Building an OER Database: a case study of cross-institutional collaboration

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Abstract

This article delves into the intricate process of developing an Open Educational Resources (OER) database, offering a detailed case study on cross-institutional collaboration. The primary goal is to scrutinise challenges, strategies, and outcomes in creating a centralised repository for undergraduate students. Focused on promoting knowledge sharing and accessibility, the research adopts a case study approach, utilising interviews, surveys, and data analytics. It addresses communication barriers, linguistic diversity, institutional policies, technological hurdles and highlights successful strategies. The study emphasises the database's effectiveness in consolidating diverse OER materials, fostering resource discovery, and creating shared ownership among collaborating institutions. The research's originality lies in its outcomes, providing insights valuable for educators, policymakers, and institutions seeking cost-effective ways to enhance OER accessibility and impact at the undergraduate level. The article concludes with broader implications for open education, suggesting potential avenues for future research and development in OER initiatives.

Keywords: Awesome table, Collaborative OER database, Google site, Google group, OER consortium, Online learning resources

1. Introduction

"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 that permits no-cost access, use, adaptation and redistribution by others with no or limited restriction" (UNESCO/COL Paris OER Declaration, 2012).

In light of the pandemic, with 89.4% of students confined at home and widespread closures of academic institutions, open educational resources (OERs) become pivotal for continuing formal education online. They serve as a substitute for regular classes, especially for those unable to access online learning. Creating OERs involves compiling resources to aid learners with specific goals, be it text-based, multimedia, or info graphics. However, factors like copyright, content delivery, and catering to diverse learners must be meticulously considered before embarking on OER development. Undoubtedly, joining this movement demands careful planning and strategic thinking to create valuable educational resources.

2. Background

During the COVID-19 pandemic, physical access to colleges and libraries in West Bengal was suspended, prompting a shift to online teaching. This transition posed

challenges for college libraries, which struggled to provide essential study materials. With restricted access to physical documents, there's a growing demand for e-resources. West Bengal's college libraries are actively trying to meet this demand through various channels such as email, WhatsApp, Facebook, Telegram, library websites, blogs, and YouTube. However, individual efforts fall short, leading to duplications and inefficiencies. Online dissemination faces obstacles like inadequate infrastructure, storage, servers, manpower, funds, and technical expertise. To address these challenges, proactive librarians have stepped forward to create a collaborative centralized database of e-resources. This database encompasses e-books, e-contents, audio/video lectures, and relevant materials aligned with the CBCS syllabus, catering to the diverse needs of undergraduate colleges affiliated with different universities in West Bengal.

3. Related works

The landscape of education has undergone a significant transformation with the advent of OER. OER databases play a pivotal role in facilitating access to high-quality, freely available educational materials. This bibliographic review explores key literature and resources that shed light on the development, impact, and challenges of OER databases.

OER is a database of freely accessible resources for educational purposes encompassing a variety of artifacts and types within the realm of OER and for example, learning objects such as multimedia content, simulations, and website resources, and conventional materials such as articles, textbooks, and digital materials, which are freely available (Pawlowski & Bick, 2012).

Another study provides a comprehensive overview of the concepts underpinning OER, emphasising the importance of openness in education. The review sets the stage for understanding the subsequent growth and influence of OER databases (Tuomi, 2006).

Open Educational Resources (OER) tackle issues of afford ability, completion rates, and learning gaps, thereby widening their significance and relevance (Watson, & Park, 2019).

Open Educational Resources (OER) have garnered acclaim for their ability to reduce students' expenses and enhance equity in higher education (Grimaldi, et. al., 2019).

In another study, it was discussed that the pandemic has spurred a growing need for online educational resources to sustain the teaching and learning process. Open Educational Resources (OER) are particularly promising in facilitating the swift transition to digital education (Tang, 2020).

Hylen (2020) pointed out numerous important problems with the availability, value, and cost of knowledge and information given through OER. To map the size and scope of OER projects in terms of their goal, content, and funding, background research is therefore required.

