

OER in the Knowledge Economy: Foundations, Growth, and Forms of Open Learning

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Abstract

Open Educational Resources (OER) represent a transformative force in the global education landscape by providing freely accessible, openly licensed materials that support teaching and learning. The purpose of this article is to explore the meaning, historical development, emergence, and types of OER in detail. By examining the evolution of open education, from the open-source software movement to the present-day OER initiatives, the article provides a comprehensive understanding of the key elements and classifications of OER. With growing emphasis on accessibility, equity, and lifelong learning, OER have become vital tools in democratizing education and promoting global knowledge-sharing. This article contributes to the ongoing discourse by offering a structured overview that informs educators, researchers, and policy-makers about the potential and diversity of OER.

Keywords: Open Educational Resources (OER), open access, education, learning, teaching, digital content, educational equity.

Introduction

The rapid evolution of technology and the digitalisation of education have resulted in the emergence of numerous innovative educational practices. Among these, Open Educational Resources (OER) have garnered significant attention for their potential to transform educational systems worldwide. OER provide an alternative to traditional educational materials by offering free and open access to high-quality learning content. These resources are particularly important in the context of ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all, as emphasised in the United Nations' Sustainable Development Goal 4.

Meaning and Definition of OER

Open Educational Resources (OER) are 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. This allows no-cost access, use, adaptation, and redistribution by others with minimal or no restrictions.

The term “OER” was first adopted in 2002 by UNESCO during the Forum on the Impact of Open Courseware for Higher Education in Developing Countries. Since then, several definitions have emerged. The most widely accepted is provided by UNESCO (2019):

“OER are learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others.”

OER can include full courses, textbooks, lectures, assessments, syllabi, videos, tests, software, and any tools, materials, or techniques used to support access to knowledge.

Types of OER

OER can be classified based on their content, format, and purpose. The following are some of the major types:

1. **Open Textbooks:** Openly licensed textbooks that can be freely used, downloaded, adapted, and shared. Examples include OpenStax, BCcampus Open Textbook Project, and Saylor Academy textbooks.
2. **Open Courseware:** Full course materials made freely available online, including lecture notes, reading materials, assignments, and video lectures. MIT OCW and Open Yale Courses are notable examples.
3. **Open Access Journals and Articles:** Research publications available under open licenses, supporting free access to scholarly knowledge. Examples include the Public Library of Science (PLOS), DOAJ, and ERIC.
4. **Multimedia Content:** Educational videos, audio clips, animations, simulations, and graphics that are openly licensed. Platforms such as Khan Academy, TED-Ed, and YouTube EDU host numerous such resources.
5. **Learning Modules and Courseware:** Smaller, self-contained units of study that can be integrated into courses. Examples include MERLOT and OER Commons modules.
6. **Open Software and Tools:** Learning management systems (e.g., Moodle), educational apps, and tools that support teaching and learning. These are typically released under open-source licenses.
7. **Open Assessment Resources:** Includes quizzes, tests, rubrics, and question banks that educators can use, modify, and distribute.

Key Open Educational Resources initiatives in India

The authors make an attempt to trace a non-exhaustive list here.

1. National Digital Library of India (NDLI) is a repository of open learning resources searching and browsing facility for the learner community. National Digital Library of India launched in May 2016. It was developed, hosted and maintained by the Indian Institute of Technology Kharagpur. It is sponsored and mentored by the Ministry of Education, Government of India, under the National Mission on Education through Information and Communication Technology (NME-ICT). <https://ndl.iitkgp.ac.in> (National Digital Library of India, n.d.)

2. National Programme on Technology Enhanced Learning (NPTEL) is Massive Open Online Courses was initiated in 2003 by 7 Indian Institutes of Technology, i.e. Bombay, Delhi, Kanpur, Kharagpur, Madras, Guwahati & Roorkee and the Indian Institute of Science Bangalore. It has 235 courses in web and video format covered with five core engineering disciplines, i.e. Civil, Computer Science, Electrical, Electronics and Communication & Mechanical. In phase II, added 600 more web and videos during 2019-14 in all major branches of engineering, physical science and management course at undergraduate and postgraduate levels. <https://nptel.ac.in> (NPTEL, Online Courses and Certification, Learn for Free, n.d.)

