LearnLink: A Mobile and Web-Based Management Information System for Angelo Levardo Loyola Senior High School

A Capstone Project Proposal

Presented to the Faculty of the Information and Communications Technology Program
STI College Carmona

In Partial Fulfillment of the Requirements for the Degree Bachelor of Science in Information Technology

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May 16, 2025

ENDORSEMENT FORM FOR PROPOSAL DEFENSE

TITLE OF RESEARCH: LearnLink: A Mobile and Web-Based Management Information System for Angelo Levardo Loyola Senior High School

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In Partial Fulfillment of the Requirements for the degree Bachelor of Science in Information Technology has been examined and is recommended for Proposal Defense.

ENDORSED BY:

Rayven O. Ladaga

Capstone Project Adviser

APPROVED FOR PROPOSAL DEFENSE:

[Capstone Project Coordinator's Name]
Capstone Project Coordinator

NOTED BY:

Ar M. Puyong

Program Head

APPROVAL SHEET

This capstone project proposal titled ***LearnLink: A Mobile and Web-Based Management Information System for Angelo Levardo Loyola Senior High School***, prepared and submitted by **Sam Gerard B. Castillo, James John M. Manalo, Carlos S. Tigulo, and Ethan Red C. Acosta** in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology, has been examined and is recommended for acceptance and approval.

Rayven O .Ladaga
Capstone Project Adviser

Accepted and approved by the Capstone Project Review Panel

[Panelist's Name] **[Panelist's Name]**

[Lead Panelist's Name]
Lead Panelist

Noted:

[Capstone Project Coordinator's Name]
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[Program Head's Name]
Ar M. Puyong

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CHAPTER I

INTRODUCTION

1.1 Project Context

Education plays a vital role in shaping the future of students, yet many schools struggle with inefficient and outdated management systems. Schools often rely on traditional methods for organizing student data, including grades, schedules, and learning materials, leading to administrative challenges, miscommunication, and difficulty in tracking student progress.

To address these issues, LearnLink is a mobile and web-based management information system designed to help Angelo Levardo Loyola Senior High School efficiently handle student records, course schedules, assignment submissions, and communication between teachers and students. The system aims to provide an accessible, reliable, and user-friendly platform to streamline academic management while ensuring flexibility for students who may lack stable internet access.

Through the development of LearnLink, the school can improve efficiency, reduce manual workload, and enhance the overall learning experience. The system ensures that both students and teachers have real-time access to essential academic data, supporting a more organized and effective educational environment.

1.2 Purpose and Description

The primary purpose of LearnLink is to create a digital academic management platform that simplifies student information tracking, course management, and document sharing. The system will allow students to view their grades, schedules, and handouts, while enabling teachers to upload resources, manage student submissions, and communicate with students efficiently.

The relevance of LearnLink lies in its ability to modernize and improve school operations. With real-time access to academic data, students can stay informed about their progress, and teachers can manage their classes more effectively. By integrating a flexible and accessible system, the school can enhance the overall learning experience while minimizing the dependence on paper-based records.

1.3 Objectives of the Study

1.3.1 General Problem

How can Angelo Levardo Loyola Senior High School (ALLSHS) manage the organization and accessibility of its academic information effectively?

1.3.2 Specific Problems

- How can students easily access grades, handouts, schedules, and submit assignments online?
- How can administrators efficiently manage and disseminate academic materials and schedules?
- How can the system be optimized for areas with intermittent internet connectivity?

1.3.3 General Objective

By implementing an online academic management platform, Angelo Levardo Loyola Senior High School (ALLSHS) can effectively organize and provide easy access to its academic information, improving efficiency and overall school operations.

1.3.4 Specific Objectives

- To providing a user-friendly web-based portal where students can securely log in to view their grades, download handouts, check class schedules, and upload assignments.
- To enable administrators to upload, manage, and distribute academic content seamlessly.
- To integrate offline capabilities for certain features to accommodate users with unstable internet access.

1.4 Scope and Limitations

1.4.1 Scope

LearnLink will include the following features:

- **Student Dashboard:** View grades, schedules, handouts, and assignment statuses.
- **Assignment Submission:** Upload assignments directly through the platform.
- **Grade Viewing:** View official grades once released by the teachers.
- **Admin Portal:** Manage student records, publish schedules, and upload course materials.
- **Notifications:** Updates on assignment deadlines, grade releases, and announcements.
- **Mobile and Web Versions:** Access through both mobile apps and web browsers.

1.4.2 Limitations

- LearnLink will not handle online exams or quizzes initially.
- Internet access is required for full functionality, although some content (like previously loaded schedules and handouts) may be accessed offline.
- The system will initially focus only on ALLSHS and may not be immediately scalable for other institutions.

CHAPTER II

REVIEW OF RELATED LITERATURE AND STUDIES

2.1 Related Literature

International Studies

Learning Management Systems and Student Engagement (2022)

A studied titled "Student-centric Model of Learning Management System Activity and Academic Performance: from Correlation to Causation" (2022), authored by Varun Mandalapu, Lujie Karen Chen, Sushruta Shetty, Zhiyuan Chen, and Jiaqi Gong, and published as an arXiv preprint on October 27, 2022**,** delves into the intersection of digital learning behavior and academic performance. The research introduces a novel student-centric analytical framework that leverages Learning Management System (LMS) activity data to extract both correlational and causal insights from observational datasets. This framework is particularly significant as it moves beyond traditional correlation-based methods and attempts to establish a clearer causal relationship between LMS usage and student outcomes.

The study analyzed LMS activity logs from a total of 1,651 computing major students enrolled at a public university in the United States during the Fall 2019 semester. The researchers focused on metrics such as student login frequency and engagement with learning materials to understand how these behaviors impacted academic success. Their findings revealed a strong and consistent correlation between the volume of student login activity and academic performance. More importantly, through a robust causal analysis approach, they were able to demonstrate that frequent LMS activity was not just correlated with better grades, but could actually be seen as a contributing factor to improved academic outcomes—especially for students who were initially performing poorly.

This research highlights the critical role of LMS platforms in shaping student learning experiences and emphasizes the importance of encouraging regular engagement with digital

learning environments. By identifying patterns of behavior that lead to academic improvement, the study provides actionable insights for educators and institutions aiming to design more effective LMS-based learning systems. In the context of educational technology initiatives like the proposed LearnLink system, the findings from this study support the inclusion of features that promote consistent LMS interaction. Tools such as usage tracking, progress monitoring, timely feedback, and automated reminders can play a vital role in enhancing student performance by fostering sustained engagement. Overall, this national study reinforces the idea that thoughtful and data-driven LMS design can serve as a powerful driver of student success.

Model of Learning Management System Activity and Academic Performance from Correlation to Causation" (2022)

A study titled "Student-centric Model of Learning Management System Activity and Academic Performance: From Correlation to Causation" (2022) presents a pioneering approach to understanding the relationship between student engagement with Learning Management Systems (LMS) and their academic success. The study was conducted by Varun Mandalapu, Lujie Karen Chen, Sushruta Shetty, Zhiyuan Chen, and Jiaqi Gong, and was published as a preprint on arXiv on October 27, 2022. The research introduces a sophisticated analytical framework designed to extract both correlational and causal insights from LMS activity data.

The study focused on a dataset of 1,651 students majoring in computing at a public university in the United States during the Fall 2019 semester. These students' interactions with the university's LMS were tracked and analyzed—particularly login frequency and timing, which were used as key indicators of engagement. While previous studies have often established that LMS activity correlates with academic performance, this study went further by implementing causal inference techniques to explore whether LMS usage actively contributes to better academic results.

The findings revealed that not only is there a strong correlation between the frequency of LMS logins and students' final grades, but this login activity was also shown to have a causal impact on academic performance. The effect was especially significant among students who were underperforming or at risk of failing. This suggests that regular and consistent interaction with LMS platforms can help improve academic outcomes, particularly for those who are struggling academically. The study emphasizes that increased LMS activity—such as accessing learning

materials, checking announcements, and participating in discussions—directly supports student learning, engagement, and performance.

This research has substantial implications for educational institutions worldwide. It encourages a shift from merely tracking LMS usage to actively designing student-centric platforms that stimulate frequent engagement. Institutions are urged to implement LMS features such as reminders, visual progress trackers, and interactive modules to motivate students, particularly those who need additional academic support.

