

ICTE 3002  
HUMAN COMPUTER INTERFACES



GHSB TEAM  
ASSIGNMENT 1 REPORT  
QUIZMASTER

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# 1 Introduction

In today's fast-paced world, the landscape of education is evolving rapidly, presenting both challenges and opportunities for learners and educators alike. The quest for creating inclusive and user-centric learning platforms has become paramount to cater to the diverse needs of users and ensure accessibility for all. The digital age has ushered in a new era of educational technology, where the focus is not only on disseminating knowledge but also on enhancing user experience and engagement.

As we navigate through the complexities of modern education systems, it becomes evident that traditional methods may fall short in meeting the dynamic demands of today's learners. Teachers encounter obstacles in creating engaging quizzes, students struggle with navigating learning management apps, and the quest for personalized learning experiences remains a constant pursuit.

In response to these challenges, our team has embarked on a journey to develop a self-study app that aims to revolutionize the way students and educators interact with educational content. By prioritizing usability, accessibility, and innovation, our goal is to create a platform that not only addresses the pain points of existing solutions but also sets a new standard for user experience in the realm of education.

This report delves into the intricacies of our self-study app project, outlining its objectives, features, and significance in the educational landscape. We explore the shortcomings of current systems, propose innovative solutions, and shed light on the user-centric design principles that underpin our app's development. Through a comprehensive evaluation of the problem domain and the execution of our software application, we aim to pave the way for a more engaging, efficient, and inclusive learning experience for students and educators worldwide.

## 2 Background

### 2.1 Project Description

#### **Project Description:**

Our project involves designing a quiz app with both student and teacher interfaces. The app aims to streamline the process of creating, assigning, taking, and grading quizzes for educational purposes.

#### **Background and Context:**

In traditional educational settings, quiz creation and administration can be time-consuming for teachers and sometimes tedious for students. Existing solutions often lack user-friendly interfaces or comprehensive features for both teachers and students.

#### **Main Problem Statements:**

1. Teachers struggle with creating and managing quizzes efficiently.
2. Students find it challenging to access and engage with quizzes conveniently.
3. Existing quiz platforms often lack features that cater to the specific needs of both teachers and students.

#### **Approach:**

Our approach revolves around user-centric prototype design. We prioritize understanding the needs and pain points of both teachers and students through research and iterative feedback loops.

#### **Users:**

The users of our solution include teachers and students across various educational levels. This solution is crucial for them as it simplifies quiz creation, distribution, and assessment processes, ultimately enhancing the teaching and learning experience.

#### **Design Purpose:**

Our primary design purpose is to prioritize user-friendliness and usability. We aim to create an intuitive interface that facilitates efficient quiz management for teachers and seamless quiz participation for students.

## 3 Team

### 3.1 Team Members

Student	Name	Number	Role
1	Bihela Wanasekara	20530930	Project Manager
2	Thirunanthisivam Umaganesh	20972901	Graphic Designer
3	Hesara Pathirana	20928386	Data Analyst
4	Sunera Sathnidu	20883773	Usability Engineer

## 4 Software Engineering Lifecycle and Tools

Agile, an iterative and incremental development approach, is the most suitable software development lifecycle model for our project. Agile allows for:

- Flexibility: Adapting to evolving requirements throughout the development process.
- Early Feedback: Incorporating user feedback early and often to improve the product.
- Faster Time-to-Market: Delivering functional features in short iterations.

## 4.1 Implementation of the Backlog

Sprint backlog						
Milestone 01	Worksheet 1					
Sprint 01	7/03/24 - 14/03/24			Task Completion	100.00%	
Task no	Task	Owner	Priority	Start Date	Dead Line	Status
1	Project Description	Bihela	Medium	7-Mar-2024	8-March-2024	Done
1.1	Product Features	Bihela	Medium	7-Mar-2024	9-March-2024	Done
2.1	User Interviews	Hesara	Medium	7-Mar-2024	10-March-2024	Done
2.2	Survey	Hesara	Medium	7-Mar-2024	11-March-2024	Done
3.1	User Personas(John)	Sunera	High	9-Mar-2024	14-March-2024	Done
3.2	User Personas(Samantha)	Sunera	High	9-Mar-2024	14-March-2024	Done
3.3	User Personas(David)	Sunera	High	9-Mar-2024	14-March-2024	Done
3.4	User Personas(Emily)	Sunera	High	9-Mar-2024	14-March-2024	Done
4	Short User Stories	Bihela	Low	7-Mar-2024	8-March-2024	Done
5.1	Quizlet Analysis	Sunera	High	7-Mar-2024	11-March-2024	Done
5.2	Fyriebox	Hesara	High	7-Mar-2024	11-March-2024	Done
5.3	Canvas LMS	Bihela	High	7-Mar-2024	11-March-2024	Done
5.4	Typeform	Hesara	High	7-Mar-2024	11-March-2024	Done
5.5	Survey Monkey	Hesara	High	7-Mar-2024	11-March-2024	Done
6	Usability Goals	Bihela	Medium	9-Mar-2024	14-March-2024	Done
7	User Experience Goals	Bihela	Medium	9-Mar-2024	14-March-2024	Done
8	Cover Page	Sunera	High	9-Mar-2024	11-March-2024	Done

In the inaugural sprint of Project Management Excellence, our adept team achieved a 100% completion rate for Milestone 01 tasks, spanning March 7-14, 2024. Precision marked our execution, from crafting project outlines to integrating pivotal tools like Canvas LMS and Typeform. Collaborative synergy among Hesara, Sunera, and Bihela was instrumental in this success. Our comprehensive analyses of educational platforms Quizlet and Firebox fortified our project's foundation.

Sprint backlog						
Milestone 02	Worksheet 2					
Sprint 01	14/03/24 - 21/03/24			Task Completion	100.00%	
Task no	Task	Owner	Priority	Start Date	Dead Line	Status
1.1	Teacher pain point	Sunera	Medium ▾	14-Mar-2024	18-March-2024	Done ▾
1.2	Student pain point	Sunera	Medium ▾	14-Mar-2024	18-March-2024	Done ▾
1.3	Identify Teacher problem	Bihela	Low ▾	14-Mar-2024	18-March-2024	Done ▾
1.4	Identify Student problem	Bihela	Low ▾	14-Mar-2024	18-March-2024	Done ▾
3.1	Define "How we might"	Hesara	Medium ▾	14-Mar-2024	18-March-2024	Done ▾
3.2	Ideate Solutions	Hesara	High ▾	18-Mar-2024	21-March-2024	Done ▾
3.3	Design Process	Bihela	Medium ▾	14-Mar-2024	21-March-2024	Done ▾
3.4	Cover Page and organise	Sunera	Low ▾	14-Mar-2024	21-March-2024	Done ▾

The team's successful completion of all tasks for Milestone 02 reflecting a significant milestone achievement. The team focused on addressing the critical pain points experienced by teachers and students, ensuring that their needs were met.

### Sprint backlog

Milestone 02	Worksheet 3					
Sprint 01	21/03/24 - 28/03/24	Task Completion			100.00%	
Task no	Task	Owner	Priority	Start Date	Dead Line	Status
1.1	SRS	Sunera	High	14-Mar-2024	18-March-2024	Done
1.2	Hierarchical Task Analysis	Sunera	Medium	14-Mar-2024	18-March-2024	Done
1.3	inclass activities	Bihela, Hesara	High	14-Mar-2024	18-March-2024	Done
1.4	Best-in world competitor analysis	Ganesh	High	14-Mar-2024	18-March-2024	Done
3.1	Cover Page and organise	Sunera	Low	14-Mar-2024	18-March-2024	Done

Milestone 02 was a resounding success, marked by a stellar 100% task completion rate. The sprint's efficient management was evident in the execution of critical tasks such as the System Requirements Specification (SRS), Hierarchical Task Analysis, and a comprehensive analysis of top competitors.

### Sprint backlog

Milestone 04	Worksheet 4 ( Low fidelity)					
Sprint 01	28/03/24 - 05/04/24	Task Completion			100.00%	
Task no	Task	Owner	Priority	Start Date	Dead Line	Status
1	Sign up Student	Sunera	High	28-Mar-2024	5-April-2024	Done
2	Sign in Student	Sunera	High	28-Mar-2024	5-April-2024	Done
3	Home Student Dashboard	Ganesh	Medium	28-Mar-2024	5-April-2024	Done
4	Brower	Bihela	Medium	28-Mar-2024	5-April-2024	Done
5	Course Screen - lessons	Ganesh	Medium	28-Mar-2024	5-April-2024	Done
6	Course Screen - lessons 1	Sunera	Medium	28-Mar-2024	5-April-2024	Done
7	Course Screen - lessons 2	Sunera	Medium	28-Mar-2024	5-April-2024	Done
8	Course Screen - lessons 3	Bihela	Medium	28-Mar-2024	5-April-2024	Done
9	Quiz Screen -1	Sunera	Medium	28-Mar-2024	5-April-2024	Done
10	Quiz Screen End	Sunera	Medium	28-Mar-2024	5-April-2024	Done
11	Quiz Results	Sunera	Medium	28-Mar-2024	5-April-2024	Done
12	Progress Tracking	Sunera	Medium	28-Mar-2024	5-April-2024	Done
13	User Profile	Ganesh	Medium	28-Mar-2024	5-April-2024	Done
14	Settings	Sunera	Medium	28-Mar-2024	5-April-2024	Done
15	Welcome	Sunera	Medium	28-Mar-2024	5-April-2024	Done
16	Sign up Teacher	Sunera	Medium	28-Mar-2024	5-April-2024	Done
17	Sign in Teacher	Bihela	Medium	28-Mar-2024	5-April-2024	Done
18	Home - Teacher Dashboard	Hesara	Medium	28-Mar-2024	5-April-2024	Done
19	My course	Hesara	Medium	28-Mar-2024	5-April-2024	Done
20	Course Screen teacher 1	Hesara	Medium	28-Mar-2024	5-April-2024	Done
21	Course Screen teacher 2	Hesara	Medium	28-Mar-2024	5-April-2024	Done
22	Course Screen teacher 3	Hesara	Medium	28-Mar-2024	5-April-2024	Done
23	Add Quiz	Hesara	Medium	28-Mar-2024	5-April-2024	Done
24	Quiz Stats	Hesara	Medium	28-Mar-2024	5-April-2024	Done
25	Teacher Home	Hesara	Medium	28-Mar-2024	5-April-2024	Done
26	Teacher Notification	Hesara	Medium	28-Mar-2024	5-April-2024	Done
27	Teacher Profile	Hesara	Medium	28-Mar-2024	5-April-2024	Done
28	Student Request	Hesara	Medium	28-Mar-2024	5-April-2024	Done
29	Settings	Sunera	Medium	28-Mar-2024	5-April-2024	Done
30	Enrolled Students	Hesara	Medium	28-Mar-2024	5-April-2024	Done
31	Progress Tracking - teacher	Hesara	Medium	28-Mar-2024	5-April-2024	Done
32	Cover Page and organise	Sunera	Low	28-Mar-2024	5-April-2024	Done

The sprint backlog from March 28 to April 5, 2024, reflects a successfully completed sprint. Task management was executed with precision, as evidenced by the completion status of all tasks.

### Sprint backlog

Milestone 02	Worksheet 5					
Sprint 01	05/04/24 - 12/04/24	Task Completion			100.00%	
Task no	Task	Owner	Priority	Start Date	Dead Line	Status
1.1	Strength	Sunera	Medium	14-Mar-2024	18-March-2024	Done
1.2	Strength	Sunera	Medium	14-Mar-2024	18-March-2024	Done
1.3	Strength	Bihela	Low	14-Mar-2024	18-March-2024	Done
1.4	Strength	Bihela	Low	14-Mar-2024	18-March-2024	Done
3.1	Weakness	Hesara	Medium	14-Mar-2024	18-March-2024	Done
3.2	Weakness	Hesara	High	18-Mar-2024	21-March-2024	Done

The team has successfully reached a significant benchmark as indicated by the completion of Milestone 02, Worksheet 5 Expert Review.

### Sprint backlog

Milestone 06	High Fidelity					
Sprint 01	12/04/24 - 19/04/24			Task Completion	100.00%	
Task no	Task	Owner	Priority	Start Date	Dead Line	Status
1	Sign up Student	Sunera	High	28-Mar-2024	5-April-2024	Done
2	Sign in Student	Sunera	High	28-Mar-2024	5-April-2024	Done
3	Home - Student Dashboard	Ganesh	Medium	28-Mar-2024	5-April-2024	Done
4	Brower	Bihela	High	28-Mar-2024	5-April-2024	Done
5	Course Screen - lessons	Ganesh	High	28-Mar-2024	5-April-2024	Done
6	Course Screen - lessons 1	Sunera	Medium	28-Mar-2024	5-April-2024	Done
7	Course Screen - lessons 2	Sunera	Medium	28-Mar-2024	5-April-2024	Done
8	Course Screen - lessons 3	Bihela	Medium	28-Mar-2024	5-April-2024	Done
9	Quiz Screen -1	Sunera	Medium	28-Mar-2024	5-April-2024	Done
10	Quiz Screen End	Sunera	Medium	28-Mar-2024	5-April-2024	Done
11	Quiz Results	Sunera	Medium	28-Mar-2024	5-April-2024	Done
12	Progress Tracking	Sunera	Medium	28-Mar-2024	5-April-2024	Done
13	User Profile	Ganesh	Medium	28-Mar-2024	5-April-2024	Done
14	Settings	Sunera	Medium	28-Mar-2024	5-April-2024	Done
15	Welcome	Sunera	Medium	28-Mar-2024	5-April-2024	Done
16	Sign up Teacher	Sunera	High	28-Mar-2024	5-April-2024	Done
17	Sign in Teacher	Bihela	High	28-Mar-2024	5-April-2024	Done
18	Home - Teacher Dashboard	Hesara	Medium	28-Mar-2024	5-April-2024	Done
19	My course	Hesara	High	28-Mar-2024	5-April-2024	Done
20	Course Screen teacher 1	Bihela	Medium	28-Mar-2024	5-April-2024	Done
21	Course Screen teacher 2	Bihela	High	28-Mar-2024	5-April-2024	Done
22	Course Screen teacher 3	Bihela	Medium	28-Mar-2024	5-April-2024	Done
23	Add Quiz	Hesara	Medium	28-Mar-2024	5-April-2024	Done
24	Quiz Stats	Hesara	Medium	28-Mar-2024	5-April-2024	Done
25	Teacher Home	Hesara	Medium	28-Mar-2024	5-April-2024	Done
26	Teacher Notification	Hesara	Medium	28-Mar-2024	5-April-2024	Done
27	Teacher Profile	Hesara	High	28-Mar-2024	5-April-2024	Done
28	Student Request	Hesara	High	28-Mar-2024	5-April-2024	Done
29	Settings	Sunera	Medium	28-Mar-2024	5-April-2024	Done
30	Enrolled Students	Hesara	Medium	28-Mar-2024	5-April-2024	Done
31	Progress Tracking - teacher	Hesara	Medium	28-Mar-2024	5-April-2024	Done
32	Cover Page and organise	Sunera	Low	28-Mar-2024	5-April-2024	Done
33	Logo	Sunera	High	28-Mar-2024	4/5/2024	Done

project sprint has concluded with remarkable outcomes, as evidenced by the comprehensive completion of the task backlog.

### Sprint Backlog:

[https://docs.google.com/spreadsheets/d/1R051EIHm3KVI\\_sucZLklauuDU1uS\\_zK4cKP5tzwKFm4/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1R051EIHm3KVI_sucZLklauuDU1uS_zK4cKP5tzwKFm4/edit?usp=sharing)

# 5 Design Thinking

## 5.1 Design Thinking Process

### 1-EMPATHIZE

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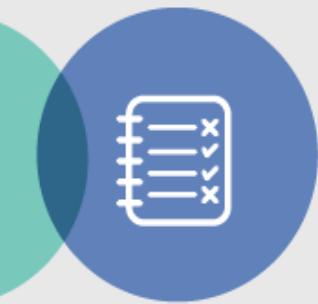
### 3-IDEATE

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### 5-TEST

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### 2-DEFINE

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### 4-PROTOTYPE

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UNDERSTAND

EXPLORE

MATERIALIZE

In developing our self-study quiz app, we heavily relied on the iterative design thinking process to ensure the app was user-friendly and effective for both students and teachers. Here's how we applied this process specifically to our project:

**Empathize:** We began by conducting interviews and surveys with both students and teachers to understand their needs, pain points, and preferences regarding self-study tools and quiz formats. Through this process, we gained insights into the specific challenges students face in self-study and the features teachers find most useful in assessing student learning.

**Define:** Based on the insights gathered during the empathize stage, we identified key themes and user requirements. For example, we learned that students often struggle to find engaging study materials, while teachers need a way to create and manage quizzes efficiently.

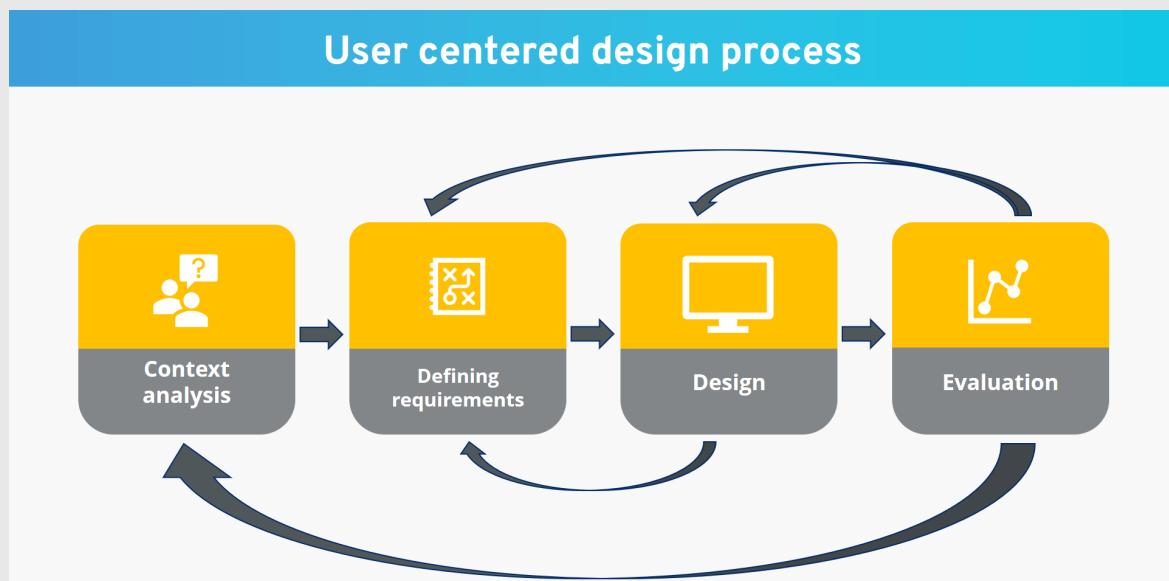
**Ideate:** With a clear understanding of user needs, we brainstormed various features and solutions that could address the identified challenges. This involved sketching out different interfaces, discussing potential functionalities, and considering how each element would contribute to the overall user experience.

**Prototype:** We created low-fidelity prototypes of the app interface, incorporating the most promising ideas generated during the ideation phase. These prototypes allowed us to quickly test different design concepts with users and gather feedback on what worked well and what needed improvement.

**Test:** We conducted usability tests with both students and teachers, presenting them with the prototype and observing how they interacted with the app. Through these tests, we identified areas where the design fell short of user expectations and made iterative improvements based on user feedback.

By repeating this cycle of empathizing, defining, ideating, prototyping, and testing, we refined the design of our app to ensure it effectively met the needs of both student and teacher users of our application.

## 5.2 User-Centred Design



Throughout the development process, we prioritized involving users in the design of our self-study quiz app to ensure it was tailored to their needs and preferences. Here are some specific ways we incorporated user feedback:

**Surveys and Interviews:** We conducted surveys and interviews to gather insights into user preferences, pain points, and behaviours related to self-study and quiz-taking. This qualitative data helped us better understand user needs and informed our design decisions.

**Beta Testing:** Before finalizing the app, we asked a professional software developer to participate in beta testing. This allowed us to collect real-world feedback on the app's usability, functionality, and overall user experience in a controlled environment.

**Iterative Design:** We embraced an iterative design approach, continuously refining the app based on user feedback and testing results. This ensured that the final product was not only functional but also intuitive and user-friendly.

By actively involving users in the design process, we were able to create a self-study quiz app that truly resonated with our target audience and provided value to both students and teachers.

## 5.3 User Interviews, Surveys, Questionnaires and Observations

### 5.3.1 User Interviews

Interview Script:

Objective: Understand the user's self-study habits and preferences for a quiz-based learning app.

Welcome and Introduction:

"Hello, [Name of Participant]! We appreciate you being here with us today. We value your willingness to contribute your insights and your time. I am [Your Name], and I am a member of the group developing a new software for self-study quizzes. Our objective is to develop an app that genuinely satisfies the demands of users who, like you, love using quiz-based learning resources and are involved in self-study.

Purpose of the Interview:

We're keen to hear from you! We're interested in your thoughts on self-study and quiz apps. Your ideas will help us create an app that meets your needs and makes learning effective and fun.

Confidentiality and Consent:

Rest assured that your answers will be kept private. The information you provide will only be used to enhance our app. If you become uncomfortable or hesitant to answer a particular question, please let us know. Your privacy is safeguarded by our Research Participation Agreement. We value your contribution to our research.

### 5.3.2 Surveys

Survey Questions:

Objective: Gather quantitative data on user preferences and habits.

Demographics:

- Age:
- Grade/Level of Education:
- Preferred Learning Environment (Home, Library, etc.):

Habits:

- How often do you dedicate time to self-study?
- On average, how much time do you spend on self-study sessions?
- Rate your comfort level with quiz-based learning (scale of 1 to 5).

Technology Use:

- What devices do you use for self-study (desktop, laptop, tablet, mobile)?
- Are you comfortable using mobile apps for learning?

Quiz App Preferences:

- Rank the importance of features in a quiz app (e.g., variety of questions, progress tracking, competitive elements).
- How frequently do you prefer to receive feedback on your quiz performance?

Challenges:

- Identify any challenges you face during self-study and quiz-based learning.
- How can a self-study quiz app help overcome these challenges?

Project theme:

- Do you prefer a light mode theme or a more modern dark mode theme?

Suggestions:

- Any additional features or improvements you'd like to suggest for a self-study quiz app?

## 5.4 Data Analysis

### 5.4.1 Background Summary

At Quizmaster, we believe that the key to building an exceptional quiz app lies in a deep understanding of our users' needs, a comprehensive competitor analysis, and an awareness of the challenges users face. Our journey began with meticulous research to pinpoint the crucial components necessary for a standout quiz application. We engaged with potential users through a detailed survey, utilizing Google Forms with a set of 15 targeted questions, allowing us to crystallize the core features and functionalities of our app.

Our approach didn't stop at user insights; we conducted a thorough competitive analysis to weigh the strengths and weaknesses of existing quiz apps. This strategic evaluation led to the discovery of unique differentiators that elevate Quizmaster above the competition, offering our users a distinctive value proposition.

We also delved into user feedback to uncover common pain points. These insights were instrumental in shaping the development of Quizmaster, ensuring that our app is not only user-centric but also delivers a seamless, accessible, and cost-effective experience.

The culmination of this extensive study provided us with a holistic view of the quiz app industry, encompassing user requirements, industry gaps, and the competitive environment. Armed with this knowledge, we've crafted Quizmaster to be the epitome of a successful and user-friendly quiz application, designed to enhance learning and make knowledge acquisition enjoyable for everyone.

### 5.4.2 Goals

Our goal is to create an engaging platform that not only entertains but also enriches your knowledge.

#### Key Features:

- User-Centric Design: We've carefully studied user feedback to tailor an intuitive interface that anticipates and meets your needs.
- Enhanced User Experience: Enjoy a seamless and enjoyable quiz-taking experience with our improved user interface, designed for ease of use and accessibility.
- Opportunity to Earn: Engage in our competitive quiz modes and stand a chance to earn rewards as you learn.

Join Quizmaster today and be a part of a community that values knowledge, fun, and the opportunity to grow every day!

### 5.4.2 Methodology

Our quiz app is designed with a robust methodology to ensure an engaging and effective experience for users seeking knowledge and entertainment. The development process begins with formulating research questions to understand user preferences, learning patterns, and obstacles encountered

while using quiz applications. We employ diverse data sources, such as user surveys, in-app analytics, direct feedback, and competitive landscape analysis, to gather comprehensive insights.

Participants for our research are carefully selected through online platforms, considering a wide range of demographics and their prior interactions with quiz formats. The collected data undergoes rigorous cleaning and structuring processes to maintain high standards of accuracy and reliability. Advanced statistical methods and visualization tools are then utilized to dissect the data, revealing key trends and user behaviours.

Interpreting these findings, we derive actionable insights that drive enhancements in the app's interface, question variety, and overall usability. Our recommendations are implemented with precision, and the app's performance is continuously monitored to ensure alignment with user expectations and educational objectives. This cyclical, data-informed approach fosters ongoing refinement of the app, based on solid data and valuable user input, detailed enough to enable replication and adaptation by peers in the field.

### 5.4.3 Results

The data, derived from a modest sample of individuals, indicates a robust inclination towards independent learning, with over half of the respondents engaging in self-study on a weekly basis. Notably, a subset of users (14.3%) demonstrates a commitment to daily self-study, underscoring a segment of highly motivated learners.

Subject-wise, math, computer science, and 3D visualization are identified as prevalent areas of interest. This suggests that the app could benefit from a strong focus on these disciplines to cater to the current demand. In terms of app utility, a majority of users (66.7%) are driven by the desire to enhance academic performance, while a third value the app for its potential to reinforce knowledge through self-testing. This dual purpose highlights the need for a versatile app design that supports both academic advancement and knowledge consolidation.

The preference for self-paced learning over timed quizzes suggests that users value autonomy in their learning journey. This is further supported by the overwhelming preference for a dark theme (85.7%), which may indicate a user base that engages in prolonged study sessions and seeks to minimize eye strain.

## 5.5 Personas

### 5.5.1 Persona 1(John)

 <p><b>John</b></p> <p>Male 45 years</p> <p>Texas, USA</p> <p>Married</p> <p>College Professor of Psychology</p>	<p><b>Background</b></p> <p>John has been teaching psychology at the university level for over 10 years. He holds a Ph.D. in Psychology and has published research in prestigious journals. He is well-respected among his peers and known for his innovative teaching methods.</p> <p><b>Goals</b></p> <p>John's primary goal is to facilitate meaningful learning experiences for his students and help them grasp complex psychological concepts.</p> <p><b>Frustrations</b></p> <p>John sometimes struggles with navigating and implementing educational technology platforms effectively, especially those that require a steep learning curve.</p>	<p><b>Motivations</b></p> <p>John is motivated by the opportunity to innovate in his teaching practices and explore new technologies and methodologies that can enhance student learning outcomes</p> <p><b>Technology</b></p> <p>Smartphone, Laptop, Android, Windows</p> <p><b>Browsers</b></p> <p>Chrome, Firefox</p>
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### 5.5.2 Persona 2(Samantha)

 <p><b>Samantha</b></p> <p>Female 14 years</p> <p>New York City, USA</p> <p>Single</p> <p>Middle School Student</p>	<p><b>Background</b></p> <p>Samantha is a bright and motivated student who enjoys learning new things. She is always looking for ways to improve her knowledge and skills.</p> <p><b>Goals</b></p> <p>To excel in her studies and achieve high grades in school. She also wants to expand her knowledge beyond the traditional curriculum.</p> <p><b>Frustrations</b></p> <p>Samantha sometimes struggles with finding engaging study materials that are tailored to her level and interests. She also finds it challenging to stay organized with her study schedule.</p>	<p><b>Motivations</b></p> <p>Samantha is motivated by her desire to succeed and make her family proud. She enjoys the feeling of accomplishment when she learns something new.</p> <p><b>Technology</b></p> <p>Smartphone, Tablet, Laptop, Apple, Android, Windows</p> <p><b>Browsers</b></p> <p>Chrome, Firefox</p>
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### 5.5.3 Persona 3(David)



**David**

Male    22 years

Australia

Single

Graduate Student

<p><b>Background</b></p> <p>David works full-time and is pursuing further education part-time. He values flexibility and convenience in his study methods due to his busy schedule. He prefers self-paced learning to accommodate his erratic work hours.</p>	<p><b>Motivations</b></p> <p>David finds motivation in being able to track his progress over time using the app, as it provides him with a sense of accomplishment and helps him stay focused on his learning goals despite his busy schedule.</p>
<p><b>Goals</b></p> <p>David aims to use the app to review course materials on the go, maximize his study time during breaks, and assess his understanding before exams.</p>	<p><b>Technology</b></p> 
<p><b>Frustrations</b></p> <p>David often feels frustrated by his lack of time to dedicate to studying due to his demanding work schedule.</p>	<p><b>Browsers</b></p> 

