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Original Article

MediTalker: Transforming Medicine Text into Speech

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Abstract

The primary goals of the website are to streamline the process of scheduling meetings, encourage honest feedback from students, provide teachers with valuable insights to enhance their teaching methods, and offer administrators data-driven analytics to optimize educational practices. In addition to these features, the website will also incorporate an attendance module, allowing educators to efficiently track and manage student attendance. The system includes functionalities such as a meeting scheduler, anonymous feedback submissions, personalized profiles, notifications for upcoming meetings and feedback, resource sharing, and a comprehensive analytics dashboard for data insights. The attendance module will enable real-time tracking of student participation, offering insights into attendance patterns and facilitating easy management for teachers and administrators. The development process follows an agile approach, encompassing stages such as requirement gathering, design and prototyping, development, testing, and deployment. Overall, the website offers a holistic solution to improve teacher-student interactions, manage attendance, and refine feedback processes, fostering a more engaging and supportive learning environment.

Keywords: *Mentoring, feedback system, meeting scheduler, attendance management, data-driven analytics, educational platform, student-teacher interaction, agile development, personalized profiles, real-time attendance tracking.*

Introduction

Mentoring plays a pivotal role in student development, offering guidance and support throughout their academic journey. To improve the efficiency of mentor-student communication and academic planning, we have developed a Mentoring, Planning, and Feedback System (MPFS). This web-based platform automates various aspects of academic management, such as attendance tracking, feedback provision, and academic planning.

The MPFS is developed using modern web technologies, including HTML, CSS, JavaScript, PHP, and MySQL for the backend. These technologies allow the system to handle real-time data management and provide interactive features that simplify mentor-student collaboration. The platform is hosted on a secure server, ensuring that user data remains protected while facilitating easy access for students and mentors alike.

- ***HTML (Hypertext Markup Language)***

HTML is the standard markup language used to create and structure content on the web. It forms the backbone of web pages by defining the elements that make up the structure, such as headings, paragraphs, lists, images, and links. HTML tags serve as the building blocks of web content, providing a basic layout for how a page should appear in the browser. Every web page is written in HTML, making it a fundamental technology for web development.

- ***CSS (Cascading Style Sheets)***

CSS is a stylesheet language used to control the presentation and layout of HTML content. While HTML structures the content, CSS defines how it should look such as specifying fonts, colors, spacing, and positioning. CSS helps create visually appealing web pages and enhances user experience by allowing developers to control the design aspect of a website. It also allows for responsive design, enabling web pages to adjust their layout based on the device or screen size.

- ***JavaScript***

JavaScript is a dynamic programming language used to add interactivity and behavior to web pages.

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It enables features like form validation, content updates without page reloads (via AJAX), animations, and real-time data processing. JavaScript works with HTML and CSS to create responsive and interactive user interfaces, providing a better experience for the user. JavaScript is essential for modern web development, and frameworks like React, Angular, and Vue.js are built on top of it to facilitate more complex applications.

- **PHP (Hypertext Preprocessor)**

PHP is a server-side scripting language designed for web development. It is used to create dynamic content that interacts with databases, manage user authentication, and handle form submissions. PHP is embedded within HTML and executes on the server to generate web pages based on user input or database queries. It is widely used because of its flexibility, ease of integration with HTML, and compatibility with databases like MySQL. PHP powers a large portion of the web, including popular content management systems like WordPress.

- **MySQL**

MySQL is a relational database management system (RDBMS) used to store, organize, and retrieve data for web applications. It allows for efficient management of large volumes of data through structured tables, queries, and relationships between different data points. MySQL is often used in conjunction with PHP to build dynamic web applications where data needs to be stored and manipulated, such as user accounts, product catalogs, or student records. Its popularity comes from being open-source, reliable, and scalable.

These technologies work together to build robust, dynamic, and interactive web applications. HTML provides the structure, CSS styles the content, JavaScript adds interactivity, PHP handles server-side logic, and MySQL manages data storage. This combination allows for the creation of full-stack web applications, including systems like the MPFS.