In relation to the LearnLink capstone project, the insights from this international study validate the importance of building an LMS-integrated academic management system that promotes frequent user interaction. By incorporating features such as mobile access, real-time updates, offline access, and personalized notifications, LearnLink aligns with the recommendations of this study. It acknowledges that digital learning tools are not only supportive aids but active contributors to student success, especially when designed to reinforce consistent academic behavior.

Ultimately, this study serves as a foundational reference for developing technology-driven, evidence-based educational tools that are both effective and inclusive, making it a critical piece of literature in the field of international educational technology research.

Local Studies

Google Classroom Adoption as Learning Management System in Senior High School Using Technology Acceptance Model (2023)

A study titled "Google Classroom Adoption as Learning Management System in Senior High School Using Technology Acceptance Model" (2023) was conducted by Albert Andry Echor Panergayo and John Vincent Callo Aliazas from the College of Teacher Education, Laguna State Polytechnic University, Philippines. The research was published in Jurnal Pendidikan Progresif, Vol. 13, No. 2, pp. 871–883, and can be accessed through the DOI 10.23960/jpp. v13.i2.202355.

The study delves into the adoption of Google Classroom as a Learning Management System (LMS) in a public senior high school in Laguna, Philippines. The primary objective of the research was to explore the factors that influence teachers' decisions to adopt and integrate

Google Classroom into their teaching methods. To do so, the researchers applied the Technology Acceptance Model (TAM), a widely recognized framework for assessing the acceptance and usage of new technologies.

One of the central focuses of the study was understanding the role of perceived ease of use, perceived usefulness, and online learning self-efficacy in the acceptance of Google Classroom. Perceived ease of use refers to how effortless teachers find the platform to use in their daily instructional tasks, while perceived usefulness evaluates how beneficial teachers believe Google Classroom is in enhancing the learning experience for students. Additionally, the study assessed online learning self-efficacy, which refers to the teachers' confidence in their ability to successfully engage with and use online teaching platforms.

Through these lenses, the research aimed to identify the factors that most strongly predict a teacher's likelihood to adopt and effectively use Google Classroom as an LMS. By understanding these factors, the study not only sheds light on the barriers and challenges teachers face when implementing LMS platforms in the classroom but also offers valuable insights on how these challenges can be addressed to ensure smoother and more widespread adoption.

The findings of this research are particularly significant in the context of the Philippines, where there has been a rapid shift toward digital and online learning, especially during and after the COVID-19 pandemic. With the increasing reliance on digital tools for education, the study offers critical insights into how educators in the Philippines perceive and utilize technologies such as Google Classroom, providing a deeper understanding of the factors that influence the successful integration of LMS systems in senior high schools.

This study is crucial in the ongoing efforts to improve the quality of education in the Philippines through technology. It highlights the importance of addressing both the technical and psychological aspects of technology adoption, ensuring that educators are not only equipped with the necessary tools but also possess the confidence and skills to use them effectively. The results also serve as a guide for educational policymakers and institutions looking to support teachers in the seamless integration of digital learning systems, ultimately contributing to a more engaging and effective learning environment for students across the country.

Challenges of Blended Learning: Navigating Educational Innovation" (2025)

The study titled **"Challenges of Blended Learning: Navigating Educational Innovation" (2025) was authored by José José Bravo Enriquez, Emilio José Medrano-Sánchez, José Coveñas Lalupu, and María Isabel Medrano-Sánchez**. This research, published on platforms like ResearchGate and Interciencia, offers a comprehensive and insightful analysis of the implementation challenges and opportunities that come with blended learning in contemporary education systems.

The researchers conducted an in-depth descriptive literature review of 36 articles, focusing on various aspects of blended learning. This approach allowed them to identify **ten key research** themes and fifty-two significant proposals that contribute to the ongoing discourse in educational innovation. The findings highlight a significant concentration of studies in areas such as the factors and benefits of blended learning, the impact on skill development, and the need for robust technological infrastructure to support the adoption of blended learning models.

Despite the progress made in the field, the study underscores the ongoing challenges in effectively implementing blended learning. Among the key issues highlighted are the **need for** further research on specific instructional strategies that blend face-to-face and online learning environments. Additionally, the study points out the importance of exploring perceptions regarding the use of digital platforms in education. The success of blended learning is also contingent on addressing the development of digital skills among both students and educators.

The authors argue that teacher training, digital curriculum planning, and the development of technology-based strategies are critical to the successful implementation of blended learning. Without these foundational elements, educational institutions may face difficulties in realizing the full potential of blended learning. This research provides valuable insights into the roles that educators, institutions, and policymakers must play in overcoming the barriers that hinder the widespread adoption of blended learning.

Moreover, the study emphasizes the necessity of continuous exploration and refinement of these topics to deepen the understanding and application of blended learning. The authors suggest that by improving the quality of research and focusing on the identified challenges,

educational systems worldwide can enhance their ability to integrate blended learning practices that are not only effective but also inclusive and adaptable to diverse student needs.

In conclusion, this study is a crucial contribution to the field of educational technology and blended learning, offering a well-rounded perspective on both the opportunities and challenges that come with incorporating digital learning strategies into traditional educational models.

2.2 Synthesis

Modern educational systems require flexible, accessible, and reliable platforms for academic management. Research indicates that mobile-ready and blended learning-friendly systems, like LearnLink, are essential for adapting to the needs of both urban and rural student populations. Offline capabilities, centralized management, and user-friendly design emerge as critical success factors.

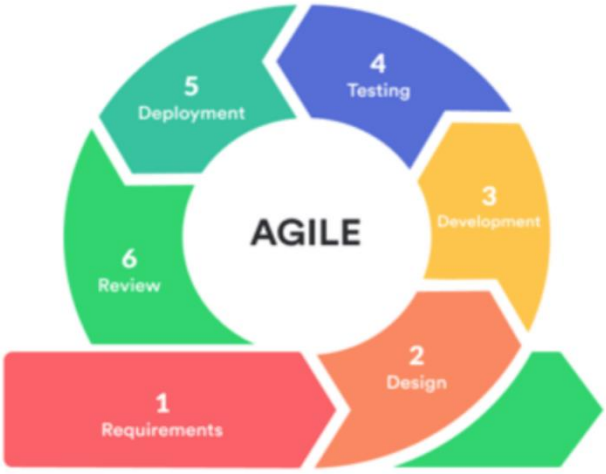
Chapter III

TECHNICAL BACKGROUND

3.1 Overview of Current Technologies to be Used in the System

3.1.1 Methodology of the Study

The Agile Software Development Life Cycle (SDLC) was adopted for this study due to its iterative, flexible, and user-focused nature. Traditional software development models, such as the Waterfall model, follow a linear and rigid sequence of phases that often do not accommodate changes once the project has begun. In contrast, Agile allows for continuous feedback and adaptive planning, which aligns well with the dynamic requirements of educational institutions and the evolving needs of students and administrators. Agile is particularly suitable for this study because the development of LearnLink (FlexEd) involves multiple stakeholder groups—students, teachers, and administrative personnel—each with different expectations and priorities. By using Agile, the development team was able to engage these stakeholders continuously throughout the project, ensuring that their feedback was rapidly incorporated into each iteration. This approach helped ensure that the final product was not only technically functional but also aligned with real-world user needs and practical workflows in the school environment. Furthermore, the Agile methodology promotes the delivery of working software at the end of each sprint.



3.1.2 Theoretical Framework

3.1.2.1 IT Theories

1. HTML - HTML was used to structure the content of the web-based platform. It defines the layout of pages such as login forms, dashboard panels, and schedule displays. As a standard language for web development, HTML ensures compatibility across all modern browsers.

2. CSS (Cascading Style Sheets) – CSS was used to style the user interface, providing a visually appealing and responsive design. It allowed the development team to create a consistent look and feel for both student and admin views, ensuring the platform is easy to navigate and user-friendly, even on mobile browsers.

3. JavaScript – JavaScript was implemented to add interactivity and enhance user experience. Features such as form validation, real-time updates, and dynamic content display (e.g., toggling between views or updating schedules without reloading the page) were made possible through JavaScript. It is a core technology for client-side web development and helps make the system more engaging and intuitive.

