Design and Development of a Moodle-Based Learning Management System for Library and Information Science Education in India: A Case Study of SGBAU

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Abstract

The study explores the design, development, and implementation of a Moodle-based Learning Management System (LMS) tailored for Library and Information Science (LIS) students, research scholars, and library professionals in India. By examining the existing LMS at SGBAU, this research evaluates its structure, learning modules, interactive features, accessibility, and role in promoting online education for LIS learners. The study also discusses how Moodle's features support flexible, self-paced learning, course delivery, assessments, and student engagement in a specialized academic context.

Keywords: Moodle; Learning Management System (LMS); Library and Information Science (LIS); E-learning; Blended Learning; Open-source Software; Digital Education; India; sgbaudlis.in

Introduction

The rapid growth of information and communication technologies (ICT) has brought significant changes in the field of education across the world. Traditional classroom-based teaching is increasingly being supported and complemented by online and digital learning methods. One of the most important outcomes of this technological development is e-learning, which enables learners to access educational resources anytime and from anywhere using computers, mobile devices, and the Internet. E-learning has become especially useful in higher education, professional training, and distance learning systems. In the context of Library and Information Science (LIS) education, the impact of ICT has been particularly strong. Libraries themselves are transforming into digital and hybrid information centers, and library professionals are expected to possess advanced skills in information technology, digital resource management, online services, and knowledge organization. As a result, LIS education must continuously adapt its teaching–learning methods to prepare students, research scholars, and professionals for these changing requirements. E-learning platforms provide an effective means to deliver updated content, practical skills, and continuous professional development in a flexible and learner-centered manner. A Learning Management System (LMS) plays a central role in the successful implementation of e-learning. An LMS is a software platform that helps in organizing courses, delivering learning materials, conducting online assessments, facilitating communication between teachers and learners, and monitoring learner progress. Among various LMS platforms available today, MOODLE (Modular Object-Oriented Dynamic Learning Environment) is one of the most widely used open-source systems in academic institutions. It is popular because of its low cost, flexibility, ease of customization, multilingual support, and strong global user community.

Several studies have shown that Moodle-based LMS platforms are effective tools for supporting blended learning, distance education, and fully online courses. Research has highlighted that such systems enable institutions to create structured virtual learning environments, provide interactive tools such as forums, quizzes, assignments, and chats, and support self-paced as well as collaborative learning. In the LIS domain, Moodle has been successfully used to offer undergraduate

and postgraduate courses, training for competitive examinations, and continuing education programs for working professionals. In India, the demand for technology-supported education in Library and Information Science is steadily increasing due to the expansion of digital libraries, institutional repositories, online databases, and electronic information services. Universities and LIS departments are gradually adopting LMS platforms to improve accessibility, enhance teaching effectiveness, and extend learning opportunities beyond the physical classroom. Moodle-based systems are particularly suitable for Indian institutions because they are open source, economically viable, and adaptable to local academic needs. The present study focuses on the design and development of a Moodle-based Learning Management System for Library and Information Science education in India. It aims to examine how such a system can support students, research scholars, and library professionals by providing structured online courses, digital learning resources, assessment tools, and interactive learning environments. By building upon existing research and practical implementations discussed in earlier studies, this paper seeks to highlight the importance of LMS platforms in strengthening LIS education and promoting effective, inclusive, and
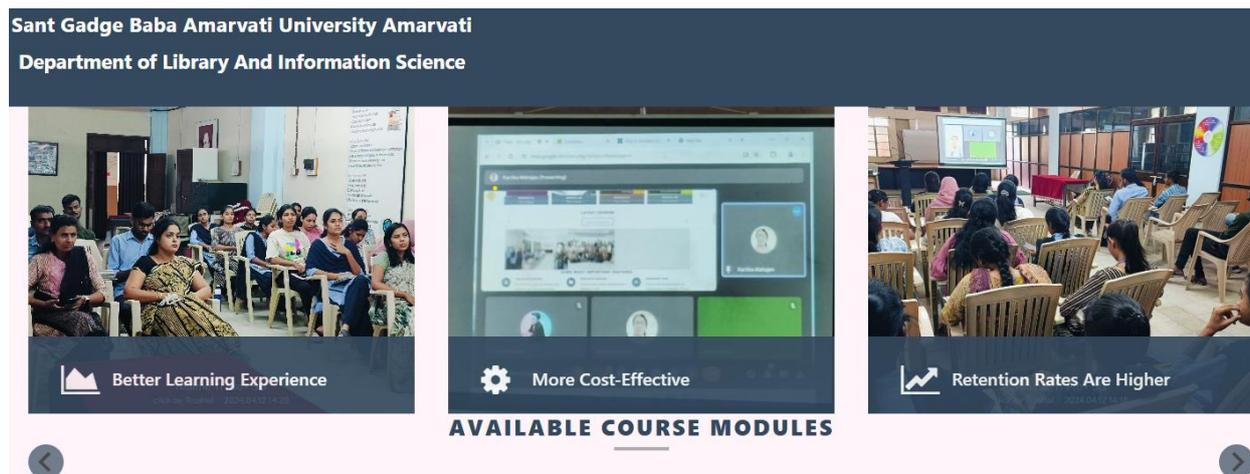
technology-driven learning in the Indian academic context.

