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OPEN EDUCATIONAL RESOURCES

The idea of open educational resources (OER) has numerous working definitions. The term was first coined at UNESCO's 2002 Forum on Open Courseware and designates "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 that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. Open licensing is built within the existing framework of intellectual property rights as defined by relevant international conventions and respects the authorship of the work".

Definitions:

William and Flora Hewlett Foundation define OER as:

OER are 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.

The Hewlett Foundation updated its definition to:

"Open Educational Resources 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 that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions". The new definition explicitly states that OER can include both digital and non-digital resources. Also, it lists several types of use that OER permit, inspired by 5R activities of OER.

5R activities/permissions were proposed by David Wiley, which include:
- **Retain** - the right to make, own, and control copies of the content (e.g., download, duplicate, store, and manage)

- **Reuse** - the right to use the content in a wide range of ways (e.g., in a class, in a study group, on a website, in a video)

- **Revise** - the right to adapt, adjust, modify, or alter the content itself (e.g., translate the content into another language)

- **Remix** - the right to combine the original or revised content with other material to create something new (e.g., incorporate the content into a mashup)

- **Redistribute** - the right to share copies of the original content, your revisions, or your remixes with others (e.g., give a copy of the content to a friend)

These definitions also have common elements, namely they all:

- cover use and reuse, repurposing, and modification of the resources;

- include free use for educational purposes by teachers and learners

- encompass all types of digital media.

Since OER are intended to be available for a variety of educational purposes, *most* organizations using OER neither award degrees nor provide academic or administrative support to students seeking college credits towards a diploma from a degree granting accredited institution.

In order for educational resources to be OER, they must have an open license. Many educational resources made available on the Internet are geared to allowing online access to digitised educational content, but the materials themselves are restrictively licensed. Thus, they are not OER. Often, this is not intentional.

Most educators are not familiar with copyright law in their own jurisdictions, never mind internationally. International law and national laws of nearly all nations, and certainly of those who have signed onto the World Intellectual Property Organization (WIPO), restrict all content under strict copyright (unless the copyright owner specifically releases it under an open license).

History

The term learning object was coined in 1994 by Wayne Hodgins and quickly gained currency among educators and instructional designers, popularizing the idea that digital materials can be designed to allow easy reuse in a wide range of teaching and learning situations.

The term "open educational resources" was first adopted at UNESCO's 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries.

The global movement for OER culminated at the 1st World OER Congress convened in Paris on 20–22 June 2012 by UNESCO, COL and other partners. The resulting Paris OER Declaration (2012) reaffirmed the shared commitment of international organizations, governments, and institutions to promoting the open licensing and free sharing of publicly funded content, the development of national policies and strategies on OER, capacity-building, and open research.

In 2018, the 2nd World OER Congress in Ljubljana, Slovenia, was co-organized by UNESCO and the Government of Slovenia. The 500 experts and national delegates from 111 countries adopted the Ljubljana OER Action Plan. It recommends 41 actions to mainstream open-licensed resources to achieve the 2030 Sustainable Development Goal 4 on "quality and lifelong education".

Advantages of using OER include:

- **Expanded access to learning** – can be accessed anywhere at any time

- **Ability to modify course materials** – can be narrowed down to topics that are relevant to course

- **Enhancement of course material** – texts, images and videos can be used to support different learning styles

- **Rapid dissemination of information** – textbooks can be put forward quicker online than publishing a textbook

- **Cost saving for students** – all readings are available online, which saves students hundreds of dollars

Disadvantages of using OER include:

- **Quality/reliability concerns** – some online material can be edited by anyone at anytime, which results in irrelevant or inaccurate information

- **Limitation of copyright property protection** – OER licenses change "All rights reserved." into "Some rights reserved.", so that content creators must be careful about what materials they make available

- **Technology issues** – some students may have difficulty accessing online resources because of slow internet connection, or may not have access to the software required to use the materials

Open educational initiatives in India

India is becoming an active player not only in the open source software movement, but also in the OA (Open Access) movement as evidenced by the increasing availability of OA electronic journals, OA repositories and open source software-based repositories such as DSpace and EPrints. In fact India has a good record in the OA area, with 81 scientific journals accessible as OA.

