ACADEMATES – YOUR PATH TO PERSONALIZED LEARNING

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*Abstract*—Academates is an innovative online education platform designed to bridge the gap between teachers and students. With a user-friendly interface built on React, teachers can register, create detailed profiles, and specify their expertise in subjects and topics. Students, in turn, can search for teachers based on their learning needs, viewing a curated list complete with teacher ratings. The platform facilitates seamless appointment scheduling with integrated video meetings featuring a whiteboard and screen-sharing options. Payment transactions are securely processed through the platform, with a percentage allocated as the platform's service fee. Academates prioritize user security and data privacy, implementing encryption and compliance with relevant regulations. The scalability and responsive design of the platform ensure a seamless experience across devices. Marketing strategies will be employed to attract a diverse user base, establishing Academates as a leading hub for quality online education. With a robust rating and review system, Academates aims to foster a thriving educational community, offering a dynamic, secure, and personalized learning experience for both teachers and students.

Keywords— Collaboration, Digital Transformation, E-Learning, Innovation, Online Education, Payment Processing, Personalized Learning, Platforms, Security, Virtual Classroom

# **Introduction**

In an era where digital connectivity is shaping the future of education, Academates emerges as a pioneering online platform designed to bridge the gap between passionate educators and eager learners. This innovative platform redefines the educational experience, offering a seamless avenue for teachers to showcase their expertise and for students to discover the perfect mentor for their learning journey. Academates envisions a dynamic learning environment that transcends geographical boundaries, bringing together a global community of educators and learners in pursuit of knowledge. At the heart of Academates lies a commitment to revolutionize virtual learning. By integrating state-of-the-art video conferencing technology with collaborative features like a virtual whiteboard and screen sharing, we aim to create an immersive and interactive learning space. This ensures that lessons are not only informative but also engaging, allowing students to actively participate in their educational journey. With these tools, Academates seeks to empower both teachers and students, facilitating a more effective and enriching learning experience. Moreover, Academates places a premium on transparency and trust. Through a robust rating and review system, students can make informed decisions when selecting their educators, while teachers have the opportunity to showcase their proficiency and dedication. Secure payment processing further reinforces the platform's commitment to integrity, ensuring that financial transactions are conducted smoothly and reliably. As we embark on this educational journey, Academates envisions a future where quality education is accessible to all, irrespective of geographical or economic constraints, redefining the way we learn and grow in the digital age.

The contribution of this research paper is summarized as follows:

I. Development of a web application designed for both teachers and students.

II. Empower students to easily book teaching schedules for the available teachers for certain topics using the application.

III. Allow teachers to teach students from different parts of the world and to generate a side income.

# **LITERATURE SURVEY**

The literature survey encompasses a comprehensive review of existing research and resources pertinent to the development of Academates, an innovative online education platform. It delves into key areas such as online education evolution, user interface design, payment systems, data privacy, and marketing strategies, providing a solid foundation for the project's implementation.

The focus of "Smart Education Platform to Enhance Student Learning Experience during COVID-19 by Naidu et al." is on putting Smart Education into practice in response to the rising need for cutting-edge teaching strategies, particularly in the wake of pandemics like COVID-19 [1]. It emphasizes how important Smart Cities are to these advancements in education and how widely Zoom and other online learning tools are used. Although the practice has been found to have positive effects in terms of flexibility, accessibility, and innovation, the paper notes that learner engagement still needs to be improved.

In today's globalized tertiary education landscape, the paper by Truong & Diep emphasizes the critical role of digital transformation and advocates for educational institutions to adopt creative, economical approaches through recent technological advancements [2]. Using a PRISMA-compliant systematic review methodology, the paper finds pertinent literature about how technology is changing postsecondary education. Although it does a good job of highlighting major technological trends like blockchain, artificial intelligence, Internet of Things, and various platforms (like social networks, mobile platforms, and big data analytics), it could go into greater detail about how these trends are actually being used in education and offer more detailed advice on how educational institutions and teachers can take advantage of these developments.

In response to the COVID-19 pandemic, the education sector implemented innovation through a comparative study conducted by Rai et al. [3]. The study emphasizes the adaptability of innovation to new technologies and methodologies. With an emphasis on the critical role that technologies like video meetings, online teaching, and digital platforms play in propelling the growth of online education, it highlights flexibility in meeting the needs of students, parents, and the government. The paper primarily focuses on conceptual and historical aspects; however, to illustrate practical implementation and impact, it would be beneficial to include particular case studies or empirical data. It might also look into possible difficulties brought on by the quickening pace of digital transformation.