## 5.5.4 Persona 4(Emily)



**Emily**

Female    28 years

New Zealand

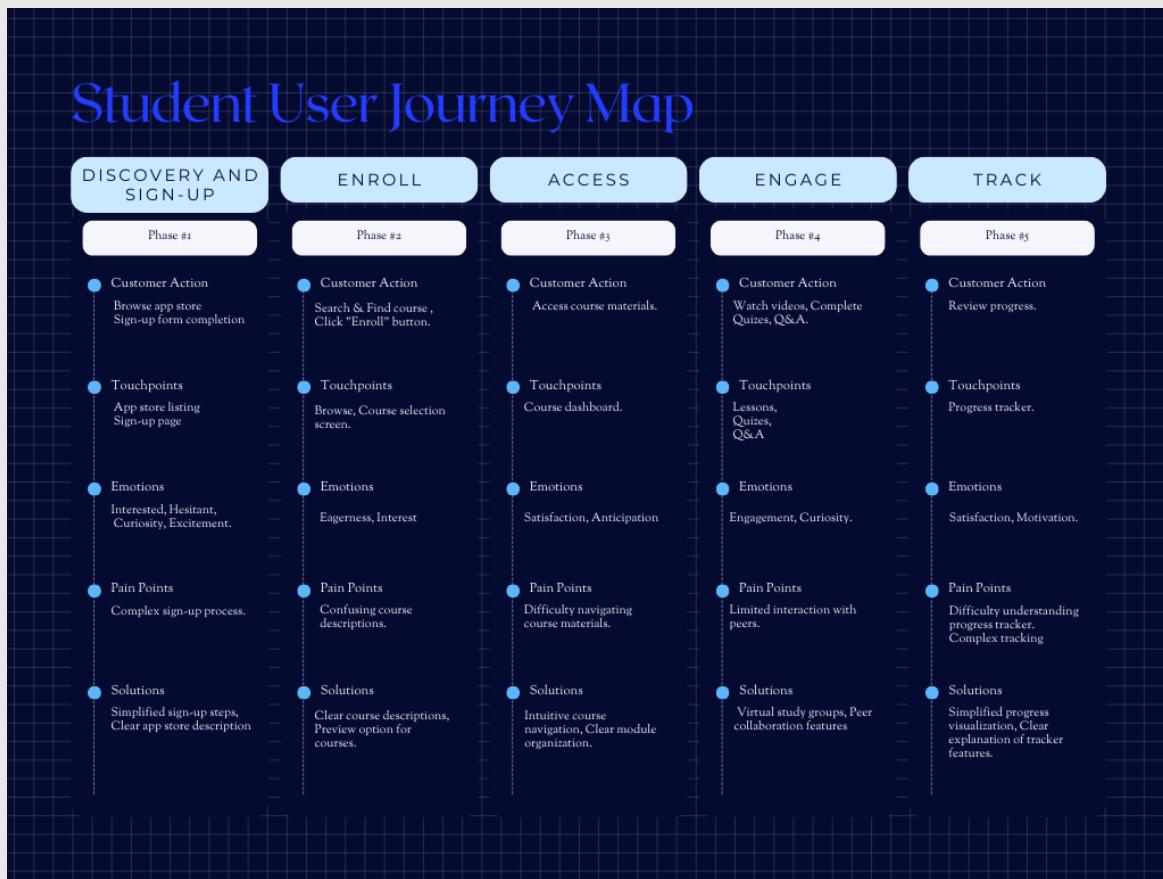
Married

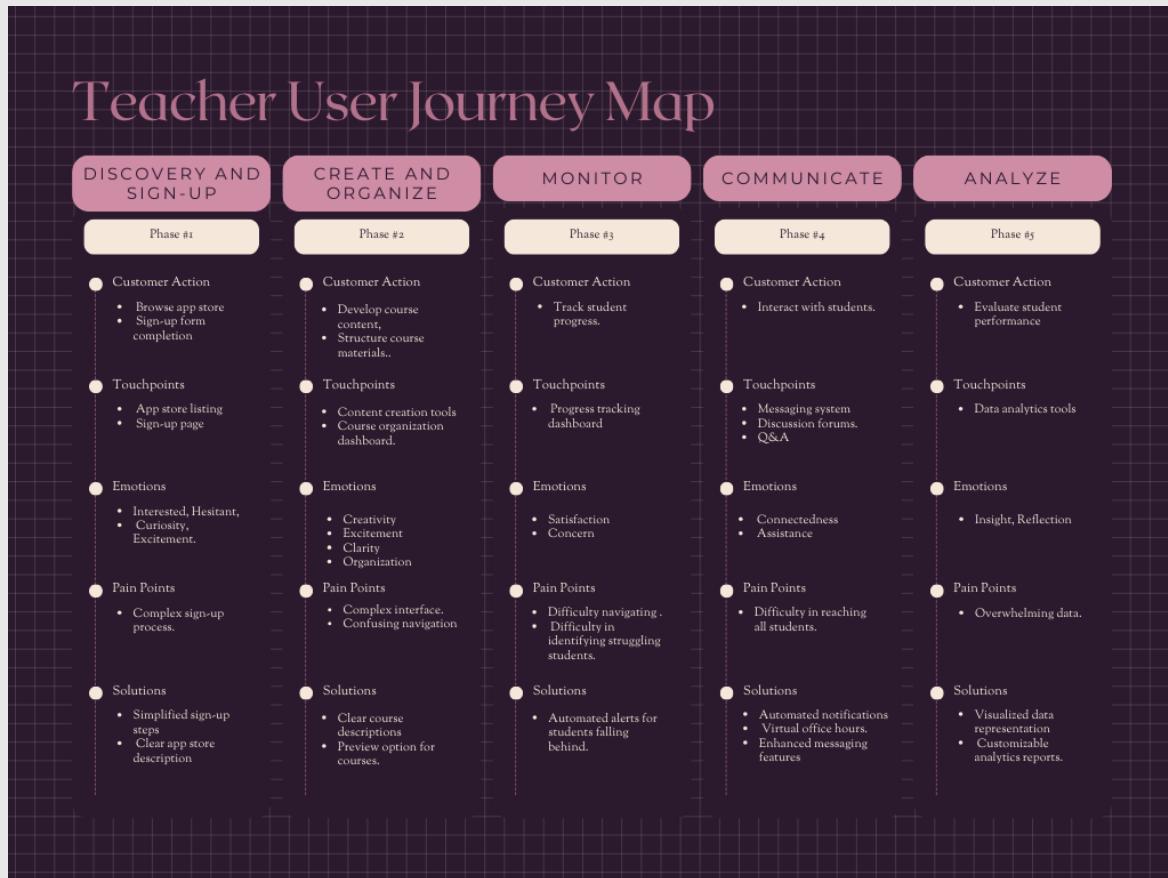
High school Teacher

<p><b>Background</b></p> <p>Emily is a dedicated high school teacher who believes in the power of technology to enhance learning. She is always looking for new ways to engage her students and help them succeed.</p>	<p><b>Motivations</b></p> <p>Seeing her students excel and enjoy learning motivates Emily to continually improve her teaching methods</p>
<p><b>Goals</b></p> <p>To create a dynamic and interactive learning environment for her students using the mobile quiz app.</p>	<p><b>Technology</b></p> 
<p><b>Frustrations</b></p> <p>Limited access to technology in the classroom, and lack of engaging educational resources.</p>	<p><b>Browsers</b></p> 

## 5.6 User journeys, User Flows, Empathy Maps

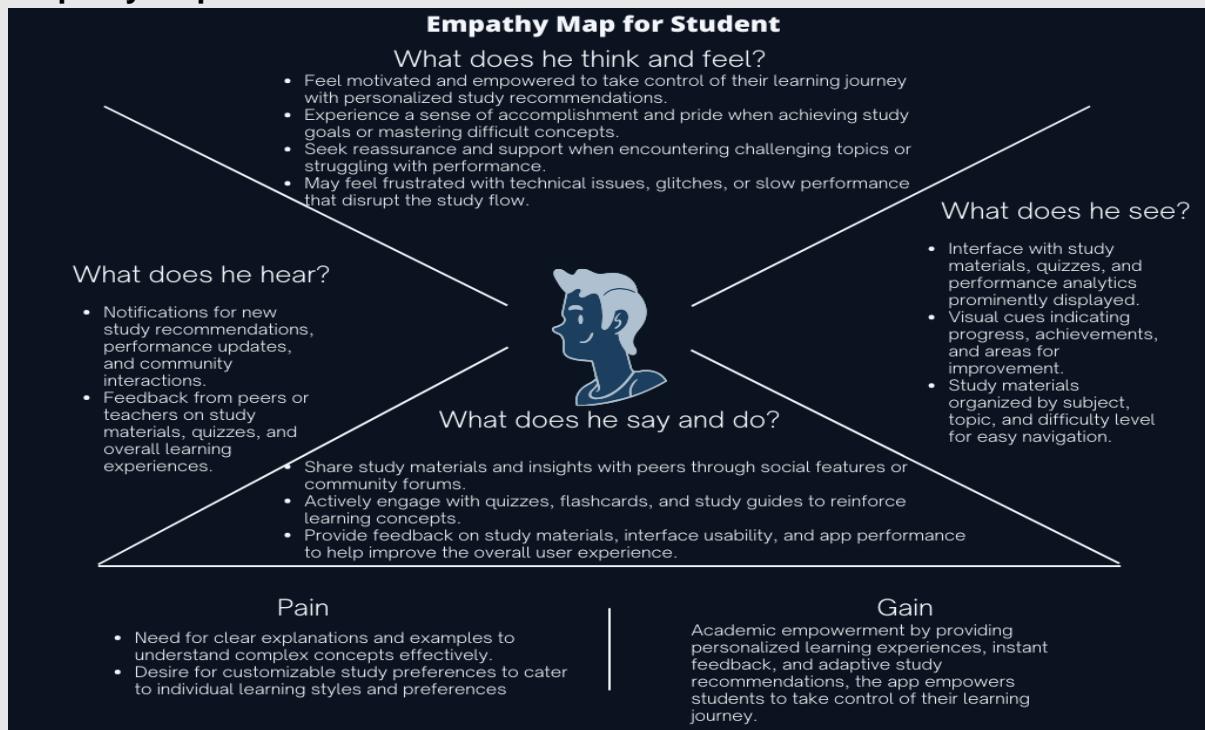
### 5.6.1 User Journeys





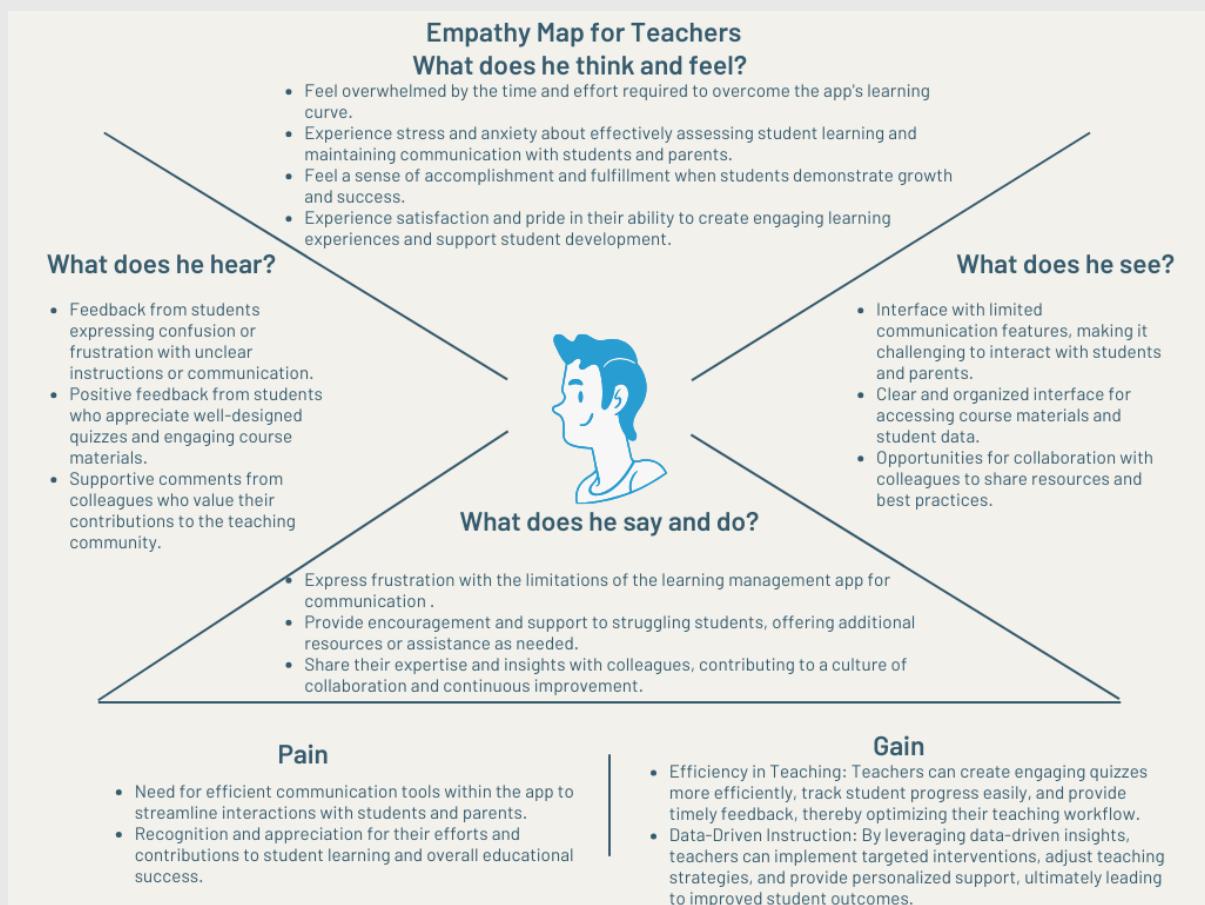
## 5.6.2 Empathy Map

### Empathy Map for Student

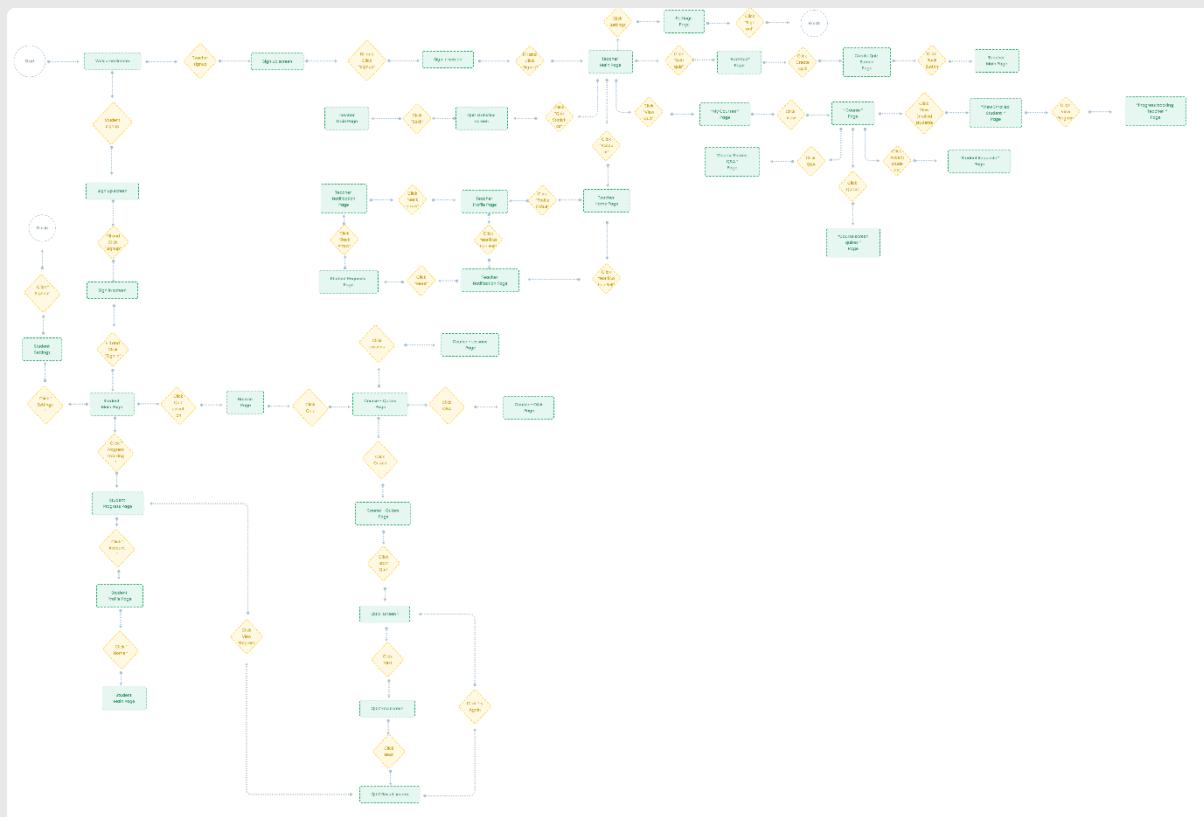


S:

## Empathy Map for Teachers:



### 5.6.3 User Flow



## 5.7 User Stories

### 5.7.1 Teacher

- As a teacher, I want to create quizzes with customizable options and question formats, so I can assess student knowledge in a variety of ways.
- As a teacher, I want to organize quizzes into courses or modules/topics, so I can group related material together and deliver quizzes in a logical order.
- As a teacher, I want to monitor student performance and view detailed analytics, so I can identify areas where students are struggling and adjust my teaching accordingly.
- As a teacher, I want to edit, update, or delete quizzes, so I can keep my content current and relevant.
- As a teacher, I want to manage student accounts and permissions, so I can control who has access to my quizzes and what information they can see.

## 5.7.2 Student

- As a student, I want to register and login to the system, so I can access the quizzes assigned to me by my teachers.
- As a student, I want to browse quizzes by category, topic, or difficulty level, so I can find the quizzes that are most relevant to me.
- As a student, I want to attempt quizzes with various question formats, so I can demonstrate my knowledge in a way that is comfortable for me.
- As a student, I want to receive instant feedback after each attempted question, so I can learn from my mistakes and improve my understanding.
- As a student, I want to receive feedback and scores upon completing quizzes, so I can see how well I performed.
- As a student, I want to view performance analytics and track progress over time, so I can identify areas where I am improving and set goals for myself.

## 5.8 Use Cases

### **Student Interface:**

#### **1. Taking a Quiz:**

- The student logs into the app.
- They navigate to the list of available quizzes.
- They select a quiz to take.
- They answer the questions within the allotted time.
- Once done, they submit their answers.

#### **2. Reviewing Quiz Results:**

- After submitting the quiz, the student can view their results.
- They can see which questions they answered correctly and incorrectly.

- They may also see the correct answers and explanations provided by the teacher.

### **3. Accessing Quiz History:**

- The student can access their quiz history to review past attempts.
- They can see their scores and performance over time.

### **4. Receiving Feedback:**

- If the teacher provides feedback on a quiz attempt, the student can access it through the app.
- They can read the feedback and use it to improve their understanding.

## **Teacher Interface:**

### **1. Creating a Quiz:**

- The teacher logs into the app.
- They access the quiz creation tool.
- They input quiz details such as title, instructions, and time limit.
- They add questions from a question bank or create new questions.
- They can set scoring options and answer keys.

### **2. Assigning a Quiz:**

- After creating a quiz, the teacher selects the class or students to assign it to.
- They set a due date and any other relevant parameters.
- The quiz is then made available to the selected students.

### **3. Monitoring Quiz Progress:**

- The teacher can monitor the progress of students taking the quiz in real-time.
- They can see which students have started or completed the quiz.

#### **4. Grading Quizzes:**

- Once students have completed the quiz, the teacher can access their responses.
- They can review each answer, assign scores, and provide feedback if necessary.

#### **5. Analysing Quiz Data:**

- The teacher can view analytics and reports on quiz performance.
- They can see class averages, question difficulty, and individual student performance.
- This data can inform future teaching strategies and interventions.

## 5.9 Competitor Analysis

### 5.9.1 Competitor 1 (Quizlet)



Visit Quizlet: <https://quizlet.com/gb>

1. [1] Market Presence and Brand Recognition: Quizlet is a well-established player in the quiz and study app market. It has gained significant traction and enjoys widespread recognition among students, educators, and professionals alike. Its brand name is synonymous with digital flashcards and study aids.

2. Features and Functionality: Quizlet offers a comprehensive suite of features designed to aid learning and retention. Key features include flashcards, quizzes, study games, and collaborative study

tools. Users can create their own study materials or choose from a vast library of user-generated content covering a wide range of subjects and topics.

3. User Interface and Experience: Quizlet boasts a user-friendly interface that is intuitive and easy to navigate. Its clean design and straightforward layout make it accessible to users of all ages and proficiency levels. The app's interactive study modes and customizable learning options enhance user engagement and satisfaction.

4. Content Quality and Variety: Quizlet's strength lies in its extensive database of study materials contributed by users worldwide. The platform offers a diverse range of content, including text-based flashcards, images, audio files, and diagrams. This variety allows users to engage with the material in multiple ways, catering to different learning preferences and styles.

5. Accessibility and Platform Integration: Quizlet is available across multiple platforms, including web, iOS, and Android devices. This broad accessibility ensures that users can access their study materials anytime, anywhere. Additionally, Quizlet integrates seamlessly with learning management systems (LMS) and educational platforms, making it a convenient tool for both independent study and classroom use.

6. Community and Collaboration: Quizlet fosters a vibrant community of learners who can collaborate and share study resources. Users can create study groups, join classes, and participate in live study sessions, facilitating peer-to-peer learning and knowledge exchange. This sense of community enhances engagement and encourages users to remain active on the platform.

7. Pricing and Monetization: Quizlet offers a freemium model, providing basic features for free while offering premium subscriptions for advanced functionality. The premium tier unlocks additional features such as ad-free browsing, offline access, and advanced study analytics. This pricing strategy allows Quizlet to appeal to a broad user base while generating revenue from dedicated users willing to pay for premium features.

8. Continuous Improvement and Updates: Quizlet regularly updates its platform with new features and enhancements based on user feedback and industry trends. This commitment to innovation ensures that the app remains relevant and competitive in a rapidly evolving market landscape. [1]

### 5.9.2 Competitor 2 (Fyrebox)



# Fyrebox

Visit Fyrebox: <https://www.fyrebox.com/>

Dislikes about the app -

- could be improved by adding more pricing options for fringe users to utilize more niche areas.
- In some cases, font of the text too dull.
- Lower statistics tracking options (Fyrebox needs a better statistics dashboard with more options. It may be clunky for beginners to change colors and designs.)
- It does not offer a broad capacity to create surveys.
- Limited free plan features can be restrictive.
- Occasional glitches in quiz rendering.

How they can be improved, what features are needed for the QuizMaster app,

## 1. Diverse Pricing Options:

**Issue with Fyrebox:** Limited pricing options for users with niche needs.

**Improvement for QuizMaster:** we will introduce a flexible pricing structure that accommodates various user requirements. Consider tiered plans with specific features tailored to different study levels and subjects.

## 2. Typography and Design:

**Issue with Fyrebox:** Dull font and clunky design customization.

**Improvement:** Provide a user-friendly interface with a variety of font options. Include pre-designed templates for easy customization, ensuring a visually appealing and engaging learning environment.

## 3. Comprehensive Statistics Dashboard:

**Issue with Fyrebox:** Limited statistics tracking options and a clunky design for customization.

**Improvement:** Develop an intuitive and comprehensive statistics dashboard. Include detailed insights on quiz performance, user progress, and engagement metrics. Simplify customization processes for colors and designs, making it accessible for users of all proficiency levels.

#### 4. Survey Creation Capabilities:

**Issue with Fyrebox:** Fyrebox lacks broad capacity for creating surveys.

**Improvement:** Improve the functionality of the app by adding a number of sophisticated survey generating options. Give people the tools they need to conduct thorough evaluations, gather insightful comments, and create incredibly customizable surveys. (This upgrade will expand the app's versatility and significantly increase its usefulness for a wider range of users and applications).

#### 5. Free Plan Enhancements:

**Issue with Fyrebox:** Limited features in the free plan can be restrictive.

**Improvement:** Enhance the features available in the free plan to provide users with a more comprehensive experience. This could include access to a broader range of quiz types, basic analytics, and customizable templates.

#### 6. Stability and Glitch-Free Experience:

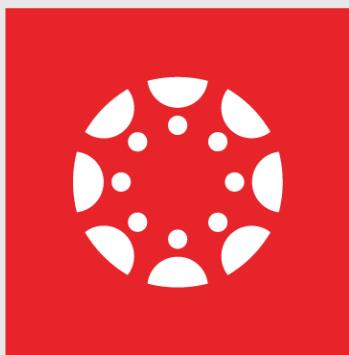
**Issue with Fyrebox:** Occasional glitches in quiz rendering.

**Improvement:** Prioritize app stability and conduct rigorous testing to ensure a glitch-free experience. Implement regular updates to address any issues promptly and enhance overall user satisfaction.

In comparison to Fyrebox, our QuizMaster app aims to stand out by prioritizing:

1. User-Friendly Customization: Offering an intuitive interface for users to easily personalize their learning experience without any design complications.
2. Comprehensive Pricing Options: Providing a variety of plans catering to different user needs ensuring affordability and value for money.
3. Versatility in Survey Creation: Empowering users with a broad capacity to create surveys allowing educators and learners to gather diverse feedback.
4. Robust Statistics Dashboard: Delivering a comprehensive and user-friendly statistics dashboard with detailed insights for both beginners and advanced users.

### 5.9.3 Competitor 3 (Canvas LMS)



# CANVAS LMS

Visit Canvas LMS: <https://www.instructure.com/canvas>

Canvas Learning Management System (LMS) has garnered widespread use in educational settings globally, yet it is not immune to criticism. Evaluating Canvas LMS from a user interface perspective reveals several areas where enhancements are warranted, providing insights crucial for the development of a more user-friendly self-study app.

#### **Dislikes about Canvas LMS:**

- 1. Limited Customization Options:** Canvas LMS users have voiced concerns regarding the platform's restricted ability to customize course layouts and designs. This limitation impedes educators from crafting engaging and personalized learning environments tailored to their students' needs and preferences.
- 2. Complex User Interface:** Novice users often find Canvas LMS's interface overwhelming and convoluted, particularly during the initial setup and course management processes. The interface's complexity can act as a barrier, deterring users from fully harnessing the platform's functionalities.
- 3. Inadequate Mobile Experience:** The mobile experience of Canvas LMS has been criticized for its subpar functionality and responsiveness across different mobile devices. Users encounter challenges accessing course materials and participating in learning activities seamlessly while on the go.
- 4. Limited Integration with External Tools:** Canvas LMS's integration capabilities with external tools and platforms are perceived as limited by some users. This limitation restricts educators from incorporating additional resources and technologies to enhance the learning experience for their students.

**5. Lack of Advanced Analytics:** While Canvas LMS provides basic analytics, users express a desire for more sophisticated reporting features to track student engagement, performance, and course effectiveness accurately. The absence of advanced analytics hinders educators' ability to assess teaching strategies effectively.

### **How Canvas LMS can be Improved and What Features are Needed for the Self-Study App:**

#### **Enhanced Customization Options:**

- Introduce a broader range of customization features to empower educators in creating visually captivating and personalized course layouts.
- Provide intuitive tools and templates to simplify the customization process, catering to users with varying levels of design expertise.

#### **Simplified User Interface:**

- Streamline the user interface by decluttering and optimizing navigation pathways, enhancing overall user experience and accessibility.
- Offer guided tours or tutorials to assist users, particularly newcomers, in familiarizing themselves with Canvas LMS's functionalities effectively.

#### **Improved Mobile Experience:**

- Optimize the mobile interface to ensure seamless functionality and responsiveness across diverse mobile devices.
- Develop dedicated mobile applications for iOS and Android platforms, offering enhanced features tailored for mobile learning.

#### **Expanded Integration Options:**

- Enhance integration capabilities with external tools and resources to provide users with greater flexibility in incorporating supplementary learning materials.

- Facilitate third-party integrations through accessible APIs and developer resources, enriching the learning experience for users.

#### **Advanced Analytics and Reporting:**

- Introduce advanced analytics and reporting features to provide educators with comprehensive insights into student engagement and learning outcomes.
- Implement predictive analytics algorithms to identify at-risk students early on and enable personalized interventions to support their academic progress.

**In comparison to Canvas LMS, our Self-Study App aims to Differentiate itself by:**

- Offering a more intuitive and customizable user interface, enhancing the overall user experience for self-paced learning.
- Providing robust analytics and reporting tools tailored to individual learners' needs, facilitating informed decision-making for educators.
- Seamlessly integrating with external resources and tools to enrich the learning experience and accommodate diverse learning preferences.
- Prioritizing mobile responsiveness and accessibility to ensure users can engage with course materials effectively across various devices and environments.

In summary, by addressing the user interface shortcomings of Canvas LMS and incorporating innovative features into the self-study app, we aspire to create a more engaging, user-centric, and efficient learning platform for students and educators alike.

#### **5.9.4 Competitor 4 (Typeform)**



The Typeform logo consists of the word "Typeform" in a large, bold, black sans-serif font. The letters are slightly rounded and have a modern feel.

Visit Typeform: <https://www.typeform.com/>

**Dislikes about the app:**

- Typeform is overpriced.
- They decided to discontinue the Chat Form creation feature.
- Does not support more scheduling tools other than Calendly.
- Typeform lacks a feature for editing previously submitted responses.
- The free plan of Typeform has some limitations, including the number of questions per survey and the number of responses allowed, which may restrict some users' needs.
- Typeform is primarily an online platform, and it does not provide an offline mode for collecting data in scenarios where an internet connection is not available.
- The platform's conditional logic capabilities are somewhat limited, making it challenging to create complex branching and skip logic in surveys.

### **How they can be improved, what features are needed for the QuizMaster app,**

- **Affordable Pricing:**

**Issue:** Typeform is considered overpriced.

**Improvement:** Offer competitive pricing plans that provide value for money and ensure affordability for users across different budget ranges.

- **Chat Form Creation Feature:**

**Issue:** Discontinuation of the Chat Form creation feature.

**Improvement:** Include a feature that makes it easy for users to develop chat forms that are dynamic and entertaining, emulating conversational interfaces.

- **Expanded Scheduling Tools:**

**Issue:** Limited support for scheduling tools beyond Calendly.

**Improvement:** Connect with many scheduling platforms, such Google Calendar, Acuity Scheduling, or Doodle, to meet the needs and preferences of a wide range of users

- **Editing Previously Submitted Responses:**

**Issue:** Lack of feature for editing previously submitted responses.

**Improvement:** Include a feature that enables users to amend their responses after submitting them, giving data collection flexibility and accuracy.

- **Free Plan Enhancements:**

**Issue:** Limitations in the free plan, including restrictions on the number of questions and responses.

**Improvement:** To better serve consumers' demands, expand the features offered in the free plan by adding more functionality or raising the question and response limits.

- **Offline Mode for Data Collection:**

**Issue:** Lack of offline mode for data collection.

**Improvement:** Provide an offline mode function that will ensure accessibility in a range of situations by enabling users to gather information and responses even in the absence of an internet connection.

- **Advanced Conditional Logic:**

**Issue:** Limited conditional logic capabilities, especially for complex branching and skip logic.

**Improvement:** Improve the platform's conditional logic features to enable more complex branching and skip logic, giving users the ability to design more intricate and customized surveys.

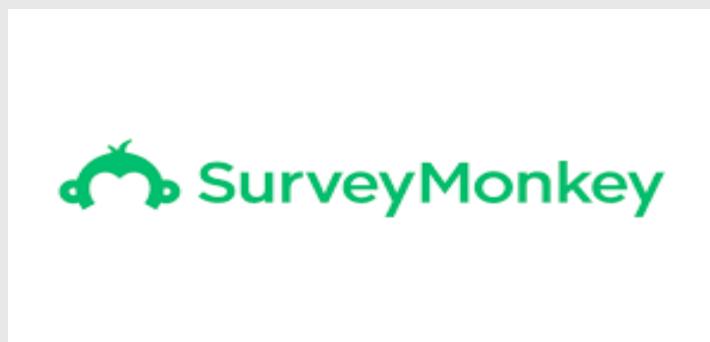
**In comparison to typeform, our QuizMaster app aims to stand out by prioritizing:**

- Cost-effective Solutions: Offering transparent features and pricing tiers at reasonable prices to accommodate different user budgets.
- Seamless Integrations: Guaranteeing simple connection with widely used tools and platforms, requiring the least number of permissions possible for trouble-free connectivity.
- Many Scheduling Options: Including integrations with many additional scheduling tools in addition to Calendly to support various workflows and scheduling preferences.
- Flexibility in Response Editing: Giving users the ability to make changes to previously submitted responses promotes accuracy and flexibility in data management.
- Features of the Generous Free Plan: To accommodate the demands of different users, the Free Plan is broad and has generous limitations on inquiries and responses.
- Accessibility and Offline option: To guarantee accessibility in a variety of settings and circumstances, an offline option for data collecting should be offered.

- Advanced Conditional Logic: This feature will allow customers to develop more intricate and customized surveys by extending the platform's conditional logic capabilities to accommodate complicated branching and skip logic.

Our self-study software seeks to overcome the shortcomings noted in Typeform and offer a more complete, intuitive, and feature-rich learning environment by concentrating on these areas of improvement.

#### 5.9.4 Competitor 5 (Survey Monkey)



Visit Survey Monkey:

[https://uk.surveymonkey.com/?ut\\_source=sem\\_lp&ut\\_source2=sem&ut\\_source3=header](https://uk.surveymonkey.com/?ut_source=sem_lp&ut_source2=sem&ut_source3=header)

##### **Dislikes about this app:**

- The pricing is a bit steep and the various plans with add-ons can quickly add up in cost.
- Customer service can be slow, or unavailable at times.
- Some of the surveys are way too long for the amount the survey is willing to pay.
- It will be good if they can support near real time syncing with Excel, Google Spreadsheets, Air Table kind of tools. Now all data needs to be exported and uploaded to respective tools.
- Number of devices logged in is limited to two at a time.
- Changing background is not possible only one can add image in questionnaire.
- The interface is a bit complicated compared to other survey applications. If you do not have enough knowledge, you will have difficulty preparing a survey.

## **How they can be improved, what features are needed for the QuizMaster app:**

- Pricing Transparency and Flexibility:**

**Issue:** Pricing is perceived as steep, with additional costs for add-ons.

**Improvement:** Provide clear and adjustable pricing schemes to guarantee affordability for users with different requirements. Give concise justifications for value propositions and additional charges.

- Improved Customer Service:**

**Issue:** Slow or unavailable customer service.

**Improvement:** Give priority to prompt, amiable customer care, providing a variety of help channels and guaranteeing prompt resolution of user inquiries and problems.

- Optimized Survey Length and Compensation:**

**Issue:** Some surveys are too long relative to compensation.

**Improvement:** Put in place systems to guarantee that surveys are fairly rewarded and balanced in duration, taking into account users' time and efforts.

- Real-Time Data Syncing:**

**Issue:** Limited support for near real-time syncing with Excel, Google Spreadsheets, etc.

**Improvement:** Provide smooth interface with well-known productivity tools, enabling survey data synchronization in almost real-time to improve data management and workflow effectiveness.

- Expanded Device Logins:**

**Issue:** Limitation on the number of devices logged in simultaneously.

**Improvement:** To ensure flexibility and accessibility and to support a variety of user scenarios, increase the number of concurrent device logins.

- Enhanced Customization Options:**

**Issue:** Limited options for customizing survey backgrounds.

**Improvement:** Offer extensive customization options, such as the capacity to add images, alter backdrops, and customize the questionnaire's appearance to the user's liking.

- **Simplified User Interface:**

**Issue:** Interface complexity compared to other survey applications.

**Improvement:** Create an interface that is simple to use and intuitive so that even people with no technical experience may utilize it. Give users precise instructions and tooltips to help them prepare and customize surveys.

