



## Feasibility Study Report

## Table of Contents

1.	Title
2.	Abstract
3.	Keywords
4.	Description of the Project
5.	Previous Works
6.	Project Scope and Contributions
7.	Technical Feasibility
8.	Risk Analysis
9.	Work Plan/Schedule
10.	Suggested Deliverables
11.	Other Details
12.	Reference

## **Document Revision History**

Not Applicable

## **Group Members Details**

Manav Singh, 123302002, CS-A (02)  
B.Tech Computer Engineering

Faaris Quamar, 123302003, CS-A (02)  
B.Tech Computer Engineering

# **ABSTRACT**

## **CLASSROOM MANAGEMENT SYSTEM**

A well-equipped classroom tool to help establish a platform between students and teachers. Instead of a traditional app to upload and submit assignments, this platform provides an integrated student support system to assist whenever students require on-the-spot help.

Students will be able to interact with the teacher regarding any doubts or messages. This facilitates seamless interaction between the students and the teacher.

Students will have a homepage from which they can navigate between their channels. In each channel, there will be sections for notes, assignments, tests, doubts, messages, and attendance.

One of the main functionalities of the app is going to be the integration of an artificial intelligence model. In case of any difficulties, the built-in AI support tool will be ready to assist.

### **Keywords**

CMS - Classroom Management System

AST - Artificial Intelligence Support Tool

DWM - Dual Window Mode

Group - A closed space with restricted access to members, notes, assignments, etc.

## Description

There are many classroom management systems available in today's world. However, they are usually limited to the simple back-and-forth of information and assignments. They serve as a means of online communication between the students and the teacher and are most widely used to assign and receive classwork.

These existing applications are meant to replicate a real classroom where a student completes their work and submits it to the teacher, who can further grade the submissions. However, one key element missing in the current arrangement is the on-the-spot help from the teacher, in case a student is unable to understand a concept or finish their work. The lack of direct support in such systems leaves the expected results far behind that of an actual classroom.

The main focus of this new CMS (Classroom Management System) is to integrate modern technology to simulate a similar support situation for any student who requires help completing their work. Using integrated AI, the student may ask and clarify any doubts or issues they may be facing. Students will also have the ability to use Dual Window Mode (DWM) which will allow them to refer to their own or uploaded notes.

The AI Support Tool will work in a unique way. Students will not always have access to the AST. Instead, it will be available based on a timer system which can be set by the teacher. The teacher can also choose which assignments have the AST enabled or disabled.

## How the AI Support Tool will work -

1. Student opens assignment
2. Timer set by the teacher starts
3. Student works on completing the assignment.
4. Student may refer to uploaded notes by using DWM.
5. If the student is still working on the assignment when the timer runs out, the AST will be active and available.
6. Student may or may not choose to use the AST for assistance.
7. If the AST is used, a dialogue box will pop up to enter any question. The AI model will give an accurate but incomplete answer.
8. The clues and hints given in the AI's answer will help the student complete the assignment and submit it.
9. The teacher will be able to see when the AST was used, what questions were asked, what answers were provided, and other duration-related metrics.

Teachers will have a dashboard to which only they have access. This will include regular reports regarding all students in the group, planned assignments/notes, important dates, etc. When reviewing a student's submitted assignment, they will be able to see-

1. When/where the AST was used.
2. Duration of assignment pre-AST usage.
3. Duration of assignment post-AST usage.
4. Total duration to complete the assignment.
5. If the student used DWM to refer to notes.

## **Previous Works**

Currently, there are many CMS applications used in the education sector. The 3 leading CMS applications are -

1. Google Classroom
2. Microsoft Teams
3. EduClassrooms

All three have similar operational models and features, with the exception of built-in virtual classrooms in Google's CMS.

These applications have a role-based access system, a closed space model for privacy and security, and single window views when opening any page/section. They provide open chats in their classrooms/channels to facilitate seamless communication within the class. Teachers may upload a range of multimedia into a dedicated storage space with easy access. Work may be assigned with due dates, instructions, uploaded material, marking systems, etc. Teachers have a separate login to access their accounts, which allow them to have administrative control and customizable metrics.

