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EXPLORING THE PEDAGOGICAL IMPLICATIONS OF OPEN EDUCATIONAL RESOURCES: A MIXED-METHODS STUDY

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RESEARCH ARTICLE

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Abstract

Open Educational Resources (OER) are free and openly accessible teaching and learning materials that are becoming increasingly popular in schools and colleges. This study explores how OER are transforming the teaching-learning process at the undergraduate level. Using a mixed-methods approach, the research combines quantitative data from surveys and qualitative insights from interviews to understand the experiences, benefits, and challenges of using OER in classrooms. The study was conducted among 38 teachers from undergraduate colleges affiliated with the University of Calcutta. In particular, the study examines how OER contribute to lesson planning, content delivery and student engagement. Findings reveal that teachers perceive OER as beneficial, cost-effective, and helpful in enhancing classroom interaction. However, several barriers persist, including limited awareness, lack of structured training, insufficient digital infrastructure, and challenges in locating high-quality resources. The study highlights the need for professional development programs, institutional encouragement, and improved digital access to fully integrate OER into daily teaching practices. These findings offer valuable insights for educators, academic administrators, and policymakers working to promote inclusive, flexible, and resource-rich education through open resources.

Keywords: *Open Educational Resources, cost-effective, lesson planning, content delivery, student engagement*

Introduction

Open Educational Resources (OER) are freely accessible teaching, learning, and research materials that can be used, adapted, and redistributed without significant legal or financial restrictions (UNESCO, 2019). They include textbooks, lecture notes, videos, quizzes, and other digital resources that support education across all levels. With the advancement of digital technologies and the growing demand for affordable, inclusive learning opportunities, OER have gained global prominence (Wiley & Hilton, 2018). In higher education, where rising textbook costs and limited access to quality learning materials continue to create barriers (Hilton, 2016), OER provide a cost-effective, flexible alternative. In India, where disparities in digital infrastructure and teaching quality persist, OER can bridge educational gaps and promote equity (Kanwar et al., 2010). The National Education Policy (NEP) 2020 also emphasizes the role of digital and open-access resources in fostering inclusive, flexible learning (Government of India, 2020).

Despite their potential, OER adoption faces challenges. Many educators lack the skills to locate, evaluate, and adapt open resources (Cox & Trotter, 2017), and concerns about quality, relevance, and academic rigor remain (Atenas & Havemann, 2014). Research has often focused on technological access or student outcomes, with fewer studies examining the pedagogical integration of OER particularly in the Indian context. This study addresses that gap by exploring how undergraduate teachers affiliated with the University of Calcutta perceive, use, and adapt OER in lesson planning, content delivery, and student engagement, as well as the challenges and support needed for effective integration. Using a mixed-methods approach, the study involved 38 teachers and offers both quantitative trends and qualitative insights to inform educators, policymakers, and administrators.

Literature Review

A. **Global Perspectives on OER Usage**: OER have reshaped education worldwide by promoting access, equity, and innovation since UNESCO's official recognition in 2002, reinforced by its 2019 Recommendation (UNESCO, 2019). International evidence shows OER improve teaching quality, reduce costs, and expand learning opportunities (Hilton, 2016). The concept

of "OER-enabled pedagogy" (Wiley & Hilton, 2018) highlights how their adaptability empowers educators to design engaging, student-cantered lessons. Barriers remain, including lack of awareness, resistance to change, quality concerns, and insufficient institutional policies (Atenas & Havemann, 2014; Cox & Trotter, 2017), compounded by uneven faculty training and infrastructure access globally.

B. **Pedagogical Implications:** OER support learner-cantered teaching, differentiated instruction, collaborative learning, and continuous content improvement (Wiley & Hilton, 2018). They enable contextual customization, aligning with constructivist approaches that promote active and project-based learning (Hodgkinson-Williams & Trotter, 2015). However, effective use demands skills in content curation, copyright literacy, and digital pedagogy (Pawlowski & Bick, 2012), without which OER may be underutilized.

C. **OER in the Indian Context:** India's initiatives such as NROER, SWAYAM, and e-Pathshala reflect its commitment to open-access learning (Government of India, 2020). Yet, adoption remains uneven, with low awareness, limited digital readiness, and infrastructural gaps, especially in semi-urban and rural colleges (Kanwar et al., 2010). Workload pressures and lack of institutional motivation further hinder uptake.

