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OPEN EDUCATIONAL RESOURCES (OERS) AND INDIAN SCHOOL EDUCATION

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ABSTRACT

Education is the foundation for the development and progress of an individual and society. Although ICT based education is not a new concept for the Indian Education system, Open Educational Resources (OERs) present an underused concept for improving student access to learning in all educational contexts. This paper aims to create awareness about Open Educational Resources (OERs) by focusing on need of Open Educational Resources (OERs) specially for Indian school teachers and how can teachers use these Open Educational Resources (OERs) in teaching learning process.

KEYWORDS: *Open Educational Resources (OER), Online, Digital, Open Access, NROER*

INTRODUCTION

"*Education is a common human right for all throughout life and that access must be matched by quality*".

-UNESCO

Education is power- a real power, a power to strengthen a person to think, feel, act in such a way that decides the way of the life, one is going to live. Education leads a person to a road map that takes one to decide the way of one's life. Education is the foundation for the development and progress of an individual and society.

Education has been considered as 'Human Right' by UNESCO[1]which means that there should be free, compulsory primary education for all. It should be followed by an obligation to develop secondary education accessible to all. Also higher education shall be equally accessible to all on the basis of merit. As per the statistics provided by 2011 census[2], India's enrolment for primary education was 95%, secondary 65% and post-secondary 25% only.

India as a developing country has been trying since decades to excel in education system. COVID-19 pandemic has hindered its progress significantly. Around 250 million children in India were affected by imposed lockdown resulting in the closure of the schools.

Although ICT based education is not a new concept for the Indian Education system, Open Educational Resources (OERs) present an underused concept for improving student access to learning in all educational contexts. A survey (2019) conducted with the teachers of Delhi, India showed that teachers are still unaware of the concept of Open Educational Resources (OERs). This paper aims to create awareness about Open Educational Resources (OERs) by focusing on need of Open Educational Resources (OERs) specially for Indian school teachers and how can teachers use these Open Educational Resources (OERs) in teaching learning process.

REVIEW OF RELATED RESEARCH

The studies (Thomas, R. 2017, Bansal, T et.al. 2013) show the ground reality of OER especially in India and highlight the following points: progress too slow, somehow in higher education only, lack of knowledge, need of development of user friendly systems, need of adopting new and appropriate technologies to match the teaching-learning environment, need of modularizing the content to meet localization needs, need of defining clear and sound policies and guidelines and updating the content regularly, need of initiating steps to increase the awareness among the teachers, researchers, and students about the availability and benefits of OER in facilitating quality teaching –learning process.

Most of the studies showing current status regarding OER in India emphasize need to take initiatives to increase the awareness amongst teachers, researchers and students about the availability and benefits of OER in facilitating quality teaching- learning process.

Hence, this paper is an effort to create awareness about Open Educational Resources (OERs) by focusing on need of Open Educational Resources (OERs) specially for Indian school teachers and how can teachers use these Open Educational Resources (OERs) in teaching learning process in Indian circumstances and school setting.

OBJECTIVES

- To create awareness about Open Educational Resources (OERs)
- To discuss need of Open Educational Resources (OERs) in Indian school settings
- To discuss how can teachers use these Open Educational Resources (OERs) in teaching learning process in Indian circumstances and school setting.

MATERIALS AND METHODS

Open Educational Resources (OERs) - What and Why

Normally learning materials are known as 'intellectual properties' and like any other properties, they are under the possession of their owner. In other words, learning materials are published under copyright and their uses demand permission or payment of the copyright holder. What makes Open Educational Resources(OERs) different from other learning materials is their licensing process. Open Educational Resources (OERs) are learning materials that are openly licensed, which means the copyright holder has published the materials on the internet under a Creative Common (CC) license that allows others to retain, reuse, revise, remix or redistribute these materials. (Wiley and Hilton 2018)[3]

The Hewlett Foundation[4] defines OERs as '*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 repurposing by others.'*

