

Identification of Slow Learner with Proposed Innovative NDLI Resources Utilization Approach

Madhuri N. Gedam¹, Dr. Deven Shah²

¹Assistant Professor, Department of Information Technology, Shree L. R. Tiwari College of Engineering, Mira Road (E), Thane, Maharashtra, India

²Professor, Department of Information Technology, Shree L. R. Tiwari College of Engineering, Mira Road (E), Thane, Maharashtra, India

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ABSTRACT

The National Digital Library of India (NDLI) is National Mission on Education set by Ministry of Education of Govt. of India. It is developed, operated, and maintained by Indian Institute of Technology Kharagpur. It is intended to provide education for all through integrated knowledge base ranging from school level to researcher's level considering different languages and easily available at the fingertips. The SWOT analysis of contents of NDLI portal is done in this paper. Authors proposed new pedagogy to map the contents of various engineering branches available on NDLI portal with university curriculum to achieve the course outcomes (CO). The analysis of student's results through quizzes and tests is used for identification of slow, medium, and fast learners of different courses.

Keywords : Digital Library, NDLI, CO, SWOT, Slow Learners

I. INTRODUCTION

The National Digital Library of India (NDLI) is a novel project introduced by Ministry of Education of Govt. of India and developed by bright minds of one of the oldest and premier Indian Institute of Technology, Kharagpur. The main motive of this mission is to provide "education for all" through a single window in this digital era. This is acting as a boon to participate, learn new things easily at a fingertip from all corners of the country, even remotest part of the world. The

mission is beautiful in eliminating the boundaries across all regions, languages, age, level of education and physical ability. NDLI is providing knowledge interface support for 10 most widely used Indian languages. It is providing education support from school level to researcher's level covering all areas of study with the help of all types of digital devices including differently-abled learners also. NDLI is able to empower its citizens with the global knowledge and stand tall in every front.

NDLI is an asset in terms of knowledge base with an aim to provide inclusive education to persons with disabilities through specially designed Disability Knowledge Portal (DEEPAK) while achieving the goals of National Education Policy (NEP) 2020. NDLI is a knowledge hub storing manifold types of video lectures, downloadable course material in different file formats on various subjects ranging from school level and going up to researcher's level. The contents are developed by the brilliant minds of various institutions spread over the country and integrated on a single access portal. It is serving as a tool for digital transformation of the learning society. NDLI portal contains a huge storage of quality data collected from various Indian public libraries, institutions as well as best libraries across the globe.

Authors proposed innovative way of mapping curriculum of university course to attain course objectives (CO) and program objectives (PO) with the help of NDLI resources. This will help both students and faculties to attain their goals, making effective teaching learning process with the help of standard resources provided by the Govt. of India.

The paper is organized as follows. Section 2 discusses literature survey of NDLI Structure and SWOT analysis of NDLI. Section 3 describes the proposed Mapping of NDLI Resources to Engineering Courses and Identification of Slow Learner, Medium Learner, and Fast Learner. Section 4 concludes the paper.

