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INTEGRATED STUDENT TEACHER INTERACTION SYSTEM FOR INSTITUTIONS

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Abstract

Education in Nigeria faces major hurdles when it comes to facilitating productive communication and teamwork between students and their teachers. This lack of engagement ends up holding back the full learning potential. This paper aims to harness readily available and inexpensive local area network (LAN) technologies to construct a virtual bridge across the digital divide which can enhance a seamless platform for real-time interaction. The system is a user-friendly web app that allows students

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and teachers to participate in virtual classrooms together. Within these digital spaces, they can engage in discussions, share educational materials, and give/receive timely feedback that transcends geographic boundaries which would normally be obstacles. When you bring affordable technology together with innovative collaborative pedagogies, you get a transformative system. This system represents a transformative solution for enhancing educational outcomes and empowering Nigerian institutions to provide quality education accessible to all more precisely Federal Polytechnic, Bali Taraba State.

INTRODUCTION

The educational landscape has swiftly evolved with the integration of novel technologies and changing expectations regarding professional knowledge in the digital age (Smith et al., 2020). Various technological progressions have improved the learning atmosphere and set the stage for a transition from teaching-centric methodologies to learner-centered approaches E-learning is recognized globally as a catalyst for national progress (Chelawat & Sant, 2023). Therefore, the urgent expansion of e-learning programs, especially those focusing on essential business skills and leadership capabilities, is crucial for promoting national autonomy and progress (Chelawat & Sant, 2023). The primary objective of e-learning is to provide educational materials anytime, anywhere, representing a significant shift in educational approaches. Additionally, by harnessing advanced technologies, e-learning can foster creativity and tap into students' untapped potentials. Consequently, there is a pressing requirement to prioritize personalized student requirements and customize training programs accordingly (Salloum et al., 2023).

By harnessing advanced web real-time communication technology, e-learning courses can complement traditional education systems by providing valuable

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tools to enhance students' skills and alleviate the challenges associated with connectivity, particularly in remote areas of Nigeria.

Aim and Objectives

The aim of this paper is to design an integrated hybrid electronic learning system that allows content interchange and effect enhance and friendly learning platform on local and internet network for student teacher interactions guided by the following objectives.

i. To develop a comprehensive e-learning platform that facilitates seamless communication and collaboration between students and teachers in Nigerian educational institutions.
ii. To integrate various multimedia and interactive tools within the e-learning system, such as video conferencing, virtual whiteboards, discussion forums, and file-sharing capabilities, to enhance the learning experience and promote active engagement.
iii. To evaluate the impact of the integrated student-teacher interaction e-learning system on academic performance, student satisfaction, and teacher productivity in Nigerian institutions, through pilot studies and comparative analyses

LITERATURE REVIEW

Over the past few years, e-learning has emerged as a successful approach for imparting education and training. E-learning offers learners the flexibility, accessibility, and cost-efficiency required for acquiring computer skills.

The e-Learning

Means et al. (2019) define e-learning as the utilization of electronic technologies for delivering education and training. E-learning encompasses various delivery methods such as online courses, virtual classrooms, webinars, and video lectures. It offers learners the flexibility to study at their own pace

and convenience, granting access to a diverse array of learning resources like multimedia content, simulations, and interactive activities.

Compared to traditional classroom-based learning, e-learning presents several advantages due to its flexibility, enabling learners to progress at their own speed and according to their schedules. Moreover, it can be accessed globally, facilitating learning for individuals in remote or disadvantaged areas. Additionally, e-learning often proves more cost-effective than traditional methods by eliminating expenses related to travel, accommodation, and associated costs.

RELATED WORKS

Several studies have been conducted on the design and implementation of e-learning for institutions. Mohammed & Abdulhamid, (2021), developed an e-learning platforms for student-teacher interactions in Nigerian higher education during pandemic era to facilitated and provide continuity of academic activities remotely. The authors incorporated a range of learning resources, including multimedia content, case studies, and interactive activities, to engage learners and promote skill development. Similarly, Alseelawi *et- al*., (2020) E-learning platforms and student-teacher interactions in Nigerian higher education. About 60% of teachers consulted have shown absolute interests in the system. The study claims a significant improvement in the learners' competencies, including ability to suggests patches and additional functionalities to the system. Additionally, a study by Fitria, (2021) applies descriptive qualitative research the result of which shows that ITB AAS Indonesia began implementing e-learning to support face-to-face classrooms in the academic year 2020/2021.