**In comparison to survey monkey, our QuizMaster app aims to stand out by prioritizing:**

- Clear and Flexible Pricing: To guarantee affordability and value for money, provide transparent add-on fees together with flexible alternatives and transparent pricing plans.
- Respondent Customer Support: Giving prompt assistance and solutions to user questions and concerns a high priority, along with efficient and approachable customer service.
- Fair Survey Length and Compensation: Ensuring that surveys are fairly compensated and suitably incentive-structured to honour users' time and work.
- Strong Anti-Fraud methods: To preserve data accuracy and integrity, strong anti-fraud methods, like captcha verification, are implemented.
- Enabling near real-time data syncing and seamless interaction with well-known productivity tools improves workflow efficiency and data management capabilities.
- Increased Device Accessibility: To support a variety of user scenarios and guarantee accessibility, allowing more devices to log in simultaneously.
- Personalized interface options and background modification are just two of the many customization possibilities that are available for survey design.
- Designing an intuitive and user-friendly interface with clear instructions and tooltips will ensure that users of all skill levels can easily navigate and use it.

Our self-study app hopes to overcome the shortcomings found in SurveyMonkey by concentrating on these areas and offering a more thorough, user-centric, and feature-rich learning platform.

#### 5.9.4 Competitor 5 (Kahoot)



Visit Kahoot: <https://kahoot.com/>

- 1. User Interface and Experience (UI/UX):** Kahoot has gained popularity partly due to its intuitive and engaging user interface. The platform's simplicity makes it accessible to a wide range of users, including students, teachers, and corporate trainers. The colourful design and interactive features enhance the overall user experience, making learning and quizzing fun and engaging.
- 2. Gameplay Mechanics:** Kahoot's gameplay mechanics are centered around live multiplayer quizzes where participants answer questions in real-time using their smartphones or other devices. The competitive aspect, with players earning points based on both correctness and speed of their answers, adds excitement, and encourages active participation. Additionally, Kahoot offers various question formats such as multiple choice, true/false, and puzzles, providing versatility in quiz creation.
- 3. Content Library:** Kahoot boasts a vast library of user-generated quizzes on a wide range of topics, including education, entertainment, and corporate training. This extensive content repository caters to diverse interests and learning needs, providing users with ample options to explore and engage with.

**4. Integration with Education:** Kahoot has made significant inroads in the education sector, with many teachers using the platform to create interactive quizzes for their students. Integration with learning management systems (LMS) and educational platforms enhances its appeal to educators, allowing seamless incorporation of quizzes into lesson plans and curriculum.

**5. Gamification Elements:** Kahoot incorporates gamification elements such as points, leaderboards, and rewards to motivate and engage users. The competitive nature of the quizzes, coupled with the ability to track progress and performance, encourages repeated use and fosters a sense of achievement among participants.

**6. Business Model:** Kahoot offers both free and premium subscription options. While the basic features are available for free, premium subscriptions provide additional customization options, advanced analytics, and access to exclusive content. The freemium model allows Kahoot to attract a wide user base while generating revenue from premium subscriptions and partnerships with educational institutions and corporate clients.

**7. Mobile Accessibility:** Kahoot's mobile app ensures accessibility across devices, allowing users to participate in quizzes anytime, anywhere. The app's compatibility with iOS and Android platforms further expands its reach and convenience for users on the go.

**8. Social Sharing and Community Engagement:** Kahoot facilitates social sharing of quizzes, enabling users to discover and play quizzes created by others. The platform also fosters community engagement through features such as public leaderboards, user comments, and the ability to follow favourite creators, enhancing the overall user experience and sense of belonging.

In summary, Kahoot's success can be attributed to its user-friendly interface, engaging gameplay mechanics, extensive content library, integration with education, effective use of gamification, flexible business model, mobile accessibility, and focus on social sharing and community engagement. Understanding these strengths can help inform the development and positioning of your quiz app in the competitive landscape.

## 5.10 Pain Points

### 5.10.1 Teacher Pain Points

# Teacher Users

## Quiz Creation and Management

Difficulty in creating and uploading quiz content.

Time-consuming process for organizing and categorizing quizzes.

Limited tools for monitoring student progress and performance.

## Analytics and Reporting

Difficulty in generating detailed reports on quiz results.

Inadequate insights into student performance and areas for improvement.

Absence of features for identifying struggling students or trends in quiz scores.

## Administrative Tasks

Challenges in managing multiple classes or groups within the app.

Difficulty in setting deadlines or time limits for quizzes.

## Collaboration and Communication

Lack of features for sharing quizzes or study materials with other teachers.

Inefficient communication channels for discussing quiz content or student performance.

Difficulty in providing timely feedback to students on quiz submissions.

Inefficient process for assigning quizzes and tracking student completion.

**Problem:** Teachers find it difficult to create engaging and effective quizzes within the learning management app.

Who is affected? Teachers

What is the problem? Difficulty creating quizzes.

Where does this problem occur? Within the learning management app

When does this problem occur? During lesson planning

Why does this problem occur? The app may lack features for creating different question types or customizing quizzes. Why is this important? It can be time-consuming for teachers and limit their ability to assess student learning effectively.

**Problem:** Teachers lack efficient tools to communicate with students and parents within the app.

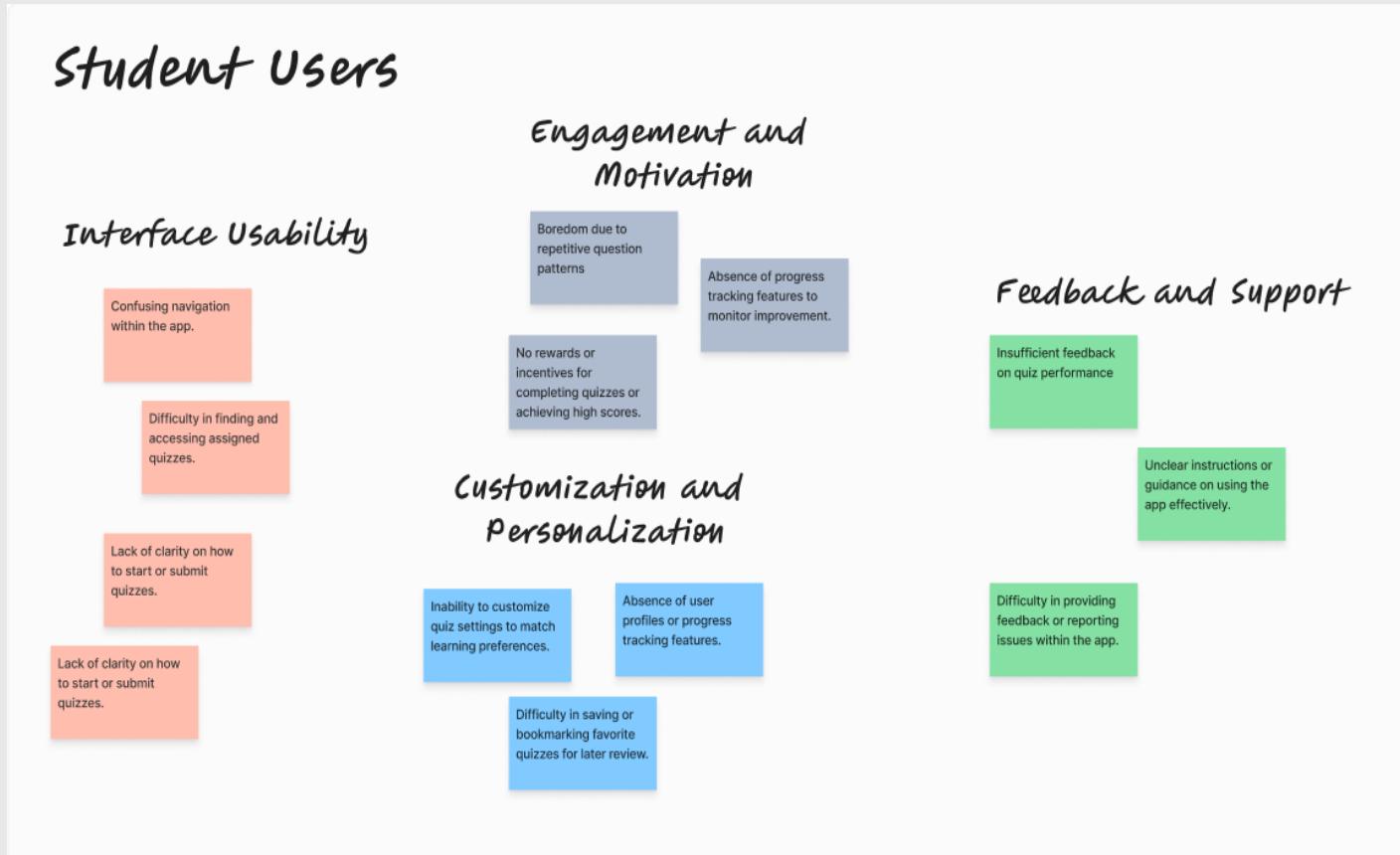
Who is affected? Teachers and students/parents

What is the problem? Difficulty communicating with students and parents.

Where does this problem occur? Within the learning management app

When does this problem occur? Throughout the learning process

### 5.10.1 Student Pain Points



**Problem:** Students find the learning management app difficult to navigate and use.

Who is affected? Students

What is the problem? Difficulty using the app.

Where does this problem occur? Throughout the app

When does this problem occur? Anytime students need to use the app.

Why does this problem occur? The app may have a confusing interface or lack intuitive features. Why is this important? A difficult-to-use app can discourage students from using it and hinder their learning.

**Problem:** Students struggle to stay engaged and motivated while using the learning management app.

Who is affected? Students

What is the problem? Lack of engagement and motivation

Where does this problem occur? Within the learning management app

When does this problem occur? Throughout their learning sessions

Why does this problem occur? The app may lack interactive elements or features that cater to different learning styles. Why is this important? Disengaged students are less likely to retain information and may not complete their coursework.

## 5.11 Problem Statement & Ideate Solutions

How we Might?

1. Users aren't aware of the full product offerings.

- How might we increase the awareness of the full product offerings?

When users initially open the app, implement a feature spotlight or onboarding procedure that highlights the entire spectrum of product offerings. This could involve using interactive tutorials or walkthroughs to highlight important features, advantages, and functionalities. Use pop-up alerts or in-app announcements to let consumers know about new features, upgrades, or product offerings. This makes sure that users are aware of and interested in the most recent changes made to the app. Users should receive frequent email newsletters that promote various features of the products offered, such as new study guides, forthcoming occasions, or exclusive deals. This promotes awareness-raising and motivates people to make advantage of all the resources that are accessible.

- How might we improve visibility and accessibility of all available study materials within the app?

Redesign the app's navigation to make it easier to locate and utilize study resources. This could include adding search filters, classifying content into easy-to-use groups, or providing quick links to well-liked websites. Include a feature that allows users to receive personalized recommendations for study materials based on their past app use, hobbies, and preferences. This ensures that the information users receive is relevant to their learning objectives. Display recommended or highlighted study materials in a prominent manner across the app, whether on the main screen or in particular parts. This promotes interaction and focuses users' attention on useful resources.

- How might we personalize recommendations to ensure users are aware of relevant content?

Implementing user profiling is a great way to encourage users to create profiles with their interests, academic level, and preferred subjects, which can then be used to personalize recommendations based on their preferences. Using machine learning algorithms to analyse users' interaction patterns with the app can help generate personalized recommendations, like suggesting similar study

materials to those they have previously engaged with. Providing content customization options allows users to tailor their learning experience by selecting preferred subjects or topics, adjusting difficulty levels, or filtering study materials based on specific criteria. Incorporating social features enables users to see study materials recommended by peers or instructors.

- How might we implement notifications or alerts to inform users about new or updated study resources?

Stay connected with users by sending them push notifications on their devices, whether it's about new study materials, updates, or upcoming quizzes. Let users personalize their notification settings to tailor the frequency and types of alerts they want to receive. Stay informed with weekly or monthly digests that highlight the latest additions to the app's study resources and offer personalized suggestions based on users' interests and activity. Receive in-app notifications like banners or pop-ups to keep users updated on new content or important announcements as they navigate through the app. Synchronize study sessions and quiz deadlines with users' calendar apps seamlessly for better organization and time management.

## 2. Users often spend a long time checking their submission for mistakes.

- How might we implement automated error detection and correction features to minimize the need for manual review?

As users enter their submissions, give them immediate feedback that points out possible mistakes and suggests changes before they submit their work in its final form. Encourage users to proofread and edit their work before submitting it, drawing attention to any mistakes or inconsistencies that are found.

- How might we offer customizable templates or checklists to streamline the submission drafting process?

Create a library of pre-made submission templates for different kinds of submissions, such as essays, reports, and presentations. Users can choose a template that best fits their needs and make any necessary customizations. Provide a checklist tool to help users draft their submissions by outlining the necessary procedures and making sure all necessary parts are included before submitting. Provide consumers the option to design their own or alter pre-existing templates to suit their own requirements, tastes, and aesthetic standards.

- How might we provide access to on-demand assistance or resources for resolving common submission errors?

Provide a thorough help centre in the app with links, instructions, and tutorials on typical submission mistakes and how to fix them. Give consumers the ability to contact qualified support agents via live chat help within the app. These agents may offer prompt assistance and advise on fixing submission

difficulties. Establish a discussion board or community forum where users may ask questions, exchange advice, and work with professionals and other users to troubleshoot common submission difficulties.

### 3. Users find the return process difficult.

- How might we simplify the user interface and navigation to streamline the return process?

Redesign the interface to eliminate extraneous items and clutter, concentrating on the key functions and activities needed to complete the return process. Confusion can be minimized by implementing an easy-to-understand navigation structure that leads users through the return process step-by-step.

- How might we leverage user feedback and analytics to continuously optimize and refine the return process for improved user satisfaction?

Encourage customers to share their thoughts about their return experience by sending them an in-app survey or feedback form. This way, you can get their opinions and suggestions for improvement. To discover pain points, bottlenecks, and opportunities for optimization, track user interactions and behaviours during the return process using analytics tools.

### 4. Users struggle to stay motivated during self-study sessions:

- How might we use gamification features, like progress monitoring or accomplishment badges, to encourage and reward regular study habits?

Establish a virtual trophy or badge system that users may obtain by passing tests, hitting goals, or becoming experts in particular areas. To keep users engaged and motivated, these badges serve as incentives and rewards. Include tools for tracking users' progress that display their learning path, emphasizing their accomplishments, development areas, and places in need of improvement. This visual feedback motivates users to continue learning by reinforcing good habits. Create leaderboards or rating systems to highlight users' accomplishments and standing in relation to other users. Friendly rivalry might motivate users to strive for better and take part more actively.

- How might social elements like peer challenges and study groups be used to help users feel more accountable and like part of a community?

Create opportunities for users to engage in friendly competition with each other by taking quizzes, earning badges, or reaching study goals. The camaraderie and healthy competition among peers can serve as a strong motivator for users to remain focused and aim for success in their studies. Enable users to share their progress, achievements, and preferred study resources on various social media platforms. This not only fosters a sense of pride and confidence in users but also serves as a source of inspiration for others to get involved and become a part of the learning community.

- In order to increase intrinsic motivation, how might we tailor study recommendations and content to users' interests and preferred methods of learning?

Make customized recommendations for study materials, tests, and learning routes by using algorithms to examine users' study preferences, habits, and performance data. Intrinsic motivation is raised when content is presented according to consumers' interests and preferred methods of learning. Use technologies for adaptive learning to modify the content and degree of difficulty of study materials according to the abilities, weaknesses, and progress of users. Users are constantly challenged and engaged at their ideal learning level because to this tailored method.

#### 5. Users struggle to effectively manage their study schedules and prioritize tasks:

- How can we create a calendar or planner function that is easy to use so that users can set goals and arrange study sessions?

Add a user-friendly calendar feature to the app for scheduling study sessions, setting goals, and tracking progress over time. Users can easily see their study schedule at a glance and make adjustments as needed. Let users set SMART goals for study sessions, like finishing quizzes or mastering a topic by a deadline. The app should show visual indicators of goal progress to motivate users. Allow users to create study plans tailored to their availability, preferences, and learning objectives.

- How can we use alerts and reminders to encourage users to adhere to their study plan and not put off studying?

Users can create personalized reminders and notifications for upcoming study sessions, deadlines, or goals. These reminders are sent via push notifications, emails, or in-app alerts according to user preferences. Machine learning algorithms analyse users' study habits and preferences to create customized reminders and prompts that encourage consistent study habits and discourage procrastination. Reminders are sent to users based on their progress towards study goals, reminding them to review specific topics or complete tasks if they are behind schedule.

#### 6. Users find it challenging to track their progress and monitor their academic performance:

- How can we make progress reports or customizable dashboards that show users' accomplishments, study habits, and areas for growth?

Create custom dashboards where users can monitor their progress, see their accomplishments, and pinpoint areas for improvement. The dashboard should have visual elements like charts, graphs, and progress bars to give users a clear overview of their academic performance. Introduce a system to monitor users' achievements, like badges, certificates, or points earned for completing quizzes, mastering subjects, or reaching study goals. Users should be able to track their progress towards these achievements on their dashboard. Offer users in-depth analytics on their study behaviours, including data on study time, quiz results, topic mastery, and learning progress.

- How can we incorporate feedback systems to assist users in assessing their comprehension and mastery of the course material, such as peer evaluations or self-assessment quizzes?

Give users the option to take part in peer evaluation activities where they can evaluate and comment on one other's work, such as group quizzes or peer-reviewed assignments. This encourages users to collaborate, think critically, and engage in active learning. Encourage interaction between students and teachers by enabling users to ask questions, get clarification, and get comments on their work. To assist students in improving their comprehension and performance, instructors can offer tailored comments and direction.

## 7. Users experience difficulty in finding study materials relevant to their specific learning goals and objectives:

- How can HMW make study resources more easily found and searchable based on the demands of users?

Enable users to filter search results by subject, topic, difficulty level, format (such as text or video), and relevance. This helps users find study materials that match their learning needs and goals. Integrate natural language processing techniques to improve the search experience.

- How can we organize and classify study resources into playlists or collections with a theme to make it easier to browse and discover relevant content?

Group study resources into playlists or thematic collections that are centred around related topics, subjects, or learning objectives. It is easier for users to access resources that align with their interests when they browse these collections, which have related content grouped together. Tailored recommendations: Make advantage of AI algorithms to assess users' performance metrics, likes, and study habits to deliver tailored recommendations for themed collections. The platform needs to suggest collections that align with users' learning goals and inclinations, assisting them in finding new and relevant readings.

- How can we use ratings and comments from users to highlight well-liked resources and present top-notch study materials within the app?

Provide a review and rating feature in the app so users may leave comments about and rate the study materials they have used. This will assist users in locating reliable sources and avoiding irrelevant or low-quality stuff. Display the overall evaluations and comments for every resource to help with decision-making. Emphasize well-liked study materials within the app by presenting resources that have received high ratings, favourable reviews, or a lot of user interaction. This social proof can assist users in finding informative and useful learning stuff. Encourage user input on study materials by offering rewards, surveys, or prompts to establish a feedback loop for ongoing

development. Make use of these suggestions to improve the app's features and give users a better educational experience.

### Ideate Solutions and Group Solution Themes (Affinity Mapping):



# 6 Requirement Specification

## 6.1 Functional Requirements

### 6.1.1 User Requirements

#### 6.1.1.1 Student Requirements

##### **1. User Authentication:**

- The app should allow students to create an account or log in using existing credentials.
- Students should be able to reset their password if forgotten.

##### **2. Profile Management:**

- Students should have access to a profile section where they can view and edit their personal information (e.g., name, email, profile picture).
- They should be able to track their progress, including completed quizzes, scores, and achievements.

##### **3. Course browsing:**

- The app should provide students with a user-friendly interface to discover quizzes.

- Quizzes should be categorized by subject, topic, difficulty level, and popularity for easy navigation.
- Students should be able to search for quizzes using keywords.

#### **4. Quiz Taking:**

- Students should be able to select and start quizzes from the available options.
- The app should present questions one at a time, with options for multiple-choice, true/false, or open-ended answers.
- There should be a timer for timed quizzes, displaying remaining time and auto-submitting answers when time runs out.
- Students should have the option to skip questions and return to them later.
- The app should provide instant feedback on correct and incorrect answers.
- For practice quizzes, students should have the option to review their answers and explanations for correct solutions.

#### **5. Progress Tracking:**

- Students should be able to track their quiz performance over time, including scores, completion rates, and areas of improvement.
- The app should provide visualizations such as graphs or charts to represent progress.

#### **6. Customization:**

- Students should have the ability to customize their quiz-taking experience, such as adjusting font size, enabling/disabling sound effects, or selecting a preferred theme.
- They should be able to create custom quizzes by selecting specific topics, question types, and difficulty levels.

#### **7. Notifications:**

- The app should send notifications to remind students of upcoming quizzes, deadlines, or new study materials.
- Students should have the option to customize notification settings based on their preferences.

## **8. Social Features:**

- The app should include social features that allow students to connect with peers, join study groups, and share quiz results.
- Students should be able to see leaderboards to compare their scores with other users.

## **9. Accessibility:**

- The app should adhere to accessibility standards, ensuring that it is usable by students with disabilities.
- Features such as screen reader support, alternative text for images, and keyboard navigation should be implemented.

## **10. Feedback Mechanism:**

- Students should have a way to provide feedback on quizzes, including rating quizzes, suggesting improvements, or reporting issues.

## **11. Multimedia Support:**

- Quizzes should include multimedia elements such as images, audio clips, or videos to enhance learning and understanding.
- The app should support various media formats and ensure compatibility across different devices.

## **12. Progress Synchronization:**

- The app should synchronize students' progress and data across multiple devices, allowing them to seamlessly switch between smartphones, tablets, and computers.
- Changes made on one device (e.g., completing a quiz or updating profile information) should be reflected on all synced devices.

## **13. Security and Privacy:**

- The app should implement robust security measures to protect students' personal information and quiz data.

- It should adhere to data privacy regulations and provide clear information about how user data is collected, stored, and used.

#### **14. Technical Support:**

- The app should offer technical support resources such as FAQs, help guides, and customer service channels to assist students with any issues or questions they encounter while using the app.

#### **15. Rewards and badges:**

- The app should incorporate gamification elements such as badges, rewards, and levels to motivate students and enhance their engagement.
- Students should earn points or virtual currency for completing quizzes, achieving high scores, or reaching milestones.

#### *6.1.1.2 Teacher Requirements*

##### **1. User Authentication and Role Management:**

- Teachers should be able to create an account or log in using existing credentials.
- The app should differentiate between student and teacher accounts, providing appropriate permissions and access levels to each.

##### **2. Dashboard and Analytics:**

- The app should provide teachers with a dashboard displaying an overview of quiz performance metrics, such as average scores, completion rates, and student progress.
- Teachers should be able to view detailed analytics for each quiz, including question-level performance, time taken per question, and student engagement statistics.

##### **3. Quiz Creation and Management:**

- Teachers should have the ability to create and customize quizzes by selecting questions from a question bank or creating new questions.
- The app should support various question types, including multiple-choice, true/false, open-ended, and essay questions.

- Teachers should be able to set parameters for quizzes, such as time limits, number of attempts, and scoring criteria.
- They should have the option to preview quizzes before publishing them to students.

#### **4. Question Bank Management:**

- Teachers should be able to manage a centralized question bank, categorizing questions by subject, topic, difficulty level, and other relevant criteria.
- They should have the ability to add, edit, or delete questions from the question bank as needed.

#### **5. Assignment and Scheduling:**

- Teachers should be able to assign quizzes to individual students, groups of students, or entire classes.
- The app should support scheduling quizzes for specific dates and times, as well as recurring assignments for ongoing practice.
- Teachers should have the option to set deadlines and time limits for quiz assignments.

#### **6. Grading and Feedback:**

- The app should automate the grading process for objective questions (e.g., multiple-choice), providing instant feedback to students upon completion.
- They should have access to a grading interface where they can view student responses, assign scores, and add comments.

#### **7. Student Progress Monitoring:**

- Teachers should be able to track individual student progress, including quiz scores, completion rates, and areas of strength and weakness.
- The app should provide visualizations such as progress charts and heatmaps to facilitate data analysis.

#### **8. Technical Support and Training:**

- The app should provide comprehensive technical support resources for teachers, including documentation, tutorials, and help guides.
- Training sessions or workshops should be offered to familiarize teachers with the app's features and functionalities.

## 6.1.2 System Requirements

### **Operating System:**

- The app should be compatible with both iOS and Android mobile operating systems.
- For iOS devices, the app should support iOS version 12 and above.
- For Android devices, the app should support Android version 7.0 (Nougat) and above.

### **Device Compatibility:**

- The app should be designed to work on a wide range of mobile devices, including smartphones and tablets.
- It should be optimized for various screen sizes and resolutions, ensuring a consistent user experience across different devices.

### **Processor and Memory:**

- The app should be lightweight and optimized for performance, capable of running smoothly on devices with varying processor speeds and memory capacities.
- It should not require excessive processing power or memory resources to operate efficiently.

### **Storage Space:**

- The app should have a small footprint and consume minimal storage space on the user's device.
- It should be designed to efficiently manage local storage, cache data, and minimize the amount of disk space used.

### **Internet Connectivity:**

- The app should support both online and offline modes of operation.
- It should require an internet connection only for certain features such as downloading quizzes, syncing progress data, or accessing online resources.
- Offline functionality should be available for core features such as taking quizzes and reviewing past performance.

#### **Permissions:**

- The app should only request necessary permissions from users to access device features and data.
- Required permissions may include access to the device's camera (for scanning QR codes or uploading profile pictures), storage (for saving downloaded quizzes), and network (for internet connectivity).

#### **Security:**

- The app should implement industry-standard security practices to protect user data and privacy.
- It should use encryption protocols to secure data transmission over the internet and store sensitive information securely on the device.
- User authentication mechanisms should be in place to prevent unauthorized access to personal accounts and quiz data.

#### **Accessibility:**

- The app should adhere to accessibility standards to ensure that it is usable by individuals with disabilities.
- Features such as screen reader support, adjustable font sizes, and colour contrast options should be implemented to accommodate users with diverse needs.

#### **Updates and Maintenance:**

- Regular maintenance and support should be provided to address user feedback, bug reports, and compatibility issues with new device models or operating system updates.

## 6.2 Non-Functional Requirements

Certainly, here are some non-functional requirements for the self-study quiz app:

### 1. Performance:

- The app should load quickly and respond promptly to user interactions, with minimal latency.
- It should be able to handle concurrent user sessions efficiently, without experiencing slowdowns or crashes during peak usage times.

### 2. Reliability:

- The app should be stable and reliable, with a low rate of crashes or unexpected shutdowns.
- It should gracefully handle errors and exceptions, providing informative error messages to users when necessary.

### 3. Usability:

- The app should have an intuitive and user-friendly interface, designed to be easy to navigate and understand for users of all skill levels.
- It should follow established design conventions and guidelines for mobile apps, ensuring consistency and familiarity with common interaction patterns.
- The app should provide clear instructions and guidance to users, especially for features such as quiz taking and results viewing.

### 4. Accessibility:

- The app should be accessible to users with disabilities, including those with visual, auditory, motor, or cognitive impairments.
- It should comply with accessibility standards such as WCAG (Web Content Accessibility Guidelines), ensuring that all users can access and use the app effectively.

### 5. Security:

- The app should implement robust security measures to protect user data and privacy.
- User authentication should be secure, with mechanisms such as password hashing and encryption to safeguard sensitive information.

- Data transmission over the internet should be encrypted using SSL/TLS protocols to prevent interception or tampering.

#### 6. Scalability:

- The app should be designed to scale seamlessly as the user base grows, without compromising performance or user experience.
- Backend systems and infrastructure should be able to handle increasing loads and user interactions, with provisions for horizontal and vertical scaling as needed.

#### 7. Compatibility:

- The app should be compatible with a wide range of mobile devices, screen sizes, and resolutions, ensuring a consistent experience across different platforms.
- It should support the latest versions of popular web browsers on both iOS and Android devices.

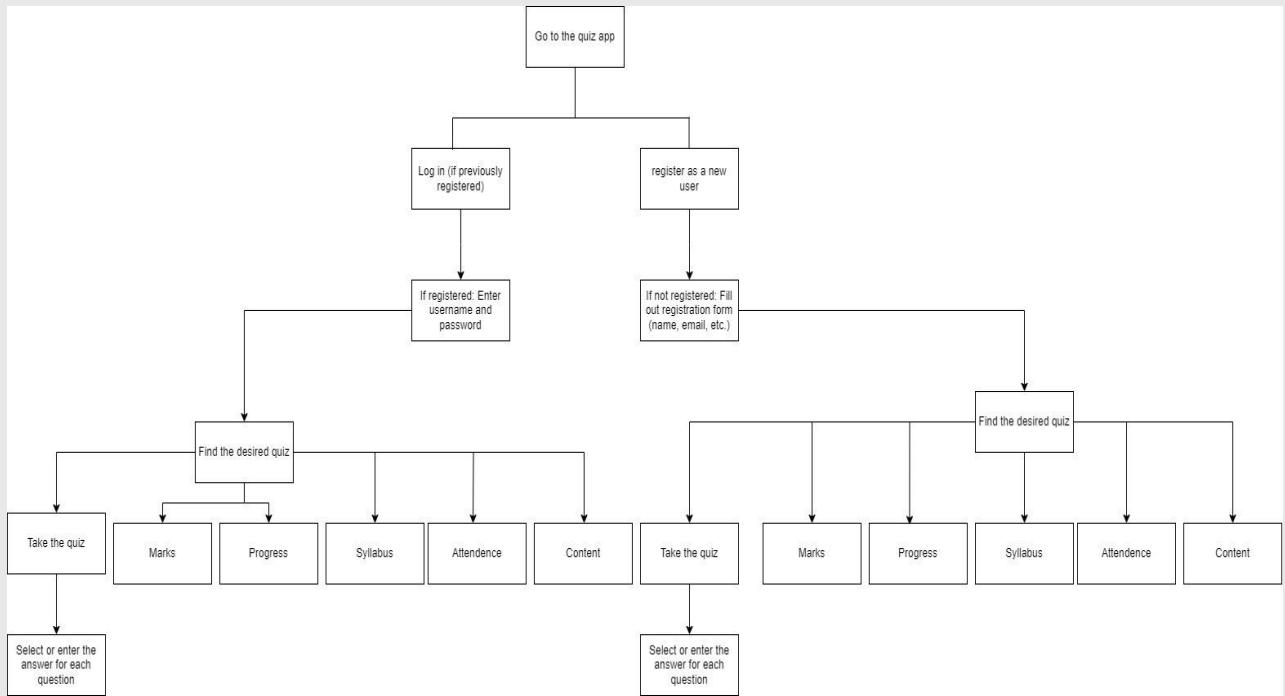
#### 8. Localization and Internationalization:

- The app should support multiple languages and locales, allowing users to customize their language preferences.
- Text and content should be easily translatable and culturally appropriate for users from different regions and backgrounds.

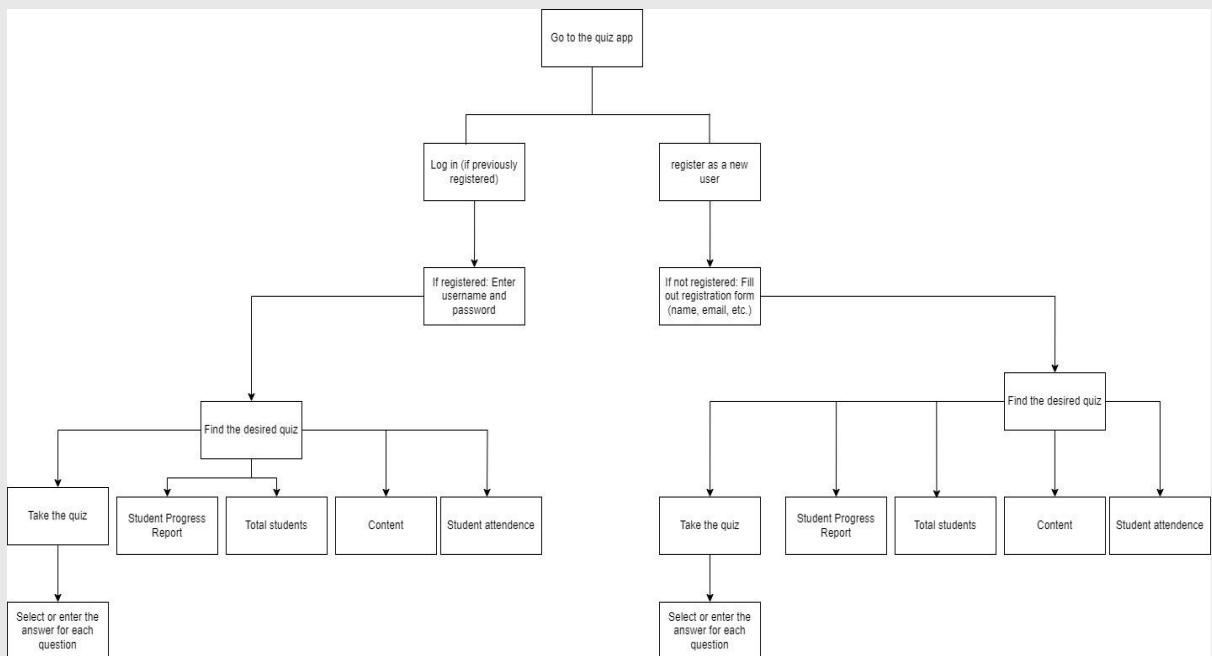
These non-functional requirements are essential for ensuring that the self-study quiz app meets high standards of performance, reliability, usability, security, and compliance with legal and industry requirements.

