is widely available and of high quality, as well as to develop open standards that can be used to guide the use and selection of OERs. Awareness and training of educators is also needed in order to ensure that OERs are being used effectively and efficiently. With the right policies and strategies in place, Open Educational Resources could provide a number of benefits for higher education in India.

## 10. CONCLUSION AND FURTHER RESEARCH

Open educational resources (OER) offer great potential for improving access to quality education in India. However, as the research article discussed, there are various opportunities and challenges to incorporating OER in India. This paper explored the existing literature on OER in India and the various factors influencing their adoption and uptake. This has identified some key issues to be addressed in order to promote the use of OER in India. The next step in exploring the opportunities and challenges of incorporating OER in India is to conduct empirical studies on the impact of OER in terms of access, affordability, and quality of education in India. This type of research would provide valuable data on the actual effect of OER in India. Additionally, more research should be done on the barriers to implementation and adoption of OER in India. Identifying the key barriers would help in developing strategies for overcoming these obstacles and promoting the use of OER in India. Furthermore, research should attempt to understand the motivations behind the adoption of OER in India. This could involve surveys or interviews conducted with various stakeholders such as teachers, administrators, and students. Understanding the motivations behind the adoption of OER would help in designing policies that encourage and promote its use. Additionally, research should explore the potential for developing OER for Indian students in different languages. OER are typically available in English and this may pose a challenge for students from rural areas who are not fluent in English.

Therefore, it would be valuable to explore the potential for developing Indian OER in regional languages. This could involve surveying existing Indian OER in different languages and assessing their accessibility and affordability. Furthermore, research should explore how existing OER could be adapted to better meet the needs of Indian students. Finally, it is also important to explore the legal issues related to OER in India. There needs to be a better understanding of the various legal frameworks, such as copyright and licensing, related to the use of OER in India. This could involve assessing existing copyright laws and how they affect OER use in India. This research should attempt to identify ways in which these laws could be amended or updated to better promote the use of OER in India. In conclusion, there are various opportunities and challenges associated with the incorporation of OER in India. Further research should attempt to understand the impact of OER in terms of access, affordability, and quality of education in

India. Furthermore, more research should be done on the barriers to implementation and adoption of OER in India and the motivations behind the adoption of OER in India. Additionally, research should explore potential for developing OER for Indian students in different languages and assessing the potential for adapting existing OER for students in India. Finally, research should explore the legal issues related to OER in India. Addressing these issues will be a valuable contribution towards the efforts of improving access to quality education in India through the use of OER.

## REFERENCES

- Abdo, M., Saif, F., Tlili, A., & Essalmi, F. (2023). Impact of Facebook as a Learning Tool on Learning Outcomes, Technology Acceptance, and Attitude. In Saif, M. A., Tlili, A., Essalmi, F., & Jemni, M. (pp. 761-777). <https://doi.org/10.4018/978-1-6684-7123-4.ch041>
- Abeywardena, I. S. (2017). An empirical framework for mainstreaming OER in an academic institution. *Asian Association of Open Universities Journal*, 12(2), 230-242. <https://doi.org/10.1108/aaouj-11-2017-0036>
- Al-Adwan, A. S. (2020). Investigating the drivers and barriers to MOOCs adoption: The perspective of TAM. *Education and Information Technologies*, 25(6), 5771-5795. <https://doi.org/10.1007/s10639-020-10250-z>
- Al Lily, A. E., Ismail, A. F., Abunasser, F. M., & Alhajhoj Alqahtani, R. H. (2020). Distance education as a response to pandemics: Coronavirus and Arab culture. *Technology in Society*, 63. <https://doi.org/10.1016/j.techsoc.2020.101317>
- Arrove, R. F. (2020). Imagining what education can be post-COVID-19. *Prospects*, 49(1-2), 43-46. <https://doi.org/10.1007/s11125-020-09474-1>
- Arthur-Nyarko, E., Agyei, D. D., & Armah, J. K. (2020). Digitizing distance learning materials: Measuring students' readiness and intended challenges. *Education and Information Technologies*, 25(4), 2987-3002. <https://doi.org/10.1007/s10639-019-10060-y>
- BESAR, D. H. S. N. P. H. (2015). *ENGAGING HIGHER EDUCATION STUDENTS WITH SOCIAL MEDIA: MIB MODULE CASE STUDY* (Issue April). <https://doi.org/10.13140/RG.2.2.30744.85762>
- Bordoloi, R. (2018). Transforming and empowering higher education through Open and Distance Learning in India. *Asian Association of Open Universities Journal*, 13(1), 24-36. <https://doi.org/10.1108/aaouj-11-2017-0037>
- Bordoloi, R., Das, P., & Das, K. (2020). Lifelong learning opportunities through MOOCs in India. *Asian Association of Open Universities Journal*, 15(1), 83-95. <https://doi.org/10.1108/aaouj-09-2019-0042>
- Bower, M. (2020). A Framework for Adaptive Learning Design in a Web-Conferencing Environment. *Learning Design*, 2016(1), 235-267. <https://doi.org/10.4324/9781315693101-16>
- Chen, H. liang, & Burns Gilchrist, S. (2013). Online access to higher education on YouTubeEDU. *New Library World*, 114(3-4), 99-109. <https://doi.org/10.1108/03074801311304023>
- Cortinovis, R., Mikroyannidis, A., Domingue, J., Mulholland, P., & Farrow, R. (2019). Supporting the discoverability

