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# Evaluation Criteria for Choosing LMS Technology for Effective Learning at Higher Education Level

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## Abstract

This study aims to identify the ideal Learning Management System (LMS) technology that aligns with institutional goals, catering specifically to greenfield universities or existing institutions seeking scalable solutions. While fundamental features such as content management and global accessibility are standard across most LMS platforms, a structured evaluation is necessary to assess the nuances of each system. This research establishes five key evaluation criteria: (1) User Interface and Experience, ensuring the platform is intuitive and enhances the learning experience; (2) Institutional Integration, confirming seamless compatibility with university tools and alignment with institutional goals; (3) Scalability, providing robust support for future growth; (4) Customer Support, ensuring reliable service for smooth operations; and (5) Cost-Effectiveness, crucial for budget-friendly implementation and sustainability. Over the past year, a comprehensive analysis was conducted on leading LMS platforms against these criteria, producing a comparative framework to guide institutions in selecting an LMS that complements their mission and vision. This study delivers actionable insights and practical recommendations that will aid new and expanding universities in making informed LMS decisions, thereby optimizing digital learning infrastructure to support educational excellence and institutional growth.

**Keywords:** accessibility, cost-effectiveness, integration, scalability, user experience

## 1. Introduction

The rapid evolution of digital education has highlighted the importance of robust Learning Management Systems (LMS) in higher education. These platforms serve as critical infrastructure, enabling the delivery, management, and enhancement of online and hybrid learning experiences. As institutions grapple with increasing enrolment, diverse learner needs, and the demand for personalized education, the selection of an appropriate LMS becomes paramount.

Greenfield universities, often characterized by their modern infrastructure and technology-driven approach, face unique challenges in selecting LMS technologies. Similarly, established

institutions looking to scale their operations or migrate from legacy systems require solutions that offer flexibility, integration, and cost-effectiveness. To address these needs, it is crucial to develop a structured framework for evaluating LMS technologies, ensuring alignment with institutional goals and delivering optimal learning outcomes.

## 2. Literature Review

Extensive research on LMS technologies reveals a growing emphasis on user-centric design, scalability, and interoperability. A study by Kasim and Khalid (2016) emphasizes the importance of intuitive interfaces in driving student engagement and faculty adoption. The usability of an LMS directly correlates with its effectiveness in achieving learning outcomes.

Studies highlight the ability of an LMS to seamlessly connect with Student Information Systems (SIS), analytics dashboards, and other institutional tools, significantly enhancing its value proposition (Zanjani et al., 2017). Scalability, highlighted by Kumar et al. (2020), ensures that the LMS can adapt to growing enrollment without compromising performance.

Cost-effectiveness remains a primary consideration, as highlighted in multiple studies. While open-source platforms like Moodle offer affordability, commercial platforms often provide advanced features such as in-built plagiarism detection and enhanced support. Comparative analyses by Taylor (2023) have identified trade-offs between functionality, cost, and support levels across leading LMS platforms. This review underlines the necessity of a holistic approach to LMS evaluation, incorporating user experience, integration, scalability, support, and cost as key parameters.

## 3. Graphical Analysis

The analysis compared four LMS platforms: Blackboard, Brightspace, Moodle, and Maple. Below is a visual representation of their key features. I am sharing the component wise Table below of the LMS.

*Table 1.* Component wise LMS

| **Key Features of LMS** | **Blackboard** | **Bright Space** | **Maple (Melimu)** | **Moodle** |
|---|---|---|---|---|
| Creation of courses | Yes | Yes | Yes | Yes |
| Registration ( User bulk enrolment ) | Yes | Yes | Yes | Yes |
| Announcements | Yes | Yes | Yes | Yes |
| Messages | Yes | Yes | Yes | Yes |
| Book Mark option on slide | Yes | PARTIALLY Brightspace supports the ability for users to bookmark web-based content. When browsing through topics within course content, users can click the Add Bookmark icon in the content viewer. Bookmarks can be accessed directly within the Bookmarks area of the Content tool. Bookmarks can also be conveniently accessed via a bookmark widget | Yes ,Book mark facility is available for course level. Bookmarking on activities level are available on Mobile apps | No |