### 6.3 Hierarchical Task Analysis

#### 6.3.1 Student Hierarchical Task Analysis



### 6.3.2 Teacher Hierarchical Task Analysis



# 7 UI /UX Goals

## 7.1 Usability

1. Efficiency: Ensure that users can accomplish tasks quickly and with minimal effort. This involves streamlining workflows, reducing the number of steps required to complete actions, and optimizing the layout of interface elements for intuitive navigation.
2. Learnability: Design the interface in a way that is easy for new users to understand and learn. Provide clear instructions, tooltips, and contextual help features to guide users through the platform and familiarize them with its functionalities.
3. Error Prevention: Minimize the occurrence of errors by implementing validation checks, clear feedback messages, and user-friendly error handling mechanisms. Anticipate common user errors and design the interface to prevent them proactively.

## 7.2 User Experience Goals

1. Engagement: Create an interactive and visually appealing interface that captivates users' attention and encourages active participation. Incorporate gamification elements, animations, and multimedia content to make the learning experience enjoyable and engaging.
2. Personalization: Offer personalized experiences tailored to individual user preferences, learning styles, and goals. Allow users to customize their profiles, settings, and content recommendations to create a sense of ownership and relevance.
3. Accessibility: Ensure that the platform is accessible to users of all abilities by adhering to accessibility standards and guidelines. Provide alternative navigation options, text-to-speech support, and adjustable font sizes to accommodate diverse user needs and ensure inclusivity.

By prioritizing these usability and user experience goals, our aim is to create a user-centric and intuitive learning platform that fosters efficiency, engagement, and accessibility for all users.

## 8 UI/UX Design Principles

### 8.1 Design Principles

The layout and arrangement of the user interface of the app are determined by fundamental standards known as design principles. Throughout the design process, they guarantee accessibility, consistency, and usefulness.

Some key design principles include:

- ❖ Consistency: we have kept the layout, color scheme, and typefaces of the app consistent throughout. Users will be able to navigate the app with ease and anticipate how various elements will behave because to this uniformity.
- ❖ Simplicity: we have simplified the app's design by getting rid of extraneous components and intricate details. Users are able to use the app without needless distractions thanks to this simplified approach, which also improves clarity and convenience of use.
- ❖ Feedback: Users of the app receive prompt, insightful feedback for their activities. Users gain confidence and gain a better understanding of the app's replies from this feedback, which can be used to validate successful interactions or notify users of issues.
- ❖ Structure: we have created a distinct informational hierarchy inside the app to direct users' focus to the most pertinent stuff. The overall usability is improved by this structure, which makes it easy for users to prioritize and locate the information they require.
- ❖ Accessibility: Ensuring that all users, including those with disabilities, can use and engage with the app successfully has been a top focus in the app's design. Screen readers and color blindness have been taken into account during the design process.(toggle theme option is available)
- ❖ User-Centricity: we have given close attention to comprehending users' wants, preferences, and behaviors at every stage of the design process. Through the prioritization of customer

feedback and the implementation of comprehensive user research, We have developed a product that genuinely satisfies users' needs and expectations.

- ❖ Flexibility: The application's design is adaptive and versatile, enabling it to offer a consistent user experience on a range of screens with different resolutions, sizes, and devices. Users may easily access the app from any device(mobile phones with different OS and different screen sizes) thanks to its versatility.
- ❖ Clarity: To reduce confusion, information is presented succinctly and clearly across the app with the help of clear labeling and easy-to-use navigation. This clarity makes sure that users can quickly grasp the available activities and how to engage with the program.

## 8.2 UI/UX Design Principles and Visual Design Principles

### 8.2.1 Layout

The layout refers to the arrangement and organization of visual elements within the app's interface. An effective layout enhances readability, usability, and visual appeal. Key considerations for layout design include:

- ❖ Grid Systems: We have arranged content and aligned elements consistently using grid-based layouts. This method enhances the entire user experience by improving readability and achieving visual harmony.
- ❖ Whitespace: To increase visual hierarchy and lessen clutter, a lot of whitespaces has been added between design elements. The overall aesthetics are enhanced, and important features are brought to light by this whitespace.
- ❖ The layout of the app is responsive, meaning it can easily adjust to various screen sizes and orientations on mobile devices. A consistent and ideal user experience across a range of devices is ensured by this responsiveness.

- ❖ Visual Hierarchy: To direct users' attention and comprehension, a distinct visual hierarchy has been constructed. This hierarchy highlights important information and prioritizes material using features like font, color, and size.

## 8.2.2 Hierarchy

The arrangement of material in an app according to priority is known as hierarchy, and it directs users' attention and interactions. A well-designed hierarchy facilitates rapid and straightforward interface navigation for users. Among the fundamental ideas of hierarchy design are:

- ❖ Typography: To create a distinct hierarchy of text elements, typefaces have been carefully chosen and positioned. To improve reading and comprehension, different font styles, weights, and sizes are used to indicate headings, subheadings, and body text.
- ❖ Visual Contrast: The app uses visual contrast to establish hierarchy and emphasize certain areas. Users are guided through the interface and significant features are brought to their notice by differences in colour, size, and shape.
- ❖ Alignment: To give the app a feeling of structure and order, alignment has been kept constant throughout the design process. This alignment improves comprehension and reading, which facilitates better navigation throughout the program.
- ❖ Grouping: To communicate their relationship and importance, related items have been grouped together. By arranging the content logically and intuitively, this grouping lowers cognitive burden and enhances usability.

## 8.2.3 Colour

In the app's UI, colour is essential for informational and emotional purposes as well as for establishing visual hierarchy. When colour is used well, it increases user engagement and promotes intuitive interaction.

- ❖ Colour psychology: Colours have been selected with care, considering their psychological connotations and effects on users' emotions and perceptions. This makes sure that the colour scheme of the app complements its branding and messaging.

- ❖ Brand Consistency: To preserve brand identity and familiarity throughout the app, a constant colour scheme has been adopted. A cohesive user experience is produced, and brand cohesion is strengthened by this uniformity (black-green theme with a modern look).
- ❖ Contrast: The app's readability and accessibility are improved by the contrast between its various elements. This contrast enhances overall visual clarity by making text easily distinguishable from background.
- ❖ Use of Meaningful Colour Coding: The software uses colour coding to classify and communicate information. Colour coding makes navigation and comprehension easier for users by illuminating the relationships between various elements. The levels of difficulty have been established with red meaning hard, green being easy and yellow being average.
- ❖ So due to popular demand we got from the user interviews we decided that a dark theme is suited for our app.

#### 8.2.4 Typography

Typography is used to describe the choice, configuration, and display of text in an application's user interface. Good typography strengthens brand identification, communicates hierarchy, and improves readability. Among the fundamentals of typographic design are:

- ❖ Font Selection: The application's fonts have been carefully selected to guarantee legibility, aesthetic appeal, and consistency with the app's branding. This choice takes into account factors like size, weight, and font style.
- ❖ Typography hierarchy has been devised to rank text elements according to their significance. To improve readability overall, font size, weight, and style variations make it easier to distinguish between headings, subheadings, and body content.
- ❖ Line Spacing: To improve reading and legibility, the ideal line spacing has been used. Comfortable reading experiences across a range of screen sizes and resolutions are guaranteed by this spacing.

- ❖ **Consistency:** The app's design maintains a consistent use of font styles and formatting. This uniformity guarantees a consistent user experience across all displays and improves visual cohesiveness.

## 8.2.5 Imagery and copy

Photographs, graphics, symbols, written language, and other visual and textual content that are presented within the app are referred to as imagery and copy. Utilizing copy and images well delivers information, builds brand identity, and increases engagement. Important factors for copywriting and imagery design are as follows:

- ❖ **Visual Consistency:** To preserve visual coherence and brand identity, imagery and language have been used consistently throughout the app. A unified user experience is produced, and brand identification is strengthened by this consistency.
- ❖ **Relevance:** In order to match the app's content, context, and intended user base, pertinent imagery and copy have been included. Users are certain to find the material interesting and valuable because of its relevancy.
- ❖ **Clarity:** The copy and imagery are succinct and clear, effectively conveying the information. The app's content and messages are easily understood by users because to its clarity, which also helps to prevent confusion.
- ❖ **Accessibility:** Users with disabilities can access all of the app's textual and graphic information. Where required, transcripts, captions, and alternative text descriptions have been added to guarantee accessibility and diversity.

## 9 Usability Heuristics

What usability heuristics analysis did you consider? (<https://www.nngroup.com/articles/ten-usabilityheuristics/>)

We have diligently considered several key usability heuristics to ensure that our interface is intuitive, user-friendly, and aligned with the needs and expectations of our users. Here's our analysis of how we've incorporated these heuristics into our implementation:

### 1. Aesthetic and Minimalist Design:

- We've carefully followed the design guidelines provided by our UI/UX team to create an interface that is visually appealing and free from unnecessary clutter.
- Our implementation focuses on presenting essential information and features prominently while removing extraneous elements that could distract or overwhelm users.
- By adhering to a minimalist design approach, we've ensured that our interface is clean, streamlined, and aesthetically pleasing, enhancing user comprehension and engagement.

### 2. User Control and Freedom:

- Throughout our implementation, we've prioritized building features that give users control over their interactions with the system.
- We've incorporated clear navigation pathways, intuitive controls, and feedback mechanisms to empower users to navigate freely and accomplish tasks efficiently.

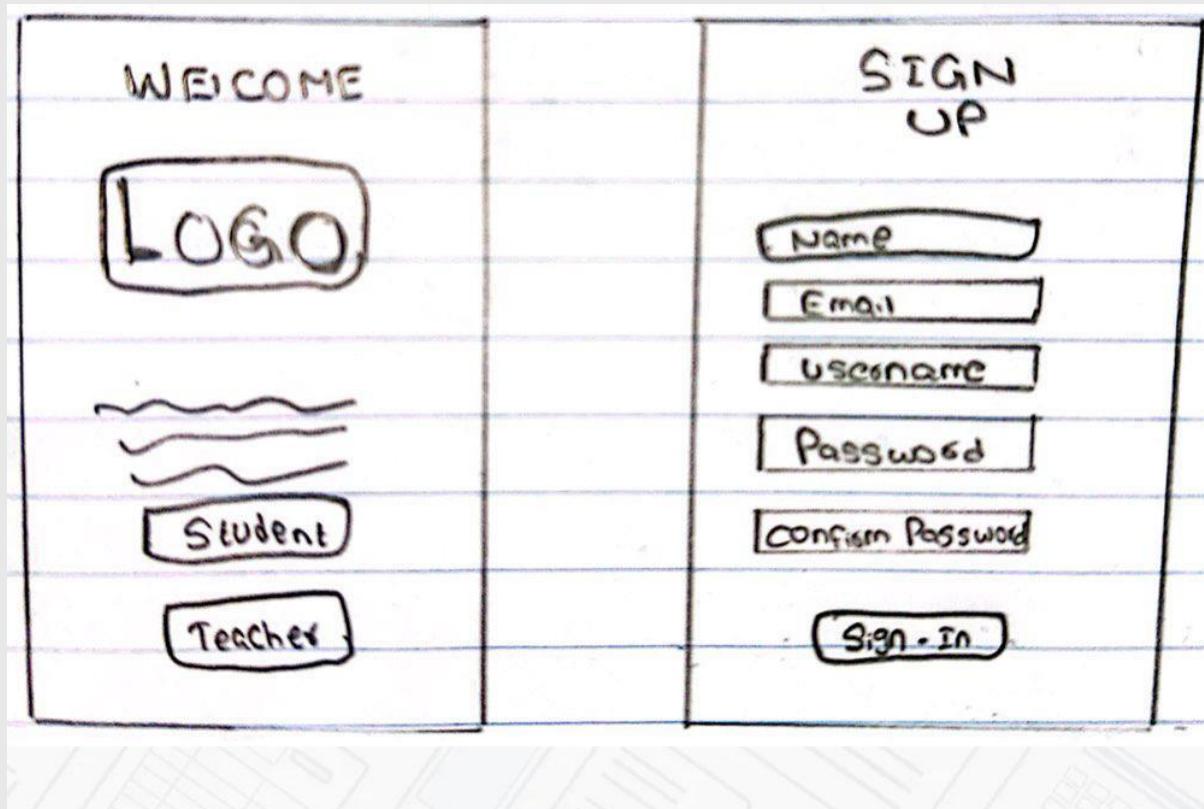
### 3. Match between System and the Real World:

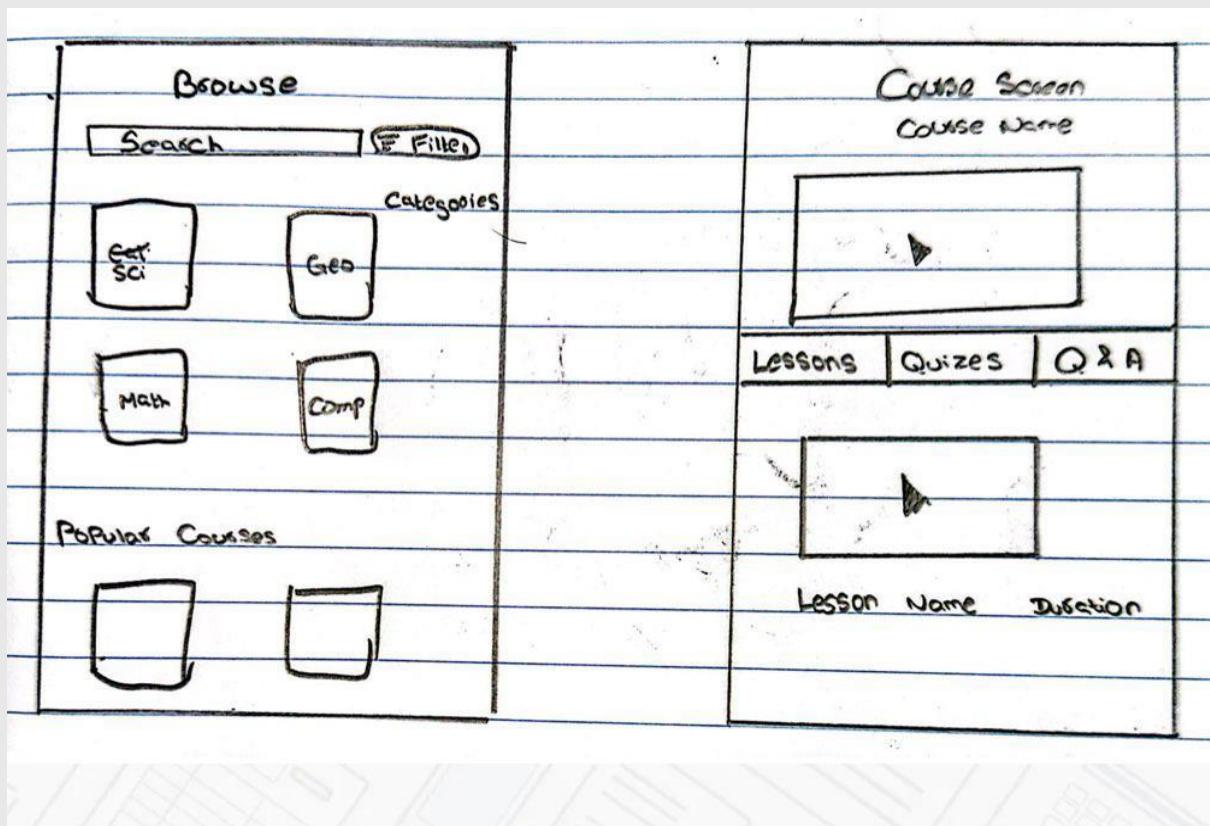
- We've worked closely with our team members to translate real-world concepts and user expectations into the interface and interactions of our system.
- Our implementation ensures that the language, terminology, and actions within the interface align closely with users' mental models and real-world experiences.
- By incorporating familiar elements and behaviors into the interface, such as common terminology and recognizable icons, we've created an intuitive and easy-to-understand system that feels natural and intuitive to our users.

In summary, our implementation of the UI/UX design has considered key usability heuristics such as aesthetic and minimalist design, user control and freedom, and match between the system and the real world. By prioritizing these heuristics, we've created an interface that not only looks great but also prioritizes usability, functionality, and user satisfaction.

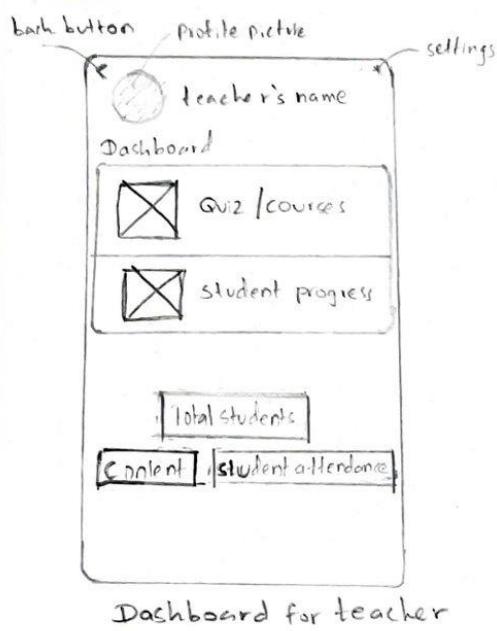
## 10 Wireframing

This wireframe serves as a starting point for the app design and will undergo several rounds of iteration and improvement based on user feedback and usability testing. As we progress, we'll refine the layout, structure, and visual elements to create a seamless and intuitive user experience for the self-study app.

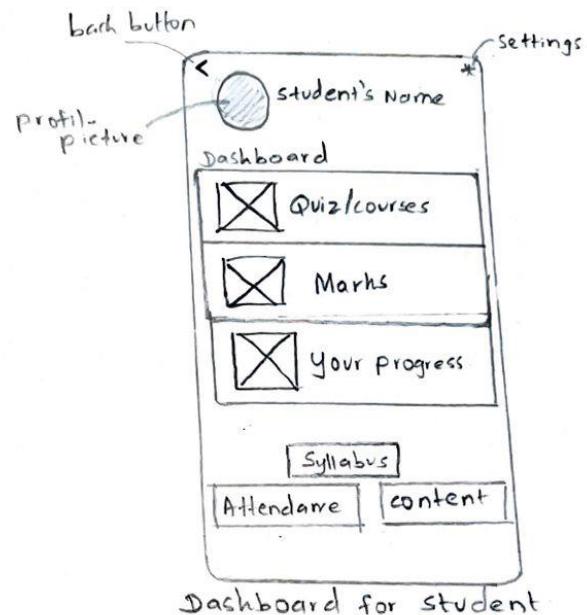




### Sketches



Dashboard for teacher



Dashboard for student

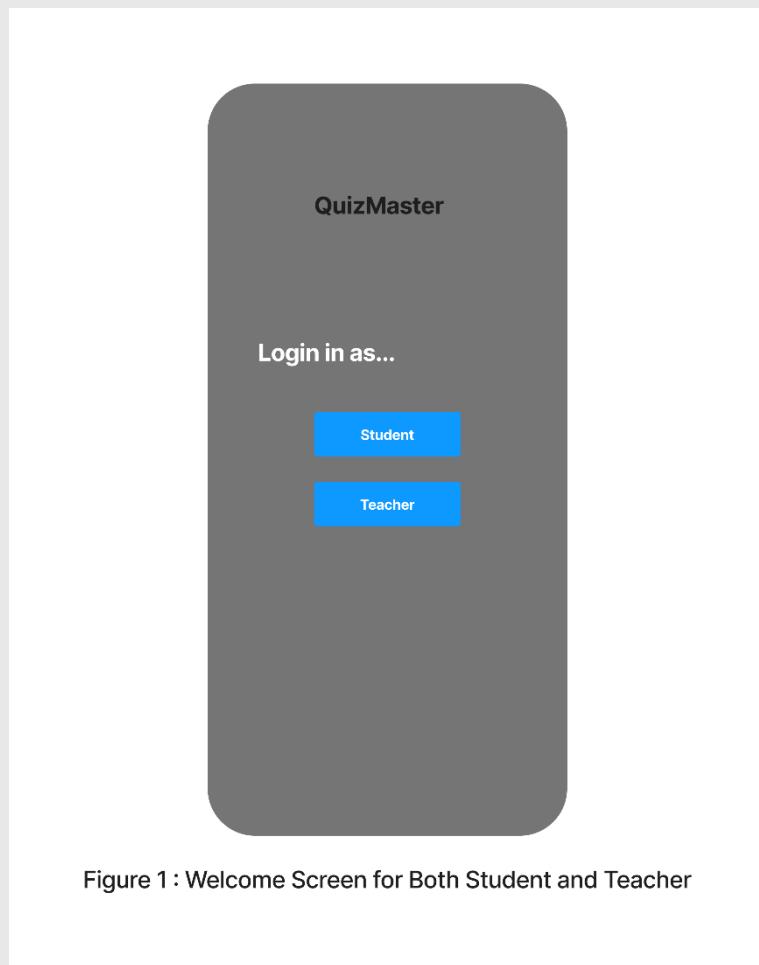
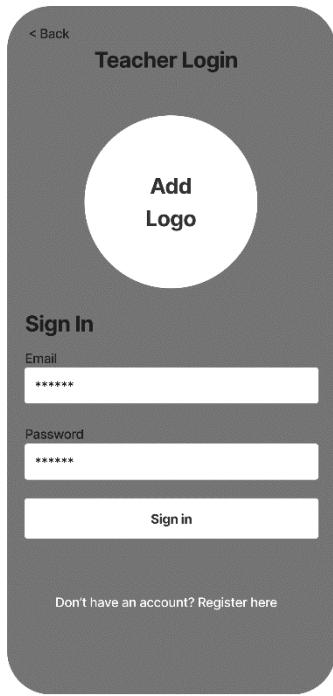


Figure 1 : Welcome Screen for Both Student and Teacher

The image displays two side-by-side mobile application screens. On the left, the "Student Login" screen features a large white circular button in the center labeled "Add Logo". Below this button, the text "Sign In" is followed by two input fields: "Email" and "Password", each preceded by a placeholder of five asterisks. A "Sign in" button is located at the bottom. At the very bottom of this screen, there is a link "Don't have an account? Register here". On the right, the "Create New Account" screen also has a large white circular button labeled "Add Logo". Below it, the text "Create New Account" is displayed. It contains three input fields: "Email", "Name", and "Password", each with a placeholder of five asterisks. A "Register" button is at the bottom. At the very bottom of this screen, there is a link "Already have an account? Login here".

Figure 2 : Sign In Page for Student

Figure 3 : Register Page for Student



**Teacher Login**

**Add Logo**

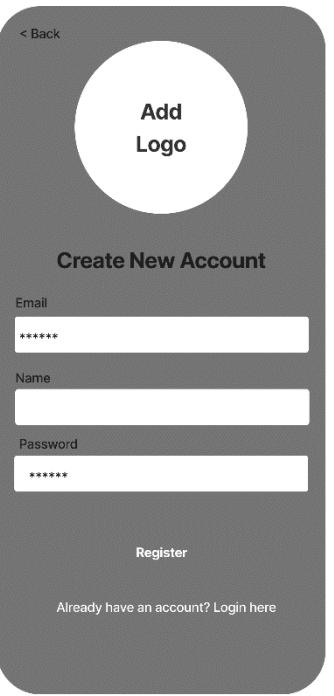
**Sign In**

Email  
\*\*\*\*\*

Password  
\*\*\*\*\*

**Sign in**

Don't have an account? [Register here](#)



**Add Logo**

**Create New Account**

Email  
\*\*\*\*\*

Name

Password  
\*\*\*\*\*

**Register**

Already have an account? [Login here](#)

Figure 4 : Sign In Page for Teacher

Figure 5 : Register Page for Teacher



**Teacher's Name**

**Dashboard**

**Quiz/ Courses**

**Student Progress**

Total Students

Content Student Attendance



**Student's Name**

**Dashboard**

**Quiz/ Courses**

**Marks**

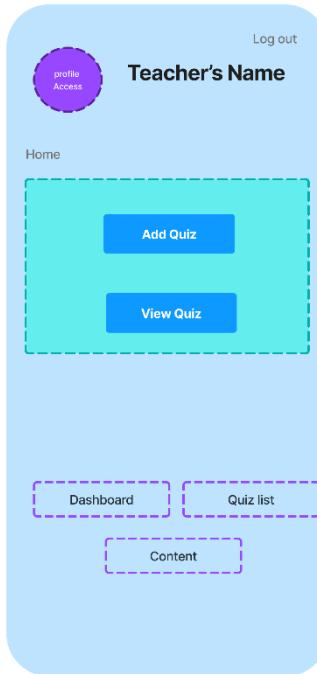
**Your Progress**

Syllabus Attendance

Content

Figure 6 : Dashboard Page of Teacher

Figure 7 : Dashboard Page of Student



**Teacher's Name**

Log out

profile Access

Home

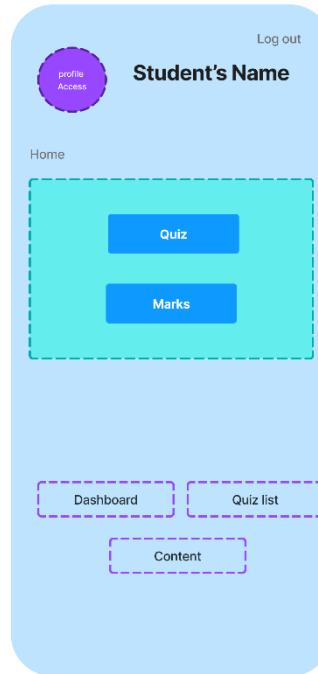
Add Quiz

View Quiz

Dashboard

Quiz list

Content



**Student's Name**

Log out

profile Access

Home

Quiz

Marks

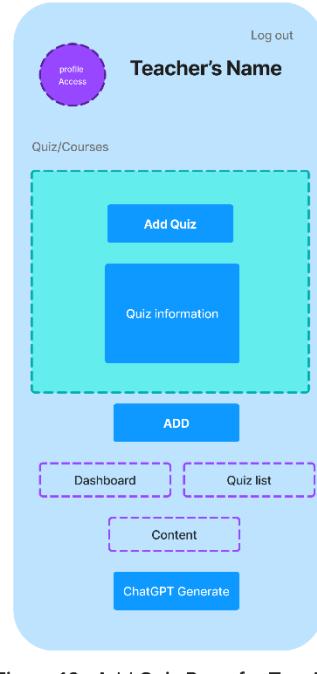
Dashboard

Quiz list

Content

Figure 8 : Home Page for Teacher

Figure 9 : Home Page for Student



**Teacher's Name**

Log out

profile Access

Quiz/Courses

Add Quiz

Quiz information

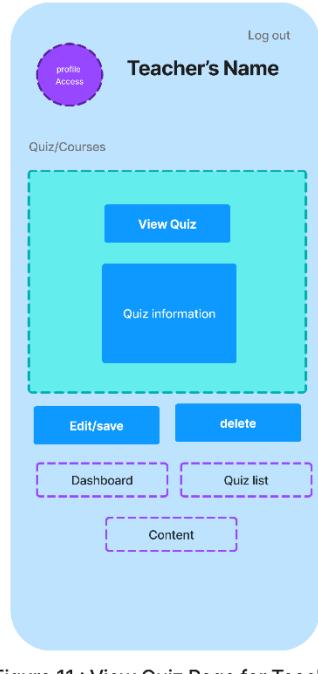
ADD

Dashboard

Quiz list

Content

ChatGPT Generate



**Teacher's Name**

Log out

profile Access

Quiz/Courses

View Quiz

Quiz information

Edit/save

delete

Dashboard

Quiz list

Content

Figure 10 : Add Quiz Page for Teacher

Figure 11 : View Quiz Page for Teacher



Figure 12 : Quiz Selection Interface

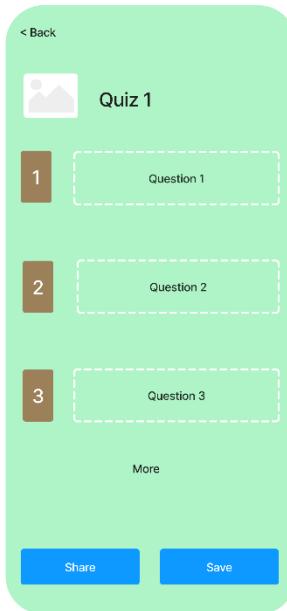


Figure 13 : Question Page on a Quiz

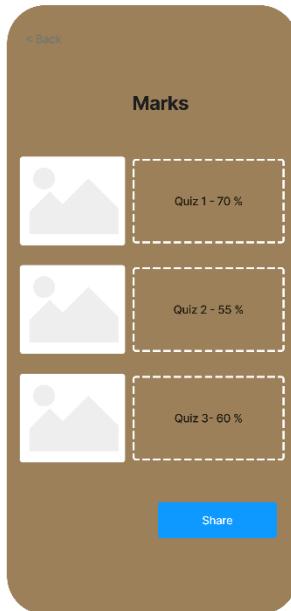


Figure 14 : View Marks Interface

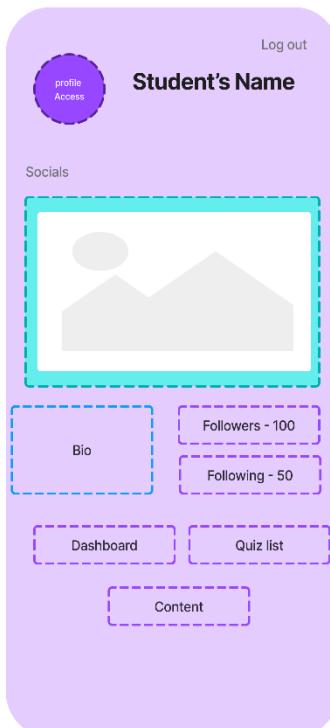


Figure 15 : Teacher's Socials Interface

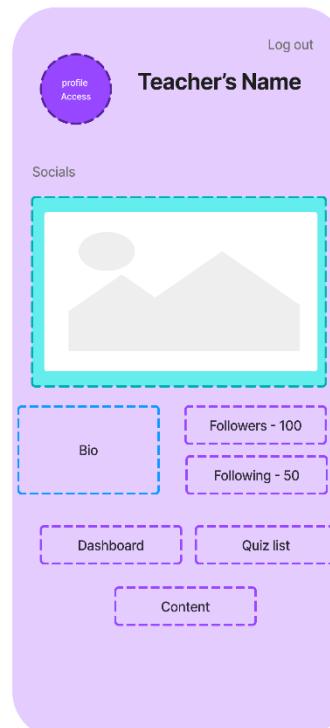
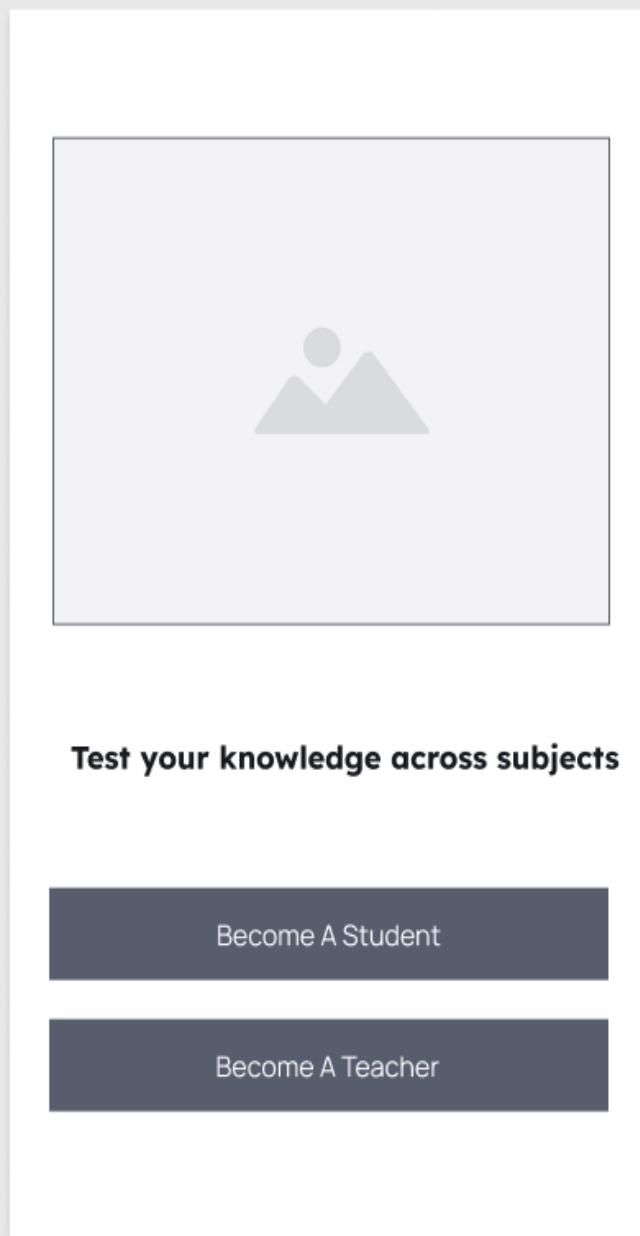


Figure 16 : Student's Socials Interface

## 11 Low-Fidelity Prototype

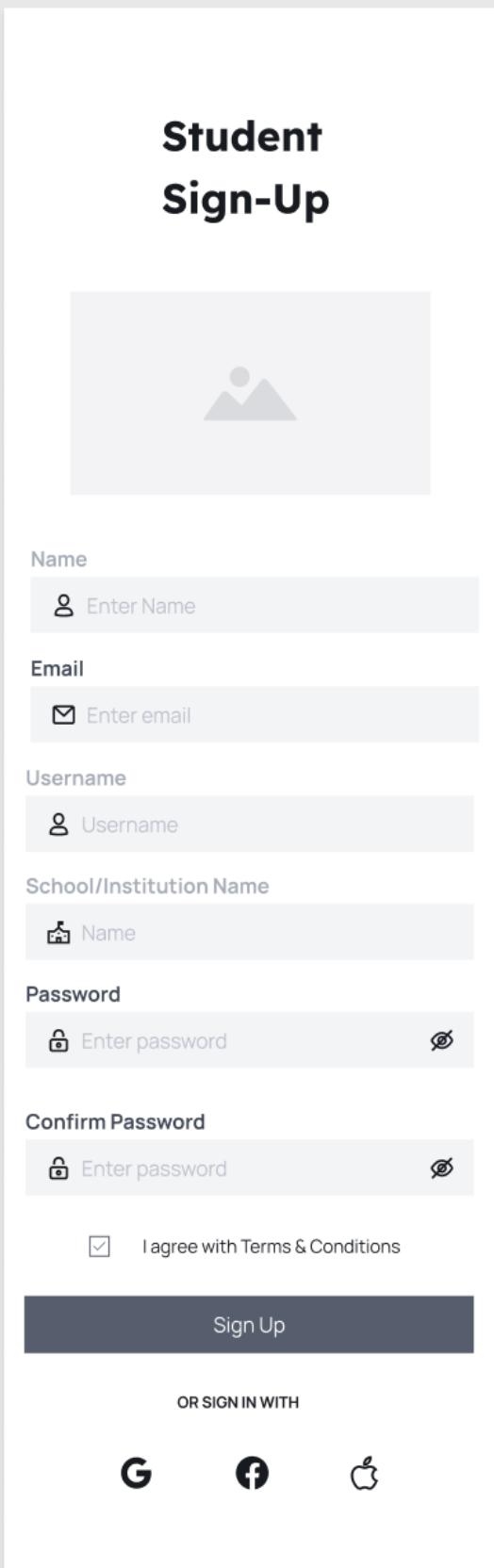
Link provided in appendix F

Welcome page for student and Teacher.



