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Open Educational Resources in India and its Application in Teaching and Learning

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ABSTRACT

Technological development has affected the ICT tools of teaching learning system. The educational system of India has emerged greatly with the benefits of ICT and open access material available online. The internet has brought the information and knowledge in the hand of educational community. This article aims to increase insight into the importance and benefits of open educational resources (OERs) and its application in teaching and learning process. To comprehend India's position on OER, Government of India has taken many relevant initiatives which are disused in this article. In order to meet the professional goals of young Indians, this research also offers several advantages of OER concepts that are building complex lifelong learning pathways.

Keywords: OER, ICT, Teaching-learning tools

The production and dissemination of information is an essential parts of present modern education system. The use of ICT in education today extends beyond just mobile learning and follows a wide range of technologies such as simulation, virtual courses, open educational resources (OER), Moodle, Google Classroom, and many more that may be accessed depending on the needs of educational objectives. ICT and open educational materials must be integrated into a teacher's professional practices (Kugamoorthy & Rajini, 2017), as the teachers are one of the most important sources of information and education and play a significant role in forming the future generation. Both students and teachers adopt open educational approaches, but it is a complicated, individual, and contextual process that evolves through time (Cronin, C. 2017).

Open Education Resources (OER) can be any kind of educational content, from small things like images to big things like books or online courses. Several educational courses, as well as degree programs, course materials, textbooks, articles, videos, assessments, software applications, and different other types of educational materials, are available as open educational resources (Neely *et al.* 2016) on OER repositories. OER use open copyright licenses like Creative Commons while traditional educational materials are subject to restrictive copyright laws. "Retain, Reuse, Revise, Remix, and Redistribute" are the characteristics of OER content, which published under 6 different types of CC license (Scheunemann, Brandão, & Brauner, 2018). These licenses permit the user to use one or more of the five characteristics, but they may also prevent them from utilizing one or more openness levels. A teacher with digital proficiency may utilize digital tools creatively to develop students' higher-order thinking skills and help them get ready for

the fast technological change that is occurring in both society and the workplace (Sakthivel & Radha, 2021), similarly an ICT-competent teacher can adopt and create quality OER for the educational community.

OER adoption in India: The rate of technological development in education has never been so quick as it has been in recent years, especially in the post-COVID period. Our methods of teaching and learning have evolved dramatically because of technology.

According to the National Knowledge Commission, OER and open access can greatly alleviate the challenges associated with educational materials (Dutta, 2016). Although using a digital copy is always more convenient, OER encourages the sharing and reuse of information in any format (Mishra, 2017). The availability of educational resources in digital or non-digital media shouldn't have an impact on the creation and uptake of open educational resources. The most efficient method to improve the quality of increasing access to education is for teachers to collaborate to generate educational content using OER (Pitroda, 2009). In accordance with the National Knowledge Commission's recommendations, the Indian government has launched a number of initiatives to raise OER's awareness and adaptability within the education system.

Vidhya-Daan: With this project, educational content would be made available to India's rural areas. Any person or organization, such as a school, is welcome to contribute to the development of an educationally disadvantaged area at this portal. They can register on the website and submit content so that everyone can access materials at anytime, anywhere for free.

SWAYAM refers to "Study Webs of Active Learning for Young Aspiring Minds". It offers different learning modules on an online platform. The courses are available for free and anyone can enroll for different courses at a time according to their need and ease. It is an initiative taken by the Indian government with help of the Microsoft company. It offers courses in various disciplines. Teachers can benefit from teacher training courses available on the SWAYAM platform. However, digital literacy and an internet connection are two of the most important requirements for using it.

National Digital Library (NDL) contains information in a variety of languages and offers learning and research interface support in many Indian languages. It was created to support students at all academic levels, including researchers for lifelong learning in all disciplines, especially for differently-abled students. NDL India offers a variety of learning resources in many formats, including PDF, HTML, DOC, PPT, JPG, GIF, MP3, and many more.