4. VS Code (Visual Studio Code) – VS Code was the primary code editor used during development. It offers a rich ecosystem of extensions for PHP, JavaScript, HTML, and MySQL. Its support for debugging, version control, and intelligent code completion significantly improved development efficiency and code quality.

5. PHP (Hypertext Preprocessor) – PHP served as the server-side scripting language, responsible for handling logic such as database queries, user authentication, data processing, and file uploads. Its compatibility with MySQL and ease of integration with front-end technologies made it ideal for building a dynamic and data-driven system like LearnLink.

6. XAMPP – XAMPP was used as the local development server environment. It includes Apache, PHP, and MySQL, allowing the team to test and debug the system locally before deployment. XAMPP is lightweight, easy to install, and suitable for student projects, making it a practical choice for development and testing without relying on external web hosting services.

1.1.2.2 Non IT Theories

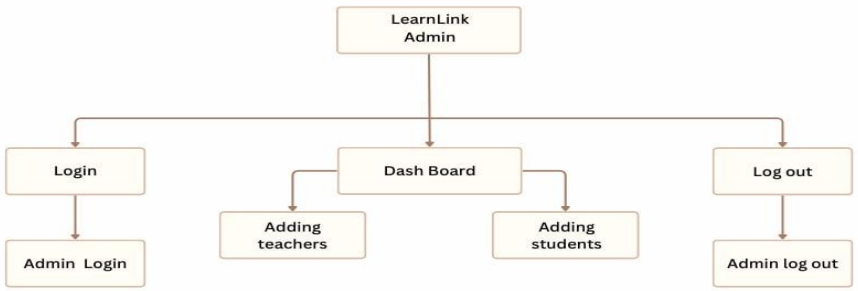
1. Teachers - are individuals who play a pivotal role in the educational process by facilitating the acquisition of knowledge and skills. They are responsible for planning, delivering, and assessing instruction, ensuring that students understand and retain the material being taught. Teachers also create a structured learning environment that nurtures the intellectual, emotional, and social development of their students. Beyond imparting academic content, teachers act as mentors, guiding students through challenges, promoting critical thinking, and fostering a growth mindset.

2. Students - are individuals who engage in a structured learning process, actively seeking to acquire knowledge, skills, and competencies across various subjects and disciplines. They participate in educational activities, both inside and outside the classroom, under the guidance of teachers and other educational professionals. Students are not passive recipients of information; they play an active role in their own learning journey by asking questions, collaborating with peers, and applying new knowledge to real-world situations.

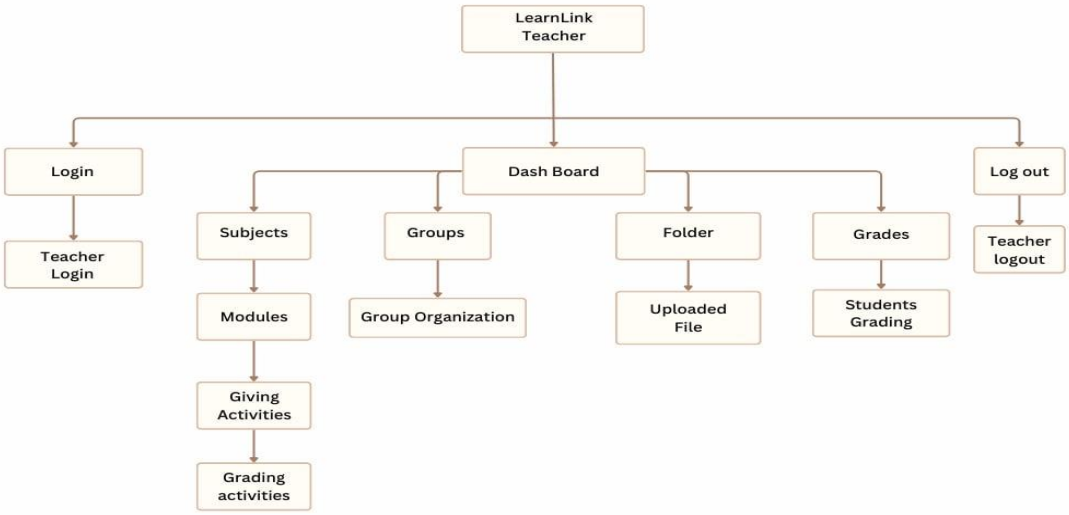
3. Books - refer to a collection of written, printed, or illustrated works that are bound together to form a cohesive whole. They serve as repositories of knowledge, ideas, stories, and information, often created with the purpose of educating, entertaining, or preserving cultural and historical records. Books can be composed of various formats, including texts, illustrations, photographs, and diagrams, and they are typically divided into chapters, sections, or volumes depending on the length and subject matter.

