



**DEPARTMENT OF INFORMATION TECHNOLOGY AND
COMMUNICATION**

**DIPLOMA IN INFORMATION TECHNOLOGY
(DIGITAL TECHNOLOGY)**

LEXILEARN

GROUP MEMBERS:

NUR FARRAH NAJWA BINTI AHMAD FADILAH 17DDT21F1087

NOOR NADHIRAH BINTI MOHD YUSOFF 17DDT21F1083

NUR ARINA BINTI AZALAN 17DDT21F1069

SUPERVISOR:

NUR HAZIMAH BINTI KHALID

SESSION: 2 2022/2023 (SHORT SEMESTER)

DECLARATION

We hereby declare that the technical report entitled “LexiLearn” is based on original work under supervision and guidance of Madam Nur Hazimah binti Khalid except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other diploma or award at Polytechnic or other institutions.

1. Signature :
 Name : NUR FARRAH NAJWA BINTI AHMAD FADILAH
 Registration No. : 17DDT21F1087
 Date : 04/08/2023

2. Signature :
 Name : NOOR NADHIRAH BINTI MOHD YUSOFF
 Registration No. : 17DDT21F1083
 Date : 04/08/2023

3. Signature :
 Name : NUR ARINA BINTI AZALAN
 Registration No. : 17DDT21F1069.
 Date : 04/08/2023

APPROVAL FOR SUBMISSION

Project Title : LEXILEARN

Session : 2 2023/2024 (SHORT SEMESTER)

Submitted by	: 1. NUR FARRAH NAJWA	17DDT21F1087
	: 2. NOOR NADHIRAH BINTI MOHD YUSOFF	17DDT21F1083
	: 3. NUR ARINA BINTI AZALAN	17DDT21F1069

“This technical report has been read, checked and approved in term of scope and quality for the award of Diploma in Information Technology (Digital Technology).”

Checked by:

Supervisor's Signature :

Supervisor's Name :

Date :

ABSTRACT

Dyslexic children face unique learning challenges that require specialized support. Currently in the market the number of applications for dyslexic learning is limited. Dyslexic children often encounter difficulties in areas such as reading, writing, spelling, and comprehension. These challenges can impact their learning progress and problem-solving abilities. Furthermore, they may struggle to identify letter, numbers even to comprehend long sentences. As a result, the goal with this software is to promote parental involvement for students with dyslexia, with a concentration on courses for Bahasa Melayu. The "LexiLearn" application will be created utilizing agile methodology and the Java programming language. Design a user-friendly and interactive learning experience for children with disabilities by constructing the programme using Android Studio and utilizing Thunkable, Adobe Illustrator, Canva, and Firebase. The notable mission is to reimagine learning for children with dyslexia, giving them the resources they need to enhance their abilities and overall learning results. Simultaneously, the hope to relieve teachers' workloads by providing an efficient and effective self learning tool that students and parents can use at their disposal . The effective usage of the "LexiLearn" application will make a huge difference in the educational path of children with learning disabilities, mostly bridging the gap between parents and students at home by doing lessons and quizzes with parental involvement.

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1.0 PROJECT PLAN

1.1 PROBLEM STATEMENT

The problem statements of our project are:

- I. Teacher at SK Bukit Ceraka currently does not have any application to assist them in teaching students with learning disability (dyslexia) as manual teaching methods are used.
- II. Currently in the market, there are limited availability of learning app for dyslexic children.
- III. There is a lack of accessible and inclusive educational resources for dyslexic students in mainstream schools, hindering their learning and academic progress.

1.2 OBJECTIVE

The objective of this project are:

- I. To develop a mobile dyslexic learning app to support their learning especially in reading, spelling and writing.
- II. To design a minimalist interface design with the use of simple instruction and dyslexic font for supporting their special needs.
- III. To measure the student comprehension through quizzes and gamification.

1.3 SCOPE

The project scopes are:

1. User's Scope:

- I. Student:
 - Students shall be able to login and logout in the app.
 - Students shall be able to view lessons.
 - Students shall be able to play games and quizzes.

- Students shall be able to take test to know what level they are currently.

II. Parents:

- Parents shall be able to login and logout in the app.
- Parents shall be able to monitor their child's achievement.
- Parents shall be able to edit profile information.

2. System Scope

- This app will have a minimalist design and fonts that will cater towards students with dyslexia.
- This app also will provide data that can help parents to monitor the student's achievement and progress.
- This app allows users to login and logout.

1.4 LITERATURE REVIEW

Below is a comparative analysis of three different dyslexic learning apps available in the current market

LOGO			
Name Of Application Website	Super Phonics	Endless Reader (dyslexia)	Endless Numbers (dyslexia)
Programming Of Language	- Java - JavaScript	- Javascript	- Javascript
Hardware	- Laptop	- Laptop	- Laptop
Software	Android Studio	Android Studio	Android Studio
Advantages (features)	- Helps children learn to spell the words. - Children can recognize letters and improve their fine motor skills by tracing them. - Memory and attention training.	- Helps children learn to recognize sight words. - Help children learn letter sounds, word pronunciation and phonics skills and reading skills. - Have speech therapy to learn how to make individual sounds.	- Helps children to visualize numbers. - Numbers are simple and effective. - There's no high scores, failures, limits or stress

Disadvantages (features)	- Need to purchase to unlock all the levels . - Have an advertisement - A phonics program should present the sounds of the letters	- Need to purchase to unlock all the levels . - Have an advertisement - Very expensive	- Complicated number manipulations. - Entire number of packs need to purchase - Need to pay for the full versions of them all.
Platform	Android/IOS	Android/IOS	Android/IOS

Table 1.4 : LexiLearn's Literature Review

In summary, the reviewed applications provide numerous benefits in supporting children's learning needs, such as speech development, reading skills, and numeracy. there are several weaknesses that can be identified which are in-app purchases, advertisement, complexity numerical and exercises, cost that offer affordable pricing or flexible payment options and phonics presentation should improve letter sound instruction and reinforcement.

1.5 METHODOLOGY



Figure 1.5 : Agile Scrum for Methodology

The methodology chosen for the project is Agile. Which is a flexible and collaborative approach to software development that focuses on iterative and incremental delivery. It emphasizes adaptability, customer involvement, and the ability to respond to changing requirements throughout the development process.

The reason is because it is beneficial for projects that need to be done in a short amount of time given that the duration is 2 months. Agile also promotes iterative and incremental development, collaboration, and adaptability, which can help our team effectively manage and deliver the project within the given constraints.

The phases involved and activities that will be conducted in Agile is :-

Phase	Activities
Planning and Meet	- Identify the problems and requirements with the client. - Define project objectives, scope, and constraints - Identify key stakeholders and their roles - Conduct initial research on dyslexia and learning needs - Create a project roadmap and timeline - Develop a product backlog - Prioritize features and functionalities - Set sprint goals and durations - Define project communication channels and tools
Analysis and Design	- Gather requirements from dyslexic children, educators, and stakeholders - Create user stories and acceptance criteria - Conduct user experience (UX) research and design wireframes - Define the app's architecture and technical specifications - Create mockups and prototypes - Review and refine design elements based on feedback
Development	- Implement core functionality based on user stories - Write clean, efficient, and well-documented code - Integrate dyslexia - specific features and accommodations - Conduct regular code reviews and maintain version control - Collaborate with dyslexic children and educators for feedback

	- Continuously test and debug the app during development
Testing and Quality Assurance	- Develop comprehensive test plans and test cases - Perform functional, usability, and performance testing - Identify and fix bugs and issues - Conduct accessibility testing for dyslexic children - Validate the app against acceptance criteria
Deployment	- Prepare the app for deployment - Configure server environments and databases - Set up app store accounts and submission process - Conduct final testing and quality assurance checks - Generate release builds and package the app - Submit the app into app stores for review and approval
Feedback and Iteration	- Gather user feedback and conduct surveys - Analyze app usage and performance metrics - Identify areas for improvement based on feedback - Client user feedback into feature enhancements - Continuously iterate and refine the app based on user needs
Release and Maintenance	- Release the app to the app stores - Monitor user reviews and ratings - Monitor app analytics and user engagement metrics