Virtual Lab is a project under the Ministry of Education, Government of India. Virtual laboratories are getting more and more attention in e-learning as a low-cost alternative to physical labs. Good laboratory settings are crucial for engineering and other technical education. One of the objectives of this project is to provide remote access to simulation-based labs in science and engineering disciplines. Students and faculty members from the science and engineering stream have the most benefits from such labs. But in a country like India, the success of virtual labs can face many challenges such as computer anxiety and lack of technical knowledge among teachers can be a major challenge in integrating technology in education (Saxena *et al.* 2019). Adequate training programs for teachers can help to overcome such challenges.

National Repository of Open Educational Resources (NROER) was created to meet the issues that our country's education sector is facing. It's a collective platform that brings together everyone who cares about education. It has resources in different languages for all disciplines and grades. NROER aims to provide open resources to the teaching-learning community and makes a connection between cognitive and applied learning (Khan, 2015). It gathers all digital resources such as educational films, pictures, diagrams, textbooks, etc. with other digital resources.

Mobile devices in education: Mobile technology is being incorporated into educational technology as ICT advances. Mobile devices started to be used as teaching-learning tools. After the spread of the corona pandemic, mobile technology has supported the education system at the world level. It provides easier access to course materials. Students can connect the teacher and his peer without the limitations of locations and boundaries. Mobile technologies, like smartphones and tablets, make it easier for faculty and students to communicate.

While not all students can afford a laptop, some may have access to a smartphone with access to OER sources for educational materials.

The following are a few reasons why open educational resources are important for teaching and learning —

Collaborative effort among Teachers: Sharing educational resources is not new in education. The term "open educational resources" was first used in 2002 during the UNESCO Conference on Open Course ware for Higher Education to promote the concept of unrestricted knowledge sharing as well as digital teaching, learning, and research tools (Krelja, 2016). Teachers recognized the opportunity to connect with peers from different institutions as a significant advantage (Baas, et al. 2022). The use and production of OER encourage organizational learning by enabling teachers to share their classroom experiences and gain from the experience of others. By using efficient OER practices, educational resources' affordability and quality may both be improved.

Customization of OER materials: Teachers customized OER to match the requirements of the classes, and they integrated this effect to the high association between OER and personalized learning (Al Abri, & Dabbagh, 2018). In a contemporary education system that uses a student-centered approach, teachers present students with a wide range of materials and encourage students to improve what they learn and how they learn it (De Los Arcos, *et al.* 2016). To meet the requirements of students, OER content can be updated. A teacher can easily adapt content to support the curriculum by beginning with OER material and modifying it to reflect the specifics of the course.

Enhance student learning accessibility: OER are available to all students and teachers at any time from anywhere. It is vital to make sure that students may easily access educational resources that are suitable for their budget and more than that at low costs because education has increasingly shifted to virtual classrooms in many areas of the world. In order to support the teaching-learning process in an increasingly complex higher education environment, institutions of higher learning require collaborative and critical approaches to openness (Conole, & Brown, 2018). Students do not have to

worry about having to buy a particular textbook or print out handouts because they can access all OER from any electronic device of their choice.

Making changes to the current course material: In a Teaching-learning setting where both learners and teachers are geographically separated, feedback is crucial for teachers to assist students in maintaining interest in and success with the course material (Steinweg *et al.* 2006). OER offers a huge range of educational contents in a variety of styles and formats due to the broad variety of materials they cover. The teacher can adapt these materials according to the specific need of the student. The vast variety of these forms can offer numerous methods to explain important ideas, enabling a variety of learning styles and strengths. It also supports the Universal Design for Learning principles, which aim to provide accessible material to all students regardless of their learning habits (Dalton, 2017).

Updating/Improving educational content: Most of the OER materials are released under the Creative Commons license. The cc license is divided into 6 categories of licenses (Margoni, & Peters, 2016). The OER released under the modification license are available to modify according to the need of the course. It is a great advantage for a teacher to modify the OER according to the need of a student.

Increase affordability: When OER are used in place of expensive textbooks and course materials, students appreciate and respond positively (Gabrielle & Judy, 2017). Open textbooks and other OER are available for free. The expansive books do not guarantee the students' success they are significantly known as a learning tool. In order to reduce the costs of textbooks, which constitute a considerable proportion of college students' expenses, efforts should be made wherever possible. The books cannot be revised or update as easily as any OER. An updating process for a book is a tedious amount of work and money.