David Wiley described the ideas and issues around the sustainability of open educational resources in higher education.

None of the aforementioned literature has covered the technical aspects of creating a cross-institutional database using free technologies, while all of them describe its potential in online learning, particularly in pandemic situations. This case study shows how a cost-effective OER was created with the assistance of various college libraries in West Bengal.

4. Objectives

- To help the students study on their own with a lot of authentic open access e-resources ready at their hand
- To collect all the open access educational resources available on different topics taught under the U.G. CBCS syllabus of different universities in West Bengal and organise them according to the stream, course, subject, semester, and paper under CBCS syllabus
- To encourage others to develop an OER database with a real-life example.

5. Scope and coverage

This study is intended for the librarians of different government and government-aided colleges in West Bengal. Participative members will be the librarians of different colleges in West Bengal who are collecting resources from authentic sources and organise them according to the stream, course, subject, semester and paper code under the CBCS syllabus. OER covers e-book, e-contents, audio/video lectures, etc. and these are limited to the CBCS syllabus of different universities in West Bengal.

6. Methodology

A case study technique was adopted, and the outcomes were thoroughly examined. The system's effectiveness was evaluated in terms of coverage, accuracy, result quality, and results accessibility. To fine-tune the system, the documents that were obtained were examined. For future reference, a report on the system's creation and customisation has also been created.

7. System design and development

The system design and development phase progressed through several key steps, like Policy framing, Tool identification, Technological developments, Analysis of reports, Maintenance, Modification and Marketing. Participative members hold meetings every week to derive some policy in the form of meeting resolutions to develop, upgrade and maintain the database. All the policies derived and procedures established to date are listed here.

7.1 *Policy framing*

A collaborative OER database will be established, and links to e-books and other e-content available under OER will be uploaded via a Google form. Link to the portal will be distributed to each contributing member. Each participating member will have to contribute a specified number of e-resources to the database to get access to it and the number will be revised from time to time.

The links of the e-resources are provided to redirect users to the original websites/ portals for the particular information. However, their availability is not guaranteed, and contributors bear responsibility for authenticity and copyright matters.

Members have to register themselves and enlist their names under different working groups and subject groups through a Google form for ease of work and data collection.

To upload a document, ensure it's an open resource under Creative Commons License and for class notes, seek author permission. The Subtitle will follow the Title of the book. Precede each unit of other title information by a colon. Rendering would not be followed in the case of 'Author/SOR'. The name of the librarian would be in Sentence Case. The name of the course would be written in full. (For example: Geography Honours instead of GEOA). Paper Codes would be given like CC1, CC2, CC3 and so

on. Every member has to upload 10 documents/ month to the database. Since contribution of resources to the database is the first and foremost criterion for membership.

The database is hosted on Google Site, renewed monthly for unlimited access. Later a proposal would be sent to NDLI or NLIST for providing the platform to host the database. If they do not support it, commercial help will be taken.

Librarian will create a Google group for their college, titled WBCOLOR_ [Abbreviated college name]_Library. He/she will manage group membership via a Google form, and group details are then integrated into the main database. The database link is then shared exclusively with members of the corresponding Google groups to provide access to the database. The librarian retains sole control over their college's Google group.

Feedback from target users will be collected through Google forms to assess the pros and cons due to website limitations. A common students' requisition form will be provided for user queries, managed by member librarians.

Member should have a common students' requisition form, where a student accessing the database could submit his/her requisition. Member librarians will address those queries.

A promotional video on WBCOLOR (West Bengal College Library Open Learning Resources) will be created to encourage more librarians to join the project.

7.2 *Tools identification*

Tools have been selected which require minimum cost and technical expertisation.