Heidari *et-al*. (2021) investigated the impact of social media on e-learning for entrepreneurship skills development. The authors reported that social media can enhance the collaborative learning experience and provide opportunities for networking and knowledge sharing.

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Jhaveri *et-al.* (2020) conducted research on the integration of augmented reality (AR) in e-learning to foster entrepreneurship skills. They discovered that AR enhanced learner engagement and immersion, resulting in heightened motivation and improved learning outcomes. Conversely, Karim and Hasan (2020) assessed the efficacy of a self-paced e-learning curriculum aimed at developing entrepreneurship skills among Indonesian university students. Their study revealed a positive influence on learners' entrepreneurship abilities, encompassing idea generation, market analysis, and financial management.

Alseelawi *et-al*., (2020b) made a study with the objective is to develop a Learning Management System (LMS)-based E-Learning framework that is evaluated within the context of Microteaching in Mechanical Engineering Education courses. The research methodology employed is based on the Han Nafian and Peck model, which encompasses distinct phases including needs analysis, design, development, and implementation. Subsequently, the constructed LMS undergoes validation by experts in media and material, who assess it in accordance with their areas of expertise.. Ouadoud *et-al*., (2021) Develop an LMS-centric E-Learning framework that undergoes empirical evaluation within the context of Microteaching in the Mechanical Engineering Education course. The research methodology employs the Hannafin and Peck model, encompassing distinct stages (needs assessment, design, development, and execution). The resultant LMS is subsequently subjected to validation by media specialists and content experts, aligning with their respective areas of expertise. Another study by (Priatna et al., 2020). Examine the determinant factors is conducted through a synthesis of findings derived from literature reviews and empirical survey methodologies in order to achieve a more comprehensive analysis; subsequently, these factors are evaluated employing the Multi-Attribute Utility Theory (MAUT) framework. The findings reveal that the critical determinant factors which should be prioritized in the execution of e-learning within the context of higher education encompass

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organizational elements, technological infrastructure, and human capital. Shurygin *et-al.,* (2021) laments the advantages of using the e-learning platforms such as Moodle, Schoology, TalentLMS, Canvas LMS, Docebo, iSpringLearn's, Brightspace, Absorb LMS based on the reviews.

Generally, the findings highlight the positive impact of e-learning on student learning outcomes and the importance of leveraging technology for skills development in higher education.

METHODOLOGY

The Existing System

Before proposing the e-learning system, it was crucial to analyze the existing manual system of student's teacher interaction. This analysis involves an in-depth examination of the current processes, methodologies, and limitations associated with the manual system.

The analysis revealed that the manual system relied heavily on traditional classroom-based training, workshops, and mentorship programs. These methods were often constrained by geographical limitations, time constraints, and the inability to provide personalized learning experiences. Additionally, the manual system lacked scalability and consistency in delivering entrepreneurship education.

The Proposed System

The proposed e-learning system aims to address the problems identified in the existing manual system and provide a comprehensive solution for conventional teaching methods. The system leverages the advantages of technology to create an accessible, personalized, scalable, and practical learning environment for aspiring entrepreneurs.