Literature Review

Kumbhar (2009) reviewed the use of e-learning in Library and Information Science education and explained its concepts, characteristics, and major tools such as learning management systems, blogs, and wikis. The study compared traditional classroom teaching with e-learning and emphasized that both methods complement each other rather than replace one another. It highlighted the suitability of e-learning for skill development, lifelong learning, and in-service training of library professionals. The paper also discussed national and international initiatives promoting online learning in LIS education. The author concluded that blended learning is the most effective approach for improving the quality and relevance of LIS education in the digital age. Khan and Sharma (2012) examined the design and real-time implementation of a Moodle-based Learning Management System using open-source software in a higher education environment. The study highlights how Moodle supports online assessments, content management, collaboration tools, and course administration in a cost-effective manner. It emphasizes the growing importance of open-source LMS platforms for improving accessibility and reducing dependency on commercial software. The authors also discuss system integration with campus applications and the role of libraries in organizing digital learning resources. The study concludes that Moodle is a flexible and reliable platform for enhancing e-learning in academic institutions. Hirwade and Rajasree (2013) examined the role of Moodle as a course management system for Library and Information Science education with special focus on quiz and content development. The study explains how Moodle supports interactive learning through structured course categories, question banks, grading systems, and online assessments. It highlights the importance of open courseware and virtual learning environments in improving accessibility and reducing educational costs in India. The authors also describe step-by-step procedures for designing quizzes and managing users in Moodle. The study

concludes that Moodle is an economical and effective platform for collaborative and student-centered e-learning in LIS education. Kampa and Kaushik (2015) designed and implemented a Moodle-based e-learning platform for Library and Information Science students at the University of Rajasthan. The study highlights how open-source LMS tools can support blended learning by providing 24×7 access to course materials, quizzes, and multimedia resources. The authors explain key Moodle features such as course creation, user management, online assessment, and mobile access. The platform was developed for BLISc, MLISc, and UGC-NET courses to improve flexibility and student engagement. The study concludes that Moodle is a cost-effective and practical solution for enhancing LIS education in Indian universities.

Objectives

1. To analyze the design features of the LMS used on *SGBAU*.
2. To understand how Moodle tools support course delivery, assessments, and learning engagement for LIS learners.
3. To assess the benefits and challenges of implementing Moodle LMS in the LIS education environment.

Methodology

The present study adopts a qualitative case study method to examine the Moodle-based Learning Management System developed for Library and Information Science education. The research focuses on the LMS available on the SGBAU LIS platform. Data for the study were collected through systematic observation, platform analysis, and content review of the LMS. Various components of the system such as course organization, learning modules, navigation structure, learning resources, quizzes, and assessment tools were examined. The courses available on the platform were compared with the standard LIS curriculum followed by Indian universities to evaluate academic relevance. In addition, relevant literature related to e-learning, Moodle platforms, and digital education in LIS was reviewed to support interpretation of findings. The analysis primarily focuses on usability, accessibility, instructional design, and the overall role of the LMS in enhancing learning opportunities..