3.1.3 Hierarchy Chart

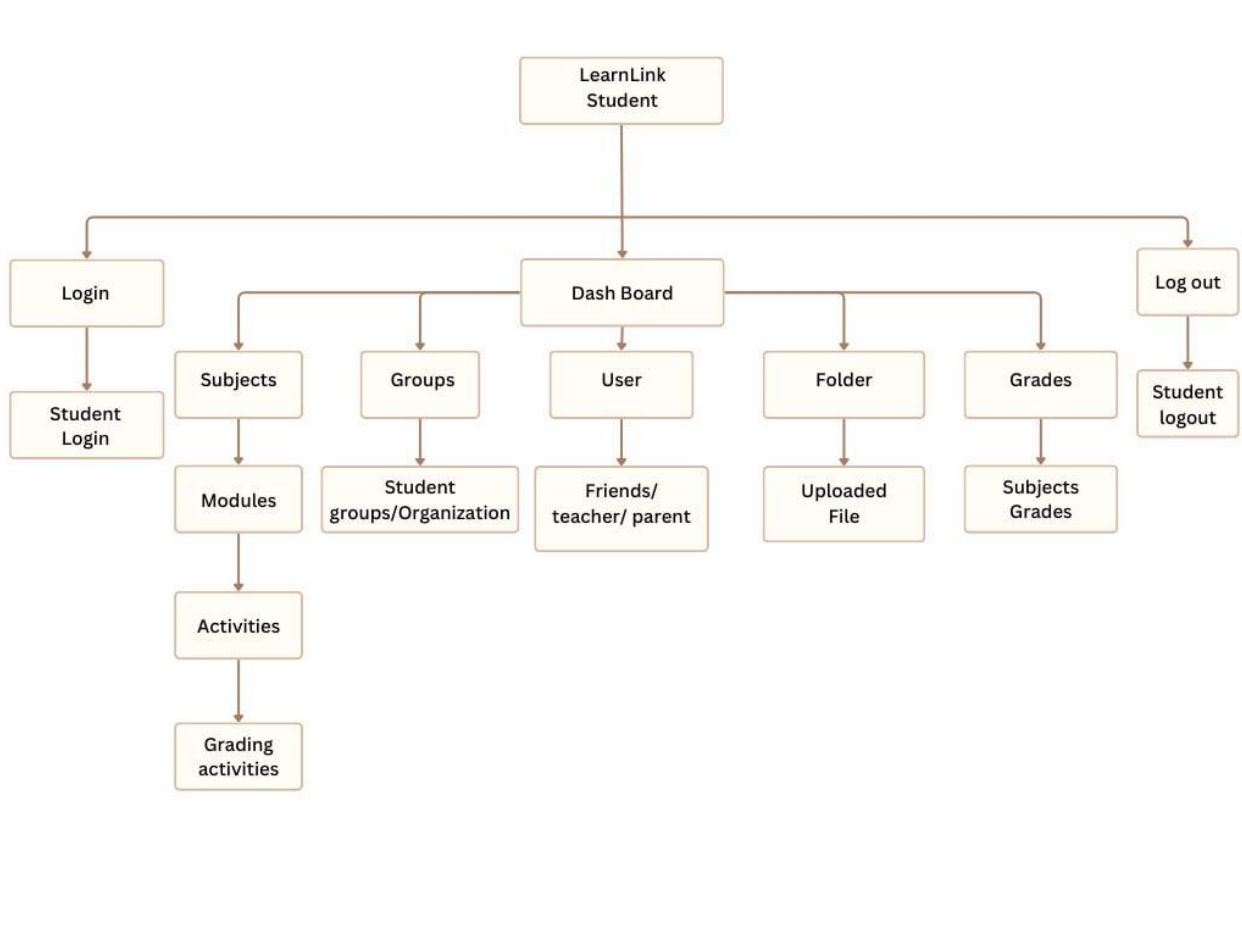
Admin



Teachers



Students



3.1.4 Data Flow Diagram

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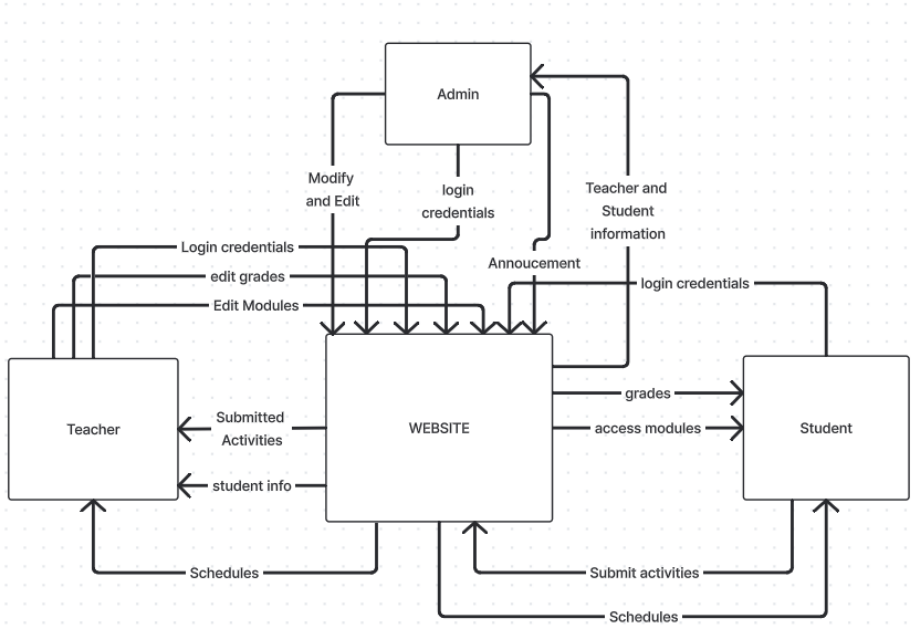
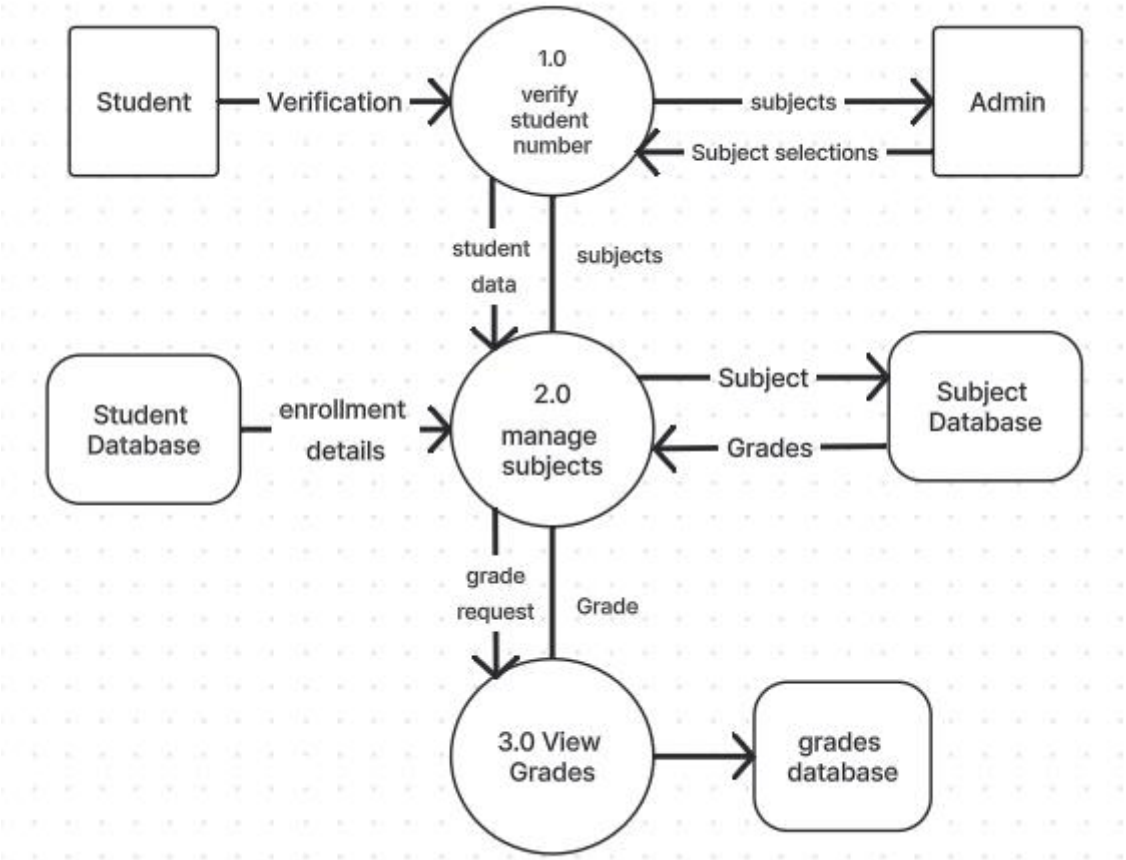
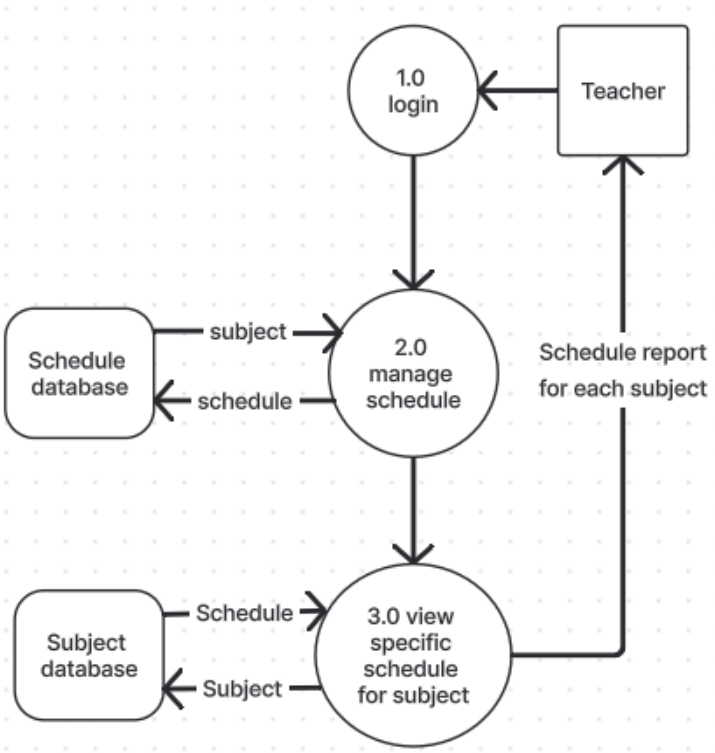


