



## Open Educational Resources: An insight into various initiatives at National Level

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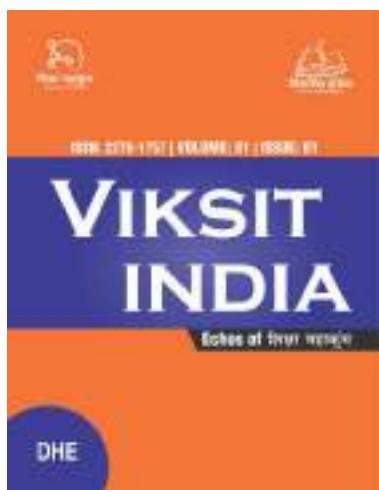
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### Abstract

In recent decades technological advancements has been witnessed in all the sections of society whether medical, travel or industry etc. Education sector has also witnessed this paradigm shift from print to digital and web based content. Open Educational Resources has transformed the educational sector and has proved as a boon for those institutions and students that were unable to access the educational content due to geographical, economical and access rights policies. Many Government initiatives / schemes have also helped in accelerating this movement. In last decade large number of institutions, universities, individuals and philanthropic organisations has supported this open educational resources movement and made their educational content free of cost available for access by any students/ teachers without any geographical/ language or economic restrictions. This paper elaborates about many such open educational resources and projects available free of cost without any restrictions and cater to the educational, textbook and course curriculum related requirements of the students. Most of the open educational resources are available with creative commons licenses which help students and teachers to use, reuse, and share and publish these resources freely. Familiarity with open educational resources will help students and teachers in their academic assignments, in-depth subject knowledge and assistance in self learning. Apart from this it will also inculcate habit of using authentic resources among students. As open educational resources are from authentic and reliable sources so students and teachers will prefer these resources rather than copying fake and wrong information from unauthentic web based resources.

**Keywords:** OER, Open Educational Resources, OERs in universities, OER Initiatives.

### Introduction

There has been a tremendous growth in the open educational resources in the recent past and large number of universities, government departments and academic organisations are making their resources freely available over the Internet which has become a significant source of open educational content.

The OER movement is built on the belief that anyone can use, reuse and redistribute these educational resources without any constraints. Open education movements are helping educational community worldwide in making education more accessible and in making it more effective.

This paper provides an overview of various open educational resources initiatives/ repositories available at national and international level. This paper also explains the key role players in open educational movement. This paper will help the libraries and librarians to know about various initiatives and to incorporate them in their resource delivery and dissemination.

India is a leading and active role player in various open access initiatives, whether it is Open-Source Software movement or Open Access of Journal Movement or Open access repositories. There is increasing availability of open content in terms of open access journals, open access repositories and other open source software repositories like E-prints, Fedora and D-space etc. Open Educational resources in higher education are very less as compared to open access scenario.

“The Indian government has played a proactive role by providing impetus to the growth of OER movement in the country through various national policy initiatives. A number of meaningful initiatives are being taken up to embed the OERs into the educational environments of today by Indian universities” (Thomas, 2017).

Some well-known Open Access Initiatives that made significant contribution in the expansion and success of OERs in India are mentioned below.

All educational material/ resources that are freely available are not necessarily Open Educational Resources. There are large numbers of digitized educational resources that are although available on the World Wide Web and are providing free online access, but these resources are with some license restrictions. In order to be considered as Open Educational Resources those educational resources must have an open license. The most widely and most commonly used international licensing framework for OER is Creative Commons License.

Many factors have played significant role in giving impetus to the OER movement. The most important factors include limited number of resources, high subscription fees, high textbook prices, need for collaboration and sharing, possibilities offered by ICT, open sources software and development of repositories.

Inspired by Stallman's Free Software Foundation Larry Lessig founded Creative Commons in 2001. This movement proved as a major milestone in the promotion of open content phenomenon. Like Stallman's GNU GPL (General Public License) project Creative Commons started Open Publication Licenses (OPL). These licenses were developed for the free and easy use of variety of creative works (Prodromos Tsivavos, 2007).

In 2002 UNESCO's forum on the impact of open course ware for higher education in developing countries for the first time used the term "Open Educational Resources". In 2002 Carnegie Mellon University initiated Open Learning Initiative.

In 2005 Internet Archive in collaboration with yahoo, University of Toronto and University of California established an international network named the open content alliance. In 2007 Open Society Initiative and Shuttle worth foundation convened a meeting in Cape town with an aim to stimulate the ideas regarding promotion of open resources, technology aid and teaching practice in education. The outcome came as a published report in 2008 famously known as Cape Town Open Education Declaration. In order to initiate dialogue and to help and improve open education movement's growth, this declaration contains three statements i) statement of principle, ii) statement of commitment and iii) the statement of strategy (*Cape Town Open Education Declaration – Unlocking the Promise of Open Educational Resources*, 2007). In 2010 UNESCO and Commonwealth of Learning jointly initiated the project "Taking the open education resources beyond the OER community: policy and capacity".

