



Emerging Trends in Electronic Information Resources in Higher Education

By

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Abstract

This article deals with Emerging trends in Electronic Information Resources (EIR), Open Educational Resources 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. Open Access has added to ease of accessibility of information and made it available taking copyrights into consideration as well. Indian OER Initiatives like NPTEL, CEC, E-PG Pathshala, NDLI, E-Gyankosh, SWAYAM and SWAYAMPURABHA, Shodhganga. The OER has gained momentum in Higher Education in India thus is very helpful in e-learning, a distant mode of learning. Various OER initiatives in India have greatly supported distant learning making it possible for students to access information sources at home rather than to visit in person the respective institution. These OERs provide a diversified mode of dissemination of information by means of multimedia (Audio, Video lectures). The present study highlights the concept of Open Educational Resources (OER) and various government initiatives on promoting open access to educational resources.

Keywords: EIR, Open Access, NPTEL, CEC, E-PG Pathshala, NDLI, SWAYAM, SWAYAMPURABHA.

1. Introduction:

Tremendous transformation is taking place in Higher Education throughout the world and especially in India with the New Education Policy 2020 brought out by the Government of India. The transformation is observed especially in the emergence of new interdisciplinary subjects, curricula revisions, methods of instruction, and content delivery with a focus on building innovative, skilled, and talented brains to meet the current day's social and market needs & demands. A hybrid mode of imparting education & training has now become the new norm of education where both physical classroom education and online or virtual education are being used. 'Right to Education' and 'Access to Education, to All' has now become the norm of education. In

fact, the changed mode of imparting online education, demand for universal education, equal access to education, inclusiveness in education, and reaching so far unreached, and also effective teaching & learning are made possible with the availability of digital resources and digital aids. Therefore, the need for digital/electronic resources has become imminent and an important ingredient in the current system of education.

The term “**Open Educational Resources**” first came into use at UNESCO’s “Forum on the Impact of Open Course Ware for Higher Education in Developing Countries” in 2002. According to UNESCO, Open Educational Resources are defined as “technology enabled, open provision of educational resources for consultation use and adaptation by the community of the users for non –commercial purposes”.

Open Educational Resources (OER): OER are teaching, learning and research materials in any medium that reside in the public domain and have been released under an open licence that permits access, use, repurposing, reuse and redistribution by others with no or limited restrictions . The use of open technical standards improves access and reuse potential. OER can include full courses/programmes, course materials, modules, student guides, teaching notes, textbooks, research articles, videos, assessment tools and instruments, interactive materials such as simulations and role plays, databases, software, apps (including mobile apps) and any other educationally useful materials. The term ‘OER’ is not synonymous with online learning, eLearning or mobile learning. Many OER — while shareable in a digital format — are also printable. Open Licence: An open licence is a standardised way to grant permission and to state restrictions to accessing, using, repurposing, reusing or redistributing creative work (whether sound, text, image, multimedia, etc.).

2. Importance of Open Educational Resources:

Open educational resources (OER) are freely accessible, openly licensed documents and media that are useful for teaching, learning, and assessing as well as for research purposes. It is the leading trend in distance education/open and distance learning domain as a consequence of the openness movement. OER is often linked to open access (OA), to online learning, and to open education, OA refers to research outputs which are distributed online and free of cost or other (major) barriers, while OER has a focus on educational purposes. However, one could argue that they both share the motivation of making access to knowledge free of barriers.

- OER has a strong link to online learning. Although OER does not only come in a digital format, information technologies have been essential to the growth and spread of the movement.
- OER is a key part of open education, which relies on these materials to achieve the goal of giving broader access to more effective learning and training opportunities. This applies as much to formal education systems as to informal learning. However, open education is a much broader concept that also looks into other aspects of the learning experience.

3. Review of Literature:

Pinfield (2005) has explained OA as costless, instant and unhindered content availability. Open Access is meant basically to serve the purpose of making the intellectual work available on a free accessible platform without any hindrance. OA movement is a modern way of communication in scholarly world all over the world.