David Wiley[5] explains the types of permission one may have about OERs: "The term 'Open Content' describes any copyrightable work (traditionally excluding software, which is described by other terms like 'Open Source') that is licensed in a manner that provides users with free and perpetual permission to engage in the 5R activities namely:

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 contribute the original or revised content with other open content 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)"

Hence, in simpler words, it may be stated that Open Educational Resources (OERs) are educational resources that are freely available on the internet for the use of learners, educators and educational institutions. Open Educational Resources (OERs) do not require any payment, royalty, license or any fee for using them. Open Educational Resources(OERs) do not mean text books only as they are usually misunderstood, their scope is very wide and includes courses, full courses, course materials, modules, textbooks, tests, quizzes, software, text resources, streaming videos or any other tools, materials, techniques, strategies that are used for gaining learning.

DISCUSSION

Rationale (Why OERs are needed in Indian Perspective)

In today's era, the geographical distance does not mean for attaining knowledge. Knowledge is always a power and power should be used for the welfare of the humanity. Today World Wide Web has blessed humanity with an extraordinary opportunity- to share, use and reuse knowledge.

OERs can be useful for teaching- learning process. OERs can create a connection amongst teacher community and learners. They can reduce hindrances for the learners in terms of access, cost, language etc. They can give their users legal rights to retain, reuse, revise, remix and redistribute educational resources without paying any royalty, permission or fees. OERs may promote open learning process very effectively OERs can help in making internet and digital resources useful for all the learners. OERs can help teachers by providing them a helping hand in teaching learning process.

These benefits may be captured only when teachers are aware of using OERs. Unfortunately, in India specially, the OERs are still underused. In Indian scenario, a survey[6] (2019) of secondary school teachers in Delhi showed that only 20% secondary school teachers were aware of the term OER. Only 5% school teachers were aware of the NROER. 95% school teachers were not able to differentiate OER from other published material available on the internet. 75% school teachers did not have any idea of how OER can help in teaching-learning process. 95% school teachers did not have any idea how teachers can contribute to NROER. 95% school teachers were not able to name any of the OER that is useful for the teaching of secondary classes.

These findings are consistent with OER awareness researches in Indian perspective (V. Venkaiah[7] 2008, Raysh Thomas[8] 2017, Bansal T., Chhabra S., Joshi D[9]. 2013) that show the pathetic underused status of OERs in Indian education system.

Teaching with OERs: How

During pandemic Indian teachers have left no stone unturned to minimize the learning loss of the students. A number of efforts have been done and Indian education system had shifted from offline to online mode for the time being. OERs may

be useful both in the offline and online teaching –learning mode, if teachers are well aware of how to use these OERs. This paper tries to enable Indian teachers specially, school teachers to know where to find and how to use these OERs.

OER initiative has always been supported in both policy and practice by Indian government. In 2008, the National Knowledge Commission (NKC) decided to stimulate the creation, adaptation and utilization of OER by Indian Institutions. For this, the NKC called for a national e- content and curriculum initiative. In 2013, India gained its own National OER repository (https://nroer.gov.in/home/)[10] which extends the OER provision by repositories such as IGNOU – hosted e-Gyankosh (https://www.egyankosh.ac.in/)[11]. In 2014, India's first MOOC platform-SWAYAM was announced by India. Digital India Initiative (https://www.digital.india.gov.in)[12]was launched by government of India in 2015. It aims at the improvement of digital infrastructure and digital literacy especially in rural India.

Where to Find OERs

OERs do not talk about text books or digital learning materials only. It has a wide range of audio resources, text resources, video resources, handouts, lesson plans, unit plans, assessments, online lesson modules, quizzes, rubrics etc. Various OER repositories provide a large variety of learning material for different learning levels and subjects. Teachers may select OERs as per the learning requirements of their students.