A notable initiative is the project being coordinated by the Indian Institute of Science of Bangalore, along with Carnegie Mellon University, in which 21 Indian institutions are participating and have digitised more than 450,000 books, 220,000 of which are now web accessible. This early success notwithstanding, the growth of OA materials as well as their impact on the cost and quality of research and human development in India has been stymied – not only by inadequate broadband connectivity and other technology constraints – but also by the absence of enabling policies exacerbated by insufficient government funding. For instance, there is both a lack of recognition of intellectual property issues in the mandates of sponsoring agencies and research institutions, as well as a lack of advocacy and information about the issue (Arunachalam, 2006).

One significant undertaking in this area is the *National Program on Technology Enhanced Learning*. It is a joint venture by seven Indian institutes of technology and Indian institutes of science and funded by the Ministry of Human Resource Development, Government of India to enhance the quality of engineering education in the country by developing curriculum-based video and web courses (http://nptel.iitm.ac.in).

Another illustrative open education initiative is *Ekalavya,* launched by Indian Institute of Technology, Bombay. In this project, content developed in various Indian languages is distributed

over the Internet. The Ekalavya project has developed an Open Source Educational Resources Animation Repository (OSCAR) that provides web-based interactive animations for teaching. OSCAR provides a platform for student developers to create animations based on ideas and guidance from instructors. Funding for the Ekalavya and OSCAR project comes mainly from private industry.

A third prominent initiative, *E-Grid*, supported by the Human Resource Ministry of the Indian Institute of Information Technology, Kerala, provides subject-specific portals that are developed and maintained by subject domain experts.

Currently, this programme offers OER only for science and engineering. Despite this promising set of projects there has been no systematic national effort to develop a strategy for developing and delivering OER. Such a strategy would need to address the development of OER for a wider range of disciplines and regional languages, as well as support to allow greater adoption among teachers and students.

Conclusion:

The Open philosophy and model has resulted in the creation and development of an umbrella of resources such as Open source (relating to business and technology), Open source software, Open source hardware, Open standards, Open access (research), Open design, Open knowledge, Open data, Open content, Open Courseware, Open educational resources and Open educational practice.

Thanks to the Open Movement, learning is literally just one click away. And the emergence of Open Educational Resources or resources that are licensed to be used and re-used in a broader as well as specific educational context, has made education extensively accessible and instantly available. These movements and philosophies have a key role in the growth of an education niche and promoting educational technology, research, learning, and teaching.

It is widely expected and believed that sharing and openness bring benefits to stakeholders in the educational community. However, at the other pole, the barriers to the sharing process include traditional cultures, practices, managerial approaches along with broader legal complexities. (refs: CD LOR, TRUST DR, Sharing e-learning content, Good Intentions report).

The process of learning and teaching plays a central role in the upliftment of the country as a global powerhouse. Along with informational content, it is helpful to identify learning resources by their granularity levels. A learning activity should be embedded with information content through digital assets (image, video or audio clip), information objects, learning objects, learning activities and/or learning design.

Within the past few years, OER related projects and programmes, from large institution-based or institution-supported initiatives to numerous small-scale activities, have witnessed a boom in the education sector. Here is listed 10 innovative and resourceful Open Education Resources:

UNESCO OER CONGRESS

https://www.oercongress.org/

On Friday 22 June 2012, the UNESCO World Open Educational Resources (OER) Congress released the 2012 Paris OER Declaration which called on governments to openly license publicly funded educational materials.

UNESCO member states unanimously approved the declaration, which highlights the importance of open educational resources and gives recommendations to governments and institutions around the globe.

National Repository of Open Educational Resources (NROER)

https://nroer.gov.in/welcome

The National Repository of Open Educational Resources (NROER). NROER is developed by CIET, NCERT. It was launched during the National Conference on ICT (Information and Communication Technology) for School Education. NROER was launched on 13 August 2013 in New Delhi in collaboration with the Department of School Education and Literacy, Ministry of Human Resource Development, Government of India. Metastudio, the platform hosting the repository is an initiative of Knowledge Labs, Homi Bhabha Centre for Science Education, Mumbai. NROER hosts a large number of educational resources in many subjects and in different Indian languages for Primary, Secondary and Senior Secondary classes. Resources are available in different formats like Video, Image, Audio, Document and Interactive. Apart from this, all NCERT books are available in Flipbook format. NROER is a collaborative platform, intended to reach the un-reached and institutions like SCERT, SIERT, SIE, Vigyan Prasar, CCERT, Gujarat Institute of Educational Technology (GIET), SIET and other stakeholders have a share in the educational content.