Methodology:

The development of the MPFS follows an iterative methodology, focusing on creating a robust, scalable, and user-friendly system. Below is a breakdown of the key stages of development:

a) Architecture Design

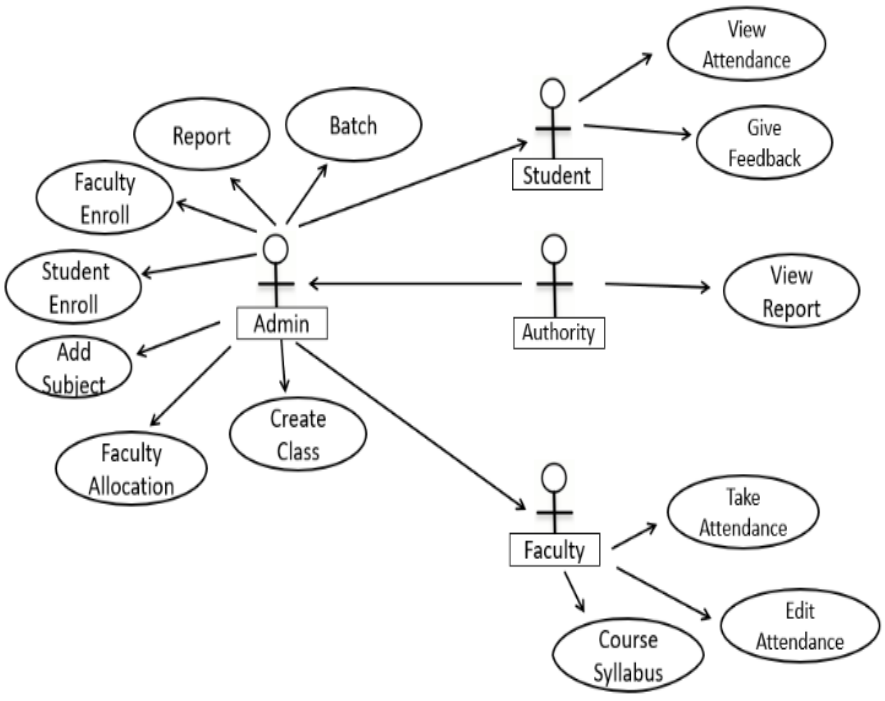


Fig 1: Block Diagram for MPFS

b) System Design and Architecture

The system is designed as a web-based application, divided into three core modules:

- **Mentoring Module**: Allows mentors to schedule meetings, track student performance, and communicate feedback.
- **Planning Module**: Enables students to plan their academic tasks and goals, ensuring alignment with mentor expectations.
- **Feedback System**: Provides real-time feedback on academic performance and tracks progress over time.

c) Technology Stack

a) **Frontend**: HTML, CSS (without external libraries), and JavaScript form the frontend, delivering a responsive and intuitive user experience.

b) **Backend**: PHP is used for server-side scripting, while MySQL is chosen for database management due to its reliability and scalability.

c) **Integration**: The frontend and backend are integrated to ensure smooth data flow, enabling students and mentors to interact in real-time.

d) Data Flow and Storage

- The system stores user data in a relational database. Student information, mentor details, and academic records are maintained in different tables, ensuring data integrity.
- Attendance is tracked through a dedicated system linked to the academic planner, allowing students and mentors to monitor class participation and performance.

1. Admin Login:

- Upon successful registration, the admin receives a confirmation email and is directed to the login page.
- After logging in, the admin gains access to administrative functionalities such as user management, system configuration, and data management.
- The admin can view and manage user accounts, including approving or rejecting faculty and student registrations, resetting passwords, and updating user information.
- Additionally, the admin can configure system settings, manage roles and permissions, and perform administrative tasks such as backup and maintenance.