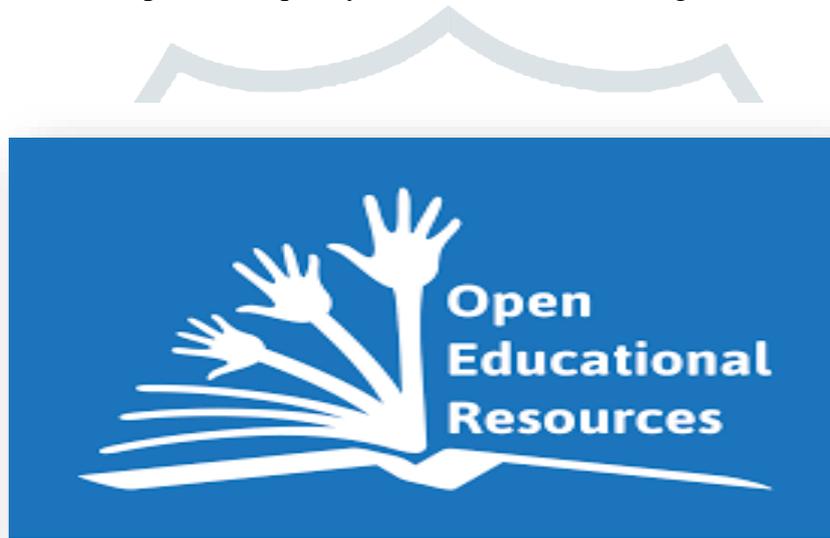
Wani, Gul, Rah,(2009) .There are many platforms by which information is available and accessible free of cost Directory of Open Access Repository(DOAR), Open source software , Directory of Open Access Journals (DOAJ), Open Educational Resources (OER) are few initiatives that make open access practically possible. Open Educational Resources are considered as the best for the purpose of making information accessible quickly anytime. According to William and Flora Hewlett Foundation “OER are the teaching,

learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge". Present study is an attempt to provide an insight to various higher education OER initiatives in India.

According to **Organization for Economic Co-operation and Development (OECD)**"open educational resources are digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research. OER includes learning content, software tools to develop, use and distribute content and implementation resources such as open licenses" (OECD, 2007).

4. Need of Open Educational Resources:

Open educational resources (OER) are materials used to support education that may be freely accessed, reused, modified and shared. These Guidelines outline key issues and make suggestions for integrating OER into higher education. Their purpose is to encourage decision makers in governments and institutions to invest in the systematic production, adaptation and use of OER and to bring them into the mainstream of higher education in order to improve the quality of curricula and teaching and to reduce costs.



5. Objectives:

1. To know the availability of open educational resources
2. To identify the major open educational resources in different disciplines.
3. To Know the web portals which are accessible open educational resources

6. Use of Open Educational Resources

1. **Retain** - make, own, and control a copy of the resource (e.g., download and keep your own copy)
2. **Revise** - edit, adapt, and modify your copy of the resource (e.g., translate into another language)
3. **Remix** - combine your original or revised copy of the resource with other existing material to create something new (e.g., make a mashup)
4. **Reuse** - use your original, revised, or remixed copy of the resource publicly (e.g., on a website, in a presentation, in a class)
5. **Redistribute** - share copies of your original, revised, or remixed copy of the resource with others (e.g., post a copy online or give one to a friend)
6. OER can provide democratic and equitable access to knowledge, meaning that anyone can access and use the resources regardless of income level, as long as there are no technical barriers. Given the sometimes high and unaffordable cost of textbooks⁷, OER offers a solution for those faced with

economic restrictions. Some argue that truly public education should not leave unresolved the problem of the affordability of textbooks, which leaves some students without access to a key part of their learning process.

7. OER can support life-long and non-formal learning, by being available to people outside of the formal educational system, regardless of age and previous studies.
8. OER can offer more diversified knowledge than traditional textbooks. Through OER, materials come from many different sources, different regions, reflect multiple perspectives and are available in many different languages.
9. OER can also create a more dynamic experience for the learner, who instead of passively listening or reading, can take part in the creation of the educational resources.

7. Librarians support OER by:

1. Encouraging their creation and use
2. Ensuring their availability, accessibility and visibility
3. Curating and ensuring its quality
4. Advising on copyright matters
5. Training users' ICT skills and encouraging digital literacy

In our India, E-Content initiations Set up in 1993, by University Grants Commission (UGC) as one of its Inter-University Centre, Consortium for Educational Communication (CEC) provides an educational program (Audio/Visual and Web-Based) and related support material for a wide range of disciplines. Four major components of this initiative include e-Education, EMRC (Media Center), VYAS and DTH Higher Education Channels and e-Knowledge Resources. These present a new idea and platform for dissemination of information. In the present era India has taken several steps for the development and welfare of OERs in India. The Government of India via National Knowledge Commission 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 canopy of the Ministry of Education is an efficient step for the enhancement of OER in India.

Open Educational Resources (OERs) are the resources available in public domain with an open license. OERs fulfils the true aim of education, by democratizing learning and reaching out to those who cannot afford or access them.



