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## Smart LMS App for Personalized Learning and Certification

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**ABSTRACT**: Delivering adaptive and engaging learning experiences remains a challenge in traditional e-learning systems, which often lack personalization, dynamic content management, and effective user motivation. To address these limitations, we propose a smart LMS app developed using PHP and MySQL that dynamically adapts to individual user preferences and learning needs. The platform features a user-friendly admin panel that facilitates seamless course creation, addition, and management, empowering educators to maintain full control over content. To enhance learner engagement, gamification elements such as badges, leaderboards, and rewards are integrated into the platform, fostering a motivating and interactive learning environment. Additionally, the system automates the certification process, including the generation, tracking, and verification of completion credentials, ensuring efficiency and reliability. Built using robust PHP frameworks and secured MySQL databases, the platform offers scalability and secure data handling. Evaluation metrics such as user satisfaction, course completion rates, and engagement levels will be utilized to assess platform performance, aiming to deliver a comprehensive, efficient, and learner-centric educational solution.

**KEYWORDS**: Personalized Learning, PHP, MySQL, E-learning, Gamification, Adaptive Education, Certificate Automation, Dynamic Content Management.

#### I. INTRODUCTION

E-learning systems have revolutionized access to education, but many platforms still suffer from limitations such as static content delivery, lack of personalized feedback, and reduced student motivation. To meet the growing demand for interactive and adaptive educational tools, a shift toward personalized and gamified digital learning environments is essential. This paper introduces a custom-built e-learning platform developed using PHP and MySQL, aimed at addressing these challenges.

By integrating dynamic content management, user preference analysis, and gamification mechanics, the platform enhances user engagement and optimizes educational outcomes. PHP's server-side scripting capabilities, combined with MySQL's secure and scalable data storage, form the technological backbone of the solution. Moreover, the system is designed to automate core administrative tasks such as certification and user progress tracking, thereby reducing manual overhead for educators and ensuring a smooth learner journey.





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#### **II. LITERATURE SURVEY**

Personalized learning has become a critical focus in e-learning systems, aiming to enhance the learner experience through tailored content delivery. Bin et al. (2024) highlight the effectiveness of recommendation models like collaborative filtering, content-based filtering, and hybrid systems in adapting learning content based on user behavior and preferences. They also emphasize the role of contextual factors—such as time, environment, and mood—in improving the accuracy and relevance of personalized recommendations. Essa and Human-Hendricks (2023) further explore machine learning techniques for identifying individual learning styles, such as visual, auditory, kinesthetic, and reading/writing preferences. Their study showcases how adaptive systems can dynamically present content aligned with these styles using decision trees, clustering, and neural networks. They stress the importance of learner feedback in continuously refining the personalization process for better outcomes.Complementing these approaches, Nouman et al. (2024) and Alojaiman (2021) discuss the importance of emotional support and platform reliability. Nouman et al. introduce an interactive e-mentoring system that combines AI and human support to improve learner motivation. Meanwhile, Alojaiman focuses on selecting trustworthy, secure, and scalable platforms that ensure data privacy and compliance. These studies collectively guide the development of a more responsive, engaging, and secure LMS tailored to individual learning needs.

#### **III. METHODOLOGY**

The proposed Smart LMS App for Personalized Learning and Certification leverages PHP and MySQL technologies to create a dynamic and scalable platform. The system is built with PHP to handle the backend processes, which are integrated with a MySQL database for efficient data storage and management. It begins by collecting user interaction data such as time spent on learning materials, quiz results, and content preferences. Machine learning algorithms are then employed to analyze this data and identify patterns in user behavior, such as preferred learning styles (visual, auditory, kinesthetic). This data-driven approach allows the system to dynamically adjust the learning path for each user, ensuring that the content delivered matches their individual preferences and maximizes engagement. To enhance the learning experience, the platform incorporates gamification elements, including badges, leaderboards, and rewards, which serve to motivate and engage learners throughout their educational journey. Once a user completes a course and meets the required criteria, the system automatically generates a digital certificate, which includes the learner's name, course details, and a unique verification code to ensure authenticity. The platform's combination of personalized learning pathways, real-time feedback, and automated certification provides a comprehensive, efficient, and engaging solution for modern e-learning needs.

#### **IV. EXPERIMENTAL RESULTS**

The experimental phase of the proposed Smart LMS App for Personalized Learning and Certification was carried out using a custom-built interface and a curated dataset of learners spanning multiple topics. Each learner in the dataset was manually assessed on their learning preferences, engagement levels, and completion progress. These assessments were used as ground truth labels for training and evaluating the machine learning model that powers the system's dynamic content adaptation.

The objective was to measure the accuracy, efficiency, and feedback capability of the system in comparison with traditional e-learning methods. The system incorporates various machine learning techniques for pre-processing learner data, including tracking learner behavior, course interaction, and performance. For feature extraction, metrics such as time spent on each module, quiz results, and participation in gamified elements (badges, rewards) were calculated. These extracted features serve as input to the machine learning model, which personalizes learning content based on the learner's progress and behavior.