- of open educational resources. *Education and Information Technologies*, 24(5), 3129–3161. <https://doi.org/10.1007/s10639-019-09921-3>
- Eniyew, T., Abebe, F., Gela, D., Asegid, A., & Tiruneh, D. (2020). Nutritional status among primary school students and its association on academic performance in north-central Ethiopia: Cross-sectional study design. *Research Square*, 1(1), 1–17. <https://doi.org/10.21203/rs.2.13718/v2>
- Ganapathi, J. (2018a). Open educational resources: Challenges and opportunities in Indian primary education. *International Review of Research in Open and Distance Learning*, 19(3), 114–128. <https://doi.org/10.19173/irrodl.v19i3.3662>
- Ganapathi, J. (2018b). Open educational resources: Challenges and opportunities in Indian primary education. *International Review of Research in Open and Distance Learning*, 19(3), 114–128. <https://doi.org/10.19173/irrodl.v19i3.3662>
- Garcia-Loro, F., Martin, S., Ruipérez-Valiente, J. A., Sancristobal, E., & Castro, M. (2020). Reviewing and analyzing peer review Inter-Rater Reliability in a MOOC platform. *Computers and Education*, 154. <https://doi.org/10.1016/j.compedu.2020.103894>
- Guerrero, M., Heaton, S., & Urbano, D. (2020). Building universities' intrapreneurial capabilities in the digital era: The role and impacts of Massive Open Online Courses (MOOCs). *Technovation*. <https://doi.org/10.1016/j.technovation.2020.102139>
- Ismaili, J., & Ibrahim, E. H. O. (2017). Mobile learning as alternative to assistive technology devices for special needs students. *Education and Information Technologies*, 22(3), 883–899. <https://doi.org/10.1007/s10639-015-9462-9>
- Jena, P. K. (2020). Impact of Pandemic COVID-19 on Education in India. *International Journal of Current Research (IJCR)*. <https://doi.org/10.31235/osf.io/2kasu>
- K. Sathish Kumar et al. (2021). OPEN EDUCATIONAL PRACTICES FOR RESEARCH EFFECTIVENESS Related papers. *International Research Journal of Modernization in Engineering Technology and Science*, 3(4), 113–121.
- Keats, D. (2009). The road to Free and Open Educational Resources at the University of the Western Cape: A personal and institutional journey. *Open Learning*, 24(1), 47–55. <https://doi.org/10.1080/02680510802627829>
- Kinsky, C., King, H., & Lewis Miller, C. (2018). Open educational resources: an analysis of Minnesota State Colleges and Universities student preferences. *Open Learning*, 33(3), 190–202. <https://doi.org/10.1080/02680513.2018.1500887>
- Kumar, K. S., & M. Mahendraprabu. (2021). *Perception of Oer and Oep* (1, Vol. 1, Issue 1). Notion Press. <https://doi.org/10.5281/zenodo.4697667>
- Kumar, K. S., & Mahendraprabu, M. (2021). Open educational practices of SWAYAM programme among research scholars. *Education and Information Technologies*, 26(4), 4621–4645. <https://doi.org/10.1007/s10639-021-10495-2>
