REDEFINING ONLINE LEARNING WITH GREAT SAGE: A SCALABLE, ROLE-BASED EDUCATION SYSTEM

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ABSTRACT

This Paper presents Great Sage, a powerful Learning Management System (LMS) designed to address the limitations of existing platforms by offering features personalized learning, intelligent content creation, and infrastructure that can be scaled based on the requirement. After a thorough comparative analysis of existing LMS solutions, the study highlights gaps in customization, monetization, and learner engagement. This research also outlines the technical architecture and future potential of platform, making it a comprehensive solution for next-gen digital learning.

Keywords: Nextjs 14, LMS, Role Based Access Control, Monetization, Customization

1. INTRODUCTION

In this digital age, education is transforming rapidly. Traditional classroom-based education is either being replaced or supplemented by online LMS platforms that offers flexibility, scalability and global reach which caused the digital learning space to greatly increase and expand rapidly in recent years, and rapid growing trends such as distance learning, virtual classroom, e-Learning platforms with increasing popularity of microlearning. Content delivery and online education are supported by a strong LMS, which forms their backbone.

Most commercial LMS platform either focuses on educational institutions or corporate training, and neglecting the changing needs of the creator economy. Content creators, freelancers, educators, often seek platform that is not only easy to use but also provide features like efficient content creation, performance analytics, user analytics, and easy to setup and manage monetization tools for create courses. Therefore, despite the availability of several existing LMS platforms, educators often struggle while choosing for a suitable LMS platform catering to their requirement. challenges such as minimal customization, high pricing, difficult setup, etc faced by educators and content creators may cause them to loose their motivation to create online courses. Meanwhile, learners today looks forward to interactive experiences rather than just static video content.

Great sage: Our LMS platform emerges as a response to all these challenges. This platform encourages course creators to focus on delivering high-quality content and automating repetitive tasks like quiz creation and mock interviews through AI, while also offering students a more interactive learning journey.

This Paper investigates the existing LMS platforms and highlights the need for a more optimised, highly customisable, feature-rich platform designed for online educators and coaches.

2. LITERATURE REVIEW

The rise of internet and distance learning has given a parallel rise in Learning Management Systems, with different platforms catering to different riches - from educational institutions to solo educators and trainers. This sections reviews existing existing studies, and academic literature related to LMS design, their application, and market behaviour.

2.1. EVOLUTION AND IMPORTANCE OF LMS

Learning Management Systems have evolved from traditional content-hosting platforms to multifaceted ecosystems which encourages synchronous and asynchronous learning, assessments and increased interactivity and engagement while also managing all the related analytics.

As per Watson and Watson (2007), the primary objective of an LMS is to centralize and automate the administration, documentation, tracking, and reporting of training and education.

2.2. EXISTING LMS STUDIES AND PERFORMANCE REVIEW

Numerous academic and industry have studied and highlighted the effectiveness and applications of LMS platforms in different learning environments:

- **Moodly** is widely studied and analyzed in academic literature for its open source and modular extensibility. Studies like Dougiamas & Taylor note its strong adaptability but highlight a steep learning curve for non-technical users.

- **Teachable and Thinkific** are frequently mentioned in education research due to their user-friendly interfaces and easily course monetization characteristcs. A Study by Pulker and Wheeler (2021) highlighted Thinkific's strengths in curriculum design but mentions limited CRM and automation tools as constraints.

- **Kajabi,** as reviewed in Journal of Digital Marketing and Business Innovation (2022), has been praised for its marketing features and analytics . But, it is not suitable for budget-sensitive educators due to higher pricing tier.
- **Exly,** has gained huge attention in Indian creator circles. According to startup ecosystem blogs Your Story (2023), Exly stands out by combining scheduling, CRM, and website-building into a single interface tailored for Indian service professionals.
- **Graphy by Unacademy,** discussed in India EdTech Review (2022), offers robust support for live classes and monetization, especially catering to vernacular language markets. However, it remains closely tied to the Unacademy ecosystem, limiting branding independence.

2.3. IDENTIFIED GAPS IN CURRENT LMS PLATFORM

Although each and every currently existing LMS platform provide various features for its user but each have it's own limitations:

- High service charges
- Lack of localized support
- Limited CRM or automation
- Customization restrictions on UI/UX

Thus this literature review and market analysis highlights the need for an affordable, flexible, customizable, LMS suited for small creators and educators.

3. PROPOSED LMS FEATURES & VISION

Our LMS Great Sage focuses on serving solo educators, consultants, trainers and Educational Institutions who need an affordable, extremely customizable, and region-friendly system with integrated dashboard and analytics.

- **Core features**

For Learners: Focuses on delivering personalized, flexible, and mobile-first learning experiences creating strong user engagement.

For Creators: This platform offers intuitive tools for content creation, AI-generated assessments, and real-time performance analytics.

For Developers: Provide a modular, scalable framework capable of handling real-time collaboration, secure content distribution, and third-party API integration.

- **Key Features**

Role-Based Access Control: Secure access for learners, instructors, and admins using JWT.

Analytics Dashboard: Real-time analytics and course performance metrics for creators.

Secure Media Hosting: Course images and videos are hosted and delivered via Cloudinary for scalability and performance.

Monetization Models: Subscriptions, pay-per-course, freemium access, and affiliate program support.

3.1. TECHNICAL ARCHITECTURE

The architecture of Great Sage is built for scalability, performance, and intelligent content delivery. It leverages modern web technologies with robust support for AI and microservices.

Frontend

- **Framework: Next.js 14**

Supports both Server-Side Rendering (SSR) and Static Site Generation (SSG) for fast load times and SEO optimization.