- WhatsApp has been chosen for instant communication among members. Therefore, groups are to be formed for all participants, different working groups and for different subject groups.
- A site has to be developed for hosting and centralised access to e-resources. Here Google site has been chosen for zero/minimum cost and less technical expertisation.
- Google form has been chosen for registration of a new member, uploading of E-resources, feedback collection and requisition purposes.
- Awesome table has been chosen to create a searchable database.
- Google groups are to be used for subscription-based access to the website.
- Google Analytics is to be integrated with the site to track and report website traffic.

7.3 *Development*

Development is the key step in the system development life cycle. Here we adopted a few ready made tools to develop the system. Customisation is needed to some extent to serve the purpose.

7.3.1 *Create and name a Google site*

- Log in to a Gmail account.
- On a computer, open new Google Sites.
- At the top, under "Start a new site," select a template.
- At the top left, enter the name of your site and press Enter.
- Add webpages, tabs and contents to your site.

- Customise the site
- At the top right, click Publish.

7.3.2 ***Create Awesome table app***

Create a Google form for uploading e-resources using a Gmail id. Add filters to the response datasheet. Here we use String Filter for Author, Title of the E-resource Fields and Category Filter for the fields of Name of the Affiliating University, Course, Subject, Semester, Paper Code, Type of E-resource and Name of the College, etc. Open an awesome table using the Gmail id. Choose to create a new app and select the response of the Google form which I want to connect as the data source and click on create. Now embed the app to the database by simply clicking on Embed option and choosing the frame or script option, copy the code and paste it to the webpage source code.

7.3.3 ***Add analytics tracking to the site***

- Open a Google Site.
- Click Settings.
- In the "Settings" window, go to Analytics.
- In the text box, under "Analytics Web Property ID," enter a valid Analytics Property ID. (Sign-Up to Analytic account and find out the Analytics Property ID)
- Select Enable Analytics.

7.3.4 ***Share Google site with Google groups***

- Navigate to edit view of Google Site
- Click on the "share with others" icon.
- In the "Add people or group" section of the "Share with People and groups" window, enter the email address for the group and select the desired level of access for the group members (such as can edit or can view or publish)
- Click on "Done"
- Now group members will have access to the Google site.

8. Working procedure

Interested members must contact the administrator for registration. The admin will then provide a registration form and a WhatsApp link for the WBCOLOR Entry group. Participants will fill out personal details and preferences related to subject groups, and upon submission, gain database access for a 10-day trial. Based on preferences, members will join respective subject groups, uploading open educational resource links through a designated Google form. Before submission, members are urged to check link availability and adhere to detailed guidelines on the website. The Database Checking group will verify links, associated values, and copyright statements. Upon successful verification of 10 links, qualified members will be asked to form a Google group of users with the registered mail Id and submit it through a designated google form. A permission letter from principal or teacher in charge is also needed to upload at that time. Now database will be accessible for one month through URL to all members included in the group. If any error is found, database checking group will inform the member through mail. Member will rectify the same and upload it to the database. If needed, consult with syllabus review group. Database checking group will check the eligibility conditions of every contributing member from time to time. If anybody fails, database checking group will forward the report to the liaison group who will send the show cause mail to the member. If no valid reason is found, access will be discontinued.

The technical group will look after all technical aspects of the portal. The documentation group will be responsible for preparing meeting resolutions and user guidelines.