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The experiment was conducted using a dataset of over 500 learners across various fields such as technology, business, and healthcare. A training-to-testing split of 80:20 was used to ensure fair evaluation. The system achieved a personalization accuracy of approximately 90% in content adaptation, with a 15% improvement in course completion rates for the experimental group using the Smart LMS compared to the control group using traditional e-learning methods. Additionally, the user satisfaction rate was recorded at 88%, with positive feedback on the personalized learning experience and gamified elements.

Fig. 1. Smart LMS App Process (a) Original learner profile and (b) course selection

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Active Courses	A course by thariqajees522@gmail.com
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ange 7aa/ ≡ My Courses QBA Menu	<ul> <li>2 hours on-demand video</li> <li>11 downloadable resources</li> <li>Full lifetime access</li> </ul>
(b)	(b)

Fig. 2. (a) Personalized Learning and Certification Process (b) Learner engagement and final certificate output showing completion and progress.

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(	a)	(b)	

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#### V. CONCLUSION

In this project, we have successfully implemented the Smart LMS App for Personalized Learning and Certification using machine learning techniques and gamification elements. The system effectively tracks and analyzes learner data, adapting learning content based on individual preferences, progress, and engagement. The personalized learning paths provided by the system not only enhance the learning experience but also lead to improved course completion rates and higher user satisfaction. Additionally, the automated certification process ensures seamless tracking and verification of learner achievements, enhancing the credibility and efficiency of the platform. The experimental results demonstrate that the proposed system offers an efficient, scalable, and learner-centric solution for e-learning, with the potential to revolutionize traditional online education by providing adaptive, engaging, and motivating learning environments.

#### REFERENCES

- [1] Qiu, B., Zuhairi, M. F., & Morcos, J. (2024). A Comprehensive Study on Personalized Learning Recommendation in E-Learning Systems. IEEE Access, 12, 1–1. doi: 10.1109/ACCESS.2024.3428419.
- [2] Essa, S. G., Celik, T., & Human-Hendricks, N. (2023). Personalized Adaptive Learning Technologies Based on Machine Learning Techniques to Identify Learning Styles: A Systematic Literature Review. IEEE Access, 11, 48392–48409. doi: 10.1109/ACCESS.2023.3276439.
- [3] Nouman, N., Shaikh, Z. A., & Wasi, S. (2024). A Novel Personalized Learning Framework with Interactive e-Mentoring. IEEE Access, 12, 10428–10458.
- [4] Alojaiman, B. (2021). Toward Selection of Trustworthy and Efficient E-Learning Platforms. IEEE Access, 9, 133889–133901.
- [5] Sengupta, S., Chaki, N., & Dasgupta, R. (2012). Learners' Quanta Based Design of a Learning Management System. arXiv preprint arXiv:1201.3978.
- [6] Salem, S. F., & Abdeen, M. A. (2016). Learning Management System (LMS) Success: An Investigation Among University Students. International Journal of Computer Applications, 135(5), 1–6.
- [7] Kumar, A., & Singh, R. (2019). A Review on Learning Management Systems (LMS) and its Importance in E-Learning. International Journal of Computer Applications, 177(7), 1–5.
- [8] Al-Fraihat, D., Joy, M., & Sinclair, J. (2020). Evaluating E-learning Systems Success: An Empirical Study. Computers in Human Behavior, 102, 67–86.
- [9] Zanjani, N., Edwards, S. L., Nykvist, S., & Geva, S. (2017). The Important Elements of LMS Design that Affect User Engagement with E-learning Tools within LMSs in the Higher Education Sector. Australasian Journal of Educational Technology, 33(1), 19–31.
- [10] Ifenthaler, D., & Yau, J. Y. K. (2020). Utilizing Learning Analytics to Support Study Success in Higher Education: A Systematic Review. Educational Technology Research and Development, 68(4), 1961–1990.
- [11] Zhang, D., Zhao, J. L., Zhou, L., & Nunamaker Jr, J. F. (2004). Can E-learning Replace Classroom Learning? Communications of the ACM, 47(5), 75–79.
- [12] Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What Drives a Successful E-Learning? An Empirical Investigation of the Critical Factors Influencing Learner Satisfaction. Computers & Education, 50(4), 1183–1202.
- [13] Al-Busaidi, K. A., & Al-Shihi, H. (2012). Key Factors to Instructors' Satisfaction of Learning Management Systems in Blended Learning. Journal of Computing in Higher Education, 24(1), 18–39.
- [14] Park, S. Y. (2009). An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use E-learning. Educational Technology & Society, 12(3), 150–162.
- [15] Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. MIS Quarterly, 13(3), 319–340.









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