Enhancing Access to Knowledge: Promoting Open Educational Resources through IITs Library Website

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Abstract:

This study investigates the role of Indian Institutes of Technology (IIT) in promoting Open Educational Resources (OER) through their websites. Data were collected from the IIT library websites of twenty-three institutions to analyze the availability of OER links, the types of resources offered, and the use of tools such as Learning Management Systems (LMS) and online public access Catalogues (OPAC). The study shows that many IIT libraries share useful learning platforms, such as NPTEL, SWAYAM, and NDLI. This study also examined how the use of OER is linked to better national rankings. The results suggest that IITs should use OER and online learning tools to improve digital education.

Keywords: *Library resources, Open Educational Resources, Use Promotion, Library Website, Indian Institute of Technology*

Introduction:

Open Educational Resources (OER) have emerged as a transformative force in global education, offering freely accessible, openly licensed learning materials that support teaching, learning, and research. Rooted in the principles of openness and collaboration, OER includes a wide range of resources, such as textbooks, lecture notes, videos, simulations, and full courses, that can be reused, revised, and redistributed with minimal restrictions.

In India, OER is becoming increasingly popular, especially in technical education. The Indian Institutes of Technology (IITs), which are among the top engineering and technology colleges in the country, have taken important steps to support OER. They create and share many high-quality study materials through platforms such as NPTEL, SWAYAM, and Yanks. These platforms help students across India learn from IIT professors, even if they are not studying at IIT. By promoting OER, IITs are helping students from all backgrounds access good education. This also supports the goals of India's National Education Policy 2020, which encourages the use of digital tools and open content to improve learning for all students.

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Key Contributions of IITs in Open Educational Resources

— NPTEL (National Program on Technology Enhanced Learning):

NPTEL is a joint project of seven IITs and IISc, funded by the Ministry of Education, and provides free video-based courses in engineering and science disciplines. These courses are delivered by IITs faculty members and are available on platforms such as YouTube and the NPTEL official website. (*Swayam - NPTEL*, n.d.)

— SWAYAM (Study Webs of Active Learning for Young Aspiring Minds)

SWAYAM was developed in association with NPTEL and led by the IIT Madras. SWAYAM is a government-funded platform that offers free interactive Massive Open Online Courses (MOOCs). It offers credit-eligible courses covers many different subjects from several institutions.(*Swayam - NPTEL*, n.d.)

— OSCAR (Open-Source Courseware Animations Repository)

OSCAR is an initiative by IIT Bombay that provides a repository of interactive animations designed to enhance teaching and learning. These visuals and reusable animations help make the concepts easier to understand.

— National Digital Library of India (NDLI)

NDLI is by IIT Kharagpur, and it brings together an enormous collection of free learning materials in one place. The NDLI is a single online platform that provides access to a wide range of free learning resources, such as textbooks, academic references, and other study materials.

— Other IIT Contributions

IITs are also involved in various educational outreach programs. The Outreach program creates and shares digital learning content in different formats, whereas the E-Grid portal provides access to study materials and encourages collaborative learning.

Need for the study:

Considering the significance of Open Educational Resources (OER) in making quality education accessible. Leading institutes like IITs have the resources and reputation to adopt OER and make them accessible; however, a systematic survey of the library websites of IITs reveals some differences in their commitment and readiness for this purpose. As libraries are the main source of information, it is necessary to determine how they promote OER to accelerate the pace of educational democratization. This study contributes to the objective of promoting OER by ensuring a thorough investigation of OER promotion across IITs' libraries.

Review of Literature:

A literature search on Google Scholar, Web of Science, LISTA, and other relevant platforms revealed that numerous studies have been conducted on this topic. Here, a selection of prominent studies published since 2000 is highlighted.

Patel and Parekh (2024) investigated the impact of Open Educational Resources (OER) on students at the Indian Institute of Technology Jodhpur. This revealed that students in higher education in India had a low to moderate level of awareness of OER. Despite this limited awareness, the study showed that using OER had a positive impact on students' academic performance. This highlights the need to increase awareness and use of these resources to improve educational outcomes.