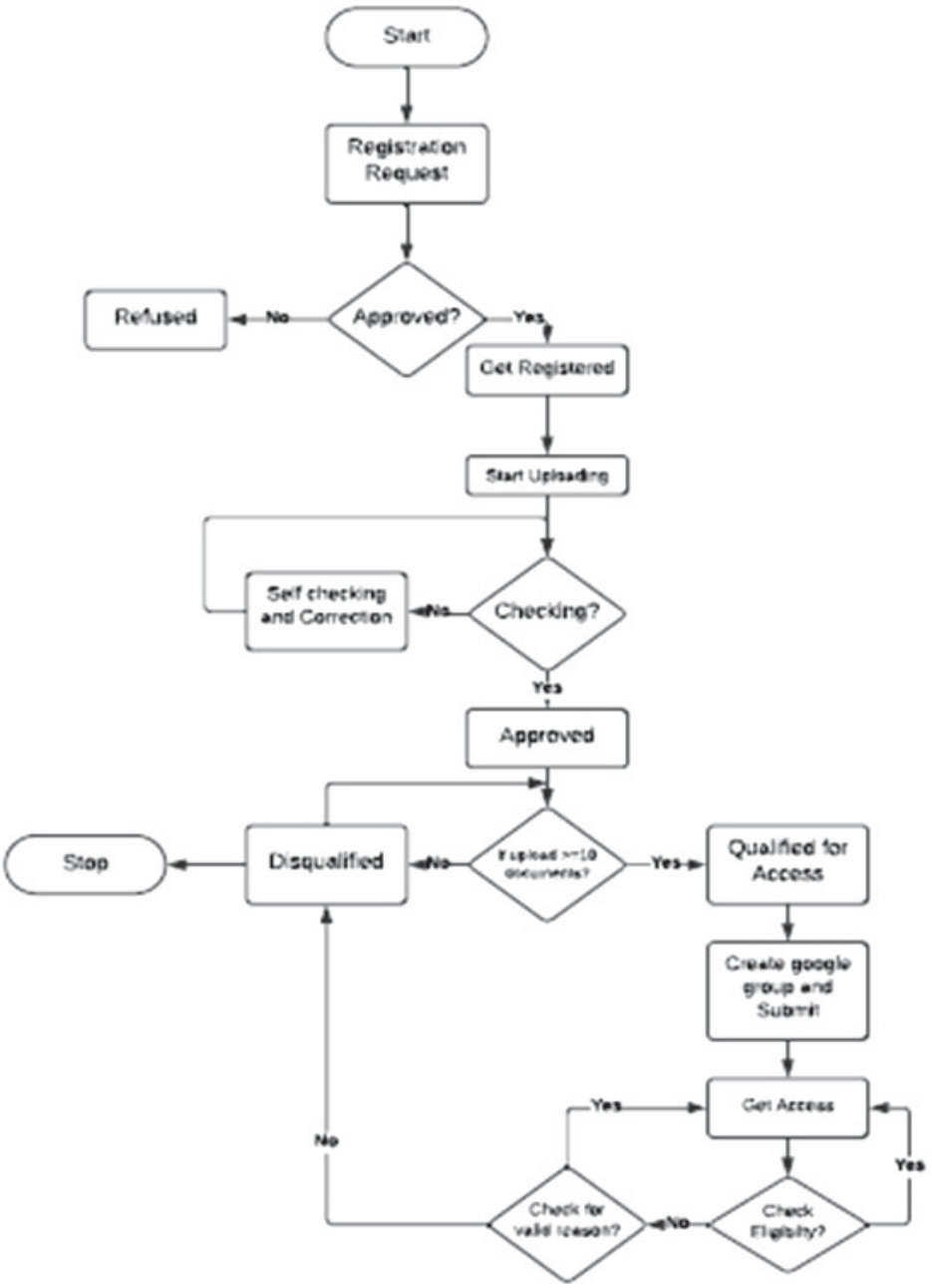
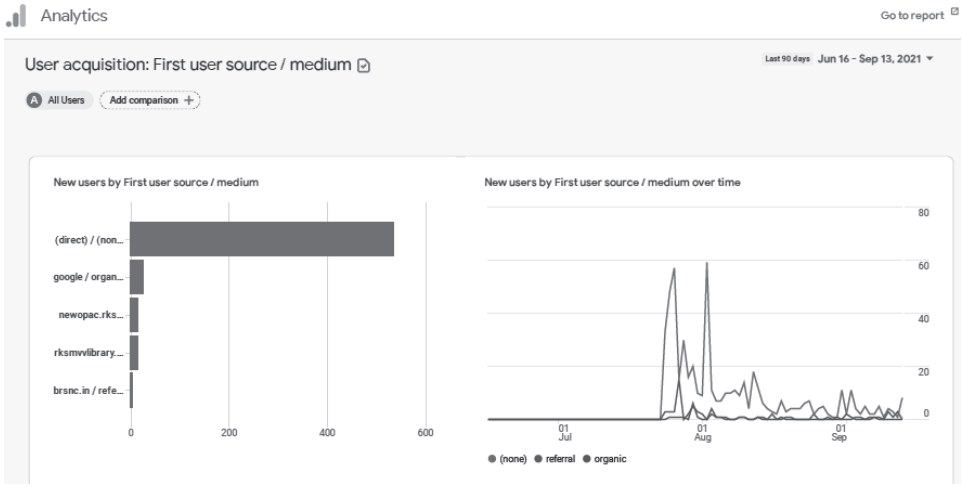


