

Development of an AI-Assisted Mobile Application for Student Assignment and Task Management

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ABSTRACT

Students often manage multiple subjects, assignments, projects, and academic tasks at the same time. This can make it difficult to organize tasks, set priorities, remember deadlines, and monitor progress. Digital task-management tools can help students organize their academic responsibilities, while artificial intelligence can provide recommendations and planning support. This study aims to develop an AI-assisted mobile application for student assignment and task management. The application will allow students to organize assignments by subject, set due dates and priorities, monitor task status, create subtasks, and receive reminders. The AI component will assist students by suggesting task priorities and possible subtasks based on the information they enter. The study will use a developmental research design that focuses on the planning, design, development, testing, and improvement of the mobile application. Existing literature and related applications will be reviewed to identify appropriate features and requirements for the system. The developed application will undergo system testing to check whether its features work according to their intended functions. The expected output is a working mobile application that combines academic task management with AI-assisted support to help students organize their academic responsibilities, manage tasks, and monitor their progress in one place.

Keywords: *Artificial Intelligence, Mobile Application, Assignment Management, Task Management; Self-Regulated Learning.*

SECTION I — INTRODUCTION (THE PROBLEM AND ITS SETTING)

1.1 Introduction

Students commonly handle several assignments, projects, and academic tasks at the same time. Managing these tasks can become difficult when students have different due dates, priorities, and workloads. Digital task-management applications provide one way of organizing these responsibilities. Fontalvo et al. (2025) found that students using a digital task-management platform submitted assignments earlier and achieved higher final assessment scores than students using traditional methods.

Artificial intelligence has also become an emerging tool in education. Jin et al. (2023) found that students viewed AI applications as useful for supporting metacognitive, cognitive, and behavioral aspects of self-regulated learning. Afzaal et al. (2024) developed an explainable AI approach that provided feedback and recommendations to support students' self-regulation.

Based on these developments, this study proposes an AI-assisted mobile application focused on student assignment and task management. The AI will assist students by suggesting priorities and subtasks, while students will remain responsible for reviewing and deciding whether to use those suggestions.

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1.2 Background of the Study

Task management is an important part of student academic organization because students need to keep track of what they have to do, when tasks are due, and how much work each task requires.

Fontalvo et al. (2025) investigated the use of Trello in higher education and found that students using the platform submitted assignments an average of 3.5 days before deadlines compared with 1.5 days among the comparison group. The Trello group also obtained higher final assessment scores. These findings show that structured digital task management can support academic organization.

Digital study assistants provide another approach to supporting students. Karrenbauer et al. (2023) designed, developed, and evaluated an individual digital study assistant intended to support self-regulated learning, study organization, and goal achievement among higher-education students.

AI can extend this type of support by providing recommendations and feedback. Jin et al. (2023) found that AI applications may support students in different self-regulated learning processes. Afzaal et al. (2024) developed an explainable AI system that generated recommendations and feedback, and their evaluation found improvements in learning achievement and self-regulated learning skills.

König et al. (2024) further examined the development of individual digital study assistants and identified requirements related to personalized support, student organization, and self-regulation.

More recent reviews show that AI in education is increasingly used for personalization, adaptive support, recommendations, and self-regulated learning. Banihashem et al. (2025) mapped 84 studies on AI and self-regulated learning, while Luo et al. (2025) reviewed 63 peer-reviewed articles on AI-based learning tools in higher education.

These studies provide a basis for developing a mobile application that combines student task management with simple AI assistance.

1.3 Objectives of the Study

General Objective

To develop an AI-assisted mobile application that helps students organize, manage, and monitor their assignments and academic tasks in one place.

Specific Objectives

The study aims to:

- Identify the relevant features and requirements needed for an academic assignment and task-management mobile application through a review of related literature and existing applications.
- Design a simple and user-friendly interface for the mobile application.
- Develop features for adding, editing, viewing, and managing assignments and academic tasks.
- Implement subject-based organization, due dates, priority levels, task statuses, subtasks, reminders, and calendar or list views.
- Integrate AI-assisted features that can suggest task priorities and possible subtasks based on the information entered by the student.
- Test the developed application to determine whether its functions operate according to their intended requirements.
- Improve the application based on the results of system testing and identified technical issues..