Level 1 Student



Level 1 Teacher



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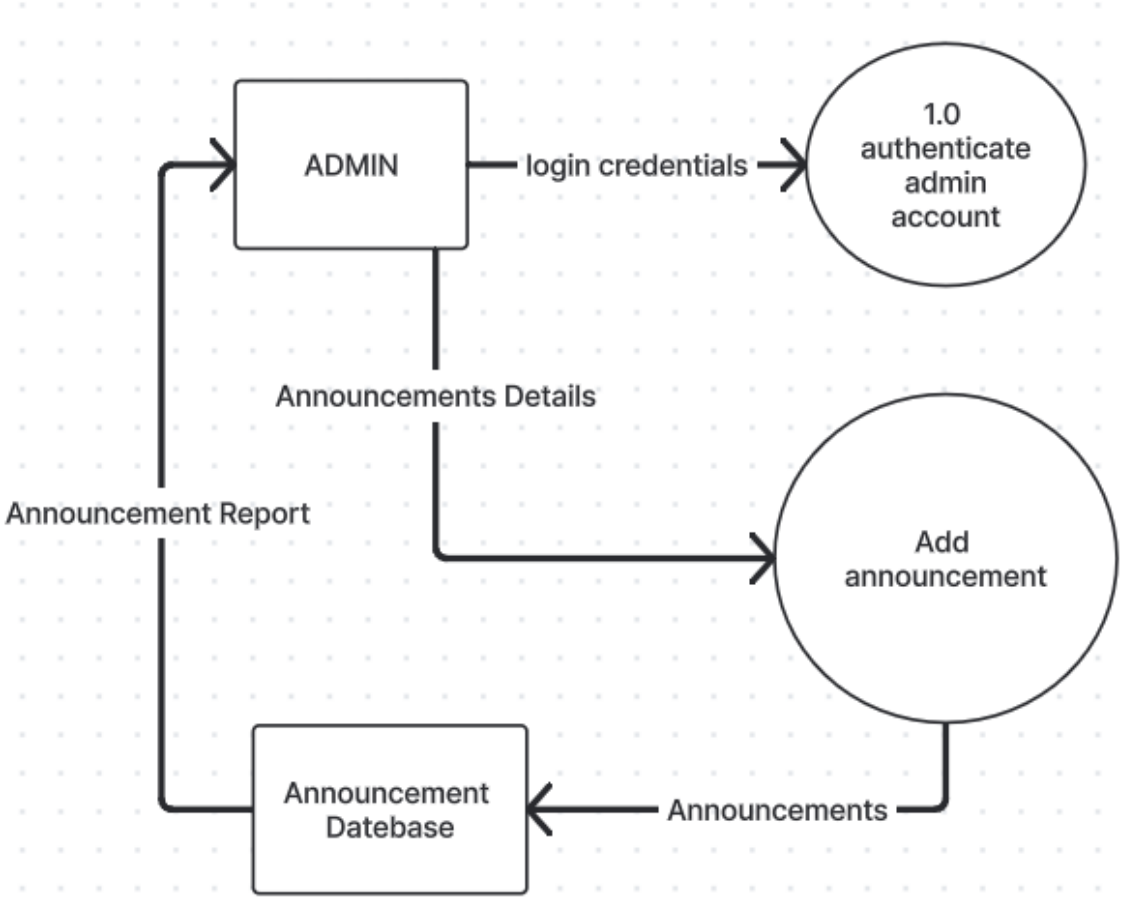
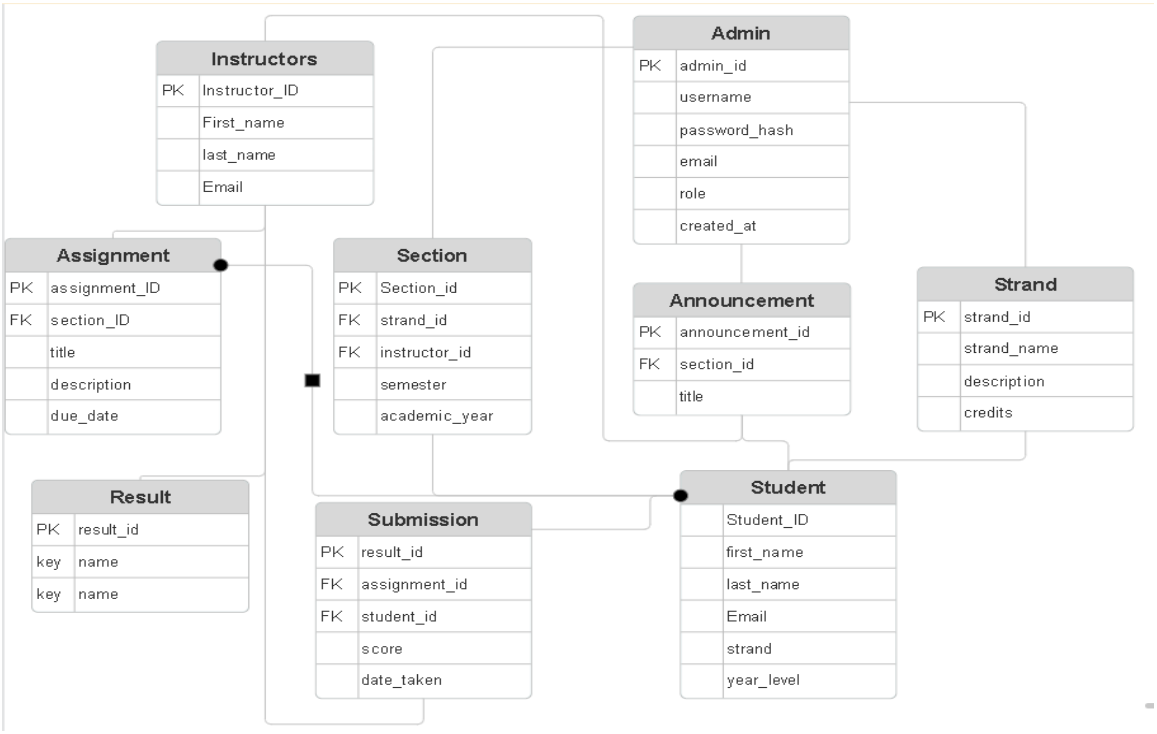
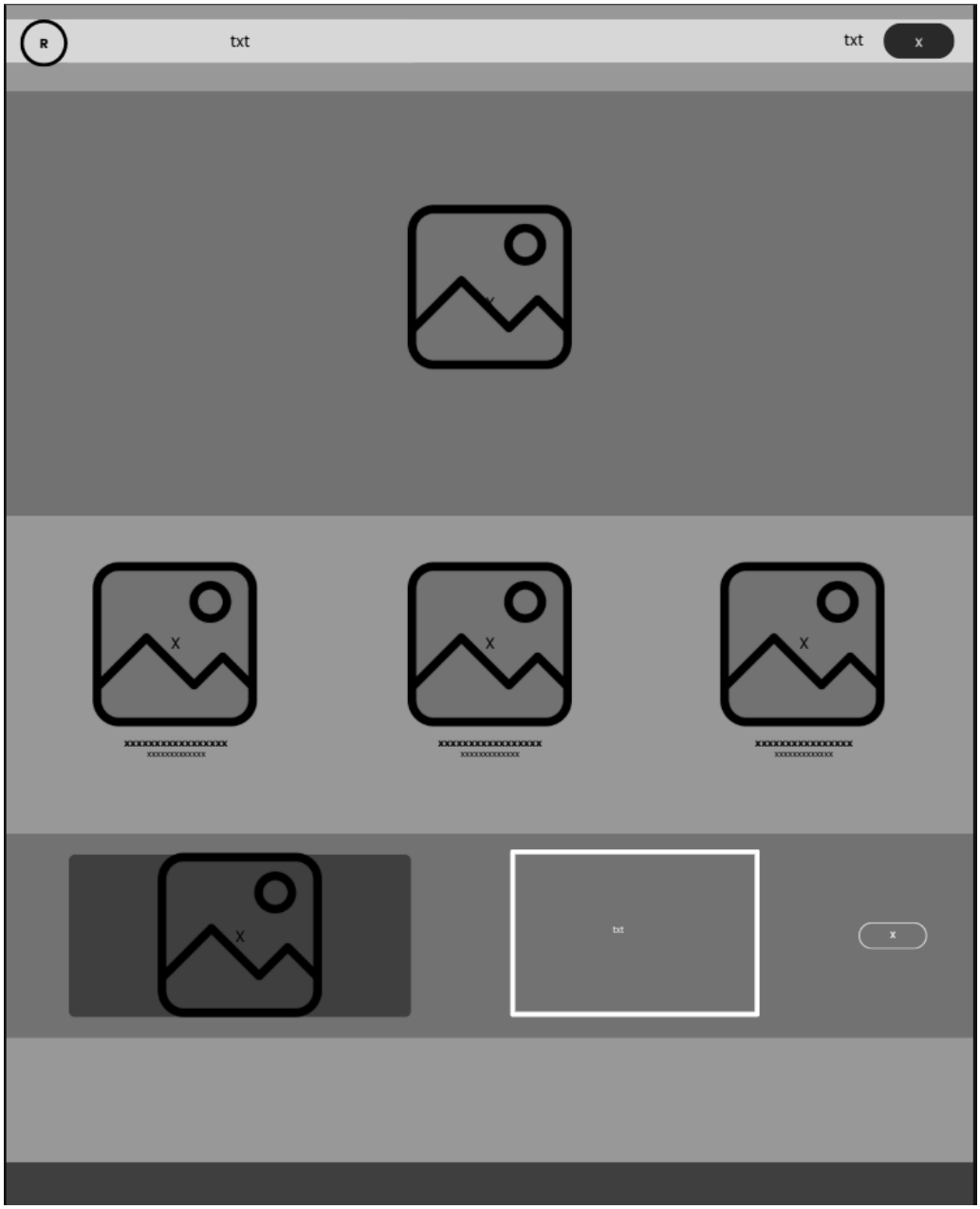


