

# Use of E-ShodhSindhu Consortium for Engineering Education in North Andhra Pradesh: A Study

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## Abstract

E-resources are the important alternatives for the users to refer to their core curriculum. Due to the heavy productivity of information from various innovations, subjects, researches and financial complications of the institutions, providing the right hard copy materials to the users at the right time and place is becoming trouble to the library and information professionals in the LIS arena. In that process, e-resources are playing a key role in fulfilling the gap if printed material circulation. The main objective of the study is to know the problems facing students, faculty, scholars and library professionals in the process of using e-resources in the engineering college education. This study can explain and help the peers understand the problems and benefits of e-resource usage in engineering education. The data was collected from three government universities, engineering colleges and six private engineering colleges in North Andhra Pradesh. Compared with government colleges and private colleges are using the e-resources regularly. This study can assist to the academicians, decision-makers to understand the problems and take the required actions to get solutions in a better environment through the use of digital resources in engineering education in North Andhra Pradesh.

**Keywords:** E-ShodhSindhu, INDEST, N-LIST, AICTE, Digital Resources, Engineering Education, Engineering College Libraries

## Introduction

In today's dynamic academic and professional landscape, the integration of e-resources has emerged as an indispensable pillar of engineering education. These e-resources not only serve as valuable supplements

to traditional printed materials but also offer users the convenience and reliability of a vast array of information sources tailored to meet their diverse information needs (Ankrah & Atuase, 2018). These resources encompass a wide range of digital tools such as textbooks, databases, journals and other online materials (Kenchakkanavar, 2014), granting engineers seamless access to cutting-edge research and development in their respective domains. The extensive adoption of e-resources has profoundly impacted engineering students, researchers and professionals, bestowing upon them a plethora of knowledge readily available at their fingertips. Furthermore, the utilisation of e-resources facilitates efficient collaboration among engineers worldwide, breaking down geographical barriers (Khairnar & Malavi, 2008) and fostering a global exchange of ideas and expertise.

However, while the significance and potential of e-resources in engineering education are widely acknowledged, there remains a need for systematic studies to evaluate their practical implementation and effectiveness in specific regional contexts. The focus of this paper is to explore the utilisation of the E-ShodhSindhu Consortium for Engineering Education in North Andhra Pradesh, providing a comprehensive analysis of its impact on the educational landscape and shedding light on the benefits, challenges and future prospects associated with its implementation. By examining the experiences and perceptions of students, faculty and other stakeholders, this study aims to offer valuable insights that can inform policy decisions, improve resource allocation and enhance the overall effectiveness of e-resource integration in engineering education.

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## Literature Review

### Usage Analysis of E-Resources in Academic Institutions

Electronic resources are essential in academic libraries, offering extensive access to scholarly information through databases, subscriptions and consortiums. However, awareness, usage and challenges differ among user groups. The first section of this literature review analyses seven studies from 2016 to 2022, exploring preferences, awareness, usage, satisfaction and challenges of students and scholars accessing electronic resources in academic libraries.

Jan and Ganaie's (2016) study found that social science students had a preference for print resources and moderate awareness of electronic resources, resulting in low utilisation and dissatisfaction due to lack of orientation. Kannappanavar and Madhu (2016) discovered moderate usage of online databases among scientists in South India, highlighting the need for extensive utilisation. Kumar and Sharma (2019) highlighted the preference for electronic collections among postgraduate students and scholars at Kurukshetra University, with recommendations for training and orientation programmes.

Aswathi and Sajna (2021) found suboptimal usage of N-LIST e-resources among postgraduate students in autonomous colleges in Kerala, emphasising the need to enhance infrastructure and Wi-Fi facilities. Panda (2021) identified high awareness but suboptimal usage of N-LIST e-resources in government-aided colleges in Punjab, recommending training programmes and orientation sessions. Veer and Panda (2021) observed high awareness and efficient utilisation of e-resources during the pandemic while noting difficulties in resource access and the need for improved infrastructure and technical support. Veer et al. (2022) emphasised the importance of an updated collection and improved internet access, suggesting demand-driven acquisition and awareness campaigns to enhance user satisfaction.

