TOPIC: “Design and Implementation of a Collaborative Academic Platform with Inter-University Leader board Competitions ”

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Collaborative learning in an academic environment involves participating in discussions, problem-solving, and studying in groups (The University of Queensland, Australia, n.d.)[1]. The bedrock of this learning approach is shared knowledge. In higher education, creating a space where learners can share ideas, questions, and teaching materials regardless of their skills and abilities ensures that they are properly engaging with new information and contributing to the learning process.

Education is being revolutionised through the use of technology, (Herrera-Pavo, 2020)[2] stated that Information and Communication Technologies (ICTs) favour collaboration in a learning situation. It is important to move on from a teaching system that embraces a traditional pedagogical approach, which leaves students with little space to think, as the teacher is the centre of the student-teacher relationship (Hu, 2024) [3].

With peer-to-peer interaction, there is a parallel relationship rather than a vertical one, and this makes students feel comfortable seeking support and challenging themselves academically.

However, many Nigerian students struggle to access quality course materials outside of their respective universities. Their learning is often limited because access to past questions, lecture notes, and peer assistance is only dependent on their personal network. This project aims to fill this gap by providing a platform where students across Nigerian universities can share and access course materials, discuss academic topics, form study groups, and participate in inter-university competitions. The platform encourages collaboration and student engagement.

* 1. STATEMENT OF THE PROBLEM

15-30% of the infrastructure and equipment used in Nigerian universities are outdated (Garba, 2023)[4]. These infrastructures include, but are not limited to, online learning platforms, libraries with physical and digital resources, research, and academic support services. Students are forced to rely on these outdated materials, and there is no trusted system where students all over Nigeria can share more reliable resources (i.e. lecture notes, past questions, academic sources) that may not be accessible to everyone.

Students' motivation is often negatively impacted when the interaction in the classroom is limited to the teacher lecturing and the student listening to store the knowledge relationship (Hu, 2024) [2]. Therefore, if there is an absence of out-of-class study groups, many students will experience poor performance in academic work.

Additionally, not engaging students in competitions which allow them to learn while dealing with real challenges creates a gap in the necessary skills and knowledge they should have acquired.

Without a centralised platform where students can engage in academic discourse, share diverse perspectives, and access course-related content, many students are left discouraged -- affecting their performance.

* 1. AIM AND OBJECTIVES

This study aims to design and implement an online academic platform accessible to all students across Nigerian universities, enabling them to share learning resources, engage in open discussion, take quizzes generated from past questions, form study groups, and participate in competitions and challenges.

Objectives:

1. To build a user-friendly platform categorised by school and course for easy access to relevant information and resources.

2. To allow upload and download of lecture notes, research materials, past questions, and others.

3. To provide discussion forums for course-related questions and answers.

4. To convert MCQ (Multiple-Choice Questions ) past papers into quizzes for self-assessment

5. To implement a leaderboard system for academic competitions across institutions.

6. To foster peer-to-peer learning and collaboration through study groups.

7. To promote academic excellence by improving access to learning resources.

* 1. SCOPE OF THE PROJECT

The focus of this project is to create a platform where students from any Nigerian university can interact with each other and find information relevant to their department and course.

It will include the following features and functionalities;

1. User registration and authentication to allow only Nigerian students

2. File upload and download to allow sharing and access to academic materials.

3. A quiz generator that converts past questions into interactive assessments that students can use to test their knowledge.

4. Discussion forums where students can ask and answer questions related to school and courses.

5. Timed competitions where students participate, submit their answers, and are ranked on a leaderboard.

6. Study groups formed by students for tutoring and preparing for exams.

7. Admin page for ensuring that discussions are appropriate, user management, etc.

The system will be developed as a web-based application that can be accessed on desktop or mobile browsers. This project is focused on delivering a functional MVP (Minimum Viable Product) that ensures structure, usability, and collaboration.