2. Faculty Login:

- Upon logging in, faculty members access features tailored to their roles, such as managing courses, recording attendance, and grading assignments.
- Faculty members can create and manage their profiles, including updating contact information.
- They can also communicate with students, post announcements, and participate in discussions related to courses they teach.

3. Student Login:

- Upon logging in, students gain access to student-specific functionalities such as viewing course schedules, checking the attendance, checking grades.
- Students can update their profiles, including personal information, contact details, and academic records.

e) *Testing and Validation*

- The system underwent multiple rounds of testing, including functionality testing, usability testing, and security testing. The validation process involved mentors and students using the platform to ensure that all components were working as intended.

Benefits of the Project

The MPFS offers numerous benefits, which can significantly enhance the educational experience for both students and mentors:

- *Improved Communication*

The system provides a streamlined communication channel between mentors and students. Messages, feedback, and meeting schedules are all managed through the platform, eliminating the need for manual communication methods.

- *Efficient Attendance Tracking*

Attendance is tracked automatically, allowing mentors to monitor student participation in real-time. This feature ensures transparency and accountability in academic activities.

- *Personalized Academic Planning*

Students can plan their academic goals and activities in consultation with their mentors. The system provides tools for setting milestones and deadlines, which can be adjusted based on student progress and mentor feedback.

- *Real-Time Feedback*

Mentors can provide immediate feedback on student performance, helping students address academic issues before they escalate. Feedback is stored within the system, allowing both students and mentors to refer back to it when necessary.

- *Progress Monitoring*

Both mentors and students can track academic progress over time. The system generates reports that help mentors identify areas where students may need additional support.

Applications

The MPFS can be applied in a wide range of educational settings, including:

- ***Higher Education Institutions:***

The system can be used in universities and colleges to streamline mentor-student interactions, track attendance, and improve academic planning.

- ***Corporate Training Programs:***

MPFS can be adapted for use in corporate mentorship programs, where mentors guide employees through training and skill

development.

- ***K-12 Schools:***

The system can also be used in schools to track student progress, communicate with parents, and support academic success through personalized mentoring.

Key Components of Mentoring, Planning and Feedback System (MPFS) Architecture

1. **User Management Module**

This module handles the registration and authentication of users, ensuring secure access.

- **Features:**
  - Role-based access control (RBAC).
  - Secure login for admin, student, and administrators.

2. **Mentorship Management Module**

This module facilitates mentor-mentee pairing and tracking.

- **Features:**
  - Assigning mentors to mentees based on criteria (e.g., skillset, experience).
  - Setting mentorship goals and milestones.
  - Recording meeting schedules and discussion points.

3. **Planning Module**

This module focuses on creating structured plans for achieving specific goals.

- **Features:**
  - Task planning with deadlines and priorities.
  - Milestone tracking for mentees' progress.
  - Calendar integration for scheduling.
  - Notifications and reminders.

4. **Feedback Management Module**

This module collects, processes, and analyzes feedback.

- **Features:**
  - Feedback forms or questionnaires with rating systems.
  - Evaluation restrictions (e.g., based on class, subject, or faculty).
  - Real-time feedback collection during or after mentorship sessions.
  - Displaying feedback summaries with rating legends:
    - 5 = Strongly Agree
    - 4 = Agree
    - 3 = Neutral
    - 2 = Disagree
    - 1 = Strongly Disagree.

5. **Data Storage and Management Module**

This module handles the storage and retrieval of system data.