The high quality open educational resources are made available as a free alternative to expensive textbooks (Hilton, 2016). Abramovich, & McBride (2018) found in a survey that nearly half of the students believed that open educational resources had high financial benefits than traditional course materials, and most respondents said that OER were

as useful as or even better than traditional course materials in their respective courses. OER will become more popular in India as a free educational resource in the future and the availability of free human resources and educational resources, it also indirectly affects GDP (gross domestic product) of India (Kumar & Prabu, 2021). Due to the high cost of textbooks, OER aids students in saving money. The pricey nature of the instructional resources may be unaffordable for many students. By moving to OER instruction, teachers may relieve students of a huge financial burden and might significantly raise their standard of living.

Concern of Quality Education: Learning scenarios and cultural norms will surely change as a result of successful elements for e-learning in the twenty-first century. They might also affect the kind of quality-related concerns that are important and how e-learning in higher education will be evaluated in the future. Once a clear strategy is placed, universities and state authorities could then act within that framework for generating e-content for education. It will be extremely difficult, to establish cohesive and sustained use of free educational materials without explicit support and approval from the relevant authority and the adoption of open educational resources can be structured on the success of the open access (Ossiannilsson, & Creelman, 2011). Resource-based learning, which is utilized in both open and distance education, provides a better environment for enhancing the culture of teaching-learning across many educational systems so that a greater number of students may access education at a higher quality (Falasca, 2011). OER-based online courses enhance the learning process since they allow for resource flexibility and the application of the information in a larger context (Sandanayake, 2019).

Digitized Learning: Students are being encouraged to use digital resources due to the physical limitation of print resources and a paradigm shift in student learning priorities (Alimi *et al.* 2020). OERs are free, publicly accessible digital resources that can be used by educational institutions to give students the finest learning opportunities. There are numerous kinds of OERs, including mixed, synchronous, asynchronous, and flipped classrooms, that can be applied in various ways by various teachers.

Increased Retention: An effective pedagogical learning environment is encouraged by the open nature of OER. Therefore, the work that a community does collectively is far richer and more durable than the work that a teacher can produce alone. OER courses were shown to have a lower rate of student dropout and a greater percentage of retention than non-OER courses (Zhao *et al.* 2020) and compared to those who used commercial textbooks, OER users' withdrawal rates were significantly lower (Clinton and Khan 2019).

CONCLUSION

It is essential for educators and students in higher education to become familiar with open educational platforms and their features to promote the use of OER in the process of learning and sharing information for free (Saxena & Singh, 2019). As technology allows us to break down our educational barriers, teachers must need to enhance their knowledge and awareness for ICT and OER integration in teaching-learning process. As well as collaborate on OER activities at the national and international levels to improve the efficacy and quality of learning. OERs are crucial for giving young students new knowledge and practical skills. Before extending their scope to include the non-formal and lifelong learning sectors, Indian OER projects focused on the formal education sector in order to address the growing aspirations for inclusive and high-quality development across the nation (Das, 2011). OER are advantageous to the educational community because they are available in a variety of formats.

REFERENCES

Al Abri, M. and Dabbagh, N. 2018. Open educational resources: A literature review. *Journal of Mason Graduate Research*, **6**(1): 83-104.

Abramovich, S. and McBride, M. 2018. Open education resources and perceptions of financial value. *The Internet and Higher Education*, **39**: 33-38.

Alimi, A.A., Adeyemo, I.A., Arulogun, O.T., Fajobi, D.T., Osunniyi, J.S., Adeoye, M.A. and Ojo, O.S. 2020. Adoption of Open Educational Resource (OER) Materials by Faculty and Learners: A Framework to Increase Openness Adoption in Open and Distance Learning Programmes. *London Journal of Research in Computer Science and Technology*, **18**.

Baas, M. *et al.* 2022. What's in it for me? A mixed-methods study on teachers' value creation in an inter-institutional

community on open educational resources in higher education. *Education and Information Technologies*, pp. 1-26.

Conole, G. and Brown, M. 2018. Reflecting on the Impact of the Open Education Movement. *Journal of Learning for Development*, **5**(3): 187-203.