* 1. PROJECT RISK

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| --- | --- | --- |
| RISK DESCRIPTION | MITIGATION | IMPACT |
| Students on the platform are inactive e.g. low participation in competitions, no conversations in the discussion forum etc. | Add gamification such as point system, challenges, and leader-boards to encourage healthy competition and participation. | High |
| Users uploading innapropriate content | Implement an admin panel that reviews all content and a flagging system that detects and flags suspicious activity. | High |
| Difficulty verifying students from multiple universities | Users should be required to upload their valid school identification cards for verification | High |
| Scalability issues from growing number of users and contents which may affect system performance. | Use efficient database structure, pagination, and content-based indexing | High |
| Timeline may be too short to complete all the features | Prioritize a MVP | Medium |

Table 1.1 - Risk Assessment

* 1. SWOT ANALYSIS

|  |  |
| --- | --- |
| STRENGTHS | WEAKNESSES |
| - Encourages students to engage with their peers and learn from them  - Connects students all over the country  - Promotes learning and healthy competition through gamification (i.e. challenges, leaderboard) | - Initial users may not have enough content to leverage because more users are yet to join to upload materials and start discussions  - The subjective opinion of many users from multiple schools may lead to misinformation  - Auto generated quizzes and challenges that are not multiple choice questions have to be manually reviewed which may cause delays in grading |
| OPPORTUNITIES | THREATS |
| - It can be expanded to accommodate other education levels (i.e. Junior Secondary School, Senior Secondary School)  - Students build long lasting networks and connections over time  - Users at the top of the leader-board could stand a chance to win physical rewards. It will encourage them to join competitions and work hard.  - Collaborating with universities to increase student adoption. | - Users in areas with bad network may nit have steady access to the platform  - Harmful posts and inappropriate content may be uploaded putting other users at risk.  - Competition from other Edtech companies  - User data like login info may be at risk. |

Table 1.2 - SWOT Analysis

* 1. SIGNIFICANCE OF THE PROJECT

The purpose of this project is to identify the need for a centralised area where students are able to communicate with their peers regardless of location, share materials related to their courses, and test their abilities.

The importance of peer-to-peer studying is constantly being highlighted, and with the boom of education technology in the past 5 years, this platform will create a modern approach to learning.

Additionally, giving users the means to upload and access lecture notes, past questions, and relevant study material provides them with tools for learning, understanding, and preparing for tests and examinations. They can then proceed to test their knowledge using the in-built quiz generator that converts MCQ(Multiple Choice Question) past papers into timed quizzes or participate in challenges and competitions to be ranked individually on the leaderboard.

These features motivate them and ensure that the users are actively involved during learning because it is centred on the students' participation, which encourages education beyond the traditional classroom setting.

* 1. ORGANIZATION OF THE PROJECT

Chapter 1: Introduction

Overview of the project, including background, objectives, problem statement, and risk assessment.

Chapter 2: Literature Review

It explores related works and gaps in online collaborative academic platforms.

Chapter 3: Methodology

This chapter covers the system requirements, system architecture, and the design approach.

Chapter 4: Implementation and Testing

Details the application development and testing process. Outlines the tools, framework, code, and test cases used when building the system.

Chapter 5: Conclusion

Summarises the project, key findings, and suggestions for future improvement.

Reference:

1. <https://itali.uq.edu.au/teaching-guidance/teaching-practices/active-learning/collaborative-learning>
2. <https://doi.org/10.1016/j.lcsi.2020.100437>
3. *(PDF) The Challenges of Access to University Education in Nigeria*. Available from: <https://www.researchgate.net/publication/374723591_The_Challenges_of_Access_to_University_Education_in_Nigeria> [accessed Aug 03 2025].
4. *(PDF) The Challenges of Access to University Education in Nigeria*. Available from: <https://www.researchgate.net/publication/374723591_The_Challenges_of_Access_to_University_Education_in_Nigeria> [accessed Aug 03 2025].

[P.S: I will edit references later on]