### Usage Analysis of E-ShodhSindhu Consortium

This section of the literature review studied only the literature that examined the usage analysis of E-ShodhSindhu consortium by the user community.

Barman and Borgohain (2017) assessed the level of awareness and accessibility of E-ShodhSindhu Consortium in the LNB Library of Dibrugarh University, finding a focus on the user community (students, faculty and research scholars). Kumar (2018) conducted a survey among research scholars at the University of Kerala, highlighting their satisfaction with the resources available in the consortium. However, challenges such as lack of orientation and browsing/printing charges were identified.

Chanchinmawia and Verma (2020) examined the awareness, utilisation and satisfaction of the E-ShodhSindhu Digital Library Consortium by faculty members and research scholars at Mizoram University. They found a need for more awareness/training programmes to enhance usage. Singh et al. (2020) explored the use of the consortium by research scholars at Kurukshetra University and Maharshi Dayanand University, noting that more than 55% of the participants were aware of and used it for research purposes.

Kumar (2021) investigated the problems and barriers experienced by librarians in implementing the E-ShodhSindhu consortium. The study collected viewpoints through questionnaires and personal interviews with member libraries, focusing on factors such as archival policies, e-resource subscription models and awareness programmes. The study emphasised the need to strengthen and maximise the use and practice of the consortium.

Kumar and Kishore (2021) conducted a study at Sri Venkateswara University, using a structured questionnaire to assess user awareness and usage of the consortium. The findings indicated a considerable level of awareness and usage among respondents, emphasising the need for additional awareness and training programmes to enhance the utilisation of the E-ShodhSindhu Digital Library Consortium.

Rawat and Kumar (2021) evaluated the usefulness of the E-ShodhSindhu Consortium among research scholars at IIT Delhi. The study examined awareness, utilisation and satisfaction levels while also highlighting the advantages and disadvantages of the consortium's resources. Recommendations were made to improve resource accessibility and enhance the effectiveness of services provided by the consortium.

Padmavathi and Nayana (2022) focused on the usage analysis of e-resources provided through the E-ShodhSindhu Consortium and bibliographic databases at Bangalore University. The study emphasised the importance of e-resources in meeting the needs of faculty members in university libraries and discussed the significance of the consortium in providing access to a wide range of resources.

Raju and Kumar (2022) highlighted the benefits of library consortiums in terms of wider access to electronic resources at affordable costs and favourable license terms. The E-ShodhSindhu Consortium was acknowledged for its role in managing, organising and archiving electronic resources, thereby supporting the research and educational needs of academic institutions, including private autonomous engineering colleges.

Overall, the reviewed studies emphasise the importance of the E-ShodhSindhu Consortium in providing access to e-resources for research and learning in higher education institutions. These studies recognise the need to address challenges such as awareness, orientation and usage to enhance the effective utilisation of these resources. Strengthening the consortium and implementing the suggested measures can contribute to its success and maximise its benefits for member libraries, faculty members and research scholars, thus supporting the evolving information needs of academic communities and fostering research and knowledge dissemination.

## Over View of Library Consortium in India

A library consortium typically refers to a group of libraries that work together to achieve mutual goals such as sharing resources, improving services and increasing access to information (Saini, 2017), (LISBDNETWORK, 2018) and (Jahnavi & Muthu, 2021). The consortium allows member libraries to pool their resources, including collections, technology, staff expertise and funding, to achieve goals that they would not be able to accomplish independently. The benefits of joining a library consortium are many, including cost savings through shared purchases, increased access to specialised materials and expertise, expanded services such as inter-library loans and digitisation initiatives, and improved advocacy for the

value of libraries in the community (Satija & Dehigama, 2008). Library consortia range from local collaborations among neighbouring institutions to state-wide or even national associations. Membership is typically voluntary but requires a commitment by members to work together towards achieving common objectives.