3.1.5 Entity-Relationship Diagram



3.1.6 Wireframe Design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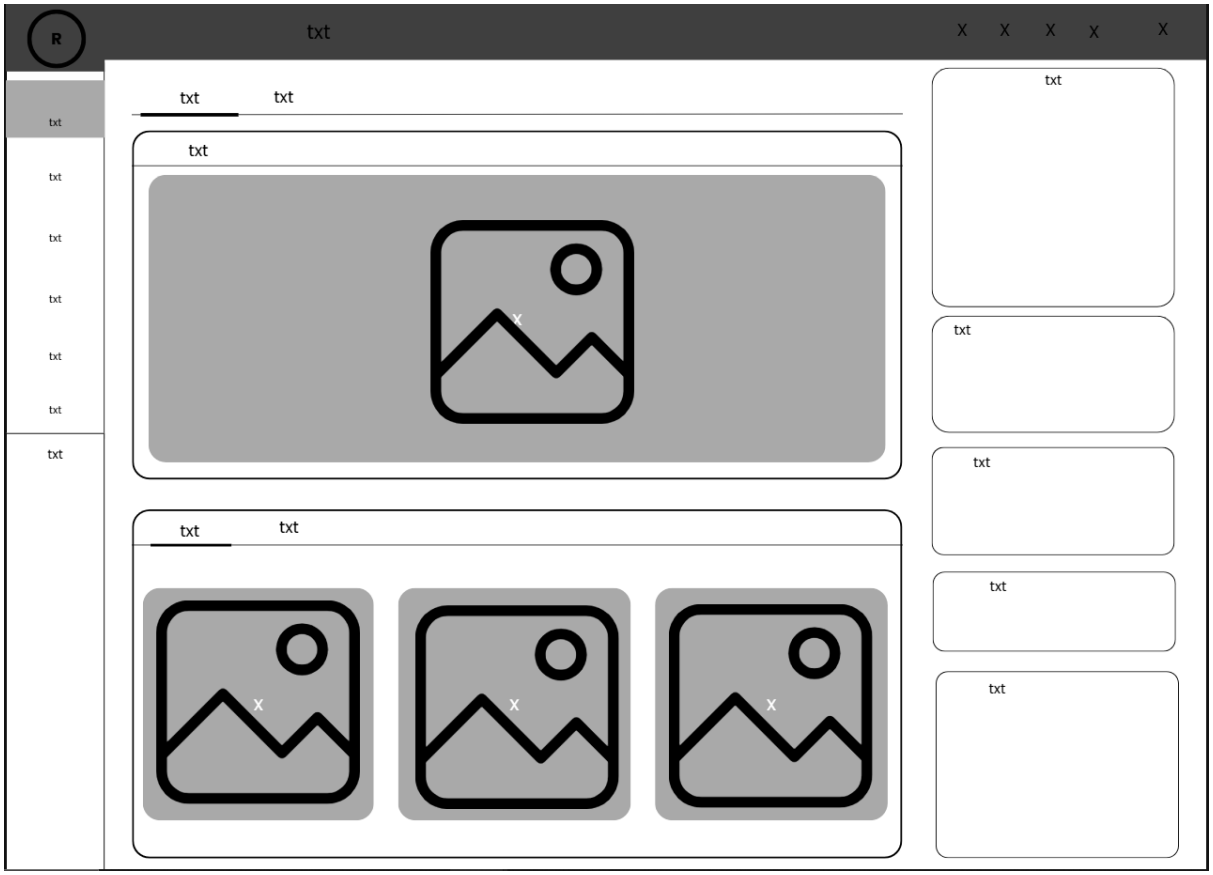
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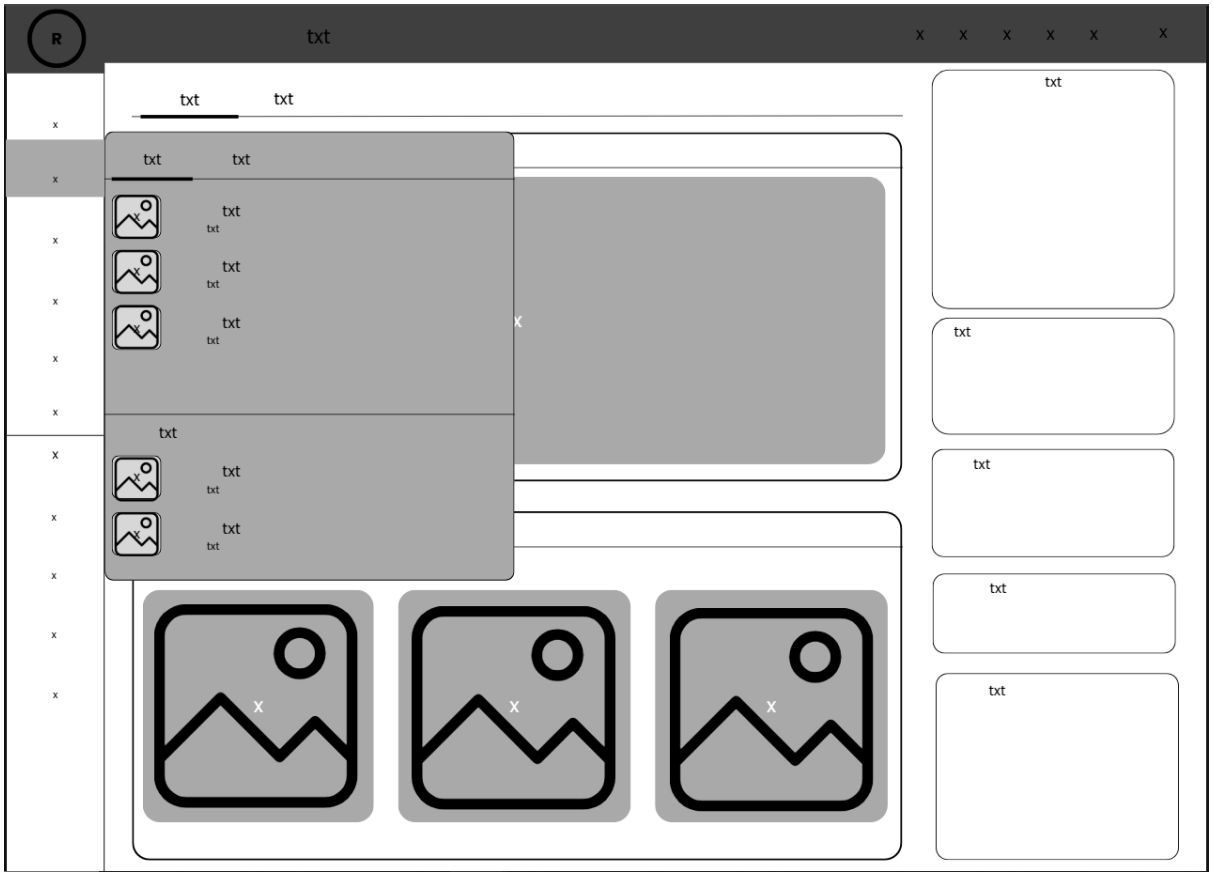
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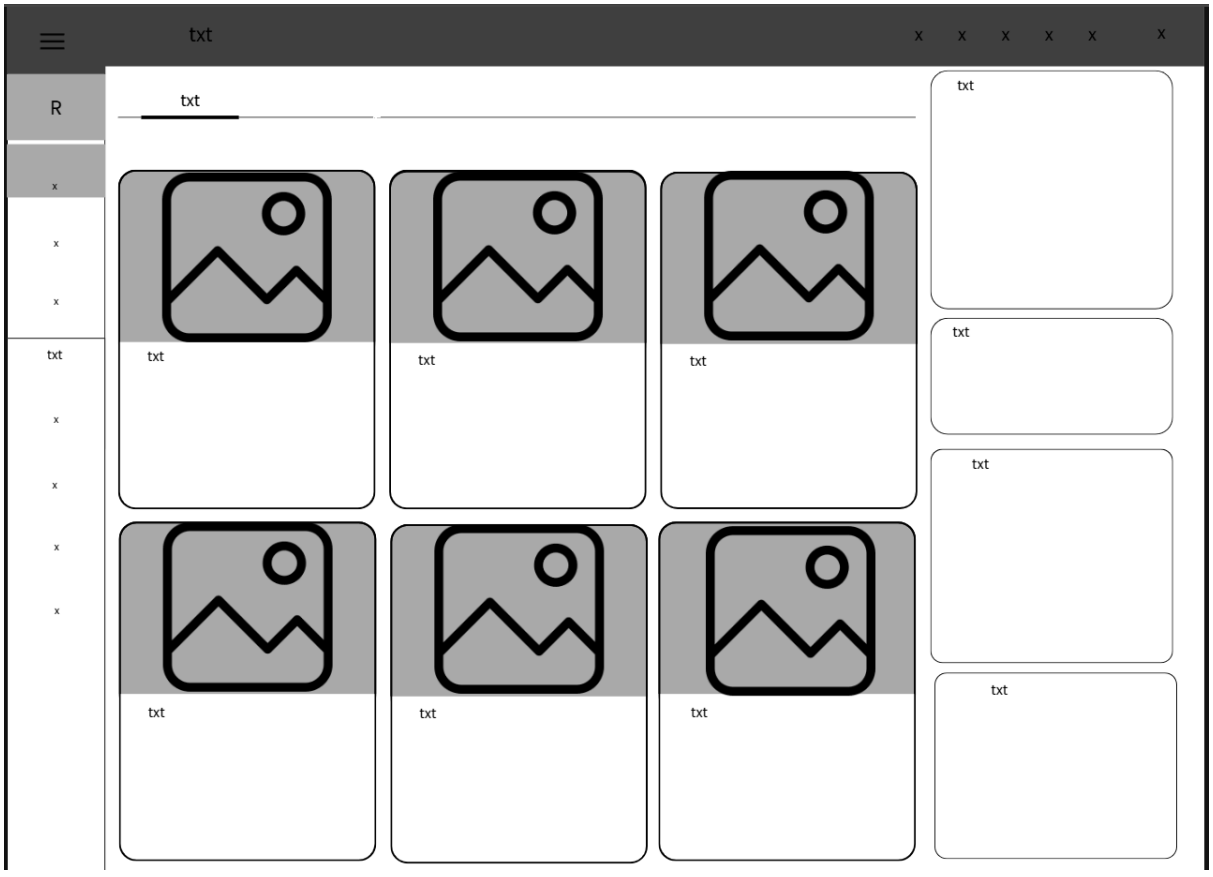