The concept by Wang & Wang acknowledges the heterogeneous nature of online information in the Internet era as it investigates the dynamic terrain of e-learning. The study emphasizes contemporary interface design while integrating Kolb's experiential learning cycle into an e-learning platform to improve user intention and learning performance [4]. The platform's design and planning place a high value on usability and user experience with the goal of lowering learning barriers, promoting interdisciplinary learning, and improving overall learning results. The paper's broad emphasis on the value of usability and user experience without providing implementation details could be a disadvantage. Furthermore, there are no case studies or empirical data proving the effectiveness of the suggested strategy in improving learning outcomes.

The A front-end and back-end separation scheme based on React and Nginx is used in an article by Lei et al. to introduce a unified and flexible experimental framework for massive online experimentation in control education [5]. With this architecture, the user experience is improved as an application is created on a single page. The framework covers online algorithm design, web-based algorithm design, parameter tuning, and real-time control with remote and virtual laboratories. It does this by integrating features and supporting technologies to provide a flexible, interactive, and real-time platform for control education. The article is mostly technical in nature, but it does not provide specific implementation examples or in-depth user experience insights.

The project by Darvin et al. explores the integration of technology in education, specifically emphasizing Learning Management Systems (LMS) [6]. LMS, crucial for supporting teaching and learning activities, is examined with a focus on the paramount importance of effective user interface (UI) design and user experience (UX). The study identifies common methods for UI and UX evaluation, such as usability measurement and heuristic evaluation, while underscoring the significance of features like discussion forums and learning materials within an LMS. However, a potential drawback is the lack of specific examples or insights into the methods for usability measurement and heuristic evaluation, along with insufficient details on challenges in LMS development.

The paper "Attaining 21st Century Skills in a Virtual Classroom" focuses on the "Four Cs" of 21st-century skills: communication, collaboration, critical thinking, problem-solving, and creativity. It discusses how these skills can be strategically developed in virtual classrooms. It makes the case that, by utilizing a variety of digital resources, online learning environments may be able to provide students with greater opportunities than traditional classrooms to acquire and master these skills [7]. The paper provides a variety of digital resources to improve online learning, but it might not fully capture the difficulties in incorporating technology into the classroom and guaranteeing equal access for all students. Furthermore, it falls short in addressing the subtleties of receiving feedback in person and the possibility of less personal interaction—two essential elements of the learning process.

The goal of the paper, "The Importance of Interaction Mechanisms in Blended Learning Courses Involving Problem-Solving E-activities," is to pinpoint the interaction mechanisms that improve cooperative problem-solving in blended learning environments. It advocates for a collaborative space using tools like GitHub and traditional Learning Management Systems (LMS) to improve student project quality and outcomes [8]. The study, carried out in a "Project Management: A Look Ahead" course, demonstrates how the mechanisms put in place have a positive impact on learning outcomes and student engagement. Its specificity, which offers interaction requirements catered to a specific course setup and platform (GitHub and Moodle), is a disadvantage, though. This specificity might make it harder to apply universally or adapt to different learning environments. Furthermore, the study may not adequately address the potential learning curve connected to these platforms, which could impair generalizability or ease of adoption in other educational contexts.

The study by Liu et al. aims to design and implement a virtual reality classroom using the Online Merge Offline (OMO) concept, facilitated by WebXR technology. This virtual reality classroom strives to offer an immersive and realistic experience for teachers and students, enabling interaction across multiple devices. Two scenes simulating classroom and discussion room settings have garnered positive feedback from university students and instructors [9]. However, a potential drawback is the study's lack of specific details about implementation challenges or any potential drawbacks or limitations of the virtual reality classroom.

The paper by Kostoski & Apostolova underscores the increasing significance of secure online payment processing systems for e-commerce businesses, introducing "Payatron" as a custom-developed solution. Payatron is designed to ensure swift and secure transactions, aiming to minimize complaints and expedite the delivery of goods. The paper focuses on the evolving global landscape of online transactions and emphasizes the pivotal role that secure payment procedures play in fostering customer loyalty [10]. Academates can apply the insights from this paper by integrating secure online payment processing features. Implementing a robust and reliable payment system, inspired by the principles outlined in the paper, would enhance the user experience for both students and educators on the platform. The incorporation of fast and secure transactions is crucial for the success and trustworthiness of any online platform, and Academates can adopt such features to provide a seamless and trustworthy transaction experience for their users.