So far, these are the leading features which are sought out by schools and organizations as tools alongside traditional schooling methods.

## Project Scope and Contributions

Most apps offering online classroom management services are simple and efficient, yet lack the vital component of timely doubt clarification without having to use external sources such as search engines, websites, etc. While having an assignment/page open, a user cannot refer to any other material or section at the same time. All leading classroom management applications face such limitations.

**Objectives:** Develop a CMS that addresses on-the-spot doubt clarification and assistance. Streamline educational processes by providing easy access to notes, assignments, visual reports, etc.

**Benefits:** Timely assistance outside working hours, data-driven insights, predictive analytics, ability to view multiple student resources at once.

**Constraints:** Minimal budget (free/low-cost applications/integrations), dependency on third-party cloud storage, network connectivity required.



## Technical Feasibility

Based on past projects, experiences, and organizational constraints (not applicable) this project is feasible under the following criteria-

1. Software Requirements
2. Development Resources
3. Platform Compatibility
4. Infrastructure and Hosting
5. Third-Party Integration Capabilities
6. Performance and Optimization
7. Budget Alignment

Taking into consideration the above conditions, each category has been planned and possible options identified.

AI integrations using ChatGPT/Gemini, cloud-based storage with Google Drive API, and cross-platform compatibility are possible free/low-cost solutions that meet the criteria mentioned.

Frontend - ReactNative

Backend - NodeJS, ExpressJS, MongoDB

Version Control - Git/GitHub

# **Risk Analysis**

As per the model of the project, minor/major roadblocks may occur during -

1. Third-Party Integration (API Integration)
2. Cloud-Based Hosting

Integration of external AI into the project may be complex and is bound to pose issues while in the developmental phase. Over-reliance on the AST is an ethical issue that may pose a major threat to the core objective of the CMS. Given the budget constraints, finding a free/low-cost hosting service that also provides acceptable quality may be an issue.

As a contingency plan, the CMS model will be scaled down to a streamlined classroom support app which has the exact same functionality, without the AST. Having put the other features in front, the scaled down CMS will focus on native integration of material and notes with assignments. Feedback and visual reports will be a key function which will be focused on.

## Work Plan/Schedule

The overall plan will be divided into phases.

Phase 1	Identification and Planning/Design
Phase 2	Create base UI/UX with Groups and assignment system
Phase 3	Implement messaging, announcements, and visual reports.
Phase 4	Streamline access between materials/notes/assignments
Phase 5	Implement AST and DWM with teacher tools
Phase 6	Implement predictive analytics and Group metrics

## Suggested Deliverables

This includes core features and post-launch updates

- Role-based control
- Creation and management of Groups
- Tools and analytics for teachers to grade assignments
- Teacher-student messaging system
- Group-wide announcements and alerts
- Streamlined access between resources
- Visual reports and analytics for students
- Predictive analytics
- Group-wide metrics for teachers
- Artificial Intelligence Support Tool
- Dual Window Mode

## Other Details

Not Applicable

## Reference

[https://support.microsoft.com/en-us/office/what-s-new-in-microsoft-teams-d7092a6d-c896-424c-b362-a472d5f105de#PickTab=Desktop\\_and\\_web](https://support.microsoft.com/en-us/office/what-s-new-in-microsoft-teams-d7092a6d-c896-424c-b362-a472d5f105de#PickTab=Desktop_and_web)

<https://support.google.com/edu/classroom/answer/6020279?hl=en>

[https://en.wikipedia.org/wiki/Microsoft\\_Teams](https://en.wikipedia.org/wiki/Microsoft_Teams)

[https://en.wikipedia.org/wiki/Google\\_Classroom](https://en.wikipedia.org/wiki/Google_Classroom)

<https://focusedlabs.io/blog/ai-integration>