Table 1: Shows a List of Repositories with their Web Links that May be Useful Specially for School Settings

Repository	Web Link	Levels Focused On
CK12	https://www.ck12.org/student/	Kindergarten – 12th grade
Curriki	https://www.curriki.org/	Preschool- 12th (career/ technical education)
EdTech Books	https://edtechbooks.org/	Teacher Education and Professional Learning
Edutopia	http://www.edutopia.org/	K-12 grades
Khan Academy	https://www.khanacademy.org/	Kindergarten-12th grade
K-12OER Collaborative	https://education-reimagined.org/resouces/oer-collaborative/18	Kindergarten-12th grade
OER Commons	https://www.oercommons.org/	Prekindergarten – Higher Education
OpenStax	https://openstax.org/	High school and higher education
Project Gutenberg	https://www.gutenberg.org/	All levels free books
NCTM Illuminations	http://illuminations.nctm.org/	Pre- K12
NLVM	http://nlvm.usu.edu/	K-12 level
NRICH Millennium Mathematics Project	http://nrich.maths.org	Mathematics for Primary, Secondary grades
PhET	http://phet.colorado.edu/	Primary to higher education
Shodor	www.shodor.org	6-12 grades
TESSA	https://tessafrica.net	School Education K-12
Wide Open School	https://wideopenschool.org/	Prekindergarten-12th grade

Table 2: Presents the Websites for Open Educational Resources that have been Developed Specially in India

Open Educational Resources for Schools	https://hbcse.tifr.res.in	• Project of HomiBhabha Centre for Science Education (HBCSE), Tata Institute of Fundamental Research (TIFR), Maharashtra Knowledge Corporation Limited (MKCL), and Indian Consortium for Educational Transformation (I-CONSENT) • Focus on educational resources in Science, Mathematics for Grades 1-10 • Includes Teaching Resources like conceptual discussions, teaching aids, activity/experiment/projects/pedagogic guidelines, research and innovations and assessments • Includes Student Resources like content enrichment puzzles, games and activities, experiments and projects, quizzes
e- Gyankosh	https://egyankosh.ac.in	• Initiative of IGNOU • A national digital repository to store, index preserve, distribute and share the digital resources
Arvind Gupta Toys	http://www.arvindguptatoys.com/	• Science study material, • Collection of toys from Trash, • Books in Hindi, English and Marathi Languages, • Collection of downloadable short films (Science), • Books, Articles and translations • Eklavya Books, Books on Education, • Books by SitaRamShastri • Science Books by Isaac ASIMOV, • Children's books in Hindi, • Mathematics books in Hindi, • Science Books in Hindi, • Environment Books, • Inspiring Books,
NROER	www.nroer.in	• Videos, Audios, Interactives, Images and Documents sections. • Video Collection -subject wise, short duration videos. • Audio Collection -audio story of famous scientists, social workers, renowned personalities and other. • Interactive library -collection of simulations on various topics and subjects especially Mathematics, Chemistry and Physics. • Images- Historical places, Minerals, Information Technology, Geography, Flower Art, Famous Personalities, Patterns, Maps of India. • Documents Library: Mathematics, Physics, Chemistry and Biology.
EBasta	www.ebasta.in	• Government Digital India initiative, • Books accessible in digital form as e-books
NCERT Books	https://www.ncert.nic.in/ncerts /textbook/textbook.htm	• NCERT textbooks of all subjects for classes I to XII in Hindi, English and Urdu.
GeoGebra	https://www.geogebra.org/	• Multi-platform Mathematics software, • Designed for Dynamic mathematics • Link between Geometry and Algebra
ICT Curriculum	https://ictcurriculum.gov.in/	• Curriculum for ICT in Education

