

# Design and Implementation of Student Online Clearance System Portal for Abia State College of Education Technical Arochukwu

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**Abstract-** *This paper presents the design and implementation of an online clearance portal system tailored for students of Abia State College of Education (Technical), Arochukwu (ASCETA). The traditional clearance process has been predominantly manual, leading to inefficiencies such as long wait times, document misplacement, and lack of transparency. The proposed solution leverages modern web technologies to automate and digitize the clearance process, ensuring a more efficient, secure, and transparent system. The system is built using Python (Flask framework) for the backend, MySQL for the database, and HTML, CSS, JavaScript (with Bootstrap) for the frontend. Flask-Login is used for authentication. The portal supports role-based access for both students and administrators, document uploads, status tracking, and communication through comments. This paper outlines the system architecture, design methodology, literature review, and results from initial deployment.*

**Keywords:** *Online clearance system, student portal, ASCETA, Flask, MySQL, web development, digital transformation*

## Executive Summary

the objective of the project is to design and implement an online clearance portal for Abia state college of education technical Arochukwu (ASCETA) to automate the student clearance process, improve efficiency and enhanced student experience. The portal will enable student to conveniently clear their fees, register courses and obtain clearance certificate online, reducing manual paper work and minimizing errors.

Key features of the project include: User friendly interface for students and staff, automated clearance processing, real-time update and notifications, secured payment gateway integration as well as comprehensive reporting and analysis. The benefits of the project among other thing include: improve student satisfaction and experience, increased efficiency and productivity, reduced work load for staff, enhanced transparency and accountabilities as

well as better recording and data management. By implementing the online clearance portal clearance portal, Abia state college of education technical Arochukwu joins the rank of modern and innovative educational institutions, providing a seamless and efficient experience for its students.

## I. INTRODUCTION

In today's digital age, educational institutions are embracing technology to enhance their administrative processes and improve student experience. Abia state college of education technical Arochukwu (ASCETA) aims to join this trend by introducing an online clearance portal system for its students. The traditional manual clearance system can be time consuming, prone to errors and inefficient, leading to frustration among students and staff. To address these challenges, the design and implementation of an online clearance portal system which now automate the clearance process, providing a user-friendly interface, secure and efficient platform for students to clear their fees, register courses, and obtain clearance certificate. This innovative system does not only streamline the clearance process but also enhances transparency, accountability, and students' satisfaction, positioning Abia state college of education technical Arochukwu as a pioneer in educational technology adoption. The clearance process in Nigerian tertiary institutions is a critical procedure required for students to finalize their academic journey. At ASCETA, this process involves several departments including Bursary, Library, Hostel, and Security. Traditionally, students are required to physically visit each department for verification and approval. This manual approach is time-consuming, prone to errors, and lacks real-time tracking. With the increasing penetration of internet services and the need for digital transformation in educational institutions, an online clearance portal presents a timely and effective solution.

## II. PROBLEM STATEMENT/ JUSTIFICATION

The traditional manual clearance system can be time consuming, prone to error and inefficient, leading to frustration among students and staff. The process in use before now in Abia state college of education technical Arochukwu requires physical presence of students in the campus, resulting in congestion and delays. The manual paper work in use before now leads to increase work load to staff, errors and discrepancies. Moreover, physical documentations are prone to loss or damage, compromising students' records. This online clearance portal system addresses these challenges by eliminating physical present requirement, reducing congestion and waits, automating manual processes, decreasing staff workload, and minimizing errors. Ensuring accuracy and consistency in students' record as well as providing secure and reliable digital storage for students' documents. By implementing the online clearance portal system, ASCETA now comfortably streamlines its clearance process, and improve overall efficiency, ultimately benefiting both students and staff. The current clearance system at ASCETA is paper-based and involves physical interactions between students and administrative departments.

Challenges observed include:

- Long queues and wait times
- Possibility of document loss
- Lack of real-time status tracking
- Limited communication between students and departments
- Risk of human errors and unauthorized manipulation

## III. OBJECTIVE OF THE PROJECT

The following are some of the objectives of designing and implementing of students' online clearance system portal for Abia state college of education technical Arochukwu:

1. To automate the clearance process. Reduce manual paper work and minimize errors.
2. To improve students' experience: provide user friendly and convenient way for student to manage their clearance requirement.
3. To increase efficiency, streamline the clearance process, reducing waiting time and increase productivity.

4. To enhance transparency and accountability, provide a clear and accessible record of clearance status for staff and students.
5. To reduce workload: automate task, freeing staff to focus on other important responsibilities.
6. To improve record keeping: provide a secure and reliable storage for clearance record.
7. To facilitate communication: enable automatic notification and updates, ensuring students and staff are informed throughout the clearance process.
8. To increase accessibilities: allow students to access the portal from anywhere, reducing the need for physical present on campus.
9. To reduce cost: minimize paper usage and reduce the need for physical infrastructure.

To enhanced institution reputation: demonstrate ASCETA commitment to innovation, technology and students' satisfaction. The primary objectives of this project are:

- To design an online portal for student clearance
- To implement secure authentication for students and staff
- To allow document uploads and automated status tracking
- To enhance transparency and communication
- To reduce clearance processing time

By achieving the above objectives, the online clearance portal will significantly improve the clearance process, making it more efficient, accurate and user friendly for all parties involved.

## IV. LITERATURE REVIEW

The design and implementation of an online clearance portal system for Abia state college of education technical Arochukwu (ASCETA) is a crucial aspect of modernizing the institution's administrative processes. Research has shown that manual clearance processes are often time consuming, prone to error and inefficient (Oladipo & Odetunmbi 2017).