## E-ShodhSindhu

The Ministry of HRD (now called the Ministry of Education) developed E-ShodhSindhu by combining three consortium efforts, namely the UGC-INFONET Digital Library Consortium, N-LIST and the INDEST-AICTE Consortium, based on the suggestion of an Expert Committee (INFLIBNET Centre, n.d.-a). The E-ShodhSindhu will continue to provide current and archival access to more than 10,000 core and peer-reviewed journals, as well as a number of bibliographic, citation and factual databases in various disciplines from a large number of publishers and aggregators (INFLIBNET Centre, n.d.-b) to its member institutions, which include centrally-funded technical institutions, universities and colleges covered under Sections 12(B) and 2(f) of the UGC Act (INFLIBNET Centre, 2019).

## UGC-INFONET

The UGC-INFONET Digital Library Consortium is a pioneering initiative in India that facilitates access to scholarly literature and digital resources for academic institutions. Started in 2003, this consortium comprises universities, colleges and research centres across India that have come together to pool their resources and enhance their digital library infrastructure (UGC, 2009).

The consortium provides access to over 10,000 electronic journals, more than 1 lakh e-books and several databases covering various fields such as science, humanities & social sciences. The member institutions can also avail themselves of interlibrary loans and document delivery services through the network (UGC, 2009). The UGC-INFONET Digital Library Consortium has revolutionised the way academic research is conducted in India by providing high-quality information resources that were previously unavailable or unaffordable (Anbalagan & Rajkumar, 2016).

## N-LIST

N-LIST is a digital library initiative of the Ministry of Human Resource Development (MHRD) in India, facilitated by the INFLIBNET Centre. It provides free access to high-quality e-resources, including journals, e-books and databases, covering various subjects such as science, engineering, humanities, social sciences, management and commerce. N-LIST aims to bridge the gap in access to academic resources for educational institutions in remote areas, where physical libraries may be limited or unavailable. It is an integral part of the E-ShodhSindhu consortium, granting users access to over 6,000 journals, more than 199,500 e-books under N-LIST and an additional 600,000 e-books through NDL (INFLIBNET Centre, 2022).

N-LIST has improved the learning environment for students and enabled researchers and faculty members in Indian universities to stay updated with resource material from around the world. Recognising its success in reaching out to remote educational institutions with abundant resources at no extra cost, the MHRD has extended the programme indefinitely.

## INDEST

INDEST-AICTE Consortium, the possibility of the production of the library consortium, came to fruition at the “Public Class on Information Systems Administration in Designing and Innovation Schooling and Exploration” held at IIT Delhi in December 2000 under the aegis of Service of Human Asset Advancement. The course was composed by Dr. Jagdish Arora and it was attended by in excess of 150 members from designing and mechanical establishments from everywhere in the country. In light of the criticism, service chose to set-up the master bunch in April 2002 for the consortium-based membership to electronic assets for Specialized School System in India under the chairmanship of Prof. N. Balakrishnan from IISc, Bangalore. The “Indian Public Computerized Library in Designing Sciences and Innovation (INDEST)

Consortium” was set up in 2003 by the Service of Human Asset Improvement (MHRD) on the suggestion of a Specialist Gathering designated by the Service (ICOLC, n.d.). The IIT Delhi was assigned as the Consortium Central Command to facilitate its exercises.

## Objectives of the Study

- To know the purpose of using e-resources.
- To explore the use of e-resources includes E-ShodhSindhu by the both government and private engineering colleges of North Andhra Pradesh.
- To find the satisfaction level of user regarding e-resources.
- To evaluate the complications in accessing E-ShodhSindhu and other e-resources in engineering education in North Andhra Pradesh.

