

Final Year Design Project Proposal

Educational System

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by

Sahab Imdad	080766
Azza Atta	080765
Noor Imdad	080750

Hazrat Ayesha Siddiqa Model Degree & Commerce College, Lahore
BS Information Technology
University of the Punjab, Lahore, Pakistan
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Nexus Lead
A Role-Based Digital Platform for College Administration and Teachers

1. Abstract of the proposal

Nexus Lead is a mobile application developed for colleges and universities to help administrators and teachers manage all academic and administrative tasks digitally in one place. It replaces traditional paper-based work with a smart and efficient digital system.

Through Nexus Lead, **Admins** can manage teachers, students, classes, timetables, teacher attendance, teacher leaves, teacher deadlines (such as reports, results, or other assigned tasks), student attendance, student leaves, marks and result reports, college events, day officers, fees, funds, fines, and student deadlines related to fee submissions or other financial matters.

Teachers can mark their own attendance, apply for leave, take student attendance, student leave notification, upload student results, view timetables, check assigned deadlines, view college events, and receive day officer notifications.

The application is developed using **Flutter** for Android devices and integrated with **Firebase** for secure data storage, real-time synchronization, safe login authentication, and instant notifications. All data shared by admins and teachers through **Nexus Lead** is automatically displayed in a separate **Nexus Learn** app designed for students. This ensures smooth, fast, and paperless communication between college staff and students.

Overall, Nexus Lead helps **Hazrat Ayesha Siddiqa Model Degree & Commerce College, Lahore** to save time, improve communication, and move toward complete digital transformation.

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2. INTRODUCTION

Background:

In many colleges and universities, teachers and administrators still depend on paper for daily tasks. Attendance is written in registers, results are stored manually, and parents are informed through calls or notices. This causes issues like missing data, delayed updates, and communication gaps.

With Nexus Lead, all such tasks — attendance, results, timetables, fees, and events — can be managed in one digital system. It makes academic work faster, more accurate, and eco-friendly.

Problem Statement:

Currently, college administrators do not have an integrated app to manage staff and students in real time.

Attendance, leaves, events, and timetables are updated late, and managing day officer duties is difficult. Teachers also struggle to manage attendance, results, and student records effectively. **Nexus Lead** addresses these issues by providing a single, easy-to-use app that connects admins and teachers seamlessly with real-time updates.

Stakeholders & Interests:

- **Admin:** The main head he can manage teachers, students, classes, timetables, teacher attendance, teacher leaves, teacher deadlines, student attendance, student leaves, marks and result reports, college events, day officers, fees, funds, fines, and student deadlines related to fee submissions or other financial matters.
- **Teachers:** They can mark their own attendance, applying for leave, taking student attendance, student leave notifications, uploading student results, viewing timetables, checking assigned deadlines, viewing college events, and receiving day officer notifications.
- **Students:** Their attendance, results, fees, fines, timetables, and related deadlines managed properly and updated regularly for easy access. So parents and the college can check easily.
- **College Management:** Gains a reliable, time-saving digital system that improves transparency and record-keeping.

Market Size: The app is primarily designed for **Hazrat Ayesha Siddiqah Model Degree & Commerce College, Lahore**, where it can be used by admins and teachers to manage all academic activities efficiently.

Objectives:

- Give **admins full control** over teacher, student, class, and event management.
- Enable teachers to handle attendance, results, timetables, and deadlines **digitally**.
- Record attendance using **GPS** and **timestamp**.
- **Notify** users instantly about events and **deadlines**.
- Manage fee (**paid/unpaid**) and fine records automatically.
- Secure login using **Firebase Authentication**.
- Connect the admin and teacher data with the **Nexus Learn app** for students, ensuring smooth communication.
- To support **Hazrat Ayesha Siddiqah Model Degree & Commerce College, Lahore** in saving time and achieving digital transformation.

Scope:

- **Admin Panel:** Add, edit, and delete teachers, students, classes, timetables, fees, fines, events, leaves, and day officer duties.
- **Teacher Panel:** Mark personal attendance, take student attendance, upload results, view timetable, and check deadlines, see events, and forward student leave requests.
- **Attendance:** Recorded with exact time and GPS to avoid errors.
- **Events:** Created by admin and sent as notifications to teachers and students.
- **Fees & Fines:** Managed by admin as paid or unpaid.
- **Leave Management:** Students request → admin approves or rejects →teachers notify.
- **Security:** Role-based login for admin and teachers.
- **Cross-Platform:** Works on Android; uses Flutter and Firebase for secure data storage, real-time updates, authentication, and notifications.
- **Student Integration:** All admin and teacher data is automatically shared with the **Nexus Learn app** for students.

3. LITERATURE REVIEW

Related Work:

Some education apps, like **PGC**, exist but have limited features. Apps such as **School Manager** or **Teacher Attendance Tracker** let teachers mark attendance but cannot manage fees, events, or leaves. Student portals may show results but do not allow real-time communication between admins, teachers, and students. Most apps work on a single platform and do not provide a complete solution. **Nexus Lead** solves these problems by combining attendance, results, leaves, fees, events, notifications, and student updates in a single mobile app.