## 11.1 Student Interface

1 Student Sign-up



**Student Sign-Up**

Name

Email

Username

School/Institution Name

Password

Confirm Password

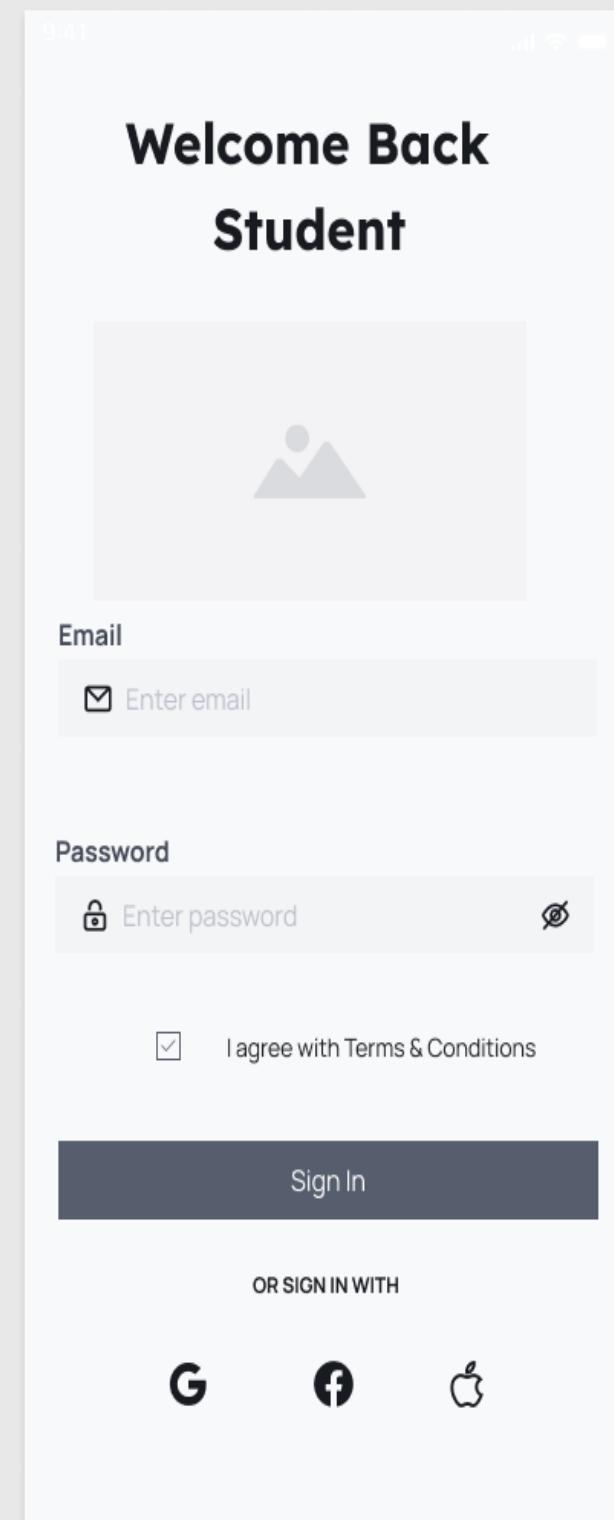
I agree with Terms & Conditions

**Sign Up**

OR SIGN IN WITH

2 Student Sign-in



9:41  

# Welcome Back Student

Email

Password  

I agree with Terms & Conditions

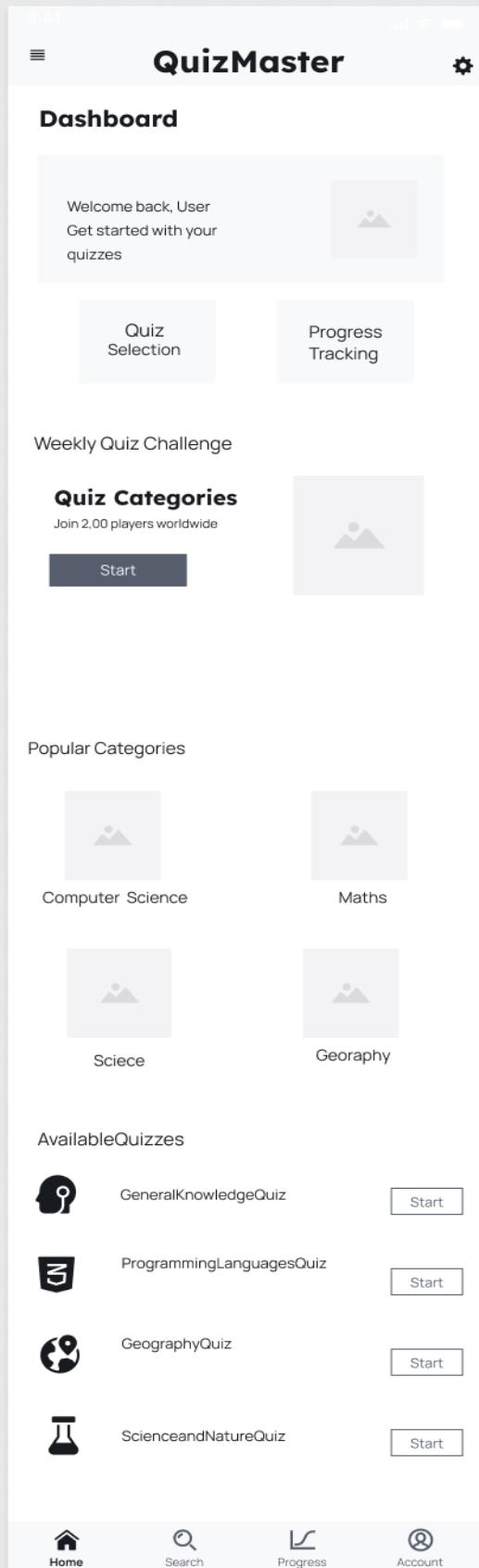
**Sign In**

OR SIGN IN WITH

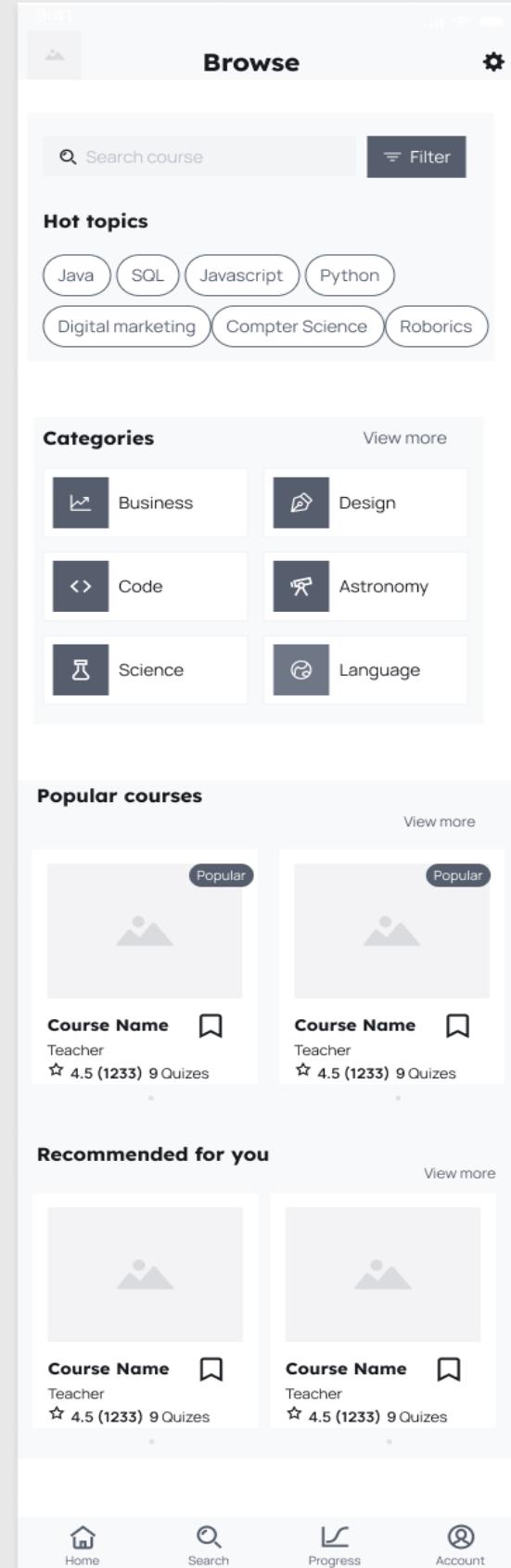
  

3 Home Student  
Browser

4



**4** Course Screen



**5** Quiz Screen – Quizzes

The Course Screen Q&A interface displays three lessons:

- Lesson 1:** Lesson Name: Duraion, Duration: 1:00
- Lesson 2:** Lesson Name: Llear Regression, Duration: 1:00
- Lesson 3:** Lesson Name: Decision Tree, Duration: 1:35

Each lesson card features a play button icon. At the bottom, there are navigation icons for Home, Search, Progress, and Account.

6 Course Screen Q&A

The Quiz Screen -1 interface displays three quiz cards:

- Quiz 1:** Category: Comp 3030, Difficulty: Easy, Last Attempt: 7/10. Includes a "Try Again" button.
- Quiz 2:** Category: Comp 3030, Difficulty: Easy, Last Attempt: 7/10. Includes a "Try Again" button.
- Quiz 3:** Category: Comp 3030, Difficulty: Easy, Last Attempt: 7/10. Includes a "Try Again" button.

At the bottom, there are navigation icons for Home, Search, Progress, and Account.

7 Quiz Screen -1

**Course Screen**

**Course Name**

LESSONS    Quizzes    Q&A

**Jane Barry**  
A day ago

How do we determine which evaluation metric is most appropriate for a given machine learning problem?

23 Comment

**Jane Barry**  
A day ago

How do we determine which evaluation metric is most appropriate for a given machine learning problem?

23 Comment

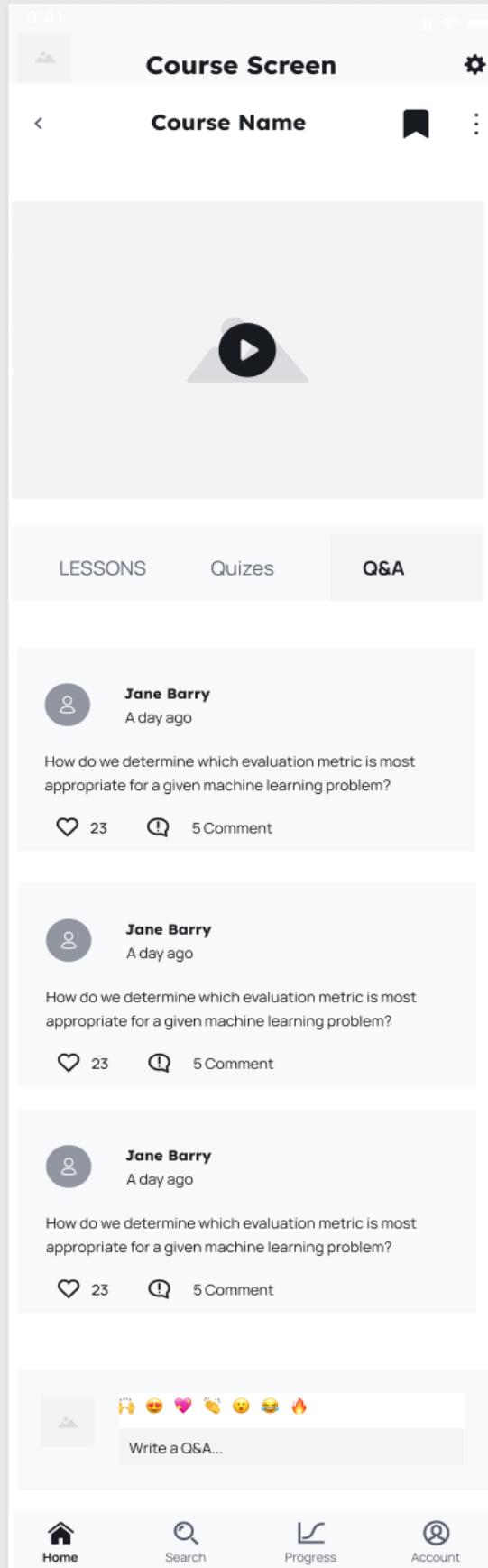
**Jane Barry**  
A day ago

How do we determine which evaluation metric is most appropriate for a given machine learning problem?

23 Comment

Write a Q&A...

Home    Search    Progress    Account



9:41

**Quiz Title**

Lesson Name

1/10

Question

Option A

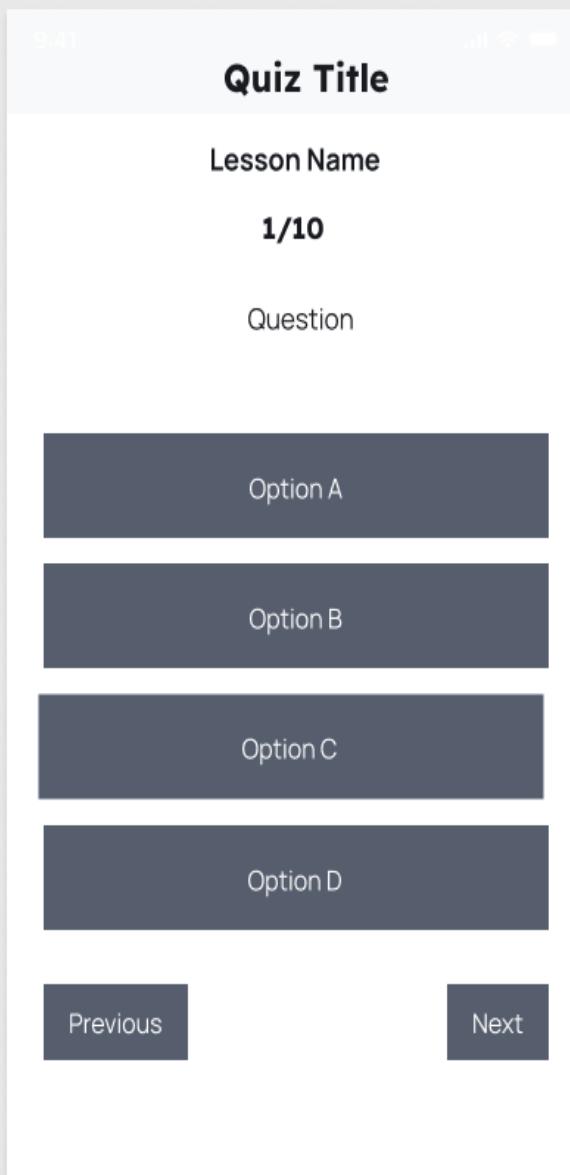
Option B

Option C

Option D

Previous

Next



9:41

## Quiz Title

Lesson Name

**10/10**

Question

W C

Option A

Option B

Option C

Option D

Previous Next

This screenshot shows a mobile quiz interface. At the top, it displays the time as 9:41 and the title 'Quiz Title'. Below that, it says 'Lesson Name' and shows a score of '10/10'. There are two circular icons on either side of the score: one labeled 'W' and one labeled 'C'. The word 'Question' is centered below the score. Below this, there are four rectangular buttons labeled 'Option A', 'Option B', 'Option C', and 'Option D' from top to bottom. At the bottom of the screen are two dark blue buttons labeled 'Previous' and 'Next'.

## QuizMaster

### Quiz Result Details

Your Score: 8/10  
Great job

### Quiz Details

**Question 2:**  
YourAnswer: OptionA  
Correct Answer: Option B  
Explanation:

**Question 8:**  
YourAnswer: OptionA  
Correct Answer: Option B  
Explanation:

### Share Options

Facebook Twitter WhatsApp Instagram

Try Again

Home View Progress

### Related Quizes

**Run Time Of Algorithms**  
Category: Comp 2003

Try Quiz

**Time Complexity**  
Category: Comp 2003

Try Quiz

8 9

Home Search Progress Account

This screenshot shows the results of a quiz. It features a large circular icon with a checkmark and the text 'Quiz Completed'. Below this, it says 'Quiz Result Details' and shows a score of '8/10' with the message 'Great job'. It then lists 'Quiz Details' for 'Question 2' and 'Question 8', showing the user's answer, the correct answer, and an explanation for each. Below this, there's a section titled 'Share Options' with social media sharing icons for Facebook, Twitter, WhatsApp, and Instagram. A 'Try Again' button is also present. At the bottom, there are 'Home' and 'View Progress' buttons. A navigation bar at the very bottom includes 'Home', 'Search', 'Progress', and 'Account'.

**10 Progress** Tracking

**11** User Profile

### Progress Tracking

**55**  
Quizzes completed

**350**  
Questions answered

**14**  
Topics explored

Top Performances this Month



**40**  
Excellent



**5**  
Poor



**10**  
Average

**Overall Performance Metrics**

Total Quizzes Taken	35
Average Score:	79%
Highest Score:	95%

**Performance by Subject/Topic**

Mathematics	Science
Quizzes Taken: 15	Quizzes Taken: 10
Average Score: 82%	Average Score: 75%
Highest Score: 90%	Highest Score: 89%

**Visual Representations**

● Science
● Programming
  
● Comp 2003
● Math



**Detailed Performance History**

Quiz Title: Algebra Basics  
Date Taken: 2022-08-15  
Score: 80%

[View Details](#)

Quiz Title: Biology Fundamentals  
Date Taken: 2022-08-10  
Score: 75%

[View Details](#)

Home
Search
Progress
Account

78 | Page

User Profile

Martha Rosie

25 lessons

24 Friends

98 Completed

Quiz History

Math Quiz Score: 90%  
**Algebra II**

Comp 2003 Score: 85%  
**Heeps**

Achievements

Quiz Mastor

Quiz Champion

Home Search Progress Account

The screenshot shows a mobile application's settings interface. At the top, there is a profile section with a placeholder profile picture, the name "John Doe", and the handle "@John777". Below this is a "Theme Selection" section with a "Light Mode" button and an "Apply Theme" button. The next section is "Notification Settings", which includes "Quiz Reminders" and "New Quizzes" with corresponding notification bell icons. Under "Language Preferences", a dropdown menu is set to "English". The "Account Management" section contains links to "Change Email", "Change Password", and "Change Profile Picture", each with an edit icon, and a "Save Changes" button. The "Privacy Settings" section has two items: "Who can view your profile" and "Who can view your Results", both with edit icons. The "Syncing Preferences" section features a "Sync Settings" button. The "Help/Support" section includes links to "FAQs", "Contact Support", and "Help Articles". The "App Version and Updates" section displays the "Current Version 1.0.0" and a "Check For Updates" button. The "Terms of Service and Privacy Policy" section contains links to "Terms of Service" and "Privacy Policy". Below these are two navigation items: "Support Center" (with a speech bubble icon) and "Manage Account" (with a person icon). A "Sign Out" button is at the bottom of this section. At the very bottom, there is a navigation bar with four items: "Home" (house icon), "Search" (magnifying glass icon), "Progress" (progress bar icon), and "Account" (person icon).

## 11.2 Teacher Interface

1

### Teacher Sign-Up



Name

Email

Username

Subjects or Courses Taught

Password  
 

Confirm Password  
 

I agree with Terms & Conditions

**Sign Up**

OR SIGN IN WITH



2



Welcome Back  
Teacher

Email

Password  
 

I agree with Terms & Conditions

**Sign In**

OR SIGN IN WITH



3

Welcome back, Teacher

# Dashboard

3 days until next quiz

Quiz management

**Add Quiz**  
1,997 quizes created

Create

**View Quiz**  
1,997 quizes created

View

Categories overview

Student Progress

Quiz Statistics

Home My Courses Progress Account

4

← My Courses

DSA

View

Physics

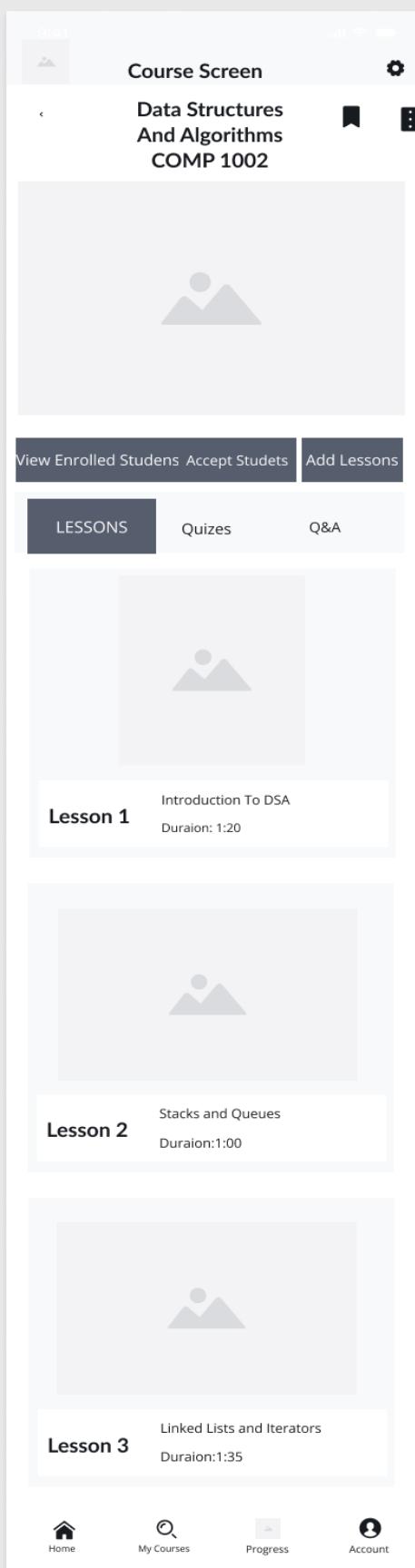
View

Biology

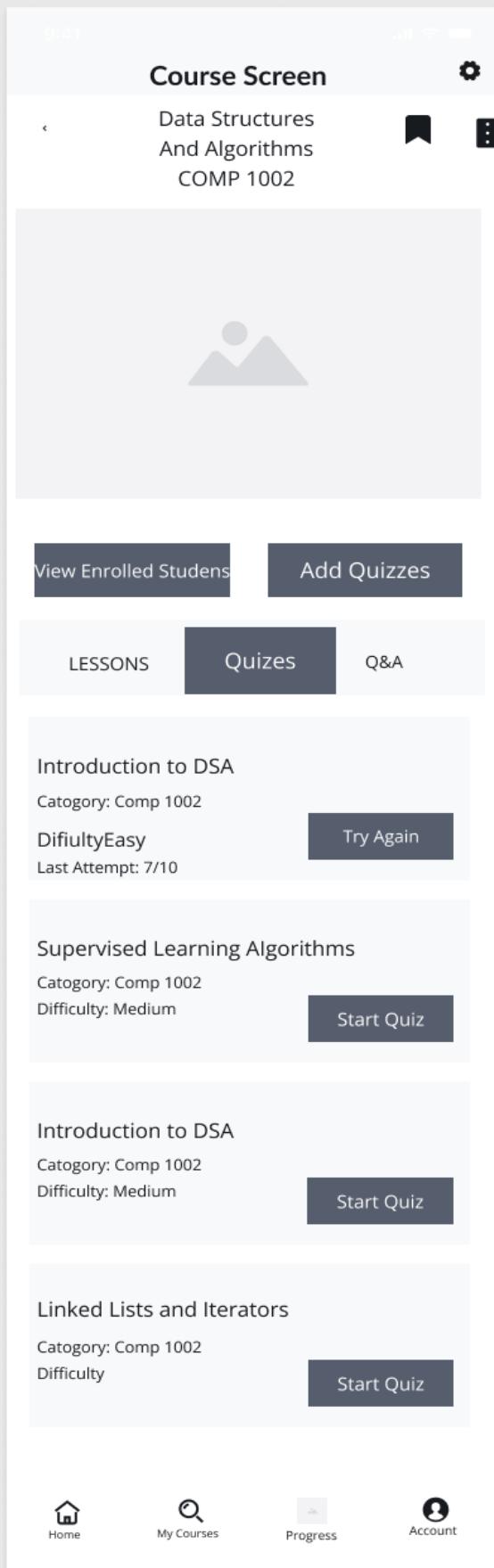
View

Home My Courses Progress Account

5



6



7

**View Enrolled Students**

Emily Johnson Just now	<a href="#">View Progress</a>	
Alexander M 10 minutes ago	<a href="#">View Progress</a>	
Sophia Ande. 1 hour ago	<a href="#">View Progress</a>	
Liam Thomp. 2 hours ago	<a href="#">View Progress</a>	
Olivia Garcia 5 hours ago	<a href="#">View Progress</a>	
Isabella Rod 6 hours ago	<a href="#">View Progress</a>	
Ava Williams 8 hours ago	<a href="#">View Progress</a>	

[Home](#) [My Courses](#) [Progress](#) [Account](#)

8

**Notifications**

Today

John	found your Quiz helpful	
John	New follower request	<a href="#">Accept</a>

This week's activity

	New comments on quiz: Maths	
Samson	found your Quiz helpful	

Student Requests [More >](#)

John	New follower request	<a href="#">Accept</a>
Samson	New follower request	<a href="#">Accept</a>

[Home](#) [My Courses](#) [Progress](#) [Account](#)

9

Teacher Profile



Sarah Norris

450 Quizzes    400 Friends    500 Students

Classroom Insights

- Completed Quizzes [view](#)
- Learning Hours Tracker [view](#)
- Achievements Unlocked [view](#)

[Home](#) [My Courses](#) [Progress](#) [Account](#)

10

Add Quiz

Create a new quiz

Add new question

Question

Option A

Option B

+ More Options

Select correct answer

A    B

Set quiz time limit

Yes    No

Upload image

+ Upload image [Done](#)

Question Type    Multiple Choice →

Quiz updated    May 12, 2023, 9:00 AM →  
Difficulty Level    Hard →

Quiz Location

General    Clasom    Online

[Create quiz](#)

[Home](#) [My Courses](#) [Progress](#) [Account](#)

# 12 Expert Review

## 12.1 Performing Expert Review

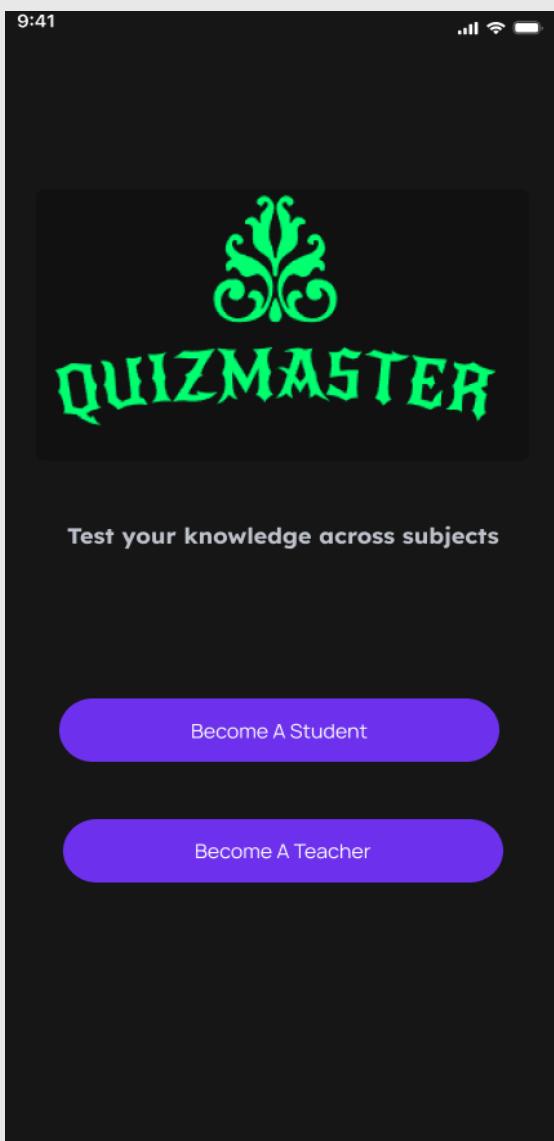
Location	Usability (Strength/Weakness)	Issue/advantage being reviewed	Heuristic	Severity	Recommendation	Best Practice Example
Home and Courses Screen	Weakness	Hot topic tags can consist of a more defined look to differentiate each category.	Recognition	Low	Redesign the tags with contrasting colors and outlines	
Progress Tracking Screen	Weakness	A lot of information is present at a glance which may confuse the user.	Minimalist Design	Low	Add drop down menus to expand and view the extra information	
Quiz Interface	Weakness	The question indicator is somewhat small, which makes it less prominent at a glance.	Recognition	Medium	Make the question indicator more visible by increasing the font size or use a different approach to show progress	Progress bar indicating quiz progress
Throughout the design	Weakness	Word spacing is inconsistent	Consistency and Standards	High	Ensure that the wording has consistent spacing where words are spaced out and increase font size to enhance visibility	
Throughout the design	Weakness	Spelling is inconsistent	Consistency and Standards	Medium	Make sure the spelling is corrected so that the user doesn't get confused with the wording.	
Throughout the design	Weakness	Font Size is inconsistent	Consistency and Standards	Medium	Ensure that throughout the design the elements utilize a consistent font sizes.	Define a font size guideline for the different text elements present in the app and follow the guideline throughout
Settings Screen	Weakness	Links appear as normal text instead of clickable buttons.	Recognition	Medium	Ensure the links appear as tappable elements (i.e. buttons) so that the user knows they can be clicked.	
Settings Screen	Weakness	Support related settings appear twice on the settings page	Error Prevention	Low	Select a single support option and redirect the user to the support services using only that link. Accordingly, the user will not get confused on which button to press.	
Throughout the design	Weakness	Spacing between elements such as Topics and content is inconsistent	visual Design	Low	Make sure that the elements present on the screen are spaced out evenly. For example, if the gap between a topic and its content is 32px, make sure that the others also have the same gap.	
Dashboard	Weakness	Some categories don't have names, only the image is present	Recognition	High	Add category names to the images	
Throughout the design	Weakness	Alignment of icons are inconsistent	Consistency and Standards	Low	Align the icons to the same level as the other design elements.	
Homepage	Strength	Elements have been well designed with consistent sizes where a lot of options are shown in a well ordered manner	Consistency and Standards	Medium		
Throughout the design	Strength	The selected icons are well picked out so that the user can easily identify the purpose of each icon	Recognition	Medium		
Progress Tracking Screen	Strength	Emojis are used in the performance scale which makes it easily interpretable for the user.	Recognition	Low		
Quiz Results Screen	Strength	The quiz result page has a comprehensive summary with important information displayed relating to the results. The option to share the result is also a great feature.	Minimalist Design	Medium		
Throughout the design	Strength	Addition of an option for light/dark theme is great for users who prefer different color contrasts.	Flexibility	Medium		
Login Screen	Strength	The login screen has been designed in a visually appealing manner with suitable spacing.	Aesthetic Design	Medium		

## 12.2 Revision Post Feedback

Final delivery stages are crucial for ensuring the quality and professionalism of any document. During this phase, attention to detail is paramount. Spelling mistakes, spacing inconsistencies, and font size discrepancies are meticulously corrected to align with the expert review feedback. This process not only enhances readability but also ensures that the document adheres to the highest standards of presentation. It is a systematic approach to refine and polish the document, eliminating any errors that may have been previously overlooked. The final delivery represents the culmination of rigorous review and careful correction, resulting in a polished and error-free product ready for its intended audience.