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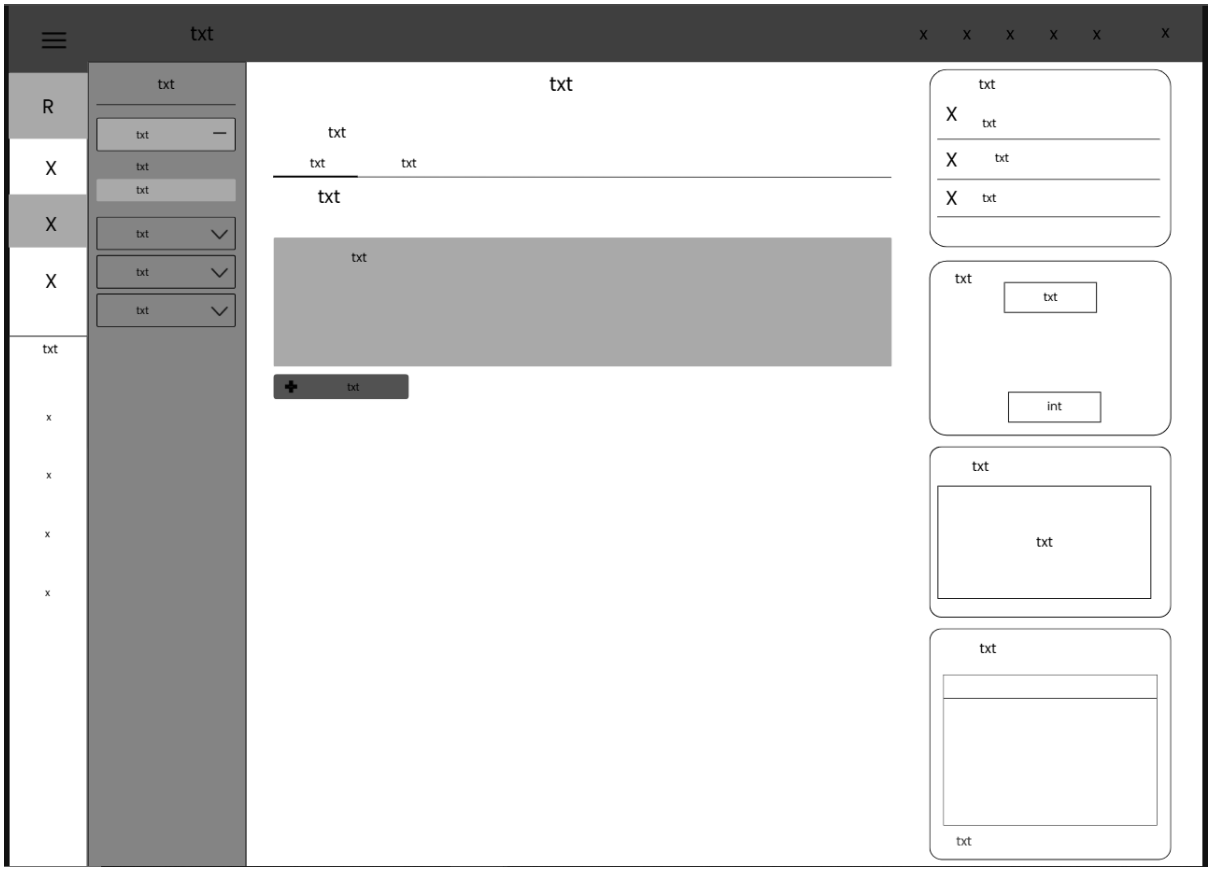
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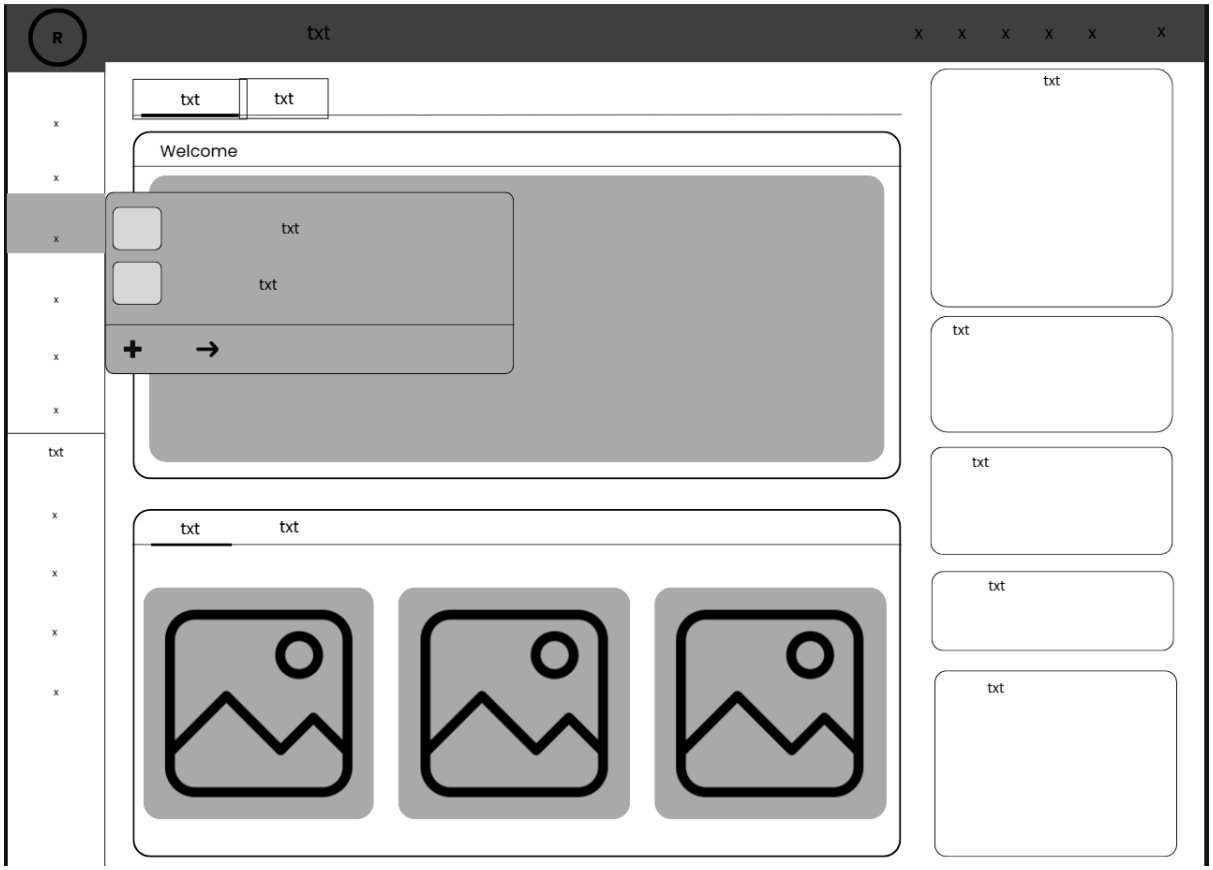
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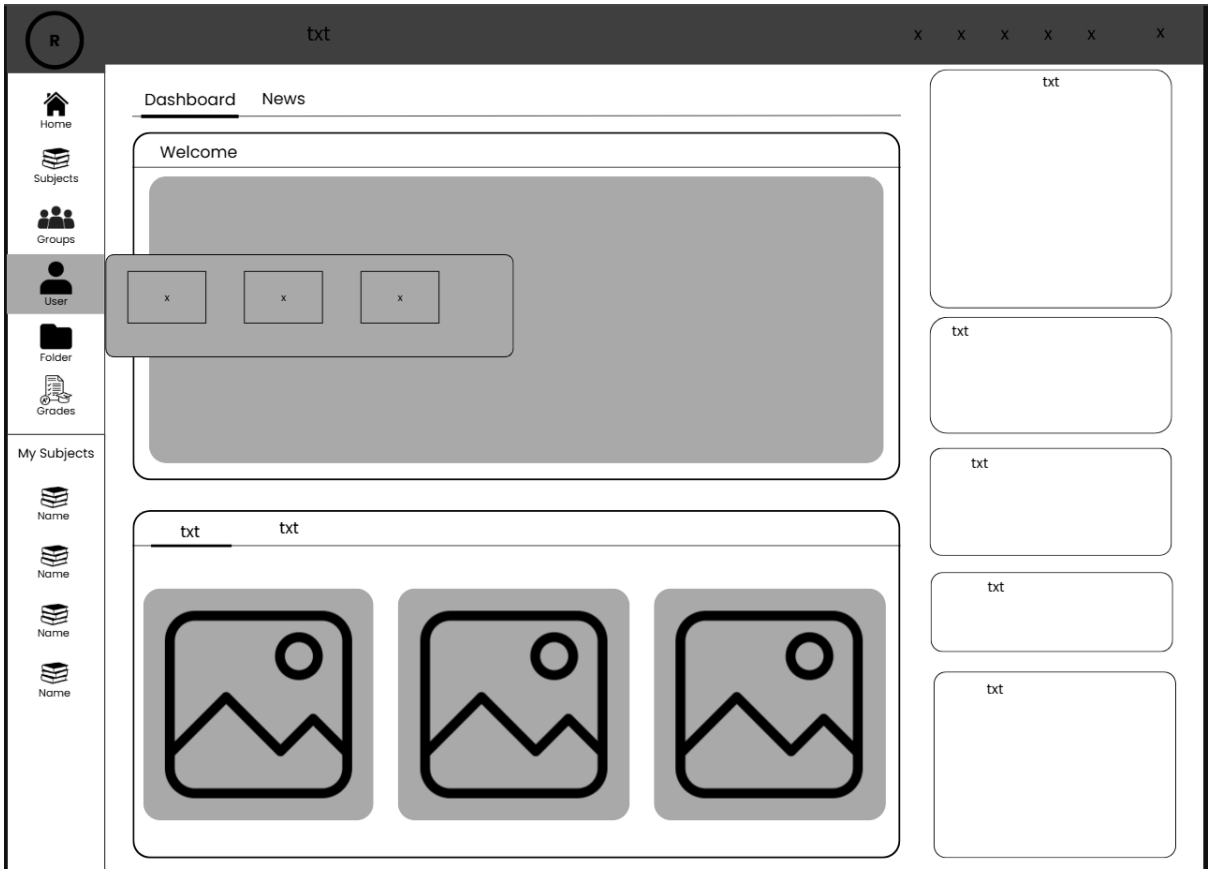
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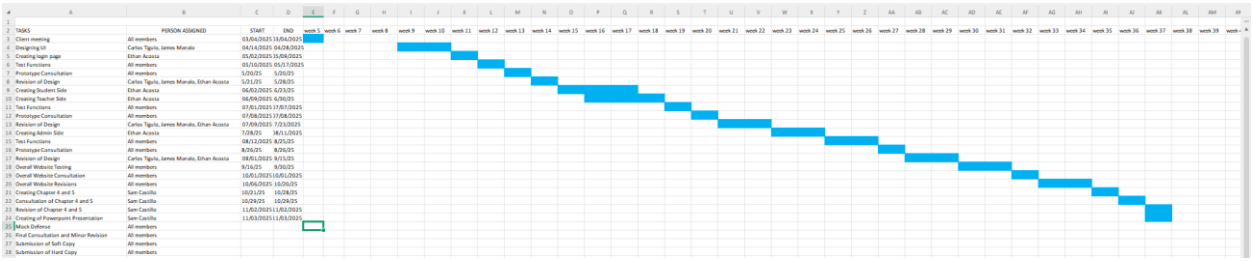
3.2 Calendar of Activities