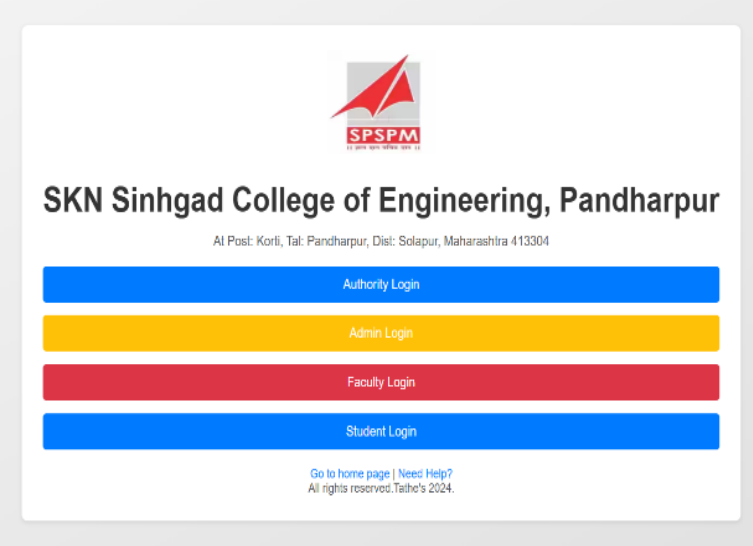
- Components:
  - Database: Stores mentorship records, feedback, plans, and user details.

6. **Reporting Module**

This module generates comprehensive reports to evaluate the system's effectiveness.

- **Features:**
  - Mentee progress reports.
  - Mentor performance evaluation reports.
  - Feedback analytics reports.
  - Export functionality (e.g., PDF, Excel).

Result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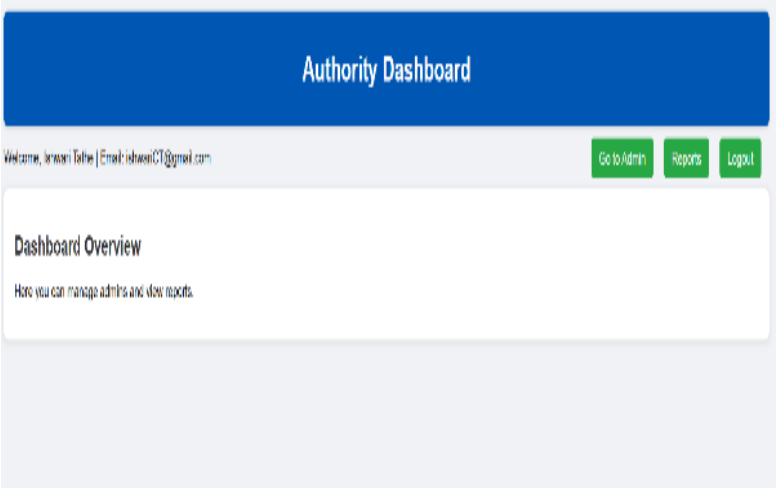
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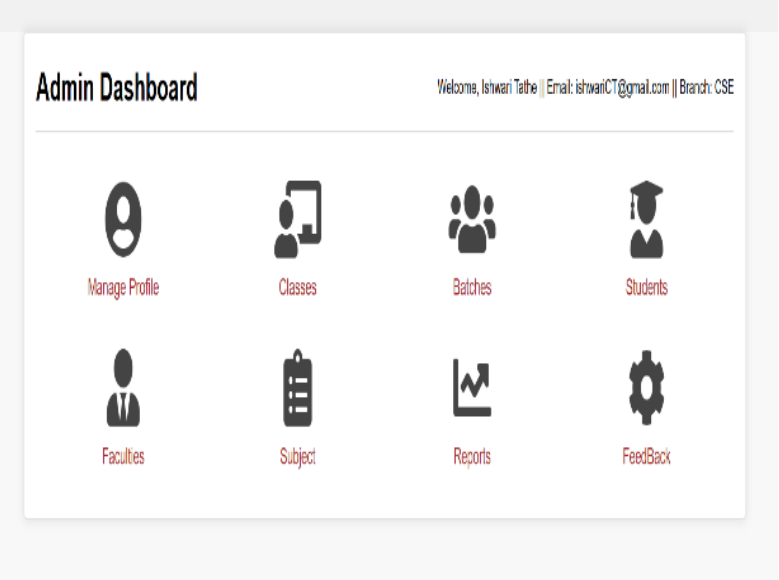
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Batches
Students
Faculties
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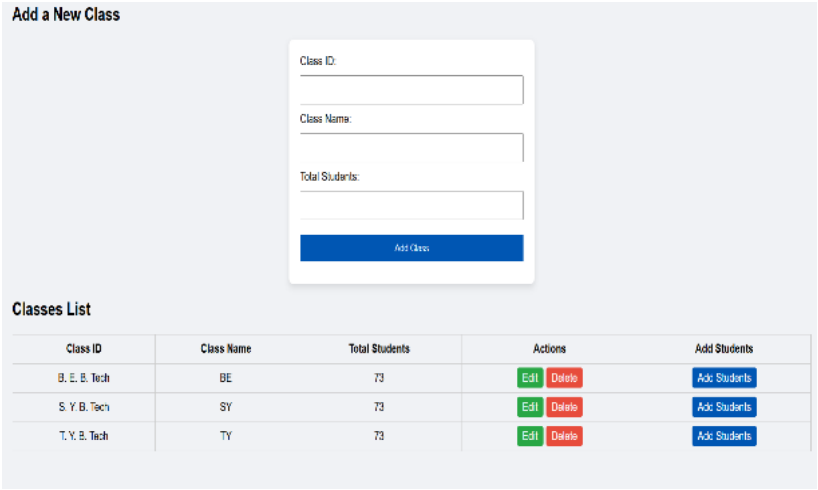