"Commonwealth of Learning (CoL) has been working to promote the development and sharing of quality teaching and learning materials; and, in 2011 it became the first intergovernmental organization to adopt an open licence policy (Miao et al., n.d.).

In 2012 in collaboration with UNESCO and with the financial support of the William and Flora Hewlett Foundation, COL played a key role in organising the World OER Congress in Paris. That Congress resulted in the OER Paris Declaration, which explicitly urged governments to release teaching, learning and research materials developed with public funds as OER" (Commonwealth of Learning, 2012).

In 2018, in honour of tenth anniversary of Cape Town Open Education declaration the forum created ten key directions to move forward in open education. These ten directions popularly known as CPT+10 in brief is as mentioned below:-

- i. Communicating Open
- ii. Empowering the next generation
- iii. Connecting with other open movements
- iv. Open education for development
- v. Open pedagogy
- vi. outside the institution
- vii. Data and analytics
- viii. Beyond the textbook
- ix. Opening up publicly funded resources
- x. Copyright reform for education.

In November 2019, the 40th UNESCO General Conference adopted the UNESCO OER Recommendation which is the only international standard setting framework in this area worldwide (UNESCO & CoL, 2019).

Indian prime minister appointed National Knowledge Commission in 2005 with an objective to bring excellence in Indian educational system. Dr Sam Pitroda, the chairman of the National Knowledge Commission intended to transform Indian education sector. In 2007 National Knowledge Commission with the financial support from government and other funding agencies initiated National e-content and curriculum initiative including National Digital Library (*National Digital Library of India*, n.d.).

The report of National Knowledge Commission has mentioned that "Our success in the knowledge community economy hinges to a large extent on upgrading the quality of, and enhancing the access to education. One of the most effective ways of achieving this would be to stimulate the development and dissemination of quality Open Access (OA) materials and Open Educational Resources (OER) through broadband internet connectivity" (*National Knowledge Commission Report to the Nation 2007 Government of India*, n.d.).

**a) NPTEL:** NPTEL acronym which stands for National programme on technology enhanced learning is largest online repository in engineering, humanities and basic sciences etc courses at global level. In 2003 seven premier IITs of India (Delhi, Bombay, Kanpur, Madras, Kharagpur, Roorkee and Guwahati) in collaboration with IISc Indian Institute of Science initiated NPTEL program. This program was funded by Ministry of Human Resource development (now Ministry of Education), Government of India (*Nptel, Online Courses and Certification, Learn for Free*, n.d.).

NPTEL is one of the most successful OER project. NPTEL YouTube channel has more than 42+ lakh subscriber and has over 1 billion viewers. It is one of the most accessed peer-reviewed educational content libraries in the world. NPTEL resources consists of video content of 56000 hours, transcribed content of 52000+ hours and subtitled videos of 51000+ hours. NPTEL has partnership with colleges also and under NPTEL local chapter 4200+ colleges are partner in this (Kumbar, n.d.).

To help the regional language students NPTEL also provides translation of video courses in 10 regional languages. The journey of NPTEL is mainly divided into three phases.

In first phase (2003- 2008) five core disciplines civil, computer science, electrical, electronics & communication and mechanical engineering were identified. During this phase 235 courses were developed in web/video format.

In second phase (2009-2014) NPTEL included core science courses also in addition to engineering courses to cover the undergraduate and post graduate courses in engineering, management and physical science course NPTEL created additional 600 web and video courses. It also made several improvements in this phase and included indexing of all videos and keywords search facility for all the courses were also added.

In third and ongoing phase (2014 onwards), NPTEL also started offering MOOCs open online courses with certification from IITs and IISc. Currently, total 522 courses are being offered. All these certificated courses are freely available but if participant want a certificate, then a nominal fee is charged from the participant. All the materials are offered under creative commons license. Detailed guidelines by UGC, AICTE for Credit transfer of these courses are also available.

**b) SWAYAM:** In order to achieve education policy's three cardinal principles i.e. access, equity and quality, Government of India initiated a program called SWAYAM. It is a platform that provide interactive courses free of cost to be accessed anywhere anytime by students of class nine to post graduation level. SWAYAM host courses in four quadrants i) Video lectures, ii) Reading materials (downloadable/ Printable) iii) test and quizzes for self-assessment and iv) online discussion forum. The ministry of Education, NPTEL, IIT Madras and Google are helping in the development and management of SWAYAM platform (*Swayam Central*, 2017).

