Edu Portal-Online Learning Management System

Sivaranjani M1*, Keerthivasan G2, kabilan K3, Dineshram k4

1*,2,3,4Department of cse, Paavai engineering college, Nammakkal, India.

ABSTRACT: The project web-based platform provides an interactive learning experience with separate login functionalities for staff and students. Staff members can log in to view and update student details, ensuring seamless management. Students can access both text and video-based learning materials. In the text-based module, students must answer each question correctly before proceeding to the next. In the video-based module, the video plays continuously unless a question is asked. If a student or staff member asks a question during playback, the video pauses automatically until the query is answered, ensuring an engaging and distraction-free learning process. The system is built using Python for backend processing, HTML and CSS for the frontend. This platform enhances learning efficiency, ensures active participation, and provides an intuitive interface for both students and staff.

KEYWORDS: interactive learning,Text based modules ,video based modules,question answer flow ,automatic video pause

1.INTRODUCTION

Interactive learning platforms have revolutionized education by integrating technology to enhance engagement and comprehension. This system is designed to provide a structured learning experience with distinct login functionalities for staff and students. Staff members can manage student details, update information, and monitor progress efficiently. Students have access to both text-based and video-based learning materials, ensuring a diverse learning approach. In the text-based module, students must answer each question correctly before proceeding to the next, reinforcing concept clarity. The video-based module ensures focused learning by automatically pausing when a question is asked, resuming only after the query is addressed. This interactive feature enhances understanding and encourages active participation. The platform is developed using Python for backend processing, while HTML, CSS, handle the user interface and real-time interactions. By promoting engagement and structured learning, this system aims to create an effective and immersive educational environment. The intelligent integration of text and video modules ensures a seamless, user-friendly experience for both staff and students.

2.LITERATURE REVIEW

Wen Xiao…[1]Juan Hu et all prposed “Analyzing Effective Factors of Online Learning Performance by Interpreting Machine Learning Models” IEEE-2023Analyzing the effective factors influencing online learning performance is a research topic that has garnered significant attention. Traditional approaches, such as multiple regression and structural equation models, tend to assume linearity, while non-linear machine learning models lack interpretability. To address this gap, we propose a framework that interprets machine learning models to analyze the effective factors of online learning performance. By applying this framework to four benchmark datasets of online learning, we examine the differential impact of various factors on performance, explore the interactions among these factors, and identify the key factors for representative learners. Our findings indicate that: 1) non-linear machine learning models, particularly Decision Regression, offer better representation of the non-linear relationship between effective factors and online learning performance compared to classical multivariate regression; 2) the factor of online

learning behavior exerts a greater influence on performance than demographic features, academic background, or online curriculum design; 3) online learning behavior features exhibit additional interaction effects on performance; and 4) learners with medium performance are influenced by diverse effective factors, with active participation in online learning activities emerging as the most crucial means to improve performance. Interpreting machine learning models presents an innovative approach for analyzing the effective factors of online learning performance, which can be extended to other factor analysis studies. The results of this research provide valuable insights for optimizing machine learning models in predicting online learning performance and enhancing learner outcomes

Bens Pardamean …[2] AI-Based Learning Style Prediction in Online Learning for Primary Education" IEEE-2022 Online learning has been widely applied due to developments in information technology. However, there are fewer relevant evaluations and applications for primary school students. All innovation efforts in learning are directed at improving the quality of education by creating an active learning atmosphere for students. Students' participation in the teaching-learning process can be improved by selecting appropriate learning materials suitable to the student's learning style. The research aims to develop and measure the impact of an Artificial-Intelligence (AI)-based learning style prediction model in an online learning portal for primary school students. The subjects were recruited from Indonesian primary school students in grades 4 to 6. To fulfill the principle of personalized learning, the AI model in the online learning portal was designed to recommend learning materials that suit students' learning styles. We formulated a new AI approach that enables collaborative filtering-based AI models to be driven by learning style prediction. With this AI algorithm, the online learning portal can provide material recommendations tailored specifically to the learning style of each student. The AI model performance test achieved satisfactory results, with an average RMSE (Root Mean Squared Error) of 0.9035 from a rating scale of 1 to 5. Moreover, students' learning performance was improved based on the results of t-test analysis on 269 subjects between the pre-test and post-test scores.

Krenare Pireva Nuci …[3] Game-Based Digital Quiz as a Tool for Improving Students' Engagement and Learning in Online Lectures" IEEE-2021

Distance teaching and learning are gaining popularity, especially amidst the COVID-19 crisis at the beginning of 2020. Several schools, colleges, and universities across the globe, as a result, have adopted the online mode of teaching. While the businesses and day-to-day activities were shutting down, eLearning tools and online education platforms saw considerable demand. Many institutions with digital infrastructure in place and prior distance teaching experience had a smoother transition from on-campus classes and lecturing to online teaching and learning. In contrast, for many, the transition involved challenges, including keeping students' motivation, interaction, and interest alive, in addition to adapting tools and technologies. This paper reports on students' engagement and motivation levels along with the learning curve during the online learning using a game-based digital quiz tool within a Human-Computer Interaction course in a university in Kosovo. The study investigates the effect of in-lecture quizzes in online classes and correlating the effect of students in the learning curve over four months. Two key motivation parameters-students' engagement and interaction - are compared and analyzed using two different online quiz platforms and the impact of its uses reflected in the learning curve. The results indicated a significant increase in students' engagement and interaction levels in lectures with systematic in-lecture quizzes. Further, the results show that the learning curve is steeper when using in-lecture quizzes (with 73%) in contrast to classes where in-lecture quizzes are not used (57.5%).