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The Proposed Model

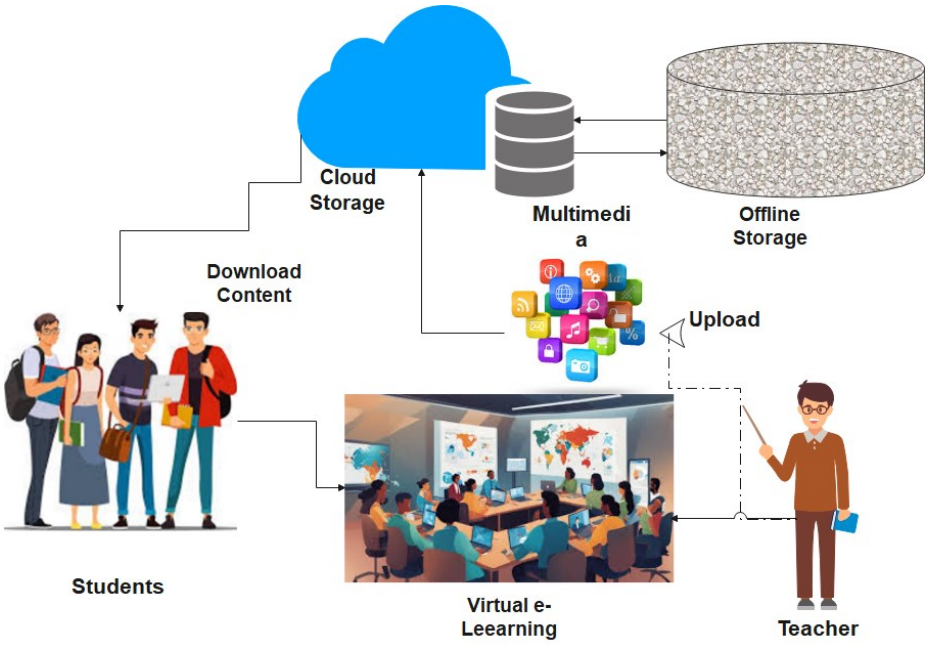

Figure 3.1: System Model

As in 3.1, the teacher uploads multimedia files to the cloud storage which asynchronously updates the local area network server. A teacher can also create assessment sessions, upload the questions and set starting time which is automatically triggered. The students on the other hand will access the content and send feedback to the system accordingly. Virtual interactions via textual audio or video can also be made possible as in the case of a teacher scheduling and students responding simultaneously. The cloud and offline server work concurrently to ensure no data lose on each section.

Database Design Model

Database design model is a crucial aspect of a project that determines how data will be structured, organized, and stored in the database. It outlines the relationships between different data entities and defines how they will be

accessed and manipulated. Common database design models include the relational database model, object-oriented model, hierarchical model, NoSQL models and entity-relationship (ER) model which is shown in 3.2. this is because the model works based on the real-world entities and the relationships among them. The ER model helps to define the data elements and their relationships for a desired database design.

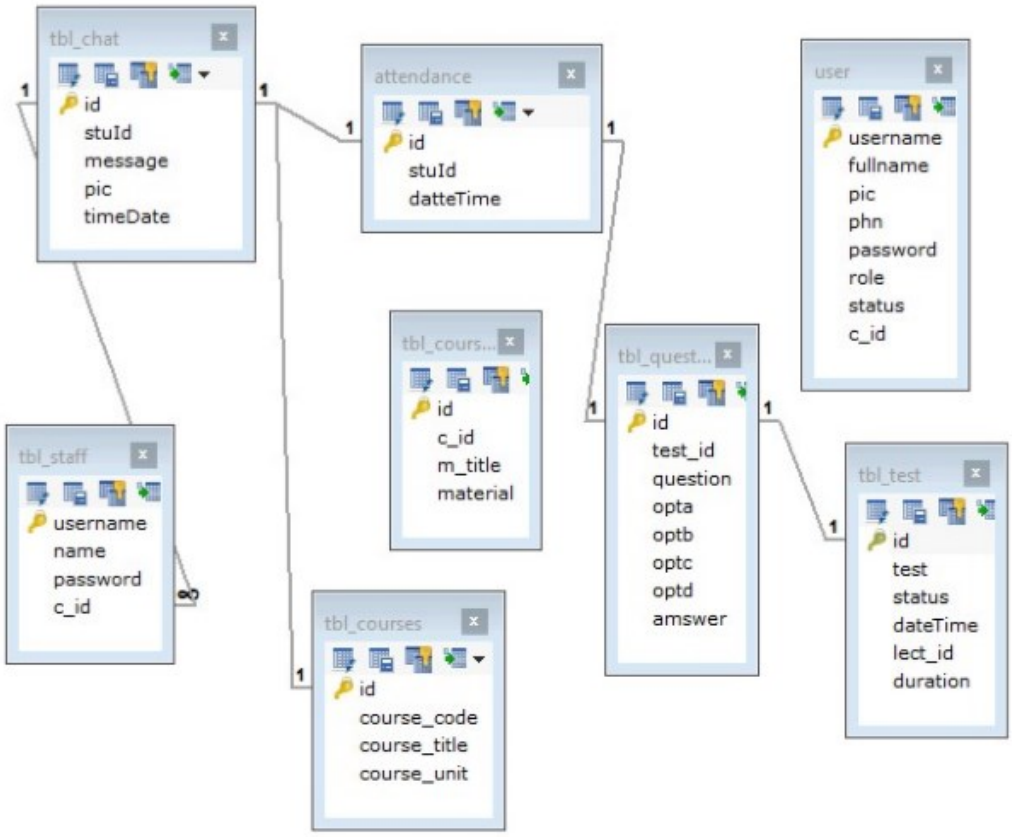

Figure 3.2 Entity Relationship Model

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RESULTS



Figure 4.1: Login Page

This page allows administrator, lecturer, student to login and get access to various system's functionality accordingly.