Courses Offered, Units Covered and Syllabus Structure on SGABU.

The Moodle-based Learning Management System available at sgbaudlis.in offers a structured set of courses designed for students, research scholars, and library professionals in the field of Library and Information Science (LIS). The courses are organized into clearly defined instructional units that correspond to the standard LIS curriculum followed by Indian universities, thereby ensuring academic relevance and curricular alignment. Courses and Units Offered The platform provides comprehensive coverage of core and applied areas of LIS education through the following major units:

Unit I: Information, Communication and Knowledge Society

This unit introduces the basic concept of information and its role in modern society. It explains how information is created, organized, communicated, and used to generate knowledge. The module also discusses the transformation of society into a knowledge-based society where information plays a key role in social, educational, and economic development.

Students learn about:

- Nature and characteristics of information
- Types and sources of information
- Communication models
- Role of knowledge in modern society
- Information needs of users

This module forms the conceptual foundation of Library and Information Science and helps students understand how libraries function as knowledge centers.

Unit II: Foundation of Library and Information Science

This module focuses on the basic principles and development of Library and Information Science as a professional discipline. It introduces the historical evolution of libraries and explains the role of libraries in education, research, and society.

Major topics covered include:

- Meaning and objectives of library science
- History and development of libraries
- Types of libraries (academic, public, special, digital)
- Library legislation
- Role of librarians and information professionals

The unit helps learners understand the importance of libraries as institutions that support knowledge creation and dissemination
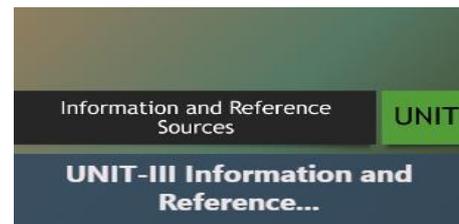
Unit III: Information and Reference Sources

This unit provides knowledge about various information sources used in libraries and research. It explains the classification of information sources and how they are used to meet user information needs.

The module includes:

- Primary, secondary and tertiary sources
- Reference books and tools
- Encyclopedias, dictionaries, directories
- Bibliographies and indexes
- Electronic and online information sources

Understanding these sources is essential for librarians because they guide users in finding accurate and reliable information

Unit IV: Information and Reference Services

This unit explains how libraries provide information services to users. It focuses on the practical aspects of assisting users in locating information.

Topics covered include:

- Reference service and reference interview
- User education programs
- Information literacy
- Current awareness services (CAS)
- Selective dissemination of information (SDI)

This module helps students develop professional skills required to support library users effectively.

Unit V: Knowledge Organization (Classification and Cataloguing)

Knowledge organization is a core area of Library and Information Science. This unit teaches how information resources are systematically arranged so that users can easily locate them.

The module covers:

- Principles of library classification
- Classification schemes
- Cataloguing rules
- Subject headings
- Metadata and indexing techniques

These techniques are essential for managing large collections of books, journals, and digital resources.

Unit VI: Library Management

Library management deals with planning and organizing library resources and services efficiently. This unit introduces management principles and their application in library administration.
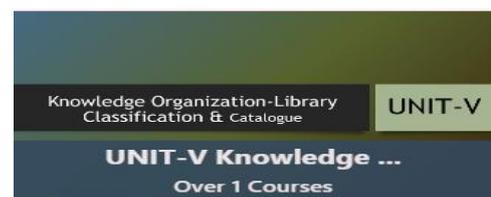
Topics include:
- Planning and policy making
- Organizational structure of libraries
- Human resource management
- Financial management and budgeting
- Collection development and evaluation

The module helps students understand how libraries are administered and how services are delivered to users.

Unit VII: Information and Communication Technology (ICT)

ICT has transformed the functioning of modern libraries. This unit provides basic knowledge of computers and digital technologies used in information management.