| | | | | |
|---|---|---|---|---|
| | | that you can add to course offering homepages. | | |
| Content to upload (Text, PDF, Audio, Video, HTML, Animation video ) | Yes | Yes | Yes | Yes |
| Maximum size of file can be uploaded | 2.56 GB | 2 GB | No limit. Limit can be set as per your suggestion | 1 GB |
| Attendance ( option to mark manually and bulk upload) | Yes | Yes | Yes | Yes (Manually) |
| How to create Quiz ( MCQ, Multiple Answer, True False, Subjective Questions, formula based, Programming ,bulk upload etc.) | Yes | Yes, but force completion option not available | Yes | Yes |
| How to create Assignment | Yes | Yes | Yes | Yes |
| Peer Assessment/Review | Yes | No (on Roadmap) | Yes | Yes |
| Discussion forum | Yes | Yes | Yes | Yes |
| Creation of Modules | Yes | Yes | Yes | Yes |
| Plagiarism checker | Yes, Safe assign | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration |
| Editing tool | Yes | Yes, Brightspace Editor (HTML) | Yes | Yes |
| SCORM Package | Yes | Yes | Yes | Yes |
| Questions Pool Bank | Yes | Yes | Yes | Yes |
| Grading (option to do manually or bulk upload) | Yes | Yes | Yes | Yes |
| Rubric | Yes | Yes | Yes | Yes |
| Feedback Model | Yes | Yes | Yes | Yes |
| Course Evaluation survey | On roadmap | Yes | Yes | Yes |
| Online lectures (option to create, edit , record, live sessions, sharing screen , Sharing data , Polling, Break out groups, Chat , option to raise hand , Emoji etc.) | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration |
| E Content | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration |
| Library E content | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration |
| Transferring of data from one course to another | Yes | Yes | Yes | Yes |
| Accessibility features Web content | Yes, As per WCAG 2.1 . | As per WCAG 2.1 | As per WCAG 2.1 | Yes , As per WCAG 2.1 |

| | | | | |
|---|---|---|---|---|
| Accessibility guideline 2.1 (Keyboard Navigation,Alt Text for Images, Closed Captions, Text transcripts, Structure content using HTML5,Text magnification (up to 200%),Mobile UI (mobile app, mobile website) Clickable links (new window) etc.) | They have a Product call Blackboard Ally designed for this. Some of those features require screens readers or other tools to work . | | | |
| Integration of tools like SIS , Attendance tool, etc.) and Plugins can be used. | Yes | Yes | Yes | Yes |
| Reporting (Student overall data, Course wise data, Grading analysis, Student Success system, Dashboard, Tracking Performance of each student at different stages etc. ) | Yes | Yes | Yes | Need to customize |
| Proctoring Tool | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration |
| White Labelling | Yes | Yes | Yes | Yes |
| Migration of complete data from existing platform to new LMS Platform | Yes | Yes | Yes | Need to check |
| Course Certificate | Yes | Yes | Yes | Yes |
| Payment Gateway | Yes | 3rd Party Integration | 3rd Party Integration | 3rd Party Integration |
| Customer Support | Yes | Yes | Yes | Provide only Admin Support . No support to faculty or students |
| Is there a way instructor can form group and can-do team evaluation | Yes (Parallel grading) | It is under development stage and may be available by end of this year. | No | Yes |
| Mobile App | Yes | Yes | Yes | Yes |
| AI Avatar | No | No | Static pictures can be used | No |
| AI content Creator | Yes | No | No | No |
| Gamification | Yes | Yes | Yes | Yes |
| Restriction of downloading Videos and Content | No | Yes | No | No |
| Closed Caption | No | Yes | Yes | Yes |