Shih Meng-Chi …[4] The Application of Arts Integration Technology for Online Learning in Early Childhood Education" IEEE-2024

This study aims to explore the effectiveness of arts integration in online preschool education by gathering the professional opinions of 50 experts and scholars in early childhood education through a Fuzzy Delphi questionnaire.

The research findings highlight the multiple positive effects of arts integration for early childhood online learning environments. Through multi-sensory experiences involving visual, auditory and interactive elements, arts integration provides engaging learning experiences in the context of online learning. The expert consensus value from the Fuzzy Delphi data analysis authenticates that arts integration contributes to improving children's concentration, child-teacher interaction and parental involvement, and significantly benefits children's self-directed learning in online learning. The results of this study highlight the impact of arts integration in early childhood online learning and provide strong support for the education sector. The study encourages more educational institutions and educators to incorporate artistic elements into their teaching practices, thereby enhancing children's learning experiences and effectiveness. An arts integration approach not only stimulates children's interest in interactive learning, but also encourages artistic creativity, bringing dynamic new perspectives to children's online learning.

Ying Zhu et …[5], Design of Computer Platform of Chinese Education for Online Education" IEEE-2024

In online teaching, the International Chinese Education Platform (ICEP) provides integrated solutions and has attracted much attention. In international Chinese education, online education is inevitable. The ICEP was designed for multi-interactive online teaching in this study. Its architecture included the infrastructure layer, data resource layer, application service layer, and user service layer. The design of ICEP was proposed to solve insufficient interaction on the teaching platform.

METHODOLOGY

- Requirement Analysis : Identify key functionalities for students and staff. Define the user authentication mechanism. Establish criteria for interactive learning modules. Determine the necessary backend and frontend technologies.
- Text-Based Learning Module : Implement a question-answer mechanism that requires correct responses before proceeding.
- Video-Based Learning Module : Ensure videos play continuously unless interrupted by a query. Implement an automated pause function when a question is asked. evelop an interactive Q&A feature to enhance engagement.
- Testing and Quality Assurance : Conduct unit testing for each module. Perform user acceptance testing to validate the learning experience. Identify and fix bugs or inefficiencies in the system.

1. MODULE DESCRIPTION

4.1 User Authentication Module:

User Authentication Module which ensures secure access to the platform through individual logins for staff and students. It implements session control and role-based access, allowing users to interact only with the features relevant to their role.

4.2 Student Management Module:

The **Student Management Module**, is accessible by staff and enables them to view, update, and manage student profiles, monitor learning progress, and assign tasks. This ensures efficient tracking and personalized supervision.

4.3Text-Based Learning Module:

The **Text-Based Learning Module**, where students progress through structured questions. They must answer each question correctly before moving to the next, promoting active learning and content mastery.

4.4Video-Based Learning Module

The **Video-Based Learning Module**, provides continuous video playback of educational content. However, when a question is raised by either a student or staff, the video pauses automatically and resumes only after the query is addressed, ensuring clarity and minimizing distractions.

4.5Management and Interaction Module

The **Query Management and Interaction Module** facilitates real-time communication, allowing students and staff to ask, respond to, and log questions during learning sessions. This enhances engagement, supports instant doubt resolution, and fosters a more interactive learning environment.

RESULT AND DISCUSSION

The developed web-based learning platform successfully delivers an interactive and user-friendly experience for both students and staff. The login system efficiently manages role-based access, allowing staff to monitor and update student progress while students focus on structured learning. The text-based module ensures active participation by requiring correct answers to proceed, enhancing understanding and retention. In the video-based module, the automatic pause functionality during queries prevents distraction and promotes focused learning. Real-time query management encourages instant doubt resolution and active communication between students and educators. The platform performs reliably with smooth video playback, responsive user actions, and accurate session handling. Tests conducted with sample users confirmed the effectiveness of the learning flow and query handling mechanisms. Staff members found it easy to manage student data and track progress, while students appreciated the step-by-step learning structure. Overall, the system enhances the quality of digital learning by integrating interactivity, accountability, and engagement. It proves to be a valuable tool for modern education environments.

1. CONCLUSION

In conclusion, the web-based interactive learning platform effectively bridges the gap between traditional and digital education by providing a structured, engaging, and responsive learning environment. With separate login systems for staff and students, it ensures secure and role-specific access to features. The integration of text-based modules promotes active learning by requiring correct answers for progression, while the video-based modules enhance engagement with intelligent pause functionality during queries. Real-time interaction and query management improve communication and ensure doubt clearance without disrupting the learning flow. The platform is intuitive, user-friendly, and supports continuous monitoring and updates by staff. It not only increases student participation but also provides staff with efficient tools for managing learning outcomes. Built using Python, HTML, and CSS, it demonstrates stability, flexibility, and scalability. The system has the potential to be adapted for various educational and training purposes. Overall, it contributes significantly to improving the quality and effectiveness of online education.

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