Gap Analysis:

Current **education apps** and college management systems are limited and cannot handle all tasks in one place. Most of them:

- **Only manage** attendance or results, not fees, events, or leaves.
- Do not allow **real-time communication** between admins, teachers, and students.
- Lack features like **GPS-based attendance**, instant notifications, and day officer management.
- Often work on only one platform (Android or iOS) and still rely partly on **paper-based work**.

How Nexus Lead fills the gaps:

- Combines all academic and administrative tasks in a **single mobile app**.
- Provides **real-time** updates, notifications, and GPS attendance.
- Ensures **smooth communication** between admins, teachers, and students.
- Works fully on Android and integrates with **Firebase** for secure data storage and synchronization.

Sample References (for MS Word):

- Smith, J., & Brown, L. (2020). *Mobile Apps in Education: Attendance and Performance Tracking*. Journal of Educational Technology, 15(3), 45-58.
- Kumar, R., & Singh, P. (2019). *Digital College Management Systems: Challenges and Opportunities*. International Journal of Computer Applications, 182(2), 12-20.
- Lee, H., & Park, S. (2021). *Real-time Notification Systems for Schools and Universities*. Education Technology Review, 10(1), 33-40.
- Fernandez, A., & Gomez, R. (2018). *Limitations of Single-Platform Educational Apps*. International Journal of Mobile Learning, 7(4), 25-32.

3. FYDP OVERVIEW

FYDP Title: Nexus Lead: Educational Mobile Application for H.A.S.M.D.C Administration and College Teachers

Sr. No	Roll Numbers	Name	Signatures
1.	080766	Sahab Imdad	
2.	080765	Azza Atta	
3.	080750	Noor Imdad	

Table 1 Project Proposal Summary

FYDP Goals

Help the college show student information in a modern digital way

Make sure student data updates in real time.

FYDP Objectives

Create separate dashboards for Admin and Teachers with role-based access.

Allow adding, editing, and deleting students, teachers, classes, and events

Include GPS attendance and real-time notifications.

Manage fees status (paid/unpaid), leaves, and day officer duties efficiently

Improve communication and make data clear for the admin, teachers, and students

FYDP Success Criteria

Admin and teacher dashboards work with all main features..

Secure login with role-based access.

Attendance, results, and events sync in real time using Firebase.

Assumptions:

All users have smartphones and the internet.

The college will provide correct student and teacher data.

Firebase services will stay available.

Risks & Obstacles

Accuracy depends on teachers/admin entering data correctly

Internet problems can affect real-time updates.

Some staff may be slow to adopt new technology.

Organization Address: FCIT, University of the Punjab, Lahore, Pakistan

Target End Users: College Administration and Teachers

Suggested Project Supervisor: Miss Ayesha Ejaz

Approved By:

Date: October 07, 2024

4. TOOLS, LIBRARIES AND TECHNOLOGIES WITH REASONING

Table 2 Tools Technologies and Libraries

Tools, Libraries, And Technologies	Tools	Version	Rationale
	Flutter	Latest Stable	Cross-platform development for Android
	Dart	Latest Stable	Programming language for Flutter; easy and efficient
	Firebase Firestore	Latest	Real-time database, secure and scalable
	Firebase Authentication	Latest	Secure login for parents and students
	Android Studio	Latest	IDE for development and debugging
	UI/UX Design Figma	Latest	Create and prototype app interfaces, user-friendly design, collaboration

5. WORK DIVISION

Clear work division among group members to be shown

Table 3 Project Team Members Work Division

Sr. No	Roll Number	Name	Role Assignment & Work Division
1.	080766	Sahab Imdad	Admin Panel management
2.	080750	Noor Imdad	Teacher Panel management
3.	080765	Azza Atta	UI/UX Design, Documentation, Testing.

6. REFERENCES

1. **Flutter Official Documentation.** <https://flutter.dev/docs> – Guide to develop apps for Android.
2. **Firebase Firestore Documentation.** <https://firebase.google.com/docs/firestore> – How to store and manage data securely with real-time updates.
3. **Firebase Authentication Documentation.** <https://firebase.google.com/docs/auth> – Guide to create secure logins and manage users.
4. **Research on Educational Apps.** Studies on digital educational apps and their impact on student learning and teacher efficiency.
5. **Books on Flutter & Dart.** Step-by-step guides to build mobile applications using Flutter and Dart.
6. **Online Courses with Certificates:**
 - **Udemy:**
 1. Courses on Flutter app development
 2. UI/UX design.

- **Simplilearn:**
 1. Courses on UX design
 3. Figma
 2. Project management, Flutter.
- **Coursera:**
 1. Courses covering UI/UX
 2. Canva design principles,
 3. Flutter development.
- **Alison:**
 1. Courses on Flutter.