1.4 Scope and Limitation of the Study

Scope

This study focuses on the development of an AI-assisted mobile application for student assignment and task management. The application will allow students to add, edit, view, and manage assignments and academic tasks. It will provide subject-based organization, due dates, priority levels, task statuses, subtasks, reminders, notifications, and calendar or list views.

The application will include an AI-assisted component that can suggest the priority of a task and possible subtasks based on the information entered by the student. Students will remain in control of the suggestions and may review or modify them before using them.

The development process will follow the Waterfall model, which will include requirements analysis, system design, development, testing, implementation, and maintenance. Related literature and existing applications will be reviewed to identify appropriate features and guide the development of the system.

Limitations

The study will focus on developing and testing the proposed mobile application and will not conduct a large-scale survey or quantitative study to measure changes in students' academic performance.

The application will not function as a complete Learning Management System. It will not provide automatic grading, online classes, video conferencing, or AI-generated answers to academic assignments.

The AI component will be limited to task organization and planning assistance, particularly task priority suggestions and subtask suggestions. It will not complete students' academic work or make final decisions for them.

The application may depend on internet connectivity for cloud-based services and AI functions, depending on the final implementation.

1.5 Significance of the Study

Students

The application may help students organize assignments, set priorities and due dates, divide large assignments into smaller tasks, monitor progress, and receive AI-assisted suggestions.

Teachers

The application may serve as an additional tool that encourages students to become more organized with their academic requirements.

Information Technology and Mobile Development

The study demonstrates the integration of artificial intelligence into a mobile application to address a practical academic problem.

Future Researchers and Developers

The study may serve as a reference for future development of AI-assisted academic task-management applications.

1.6 Definition of Terms

Artificial Intelligence (AI). Technology used to provide computer-based analysis, recommendations, or other forms of intelligent assistance.

AI-Assisted. The use of AI to provide suggestions while the user remains responsible for the final decision.

Assignment. An academic task or requirement given to a student.

Task Management. The process of organizing, prioritizing, monitoring, and completing tasks.

Subtask. A smaller activity that is part of a larger assignment.

Task Priority. The level of urgency or attention assigned to a task, such as Low, Medium, or High.

Mobile Application. Software designed to operate on a mobile device.

SECTION II — LITERATURE REVIEW

2.1 Introduction to the Review

The literature is organized into four themes: **digital task management and student organization; AI and self-regulated learning; AI recommendations and digital study assistants; and AI design, usability, and responsible use.**

2.2 Review of Related Literature and Studies

Digital Task Management and Student Organization

Fontalvo et al. (2025) examined the use of Trello as a digital task-management platform among 103 university students. The study reported that Trello users submitted assignments earlier than the comparison group and had higher final assessment scores. The study demonstrates how digital task organization can support academic work.

Karrenbauer et al. (2023) designed and evaluated an individual digital study assistant for higher-education students. The assistant was developed to support students' study organization, self-regulated learning, and goal achievement.

These studies support the basic task-management functions of the proposed application.

AI and Self-Regulated Learning

Jin et al. (2023) explored the use of AI applications for self-regulated learning. In their study, students perceived AI applications as useful for supporting metacognitive, cognitive, and behavioral regulation. The authors also emphasized the importance of considering students' individual characteristics and active participation when designing AI support.

Banihashem et al. (2025) conducted a systematic mapping review of 84 studies on AI and self-regulated learning. Their findings showed that AI is commonly used for adaptive systems, personalization, prediction, intelligent tutoring, and assessment to support students' self-regulated learning.

Guan et al. (2025) reviewed 27 studies on educational chatbots and found that chatbots mainly supported learning resources, learning strategies, and monitoring. However, the review found more limited support for goal-setting and creating learning plans.

These findings support the use of AI to assist students in organizing and monitoring their tasks.

AI Recommendations and Digital Study Assistants

Afzaal et al. (2024) developed an explainable AI approach that provided automatic feedback and recommendations to support students' self-regulation. The study found that the AI-generated recommendations positively affected student performance and supported self-regulation.

König et al. (2024) examined the development of individual digital study assistants and identified requirements for supporting students' organizational and self-regulation skills. Their study also showed the importance of iterative development and evaluation when creating digital study assistants.