8. A brief explanation of some higher education OER initiatives in India is as follows:

8.1. National Programme on Technology Enhanced Learning (NPTEL): It is a Government of India initiative funded by the Ministry of Human Resource Development (MHRD). The initiative was started in 1999 with a prime aim of developing and enhancing the basic knowledge of science and engineering with the help of multimedia and the internet. The main motive of NPTEL is to empower students and prepare them for competition on a global level. It is a joint venture by seven Indian Institute of Technology and Indian Institute of Science Bangalore. About Us NPTEL (National Programme on Technology Enhanced Learning), is a joint venture of the IITs and IISc, funded by the Ministry of Education (MoE) Government of India, and was launched in 2003. Initially started as a project to take quality education to all corners of the country, NPTEL now offers close to 600+ courses for certification every semester in about 22 disciplines. <https://nptel.ac.in/>

- Largest online repository in the world of courses in engineering, basic sciences and selected humanities and management subjects
- YouTube channel for NPTEL – most subscribed educational channel, 1.3 billion views and 40+ lakhs subscribers
- More than 56000 hours of video content, transcribed and subtitled
- Most accessed library of peer-reviewed educational content in the world
- Translation of more than 12000 hrs of English transcripts in regional Indian languages

8.2 Consortium for Educational Communication (CEC): Consortium for Educational Communication (CEC) is one among the University Centres set up by University Grants Commission (UGC). CEC has been primarily set up to address the needs of higher education specially Degree level content by the use of powerful television media along with appropriate use of Information and Communication Technology (ICT). CEC produces educational programmes in different subjects by coordinating with 21 Media Centers. The e-content of CEC is in the form of audio, video etc. <https://cec.nic.in/cec/aboutcec>

8.3 E-PG Patshala: For the development of postgraduate programmes in India the Ministry of Human Resource Development under the canopy of National Mission on Education through ICT (NME ICT) has assigned UGC a assignment for the development of e-content in 77 subjects of postgraduate level. The E Patshala covers many subjects in its broad spectrum across the disciplines of Arts, Commerce, Humanities, Languages, Engineering and Technology, Life Science, Medical and Health Science, Physical and Basic Sciences, Social Science. It strongly advocates "Massive Open Online Course"(MOOCS). <https://epgp.inflibnet.ac.in/>

8.4 e-Gyankosh: e-Gyankosh is a national digital repository meant to store, index, preserve, distribute and share the digital learning resources developed by the Open and Distance Learning Institutions in India. The items in eGyankosh are protected by copyright. The course material is available in PDF format that is downloadable freely. Resources can be accessed through one time registration. It provides access to videos. <https://egyankosh.ac.in/>

8.5 Ekalavya: Ekalavya is another programme launched by Indian Institute of Technology Bombay in the year 2004. It offers several programmes like e-OUTREACH, e-GURU. e-OUTREACH is a programme under which a good quality audios, videos, digital text and HTML contents of educational value are created and disseminated. e-GURU is an Open Source initiative meant for providing e-guidance and online mentorship to students of B.E., M.C.A. and M.Sc. (CS/ IT/ Electronics) programmes, for their final year projects. This venture is very helpful for the propagation of interactive education. <http://ekalavya.net/>

8.6 .Virtual Learning Environment(VLE): It is an Institute of Life Long Learning. Virtual Learning Environment Institute of Life Long Learning is another OER initiative of University of Delhi .VLE provides e-learning in the disciplines of Commerce and Management Studies, Humanities and Social Sciences, Sciences, Mathematical Sciences both at undergraduate level and postgraduate level.

8.7 National Digital Library of India: The concept of library is changing from 'library within a wall' to 'library without a wall', i.e., "Digital Library". Digital library could transmit information to their users through network and users will access the information from anytime and anywhere at place of work. Digital library is always immediately adopting new technology for providing electronic information as well as presenting new forms of communication. Considering importance of digital library Ministry of Human Resource Development, India developed National Digital Library India (NDLI). The objective of the NDL India is provides all language information content, specially also hold up regional language content information. It also gives help to all educational level disciplines from primary to post graduate, all types of researchers along with lifelong learners of various academic courses. This article emphasizes various services offered by NDLI for access to electronic books, magazines, articles, audios and videos. It is an attempt to communicate the services and systems of NDL India. This article can be useful to the community of students, teachers and users.

For accessing the NDLI resources log on to <https://www.ndl.gov.in> or <https://ndl.iitkgp.ac.in> you will be on the homepage of the National Digital Library of India. 99859250 e-documents are available in NDLI.