SWAYAM uses state of the art technology and uses audio/visual and multimedia technology to enrich the learning experience. AICTE, UGC, NCERT, NIOS, IGNOU, NITTTR, IIM Bombay and CEC are nine national coordinators of SWAYAM. Like NPTEL, SWAYAM also offers free of cost courses and charges a nominal fee if SWAYAM Course certification is required.

Both UGC and AICTE have issued regulations where credits can be transferred to student's academic record if he/she has done any course through SWAYAM platform (*Swayam Central*, n.d.).

**c) NIOS:** In 1989 Ministry of Human Resource Development (Currently known as Ministry of Education) Government of India initiated National Open School. NIOS offers open and distance learning programs for 10<sup>th</sup>, 12<sup>th</sup> and vocational courses. It is one of the largest open schooling systems in the world. 42 courses on different subjects are offered by NIOS on SWAYAM platform. NIOS has provided training to 13 lakh elementary teachers using Swayam platform (NIOS, n.d.).

**d) NCERT:** In 1961 Government of India set up an autonomous organisation named NCERT (National Council of Educational Research and Training) for quality improvement

in school education. It has now been upgraded to a university. The objective of this organisation is to support and guide the state and central governments about various policies and programs related to school education. NCERT has played an important role in achieving the OER objectives at national level. Publishing model textbooks, journals, multimedia digital material, supplementary material and educational kits, etc. is the core objective of NCERT. In 2010 an act was passed in parliament with a resolution: "Right of children to free and compulsory education, 2010". It is one of the landmark resolutions and NCERT has played a proactive role in unfolding this national agenda. The publication of educational material very well meets the national agenda for promoting an equitable and universal access to education. NCERT has published 246+ textbooks for class 1 to 12. All these textbooks are freely available Open Educational E Resources. The NCERT had made provisions to access the books with QR codes and entire books can be downloaded freely however republication of these textbooks is strictly prohibited. NCERT has fulfilled the objective of OER in true spirit (NCERT, n.d.).

**e) NROER:** National Repository of Open Educational Resources is a collaborative platform that was initiated by Ministry of Human Resource Development (currently known as Ministry of Education), Government of India. The repository is jointly managed by NCERT and Central Institute of Education and Technology (CIET). The Centre for Cultural Resources and Training (CCRT), UNICEF, Azim Premji University, Vigyan Prasar etc. is the partners of NROER.

It is one of the largest repositories that has 700 collections and total 19700+ resources out of which 5934 are text resources, 1453 are interactive resources, 2956 are audio resources, 2582 images and 6842 videos in its collection. Majority of resources are in English languages i.e. 13180 out of total 19767. It also has 440 textbooks in its collection (*ICT: ABOUT NROER*, n.d.).

**f) National Digital Library:** National Mission on education through information and communication technology (NMEICT) and Ministry of Education funded and sponsored the National Digital Library of India. The National Digital Library (NDL) is developed, maintained, and operated from IIT, Kharagpur (*National Digital Library of India*, n.d.). It is a single window platform for learners to the largest virtual repository. It provides filtered and federated search engines that makes searching of required content easy and quickly. The repository has 72,234,634 number of resources and it keep on adding more material on daily basis. The resources are available in many languages. The repository contains all types of learning resources like articles, audio lectures, books, question papers, thesis and video lectures etc.

**g) CEC (Learning Object Repository of the Consortium for Educational Communication):** The Centre for Educational Communication commonly known as CEC is an inter university centre set up by University Grants Commission (UGC). CEC was set up with an objective to address the needs of higher education institutes through a powerful medium and use of television and ICT for the information dissemination. In the year 1984, UGC started the countrywide classroom programmes to disseminate educational knowledge through television. The production of such programmes took place at 21 media centers established in different Indian universities (*Oer | Consortium For*

*Educational Communication*, n.d.). CEC is a nodal agency that coordinates guides and facilitates these media centers about educational content production at national level. The CEC extended its dissemination strategy and started production of broadcast as well as audio visual and web based and related supported material. The web portal of CEC hosts many educational channels; you tube channels, MOOCS and Open educational resources.

**h) National Science Digital Library:** National Science Digital Library (NSDL) is an initiative of CSIR-NISCAIR (National Institute of Science Communication and Information Resources). NSDL provides high quality online open educational resources in engineering, science and technology and mathematics. Most of the resources on NSDL library portal are open educational resources and freely accessible to everyone with some exceptions to some of the resources that requires membership or fee (NSDL | NSDL, n.d.). The types of resources on NSDL portal includes case studies, lecture notes, interactive learning objects, full course materials, textbooks, lab activities and many more educational resources. The number of educational resources as per subject areas are such as Physical science (10123), Applied Sciences (7804), Education (5666), Life Sciences (7611), Mathematics (4835) and History (903).