- Kumar, K. S., Prabu, M. M., Kalaiyarasan, G., Ramnath, R., Kumar, N. S., Mookkiah, M., Kumar, M. A., & M. Manida. (2021a). Impact of the Open Educational Practices through Academic Achievement with Emotional, Social and Academic Adjustment among Researchers. *International Journal of Research Publication and Reviews*, 2(4), 434–444.
- Kumar, K. S., Prabu, M. M., Kalaiyarasan, G., Ramnath, R., Kumar, N. S., Mookkiah, M., Kumar, M. A., & M. Manida. (2021b). Impact of the Open Educational Practices through Academic Achievement with Emotional, Social and Academic Adjustment among Researchers. *International Journal of Research Publication and Reviews*, 2(4), 434–444. <https://doi.org/10.5281/ZENODO.4705214>
- Kumar, K. S., Prabu, M. M., Kalaiyarasan, G., Ramnath, R., Kumar, N. S., Mookkiah, M., Kumar, M. A., & M. Manida. (2021c). *Impact of the Open Educational Practices through Academic Achievement with Emotional, Social and Academic Adjustment among Researchers*. <https://doi.org/10.5281/ZENODO.4705214>
- Lane, A. (2013). The social and economic impacts of open education. In *Advances in Digital Education and Lifelong Learning* (Vol. 1, pp. 137–172). Emerald Group Publishing Ltd. [https://doi.org/10.1108/S2051-2295\(2013\)0000000006](https://doi.org/10.1108/S2051-2295(2013)0000000006)
- Latchem, C. (2014). Musing on the memes of open and distance education. *Distance Education*, 35(3), 400–409. <https://doi.org/10.1080/01587919.2015.955266>
- Lawrence, C. N., & Lester, J. A. (2018). Evaluating the Effectiveness of Adopting Open Educational Resources in an Introductory American Government Course. In *Journal of Political Science Education* (Vol. 14, Issue 4, pp. 555–566). Routledge. <https://doi.org/10.1080/15512169.2017.1422739>
- Leng, C. B., Ali, K. M., & Hoo, C. E. (2016). Open access repositories on open educational resources. *Asian Association of Open Universities Journal*, 11(1), 35–49. <https://doi.org/10.1108/aaouj-06-2016-0005>
- Luo, T., Hostetler, K., Freeman, C., & Stefaniak, J. (2020). The power of open: benefits, barriers, and strategies for integration of open educational resources. *Open Learning*, 35(2), 140–158. <https://doi.org/10.1080/02680513.2019.1677222>
- McGowan, V. (2020). Institution initiatives and support related to faculty development of open educational resources and alternative textbooks. *Open Learning*, 35(1), 24–45. <https://doi.org/10.1080/02680513.2018.1562328>
- Mehta, S. N. (2020). E-Learning – An Online Educational Platform Challenges and Futuristic Scope in Rural India. *Xi'an University of Architecture & Technology, XII(Iiii)*, 14–20.
- Morales, R., & Baker, A. (2018). Secondary students' perceptions of open science textbooks. *Journal of Interactive Media in Education*, 2018(1), 1–9. <https://doi.org/10.5334/jime.455>
- Movchun, V., Lushkov, R., & Pronkin, N. (2020). Prediction of individual learning style in e-learning systems: opportunities and limitations in dental education. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-020-10372-4>
- Mulholland, E., & Bates, J. (2014). Use and Perceptions of E-