8.8. Vidya-mitra: Vidya-mitra is an online learning portal for all the e-content projects developed under the NME-ICT (National Mission on Education through Information and Communication Technology), MHRD. The portal provides facility to search and browse all hosted content wherein a learner can easily access the desired material including audio/video learning material, textual material, multimedia-enriched materials etc. through a single interface. Moreover, features of faceted search, usage statistics, project-wise access, My-Space are incorporated in this portal. <https://vidyamitra.inflibnet.ac.in/>. **UG-46515, PG-20487, E-Text-44544, E-Tutorials 72684, Others-37858.**



8.9 SWAYAM: SWAYAM is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy.

The courses hosted on SWAYAM are in 4 quadrants – (1) video lecture, (2) specially prepared reading material that can be downloaded/printed (3) self-assessment tests through tests and quizzes and (4) an online discussion forum for clearing the doubts. Steps have been taken to enrich the learning experience by using audio-video and multi-media and state of the art pedagogy / technology. <https://swayam.gov.in/>

8.10. SWAYAM PRABHA: The SWAYAM PRABHA is a group of 40 DTH channels devoted to telecasting of

high-quality educational programmes on 24X7 basis using the GSAT-15 satellite. Every day, there will be new content for at least (4) hours which would be repeated 5 more times in a day, allowing the students to choose the time of their convenience. The channels are uplinked from BISAG-N, Gandhinagar. The contents are provided by IITs, UGC, CEC, IGNOU. The INFLIBNET Centre maintains the web portal. 120600 Title available.
<https://www.swayamprabha.gov.in/>

8.11 SHODHGANGA: "Shodhganga" is the name coined to denote digital repository of Indian Electronic Theses and Dissertations set-up by the INFLIBNET Centre. The word "Shodh" originates from Sanskrit and stands for research and discovery. The "Ganga" is the holiest, largest and longest of all rivers in Indian subcontinent. The Ganga is the symbol of India's age-long culture and civilisation, everchanging, ever-flowing, ever-loved and revered by its people, and has held India's heart captive and drawn uncounted millions to her banks since the dawn of history. Shodhganga stands for the reservoir of Indian intellectual output stored in a repository hosted and maintained by the INFLIBNET Centre. DSpace supports "Open Archives Initiative's Protocol for Metadata Harvesting" (OAI-PMH) and uses a qualified version of the Dublin Core schema for its metadata. The INFLIBNET Centre, promotes setting-up of institutional and ETD repositories in member universities using OAI-PMH compliant software. A number of member universities have already set-up their institutional and ETD repositories using either DSpace or other OAI-PMH compliant Institutional Repository software. It would be possible for universities having sufficient network and computing infrastructure to maintain their own ETD repositories wherein their research scholars could deposit e-versions of their theses and dissertations. At present 450000 Full text theses are accessible.
<https://shodhganga.inflibnet.ac.in/>



9. ISSUES AND CHALLENGES WITH OPEN EDUCATIONAL RESOURCES:

1. Using OER will still require understanding of licensing terms, which may stand in the way of particular types of reuse. Producing OER, especially when this involves drawing on existing copyrighted works, such as newspaper articles or pictures also requires knowing what is possible, and then how to apply the right licence and make this clear to developers and to users.
2. There may also be legal issues for platforms hosting OER, which in some circumstances may be made liable for the actions of uploaders. Finally, users may also need to be aware that use of some OER may involve data collection, and so raise privacy concerns. Given the issues above, there are issues around the level of legal and copyright literacy of developers, librarians and others. Where this is lacking, there may be mistakes, or confusion as to what is possible.
3. A separate concern is around the perceived quality of OER. Given that it does not always follow a traditional editorial process, some suggest it meets a lower standard. However, OER can be peer reviewed through open methods and there is a lot of high-quality material available. Nonetheless, there is a need to combat the assumption that OER is of a lower quality than conventional materials and sources. Connected to this is the potential for teachers and other educators creating OER not to receive credit for the time invested. While authoring a traditional textbook may count towards promotion or positive appraisal, this is not necessarily the case for those making and sharing OER. There are also questions about discoverability. While a lot of OERs exist, they may not easily be found by teachers or learners. Platforms and curation can play a major role in this regard, as well as offering a potential means of addressing concerns around quality, given that they make it easier to assess and identify materials.

10. CONCLUSION: In the Digital era, Electronic Information Educational Resources ,Open Educational Resources (OER's) for higher education in India make an important contribution to the diversified supply of learning resources to the community of learners. Institutions with better access to ICT infrastructure will make more use of open resources rather than those lacking adequate infrastructure. So for ensuring

equitable access to open resources, equitable access to technology is must. Even the best e- content is of no significance unless there is a widespread awareness among the common masses on the availability of such resources.

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