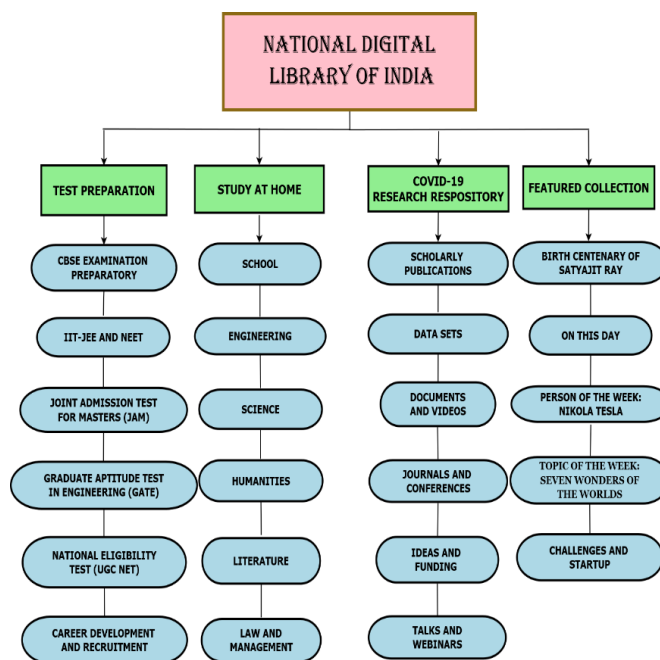
II. Literature Survey

The well-known fact about the libraries is that they are treasure hunt of information. But retrieval of desired information in required format is always cumbersome task. The paradigm shift of libraries towards digital knowledge repositories is going to make learners life simple. NDLI is playing a humungous role in dissemination of digital information of all academic levels in a different suitable format accessible over the globe through a single interface. It is a central repository fetching digital information from various

Indian libraries as well as global libraries. The learners are still required to be educated regarding use of a NDLI portal instead of browsing through various standalone resources to get the right contents. Different content types from multiple sources like books, articles, theses, manuscripts, web courses, etc. are supported in NDLI portal. Learning resources are available in multiple formats like text, image, audio, video, etc.

2.1 NDLI Structure

A. The following figure shows the resources structure of the NDLI portal. It mainly shows the contents required for test preparation, study at home, Covid-19 research repository, featured collection, etc.



2.2 SWOT Analysis of NDLI

Following are the feature of NDLI portal which are categorized according to their nature and making it to prove the ability of this portal.

(i) Strength

- (a) API based integration of various knowledge bases, hence keeping sanctity of original content of data.
- (b) Simple access of strong and right knowledge base provision to learners on 24*7*365 basis across all levels of different domains.
- (c) It can be used effectively for test preparation of various important test examinations such as IIT-JEE, NEET, JAM, GATE, UGC-NET, etc.
- (d) It can be mapped with various Boards/ Universities syllabus to attain their course objectives.
- (e) Free education for all complying with NEP-2020 including disable friendly knowledge base.
- (f) It can be used as a tool for study at home of various streams like engineering, science, humanities, literature, law & management, etc.
- (g) It contains COVID-19 research repository containing literature documents, data sets, videos, journals & publications. It is acting as a platform for start-ups providing different ideas and their challenges.
- (h) It is a tool to improve socio-economic standard of citizens through availability of high-quality learning material recognized at both national as well as international level.

(ii) Weaknesses

- (a) It needs internet connectivity which may not be available at the remotest part and online access cost may not be affordable to weaker sections of society.
- (b) Due to its feature of non-storage of data in the portal, the quality of the material depends upon the provider of source content. NDLI has no control over the source content.
- (c) Access to some of the resources may need to face copyright issues and may only get initial pages of

information. It may need proper authorization from the content provider for full access.

- (d) No standardization of file formats specified to read contents. Hence it may need various supporting software to read contents.

(iii) Opportunities

- (a) Start-ups can be established using knowledge base and ideas.
- (b) Uniformity of syllabus of different boards, universities can be done using the content available throughout the country providing equal opportunities to everyone.

(iv) Threats

- (a) Prone to cyber-attacks due to its availability in public domain
- (b) Illegal access and theft of data by intruders

III. Proposed Mapping of NDLI Resources to Engineering Courses

We have proposed an innovative approach to map the contents of engineering curriculum of University of Mumbai with NDLI resources. As a case study, engineering curriculum of various branches like Information Technology, Computer Science, Electronics, Civil Engineering and Mechanical engineering have been considered. NDLI resources such as Video, Transcript, Swayam, NPTEL, web courses are mapped with all the course outcome (CO's) of a particular course and it is shared with all the students of our institute. It will be helpful for their academic growth. Table 1 shows mapping of software engineering course is with the NDLI resources in the following way.

Recommended font sizes are shown in Table 1.