Cronin, C. 2017. Open Education, Open Questions. EDUCAUSE Review. https://er.educause.edu/articles/2017/10/open-education-open-questions

Clinton, V. and Khan, S. 2019. Efficacy of open textbook adoption on learning performance and course withdrawal rates: A meta-analysis. *AERA Open*, **5**(3): 1–20.

Das, A.K. 2011. Emergence of open educational resources (OER) in India and its impact on lifelong learning. *Library Hi Tech News*, **28**(5): 10-15.

De los Arcos, B., Farrow, R., Pitt, R., Weller, M. and Mcandrew, P. 2016. Personalising learning through adaptation: Evidence from a global survey of K-12 teachers' perceptions of their use of open educational resources. *Journal of Online Learning Research*, **2**(1): 23-40.

Dutta, I. 2016. Open Educational Resources (OER): Opportunities and challenges for Indian higher education. *Turkish Online Journal of Distance Education*, **17**(2).

Dalton, E.M. 2017. Universal Design for Learning: Guiding Principles to Reduce Barriers to Digital & Media Literacy Competence. *Journal of Media Literacy Education*, **9**(2): 17-29.

Falasca, M. 2011. Barriers to adult learning: Bridging the gap. *Australian Journal of Adult Learning*, **51**(3): 583-590.

Gabrielle, V. and Judy, G. 2017. Student perceptions of college faculty who use OER. *The International Review of Research in Open and Distributed Learning*, **18**(4).

Hilton, J. 2016. Open educational resources and college textbook choices: A review of research on efficacy and perceptions. *Educational Technology Research and Development*, **64**(4): 573-590.

Krelja 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.

Kugamoorthy, S. and Rajini, M. 2017. ICT and OER-Integrated Teaching and Learning: Supporting Social Change among Teachers in a Post-War Northern Sri Lanka.

Kumar, S. and Prabu, M.M. 2021. Open Educational Practices among Research Scholars in Education. *Ahalia International Journal of Advanced Science and Technology*, **1**(1): 50-65.

Margoni, T. and Peters, D. 2016. Creative Commons Licenses: empowering open access. *Available at SSRN 2746044*.

Mishra, S. 2017. Open educational resources: Removing barriers from within. *Distance Education*, **38**(3): 369-380.

Neely, P., Tucker, J.P. and Au, A. 2016. Open Educational Resources: A Review of Attributes for Adoption in an Online Bachelor's Degree Program. *Journal of Instructional Research*, **5**: 61-69.

Ossiannilsson, E. and Creelman, A. 2011. Quality improvement of the use of OER in higher education-challenges and consequences. In *European Association of Distance Teaching Universities Annual Conference 2011*.

Pitroda, S. 2009. National knowledge commission: report to the nation 2006-2009. *Advisory Report, Government of India, New Delhi: Ministry of Human Resource Development, Department of Higher Education, Government of India*.

Saxena, M.K. and Singh, A. 2019. "Open Educational Resources: A New Hope for Education", Proceedings of National Education Conference – 2019 (National Conference on Distance and Open Learning: Challenges and Opportunities in Present Scenario), Center for Distance and Open Learning, Jamia Millia Islamia, New Delhi, Maktab Jamia Ltd., pp. 49 – 55.

Scheunemann, S., Brandão, A. and Brauner, D. 2018. Rethinking the 5 R´s in Open Educational Resources: A Reuse Perspective. In *Brazilian Symposium on Computers in Education (Simpósio Brasileiro de Informática na Educação-SBIE)*, **29**(1): 1729.

Steinweg, S.B., Williams, S.C., Warren, S.H. and Allen, P. 2006. Reaching through the screen: Using a tablet PC to provide feedback in online classes. *Rural Special Education Quarterly*, **25**(2): 8-12.

Sakthivel, D. and Radha, B. 2021. ICT Tools for Modern Education. *International Journal of Multidisciplinary Research and Explorer (IJMRE)*, **9**(1): 22-27.

Sandanayake, T.C. 2019. Promoting open educational resources-based blended learning. *International Journal of Educational Technology in Higher Education*, **16**(1): 1-16.

Zhao, Y., Satyanarayana, A. and Cooney, C. 2020. Impact of open educational resources (OER) on student academic performance and retention rates in undergraduate engineering departments. American Society for Engineering Education, 2020. City University of New York