Studies have highlighted the benefits of online clearance system, including improved students' satisfaction, increase efficiency and reduce workload for staff (Adeyinka & Adewale 2015). Online portal also provides real-time update and notifications, enhancing transparency and accountability (Ojo & Ajayi, 2018).

However, challenges such as technical issues, data security concern, and user acceptance have been identified as potential barriers to the successful implementation of online clearance system (Bello & Oloyede 2018)

To address these challenges, researchers recommend a user -centered design approach, robust security measure, and adequate training of staff and students (Akitunde & Oloruntoba, 2020). By designing and implementing an effective online clearance portal system, ASCETA can enhance its administrative processes, improve students' experience, and maintain a competitive edge in education sector.

The use of digital platforms to streamline administrative processes in higher education has gained momentum globally. Several studies affirm the effectiveness of automation in reducing bureaucracy and improving service delivery. For instance, Okon and Effiong (2019) emphasized that digital student management systems reduce institutional workload and eliminate repetitive tasks, especially in clearance and registration workflows.

In the Nigerian context, Adebayo and Ogundele (2018) noted that the adoption of ICT in higher institutions is still evolving, with challenges including inadequate infrastructure and resistance to change. However, where adopted, such systems have improved institutional efficiency significantly.

Similarly, Nwachukwu et al. (2021) discussed the design of clearance systems in polytechnics, highlighting user experience and security as key factors in adoption. The research proposed modular architecture and role-based access as best practices — strategies adopted in the current ASCETA portal.

Internationally, the University of Cape Town's eServices platform has been cited as a model for African institutions. It integrates academic, financial, and clearance services into a unified platform accessible by all stakeholders.

The reviewed literature supports the need for ASCETA to transition to a digital clearance platform. The system design reflects best practices and incorporates features that address both technical and operational challenges highlighted by prior researchers.

## V. METHODOLOGY

The methodology adopted in this work is system analysis and design. The choice of system analysis and design is because it would help in studying Abia state college technical Arochukwu (ASCETA) to identify its clearance problems with the intention of developing a technical solution that will fulfil the clearance requirements through better methods and procedure then integrates the technical solution in the clearance process.

The incremental model is the approach adopted for the system development. This will deliver a series of release called 'increments' that provide progressively more functionality for the user as each increment is delivered. This model applies linear sequence in a staggered fashion as calendar time progresses. Each linear sequence produces deliverable 'increment' of the software. The increment model helps in establishing a system project plan that is, the overall list of the processes of developing and maintaining the system.

Microsoft-Access form is use to enter data in the program (project). After the designing of the program (input, output and system), the coding of the system is carried out using VBA. A hybrid of Agile and waterfall is adopted in the project because of its complexity and requirement specifications. Moreover, the following tools are employed: Asana, Trello or Jira for project management; React, Angular or Vue.js for front-end frame work, while Node.js, Django or flask for back-end frame work. Before the implementation of the project into operations, a test run of the system is carried out to remove all bugs, if any after modifying the whole program of the system, a test run is carried to run on a given number of students. The project is modular in nature as this help in fast development, maintenance and future change if required.

### Basic Features of the Portal

For students:

- Login / Registration
- Submit Clearance Request
- View Clearance Status (Pending, /Approve/Rejected)
- Upload Document (Optional)

For Admin (bursary, Library, Hostel, Security)

- Login
- View Student Clearance Request
- Add comments if needed

**System Design and Architecture** The system follows a client-server architecture:

- Frontend: Developed using HTML, CSS, and JavaScript with Bootstrap for responsive UI.
- Backend: Built on Flask (a Python microframework).
- Database: MySQL stores user data, clearance records, documents, and logs.
- Authentication: Flask-Login handles login sessions and role management.

**User Roles:**

- Students: Register/Login, Submit clearance request, Upload documents, Track status
- Administrators (Bursary, Library, Hostel, Security): Login, View requests, Add comments, Approve/Reject requests

**Implementation** The portal was implemented with the following features:

- User Registration/Login: Secure authentication with role-based access.
- Clearance Request Submission: Students can request clearance with optional document upload.
- Status Tracking: Status shown as Pending, Approved, or Rejected per department.
- Comments: Admins can provide feedback or request clarification.

**Tech Stack**

Part	Option
Frontend	HTML CSS, JAVASCRIPT (Bootstrap)
Backend	Python (Flask)
Database	MYSQL
Authentication	Flash-Login

**Output /** The result for the design and implementation of online clearance portal system for ASCETA include:

1. Automated processes: streamline and efficient process reducing manual paper work and minimizing errors.

2. Better record keeping: Secure and reliable storage of clearance records, with easy access for future reference.
3. Competitive advantage: ASCETA positions itself as a leader in educational technology adoption, enhancing its reputation and attractiveness to prospective students.

These results contribute to a more efficient, effective, and students-centered clearance process at ASCETA. Results and Testing Initial testing was conducted with a sample set of students and administrative staff. The results indicated:

- 80% reduction in processing time
- Zero incidents of document loss
- Improved satisfaction among users

Transparent tracking of request status

## CONCLUSION

The implementation of the online clearance portal at ASCETA marks a significant step toward digitalizing student administrative services. It addresses inefficiencies in the manual system and provides a scalable model for other institutions. Future enhancements may include integration with payment systems, mobile access, and automated notifications.

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