## 4. Methodology

To evaluate the LMS platforms, a mixed-method approach was adopted. It included:

1. **Vendor Demos and Hands-on Testing**: Detailed demonstrations and trial access were sought from LMS vendors such as Blackboard, Brightspace, Moodle, and Maple.
2. **Evaluation Framework Development**: The five key criteria—User Interface and Experience, Institutional Integration, Scalability, Customer Support, and Cost-Effectiveness—were used to create a structured evaluation matrix.
3. **Comparative Analysis**: Features were mapped against institutional requirements, and strengths and limitations were identified.
4. **Stakeholder Feedback**: Faculty, students, and administrators were consulted to gather diverse perspectives on usability and functionality.

## 5. Results and Analysis

The evaluation revealed significant variations in the features and capabilities of the shortlisted LMS platforms:

- **Blackboard** emerged as a leader in accessibility and plagiarism detection but lacked comprehensive course evaluation tools.
- **Brightspace** offered advanced learning analytics but was limited by the absence of peer assessment features.
- **Moodle**, while customizable, posed challenges with its interface and limited vendor support.
- **Maple** excelled in mobile-first learning but required additional integrations for plagiarism detection and team evaluations.

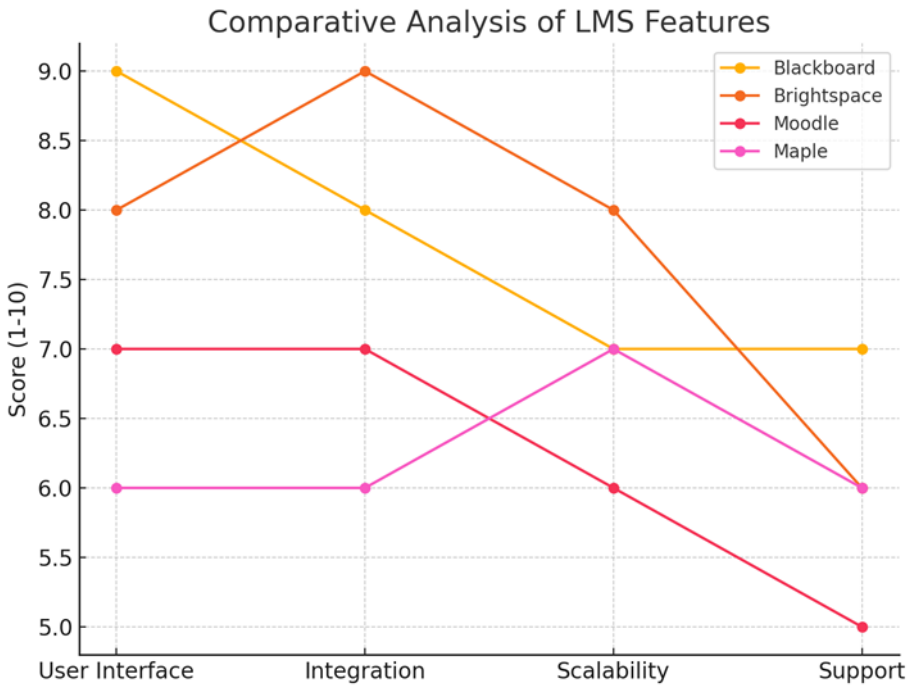


*Figure 1.* Comparative analysis of LMS features

## 6. Conclusion

Selecting an LMS requires a refined approach that balances institutional priorities, user needs, and budgetary constraints. This study highlights that while no single platform is perfect, institutions can achieve alignment with their goals by prioritizing features that matter most to their stakeholders. For greenfield universities, scalability and integration are crucial, while established institutions may prioritize advanced analytics and support.

Future research should explore the impact of emerging technologies such as AI-driven content creation and gamification on LMS effectiveness. By continuously refining evaluation frameworks, higher education institutions can remain agile in their adoption of digital learning tools, fostering environments that empower both educators and learners.

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