3. SWAYAM is a free online education program initiated by the Government of India. It contains the courses in video formats, downloadable reading materials, quizzes, and assessment and online

discussion forums. The courses available for class 9 to postgraduation level, accessible by anyone at anytime and anywhere. <https://swayam.gov.in> (Swayam Central, n.d.) 4. Swayam Prabha is a free DTH channel for education, 34 DTH channels telecasting only quality education programs on a 24X7 basis by using GSAT-15 satellite. The DTH channels cover Higher and School level education. NPTEL, IITs, CEC, IGNOU, NIOS, NCERT and UGC are contents provider for Swayam Prabha. These channels uplinked by BISAG, Gandhinagar and the web portal maintained by INFLIBNET Centre, Gandhinagar. <https://www.swayamprabha.gov.in> (Swayam Prabha- Free 34 DTH Channels, n.d.)

4. ShodhGanga is a reservoir of Indian Theses. It is an open-access digital repository of Indian Electronic Theses & Dissertation, and it has M.Phil. and PhD theses full-text collections and it is set up and maintained by INFLIBNET Centre, Gujarat. <https://shodhganga.inflibnet.ac.in> (Shodhganga : A Reservoir of Indian Theses @ INFLIBNET, n.d.)

5. NOPR (NISCAIR Online Periodicals Repository) is a full-text of articles 19 research journals published by CSIR-NISCAIR. It is an open-access repository developed and maintained by CSIR-NISCAIR, New Delhi. <http://nopr.niscair.res.in> (NOPR: Home, n.d.)

6. Open Government Data (OGD) Platform India is a platform developed by Government of India to support Open Data Initiatives. This portal is joint initiatives of Government of India and US Government. The portal is intending to use for Government Ministries/Departments their organisation to publish dataset, documents, services, tools and application collected by them for public use. <https://data.gov.in> (About Open Government Data (OGD) Platform India, 2013)

7. Vidya-Mitra Integrated e-Content Portal (A gateway to all learners) is webbased interface developed by INFLIBNET Centre and funded by Ministry of Education, Government of India under the National Mission of Education through Information and Communication Technology (NME-ICT). The portal containing audio/video, textual and multimedia learning materials with the facility of search and browse in a single interface that can be easily accessible to learners. <https://vidyamitra.inflibnet.ac.in> (Vidya-Mitra, Integrated E-Content Portal, n.d.)

Benefits of OER

While there are several advantages of OER, there are a few disadvantages too. Let's take a look at them. Advantages of Open Educational Resources for learners and teachers. Grodecka & Śliwowski (2014); (Cole, n.d.; OER Pros & Cons and Evaluation Methods, n.d.) & Open Educational Resources (2021) have identified the advantages of OER as mentioned below:

- Cost saving for learners,
- Reducing the gap between the country and different strata of society,
- Improve the quality of education
- Access the OER at any time and from anywhere
- Scalability,
- The rise of class materials,
- Enrichment of traditional course materials,
- Swiftly disseminate the information by OER,
- Cost-saving for students,
- Showcase of innovation and talent,
- Alumni connected with the institute,

- Frequently enhanced resources,
- OER are expanded access to learning, and
- The ability to modify course materials.

Challenges in OER Adoption

- **Quality Assurance:** Concerns about the credibility and academic quality of some OER.
- **Digital Divide:** Lack of infrastructure in low-income regions hampers access.
- **Awareness and Training:** Limited understanding and skills among educators about finding and using OER.
- **Licensing Confusion:** Misunderstanding of Creative Commons licenses can lead to misuse.
- **Sustainability:** Financial and operational sustainability of OER projects is a concern.

Conclusion

Open Educational Resources have redefined the landscape of teaching and learning by promoting accessibility, equity, and innovation in education. As the world moves towards more inclusive and technology-driven learning ecosystems, OER stand out as essential instrument for bridging educational gaps. However, maximizing their potential requires increased investment in infrastructure, educator training, and policy frameworks that support open education.

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