NPTEL

https://nptel.ac.in/

To improve the quality of higher education in India, IIT Madras came up with an initiative called NPTEL (National Programme on Technology Enhanced Learning) in the year 1999. As per this initiative, all the IITs, along with the IISc Bangalore would come up with a series of video lecture-based courses across all the streams of engineering. This initiative has gained wide popularity in India and the lectures are being used by several engineering students from across India.

Khan Academy

Khan Academy is a non-profit educational organisation created in 2005 by Salman Khan with the goal of creating a set of online tools that help educate students. The organisation produces short lessons in the form of YouTube videos. Its website also includes supplementary practice exercises and materials for educators.

TESS-India

http://www.tess-india.edu.in

It is led by The Open University and Save The Children India, funded by UK Aid. It is a multilingual teacher professional development programme that aims at supporting India's national education policy through the use of freely available and adaptable OER. A collaboration between the educational experts and policymakers of India and UK, the OER focuses on the enhancement of pedagogic practices parallel to Language, Literary, Science, Mathematics, and English. It aims at supporting learner-centers, inclusive, participatory, engaging and effective classroom pedagogy to influence the progress and achievements of students through quality schooling.

CK-12 Foundation

https://www.ck12.org/student/

The CK-12 Foundation is a California-based non-profit organisation whose stated mission is to reduce the cost of and increase access to, K-12 education in the United States and worldwide. CK-12 provides free and fully customisable K-12 open educational resources aligned to state curriculum standards and tailored to meet student and teacher needs. The foundation's tools are used by 38,000 schools in the US, and additional international schools.

CK-12 was established in 2007 by Neeru Khosla and Murugan Pal to support K-12 Science, Technology, Engineering, and Math (STEM) education. The organisation first generated and distributed educational content via a web-based platform called the "FlexBook." CK-12 has updated its FlexBook platform and has begun to focus on concept-based, multi-modality learning. CK-12 is being funded by the Amar Foundation and by Vinod and Neeru Khosla.

Gooru

http://gooru.org/welcome/

Teachers have millions of free online multimedia resources and quiz questions at their fingertips, often making it difficult and time-consuming to create a learning experience geared expressly for their students. Gooru is a free personalised learning solution that helps teachers to find, remix, and share collections of web resources on any K-12 topic.

Gooru organises all online learning content. It connects a community of educators and learners. It supports many different instructional uses and types of learners to improve all students' learning outcomes. Its online quiz environment gives students instant feedback on their progress and provides teachers with assessment results and learning resource suggestions.

ISKME - Institute for the Study of Knowledge Management in Education

http://iskme.org/

An independent and education nonprofit platform, it aims at improving the practice of continuous learning, collaboration, and change in the education sector. Established in 2002, ISKME conducts social science research, develops research-based innovations, and facilitates innovation that improves knowledge sharing in education. ISKME supports innovative teaching and learning practices throughout the globe and is well known for its pioneering open education initiatives. ISKME also assists policymakers, foundations, and educational institutions in designing, assessing, and bringing continuous improvement to education policies, programs, and practice. As such, ISKME helps schools, colleges, universities, and the organisations that support them expand their capacity to collect and share information and create open knowledge-driven environments focused on learning and success.

Curriki

https://www.curriki.org/

It is a free community that provides OER for K-12, which are contributed by members of the Curriki community including educators, parents, and other partners from over 193 countries. All the material is peer-reviewed to maintain the quality. It helps in cost savings to teachers, since the teachers can use Curriki OER, instead of using supplemental materials.

Connexions - Openstax CNX

https://cnx.org/

A global repository of educational content for learners from all walks of life, it includes K-12 and higher education in nearly every discipline, including math, science, psychology, sociology, history etc. Connexions' repository consists of more than 17,000 learning objects or modules and over 1000 collections (textbooks, journal articles etc.). These resources can be remixed and edited for reuse and can be easily downloaded free of cost on any mobile device. The platform is provided and maintained by Rice University.

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