**i) E-Gyankosh:** Indira Gandhi National Open University (IGNOU) in 2005 launched its popular open educational resources portal names as e-Gyankosh. It is a national digital repository that supports in storing, indexing, preserving, disseminating and sharing of digital content and digital learning resources that are developed by various open and distance learning institutes of India (*EGyanKosh: Home*, n.d.). The e-Gyankosh repository contains self-study print and online material for about 227 courses that comprises 40000+ course modules. More than 3000+ video programmes of IGNOU had also been digitised and uploaded on e-Gyankosh repository.

**j) Vidhya Nidhi:** The Government of India, erstwhile NISSAT and DSIR together started a pilot project in the year 2000 with an objective to make an e-thesis repository of India. With the support provided from Microsoft India and Ford Foundation Vidhya Nidhi became a national initiative. Microsoft India supported Vidhya Nidhi regrading implementation of Unicode for the different Indian languages (*Vidyanidhi - India's Educational News Portal*, n.d.). The Ford Foundation supported Vidhya Nidhi specifically on the project related to Ph. D theses in social sciences and humanities. Vidhya Nidhi is also a member of global initiative of Networked Digital Library of Theses and Dissertations (NDLTD). Similar to NDTLD project Vidhya Nidhi is also a member of UNESCO's supported project on Electronic Thesis and Dissertations. The mission statement of Vidhya Nidhi evolves to be a national repository and consortium for online resources and Indian Thesis.

**k) Khan Academy:** Khan Academy is a very popular private non-profit organisation that aims to provide world class education to anyone anywhere at free cost. The content at Khan Academy is created by world class expert professional teachers. Khan academy hosts educational content in interactive video formats and has educational content for all subjects available for class 1 to class 12 students (*Khan Academy | Free Online Courses, Lessons & Practice*, n.d.).

#### I) ePathshala:

Since the introduction of digital India campaign, Indian education sector has witnessed extensive and effective usage of ICT in teaching learning process. Ministry of Education, NCERT and Govt. of India jointly initiated the ePathshala Project. This portal is used to showcase and disseminate variety of educational and digital resources such as textbooks, images, audio-video, proceedings, periodicals etc.

The ePathshala is designed to achieve the equitable, quality, inclusive education and lifelong learning for all and bridging the digital divide. Teachers, Educators, Parents and Students can access e-books through web portals, through laptops, mobile phones, tablets and desktops, and through multiple technology platforms etc. ePathshala also allows users to carry as many books as their device supports. Features of these books allow users to select, zoom, bookmark, highlight, navigate, share, listen to text using text to speech (TTS) apps and make notes digitally (*Epathshala | Learning On The Go*, n.d.)

**m) E Grid:** E Grid is developed by Indian Institute of Information Technology and management, Kerala for establishment of a virtual learning environment that aims to enhance the quality of education in Kerala. This project is supported by ministry of education. This project helps in hosting and distribution of NPTEL content and it also assist colleges in Kerala in establishing the infrastructure necessary for practicing the technology enabled learning. Presently open educational resources in science and technology are being offered by E-Grid.

**n) Eklavya (OSCAR):** In the year 2004, IIT Bombay in collaboration with National Mission for Education through Information and Communication Technology (NME-ICT) initiated an interactive platform for creation of, absorption of, usage, and dissemination of knowledge content. This project was sponsored by Ministry of Human Resource Development presently known as Ministry of Education. The project Eklavya is an open sources project and manifested in various programmes such as e-Content, e-Guru and e-Outreach (*NGO For Children - Eklavya | Eklavya Children Books, Toys & Kits*, n.d.). The open-source courseware animations repository (OSCAR) project is a part of e-Outreach programme and creates a large repository of subject related interactive animation videos that helps in teaching various concepts and technologies in audio visual mode (*OSCAR Main Page*, n.d.). This project has opened up many new dimensions by providing opportunities in affordable classroom teaching and in self and distance learning. The web based interactive learning projects hosted on Oscar platform are offered in various subjects and topics at post graduate and under graduate level. It has around 500 learning objects available at UG and PG level and around 200 learning objects are available at school level. All the materials produced under OSCAR project are in open-source courseware and all the learning objects are released under creative commons license.

#### Conclusion

Many open educational resources initiatives at the local, regional, national and international levels have given a boost to this movement to reach scholars and underprivileged students to provide educational material. The movement is getting stronger day by day. Many academic institutions,

organisations and Government departments are joining hands *xxi.*  
in this movement.

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