Figure 1: Flow chart of working procedure



Search... Rows per page: 25 Go to: 1 1-25 of 26

	First user source / medium	New users	Engaged sessions	Engagement rate	Engaged sessions per user
	Totals	626 100% of total	2,043 100% of total	90.72% Avg 0%	3.28 Avg 0%
1	(direct) / (none)	536	1,635	89.84%	3.06
2	google / organic	27	169	96.57%	6.26
3	newopac.rksmvvlibrary.in / referral	15	135	94.41%	9.00
4	rksmvvlibrary.in / referral	15	18	85.71%	1.20
5	brsnc.in / referral	4	18	90%	4.50
6	1465340919-jotspot-embeds.googleusercontent.com / referral	3	7	77.78%	7.00
7	panchakotmv.in / referral	3	4	100%	1.33
8	yspm.edu.in / referral	3	14	87.5%	4.67
9	ssclibrary.lovestoblog.com / referral	2	3	100%	1.50
10	wbbudgebudgecollege.org / referral	2	2	100%	1.00
11	1362629364-jotspot-embeds.googleusercontent.com / referral	1	2	66.67%	2.00
12	1426474735-atari-embeds.googleusercontent.com / referral	1	1	100%	1.00
13	1705742403-atari-embeds.googleusercontent.com / referral	1	11	100%	11.00
14	1750008620-jotspot-embeds.googleusercontent.com / referral	1	1	100%	1.00
15	405705375-jotspot-embeds.googleusercontent.com / referral	1	1	100%	1.00
16	518471920-jotspot-embeds.googleusercontent.com / referral	1	1	100%	1.00
17	655368078-atari-embeds.googleusercontent.com / referral	1	1	100%	1.00
18	723336542-jotspot-embeds.googleusercontent.com / referral	1	1	100%	1.00
19	752308317-jotspot-embeds.googleusercontent.com / referral	1	2	100%	2.00
20	788496136-atari-embeds.googleusercontent.com / referral	1	6	100%	6.00
21	gds.google.com / referral	1	1	100%	1.00
22	librarygmrc.blogspot.com / referral	1	6	100%	6.00
23	magrahatcollege.com / referral	1	1	100%	1.00
24	mscclibrary.wordpress.com / referral	1	1	100%	1.00
25	rediffmail.com / referral	1	1	100%	1.00

