Software Requirement Specification

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Introduction

Purpose and Scope

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.

Definitions, Acronyms, and Abbreviations

Here is the list of keywords required to navigate throughout this report.

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.

Intended Audience and Reading Suggestions

This document will give an extensive technical overview to anyone involved in the development team. Developers will be able to understand the core fundamentals of what this project requires. Project managers will be able to visualize the responsibilities and processes required to efficiently lead the team. Marketing staff will have a clear idea about the specific functionalities they can target in marketing campaigns. Users and testers will have an expansive overview of the software in an easy-to-understand way.

Overall Description

Product Perspective

This enhanced classroom management system is a replacement for existing classroom management apps. This specific app takes existing features which are the current market trends and brings an enhanced implementation using embedded AI. The very core of this CMS is to provide an active classroom experience to students and much-needed tools to teachers. An easier-to-navigate UI is also an important pillar of this CMS, seeing as current management systems are not able to provide seamless navigation among sections of the application.

Product Functions

- AI Integration
- Teachers can set a timer for the students as to when they can start using the AI
- Students can use the AI model for getting help on their work
- Division into sections such as Notes, Tests, Homework, Assignments

Operating Environment

Hardware Requirements

- Memory greater than 2 GB
- Storage greater than 32 GB
- CPU speed above 1.5 GHz

Software Requirements

- Android 5.0 or later
- iOS 12 or later

General Constraints, Assumptions and Dependencies

This project is based mainly on file management of the students and teachers using Google Drive API and integration of an AI tool using its own API.

The Google Drive API might cause errors in the implementation as integrating it is a process of its own. Making it work with the software is also a major concern as this might change in future. Developers might be tempted to use another file management system like AWS of Microsoft Azure.

The AI model API is also going to cause some problems while development. The student must get an answer that is not complete and to do this another algorithm will have to be developed which will cost some effort to the developers. It will not be causing any serious problems as it is just an API call but limiting the answer is not an easy process.

Specific Requirements

External Interface Requirements

User Interfaces

- Dark Mode interface to eye stress on students
- All fonts will be in Comic Sans
- All buttons will have images
- A navigation bar on top with profile icon and a search icon\

Hardware Interfaces

None

Software Interfaces

- Google Drive API - This will be used to manage file storage onto the cloud. It will store the files when a user receives it and then they can access it using that particular link generated by the API.
- AI support API - This will be used to integrate the AI support system to help the students in their work. It will give an API call and then it will generate an answer limited to what is sufficient enough to help and not to answer the question as a whole.

Communication Interfaces

None

Functional Requirements

Functional Requirement #1

Purpose: To help the student in answering a question
Input: A question by the student
Output: A limited answer by AI.

This will help the students in answering the question only. It will not make the students completely reliant on AI. It will also help students understand an approach towards the question without providing them with too much information. This will enable critical thinking and encourage the students towards answering the questions on their own from next time onwards. It will also enhance their

problem solving skills rather than offering direct answers that bypass the learning process.

Functional Requirement #2

Purpose: To enable file storage
Input: Any file given by the teacher
Output: Storage and access from cloud

This will help in secure and reliable file storage and access through the cloud. It allows easy retrieval and sharing of educational material from the cloud. It also helps in scalability and flexibility with various file sizes while maintaining the true integrity of the file which can be accessible by both students and teachers.

Nonfunctional Requirements

Maintainability

This focuses on the system such that it can be easily updated, modified and expanded with the most minimal effort and cost input. It includes writing clean code, building proper documentation and designing the system such that in the future, developers can easily understand the code and make their own changes without disrupting what already is implemented.

Security

This focuses on protecting a particular user's own data from any sort of vulnerabilities like data breaches. It means implementing the best authorization and authentication measures to ensure that only the particular user can have their own personal data. Security not only protects user data but also builds trust between the end user and the developers.

Design and Implementation Constraints

Placing a limit to the answering capacity of the AI support tool is a design and implementation consideration that aims at improving the learning experience. Since students are limited to reading short texts, which are less than two hundred words, the system encourages them to interact with content more efficiently and stimulates their reasoning processes. This limitation also goes a long way in avoiding information overload as students get to process the information read and think through it without the 'heavy' feeling. It also responds to the best practices in education by creating a situation where learners can go out of their way to find answers, ask probing questions and make their own efforts in understanding. This limitation helps in order to ensure that there is

both guiding of the students and also giving the students the opportunity to control their learning.

Other Requirements

None

To Be Determined List

Not applicable