Table 1.5 : LexiLearn’s Methodology

1.6 GANTT CHART

LEXILEARN

NUR ARINA BINTI AZALAN

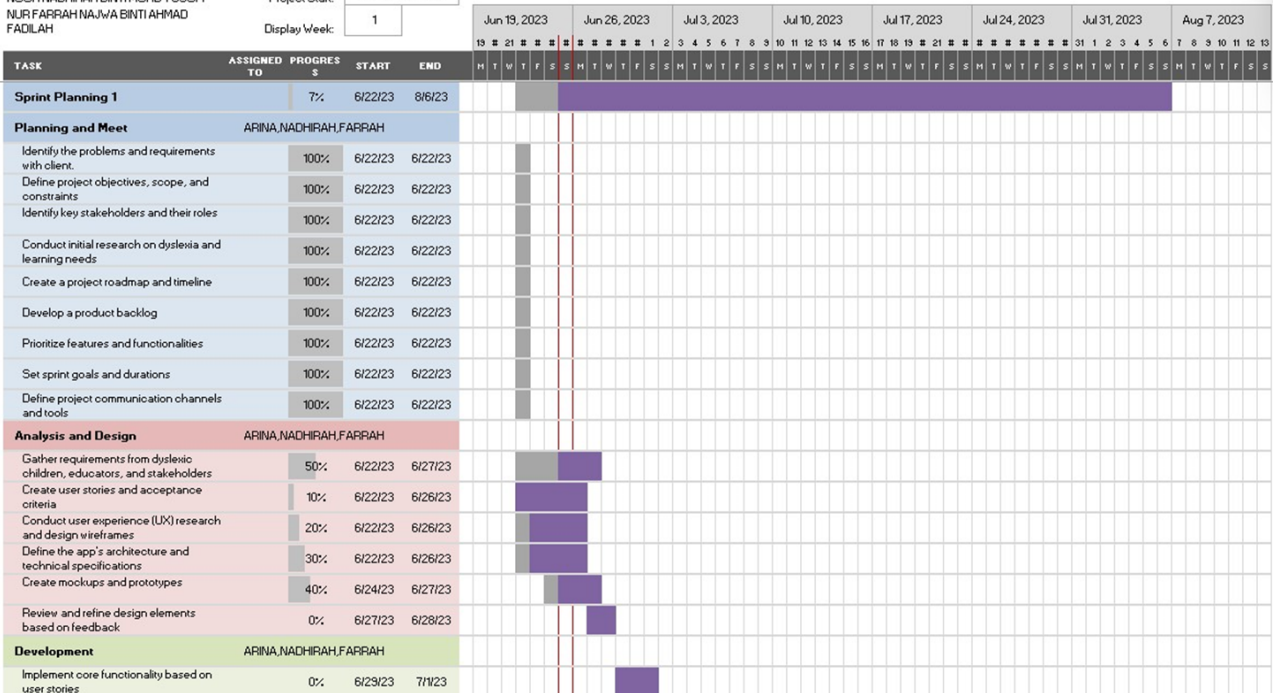
NOOR NADHIRAH BINTI MOHD YUSOFF
NUR FARRAH NAJWA BINTI AHMAD
FADILAH

Project Start:

Thu, 6/22/2023

Display Week:

1



LEXILEARN

NUR ARINA BINTI AZALAN

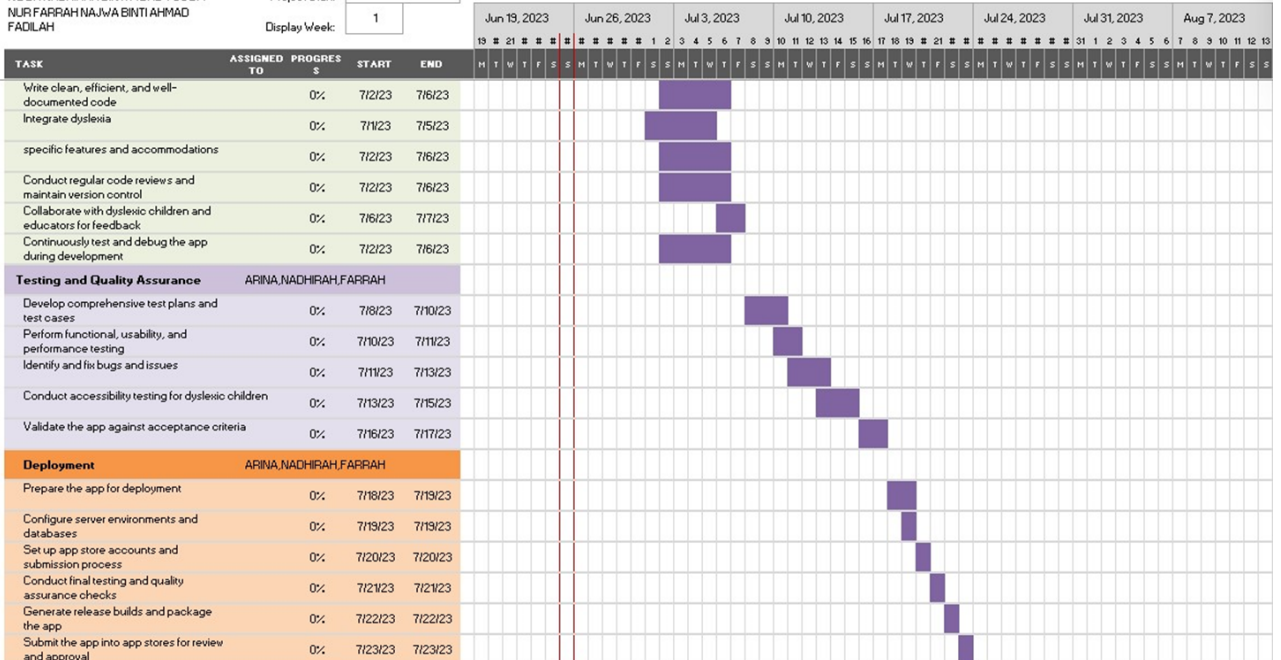
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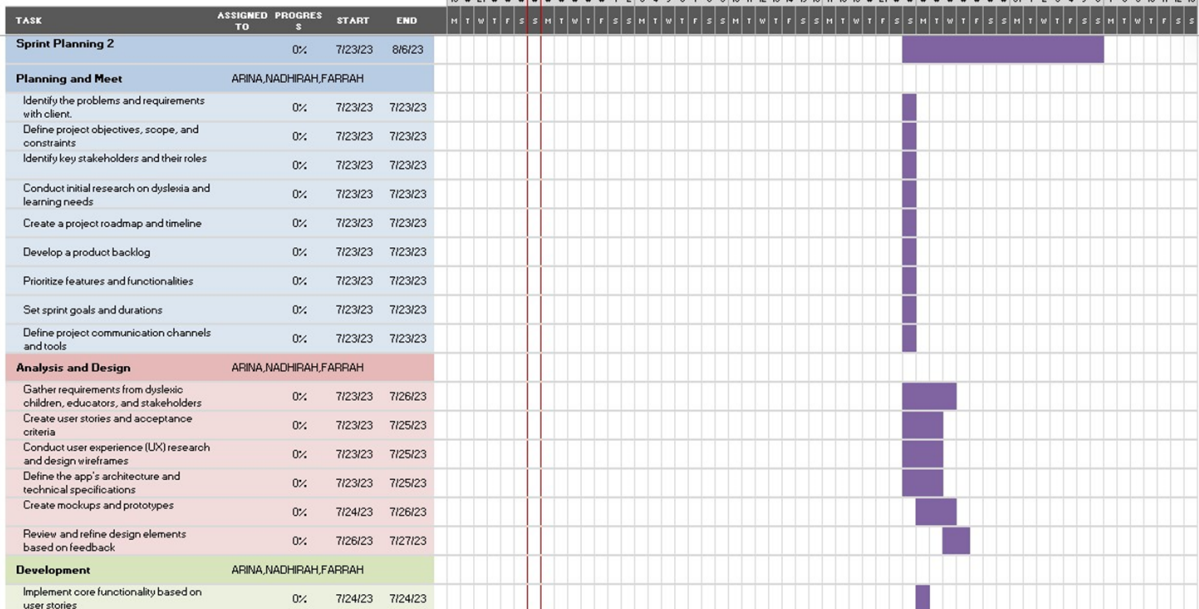
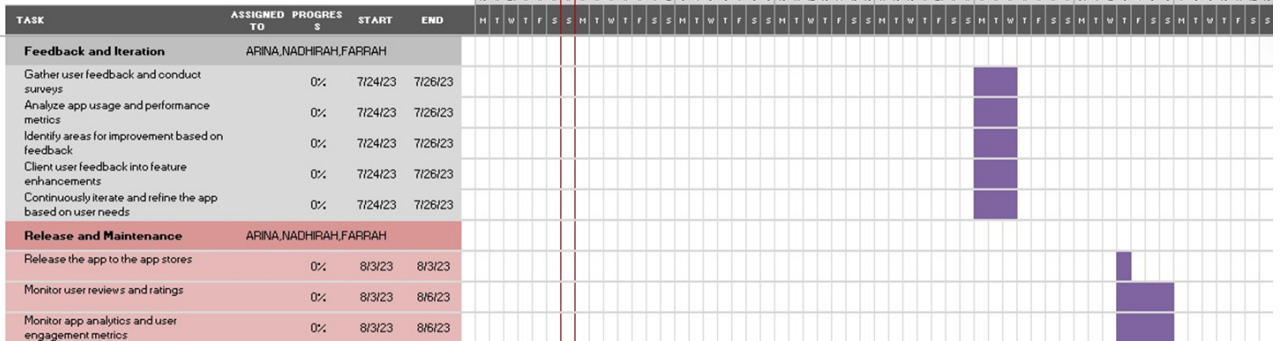
Project Start:

Thu, 6/22/2023

Display Week:

1





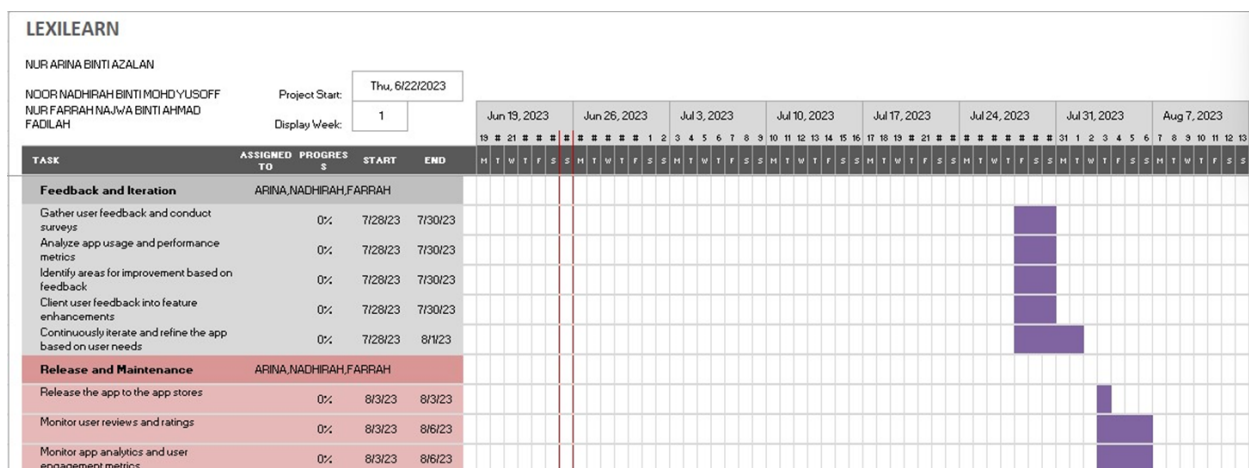
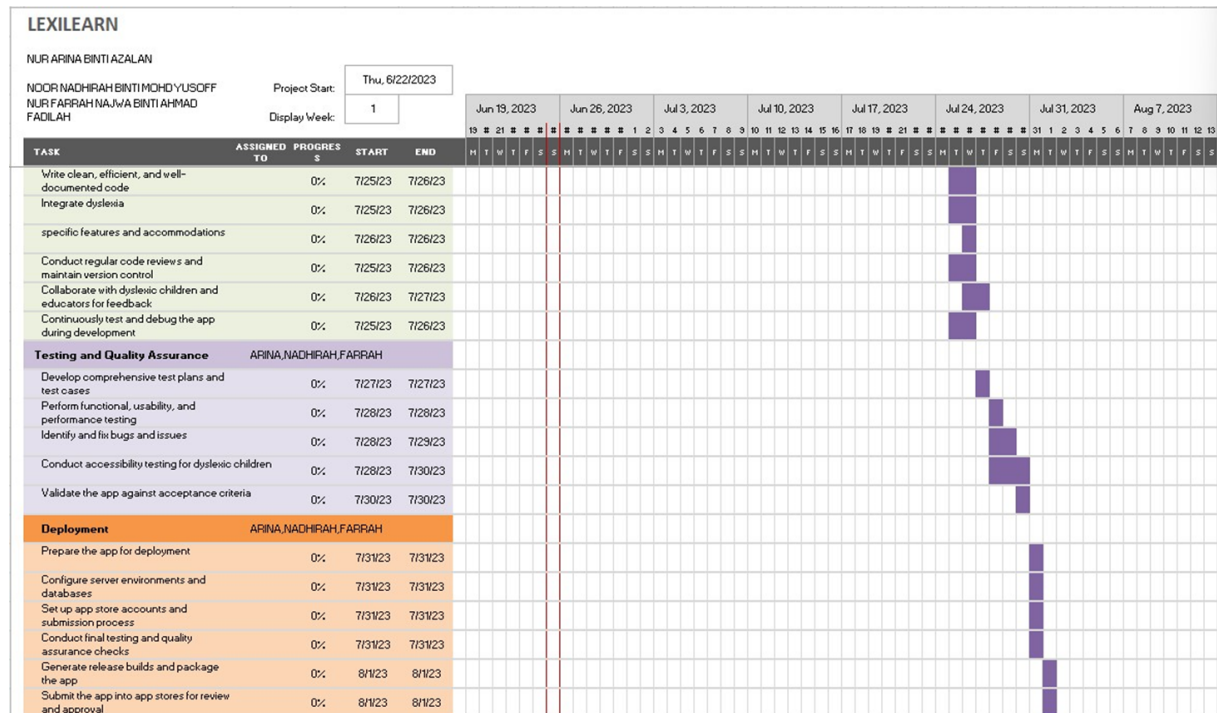


Table 1.6 : LexiLearn's Project Gantt Chart

2.0 REQUIREMENT SPECIFICATION

2.1 FUNCTIONAL REQUIREMENT

1. Login and Registration Authentication

- I. Users should be able to log in to the app with the existing account.
- II. User should be able to create a new account
- III. The password must be at least eight characters long and should include a combination of capital and small letters, numbers, and special characters.

2. Edit Account

- I. User should be able to change their profile information
- II. Users should be able to change their password and save it.

3. Lesson and Quiz

- I. Users should be able to view the Lesson and play the quizzes.
- II. Drag and drop letter and play Audio spelling game for Spelling Section
- III. Letter tracing based on the alphabet for Writing Section
- IV. Text to Speech Audio for Reading Section
- V. The system shall track user progress for Lesson and Quizzes

4. ScoreBoard

- I. The system shall track student progress based on their Lesson and Quiz
- II. The Badge shall be enabled once users finish their Lesson or Quiz based on the categories.