D. **Teacher Attitudes and Practices:** Teachers' attitudes, confidence, and digital literacy significantly influence OER adoption. While many educators view OER positively, time constraints, insufficient training, and institutional inertia restrict regular use (De Los Arcos et al., 2016). In India, awareness of platforms like NROER is limited, and skills in localization or remixing are underdeveloped (Mishra, 2017).

E. **Lesson Planning and Content Delivery:** OER offer flexibility in designing lessons tailored to learner needs. They enable greater variety and contextual relevance in content, often leading to higher engagement (Bliss et al., 2013). They also facilitate context-sensitive teaching in diverse or resource-limited environments (Cox & Trotter, 2017).

F. **Student Engagement:** Creative adaptation of OER can increase participation, collaboration, and active learning. In India, lessons enriched with open videos, simulations, and multilingual materials have improved responsiveness (Patra & Pani, 2021). "OER-enabled pedagogy" encourages students to co-create content, deepening their learning (Wiley & Hilton, 2018).

Despite available national platforms, adoption is modest due to infrastructural challenges, lack of technical support, and minimal incentives (Kanwar et al., 2010; Mishra & Singh, 2018). In eastern India, especially West Bengal, the digital divide and insufficient training remain critical hurdles. While global and national studies have examined OER from policy and access perspectives, limited empirical work explores their pedagogical use by college teachers in India. This study addresses that gap by investigating how OER influence lesson planning, content delivery, and student engagement, while identifying barriers and support systems essential for effective adoption.

Methodology

Research Design

This study employed a mixed-methods research design to explore the pedagogical implications of Open Educational Resources (OER) among undergraduate college teachers. A combination of quantitative and qualitative approaches was used to gain a deeper understanding of how OER are perceived, adopted, and integrated into teaching practices. This design enabled the researcher to collect both broad statistical trends and detailed narrative data (Creswell & Plano Clark, 2018).

Participants

The participants of the study consisted of 38 teachers from various undergraduate colleges affiliated with the University of Calcutta, West Bengal. These teachers represented different academic disciplines, including arts, science, and commerce. The selection was based on purposive sampling, ensuring that the respondents had at least basic familiarity with digital teaching tools and platforms where OER might be accessed (National Digital Library of India, NPTEL, SWAYAM, e-GyanKosh, and Shodhganga, NROER, YouTube Edu, etc.).

Data Collection Methods

Quantitative data were collected using a structured questionnaire that included Likert scale items. The questionnaire was designed to measure the factors such as awareness and usage of OER, perceived benefits as cost, flexibility, student engagement, challenges as infrastructure, training, quality concerns and institutional support for OER integration. Qualitative Data were collected through semi-structured interviews were conducted with 12 selected participants from the sample. These interviews provided deeper insights into how teachers actually use OER in lesson planning, content delivery, and classroom engagement.

Data Analysis

The quantitative data i.e. survey responses were analyzed using descriptive statistics (percentages, means, and frequencies) to identify overall patterns and trends and the qualitative data i.e. interview transcripts were analyzed using thematic analysis. Here are 30 structured Likert-scale items (both positive and negative) along with sample results from 38 respondents, categorized into 6 themes. The responses are represented in percentage form for each category: Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), Strongly Agree (SA).

Table 1: Awareness & Access

No.	Likert Item	SD	D	N	A	SA
1	I am familiar with the concept of Open Educational Resources (OER).	2%	5%	15%	60%	18%
2	I regularly use OER in my teaching practices.	5%	10%	35%	40%	10%
3	I find it difficult to locate suitable OER for my subject.	10%	25%	30%	25%	10%
4	I have attended training/workshops related to OER.	30%	25%	25%	15%	5%
5	I am aware of Indian OER platforms like SWAYAM and NROER.	5%	10%	20%	45%	20%

Table 2: Perceived Benefits

No.	Likert Item	SD	D	N	A	SA
6	OER help in reducing the cost of teaching materials.	0%	2%	18%	55%	25%
7	OER enhance student engagement in the classroom.	2%	8%	25%	45%	20%
8	OER support flexible and self-paced learning for students.	0%	5%	20%	50%	25%
9	OER are useful in lesson planning and content preparation.	0%	5%	15%	55%	25%
10	OER promote collaborative and participatory learning.	2%	5%	25%	50%	18%