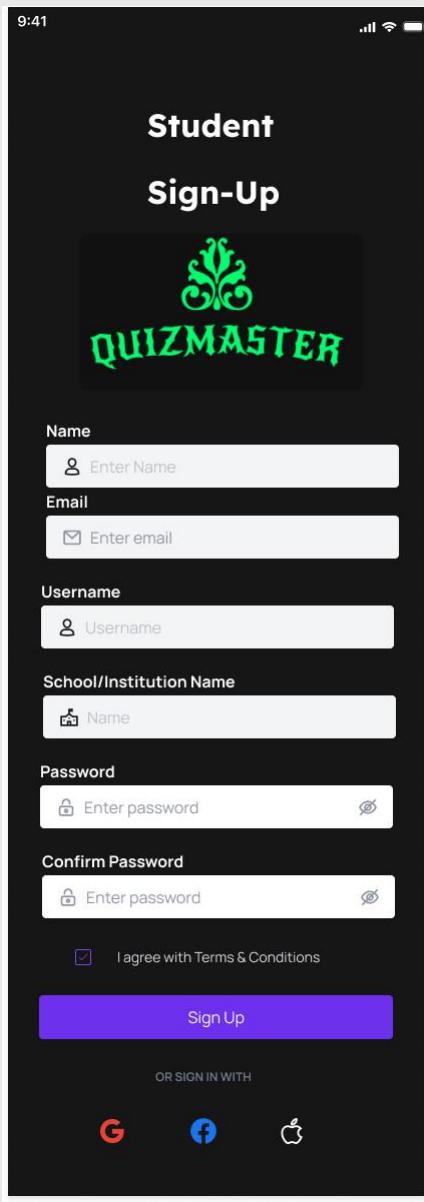
# 13 High-Fidelity Prototype

## 13.1 Student Interface



### 1. Welcome

This is the Welcome Page for Both the Teacher and Student where we can select to sign in as Student or Teacher.



9:41

Student  
Sign-Up

**QUIZMASTER**

Name

Email

Username

School/Institution Name

Password

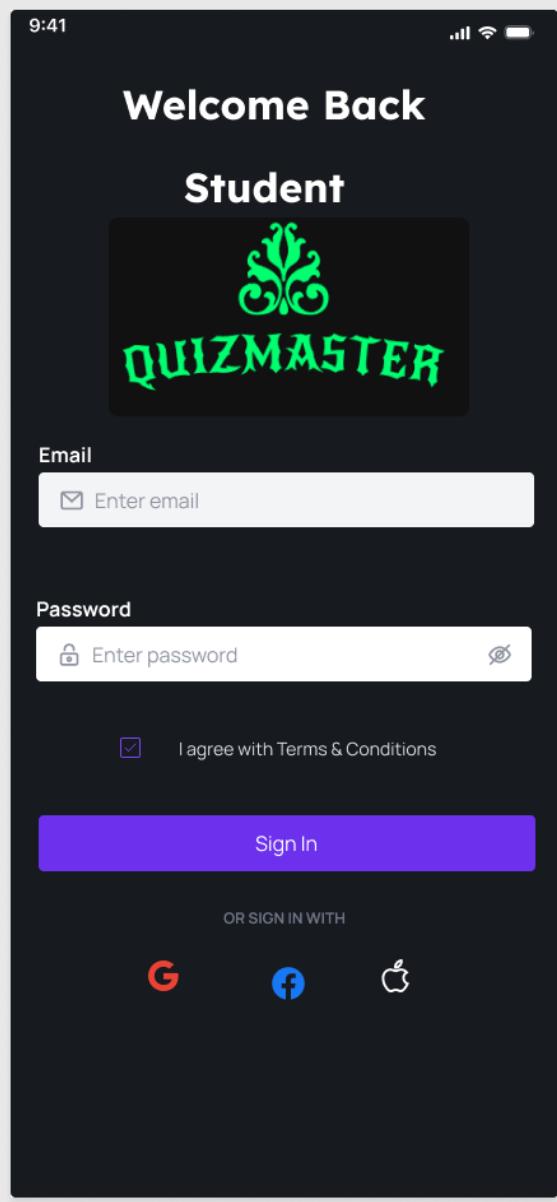
Confirm Password

I agree with Terms & Conditions

OR SIGN IN WITH

2. Student Sign-up



9:41

Welcome Back

Student

**QUIZMASTER**

Email

Password

I agree with Terms & Conditions

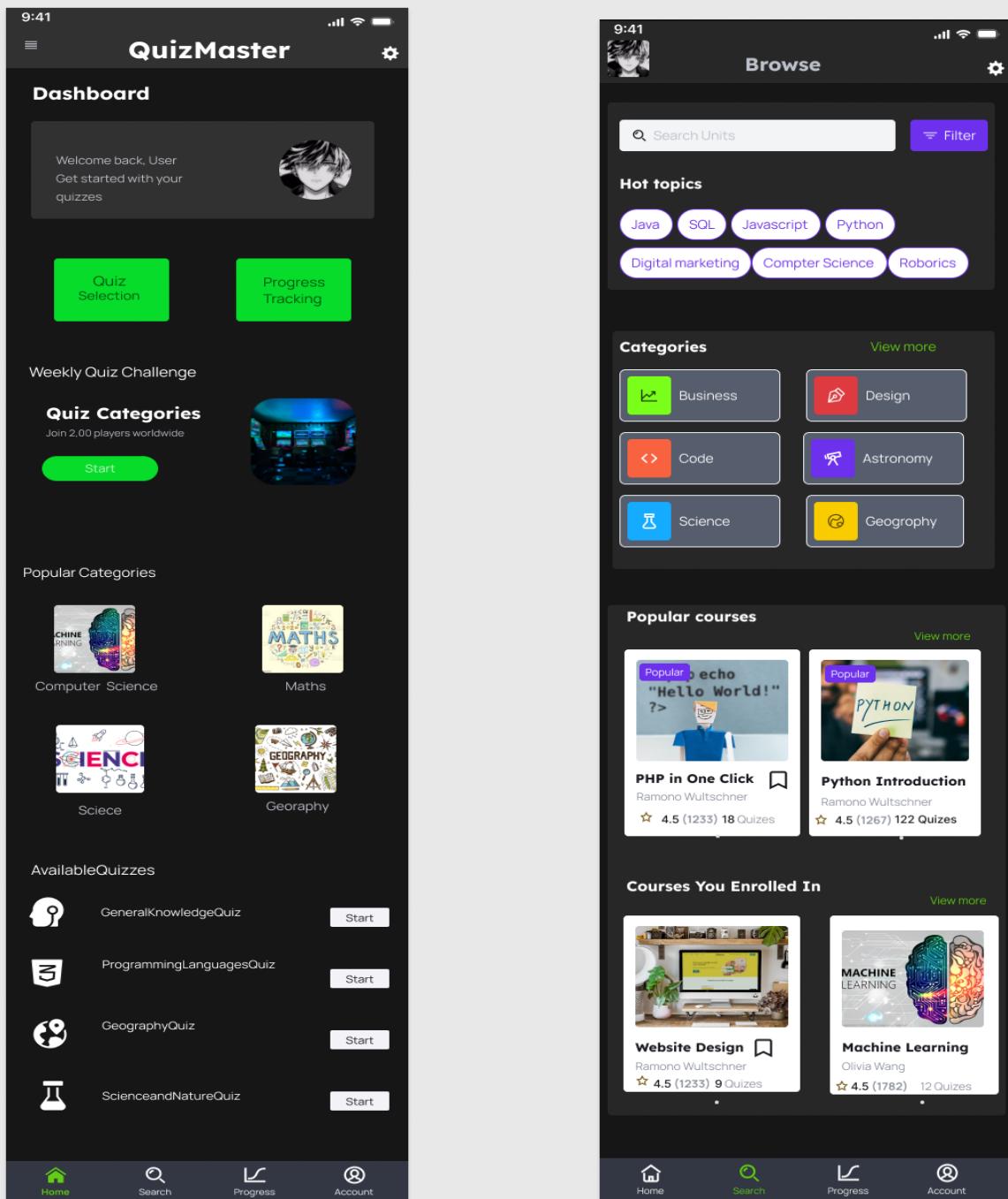
OR SIGN IN WITH

3. Student Sign-in

This is the sign-Up (Registration) interface for the student

This is the Student Sign-In interface page

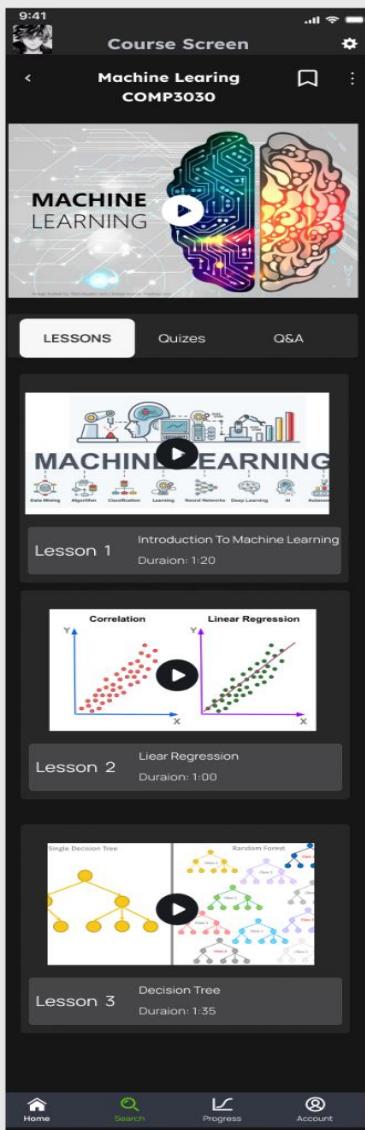


4. Home Student

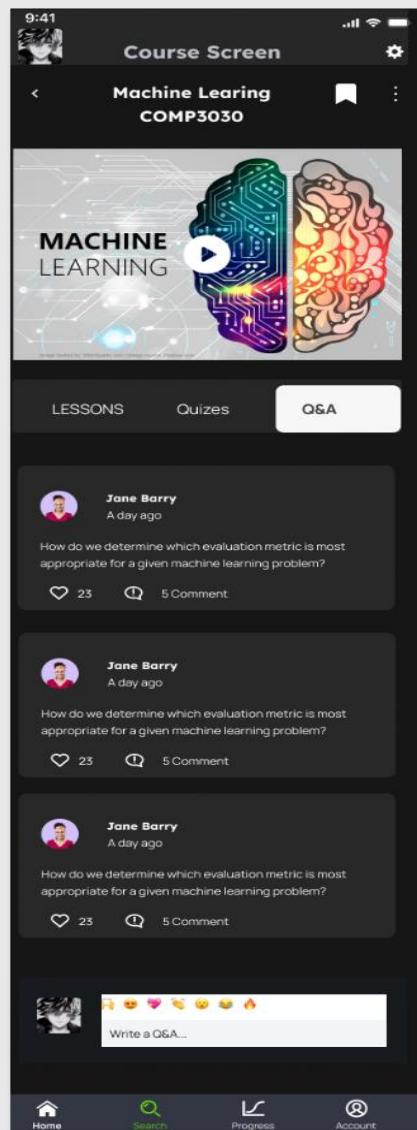
This is the Dashboard page for the student where it has view function and a categories

5. Browser

In This Screen the user (Student) can browse already enrolled courses as well as new courses.



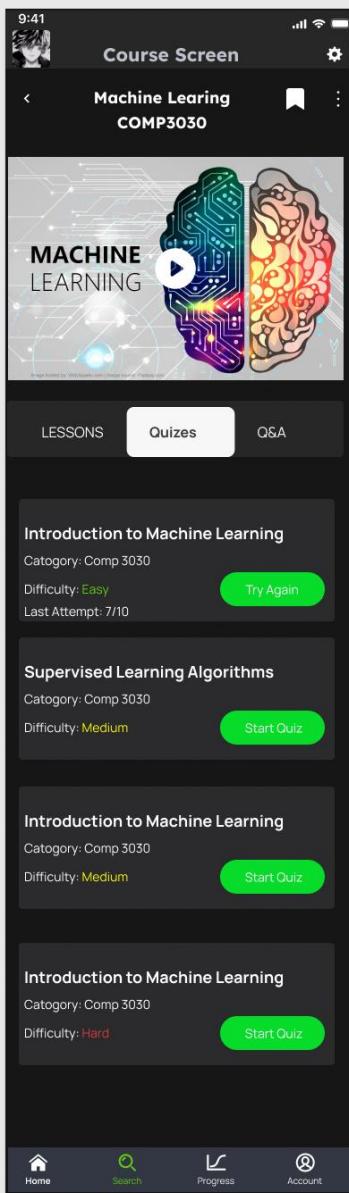
6. Course Screen



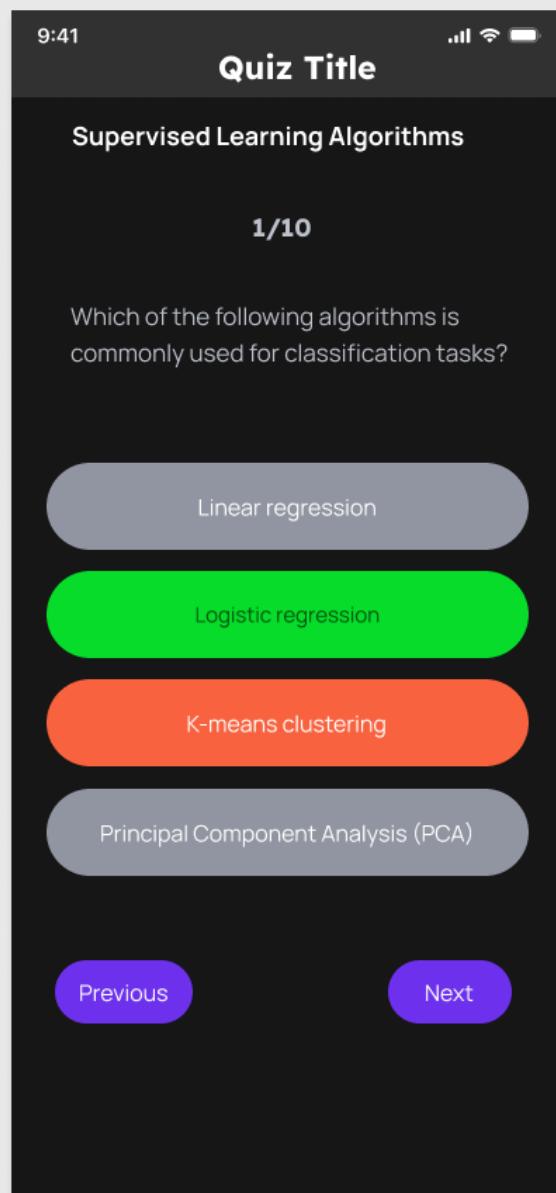
7. Course Screen Q&A

This is the Course screen for the student where they can interact with lessons

In This Screen the user (Student) can browse through the Q&A. Also ask new questions.



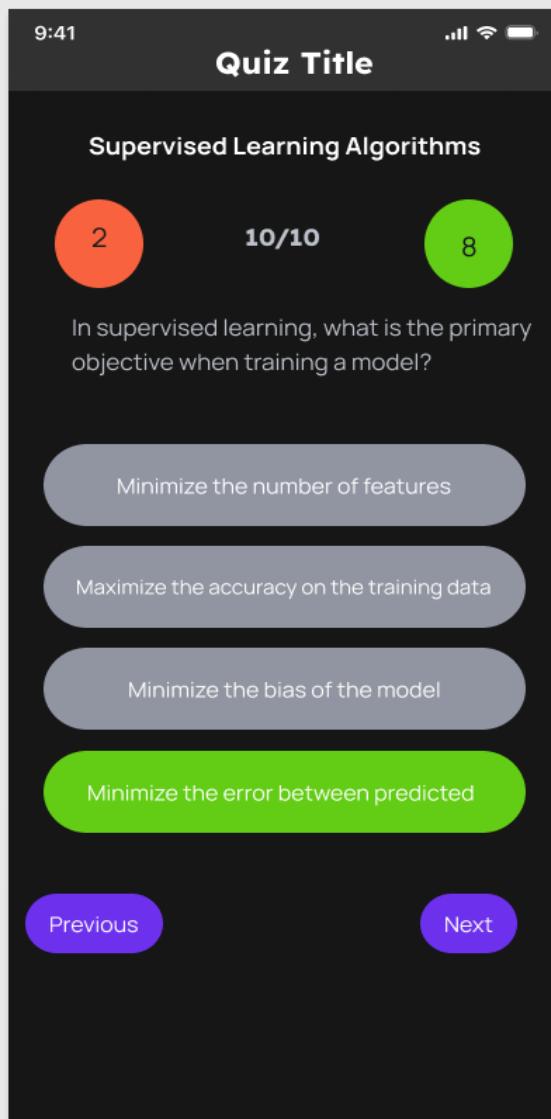
8. Quiz Screen - Quizzes



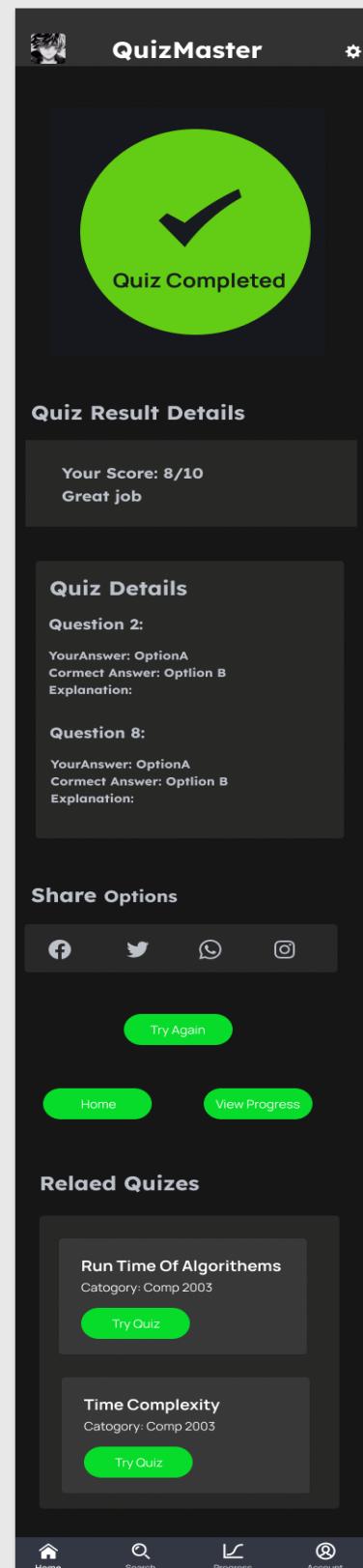
9. Quiz Screen –1

This is the Course screen for the student where they can start quiz in related topics of the course

In This Screen the user (Student) can interact with the quiz we can also see how the right answer and wrong answer interpreted in the quiz after each attempt in questions.



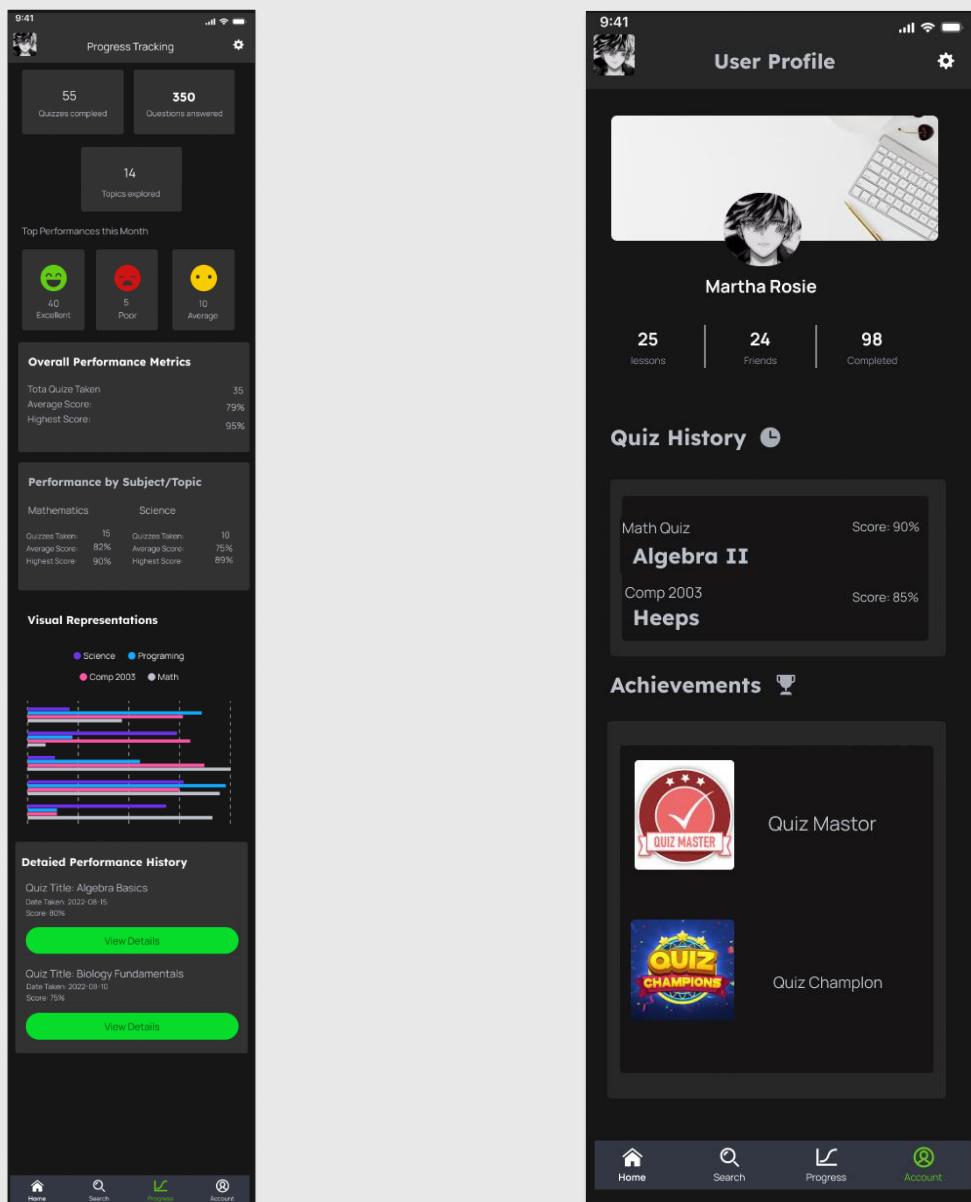
10. Quiz Screen - End



11. Quiz Results

This is the last question of the quiz screen for the student where they can end quiz.

In This Screen the user (Student) can check their progress in the last attempted quiz and explanations for poorly attempted questions

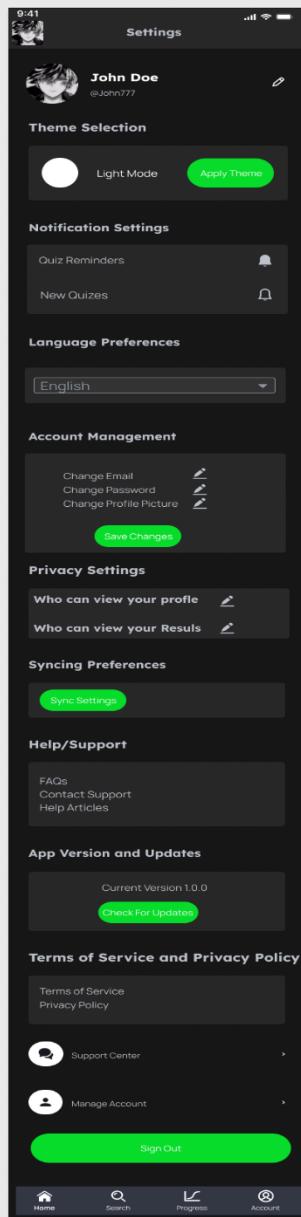


## 12. Progress Tracking

This is the detailed progress tracker which shows progress of student in each course and subtopics.

In This Screen the user (Student) can check and publish their achievements in their quiz master journey

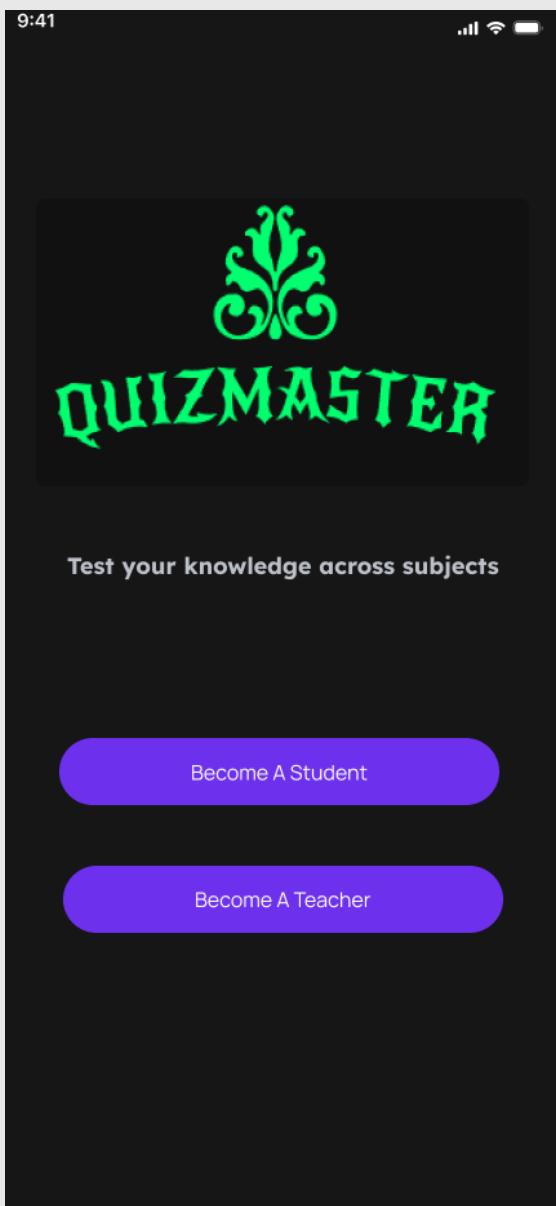
## 13. User Profile



## 15. Settings

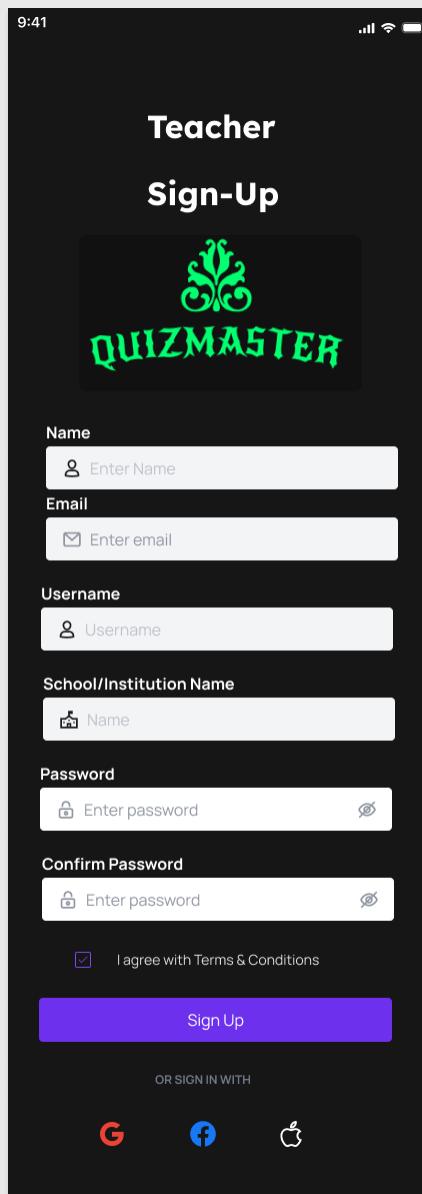
This is the Settings Page for Student where they can select to sign out change their privacy change to light and dark mode, change the language and account management activities.

## 11.2 Teacher Interface

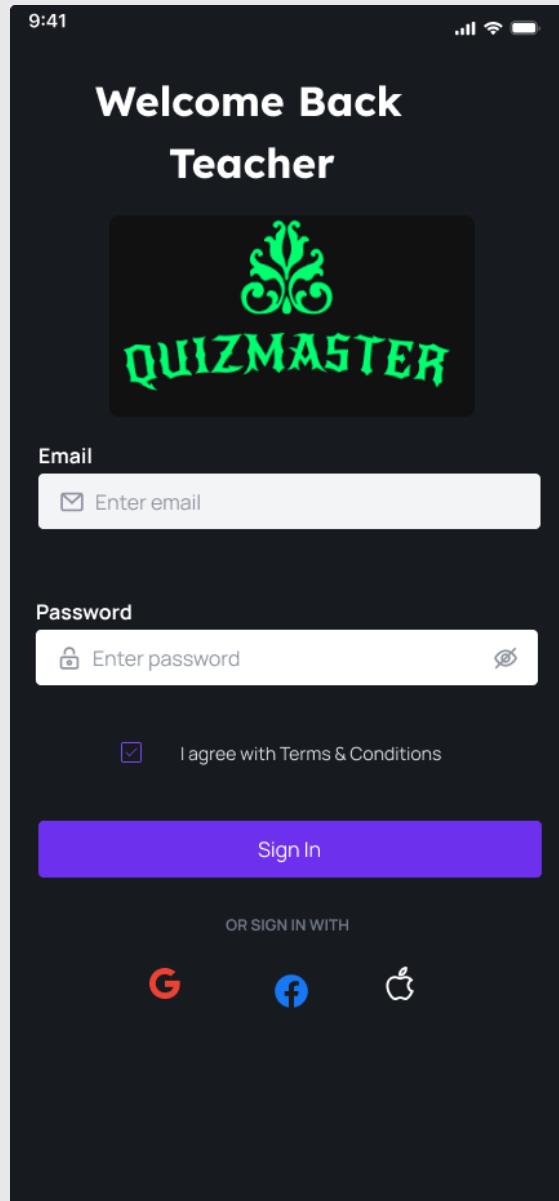


### 1. Welcome

This is the Welcome Page for Both the Teacher and Student where we can select to sign in as Student or Teacher.