Table 2: Contd.,

National Portal of India	https://india.gov.in/ https://bharat.gov.in/	• National Portal of India by various Indian Government Ministries and Departments, at the Central/State/District level. • Mission Mode Project under the National E-Governance Plan, designed and maintained by National Informatics Centre (NIC), DeitY, MoCIT, Government of India.
Khan Academy	https://www.khanacademy.org/	• Offers practice exercises, instructional videos, and a personalized learning dashboard • Mathematics, Science, Computer Programming, History, Art History, Economics etc. Our math missions guide learners from kindergarten to calculus
Tess India	https://www.tess-india.edu.in/	• led by The Open University in the UK and is funded by UK aid from the UK government, • Initiated in November 2012with the focus on the professional development of teacher educators and teachers in the states of Bihar, Madhya Pradesh, Uttar Pradesh, Odisha, Karnataka, Assam and West Bengal. • Comprise 105 units for classroom teachers in elementary and secondary schools (Teacher Development OER), and 20 units for school leaders (School Leadership OER). • Available in multiple versions for use in a range of linguistic and cultural contexts. • Resources in Elementary Maths, Elementary English, Elementary Science, Elementary Language and Literacy, secondary English, Mathematics and Science.
Nptel	http://nptel.ac.in/	• Joint Initiative by 7 IITs in India supportd by MHRD. • E-learning through online Web and Video courses in Engineering, Science and Humanities streams
Digital Library of India	https://iisc.ac.in	• Collaborative project by institutions in India and currently handled by IISc Bangalore. • Provides access to a digitized collection of various rare non copyrighted books by multiple authors from libraries across India.
National Digital Library of India	https://ndl.iitkgp.ac.in	• An initiative by IIT Kharagpur to bring free access to content in English and Other regional languages on a public network.
Shodhganga	https://shodhgnga.inflibnet.ac.in	• Digital repository of theses and journals submitted by doctorates and research students
Project OSCAR	http://oscar.iitb.ac.in	• An enterprise of IIT Bombay • Contains a massive repository of animations and stimulations based on science and technology
NIOS	https://www.nios.ac.in	• An Open university that started its own project to provide educational materials for the vocational streams.
Agropedia	http://agropedia.iitk.ac.in	• Runs under the guidance of the Indian Council of Agricultural Research • Contains knowledge resources about agriculture and its related topics.

How to Use OERs

The best part of OERs is that OERs can easily be reused, revised, remixed. With the online available digital resources, the limitation lies in the fact that they cannot be used as it is, because the learning needs/ requirements of the learners from different backgrounds may differ and these online available learning resources cannot be revised or remixed. In other words, without prior permission, online available open resources cannot be adapted as per learning requirements of the learners. Here comes the role of OERs and here OERs help the teachers.

Teachers are well aware of the leaning background of their students. They, being the experienced ones in the field of education know very well the mistakes prone areas of their learners. They know well where the most of the students commit the most mistakes, where do lie common misconceptions, false assumptions and consistent mistakes of their learners. They know best how to accommodate OERs to fill the learning gap of their learners. Teachers may take ideas from available OERs and may adapt the materials to accommodate their learners' needs. Teachers may adapt OERs in the form of MCQs, rubrics, callout text box, one-word answer, instructional videos etc. to fill this gap to correct their misconceptions, to remove their faulty assumptions and to help them in coming out of their consistent mistakes. Techers are the best persons to use OERs after personalizing content as per the learning needs of their learners.

Examples given in the OERs may be changed to the daily life examples and practices of the learners. It may help them in connecting with the content. Students' case studies may also be used by the teachers to make their content more interesting for their learners. Students should not only be given opportunity to look at the case studies, examples etc. given by and of others rather they should be given opportunity to represent themselves their own stories, their own practices, their own examples as the part of OERs. This remixing with help the students to connect with the content. Thus contextualizing content as per the learning needs of the learners may give teachers a new way to focus on existing OERs.

CONCLUSION

UNESCO believes- *"To remain human and livable knowledge societies will have to be societies of shared knowledge."* Teaching profession is based on this sharing culture where teachers share their resources to benefit the students. This paper focusing on use of OERs in Indian school settings invites school teachers to adapt OERs, to learn about where to find and hoe to use OERs as per the learning needs of their learners. OERs have a great potential in them because of the unique trait- to be remixed and revised. Personalizing and contextualizing OERS may help teachers and learners both.

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