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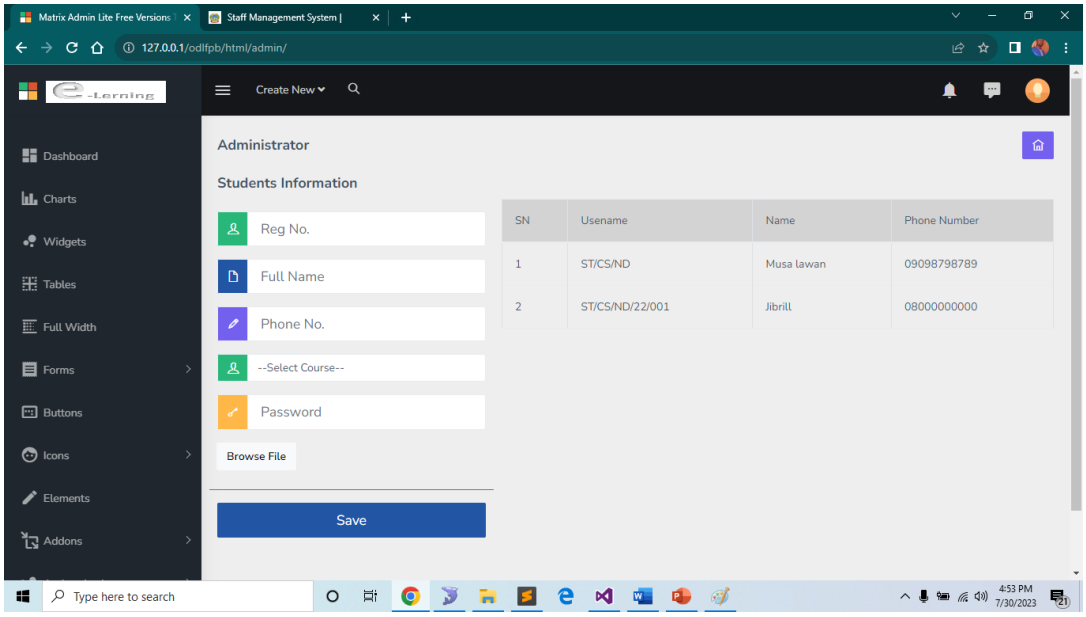

Figure 4.2: Student Registration Page

This page allow lecturer to register student by entering his reg No, full Name, phone number, course and password.

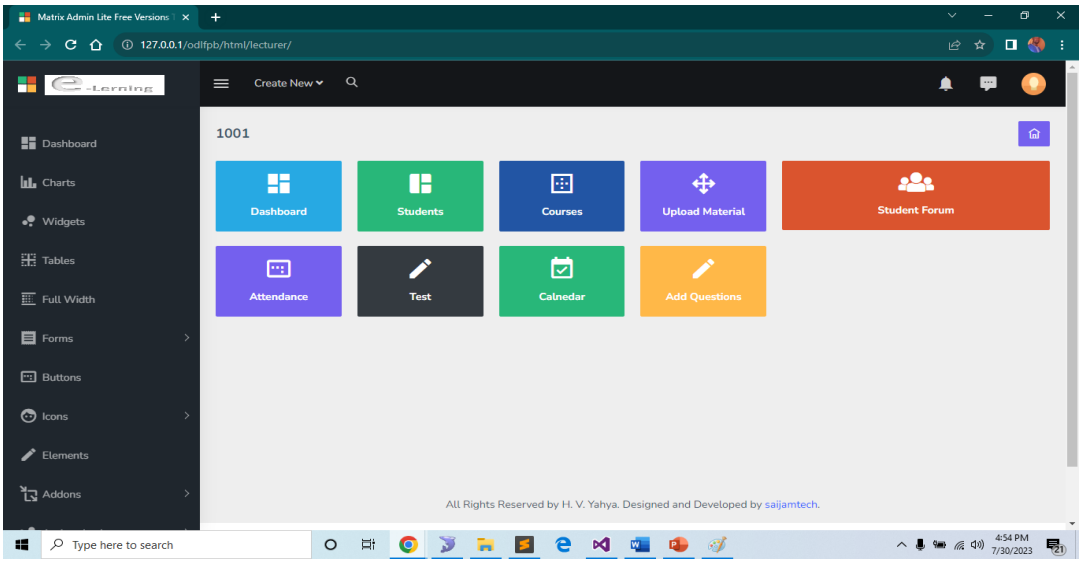

Figure 4.3: Lecturer Page

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This page allow lecturer to register/manage student, mange course material, create C.A information/Test questions and View student Attendance as show below.