## Methodology and Scope of the Study

In this manuscript, to study the results, I used the survey method and selected a quantitative approach. The questionnaire is completely explained with the help of the eminent faculty, librarians, scholars and students in engineering. The online questionnaire is formed and served through Google Forms during the period of 1<sup>st</sup> February 2023–31<sup>st</sup> March 2023. The questionnaire was sent to 280 members. Out of 280, I received 200 valid responses, which is equal to 71%. The data has been preserved in MS Excel and the data analysis has been done through MS Excel only. To provide a clear view of preliminary information, tables and graphical representations are used wherever necessary.

There are six government engineering colleges and above 15 private engineering colleges running in North Andhra Pradesh. This study covers four government engineering colleges and six private colleges. My targeted population is graduate and post-graduate engineering and management students, graduate and post-graduate level faculty, research scholars and librarians. The details are given below about the range of my study.

**Table 1: List of Institutions/Colleges Covered in this Study**

<i>Sr. No.</i>	<i>Institution/College</i>	<i>Category</i>	<i>Year of Establishment</i>
1	College of Engineering, Dr. B.R Ambedkar University-Srikakulam	Government	2018
2	RGUKT IIT-Srikakulam	Government	2016
3	College of Engineering, JNTU-GV	Government	2007
4	College of Engineering-Andhra University	Government	1955
5	Aditya Institute of Technology and Mnagement, Tekkali	Private	2001
6	GMR Institute of Technology	Private	1997
7	MVGR College of Engineering	Private	1997
8	Anil Neerukonda Institute of Technology and Science	Private	2001
9	Gayatri Vidya Parishad College of Engineering	Private	1996
10	Vignan's Institute of Information Technology	Private	2002

Data Source: Annexure.

## Data Collection

The required data has been collected from the students, scholars, librarians and faculty members from the

following institutions/colleges mentioned in the tabular format for the study.

**Table 2: Details of Population Covered in the Study**

<i>Sr. No.</i>	<i>Institution/College</i>	<i>Librarians/ Library Professional</i>	<i>Students</i>	<i>Research Scholars</i>	<i>Faculty</i>
1	College of Engineering, Dr. B.R Ambedkar University-Srikakulam	1	10	1	5
2	RGUKT IIT-Srikakulam	1	10	0	5
3	College of Engineering, JNTU-GV	1	10	2	5
4	College of Engineering-Andhra University	1	15	6	10
5	Aditya Institute of Technology and Mnagement, Tekkali	1	10	0	5
6	GMR Institute of Technology	1	10	1	5
7	MVGR College of Engineering	1	20	0	12
8	Anil Neerukonda Institute of Technology and Science	1	10	0	8
9	Gayatri Vidya Parishad College of Engineering	1	10	0	5
10	Vignan's Institute of Information Technology	1	10	0	5
Total Population		10	115	10	65
Population Percentage		5%	57.5	5%	32.5

Data Source: Annexure.

## Data Analysis and Interpretation

### Usage of E-ShodhSindhu and Other E-Resources

**Table 3: Usage Comparison of E-ShodhSindhu and Other E-Resources**

User Category	E-Sodhsindhu	E-Books	E-Journals	Other Sources/ Databases
Faculty	64 (98%)	60 (92%)	65 (100%)	61(93%)
Students	15 (13%)	95 (82%)	64 (55%)	60(52%)
Scholars	10 (100%)	5 (50%)	10 (100%)	08(80%)

From the Table 3, E-ShodhSindhu is used very well by the faculty and scholars. But it is very poorly used by the students. The users are very well aware of e-resources. Almost all the users are thoroughly used the e-books and e-journals. Faculty and students are very much used e-books also. Scholars are very decent at using of

E-ShodhSindhu, e-journals and other databases for their research purposes. Faculty, students and scholars are very much aware about some other databases like Elsevier, Springer, Science direct, McGraw-Hills e-books, J-Gate, EBSCO, ASME, ASTM, ASCE journals, NDLI and other resources.