The Payment Tracking System (PTS), an advanced web-based platform for effective tracking and management of vendor payments, is introduced in the paper by Baibhav et al. PTS acts as a single point of contact for all payment requests, combining best practices to guarantee supplier payments on time. In order to address issues in the current business environment, advanced features such as Invoice Generation and Payment Reminders provide visibility into financial transactions [11]. By taking cues from PTS, optimizing payment workflows, and giving users visibility and control over their financial transactions, Academates can improve their financial procedures. The platform's ability to integrate features such as Invoice Generation and Payment Reminders guarantees educators and students a dependable and seamless financial experience.

The Unified Payment Interface (UPI), a revolutionary mobile-centric real-time interbank payment system in India, is examined in the paper "Unified Payment Interface – An Advancement in Payment System" by Gochhwal. It charts the development of payment systems and emphasizes how UPI helped make digital payments ubiquitous. The study explores UPI's technological capabilities, highlighting its security and architectural frameworks [12]. UPI is recognized for its advancements in cost, consumer ease, settlement times, and security, experiencing significant user adoption. Academates can apply UPI insights to enhance their payment infrastructure, streamlining processes for educators and students. By integrating a mobile-centric, real-time payment system, Academates can improve user experience, offering efficient transactions within the platform. Developing merchant-centric UPI solutions aligns with financial inclusion goals, fostering a low-cost digital payment ecosystem and enhancing platform accessibility.

The growing threat of cybercrime and online data theft in educational institutions as a result of the widespread adoption of information systems and online platforms is discussed in the paper "Data Security and Protection: A Mechanism For Managing Data Theft and Cybercrime in Online Platforms Of Educational Institutions." In order to secure sensitive data pertaining to fees and academic records, it highlights the necessity of having strong data security and protection mechanisms. The study carries out empirical research on cyberthreats and data security problems in educational institutions. The article promotes the adoption of a thorough security model to thwart illegal access and data manipulation. It also suggests awareness-raising efforts for faculty and staff to lessen the possibility of coming into contact with malevolent individuals on the internet [13].

To protect privacy on the E-Learning Platform "SHCneo," a partnership between Chinese and German universities, the paper "Data Privacy Protection from the Perspective of GDPR - A Case Study on E-learning Platform "SHCneo"" focuses on closely following the General Data Protection Regulation (GDPR) in the EU. This paper analyses the GDPR's personal data privacy protection features using SHCneo as a case study, addressing the growing concerns about privacy breaches on E-Learning platforms. It describes data privacy protection strategies and attempts to improve data privacy security in online learning systems. The study emphasizes how crucial it is to have strict data security policies in place to guard against cybercrimes and unauthorized access to private data, particularly in educational institutions that use online platforms [14].

The article “Securing e-learning platforms” addresses the crucial issue of security in the context of the growing popularity of e-learning. As e-learning gains traction, ensuring robust security measures becomes paramount. The paper highlights key security considerations such as access control, authentication, data integrity, and content protection. It emphasizes the use of information security tools like cryptography and network protocols to safeguard e-learning platforms. Focusing on an open-source e-learning system, the paper examines security aspects and outlines challenges in the development and usage of e-learning platforms. It underscores the multifaceted nature of security management, especially concerning content, services, and personal data for both external and internal users [15].

The study examines how user rating behavior affects how helpful reviews are, considering the changing nature of online reviews and the needs of both companies and reviewers. The study suggests a user-centric method for review selection and adds and changes features for reviewers and businesses [16]. The research finds changes in user choice patterns, rating behaviors, and business reputation through a thorough examination of a Yelp dataset. Remarkably, 60% of reviewers behave irregularly when rating a business, and 46% of users favor companies with at least four stars. The research highlights the significance of attributes like reviewer popularity, experience, and diverse user behaviors in ascertaining the helpfulness of reviews. For web app academies, this research offers valuable insights into understanding user behaviors, aiding in the development of platforms that enhance the relevance and usefulness of online reviews of teachers.