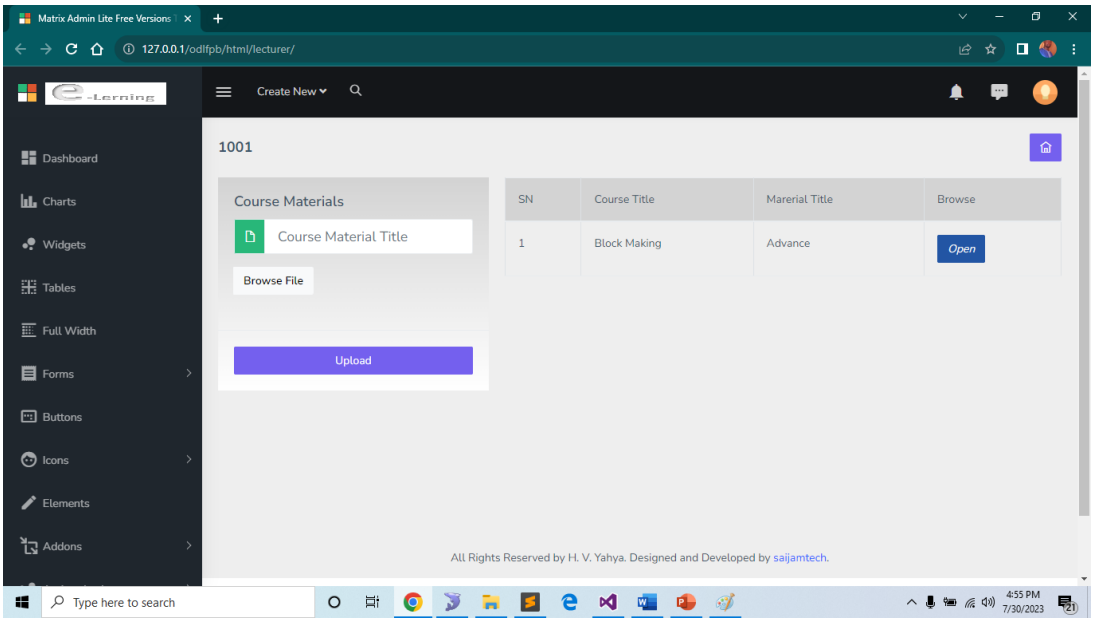

Figure 4.4: Course Material Upload Page

This page allows lecturer to upload course material such as Pdf and videos.

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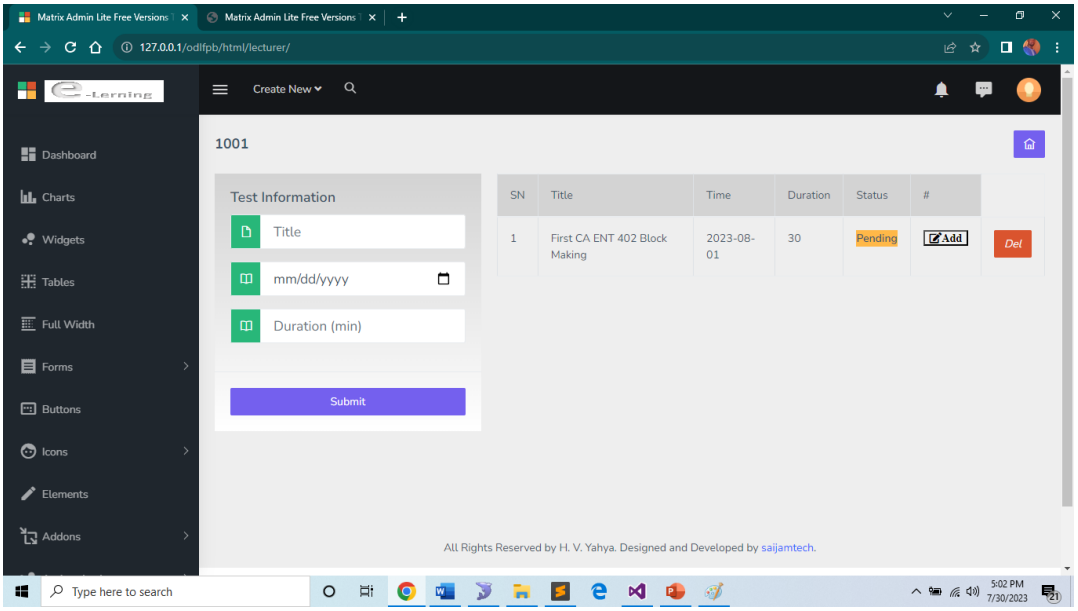

Figure 4.5: Test Upload Page

This page enables lecturer to Upload test Questions along with the correct answer for automatic grading.