5. Parental Dashboard

- I. The User shall be able to see their child's current progress.
- II. The User shall be able to view their child achievement badge.

2.2 NON-FUNCTIONAL REQUIREMENT

Requirement	Product
Performance	The app ensures that editing the profile loads quickly by optimizing the code and minimizing loading times for the profile page.
Reliability	Users can access the app without any problem or failures.
Availability	Users should have uninterrupted access to and seamless usage of the app, experiencing minimal interruptions or downtime.
Maintainability	The app's code is well-organized, with clear comments, making it easier for developers to maintain and add new features.
Recoverability	None
Capacity	The app's infrastructure is designed to handle a large number of parents accessing their children's information simultaneously.
Serviceability	None
Security	Only the users with the role "parent" can login, edit profile information.
Manageability	None
Environmental	The app can be used anytime, at convenience.
Data Integrity	The app should perform thorough validation checks on user input to prevent the entry of incorrect or invalid data.
Interoperability	None
Usability	The application's interface must be user-friendly and easy to use.

Table 2.2 Non-Functional Requirement of LexiLearn

2.3 HARDWARE AND SOFTWARE REQUIREMENT

i. Hardware Requirement

No	Hardware Item	Price	Quantity	Description
1.	Laptop	RM 1700	3	Some computers might cost somewhere between RM 1700 and RM 3200. Desktop computers cost between RM 1000 and RM 2500.
2.	Additional Computer Accessories	RM 340	3	Other equipment used by our developers, such as a mouse, keyboard, speaker, and so on. Often the prices start as low as RM 60 and go up to RM 700. These extra equipment, such as speakers and microphones, are essential for application's development.
3.	Hard disk and Pendrive	RM 200	3	Moreover, things such as hard discs and pen drives are utilised to save data as a preventative step in the event that one of the computers or laptops used is broken. Pen drives cost between RM 20 and RM 70, while hard drives cost between RM 120 and 180.
4.	Laptop Cooler	RM80	3	Are quite important since they keep the laptop from

				overheating and may make enough of a difference to extract some additional usage out of the gadget.
The total cost of the hardware items				RM 6960

Table 2.3: LexiLearn's Hardware Requirement

ii. Software Requirement

No	Software	Specification	Quantity	Price
1.	Android Studio	-64-bit Microsoft Windows 8/10/11 -8 GB RAM or more -8 GB of available disk space minimum (IDE + Android SDK + Android Emulator) - 1280 x 800 minimum screen resolution - x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor.	3	Free
2.	Android License	- AOSP master branch - Android versions 8.0(Oreo)	3	RM 120

3.	Operating System	- Windows 7 - Windows 8/8.1 -Microsoft windows 10(x64) -Microsoft windows 11	3	RM 579.99
4.	Canva premium/pro	- User Interface - Custom Design - Image - Text - Graphics and Elements	3	RM 29.90
5.	Thunkable	- Drag-and-Drop Builder - Cross-Platform - Custom Design - Testing and Debugging - Media Handling - Component Library - Data Storage	3	Free
6.	Adobe Illustrator	-Processor: Multicore intel processor - OS: Windows 11 and Windows 10 (64-bit) versions V21H1, and V20H2. -RAM: 8 GB of RAM -Hard disk: 2 GB - Monitor 1024 x 768 display (1920 x 1080 recommended) - GPU: Have a minimum of 1 GB of VRAM (4 GB recommended)	3	RM 678.25

7.	Firebase	- Realtime Database - Firestore - Authentication - Cloud Storage	3	Free
The total cost of the software items				RM 4,224.42

Table 2.4: LexiLearn’s Software Requirement

2.4 SYSTEM CONFIGURATION

I. Hardware Components:

This app requires at least 8 GB of RAM for efficient app development, and we recommend using an SSD for quicker project loading and app building.

II. Software Configuration:

Users can install the app from the app store such as “Google Play Store” for Android and follow an initial setup process to configure preferences and permissions.

This app requires a minimum Android version of Android 8 (Android Oreo) or higher to function correctly.

III. Network Configuration:

This app requires internet access during the login page to store user data in a database and provide real-time information to users.

2.5 SECURITY REQUIREMENT

- I. Using a strong password with specific characteristics such as minimum length of 8 character, uppercase letter, digit, and potentially special character.
- II. The email format must be in the form of “[name@gmail.com](#)”.

- III. All mandatory text fields must be filled before proceeding with any action or submission.
- IV. If a user enters an incorrect or invalid password during the authentication process, the system will recognize it as "invalid credentials".
- V. Users can reset their password if they forgot it by clicking on the 'Reset Password' link sent to their email.
- VI. Users need to register their account if they are first-time users.

3.0 FINAL DESIGN

3.1 Logical Design

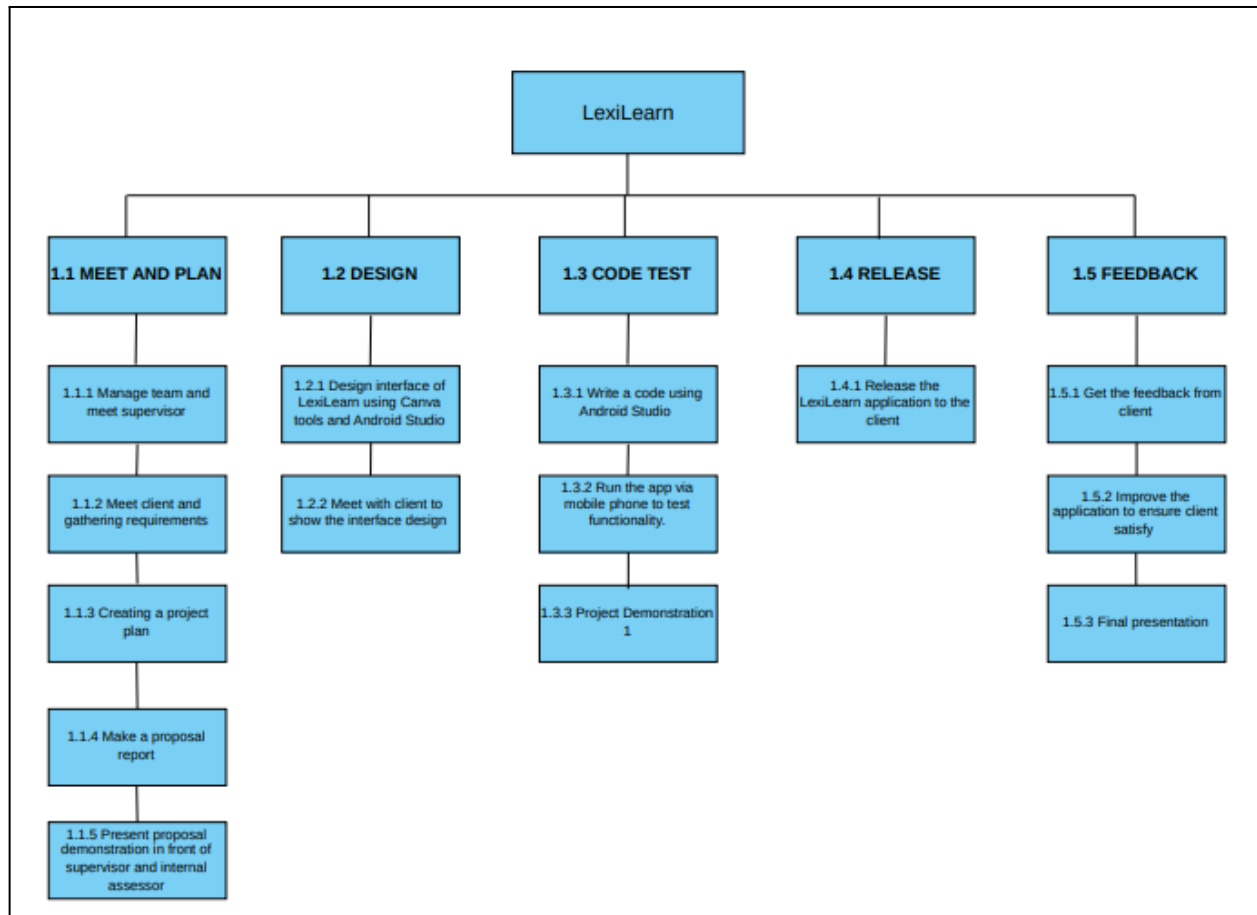


Figure 3.1.1 : Functional Decomposition Diagram (FDD)