In light of increased competition and decreased quality during the COVID-19 pandemic, the paper "Student Satisfaction and Churn Predicting using Machine Learning Algorithms for EdTech course" addresses student churn in EdTech courses. In order to predict churn based on feedback from course-end surveys, it suggests using machine learning algorithms, more especially K-Nearest Neighbor (KNN) and Support Vector Machines (SVM). The model detects unhappy students by using a real-time dataset from the EdTech startup Zikshaa, enabling tailored interventions for course improvement [17]. This methodology can be used by web app academies to anticipate and resolve student dissatisfaction, improving the quality and customization of their courses. Academies that incorporate predictive analytics give priority to the user experience, lower attrition rates, and promote long-term expansion by means of enhanced client retention.

The paper by Birari et al. conducts sentiment analysis on 600 reviews from MouthShut.com to explore user perceptions on three major EdTech platforms amid the COVID-19 pandemic. Analyzing sentiments related to faculty expertise, user-friendliness, syllabus, and pricing model reveals positive user sentiments toward EdTech services [18]. The research provides valuable insights for EdTech service providers to optimize their strategies and offerings, attracting and retaining consumers in the evolving educational landscape. Web app academies can apply these findings to understand user sentiments, optimizing their platforms for enhanced experiences. Conducting similar sentiment analyses on user reviews enables academies to identify areas for improvement and strategically position themselves in the competitive EdTech landscape, contributing to increased user satisfaction and sustained engagement.

# **PROPOSED METHODOLOGY**

In addressing the challenges identified in the dynamic landscape of online education, Academates proposes a comprehensive methodology to revolutionize teacher-student interaction. Following the project introduction, Academates aims to overcome obstacles by creating an intuitive and transparent platform for educators and learners. The platform will seamlessly connect teachers and students, providing a personalized and interactive virtual classroom experience. Through the integration of cutting-edge video conferencing tools, a collaborative virtual whiteboard, and secure payment gateways, Academates ensures an efficient and secure learning environment. A robust rating system enhances transparency, and future developments, including AI-driven matching and multi-language support, further position Academates to evolve with the ever-changing needs of the education sector. By prioritizing user experience, security, and innovation, Academates aspires to redefine online education, making quality learning accessible to a global audience.

A diagram of a teacher's process

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*Fig 1. Academics Architecture Diagram*

In Fig. 2.3.1, The diagram depicts the workflow for the Academates project, illustrating the user journey from login to post-lecture activities. Users, categorized as students or teachers, log in to their respective dashboards. Students can search for topics and select teachers based on their preferences, proceeding to request appointments. Teachers view all appointment requests on their dashboard and accept them as appropriate. Once an appointment is accepted, an online lecture takes place. After the lecture, students can make payments and provide feedback to the teacher. Additionally, teachers can provide notes and feedback for the students, closing the loop of an interactive educational session.

# **IMPLEMENTATION**

**Web App components**

The components of the Academates app, as outlined in the provided materials, would likely include the following:

* User Authentication System: To handle user login and maintain secure access.
* User Profiles: For both students and teachers, with details like qualifications, subjects, availability for teachers, and learning preferences for students.
* Search and Matching Engine: Allowing students to search for teachers by topic and other criteria.
* Appointment Scheduling: For students to request and teachers to manage appointments.
* Virtual Classroom Environment: With video conferencing, interactive whiteboards, and screen sharing capabilities.
* Payment Gateway: To process payments from students to teachers.
* Rating and Feedback System: For students to rate teachers and vice versa, along with leaving feedback.
* Content Management System: For teachers to upload notes and resources.
* Data Storage and Security: To securely store user data, session records, and other pertinent information.

These components come together to create a robust virtual learning platform designed to facilitate and streamline the online educational experience for both students and teachers.

**Steps and Flowchart**

The steps for an online personalized learning system are as follows:

A diagram of a teacher

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*Figure 2: Flowchart of Academates*

**Teacher Side**

Step 1: Teacher Login

Step 2: The teacher opens his profile.

step 3: The teacher checks the lecture requests.

step 4: If the lecture request is there, the teacher accepts or declines the request.

step 5: After accepting, the teacher can come back at the accepted time and take the class.

step 6: Add feedback about the students.

step 7: Get the payment.

**Student Side**

Step 1: Student Login

Step 2: Search for the desired lecture from the available teachers

Step 3: Submit a lecture request to the teacher.

Step 4: Wait for the teacher to accept or decline the request.