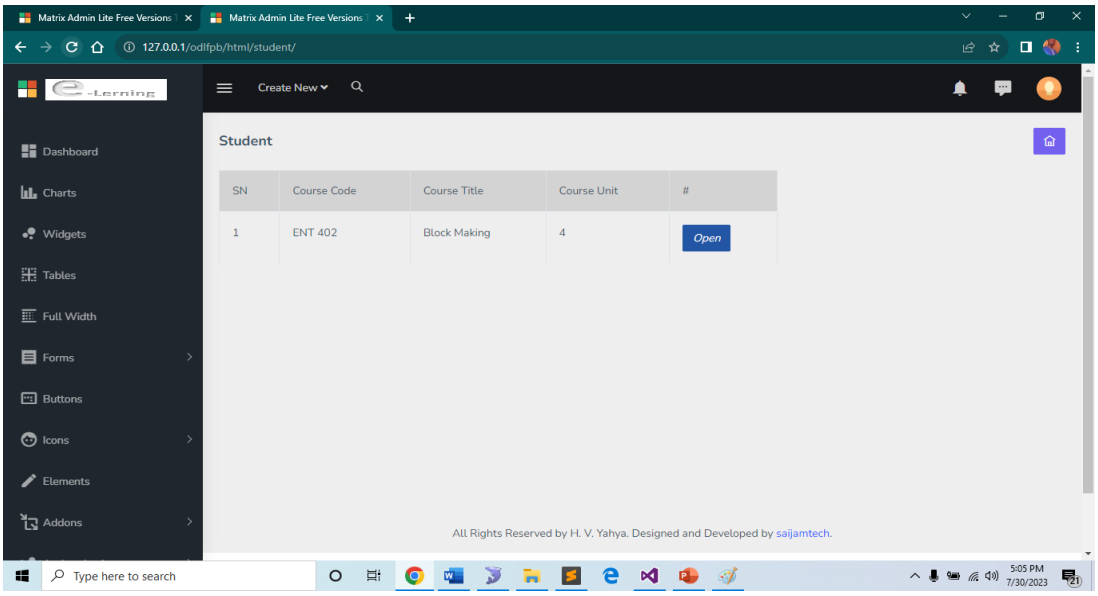

Figure 4.6: Course Material Viewing/Downloading Page

This page enables student to view and download entrepreneurship study material.

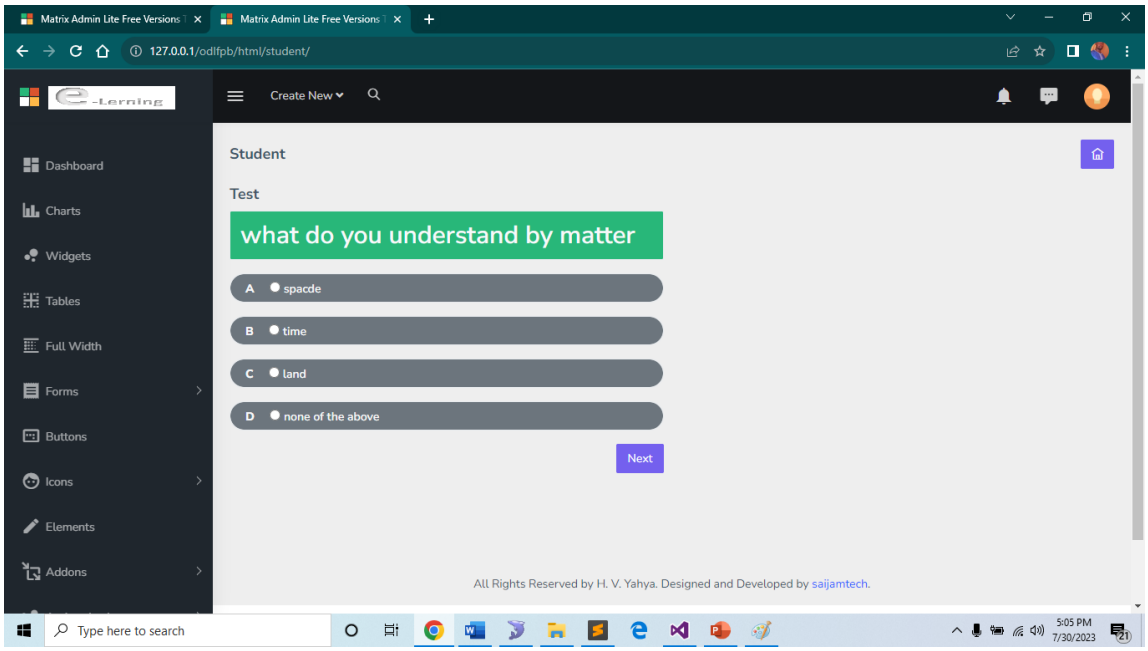

Figure 4.7: Student Test Page

This page enables Student to write his/her C.A test by selecting answers from the provided options A-D.