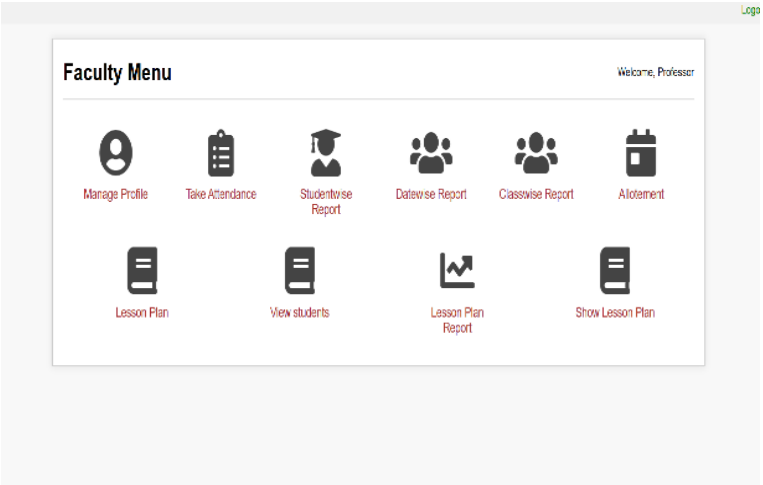

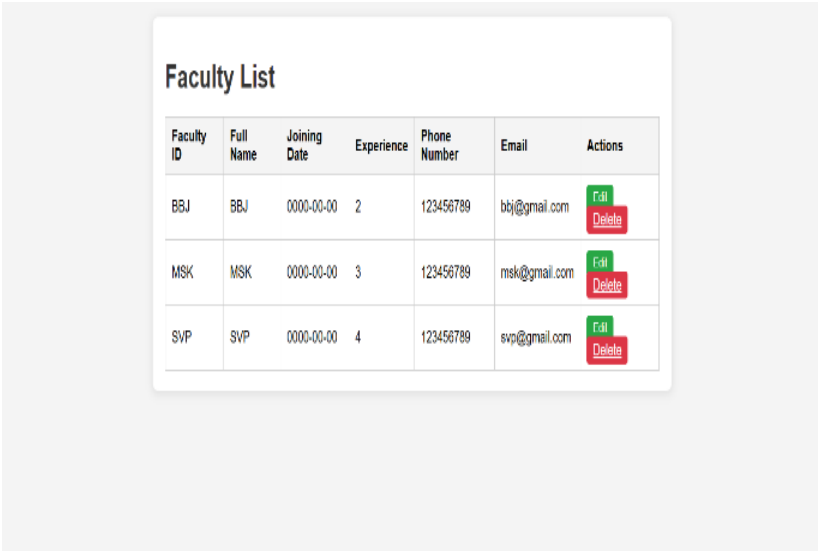

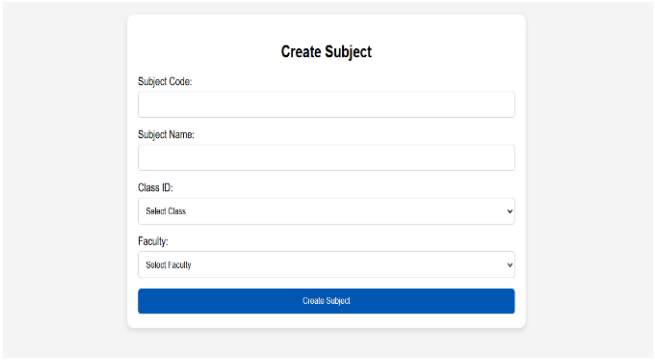
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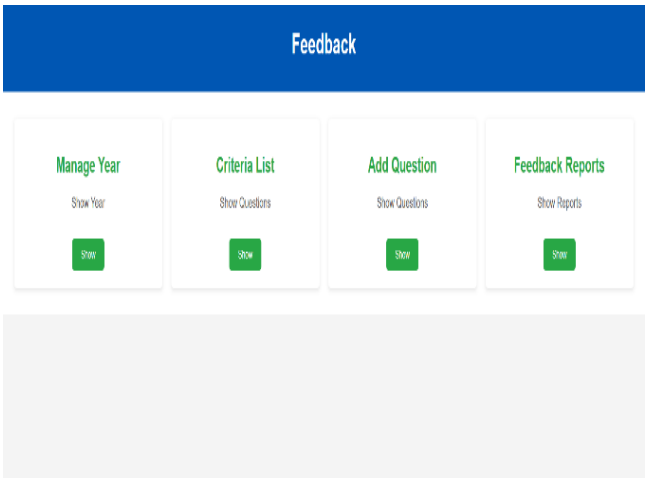
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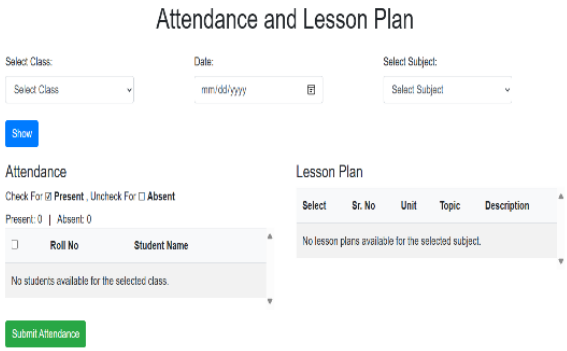
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Date:
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Attendance
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Present: 0 | Absent: 0
Roll No
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No students available for the selected class.