Figure 2: Usage report

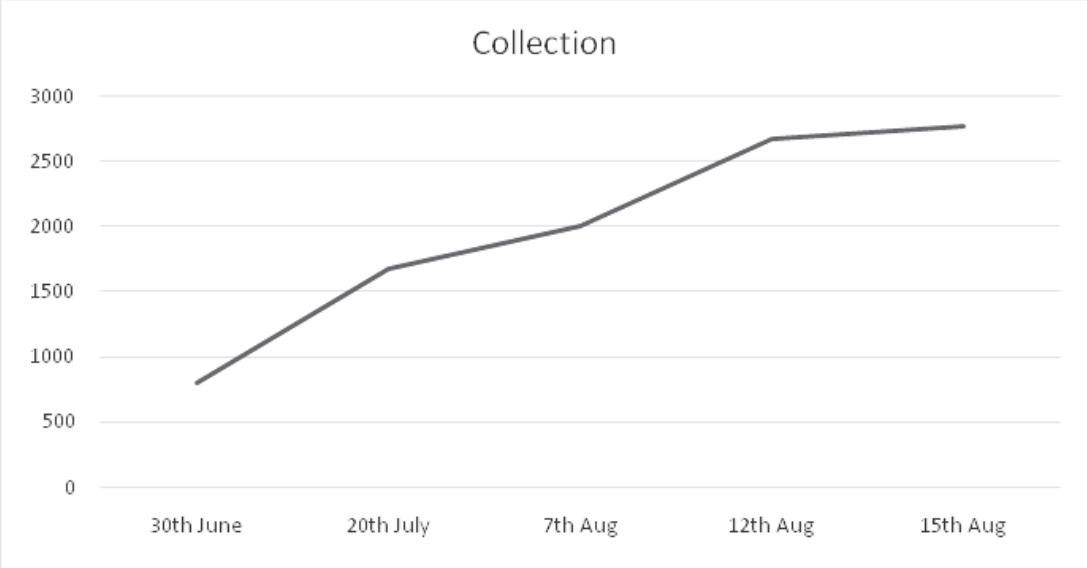


Figure 3: Collection development

From the above figures we could say that a slow but steady growth is seen in terms of uses and collection of e-resources. 626 new users have visited the website with an average session is 3.28 per user. Though it is not satisfactory considering the age and volume of the database it is acceptable. Need more paces in resource uploading to make the database more comprehensive in a very short time. Only a comprehensive database will attract the students, librarians and faculties to join this collaborative project.

9. *Maintenance, modification and marketing*

Recurring meetings and feedback from users raised different issues regarding operations and management which are usually addressed in the very next meeting. Based on the overall decision, a policy is made for future reference and prompt actions are taken to resolve the issues.

A comprehensive promotional video has been created and uploaded on You Tube to introduce the database and its features. Apart from the video, member librarians are posting different messages about WBCOLOR (West Bengal College Library Online Learning Resources) on different social media to attract students and faculties from every corner of our state.

10. Limitations

Awesome table is a very good tool to create a searchable database but subject mapping is not possible here. Therefore, contributors have to upload the same documents for different universities. Another limitation is that the free version allows only 500 views. To support multiple numbers of concurrent users we need to move to paid version.

Google analytics cannot track the independent visits to the website from Google sites. It clubs all the visits from Google sites as Google/organic. So, it is impossible to find out the participation of a particular college. Google sites have some limitations in customisation. Google products have the possibility of discontinuation.

11. Future development proposal

Due to limitations in Google products, we plan to develop our customised portal. The proposed model includes a general interface with Home, About Us, Gallery, Contact Us, and Login sections. Three login credentials will be established: Super Admin, Admin, and User. The Super Admin oversees all system activities, while the Admin controls college-level operations. Users can perform self-registration, log in, access the database, add resources to favourites, request materials, and provide feedback.

The Super Admin will create distinct work spaces for each university, incorporating stream, subject, semester, and Paper Code. They also manage Admins for each college with the necessary permissions. Admins can create/delete users, upload resources, map them to related topics of other universities, and circulate notices. Both Super Admin and Admin possess control over various report generation functionalities, ensuring efficient management and functionality within the system.

12. Conclusions

OERs are best used in evolving learning societies and learning organizations. During the pandemic situation, students are confined to their homes and in this context, OER become the best alternative for self-learning.Finding specific topics among numerous online educational resources is like searching for a needle in a haystack. The process is tedious, time-consuming, and often leads students to irrelevant information. Therefore, the idea came to our mind that if experts like librarians collect the resources and organise them according to the syllabus of the universities, it would be beneficial for the students. To promote sustainable remote learning, library professionals must step forward for a collaborative project to bring all the relevant information to our fingertips without any repetition of work.

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