Zia and Nazim (2023) examined the use of open access (OA) resources by faculty and research scholars at IITs in North India. Using the SET and UTAUT models, we found high awareness but low usage of OA resources. Factors such as internet self-efficacy, attitudes, and copyright concerns hindered engagement. The study suggests that better OA policies and copyright solutions could enhance scholarly communication.

Das, (2011) discussed the significance of OER in improving equitable access to quality education in India. It emphasizes the efforts of institutions like the National Knowledge Commission in promoting the use and creation of OER. This study highlights the important role of the Indian Institutes of Technology (IITs) in the NPTEL initiative, which aimed to enhance engineering education through web and video courses. The paper also noted collaborations between Indian OER initiatives and international platforms, which helped make quality educational content accessible to a wider audience in India.

Dutta (2016) discussed the challenges faced by Indian higher education institutions, particularly IITs, such as a shortage of qualified faculty and outdated curricula, which affected their global rankings. It highlights the potential of Open Educational Resources (OER) to enhance the quality and accessibility of education. The study also noted that government initiatives, such as the National Mission on Education through ICT (NMEICT), supported the promotion and use of OER to improve learning outcomes and address existing educational gaps.

There is limited research on IIT library websites that support and promote Open Educational Resources (OER) and Learning Management Systems (LMS). Existing studies focus more on OER creation and usage and not on library-based dissemination. The role of IIT libraries in enhancing OER visibility remains largely unexplored. This study addresses this gap by evaluating their online platforms and practices.

Objectives:

This study was conducted with the following objectives.

1. To examine the status of IITs library websites.
2. To identify the types and categories of OER content promoted through IIT library websites.

Methodology:

For this study, data were collected from the library websites of the Indian Institute of Technology (IIT). The list of institutions was obtained from the official website of the Ministry of Higher Education, Government of India (**https://www.education.gov.in/iits**). This study aims to evaluate the content of these websites, with a specific focus on the Open Educational Resources (OER) they offer. Additionally, a comprehensive literature review was conducted by sourcing research articles from the scholarly databases.

(*Institutions | Government of India, Ministry of Education*, n.d.)

Data analysis and Interpretation:

Table:1 List of Indian Institute of Technology

S. N.	Name of the Organization	Year of Establishment	Website	Library website
1	IIT, Gandhi Nagar	2008	http://www.iitgn.ac.in/	https://library.iitgn.ac.in/
2	IIT, Bhubaneshwar	2008	http://www.iitbbs.ac.in/	https://library.iitbbs.ac.in/
3	IIT, Madras	1959	http://www.iitm.ac.in/	https://cenlib.iitm.ac.in/
4	IIT, Guwahati	1994	http://www.iitg.ernet.in/	https://www.iitg.ac.in/lib/
5	IIT, Indore	2009	http://www.iiti.ac.in/	https://library.iiti.ac.in/
6	IIT, Kanpur	1959	http://www.iitk.ac.in/	https://pkklib.iitk.ac.in/
7	IIT, Jodhpur	2008	https://www.iitj.ac.in/	https://library.iitj.ac.in/
8	IIT, Kharagpur	1951	http://www.iitkgp.ac.in/	https://library.iitkgp.ac.in/
9	IIT, Hyderabad	2008	http://www.iith.ac.in	https://library.iith.ac.in/
10	IIT, Mumbai	1958	http://www.iitb.ac.in/	https://www.library.iitb.ac.in/
11	IIT, Patna	2008	http://www.iitp.ac.in/	https://library.iitp.ac.in/
12	IIT, Delhi	1961	http://www.iitd.ac.in/	https://library.iitd.ac.in/
13	IIT, Ropar	2008	http://www.iitrpr.ac.in/	https://www.iitrpr.ac.in/library/

14	IIT, Mandi	2009	http://www.iitmandi.ac.in/	https://library.iitmandi.ac.in/
15	IIT, Roorkee	1847	https://www.iitr.ac.in	https://mgcl.iitr.ac.in/
16	IIT, Varanasi	1919	http://iitbhu.ac.in	https://iitbhu.ac.in/cf/lib
17	IIT, Jammu	2016	http://iitjammu.ac.in	https://library.iitjammu.ac.in/
18	IIT, Palakkad	2015	http://iitpkd.ac.in	https://lib.iitpkd.ac.in/
19	IIT, Tirupati	2015	http://iittp.ac.in/	https://iittp.ac.in/CentralLibrary/
20	IIT, Goa	2016	http://www.iitgoa.ac.in	https://iitgoa.ac.in/about-central-library/
21	IIT, Bhola	2016	https://www.iitbhilai.ac.in/	https://iitbhilai.ac.in/index.php?pid=dept_lib
22	IIT Dharwad	2016	http://www.iitdh.ac.in/	https://www.iitdh.ac.in/knowledge-resource-and-information-library
23	IIT, Dhanbad	1926	https://www.iitism.ac.in/	https://library.iitism.ac.in/