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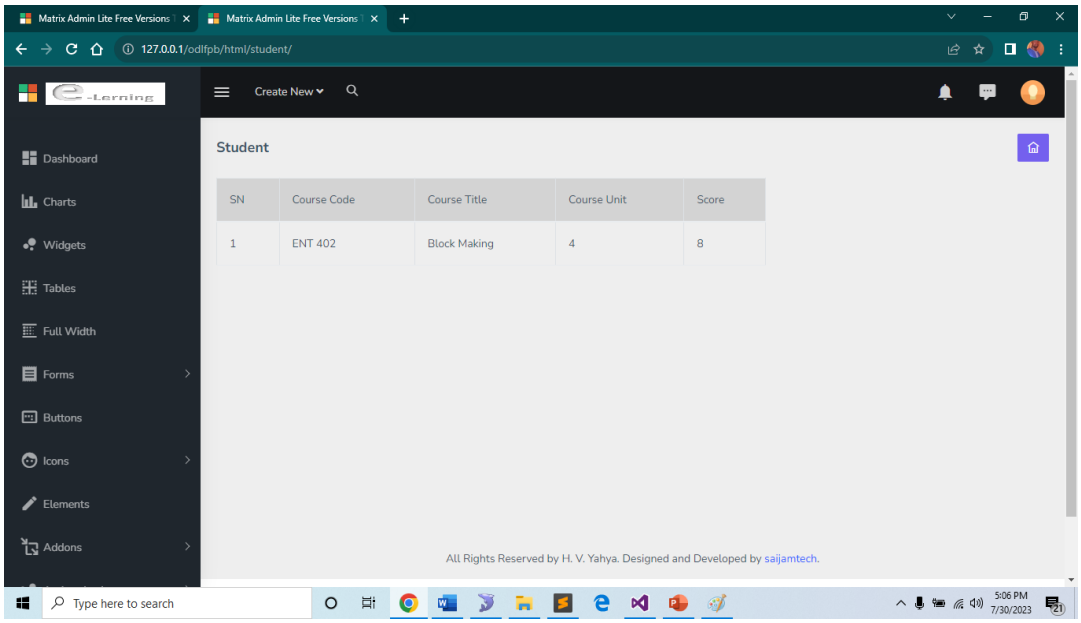