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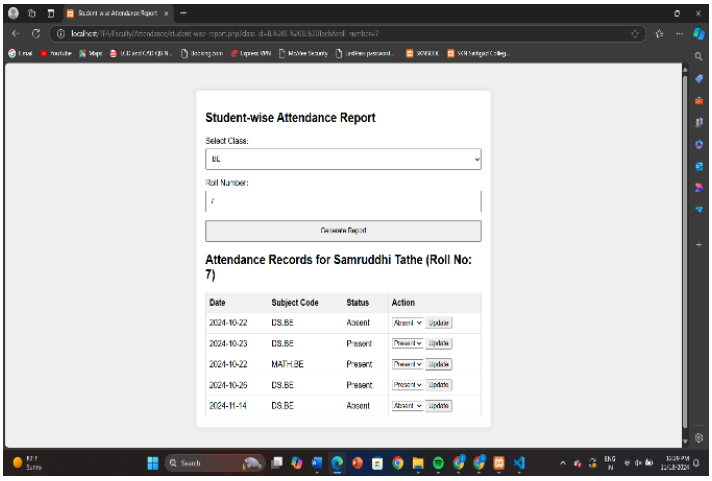
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Roll Number:
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Attendance Records for Samruddhi Tathe (Roll No: 7)
Date
Subject Code
Status
Action
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DS.BE
Absent
2024-10-23
DS.BE
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2024-10-22
MATH.BE
Present
2024-10-25
DS.BE
Present
2024-11-14
DS.BE
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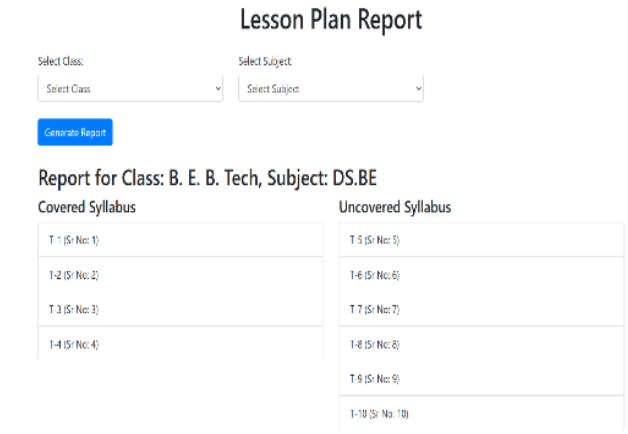