Table 3: Perceived Challenges

No.	Likert Item	SD	D	N	A	SA
11	I face technical difficulties while accessing OER platforms.	5%	20%	25%	35%	15%
12	There is a lack of institutional support for using OER.	2%	15%	20%	40%	23%
13	I feel overwhelmed by the vast amount of OER content available online.	5%	10%	30%	35%	20%
14	There is insufficient guidance on integrating OER into the curriculum.	3%	12%	20%	45%	20%
15	My college provides adequate digital infrastructure to support OER use.	10%	25%	30%	25%	10%

Table 4: Attitude & Belief

No.	Likert Item	SD	D	N	A	SA
16	I believe OER are as effective as traditional resources.	0%	5%	25%	50%	20%
17	Using OER improves my teaching quality.	2%	8%	28%	45%	17%
18	I feel confident in evaluating the quality of OER materials.	3%	10%	30%	42%	15%
19	I am open to replacing traditional textbooks with OER.	5%	15%	30%	35%	15%
20	OER should be included in teacher training programs.	0%	5%	15%	50%	30%

Table 5: Impact on Students

No.	Likert Item	SD	D	N	A	SA
21	Students benefit academically from OER use.	0%	5%	20%	55%	20%
22	Students find OER easy to access and use.	2%	10%	28%	45%	15%
23	OER help students become independent learners.	0%	8%	22%	50%	20%
24	Students are more interactive when I use OER.	3%	7%	25%	48%	17%
25	OER allow students to explore beyond the syllabus.	0%	5%	18%	55%	22%

Table 6: Future Use & Recommendation

No.	Likert Item	SD	D	N	A	SA
26	I plan to use more OER in future semesters.	2%	5%	20%	50%	23%
27	I would recommend OER to my colleagues.	0%	5%	18%	52%	25%
28	OER should be made mandatory in higher education.	5%	15%	25%	40%	15%
29	More training sessions on OER should be provided.	0%	2%	10%	55%	33%
30	OER can transform traditional classroom teaching.	2%	5%	18%	55%	20%

Quantitative analysis shows that while most teachers are familiar with OER platforms like SWAYAM, regular use remains limited, with over one-third reporting difficulty in finding relevant content. A significant proportion had never received formal OER training, highlighting a gap in professional development. More than 80% agreed that OER reduce costs and support lesson planning, and around 70% believed they promote self-paced learning, student engagement, and collaborative learning. However, barriers persist: 60% reported technical issues, 63% cited lack of institutional support, and few felt their institution had adequate digital infrastructure. While over 60% believed OER improve teaching quality, only half felt confident evaluating content quality. Most (80%) supported integrating OER into teacher training. Teachers noted positive student impacts, including improved academic performance (75%), independent learning (70%), and curiosity beyond the syllabus (77%), though student access and actual usage were lower, underscoring the need for support systems. Overall, 73% expressed strong intent to use OER in the future and 77% would recommend them to peers, with 88% calling for enhanced training. The findings suggest that OER

adoption could significantly transform classroom practices if backed by institutional incentives, robust digital infrastructure, and targeted capacity building.

Table 7: SWOT analysis

Strengths	**High perceived usefulness, improved engagement, flexible and low-cost tools**
Weaknesses	Training deficit, access challenges, lack of institutional push
Opportunities	Integration into curriculum, peer training, teacher leadership in OER
Threats	Digital divide, overwhelming choices, resistance to change

The qualitative data were analyzed using thematic analysis based on interviews with 12 undergraduate college teachers affiliated with the University of Calcutta. The findings were organized into six thematic categories. Many participants highlighted that OER enhanced their autonomy in lesson planning and content customization, allowing them to adapt materials to their teaching styles and students' needs. Regarding student engagement, several teachers observed that multimedia-rich OER increased motivation, interactivity, and independent learning habits, with noticeable improvements in class participation.

However, participants also raised concerns about inequitable digital access and limited institutional infrastructure. Rural students often lacked devices or stable internet connections: *"I teach in a semi-urban area. More than half of my students don't have access to reliable internet at home"* (Participant 2). Similarly, infrastructure constraints, such as the scarcity of smart classrooms, hindered classroom integration: *"Our college has only one smart classroom, and that's always booked. So even if I want to use OER, I can't"* (Participant 9).

A recurring theme was the absence of formal training in identifying, evaluating, and integrating OER into teaching practice. Some educators were hesitant to use unfamiliar platforms without guidance, while a few expressed skepticism about the authenticity, peer-review processes, and academic rigor of certain resources.