The Indian Institutes of Technology (IITs) are premier autonomous public technical universities in India, established to advance education and research in engineering, technology and sciences. The first IIT was established in Kharagpur in 1951, and today, there are 23 IITs across the country. Recognized as Institutions of National Importance, IITs are known for their rigorous academic standards, competitive admissions through JEE Advanced, and excellence in research, innovation, and entrepreneurship.

IITs play a vital role in India's higher-education system by setting benchmarks in curriculum development, research output, and institutional governance. They collaborate with industries and international bodies to drive innovation and contribute significantly to policymaking and national development. IITs help students with startups and promote digital learning and open educational resources, helping bridge the gap between education and emerging technologies.

This table lists 23 Indian Institutes of Technology (IITs) with their official and separate library websites. Each IIT maintains a dedicated library website, indicating the importance of academic resource accessibility and digital library services across all IITs. The first generation of IITs (Kharagpur, Bombay, Madras, Kanpur, and Delhi) was established between 1951 and 1961, IIT Guwahati was established in 1994, and some existing colleges were upgraded to IITs, such as IIT Roorkee in 2001 and IIT (BHU) Varanasi in 2012. New IITs were established in 2008 and 2009 in places such as Gandhinagar, Hyderabad, Patna, and Bhubaneswar as part of a national plan to expand technical education. The newest IITs, such as those in Goa, Bhilai, Jammu, and Dharwad, were established after 2015.

Table:2 NIRF Ranked IITs

NIRF Ranking	No of IITs	%
NO	02	8.70
1-10	09	39.13
11-20	03	13.04
21-40	04	17.39
41 Above	05	21.74
Total	**23**	**100**

Table 2 shows that out of 23 IITs, 39.13% (N=9) are ranked in the top 10 of the NIRF rankings, reflecting their strong academic and research performance. Approximately 30.43% (N=7) fall between ranks 11 and 40, while 21.74% (N=5) are ranked above 41, and 8.70% (N=2) are not ranked.

Table 3: Open Educational Resources Link

OER link	Total no of IIT	Percentage (%)
Yes	17	73.92
No	06	26.08
Total	**23**	**100**

Table 3 illustrates the availability of Open Educational Resources (OER) links on the IIT library website. Of the 23 IITs, 73.92% (N=17) provided links to Open Educational Resources (OER), showing that a large majority are promoting open access to learning materials. However, 26.08% (N=6) did not offer OER links, indicating that there is still room for improvement in ensuring wider access to free educational content across all IITs.

Table 4: OER vs NIRF ranking Institutions

OER Link	NIRF (%)	Non-NIRF (%)	Total (%)
Yes	16 (94.12)	01 (5.88)	17 (100)
No	05 (83.33)	01 (16.67)	06 (100)
Total	**21 (91.30)**	**02 (8.70)**	**23 (100)**

Table 4 shows the relationship between IITs providing Open Educational Resources (OER) and their presence in the NIRF rankings. Among the 17 IITs that offer OER links, 94.12% (N=16) are NIRF-ranked, indicating a strong link between OER offerings and institutional performance. Among the six IITs without OER links, 83.33% (N=5) are still NIRF-ranked, but 16.67% (N=01) are not ranked. Overall, 91.30% (N=21) of IITs are in the NIRF rankings, while 8.70% (N=02) are not. This suggests that institutions that promote open educational content are more likely to be recognized in national rankings.