3.2.1 Gantt Chart

Task Name	Task Activity
Project Conceptualitation	Brainstorming, Thinking possible and viable Projects
Title Proposal	Final selection of Project title
Chapter 1	Project Context
	Purpose and Description of the Project
	Objectives of the Study
	General Probblem
	Specific Problems
	General Objectives
	Specific Objectives
	Significance of The Study
	Scope and Limitations of the Study
	Scopes
	Limitaions
Chapter 1 Consultation	Checking of Chapter 1
Chapter 1 Revisions	Editing Minor Restrictions and Checking of Adviser
Chapter 2	Related Literature
	International Studies
	Local Studies
	Synthesis
Chapter 2 Consultation	Checking of Chapter 2
Chapter 2 Revisions	Editing Minor Restrictions and Checking of Adviser
Chapter 3	Overview of Current Technologies to be Used in the System
	Calendar of Activities
	Resources
Chapter 3 Consultation	Checking of Chapter 3
Chapter 3 Revisions	Editing Minor Restrictions and Checking of Adviser
Final Revision	Preparing of Documents for Final Revision
Draft Completion	Producing of Soft/Hard Copies of the Documents
Defense	Title Defense



3.3 Resources

3.3.1

Laptop	**Microsoft Windows 11**
Ram	**16gb Ram**
Storage	**512 SSD**
Network	**65Mbps to 130Mbps**

3.3.2 Software Requirements

Web Browser

LearnLink is a browser-based application, which means that users access the system through an internet browser rather than installing a separate desktop application. For the system to function correctly and display all elements accurately, it must be accessed through a modern, standards-compliant web browser.

Internet Connection

As LearnLink is an online platform, a working internet connection is a fundamental requirement. Without internet access, users will not be able to log in, retrieve data, or communicate through the system.

3.3.3

Students

Students are the main beneficiaries of the LearnLink system. They are expected to use the platform to access academic schedules, view and submit assignments, and monitor their grades.

Teachers

Teachers use LearnLink to upload lessons and handouts, manage schedules, monitor student performance, and communicate academic updates.

Admins

Administrators handle user account management, monitor system use, and support both students and teachers in using LearnLink.