Key areas include:
- Fundamentals of computer systems
- Software and hardware
- Networking concepts
- Internet and digital communication
- ICT applications in libraries

This module prepares students to work in technology-driven information environments.

Unit VIII: Library Automation and Digital Libraries

This unit focuses on the use of technology to automate library operations. It explains how digital tools improve library efficiency and user services.

Topics include:
- Library automation systems
- Integrated library management software
- Digital libraries and institutional repositories
- Electronic resources and databases
- Online information retrieval systems
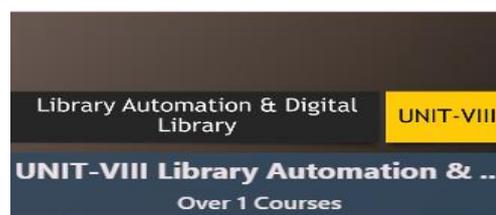
The module highlights how technology has transformed traditional libraries into modern digital knowledge centers.

Unit IX: Research Methodology

Research is an important part of higher education and professional development. This unit introduces students to research methods used in Library and Information Science.

The unit includes:
- Meaning and purpose of research
- Types of research
- Research design
- Data collection methods
- Sampling techniques
- Data analysis and report writing

This module helps students and scholars conduct academic research and prepare dissertations and research papers.

Mega Question Bank: The LMS also provides a comprehensive Mega Question Bank that contains practice questions related to different units. This feature helps students evaluate their understanding of the subject and prepare for competitive examinations and university assessments.

Such self-assessment tools encourage continuous learning and allow students to track their progress.

Key Features   **of the LMS Platform**

The LMS platform offers several features that improve the learning experience:

1. User-Friendly Interface

The platform is designed with a simple and clear interface that allows students and teachers to navigate courses easily.

2. Interactive Learning Tools

The LMS includes quizzes, multimedia content, and interactive activities that make learning more engaging.

3. Assessment and Evaluation

Online quizzes and tests help instructors evaluate student performance and provide feedback.

4. Learning Analytics

The system provides insights into student progress and learning patterns, helping teachers improve teaching strategies.

5. Offline Reading

Students can download learning materials and access them later without internet connectivity.

6. Flexible Learning

Learners can study according to their own schedule and pace, which is especially beneficial for working professionals. (sgbaudlis.in)

Benefits of the LMS for Students and Professionals

The LMS provides several academic and professional benefits:

1. Improved Access to Education: Students can access learning materials anytime and from anywhere, which reduces geographical barriers.

2. Better Exam Preparation: Practice questions and quizzes help students prepare effectively for examinations.

3. Skill Development: The platform helps students develop digital literacy and information management skills.

4. Cost-Effective Learning: Online learning reduces the cost associated with travel, accommodation, and printed materials. (sgbaudlis.in)

5. Long-Term Impact of the LMS: The implementation of this LMS can produce several long-term benefits for Library and Information Science education:

6. Strengthening Digital Education: The LMS supports the digital transformation of higher education and encourages the use of modern teaching methods.

7. Continuous Professional Development: Library professionals can update their skills and knowledge through online learning resources**.**

8. Increased Accessibility: Students from remote areas can access quality educational materials without relocating.

9. Improved Academic Performance: Regular practice, interactive learning, and easy access to materials help improve learning outcomes**.**

10. Development of Digital Libraries: Students trained through such platforms are better prepared to manage modern digital information systems.