Despite these challenges, most participants were optimistic about OER's future role in education. They advocated for clear institutional strategies, collaborative content development, and the creation of high-quality OER in regional languages. Overall, the analysis indicates a strong demand for localized and collaborative OER ecosystems supported by robust policies, peer exchange, and language inclusivity.

Table 8: Summary of Themes and Insights

Theme	Key Insight
Autonomy & Flexibility	OER enable personalized, context-rich lesson planning
Student Engagement	Multimedia OER improve motivation, curiosity, and participation
Digital Divide	Rural access gaps hinder equitable use
Training Needs	Teachers lack formal exposure, confidence, and support in using OER
Quality Assurance	Concerns persist around academic rigor and syllabus alignment
Vision & Advocacy	Teachers seek collaborative, multilingual, policy-supported OER ecosystems

Findings of the Study

This mixed-methods study reveals that undergraduate college teachers under the University of Calcutta hold generally positive perceptions of Open Educational Resources (OER), though adoption remains inconsistent.

1. **Awareness** – Most teachers were moderately to highly aware of OER and familiar with platforms like SWAYAM and NROER, but many lacked clarities on licensing, reuse, and open access principles, limiting confident application.
2. **Usage Patterns** – Around half used OER regularly for lesson planning and content delivery, valuing its cost-effectiveness and flexibility. However, OER was often supplementary rather than central to instruction due to rigid curricula and limited pedagogical familiarity.
3. **Perceived Benefits** – Teachers reported improved student engagement, collaborative learning, differentiated instruction, and contextual adaptability, fostering ownership and innovation in teaching.
4. **Barriers** – Key challenges included insufficient training, poor digital infrastructure, content overload, and difficulty in locating quality subject-specific materials.
5. **Institutional Support** – Few received institutional or peer encouragement; absence of formal OER policies hindered uptake and integration into academic planning.
6. **Student Impact** – OER promoted self-paced, exploratory, and resource-rich learning but student awareness and effective use remained low, indicating the need for orientation programs.
7. **Future Outlook** – Teachers expressed willingness to expand OER use, recommending structured training, incentives, curated repositories (including regional-language resources), and stronger institutional policies.

Conclusion

This study examined the pedagogical impact of Open Educational Resources (OER) in undergraduate colleges under the University of Calcutta through a mixed-methods approach. Results show that OER enhances accessibility, affordability, engagement, lesson planning, interactivity, and student participation, fostering inclusive and collaborative learning. However, limited awareness, inadequate training, poor infrastructure, and difficulty in finding quality subject-specific materials remain

major barriers. The findings underscore the need for stronger institutional and policy support to enable effective OER adoption, positioning it as a catalyst for advancing open and inclusive education in the digital era.