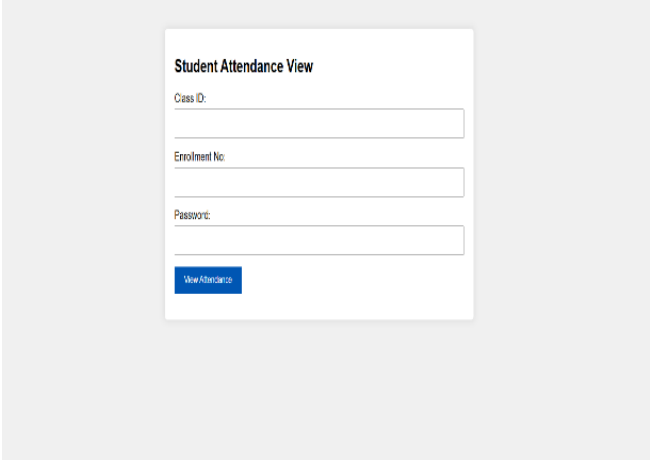

Results and Analysis

During testing and deployment, the MPFS proved highly effective in enhancing mentor-student interactions. The system was implemented in a pilot study with a group of 50 students and 10 mentors. The results showed significant improvements in communication, with mentors reporting that they could provide feedback more efficiently and that students were more engaged in academic planning.

- **Attendance Tracking:**

Mentors noted that the automated attendance tracking feature reduced the administrative burden of manually monitoring student participation. This feature was especially useful in larger classes where keeping track of attendance manually is time-consuming.

- **Feedback System:**

Mentors appreciated the real-time feedback system, which allowed them to address academic issues promptly.

- **Student Engagement:**

Student engagement improved, with 80% of students using the platform actively for academic planning and receiving feedback.

Conclusion

The Mentoring, Planning, and Feedback System (MPFS) is a comprehensive tool designed to improve mentor-student interaction, facilitate academic planning, and provide timely feedback. The system offers a digital platform that simplifies attendance tracking, academic planning, and communication. It enhances student accountability, increases mentor efficiency, and supports overall academic success. As we look to the future, the MPFS can be further enhanced with additional features such as automated notifications and AI-driven academic recommendations to better support student success. Beyond mere automation, the innovative scope of the project encompasses adaptive learning analytics, proactive dropout prevention, and potential integration with emerging technologies. This multifaceted approach underscores the system's potential to revolutionize attendance tracking and contribute to broader advancements in educational technology.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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