Findings and Discussion

The Moodle-based Learning Management System offered a comprehensive range of course modules that cover core and advanced subjects in Library and Information Science, including Information Communication & Knowledge Society, Foundation of Library & Information Science, Library Management, Library Automation & Digital Library, and Research Methodology, among others. These structured modules make the LMS a holistic learning environment for LIS students, research scholars, and professionals by aligning online content with curriculum needs. (sgbaudlis.in) The platform includes interactive and user-friendly features such as quizzes, downloadable content, multimedia elements, and practice question banks, which enhance learner engagement. The LMS's easy-to-navigate interface and interactive tools support flexible access to learning resources, allowing users to study at their own pace and revisit materials for deeper understanding. These features not only help accommodate learners with diverse schedules and learning preferences but also promote self-paced and lifelong learning in a cost-effective manner. (sgbaudlis.in) Furthermore, Moodle's inherent adaptability including role-based user management, mobile access, and offline reading options supports both academic and professional development. Learners can manage their own learning trajectories, choose modules relevant to their interests, and engage with content beyond traditional classroom boundaries. Such flexibility is particularly beneficial for working professionals and distance learners in India, where schedule constraints and internet connectivity vary widely. (sgbaudlis.in). In addition, LMS analytics and tracking tools provide educators with insights into learner engagement and performance, enabling greater academic oversight and targeted pedagogical interventions. By integrating course management and assessment tools into a unified online platform, the LMS not only strengthens instructional delivery but also supports continuous evaluation and feedback that are essential for improving learning outcomes. (lms.in). Overall, the Moodle-based LMS at *sgbaudlis.in* demonstrates how open-source technologies can be effectively leveraged to enhance the quality, accessibility, and flexibility of LIS education in the Indian context, responding to both curricular requirements and learner needs in a dynamic educational landscape. (sgbaudlis.in)

Conclusion

The Moodle-based LMS exemplified by sgbau represents a practical model for supporting Library and Information Science education in India. It not only offers a structured pathway for online learning but also enhances accessibility, personalization, and lifelong learning opportunities for LIS students and professionals. The study demonstrates that a Moodle-based Learning Management System, as implemented on sgbau, is an effective and practical solution for delivering Library and Information Science education in India. The availability of structured course modules, flexible access to learning materials, and interactive tools supports both academic learning and professional development. The platform enables students, research scholars, and working professionals to learn at their own pace and overcome limitations of time and location. Overall, the findings suggest that open-source LMS platforms like Moodle can significantly enhance the quality, accessibility, and continuity of LIS education and can be successfully adopted by universities and academic institutions to strengthen digital teaching and learning practice

References

Bansode, S. Y., & Kumbhar, R. (2012). E-learning experience and future of library and information science education in India. International Journal of Digital Library Services, 2(3), 1 to 9.

Dougiamas, M., & Taylor, P. (2003). Moodle: Using learning communities to create an open source course management system. Proceedings of the EDMEDIA 2003 Conference, 171 to 178.

Ellis, R. A., & Goodyear, P. (2010). Students' experiences of e-learning in higher education: The ecology of sustainable innovation. Routledge.

Hirwade, M. A. (2011). Use of open source software for library services: A practical approach. DESIDOC Journal of Library & Information Technology, 31(1), 60 to 66.

Hirwade, M. A., & Rajasree, O. P. (2013). Role of Moodle in a course management system. *International Journal of Applied Sciences & Engineering, 1*(1), 49 to 63. New Delhi Publishers.

Kampa, R. K., & Kaushik, P. (2015). Designing and developing an e-learning platform for library & information science students of University of Rajasthan: A study. *Proceedings of the 10th International CALIBER 2015 Conference*, Shimla, India. INFLIBNET Centre.

Khan, S., & Sharma, A. (2012). Moodle based LMS and open source software (OSS) efficiency in e-learning. *International Journal of Computer Science & Engineering Technology (IJCSET), 3*(4), 50 to 60.

Kumar, V., & Sharma, D. (2016). Adoption of learning management systems in higher education institutions in India. International Journal of Education and Learning Systems, 1(2), 45 to 52.

Kumbhar, R. (2009). Use of e-learning in library and information science education. *DESIDOC Journal of Library & Information Technology, 29*(1), 37 to 41.

Rosenberg, M. J. (2001). E-learning: Strategies for delivering knowledge in the digital age. McGraw-Hill.

UNESCO. (2019). Artificial intelligence in education: Challenges and opportunities for sustainable development. UNESCO Publishing.

Weller, M. (2020). 25 years of ed tech. Athabasca University Press.