### E-Resources Usage Frequency

**Table 4: Frequency of Using E-resources**

User Category	Daily	Frequently in a Week	Once in a Week	Once in a Month
Faculty	42	13	9	2
Students	82	21	9	3
Scholars	6	3	1	0
Total	130	37	19	5
Percentage	68.4%	19.4%	10%	2.6%

From the Table 4, e-resource usage frequency is very good in the user categories. Faculty, students and scholars are very much using the e-resources regularly; they are using them on a daily basis, occupying 68.4% of the total users. Weekly they are using 19.4% of overall users. Weekly, use of the e-resource is 10%, and once a month is 2.6%. Most scholars use it once a week.

### Purpose of Using E-Resources

#### For Faculty

**Table 5: Purpose of Using E-Resources for Faculty**

Sr. No	Purpose of Using E-Resource	No. of Respondents	Percentage
1.	Personally updated	25	38%

2.	To fulfil classwork and teaching	18	28%
3.	To prepare curriculum	16	25%
4.	To fulfil research work	4	6%
5.	Research Guidance	2	3%

From Table 5, it is clear that the usage of e-resources is identified by five main purposes. The maximum number of respondents personally updated themselves, that is, 38%, the next highest respondents are using e-resources for fulfilling their class work. 25% of respondents are using it for preparing curriculum, a minimum number of respondents are using it to fulfil research work/guidance and others.

## For Students

**Table 6: Purpose of Using E-Resources for Students**

Sr. No.	Purpose of Using E-Resource	No. of Respondents	Percentage
1	Personally Updated	15	13%
2	To submit the assignments/projects	46	40%
3	To prepare the semester examinations	24	21%
4	To develop the research skills	11	10%
5	To enhance technology learning	19	17%

From Table 6, it is found that the e-resources usage is identified by five main purposes. The maximum number of respondents using for submitting assignments and project work, that is, 40%, next highest respondents are using e-resources for the preparation of semester examinations (21%). Nearly 16% of respondents are using for the enhancement of technology. About 13% of respondents updating themselves by using e-resources. Remaining 10% respondents are interested to update themselves.

## For Scholars

**Table 7: Purpose of Using E-Resources for Scholars**

Sr. No.	Purpose of Using E-Resource	No of Respondents	Percentage
1	Personally Updated	1	10%
2	To submit the research work/Thesis	3	30%
3	To publish research papers	4	40%
4	To develop Research aptitude qualities	1	10%
5	To develop teaching Aptitude	1	10%

From Table 7, it is observed that maximum number of respondents using for paper publication. Next highest respondents are using e-resources for submitting their

thesis work (30%). About 30% of purpose was equally shared by personally update, for developing research aptitude and to develop teaching aptitude.

## Guidance for Using E-Resources

**Table 8: Source of Guidance for Using E-Resources**

Guided by	Faculty	Students	Research Scholars
Individual Efforts	6	8	1
Seniors	22	17	2
Peer Groups	28	34	4
Library Staff	9	56	3

From Table 8, it is clear that peer groups guidance is more on faculty, research scholars and students. Library staff is guiding more to students about e-resources. Individual efforts are very less on students, faculty and research scholars. Seniors are also guiding more to faculty and students.

## Place of Using E-Resources

**Table 9: Place of Using E-Resources**

Place	Faculty	Students	Research Scholars	Total	Percentage
Library	19	20	1	40	21%
Computer Centre/Digital Library	9	65	6	80	42%
Department	33	15	1	49	26%
House/Hostel	4	15	2	21	11%

From Table 9, it is observed that faculty is more comfortable to use e-resources at department following by library, computer centre/digital library and house/hostel. Students are interested to use computer centre/digital library comparing with library, department and house/hostel. Research scholars are using more digital library for e-resources followed by hostel/house, library and department.

## Satisfaction Levels of Using E-Resources

**Table 10: Levels of Satisfaction of Using E-Resources**

Satisfaction Level	Faculty	Students	Research Scholars	Total	Percentage
Fully Satisfied	55	33	6	94	49.5%
Satisfied	8	67	3	78	41%
Dissatisfied	2	15	1	18	9.5%

From the above table it is clear that fully satisfied e-resource users are more, that is, 50% of total respondents. Comparing to dissatisfaction level more number of respondent are satisfied with e-resource usage.