Table 5: List of OER link provided

List of OER	YES	Percentage (%)
National Digital Library	11	47.82
NPTEL	11	47.82
SWAYAM	04	17.39
e-PG Pathshala	01	4.34
eGyanKosh	02	8.69
Virtual Labs	02	8.69
MIT OpenCourseware	08	34.78
OER COMMONS	04	17.39
National Repository of OER (NROER)	01	4.34

Table 5 shows the types of Open Educational Resources (OER) linked by IITs. The National Digital Library and NPTEL are the most provided, each used by 47.82% (N=11) IITs. MIT OpenCourseWare is also widely shared, with 34.78% (N=8) IITs offering it. Other resources like SWAYAM 17.39% (N=4), OER Commons 17.39% (N=4), Virtual Labs 8.69% (N=2), eGyanKosh 8.69% (N=2), e-PG Pathshala 4.34% (N=1), and NROER 4.34% (N=1) are used to a lesser extent. This shows varied adoption of national and international OER platforms across IITs.

Table 6: Learning Management System

LMS	Total no of IIT	Percentage (%)
Yes	09	39.13
No	14	60.87
Total	**23**	**100**

Table 6 shows the use of Learning Management Systems (LMS) in IITs; out of 23 IITs, only 39.13% (N=9) have adopted LMS platforms. Most of these institutions use the MOODLE platform, while IIT Roorkee uses the LMS-NPTEL. The majority (60.87%, N=14) of IITs are not using any LMS. This indicates that digital tools for managing and delivering educational content are not widely used in most IITs in India.

Table 7: LMS vs. NIRF ranking Institutions.

LMS	NIRF (%)	Non-NIRF (%)	Total (%)
Yes	07 (77.78)	02 (22.22)	09 (100)
No	14	00	14 (100)
Total	**21 (91.30)**	**02 (8.70)**	**23 (100)**

Table 7 presents the relationship between the use of Learning Management Systems (LMS) and NIRF rankings. Among the nine IITs that have adopted LMS, 77.78% (N=07) are ranked in NIRF and 22.22% (N=2) are not. All 14 IITs that do not use an LMS are ranked in the NIRF. Overall, 91.30% (N=21) IITs were ranked and 8.70% (N=2) were not. The data show the distribution of LMS usage among ranked and non-ranked IITs.

Recommendation:

IIT libraries should develop a unified and clearly visible section on their websites dedicated to Open Educational Resources (OER) and integrate LMS to ensure easy access and navigation for users. Libraries should actively promote OER through awareness programs, user guides and integration with global OER platforms. Standardized policies and best practices should be adopted across all IITs to ensure the consistent presentation and sharing of resources. Additionally, librarians should be trained in OER curation and digital content management to better support open-access initiatives.

Conclusion:

This study highlights the growing role of IIT library websites in promoting Open Educational Resources (OER) to support accessible and quality education. Most IITs have integrated OER links, especially to platforms like NPTEL, NDLI, and SWAYAM, showing strong efforts toward open learning. However, some institutions still lack such resources, indicating the need for broader adoption. The positive link between OER promotion and NIRF rankings suggests that open access contributes to academic excellence. The limited use of Learning Management Systems (LMS) also shows scope for improvement in digital content delivery. Overall, IITs can enhance their library services by expanding OER access and adopting advanced digital tools.

References

Das, A. (2011). *Emergence of open educational resources (OER) in India and their impact on lifelong learning*. **Library Hi Tech News, 28**(5), 10–15. https://doi.org/10.1108/07419051111163848

Dutta, I. (2016). *Open educational resources (OER): Opportunities and challenges for Indian higher education*. **Turkish Online Journal of Distance Education, 17**(2), 110–121.

Institutions | Government of India, Ministry of Education. (n.d.). *Ministry of Education*. Retrieved April 16, 2025, from https://www.education.gov.in/iits

Patel, K., & Parekh, Y. (2024). *Impact of open educational resources on higher education in the open knowledge era: A study of the students of Indian Institute of Technology Jodhpur*. **Vidya – A Journal of Gujarat University, 3**(1), 51–58. https://doi.org/10.47413/vidya.v3i1.387

Swayam - NPTEL. (n.d.). *NPTEL Online Courses*. Retrieved April 29, 2025, from https://onlinecourses.nptel.ac.in/

Zia, S., & Nazim, M. (2023). *Exploring factors influencing the use of open access resources in India: A novel perspective on Indian researchers*. **Journal of Librarianship and Information Science**. https://doi.org/10.1177/09610006231207658

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