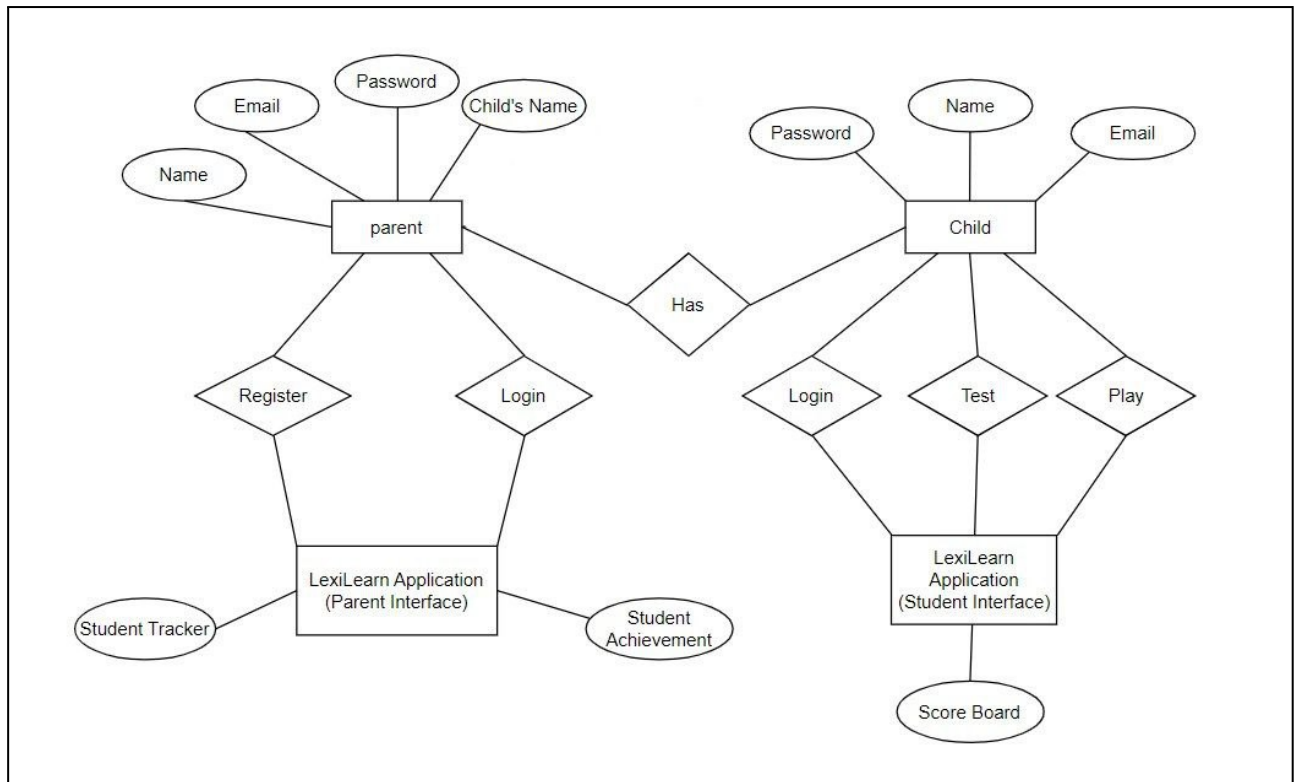


Figure 3.1.2 : ERD Diagram

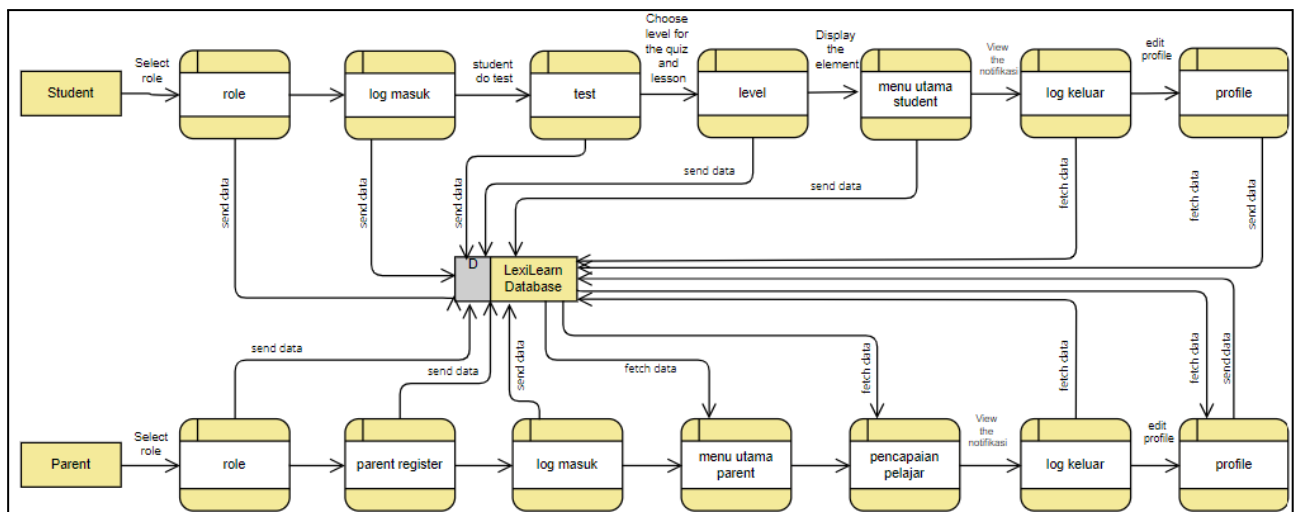


Figure 3.1.3 : Data Flow Diagram (DFD)

3.2 Physical Design

3.2.1 Start Page

In this start page, user will see the “Tekan untuk mula” button for start the application.



Figure 3.2.1 Start Interface

3.2.2 Role Play Page

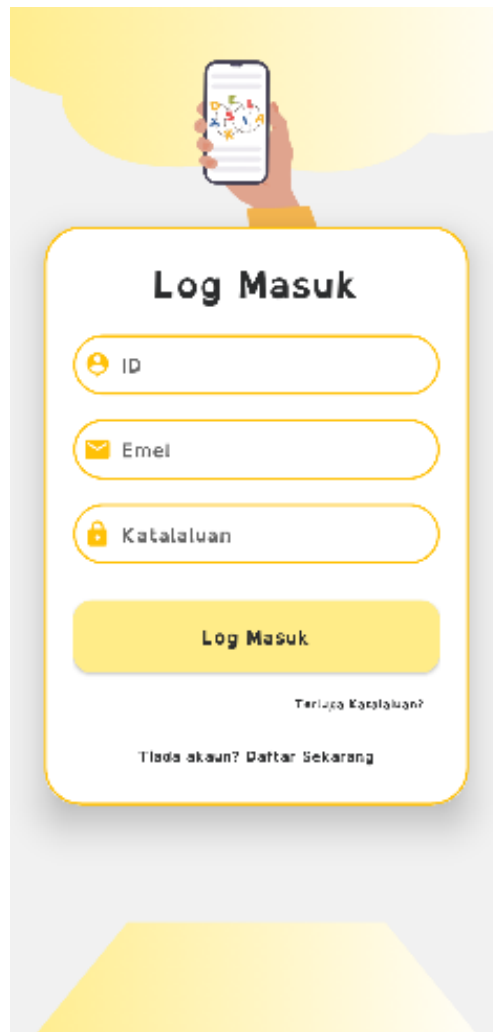
For the role play page, users can choose their role either they are parent or student.