## Problems Facing in E-Resources Usage

**Table 11: Problems of Using E-Resources**

Problems	Faculty	Students	Research Scholars	Total	Percentage
Network speed issues	9	11	2	22	11.5%
To find out the relevant information	6	32	1	39	20.5%
Difficulty in reading	8	17	1	26	13.6%
Lack of proper infrastructure	17	23	2	42	22.3%
Library Staff support	6	6	1	13	6.9%
Database access issues	19	26	3	48	25.2%

From Table 11, it is observed that the main problem while using e-resource is database subscription issues. Second and third most problems are like proper infrastructure and the way of searching relevant information. Other problems like difficulty while reading is followed by network speed issues and library staff support.

## Findings

With the support of the analysis and interpretation of the study some vital points are found as following:

- The faculty and scholars are aware about e-resources and E-ShodhSindhu consortium comparing to students.
- The users are often using e-resources in the engineering education.
- The faculty are personally updated themselves by using e-resource.
- Students and scholars are using e-resources for the purpose of projects, thesis submission and research publication.
- Library staff is playing a vital role in assisting the students to access the e-resources.
- Computer centre/Digital Library plays a significant role to the students and scholars to retrieve the information in the procurement of their needs. Library or Learning Centre (reading area and digital library) is the best place to the users for getting information by using e-resources in the engineering education.
- Most number of respondents is fully satisfied by using the e-resources in engineering education.
- There is a problem of infrastructure in engineering institutions. Students are facing problem to find relevant information and difficulty while reading the e-resources due to lack of abilities.
- Database access issues are faced by the users in engineering education.

## Suggestions

Based on the study, some suggestions are made to strengthen the engineering education in North Andhra Pradesh to enhance full-pledged knowledge and command in the usage of E-ShodhSindhu and other e-resources.

- It is required to develop infrastructure in engineering institutions.
- Even though the users are aware of the e-resources, the library staff is suggested to guide them in a proper way about the searching techniques, problems in finding the exact information, etc.
- There is a requirement to conduct user education and orientation programmes.
- Library professionals are required to provide a consistent update on contemporary information literacy practices to educate users.



- A suitable library application, library webpage and web links can help the users access the data exactly.
- Proper implementation and maintenance of e-resources are required in engineering institutions.
- Regulatory bodies need to continuously monitor e-resource usage in engineering institutions.

## Conclusion

The subscription of E-ShodhSindhu and e-resources in libraries has transformed the way the engineering faculty, students and research scholars access information and knowledge in academics as well as research. While traditional library resources such as books and journals remain essential, electronic resources offer numerous benefits such as convenience, speed, availability and cost-effectiveness. Libraries must continue to adapt to changing technologies to ensure they provide their patrons with relevant and high-quality information. In addition, library professionals play a vital role in helping users navigate digital resources by offering training programmes and tailored reference services.

Even though there are advantages to e-resources, there are a few limitations, like unequal access to technology and licensing restrictions, that obstruct the full potential of these resources. Ultimately, it is essential for libraries to strike a balance between traditional resources and technological advancements to meet the diverse needs of their users. This study is limited to the engineering education in the North Andhra Pradesh. There is scope to extend the study to traditional courses and other professional courses like management, medicine, pharmacy, etc.

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## Further Reading

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## Annexure

The data used for Table 1 and Table 2 retrieved from the following sources:

- <https://www.mvgrce.com/infrastructure/library>
- <https://gmrit.edu.in/library.php>
- <http://www.vignansiit.com>
- <https://www.adityatekkali.edu.in/library.php>
- <https://library.anits.edu.in/>
- <https://www.andhrauniversity.edu.in/central-facilities/library.html>
- <https://www.andhrauniversity.edu.in/college/college-of-engineering-women/engineering-women-home.html>
- <https://www.gvpce.ac.in/lib.html>
- <http://www.brau.edu.in/Library.aspx>
- <https://jntukucev.ac.in/facilities/library/>