Glick et al. (2024) examined AI-powered virtual-human training focused on planning and self-monitoring among STEM students. The study provides support for using AI-related assistance to strengthen planning and monitoring behaviors.

These findings support the proposed AI features for priority suggestions and subtask suggestions.

AI Tool Design and Usability

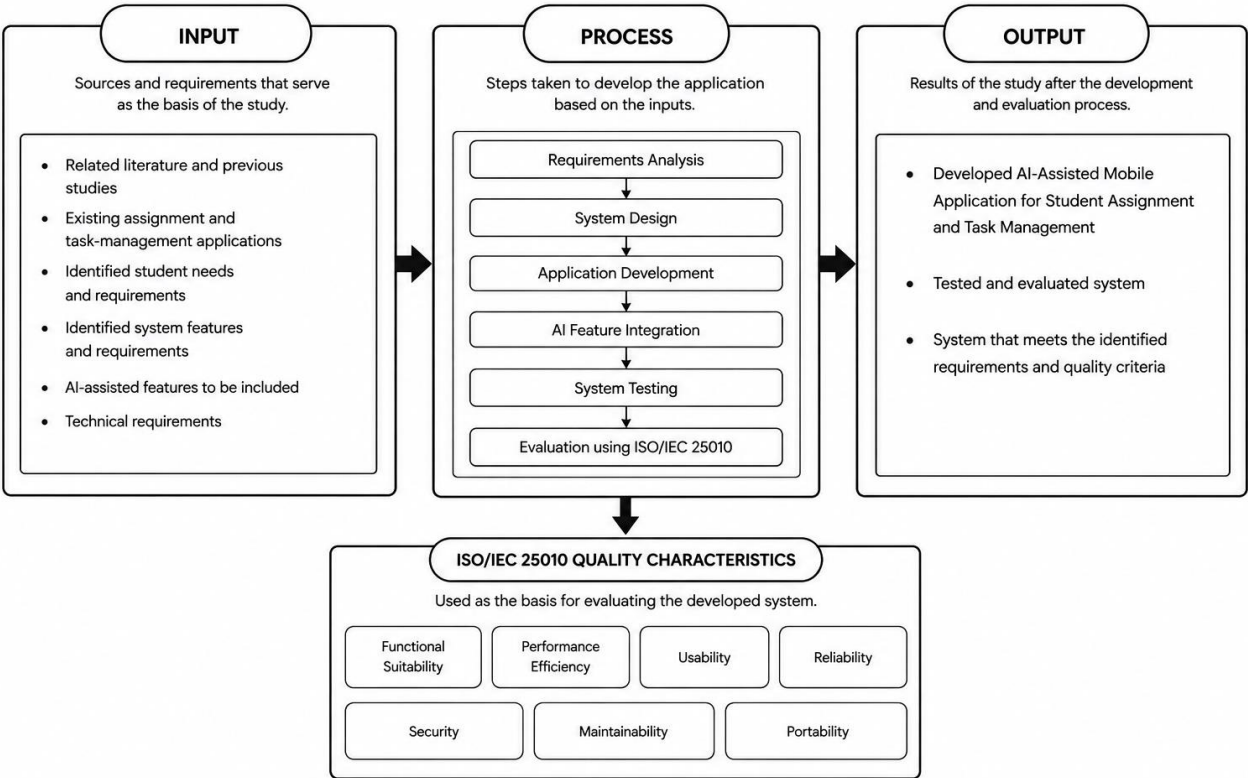
Luo et al. (2025) reviewed 63 peer-reviewed articles on AI-based learning tools in higher education. The review identified personalized feedback and recommendations as major roles of AI and emphasized that AI-based learning tools require appropriate design and implementation.

Von Garrel and Mayer (2024) studied more than 6,300 students and found that students valued AI tools that provide reliable information, error detection, transparency, and understandable reasoning.

These findings are relevant to the proposed application because AI-generated suggestions should be understandable and should remain under student control.

2.3 Conceptual Framework

The conceptual framework shows how the study uses related literature, existing applications, and identified requirements as inputs, which are processed through system development and evaluation using ISO/IEC 25010, resulting in the developed AI-assisted mobile application.



2.4 Synthesis

The reviewed studies show that digital tools can support students in organizing academic tasks and learning activities. Fontalvo et al. (2025) found positive outcomes associated with digital task management, while Karrenbauer et al. (2023) demonstrated the use of a digital study assistant to support student organization.