2. Teacher Sign-up



3. Teacher Sign-in

This is the sign-Up (Registration) interface for the teacher

This is the Teacher Sign-In interface page

Welcome back, Teacher

# Dashboard

3 days until next quiz

Quiz management

Add Quiz  
1,997 quizzes created

Create

View Quiz  
1,997 quizzes created

View

Categories overview

Student Progress

Quiz Statistics

Home My Courses Progress Account

4. Teacher Dashboard

My Courses

DSA

View

Physics

View

Biology

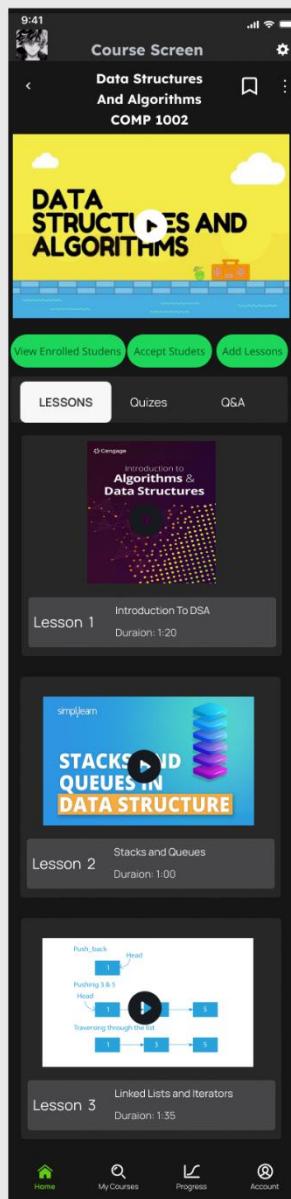
View

Home My Courses Progress Account

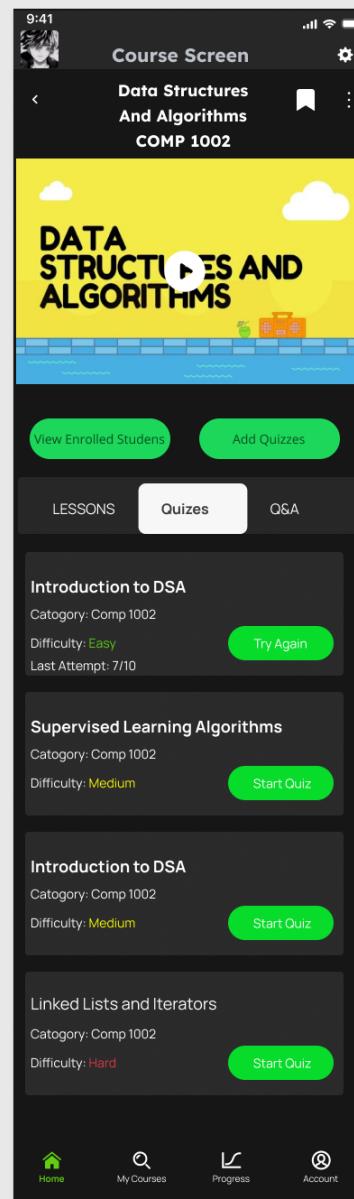
5. My course

This is the Dashboard page for the teacher where it has add function, view function and a categories overview block

This is the My Course page where the teacher can view a specific course and view it.



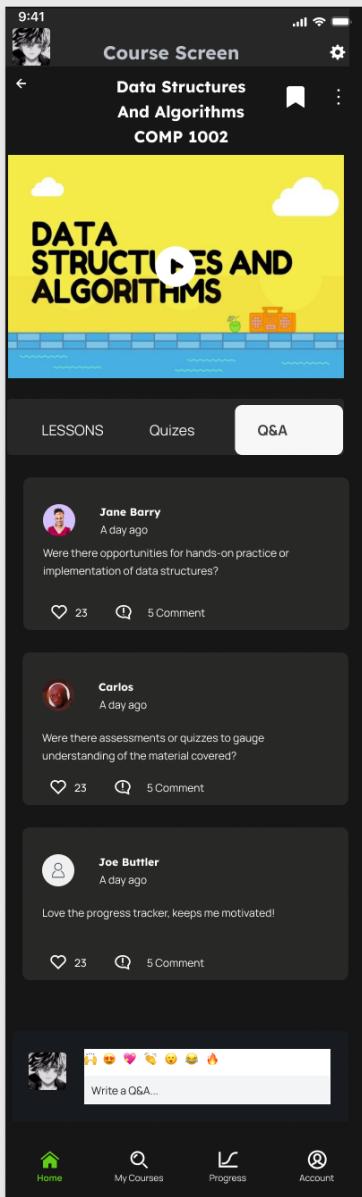
6. Course Screen - Teacher



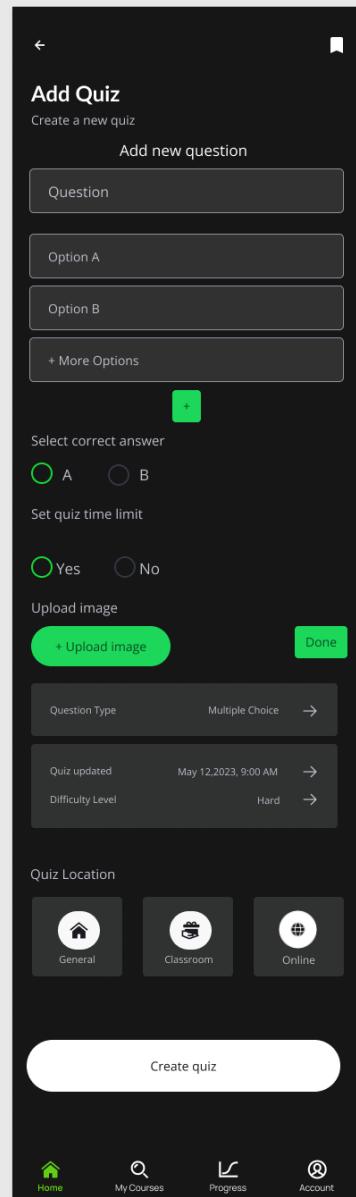
7. Course Screen – Quiz - Teacher

This is the course screen where the teacher can view the lessons under the selected course.

This is also the course interface but here we have a toggle option where we can change to quizzes and Q&A. This contains saved quizzes under each course.



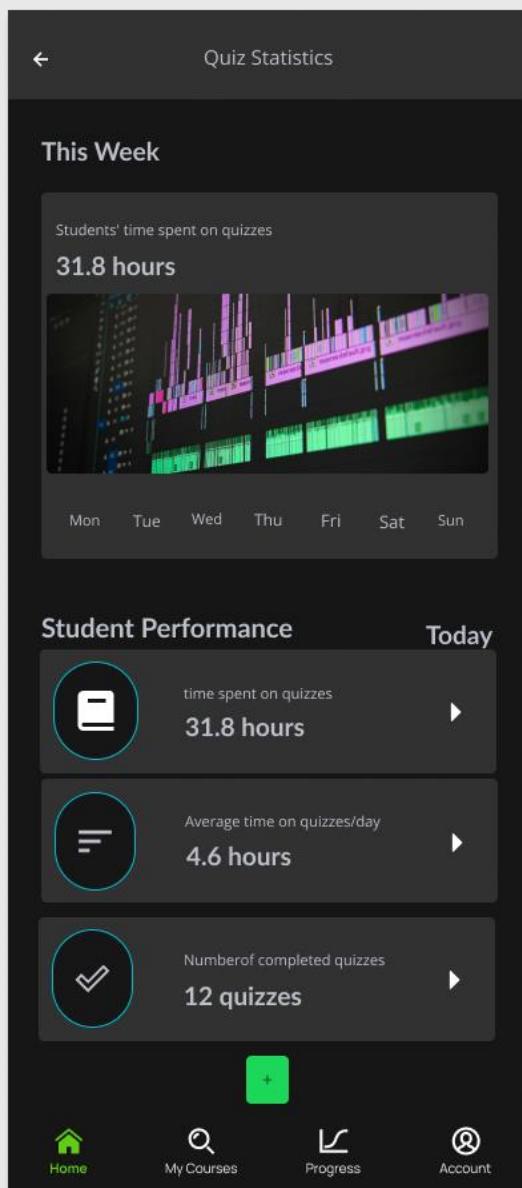
8.Course Screen – Q&A - Teacher



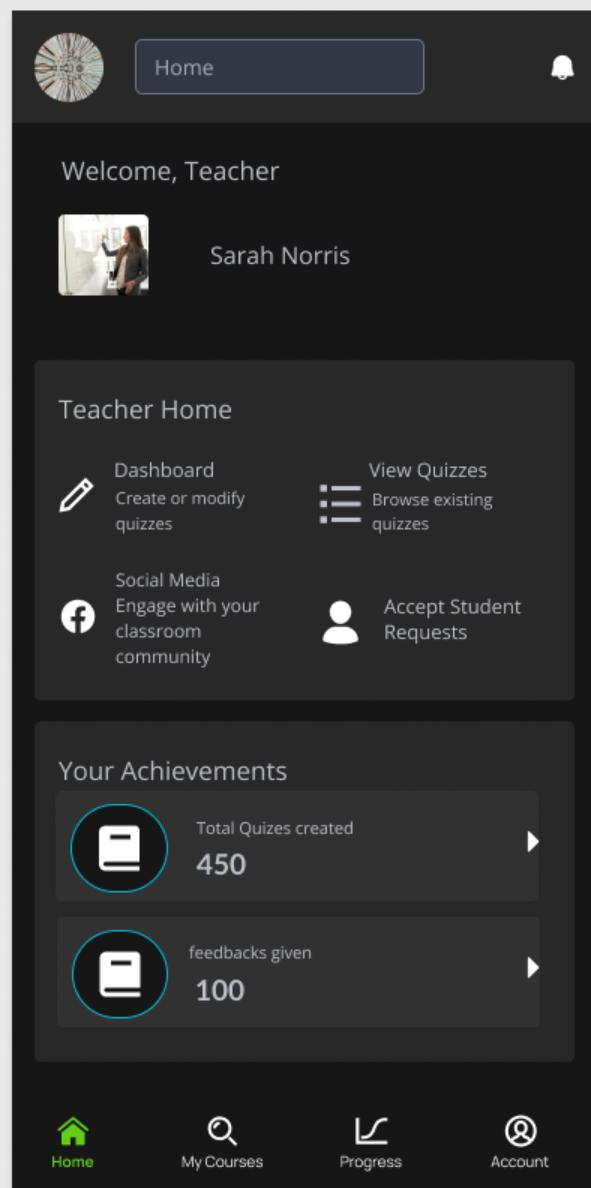
9. Add Quiz

This is the Q&A part from the toggle option on the Course screen interface where it shows the comments and questions asked by students.

This is the Add Quiz interface where the teacher can add a preferred question, select a preferred answer and a quiz time limit if wanted. At the bottom there is a option to select where the quiz should be saved "Quiz Location" before creating the Quiz.



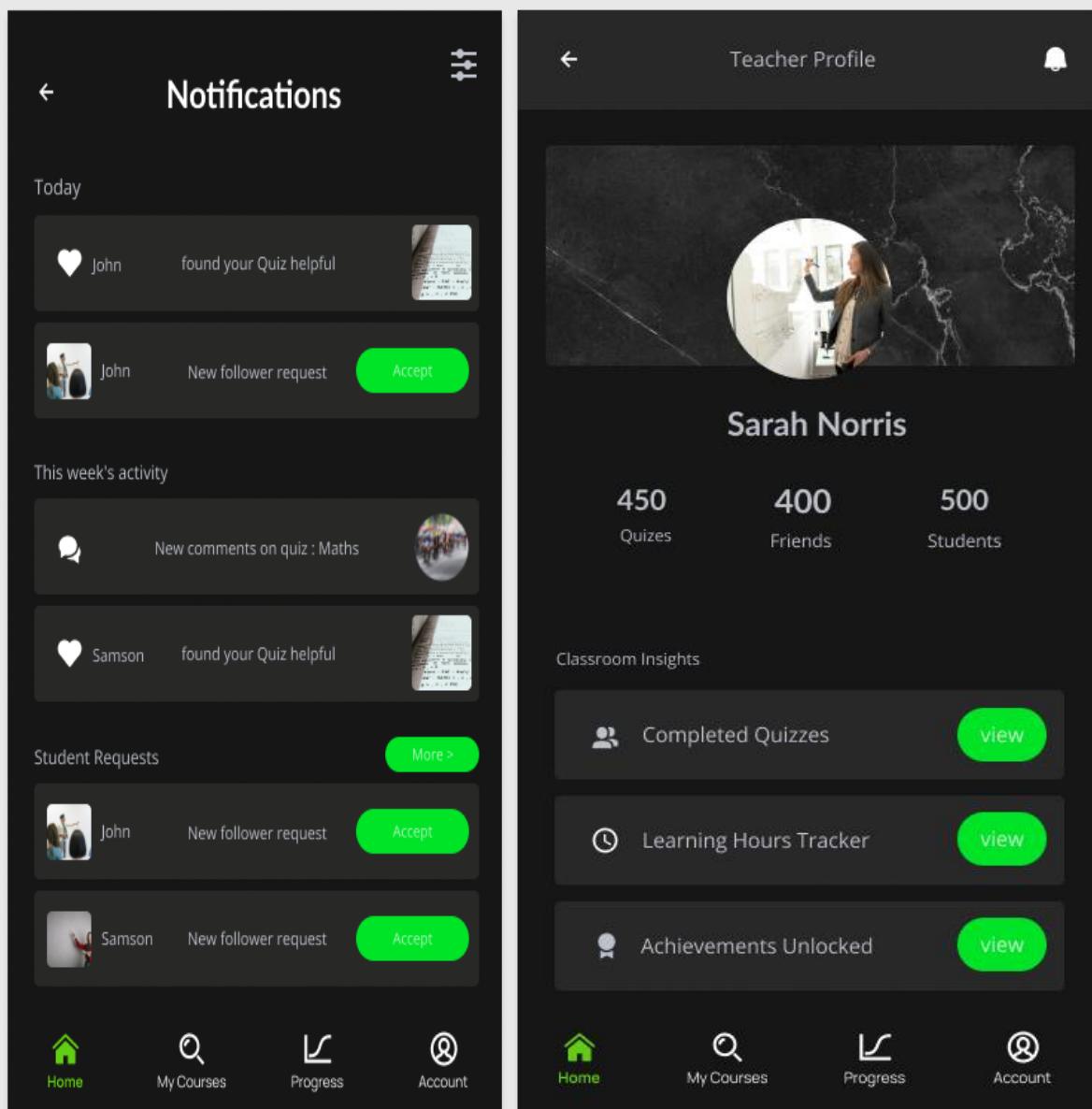
10. Quiz Stats



11. Teacher Home

This is the Quiz statistics interface where the teacher can see the performance of all the students and each of their achievements

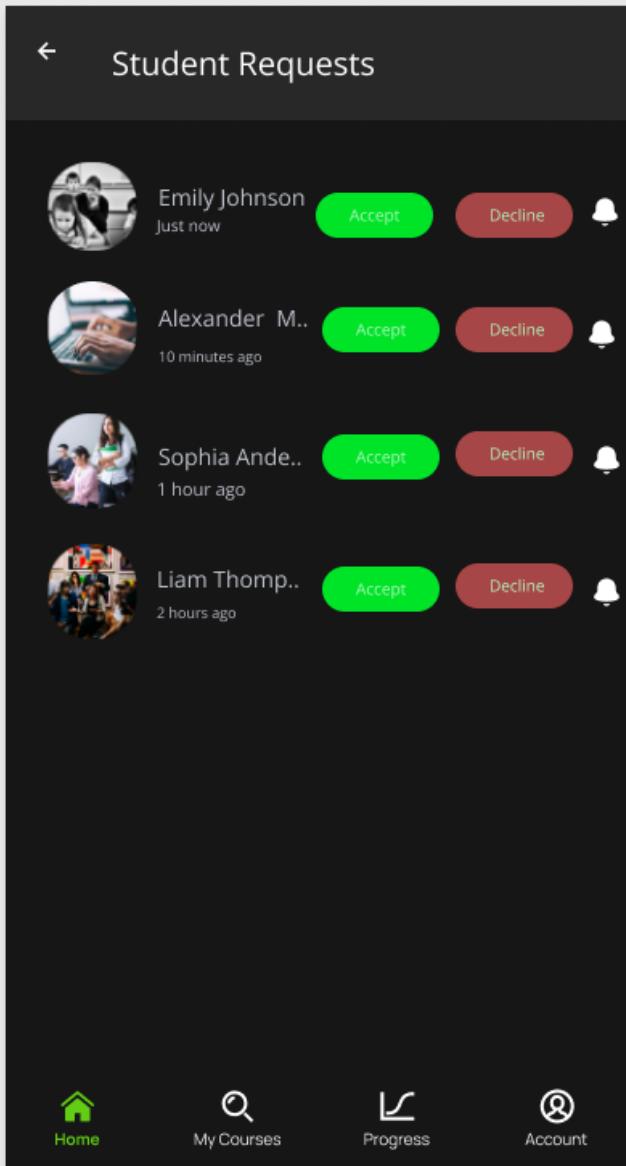
This is the Home page of the teacher where it contains the personal information of the teacher and also the achievements gained by the teacher. Also consists a notification button at the top left



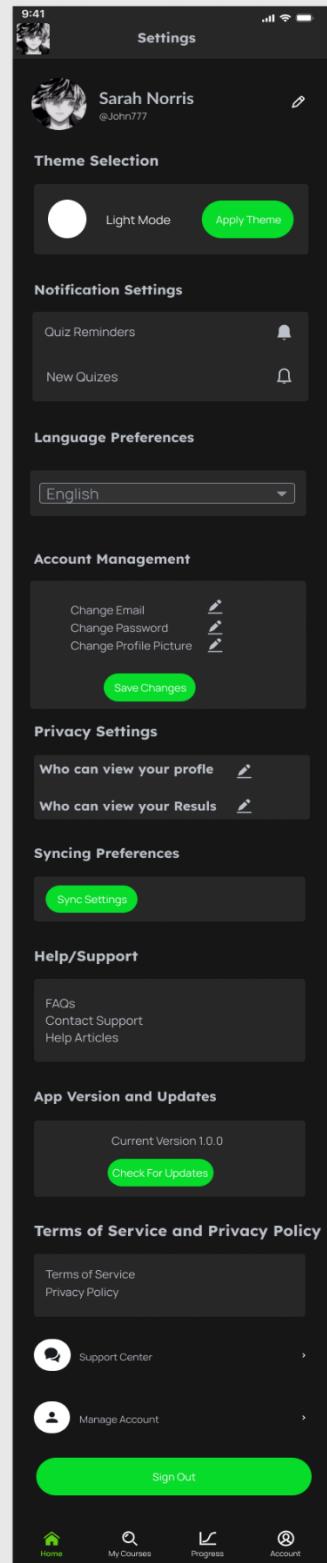
## 12. Teacher Notification 13 Teacher Profile

This is the notification interface of teacher where it has the student comments on the quizzes and also the likes on them which the student found the quiz helpful. It also have student requests block where it consists of the invites sent by the students.

This is the teacher profile where all the quizzes created by the teacher can be seen, the friends on this app and students accepted that are under your instructions.



14. Student Request



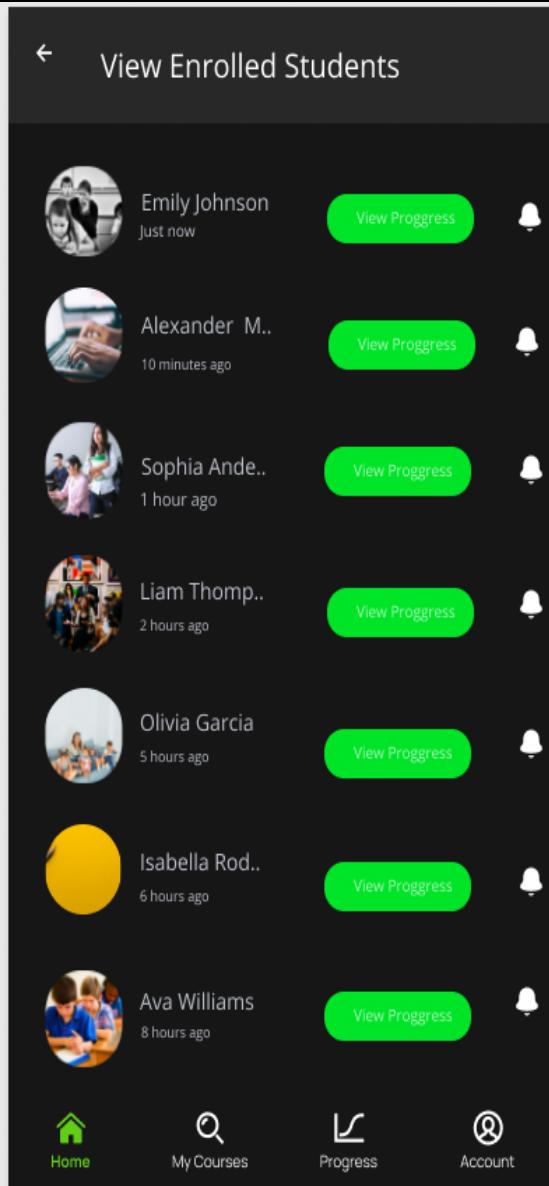
15. Settings

This is the student Request interface where it contains the requests sent from the students. The teacher can either accept or decline the

This is the settings page where the user can edit the theme from black to white if preferred, consists of notification settings, account

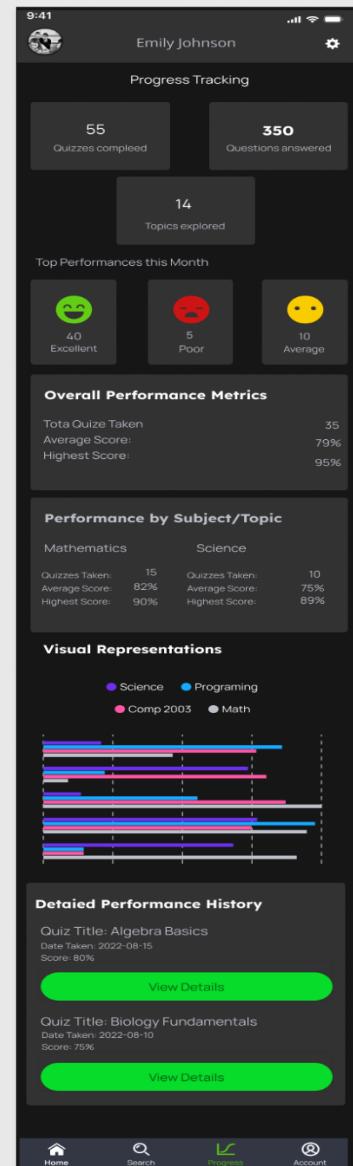
request.

management settings and info on the help and support and many more settings. At the bottom the user can sign out if needed which directs to the welcome page



16. Enrolled Students

This is the interface where we can see the students that are enrolled to the lessons. The teacher can view each of their progress.

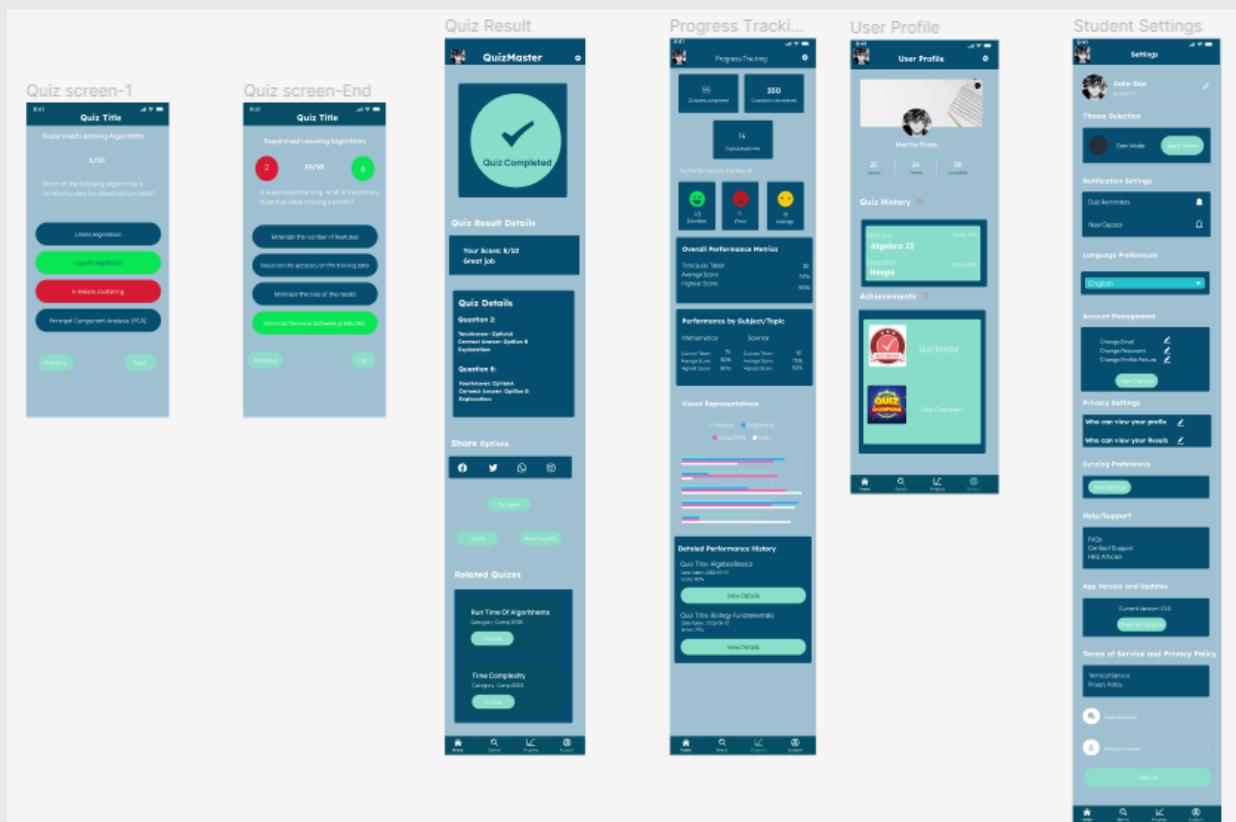
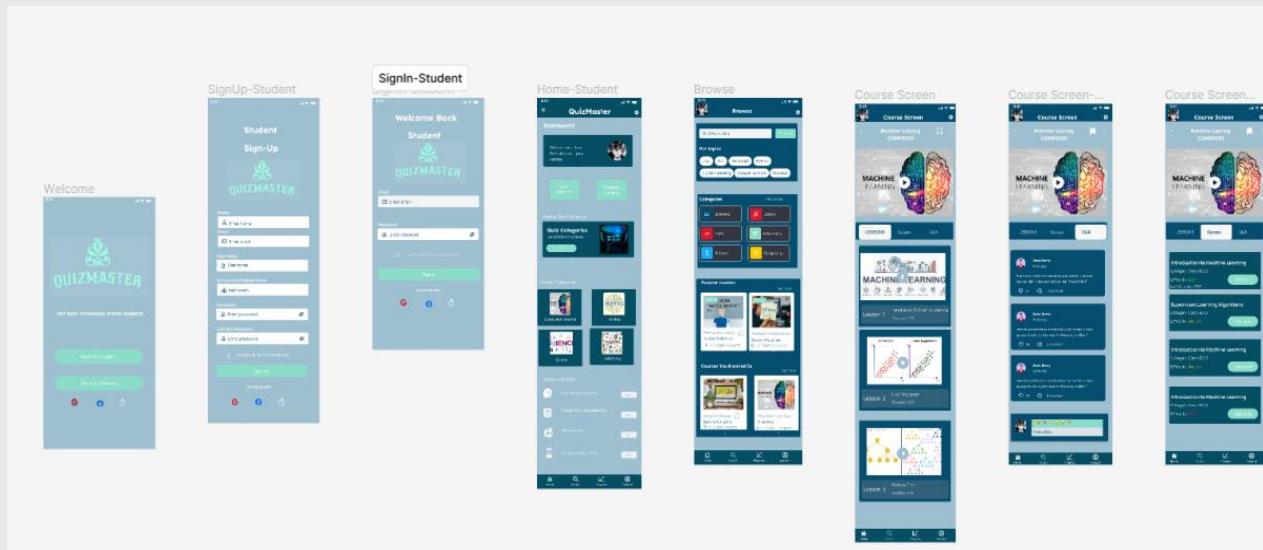


17. Progress Tracker – for enrolled students

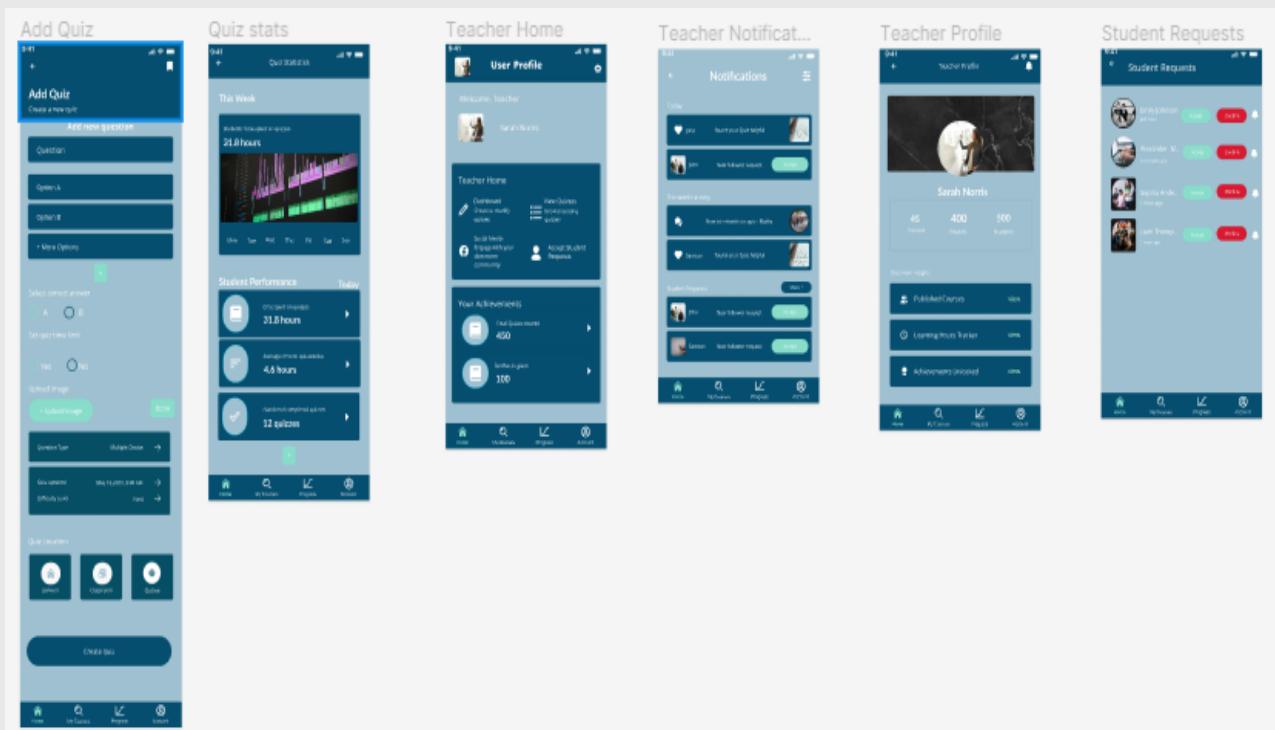
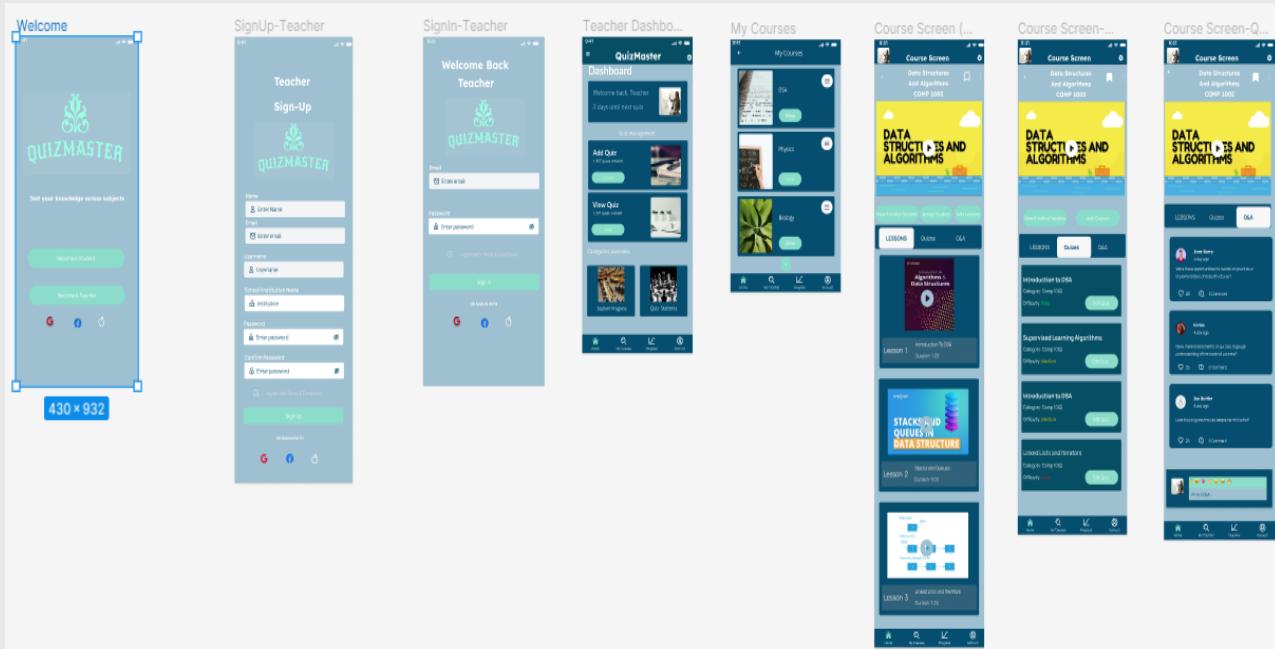
This is the progress tracker interface where the teacher can check on each students progress. It contains overall performance metrics and visual representations as seen on the figure.17