Dynamic routing for user dashboards, course pages, and profile views.

- **API Integration:** RESTful services + third-party APIs (OpenAI, Gemini)

Backend

- **Server: Node.js with Express.js**

REST API handling user authentication, course management, and AI-related endpoints.

Built with a microservices architecture to decouple modules like payments, quizzes, and analytics.

Database

- **MongoDB:** Stores user data, course metadata, quiz results, analytics logs, etc.
- **Cloudinary:** Manages media uploads (videos, images) used in courses.

Authentication & User Roles

- **JWT** used for secure authentication and implementing role-based access.

AI Integration

- **OpenAI or Gemini API:**

Generates dynamic quizzes, gives mock interview feedback, and enhances course interactivity.

Deployment

- **Containerization:** Docker ensures consistency across development and production environments.
- **Hosting:** Vercel is used ewfor frontend deployments; backend and databases are hosted on AWS with auto-scaling capabilities.
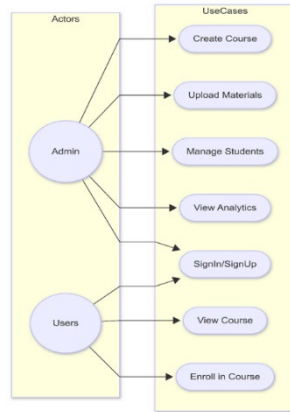
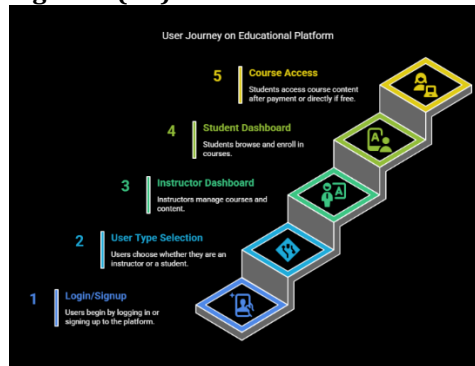# 4. PROPOSED DESIGN

Figure 1 (4A)

Figure 1 (4A)

Figure 2 (4B)

Figure 2 A & 4B is Diagram that Describe the Platform

5. COMPARATIVE ANALYSIS OF EXISTING LMS PLATFORMS

Platform	Ease of Use	Customization	Pricing	Target Users	Monetization Features	Unique Selling Points
Exly	⭐⭐⭐⭐	Moderate	Custom	Coaches, Trainers	Courses, Sessions, Subscriptions	India-focused tools, CRM
Kajabi	⭐⭐⭐⭐	High	$149/mo.	Entrepreneurs	Courses, Memberships, Funnels	All-in-one suite
Teachable	⭐⭐⭐⭐	Moderate	Free - $39/mo.	Educators	Courses, Coaching	Easy setup, US payment integrations
Thinkific	⭐⭐⭐⭐	High	Free - $49/mo.	Independent Teachers	Courses, Communities	Drag-and-drop builder
Graphy	⭐⭐⭐⭐	Moderate	Custom	Indian Creators	Courses, Memberships	Unacademy brand trust
Moodle	⭐⭐	High	Free (open source)	Educational Institutions	Certifications	Full customization, SCORM
Great Sage	⭐⭐⭐⭐⭐	Very High	Custom	Coaches, Trainers, Entrepreneurs, Independent Teachers, Educational Institutions	Pay-per-course, custom	All-in-one suite, Easy setup, Full customization, CRM, India-focused tools, Region-friendly

Figure 3 Comparative Analysis

6. CONCLUSION

Through a detailed review of existing LMS platform such as Exly, Kajabi, Teachable, Moodle, and Thinkific, it becomes clear that while each and every system offer powerful features, they often fall short in one or more key features. Moreover, few are optimized for freelancer or solo educator and content creators who requires flexible, scalable and efficiently monetizable platform.

Our platform is not just a tool—it's a solution. It is a step toward embracing this new digital era, which makes use of state-of-the-art technology while being committed to meeting the requirements of learners and producers. Great Sage seeks to reimagine what efficient, approachable, and pleasurable online education looks like by providing monetization options to authors and individualized experiences to learners.

In summary, Great Sage is a next-generation learning management system (LMS) that is created with a thorough awareness of the potential and problems facing digital education today. It is not just a substitute for current platforms.This platform has enormous potential to influence education in a variety of fields and geographical areas. With careful planning, ongoing feedback, and iterative development, Great Sage has the potential to become a game-changer in the worldwide ed-tech industry.

CONFLICT OF INTERESTS

None.

REFERENCES

Coates, H., James, R., & Baldwin, G. (2005). A Critical Examination of the Effects of Learning Management Systems on University Teaching and Learning.

Dougiamas, M., & Taylor, P. (2003). Moodle: Using Learning Communities to Create an Open Source Course Management System.

G2 & Capterra LMS Reviews (2023). User Satisfaction and Feature Matrix for LMS Platforms.

IDC Report (2021). Corporate Learning Trends and LMS Analytics.

Journal of Digital Marketing and Business Innovation (2022). Kajabi's Role in Creator Commerce.

Kumar, R., & Shah, A. (2021). The Rise of the Creator Economy.

Pulker, L. & Wheeler, B. (2021). Entrepreneurial Use of Thinkific for Course-Based Income.

Watson, W. R., & Watson, S. L. (2007). An Argument for Clarity: What Are Learning Management Systems, What Are They Not, and What Should They Become?

YourStory (2023). How Exly Is Empowering Indian Coaches and Trainers.

https://elearningindustry.com/elearning-by-connecting-the-connectivism-pedagogy

https://exlyapp.com/

https://www.techtarget.com/searchcio/definition/learning-management-system