Recent AI research further shows that AI can provide recommendations, feedback, personalization, planning support, and monitoring. Jin et al. (2023), Afzaal et al. (2024), Banihashem et al. (2025), and Guan et al. (2025) demonstrate different ways AI can assist students' self-regulated learning.

However, the reviewed studies commonly focus on **digital study assistants, educational chatbots, general AI-supported learning, or general task-management systems**. There is less focus on combining assignment and task management with simple AI assistance specifically for students' everyday academic workload.

Therefore, this study addresses a **practical/knowledge gap** by developing an AI-assisted mobile application focused on student assignments and tasks, with AI features for priority suggestions and subtask suggestions.

SECTION III — METHODOLOGY

3.1 Research Design

This study will use a **Developmental Research Design**. The study focuses on the development of an AI-assisted mobile application for student assignment and task management. The developmental process will involve identifying the system requirements, reviewing related literature and existing

applications, designing the user interface and system structure, developing the application, integrating the AI-assisted features, testing the system, and making necessary improvements.

The study will focus on producing a functional mobile application rather than conducting a quantitative survey or measuring changes in students' academic performance. System testing will be performed to identify technical problems and verify that the application's features operate according to their intended requirements.

This research design is appropriate because the main purpose of the study is to develop a technological solution that addresses the problem of organizing and managing student assignments and academic tasks.

3.2 System Development Methodology

The study will use the **Waterfall Model** as the system development methodology. The Waterfall Model follows a structured and sequential development process where each stage is completed before moving to the next stage.

Requirements Analysis

The researchers will identify the requirements of the mobile application through a review of related literature, existing task-management applications, and the objectives of the study. The needed task-management and AI-assisted features will be identified during this stage.

System Design

The researchers will design the user interface, navigation, database structure, system architecture, and system flow. The design will serve as the guide for developing the application.

Development

The researchers will develop the mobile application based on the approved requirements and system design. The main task-management features, database, reminders, and other required functions will be implemented.

AI Integration

The AI-assisted features will be integrated into the application. These features will provide task priority suggestions and possible subtasks based on the information entered by the student.

Testing

The completed application will undergo system testing to identify errors and verify whether its features work according to their intended functions. The AI-assisted features will also be tested using different task information.

Implementation

After testing and necessary corrections, the completed application will be prepared for actual use in the intended environment.

Maintenance

Necessary corrections and improvements will be made when technical issues are identified after implementation.

3.3 Requirement Specification and Analysis

The system requirements will be identified through a review of related literature, existing task-management applications, and the objectives of the study. The application will allow students to

create and manage assignments, organize tasks by subject, set due dates and priorities, change task status, create subtasks, receive reminders, and view tasks through calendar and list views.

The AI component will provide:

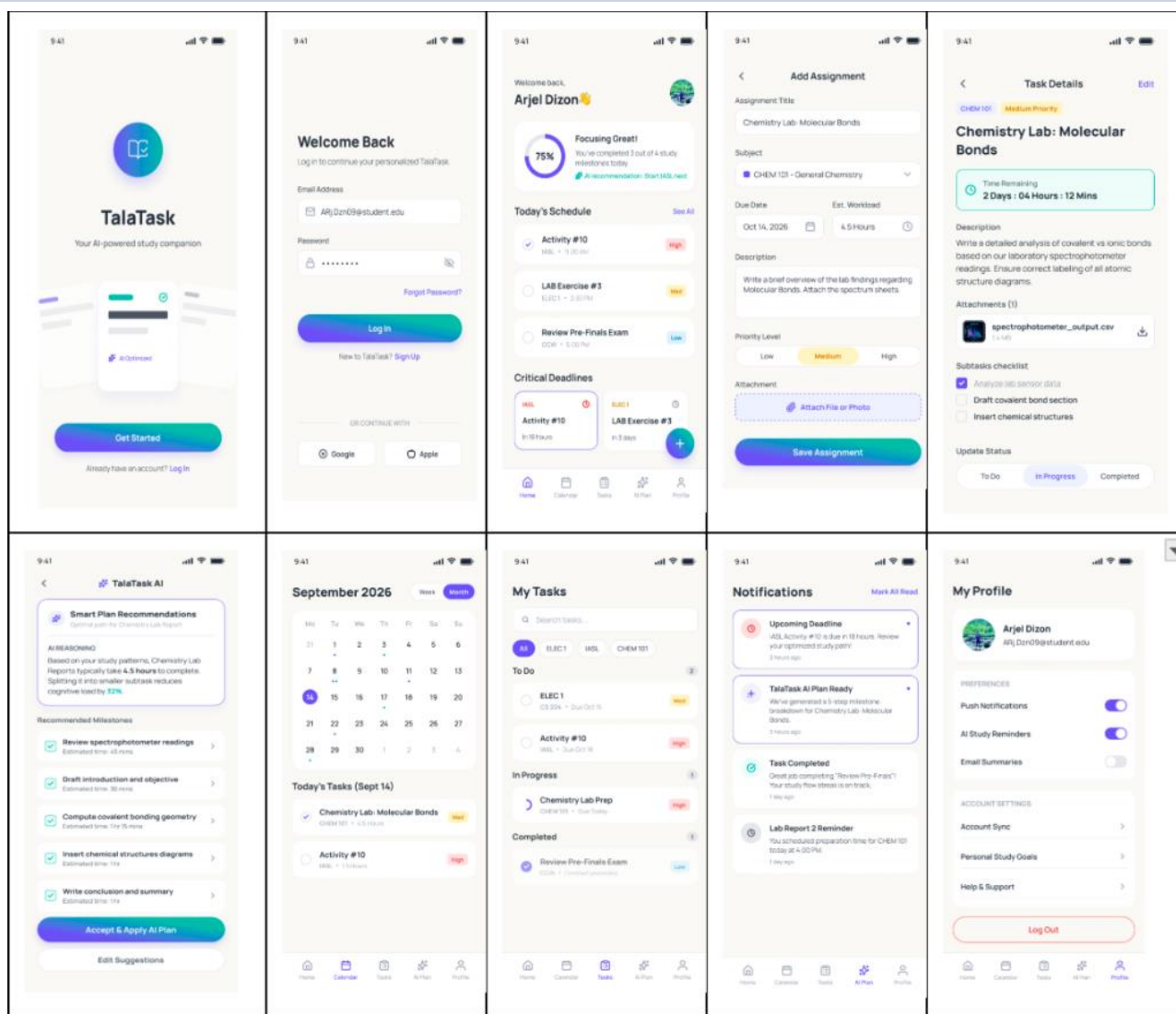
AI Priority Suggestion — suggests a Low, Medium, or High priority based on relevant task information such as the due date and workload.

AI Subtask Suggestion — suggests smaller steps that may help students divide a larger assignment into manageable tasks.

Student Control — allows the student to review and modify the AI suggestions before using them.

System requirements will be represented using appropriate diagrams such as use-case diagrams, flowcharts, Data Flow Diagrams (DFDs), and Entity-Relationship Diagrams (ERDs). The proposal format specifically identifies DFDs, ERDs, and flowcharts as appropriate tools for requirement analysis.

3.4 System Design Specification



3.5 Implementation

During implementation, the mobile interface, database, task-management modules, notification system, and AI-assisted functions will be integrated into the application.

Firebase Firestore can be used to store structured application data such as user accounts, subjects, assignments, deadlines, priorities, and task statuses. Firebase Cloud Storage can be used for uploaded files and photos.

The AI component will process relevant task information and return suggestions that students can review before saving. The implementation section follows the proposal guide's focus on code organization, database setup, and component integration.

3.6 Testing and Evaluation

The developed mobile application will undergo system testing to identify errors and verify that its features work according to their intended requirements.

The testing will focus on the following areas:

Functionality — checks whether the application's features perform their intended functions, such as adding assignments, setting due dates, changing task status, creating subtasks, and receiving AI suggestions.

Usability — checks the consistency, navigation, and ease of use of the application's interface during system testing.

Performance — checks the application's responsiveness, loading behavior, and operation of its main features.

The AI-assisted functions will also be tested using different task information to determine whether they provide appropriate task priority and subtask suggestions.

The results of system testing will be used to identify technical problems and guide necessary improvements. The final application will be reviewed to ensure that its main features operate as intended.

This approach focuses on system testing rather than conducting a student survey, which is consistent with the study's developmental purpose.

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