Figure 3.2.2 Role Play Interface

3.2.3 Login Page

For the login page, parents are required to fill in all the text fields before they can proceed by clicking the "Log Masuk" (Login) button. The page includes validation and enforces a specific format that users must adhere to. If a user does not have an account, they are required to register first.



The image displays a login interface titled "Log Masuk". It features three input fields: "ID" with a person icon, "Email" with an envelope icon, and "Kata Laluan" (Password) with a lock icon. Below these fields is a yellow "Log Masuk" button. At the bottom of the form, there are two links: "Lupa Kata Laluan?" (Forgot Password?) and "Tiada akaun? Daftar Sekarang" (No account? Register Now). The interface is set against a light gray background with yellow decorative elements at the top and bottom.

Figure 3.2.3 Login Interface

3.2.4 Forgot Password Page

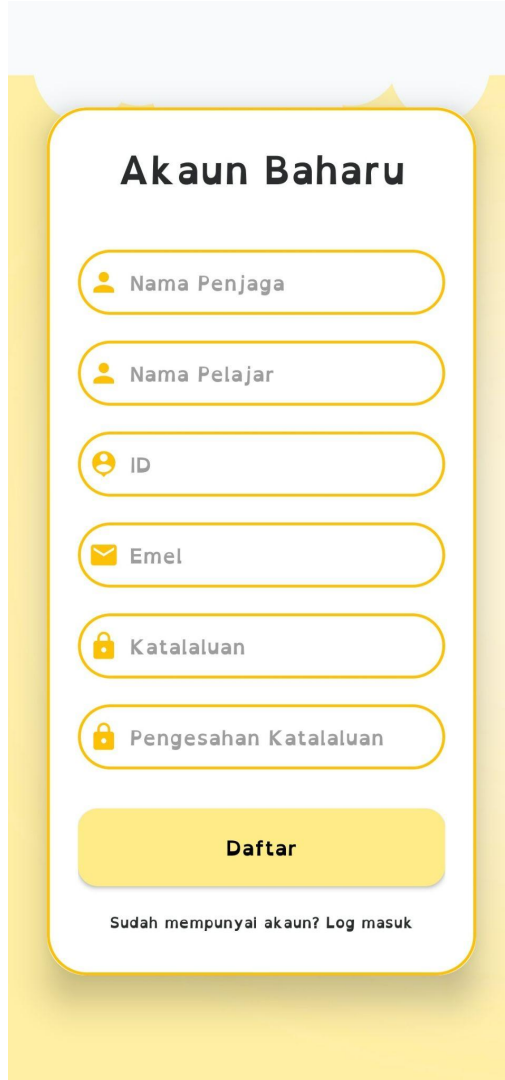
On this page, users can enter their email, and when they click on the "Reset Password" button, a reset link will be sent to their email. The "Cancel" button function will go back to login page.

The image shows a mobile application interface for a forgot password screen. The background is a solid light yellow color. At the top, the title "Terlupa Katalaluan" is displayed in a bold, black, sans-serif font. Below the title is a white rectangular input field with rounded corners. Inside the field, on the left, is a small yellow envelope icon, and to its right is the placeholder text "Masukkan emel" in a grey, sans-serif font. Below the input field are two white buttons with rounded corners. The left button contains the text "Ubah Katalaluan" and the right button contains the text "Batal", both in a black, sans-serif font.

Figure 3.2.4 Forgot Password Interface

3.2.5 Sign Up Page

For the first time user, upon accessing the sign-up page, parents must fill in all the text fields before they can proceed by clicking the "Daftar" (Sign Up) button. The page includes validation and enforces a specific format that users must adhere to during the registration process.



Akaun Baharu

Nama Penjaga

Nama Pelajar

ID

Emel

Katalaluan

Pengesahan Katalaluan

Daftar

Sudah mempunyai akaun? [Log masuk](#)

Figure 3.2.5 Sign Up Interface

3.2.6 Student Profile Page

On this page, which is the student page, there is one text field where users can fill in their names based on the name they used during registration. If users incorrectly fill in their names, they will not be able to proceed further. Additionally, there is a 'Tekan untuk masuk' (Press to Enter) button.

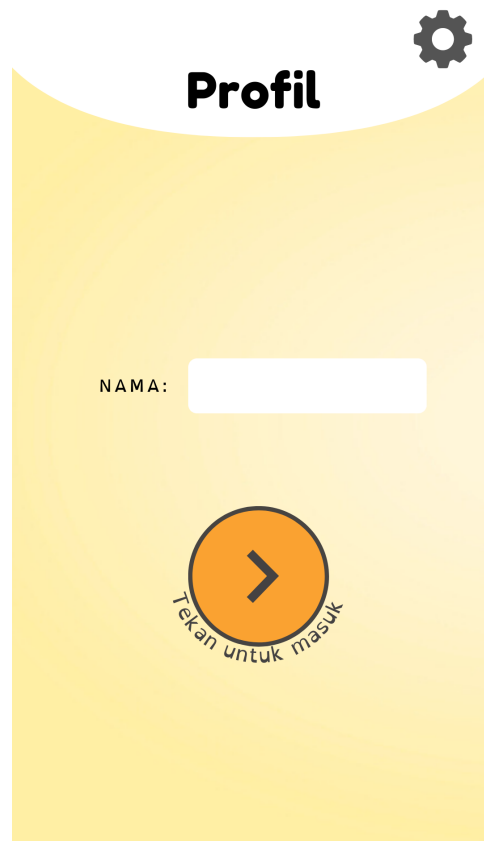


Figure 3.2.6 Student Profile Interface

3.2.7 Student Homepage

On this page, there are three buttons which contain quiz, lesson, and the scoreboard.



Figure 3.2.7 Student Homepage Interface

3.2.8 Quiz Selection Page

On this page, there are four buttons which contain spelling quiz, guess sound, write letter and mind test.



Figure 3.2.8 Quiz Selection Interface

3.2.9 Lesson Selection Page

On this page, there are four category buttons which are spelling, reading, writing and listening.



Figure 3.2.9 Lesson Selection Interface

3.2.10 Scoreboard Page

On this page, parents can track and view their children achievements and progress.



Figure 3.2.10 Scoreboard Interface

3.2.11 Spelling Selection Page

Upon Clicking on the Spelling Page, Users have to make a selection from the four distinct categories: Transportation, Objects, Animals, and Fruit.