- books by Academic Staff in Further Education. *Journal of Academic Librarianship*, 40(5), 492-499. <https://doi.org/10.1016/j.acalib.2014.05.018>
- Newby, L. S., Hite, J. M., Hite, S. J., & Mugimu, C. B. (2013). Technology and education: ICT in Ugandan secondary schools. *Education and Information Technologies*, 18(3), 515-530. <https://doi.org/10.1007/s10639-011-9180-x>
- Nipa, T. J., & Kermanshachi, S. (2020). Assessment of open educational resources (OER) developed in interactive learning environments. *Education and Information Technologies*, 25(4), 2521-2547. <https://doi.org/10.1007/s10639-019-10081-7>
- Nkwenti, M. N., & Abeywardena, I. S. (2019). OER Mainstreaming in Cameroon: Perceptions and Barriers. *Open Praxis*, 11(3), 289. <https://doi.org/10.5944/openpraxis.11.3.981>
- Nordkvelle, Y. T., & Olson, J. (2005). Visions for ICT, ethics and the practice of teachers. In *Education and Information Technologies* (Vol. 10, Issues 1-2, pp. 19-30). <https://doi.org/10.1007/s10639-005-6745-6>
- Olakulehin, F. K. (2008). Open and distance education as a strategy for human capital development in Nigeria. *International Journal of Phytoremediation*, 23(2), 123-130. <https://doi.org/10.1080/02680510802051939>
- Richter, T., & McPherson, M. (2012). Open educational resources: Education for the world? *Distance Education*, 33(2), 201-219. <https://doi.org/10.1080/01587919.2012.692068>
- Salkey, A., & D'Aguiar, F. (1994). British Subjects. In *World Literature Today* (Vol. 68, Issue 4). <https://doi.org/10.2307/40150782>
- Sathish Kumar, K., Mahendraprabu, M., Kalaiyaran, G., Ramnath, R., Sasi Kumar, N., & Mani, M. (2021). Social Media as an Open Educational Practice Tools and Challenges. *Library Philosophy and Practice*. <https://doi.org/10.5281/zenodo.4705256>
- Sathish Kumar, K., Mahendraprabu, M., Kalaiyaran, G., Ramnath, R., Sasi Kumar, N., & Mookkiah, M. (2021). A vision of teaching learning practices in mathematics education through open educational resources. *International Journal of Education and Teaching*, 1(2), 30-36. <https://doi.org/10.51483/ijedt.1.2.2021.30-36>
- Scanlon, E., McAndrew, P., & O'Shea, T. (2015). Designing for Educational Technology to Enhance the Experience of Learners in Distance Education: How Open Educational Resources, Learning Design and Moocs Are Influencing Learning. *Journal of Interactive Media in Education*, 2015(1). <https://doi.org/10.5334/jime.al>
- Shukla, S. (2021). M-learning adoption of management students': A case of India. In *Education and Information Technologies* (Vol. 26, Issue 1). <https://doi.org/10.1007/s10639-020-10271-8>
- Singh, G., & Chauhan, R. (2017). Awareness towards Massive Open Online Courses (MOOCs) and their usage for Teacher Education in India. *Asian Journal of Distance Education*, 12(2), 81-88.
- Solomonidou\*, C., & Stavridou, H. (2001). Design and development of a computer learning environment on the basis of students' initial conceptions and learning difficulties about chemical equilibrium. *Education and Information Technologies*, 6(1), 5-27. <https://doi.org/10.1023/A:1011359010331>
- Thomas, R. (2017). Use of Open Educational Resources: Indian Scenario. *International Journal of Library & Information Science (IJLIS)*, 6(5), 17-26. <http://www.iaeme.com/IJLIS/index.asp17http://www.iaeme.com/IJLIS/issues.asp?JType=IJLIS&VType=6&IType=5JournalImpactFactor>
- Tlili A, Denden M, D. A., & Padilla-Zea N, Huang R, S. T. and B. D. (2022). Game-Based Learning for Learners With Disabilities — What Is Next? A Systematic Literature Review From the Activity Theory Perspective. *Front. Psychol.*, 12(February), 1-16. <https://doi.org/10.3389/fpsyg.2021.814691>
- Weinhardt, J. M., & Sitzmann, T. (2019). Revolutionizing training and education? Three questions regarding massive open online courses (MOOCs). *Human Resource Management Review*, 29(2), 218-225. <https://doi.org/10.1016/j.hrmr.2018.06.004>
- Xia, J. (2013). Let us take a Yale open course: A Chinese view of open educational resources provided by institutions in the West. *Journal of Computer Assisted Learning*, 29(2), 122-137. <https://doi.org/10.1111/j.1365-2729.2012.00477.x>

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