Figure 4.8: Student Result Viewing Page

This is the page where student view his/her C.A scores as shown in Figure 4.11

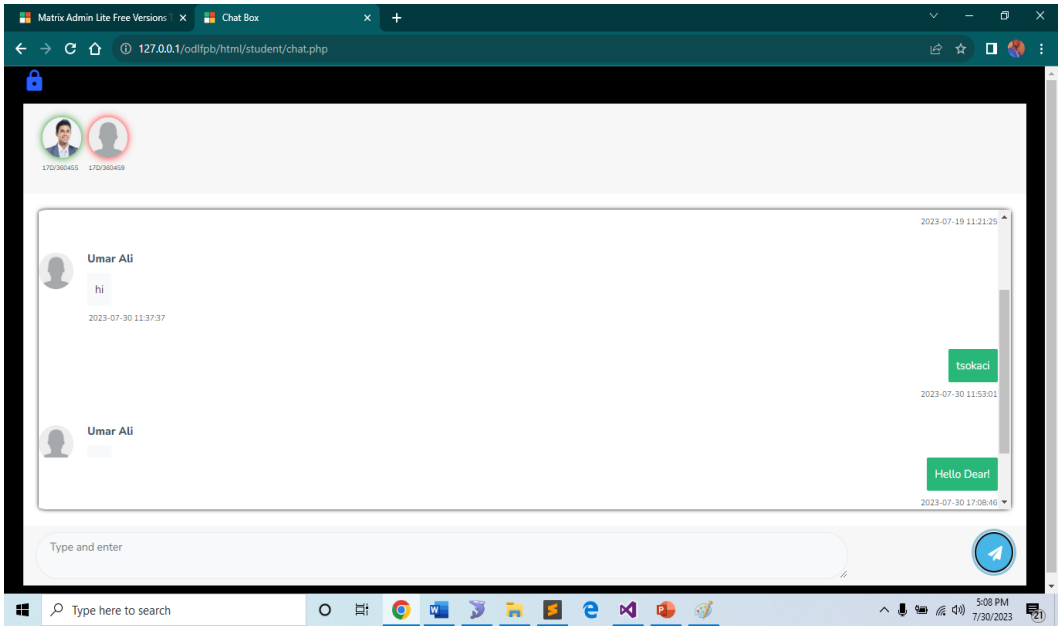

Figure 4.9: Chat Forum Page

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This page enables lecturer and Students interact and it can be for announcement and discussion.

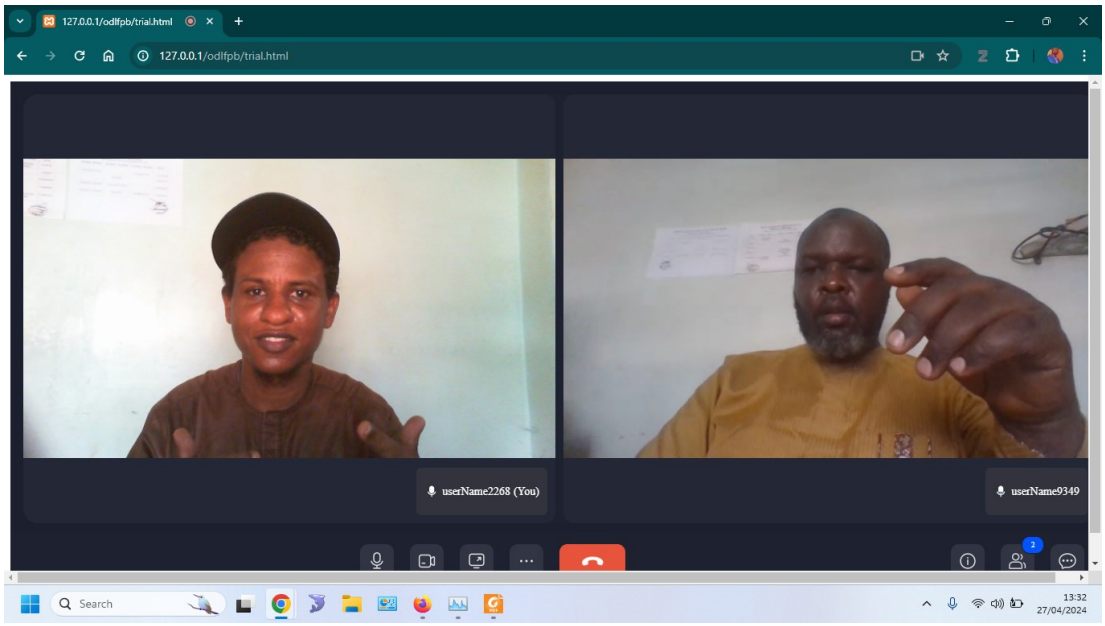

Figure 4.10: Video Chat Room

At this section, the lecturer will schedule a lesson time on internet or local server then shares a room id which legible students will use to login and have live video interactions.

DISCUSSION

The results of the implementation demonstrate the effectiveness and value of the e-learning platform. The advantage of these platforms over the existing manual system are evident, as they address various challenges and limitations. By accepting such systems, this platform particularly offers a user-friendly, interactive, and dynamic learning experience.

CONCLUSION

The development and implementation of an integrated student-teacher interaction system represent a pivotal step towards enhancing the educational landscape in Nigerian institutions. This system offers a transformative approach to communication and collaboration, promoting a dynamic learning environment that transcends geographical barriers. By adopting modern technology, such as online platforms, video conferencing tools, and collaborative software, students and teachers can engage in meaningful interactions that enrich the learning experience. Moreover, the system will promote inclusivity and accessibility, ensuring that all students, regardless of their location or circumstances, have equal opportunities to participate actively in the educational process.

Nigerian institutions should collaborate with technology experts to design and implement an integrated student-teacher interaction system tailored to their specific needs and challenges this will lament full understanding and control of the system. And hence updates and modification will be easy as compared to e-learning utility softwares.

RECOMMENDATIONS

This proposed electronic learning system is proposed to adopted for use in arears where limited access to schools is difficult due to either insurgency, flooding, or migration to drought as well as for nomadic education. Further research should be conducted to enhanced the architecture of the proposed system for government adoption.

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