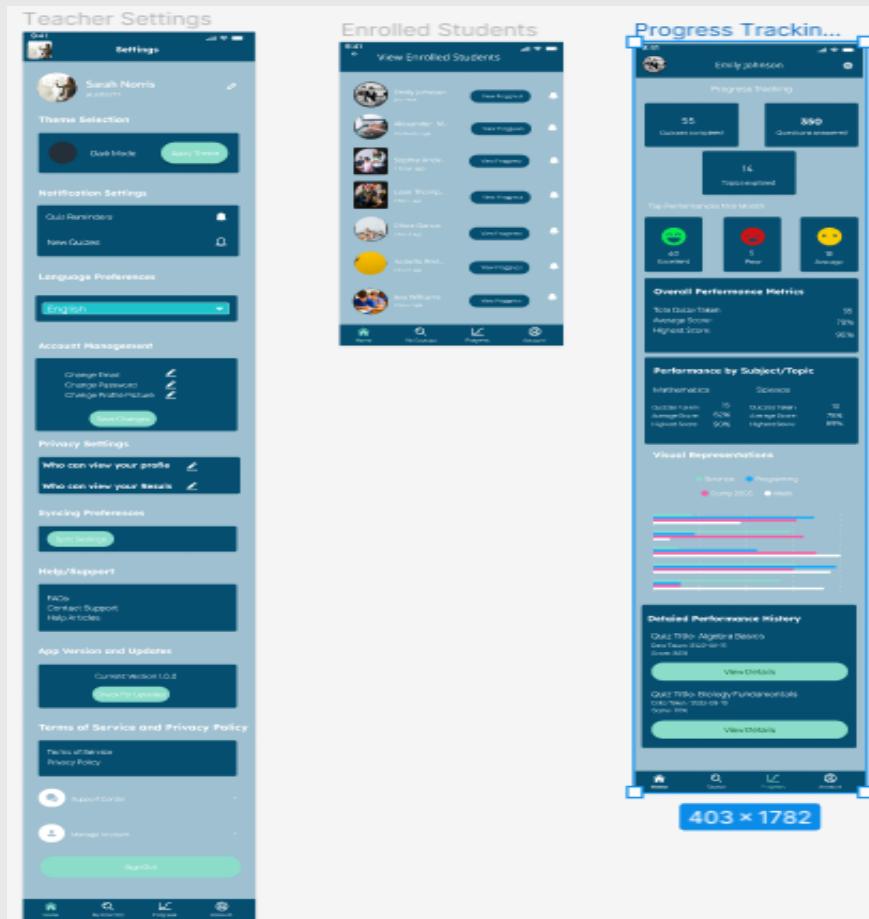
## Light Mode

### Student Interface



## Teacher Interface





## 14. Project Management

The evaluation of the overall design process is a crucial thing in group work, to ensure that the final goal and the functionalities are on the line. As the first step to maintaining the design process, we have defined the evaluation criteria before starting the process. It helped us to determine the metrics that we use to evaluate the design process. Then we collect user feedback from target users by using surveys and interviews, which helped us to ensure that our design meets the user's expectations. As the third step, we analysed the user feedback and revise our design according to the user feedback results. As the next step, we must test our revised design then finally, we have maintained the iterative process by repeating the following steps until we get the desired output.

### 14.1 Meetings

Discord Server is the most frequently used communication medium for conduct meetings and sharing all other information related to the assignment. We also used to have face to face meetings at the end of the weekly evaluation, during that we used to discuss the things and progress that must be perform until next week evaluation. Online meetings are always relied in the availability of all the teammates.

Frequency: Weekly

Duration and communication platform: 1 hour (Discord meeting).

Agenda:

1. Discussing about obstacles occurred during the previous week tasks.
2. Review the previous week progress.
3. Select the progress for the next week evaluation and divide within teammates.
4. Open forum for teammates for discuss about or suggest anything about project.

## 14.2 Risk Management

Risk being considered when you are completing this project.

Technical risks - It could be any kind of issue that is related to technical failures, software or hardware errors, and other compatibility issues. This kind of failure can cause a complete loss of project data or delay in the project's progress when the proper backups and disaster management is not performed.

Schedule risks - It can be the risk that can be created when changing the scope or discovering new functionalities in the middle of the project. This could be worse when team members couldn't finish their desired weekly and overall process. It can also lead the progress to a failure or delay.

Communication risks - It could be the risk that can be caused due to the poor communication between the teammates or stake holders. It will not lead to the project to a complete failure because, it can be sorted out in the regular meetings and iterative process. however, it can cause delay in the project and misunderstanding between team members.

All these risks can be avoided or sorted by performing regular risk assessment process throughout the whole project life cycle

## 14.3 Milestones

User research and persona development - 2 weeks

Generating problem statements and solutions - 1 week

Developing wireframes and user flows - 1 week

Creating low fidelity prototype to the app - 2 weeks

Developing high fidelity prototype to the app - 2 weeks

Creating visual design and logo for the app - 1 week

Continuously monitoring and improving according to the user feedback - ongoing from week 1 to last week

## 15. Development

For developing our mobile quiz app, we would choose a tech stack that offers a balance of performance, scalability, ease of development, and compatibility with mobile platforms. Here's a breakdown of the tech stack we would use and the reasons behind each choice:

### 1. Frontend Development:

**React Native:** React Native is a popular framework for building mobile applications using JavaScript and React. It allows for cross-platform development, enabling us to write code once and deploy it on both iOS and Android platforms.

**Expo:** Expo is a set of tools and services that complements React Native development, providing features like a simplified build process, access to device APIs, and over-the-air updates. It streamlines the development process and accelerates the iteration cycle.

**Redux:** Redux is a predictable state container for JavaScript apps, commonly used with React applications. It helps manage the application's state efficiently, which is crucial for a complex app like ours with various quiz-related data and user interactions.

### 2. Backend Development:

**Node.js:** Node.js is a runtime environment for executing JavaScript code server-side. It's lightweight, scalable, and has a vast ecosystem of libraries and frameworks, making it an excellent choice for building the backend of our mobile app.

**Express.js:** Express.js is a minimalist web application framework for Node.js. It provides a robust set of features for building web and mobile APIs, handling routes, middleware, and more, making it ideal for developing our backend API endpoints.

**MongoDB:** MongoDB is a NoSQL database that offers flexibility, scalability, and performance for handling large volumes of data. Its JSON-like document structure aligns well with JavaScript objects, simplifying data storage and retrieval operations.

### **3. Authentication and Authorization:**

**JSON Web Tokens (JWT):** JWT is a compact and self-contained way for securely transmitting information between parties as a JSON object. We would use JWT for authentication and authorization, enabling users to securely log in, access protected resources, and maintain session state.

### **4. Cloud Services:**

**Firebase:** Firebase is a comprehensive platform provided by Google for building mobile and web applications. It offers features such as authentication, real-time database, cloud storage, and push notifications, which can enhance the functionality and performance of our app.

By leveraging this tech stack, we can develop a robust, scalable, and cross-platform mobile quiz app that meets the needs of both teachers and students while providing a seamless user experience across iOS and Android devices.

## **16. Conclusion**

In conclusion, the goal behind developing the Self Learning QuizMaster app was to enable users to enhance their educational experience by providing them with interesting quizzes and useful study resources. In order to provide a robust and ideal platform for self-directed learners, we have taken care to prioritize user-friendly design and have been gathering feedback on a regular basis.

We have endeavoured to create a seamless and pleasurable learning experience by concentrating on crucial concerns such ensuring users are aware of our goods and can readily access study materials. With special features like gamification elements, tailored recommendations, and progress tracking tools, our aim is to boost user motivation, promote community engagement, and assist users in efficiently managing their time while they pursue their learning goals.

The Self Learning QuizMaster app is more than just a tool for gaining knowledge; it is a dynamic platform that promotes exploration, collaboration, and ongoing improvement. Our dedication to providing users with the necessary resources and support for their learning endeavours remains unwavering as we strive to enhance and perfect the app.

## **17. Acknowledgements**

We would like to extend our sincere gratitude to Team 1 for their expert review and valuable feedback throughout the development of our quiz app project. Their insights and suggestions have been instrumental in shaping our design decisions and improving the overall quality of our solution.

Additionally, we would like to thank the industry professional who provided us with valuable advice and guidance on various aspects of the project. Their expertise and perspective have been immensely helpful in ensuring that our app meets industry standards and addresses real-world needs effectively.

We also express our appreciation to all the users who participated in interviews, surveys, and usability testing sessions. Their input and feedback have been invaluable in understanding user needs and preferences, ultimately shaping the direction of our project.

## 17. References

- 1) PCMag, “Quizlet review,” *PCMAG*, Oct. 18, 2023. <https://pcmag.com/reviews/quizlet>
- 2) PCMag, “Kahoot! Review,” *PCMAG*, Mar. 31, 2021. <https://www.pcmag.com/reviews/kahoot>
- 3) Kabir, A. (2021, December 7). A Design Critique of Canvas - Arif Kabir - medium. *Medium*. <https://medium.com/@arifikabir/a-design-critique-of-canva-89a4718dd0fd>
- 4) “What are frontend and backend in app development? | LIZARD.global.” <https://www.lizard.global/blog/what-are-frontend-and-backend-in-app-development>
- 5) “Top frontend frameworks for mobile apps in 2023.” <https://www.dhiwise.com/post/front-end-frameworks-for-mobile-apps>
- 6) S. Srivastava, “A quick guide to mobile app backend development,” *Appinventiv*, Dec. 18, 2023. <https://appinventiv.com/blog/quick-guide-mobile-app-backend-development/>

# Appendix

## Appendix A: A User Survey Responses and Sample Question

### Survey Questions

Quiz Master interview questions.

B I U ↵

Form description

How often do you engage in self-study?

Daily  
 Weekly  
 Monthly  
 Occasionally  
 Rarely

What subjects or topics do you usually focus on during self-study?

Long answer text

Are there specific goals you aim to achieve through using a self-study quiz app?

Long answer text

Do you currently use any quiz or study apps?

Quizlet  
 Fyrebox  
 Canvas LMS  
 Typeform  
 Survey Monkey  
 Other...

Would you prefer timed quizzes or self-paced learning?

Timed Quizzes  
 self-paced learning

What improvements would you like to see in a self-study quiz app?

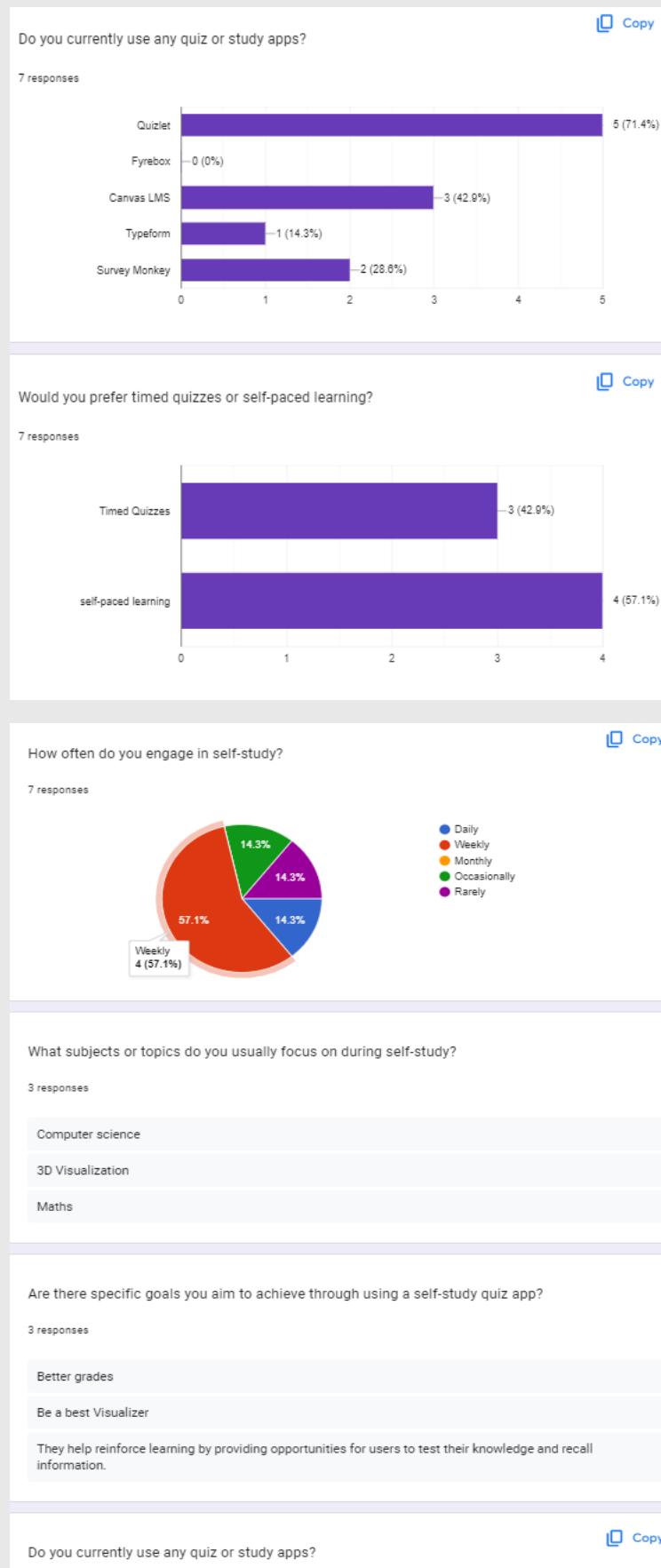
Long answer text

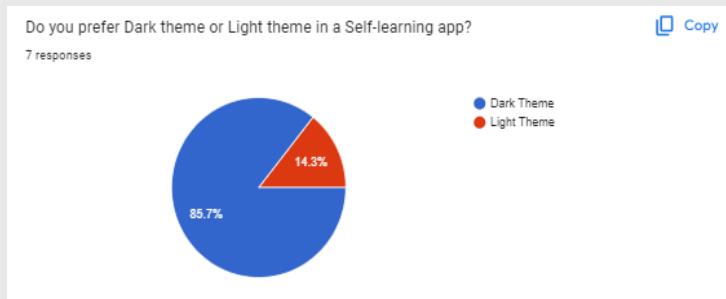
If you could design your ideal self-study quiz app, what features would it include?

Long answer text

Tr  
↶ ↷

## Survey Answers





## Appendix B: Expert Review

Usability strength or weakness	What type of heuristic is applicable?	Describe the issue you are reviewing	Severity	Reccomendation
1 Strength	Design Principles	Providing the option to customize settings	Medium	
2 Strength	Visual Design Fundamentals	Visual Design Fundamentals Understandable UI in specific implementations	Low	
3 Strength	Design principles in Sign up layout	have a contemporary design that is simpler for users to grasp.	Low	
4 Weakness	Visual design fundamentals	vertically align all the buttons and features to center. (Basically it looks empty in below below part)	Low	
5 Weakness	Usability Heuristics	Have the QR code in a separate page or make it much larger	Medium	<a href="#">Link</a>
6 Strength	Fundamentals of design: Layout Asymmetry	have a good layout in "Pregnancy Home page" interface	Low	

## Appendix C: Meeting Minutes

### Meeting 1

### Team Meeting Minutes

<b>Date:</b>	07/03/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	First Meeting
<b>Attendees:</b>	Bihela, Ganesh, Sunera, Hesara
<b>Absent:</b>	

Meeting Objective/s	
Choose a Topic for the Project	

Agenda		
Name	Topic	Time
1	Choose a Topic	30min
2	Appoint Roles	30min

## Team Meeting Minutes

<b>Date:</b>	8/03/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	Second Meeting
<b>Attendees:</b>	Bihela, Sunera, Hesara
<b>Absent:</b>	Ganesh

### Meeting Objective/s

Assigning tasks for Worksheet 1  
 Bihela - Usability and user experience, inclass part c, competitors analysis (1)  
 Sunera - inclass - part b, competitors analysis (1), cover page  
 Hesara - inclass - part a, competitors analysis (1)  
 Ganesh - Project Description, competitors analysis (2)

### Agenda

Name	Topic	Time
1	Assigning tasks for Worksheet 1	1hr

## Meeting 2

## Meeting 3

## Team Meeting Minutes

<b>Date:</b>	09/03/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	Third Meeting
<b>Attendees:</b>	Bihela, Sunera, Hesara
<b>Absent:</b>	Ganesh

### Meeting Objective/s

APP name : Quiz Master  
 Oranginse the proposal to the DOC

### Agenda

Name	Topic	Time
1	Assigning tasks for Worksheet 1	1hr

## Team Meeting Minutes

<b>Date:</b>	11/03/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	Fourth Meeting
<b>Attendees:</b>	Bihela, Sunera, Hesara
<b>Absent:</b>	Ganesh

### Meeting Objective/s

Deadline was extended to 17th sunday.  
Friday next 9.00pm

### Agenda

Name	Topic	Time
1	Assigning tasks for Worksheet 1	30min

## Meeting 4

## Meeting 5

## Team Meeting Minutes

<b>Date:</b>	17/03/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	Fifth Meeting
<b>Attendees:</b>	Bihela, Sunera, Hesara
<b>Absent:</b>	Ganesh

### Meeting Objective/s

planned Worksheet 2  
Sunera - a in-activity, organise report  
Hesara - c in-activity,d in-activity.  
Bihela - Design Process, b inactivity

### Agenda

Name	Topic	Time
1	Assigning tasks for Worksheet 2	1hr

## Team Meeting Minutes

<b>Date:</b>	18/03/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	Sixth Meeting
<b>Attendees:</b>	Bihela, Sunera, Hesara
<b>Absent:</b>	Ganesh

### Meeting Objective/s

planned Worksheet 2

### Agenda

Name	Topic	Time
1	Assigning tasks for Worksheet 2	1hr

## Meeting 6

## Meeting 7

## Team Meeting Minutes

<b>Date:</b>	21/03/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	Seventh Meeting
<b>Attendees:</b>	Bihela, Ganesh, Hesara
<b>Absent:</b>	Sunera

### Meeting Objective/s

planned Worksheet 3  
Sunera - SRS,organise, 3. Hierarchical Task Analysis  
Hesara - inclass  
Bihela - inclass  
Ganesh - Best-in world competitor analysis d

### Agenda

Name	Topic	Time
1	Assigning tasks for Worksheet 3	1hr

## Meeting 8

### Team Meeting Minutes

<b>Date:</b>	24/04/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	Eighth Meeting
<b>Attendees:</b>	Bihela, Sunera, Hesara
<b>Absent:</b>	Ganesh

### Meeting Objective/s

planned Worksheet 3  
Eighth meeting - 3 ganesh  
Worksheet 3  
Functionality  
User interface  
Sunera - SRS requirements,organise  
Hesara - Entire inclass  
Bihela - 3. Hierarachical Task Analysis  
Ganesh - Best-in world competitor analysis d

### Agenda

Name	Topic	Time
1	Assigning tasks for Worksheet 3	1hr

### Team Meeting Minutes

<b>Date:</b>	28/03/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	Ninth Meeting
<b>Attendees:</b>	Bihela, Sunera, Hesara
<b>Absent:</b>	Ganesh

### Meeting Objective/s

Assign tasks for Low Fidelity

### Agenda

Name	Topic	Time
1	Low Fidelity	1hr

## Meeting 9

## Meeting 10

### Team Meeting Minutes

<b>Date:</b>	05/04/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	tenth Meeting
<b>Attendees:</b>	Bihela, Sunera, Hesara
<b>Absent:</b>	Ganesh

#### Meeting Objective/s

Assign tasks for Expert Review

#### Agenda

Name	Topic	Time
1	Expert Review	1hr

## Meeting 11

### Team Meeting Minutes

<b>Date:</b>	12/04/2024
<b>Time:</b>	9.00pm
<b>Topic:</b>	Eleven Meeting
<b>Attendees:</b>	Bihela, Sunera, Hesara
<b>Absent:</b>	Ganesh

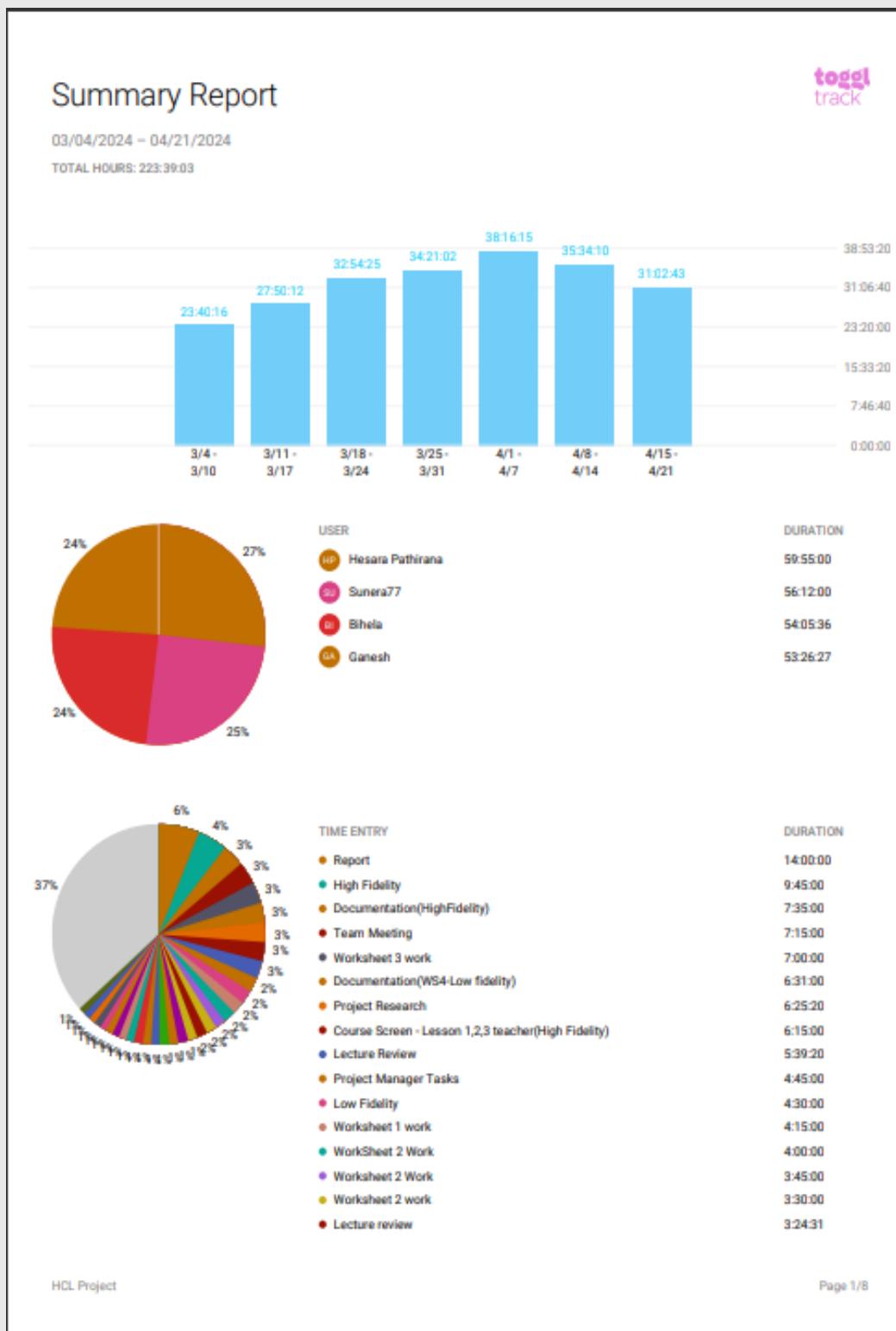
#### Meeting Objective/s

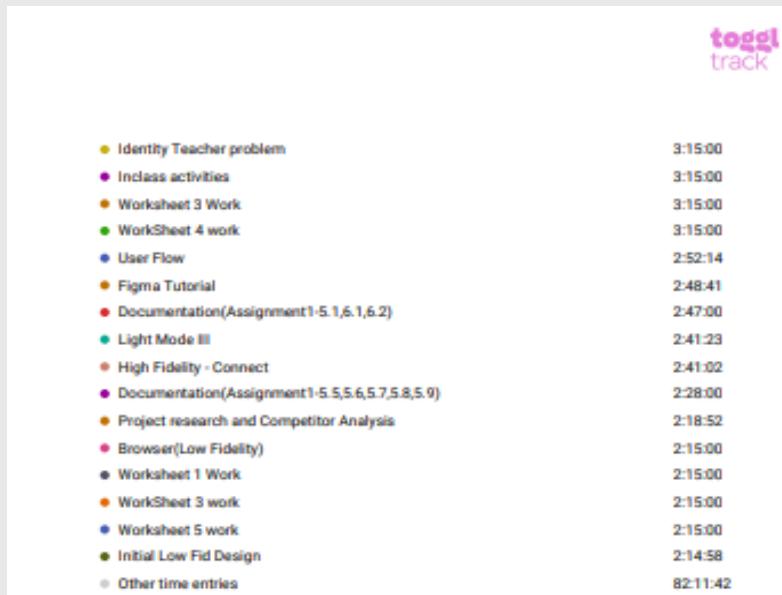
Assign tasks for High Fidelity

#### Agenda

Name	Topic	Time
1	High Fidelity	1hr

## Appendix D: Record Keeping





Toggle Report: <https://drive.google.com/file/d/1Yq1bocP9vo9qRh3IyaKXX3QtQTy5j2/view?usp=sharing>

## Appendix E: Contribution Table

### Sprint Backlog for worksheets:

[https://docs.google.com/spreadsheets/d/1R051EIHm3KVI\\_sucZLklaauDU1uS\\_zK4cKP5tzwKFm4/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1R051EIHm3KVI_sucZLklaauDU1uS_zK4cKP5tzwKFm4/edit?usp=sharing)

### Sprint Backlog for Assignment 1:

Student	Contributions
Bihela Wanasekara	<p><a href="#">1 Introduction</a></p> <p><a href="#">4 Software Engineering Lifecycle and Tools</a></p> <p><a href="#">5.4 Data Analysis</a></p> <ul style="list-style-type: none"> <li><a href="#">5.4.1 Background Summary</a></li> <li><a href="#">5.4.2 Goals</a></li> <li><a href="#">5.4.2 Methodology</a></li> <li><a href="#">5.4.3 Results</a></li> </ul> <p><a href="#">13 High-Fidelity Prototype</a></p> <ul style="list-style-type: none"> <li><a href="#">13.1 Student Interface</a></li> <li><a href="#">13.2 Teacher Interface</a></li> </ul> <p><a href="#">Appendix</a></p>

	<p><a href="#">Appendix A: A User Survey Responses and Sample Question</a></p> <p><a href="#">Survey Questions</a></p> <p><a href="#">Survey Answers</a></p> <p><a href="#">Appendix B: Expert Review</a></p> <p><a href="#">Appendix C: Meeting Minutes</a></p>
<b>Thirunanthisivam Umaganesh</b>	<p><a href="#">5.6 User journeys, User Flows, Empathy Maps</a></p> <p><a href="#">5.6.1 User Journeys</a></p> <p><a href="#">5.6.2 Empathy Maps</a></p> <p><a href="#">5.6.3 User Flows</a></p> <p><a href="#">9 Usability Heuristics</a></p> <p><a href="#">High Fidelity – Light Mode</a></p>
<b>Hesara Pathirana</b>	<p><a href="#">7 UI /UX Goals</a></p> <p><a href="#">7.1 Usability</a></p> <p><a href="#">7.2 User Experience Goals</a></p> <p><a href="#">8 UI/UX Design Principles</a></p> <p><a href="#">8.1 Design Principles</a></p> <p><a href="#">8.2 UI/UX Design Principles and Visual Design Principles</a></p> <p><a href="#">8.2.1 Layout</a></p> <p><a href="#">8.2.2 Hierarchy</a></p> <p><a href="#">8.2.3 Colour</a></p> <p><a href="#">8.2.4 Typography</a></p> <p><a href="#">8.2.5 Imagery and copy</a></p> <p><a href="#">9 Usability Heuristics</a></p> <p><a href="#">10 Wireframing</a></p> <p><a href="#">16. Conclusion</a></p>
<b>Sunera Sathnidu</b>	<p>Cover page.</p> <p><a href="#">3 Team</a></p> <p><a href="#">5.1 Design Thinking Process</a></p> <p><a href="#">5.2 User-Centred Design</a></p> <p><a href="#">5.3 User Interviews, Surveys, Questionnaires and Observations</a></p> <p><a href="#">5.5 Personas</a></p>

	<a href="#"><u>5.7 User Stories</u></a> <a href="#"><u>5.8 Use Cases</u></a> <b>Error! Bookmark not defined.</b> <a href="#"><u>5.9 Competitor Analysis</u></a> <a href="#"><u>5.10 Pain Points</u></a> <a href="#"><u>6 Requirement Specification</u></a> <a href="#"><u>6.1 Functional Requirements</u></a> <a href="#"><u>6.1.1 User Requirements</u></a> <a href="#"><u>6.1.2 System Requirements</u></a> <a href="#"><u>6.2 Non-Functional Requirements</u></a> <a href="#"><u>11 Low-Fidelity Prototype</u></a> <a href="#"><u>15. Development</u></a> <a href="#"><u>17. Acknowledgements</u></a>
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## Appendix F: Figma Files

### **High-fidelity:**

<https://www.figma.com/file/kTzhGteSHCvCH2A0BevQWQ/HighFidelity?type=design&node-id=0%3A1&mode=design&t=oMAYjst32UWzLGs8-1>

### **High-fidelity (Light mode):**

<https://www.figma.com/file/NBYN8slawY7II95hk8MRWh/Highfid---Light-mode?type=design&mode=design&t=8yFvskljTlnlo6JJ-0>

### **Low fidelity:**

<https://www.figma.com/file/un493hcnE7UEbGaItrjQM/Low-Fidelity?type=design&mode=design&t=oMAYjst32UWzLGs8-1>