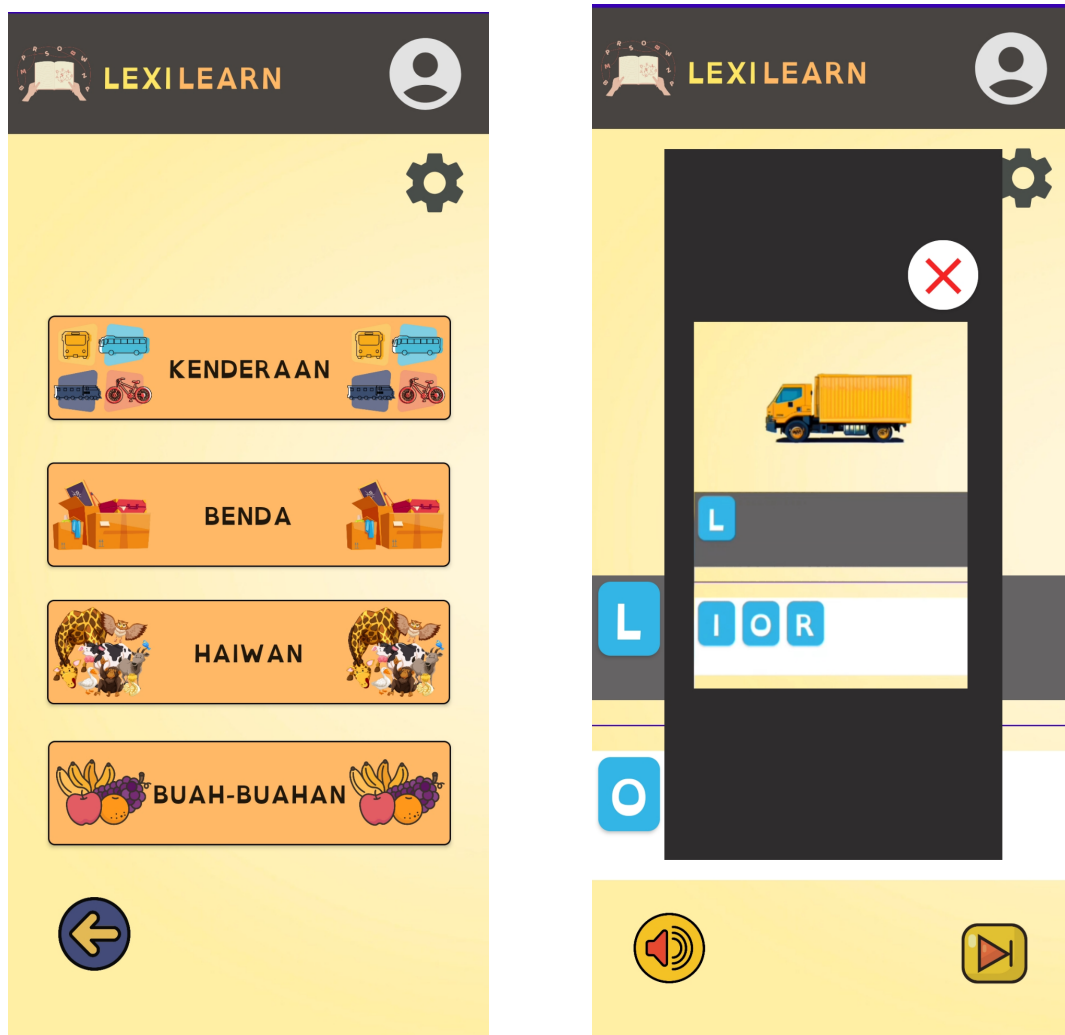


Figure 3.2.11 Spelling Selection Interface

On this page, users are able to “Drag and Drop” words with the help of instruction mode.

3.2.11 Writing Selection Page

After clicking on the “Menulis” button, it navigates to the Select Letter Page. On this page, users can select capital letter buttons from A to Z and a to z. Additionally, there is a "Next" button that allows them to navigate to the small letter page.



Figure 3.2.12 Select Letter (Capital Letter) Interface

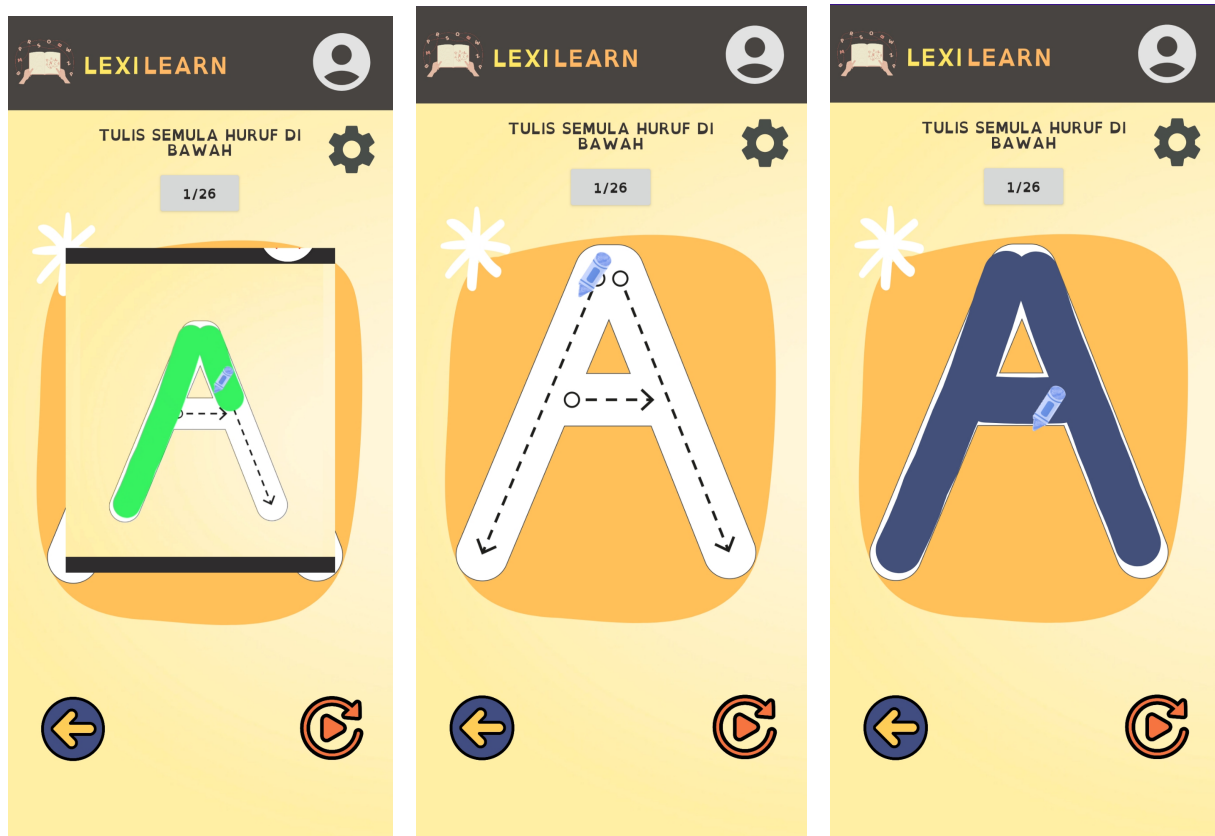


Figure 3.2.13 Writing (Capital Letter) Interface

On this page, users are able to trace the letter with the help of instruction mode, user will need to trace the Capital letter inside the line letter.