Subject Code	COs	Course name	Link
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ITC504	CO1: To provide the knowledge of software engineering discipline	Software Engineering	http://ndl.iitkgp.ac.in/document/TVBkSVpKTGZKMXhTTXJaYkIyeisrUWpvdGVGRzdVbjJhY1BJS05XTHNTbkhONnFkUVcwMEdOODBqZGFJSld3TXFYK0pWSHRWRUhtcmdqM2JoeWJubGc9PQ
ITC504	CO2: To understand Requirements and analyse it.	Software Engineering	http://ndl.iitkgp.ac.in/document/S1loNUNiRE91VEk4NzFxWDNoYW05cFYyTDJlcG5oWC9MdGJkSXDFN2JTMmtXVklJN3RGUy81dkdMN3NES3IvS2V3UF1ORktwaFVIc2ZRN2hUNE1jbjExaW5PSGJ1YWILV0ZtTGhEZ0c4WUk9
ITC504	CO3: To do planning and apply scheduling.	Software Project management	http://ndl.iitkgp.ac.in/document/S1loNUNiRE91VEk4NzFxWDNoYW05cFYyTDJlcG5oWC9MdGJkSXDFN2JTM3VsRkFrQTNkd21pdjJ1Q2dMRDF6Nk5iOEg5a2JDckJuUjJXb0p5L0w0QVhhTVpWWG5IL0kxMm5XdFpscFluYXM9
ITC504	CO4: To apply analysis, and develop software solutions.	Software Engineering Transcript	http://ndl.iitkgp.ac.in/document/S1loNUNiRE91VEk4NzFxWDNoYW05cFYyTDJlcG5oWC9MdGJkSXDFN2JTMmtXVklJN3RGUy81dkdMN3NES3IvS2dmSjNaQXZW RZBnOUtrcVJqR1pEaTAyT HpKTmpRYmtLY1NrUWpC RFh6TWc9

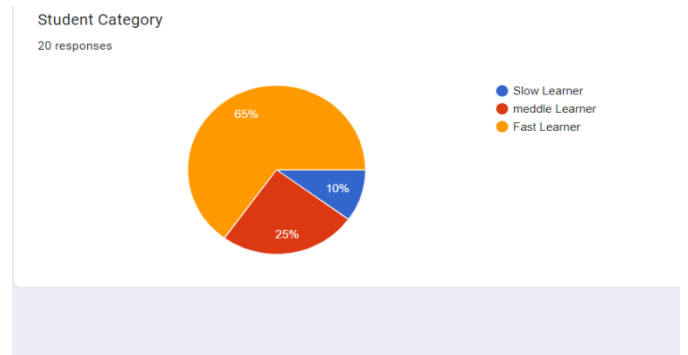
ITC504	CO5: To demonstrate and evaluate real time projects with respect to software management engineering principles.	Software Project	http://ndl.iitkgp.ac.in/document/S1loNUNiRE91VEk4NzFxWDNoYW05cFYyTDJlcG5oWC9MdGJkSXdfN2JTM3VsRkFrQTNKd21pdjJ1Q2dMRDF6Nk5iOEg5a2JDckJuUjJXb0p5L0w0QVhhTVpWWG5IL0kxMm5XdFpscFluYXM9
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ITC504	CO6: Apply testing and assure quality in software solution.	Software testing	http://ndl.iitkgp.ac.in/document/S1loNUNiRE91VEk4NzFxWDNoYW05cFYyTDJlcG5oWC9MdGJkSXdfN2JTMStyN2xocDZpNFFlODBOZmhTQUltT0RpbWxSaDJPVUZZM3F3NzBjUTlyblRTdFJ6alpyZ0djYnBNczJOVUtPM1E9
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After learning two modules using this unique approach, quizzes and term tests has been conducted for this course.

3.1 Identification of Slow Learner, Medium Learner and Fast Learner

This study was conducted in our institute belonging to University of Mumbai. The student's results were analysed for identification of Slow Learners, Medium Learners, and Fast Learners of software engineering course. The result analysis is represented as below-



Graph 1. Slow Learner, Medium Learner and Fast Learner.

Authors proposed this new pedagogy to improve teaching learning process of engineering curriculum. It is benefitted to students from school level to graduate level as well as faculty in achieving course outcome (CO) targets.

IV.CONCLUSION

NDLI portal is presently one of the biggest knowledge hub containing information on any branch of knowledge for any user at anytime from anywhere in many languages and formats. The SWOT analysis of contents of NDLI portal indicates more benefits to the learner's community. A novel idea of mapping of university curriculum with the contents of various engineering branches led to the identification of slow, medium, and fast learners of different courses while attainment of course outcomes (CO).

V. REFERENCES

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