Step 5: If the request is accepted, be present at the scheduled time for the class.

Step 6: Participate actively in the class and take notes.

Step 7: After the class, review the feedback provided by the teacher, if any, and provide feedback to the teacher for the overall studying experience.

Step 8: Make the payment for the attended class.

Step 9: Check your profile for the progress.

A screenshot of a login form

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*Figure 2.1: welcome and login page*

This login page in Figure 2.1 is the gateway to the Academates platform, featuring a clean and user-friendly design. On the right, existing users are greeted with a straightforward interface to enter their username and password, with options to stay logged in or recover a forgotten password. A prominent 'Login' button initiates access to the system. A 'Sign Up' link is available for new users to create an account. The left side of the page showcases an illustration that reflects the collaborative and interactive nature of the platform, emphasizing education and technology.

A screenshot of a computer

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*Figure 2.2: Teacher Profile Page*

The teacher profile page within Academates serves as a personalized dashboard, providing an overview of a teacher's activities and interactions. It features sections for upcoming classes and assignments, a schedule calendar, ongoing lessons, and student grades. The sidebar allows navigation through different functionalities such as class schedules, grading, and accessing teaching materials. There's also a space for the latest updates, like approved scholarships, ensuring teachers stay informed. This interface streamlines the teaching process by keeping all relevant information and teaching tools in one accessible location, optimizing the educator's experience on the platform.

A screenshot of a cell phone

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*Figure 2.3: Teacher Search Page*

This page (Figure 2.3) on Academates is a directory for students to search and overview teachers available on the platform. It displays profiles of teachers with their names, subject expertise, and contact information, allowing for easy navigation and connection. The top bar categorizes teachers by subjects and topics for a more refined search, and individual cards provide quick links to more details or direct communication options. This setup facilitates the student's ability to find and interact with the right educators to suit their academic needs within the Academates ecosystem.

A screenshot of a computer

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*Figure 2.4: Student overview profile page*

In Figure 2.4, the profile overview page for Academates displays a student's educational engagement, featuring key statistics like courses completed, hours taught, and skills acquired. It provides a snapshot of the student's achievements and progress, with badges like "Dedicated Educator" rewarding consistent effort. A bio section allows personalization and a sidebar for easy navigation between different sections is present. Teacher details and a friends list encourage a community feel, fostering connections within the platform. This interface helps students track their academic journey and build a network, enhancing the learning experience on Academates.

A graph with a line

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*Figure 3.1: Performance Validation Table*

Figure 3.1 provides real-time usage data and the load time of Academates. It is an essential tool for performance analysis and finding areas that can be improved. A complete grasp of the dynamics of the platform is made possible by the analysis of real-time user interactions, which offers vital insights into user behaviour and usage patterns. Because long load times can turn off users, load time is a crucial metric that affects user experience and is constantly monitored. For developers, this information acts as a compass, helping them identify areas of performance bottlenecks and maximise platform efficiency. In the end, these numbers provide very useful data that allows developers to evaluate Academates' performance in a thorough manner and identify areas for improvement, so that all users can benefit from a smooth and efficient learning experience.

# **RESULT**

The Academates project has successfully developed a robust and comprehensive online educational platform. It has achieved its goal of creating an interactive, user-friendly environment where students can easily find and engage with qualified teachers across various subjects. With features like live class streaming, interactive tools, and a secure payment system, the platform has enhanced the learning and teaching experience. Feedback from users has been positive, indicating high satisfaction with the platform's ease of use and the quality of educational content. Overall, Academates stands as a testament to the effectiveness of blending technology with education to foster an engaging virtual learning community.

# **CONCLUSION**

In conclusion, Academates represents a transformative leap in the realm of online education, addressing the prevailing challenges and reshaping the dynamics of teacher-student interactions. By establishing a user-centric platform that emphasizes transparency, security, and innovation, Academates not only connects educators and learners seamlessly but also enriches their experience through advanced tools like video conferencing and collaborative whiteboards. The robust rating system fosters a culture of trust and accountability, while future-oriented features such as AI-driven matching and multi-language support underscore our commitment to staying at the forefront of educational technology. As we propel into the future, Academates envisions becoming a cornerstone in the digital education landscape, offering a dynamic, accessible, and personalized learning journey for students worldwide, and providing a platform for passionate educators to share their expertise with an eager audience.

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