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References

1. Abeywardena, I. S., Dhanarajan, G., & Chan, C. S. (2012). Searching and locating OER: Barriers and solutions. *International Review of Research in Open and Distributed Learning, 13*(2), 91–103. https://doi.org/10.19173/irrodl.v13i2.1179
2. Adil, H. M., Ali, S., Sultan, M., Ashiq, M., & Rafiq, M. (2024). Open education resources' benefits and challenges in the academic world: A systematic review. *Global Knowledge, Memory and Communication, 73*(3), 274–291. https://doi.org/10.1108/GKMC-02-2022-0049
3. Andrade, A., Ehlers, U. D., Caine, A., Carneiro, R., Conole, G., Kairamo, A. K., ... & Holmberg, C. (2011). Beyond OER: Shifting focus to open educational practices (OPAL Report 2011). Open Educational Quality Initiative. https://oerknowledgecloud.org
4. Atenas, J., & Havemann, L. (2014). Open educational resources: Quality standards and quality assessment in open learning. *Open Praxis, 6*(1), 29–43. https://doi.org/10.5944/openpraxis.6.1.81
5. Bates, T. (2015). *Teaching in a digital age: Guidelines for designing teaching and learning.* Tony Bates Associates Ltd. https://www.tonybates.ca/teaching-in-a-digital-age/
6. Bliss, T. J., Hilton, J., Wiley, D., & Thanos, K. (2013). The cost and quality of open textbooks: Perceptions of community college faculty and students. *First Monday, 18*(1). https://doi.org/10.5210/fm.v18i1.3972
7. Camilleri, A. F., Ehlers, U. D., & Pawlowski, J. M. (2014). State of the art review of quality issues related to open educational resources (OER). *European Journal of Open, Distance and E-Learning, 17*(1), 1–13.
8. Coughlan, T., Pitt, R., McAndrew, P., & Scanlon, E. (2019). Creating open educational resources with and for teachers: The case of the ORBIT project. *Journal of Interactive Media in Education, 2019*(1). https://doi.org/10.5334/jime.510
9. D'Antoni, S. (2009). Open educational resources: Reviewing initiatives and issues. *Open Learning: The Journal of Open, Distance and e-Learning, 24*(1), 3–10. https://doi.org/10.1080/02680510802625443
10. de los Arcos, B., Farrow, R., Pitt, R., Weller, M., & McAndrew, P. (2016). Personalizing learning through adaptation: Evidence from OER Hub and beyond. *Journal of Interactive Media in Education, 2016*(1), 2. https://doi.org/10.5334/jime.408
11. Garzón, J., Tlili, A., Salha, S., et al. (2023). Are open educational resources (OER) and practices (OEP) effective in improving learning achievement? A meta-analysis and research synthesis. *International Journal of Educational Technology in Higher Education, 20,* 54. https://doi.org/10.1186/s41239-023-00424-3
12. Green, C. (2012). The future of open education: The impact of open educational resources. *EDUCAUSE Review, 47*(6), 28–30.
13. Hilton, J. (2016). Open educational resources and college textbook choices: A review of research on efficacy and perceptions. *Educational Technology Research and Development, 64*(4), 573–590. https://doi.org/10.1007/s11423-016-9434-9
14. Hylén, J. (2006). Open educational resources: Opportunities and challenges. OECD Centre for Educational Research and Innovation. https://www.oecd.org
15. Iniesto, F., & Bossu, C. (2023). Equity, diversity, and inclusion in open education: A systematic literature review. *Distance Education.* [Early access]
16. Kanwar, A., Kodhandaraman, B., & Umar, A. (2010). Toward sustainable open educational resources: A perspective from the Global South. *American Journal of Distance Education, 24*(2), 65–80. https://doi.org/10.1080/08923641003696588
17. Lane, A., & McAndrew, P. (2010). Are open educational resources systematic or systemic change agents for teaching practice? *British Journal of Educational Technology, 41*(6), 952–962. https://doi.org/10.1111/j.1467-8535.2010.01119.x
18. McGill, L., Falconer, I., Dempster, J. A., Littlejohn, A., & Beetham, H. (2013). Journeys to open educational practice: UKOER/SCORE review final report. JISC. https://oersynth.pbworks.com
19. Orr, D., Rimini, M., & Van Damme, D. (2015). *Open Educational Resources: A catalyst for innovation* (OECD Report). Paris: OECD Publishing. https://doi.org/10.1787/9789264247543-en
20. Pitt, R. (2015). Mainstreaming open textbooks: Educator perspectives on the impact of OpenStax College open textbooks. *International Review of Research in Open and Distributed Learning, 16*(4), 133–155. https://doi.org/10.19173/irrodl.v16i4.2381
21. Shareefa, M., Moosa, V., Hammad, A., Zuhudha, A., & Wider, W. (2023, July 3). Open education practices: A meta-synthesis of literature. *Frontiers in Education, 8.* https://doi.org/10.3389/feduc.2023.1121739
22. The impact of open educational resources on student achievement: A meta-analysis. (2024). *International Journal of Educational Research, 126,* Article 102365. https://doi.org/10.1016/j.ijer.2024.102365
23. Benefits and challenges of using OER in higher education: A pragmatic review. (2024). *Discover Education, 3,* Article 81. https://doi.org/10.1007/s44217-024-00142-6
24. Thuon, N., & Zhang, W. (2024). Development of an open education resources (OER) system: A comparative analysis and implementation approach. *arXiv.* https://doi.org/10.48550/arXiv.2405.16442

25. UNESCO. (2019). *Recommendation on Open Educational Resources (OER).* Paris: UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000370936
26. Weller, M., de los Arcos, B., Farrow, R., Pitt, R., & McAndrew, P. (2017). What can OER do for me? Evaluating the claims for OER. In J. M. Spector, B. B. Lockee, & M. D. Childress (Eds.), *Learning, Design, and Technology* (pp. 1–24). Springer. https://doi.org/10.1007/978-3-319-17727-4_71-1