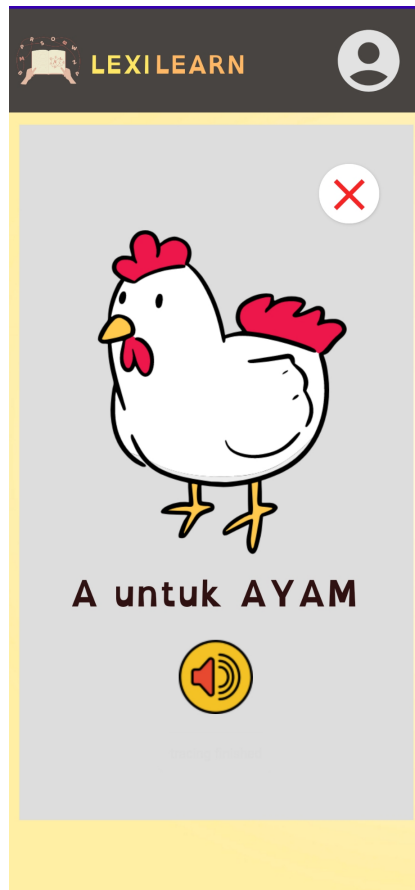


Figure 3.2.14 Writing (Popup Dialog) Interface

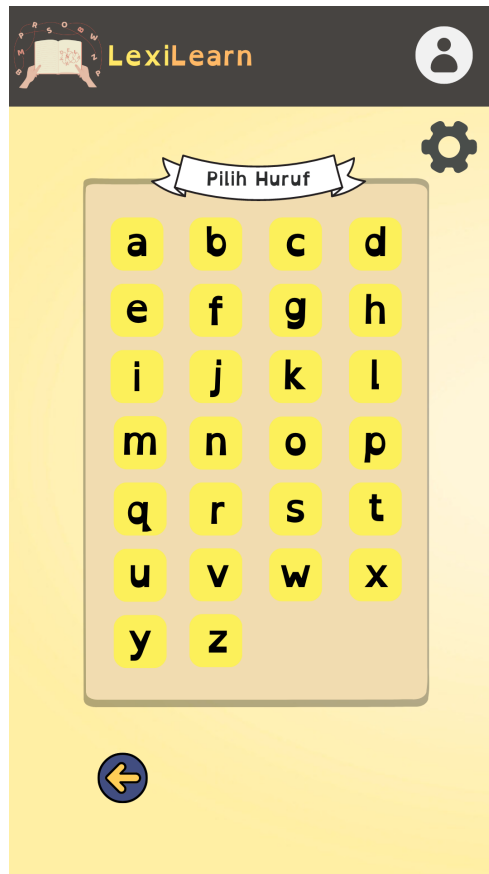


Figure 3.2.15 Select Letter (Small Letter) Interface

On this page, users are able to trace the letter with the help of instruction mode. Users will need to trace the Small letter inside the line letter.



Figure 3.2.16 Writing (Small Letter) Interface

3.2.12 Listening Page

In the "Mendengar" (Listening) lesson, students can learn to recognize the sounds of animals, transportation, and humans.



Figure 3.2.17 Listening Interface



Figure 3.2.18 Listening Interface (Animals)



Figure 3.2.19 Listening Interface (Transportation)



Figure 3.2.20 Listening Interface (Humans)

3.2.13 Reading Page

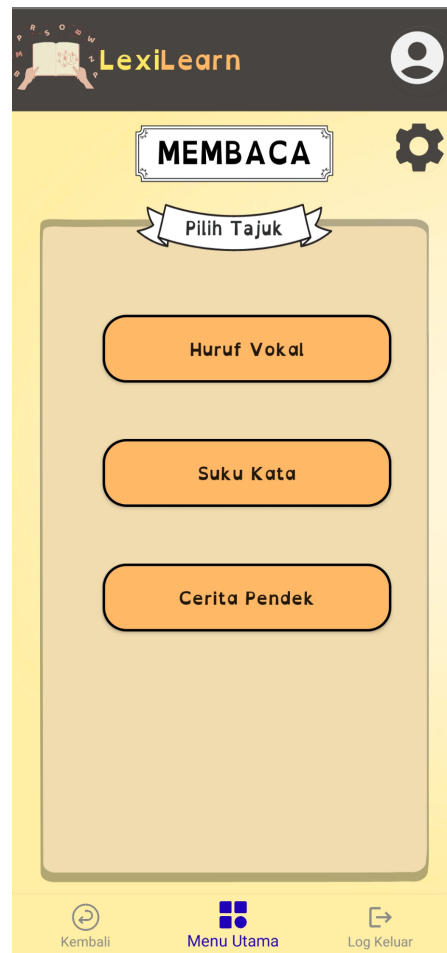


Figure 3.2.21 Reading Interface

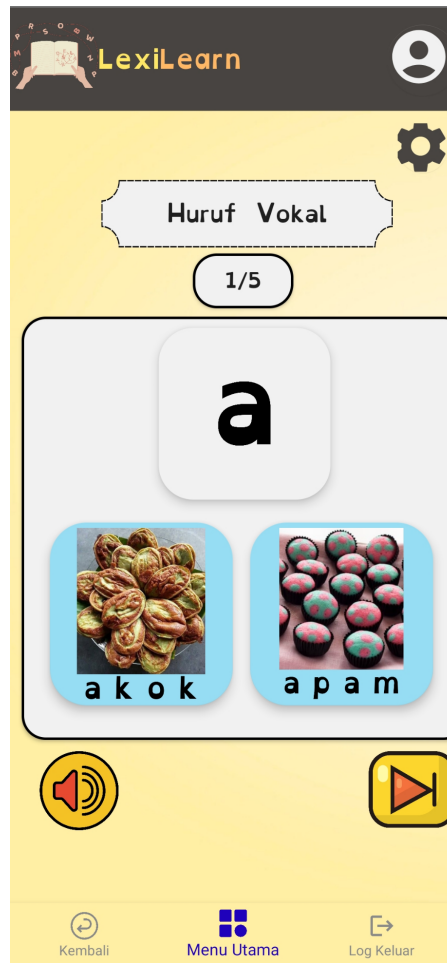


Figure 3.2.22 Reading Interface (Huruf Vokal)

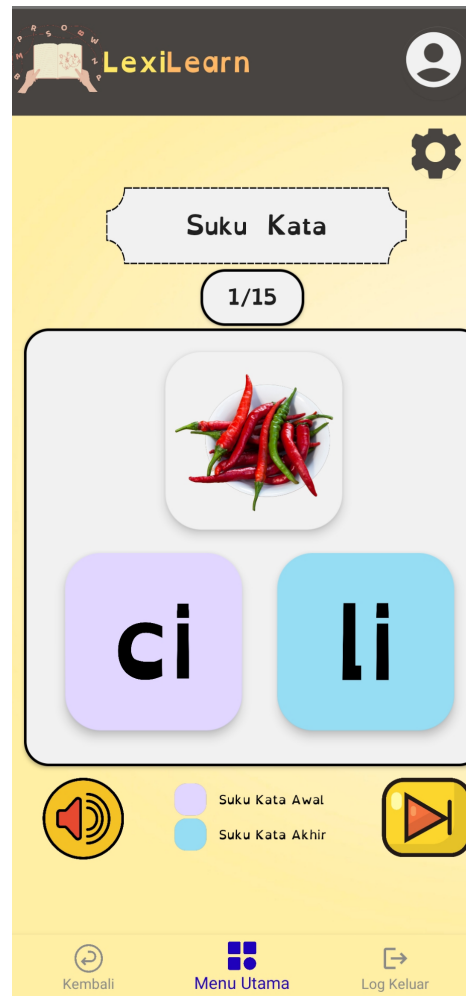


Figure 3.2.23 Reading Interface (Suku Kata)



Figure 3.2.24 Reading Interface (“Cerita Pendek” Selection)

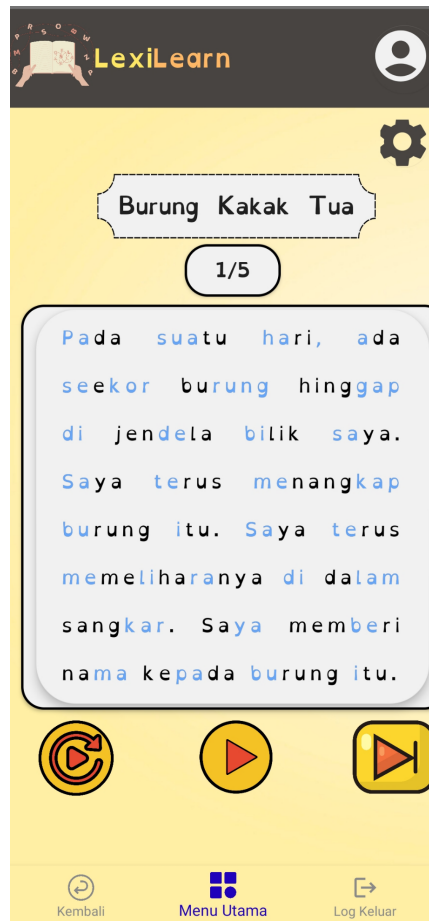


Figure 3.2.25 Reading Interface (Burung Kakak Tua)

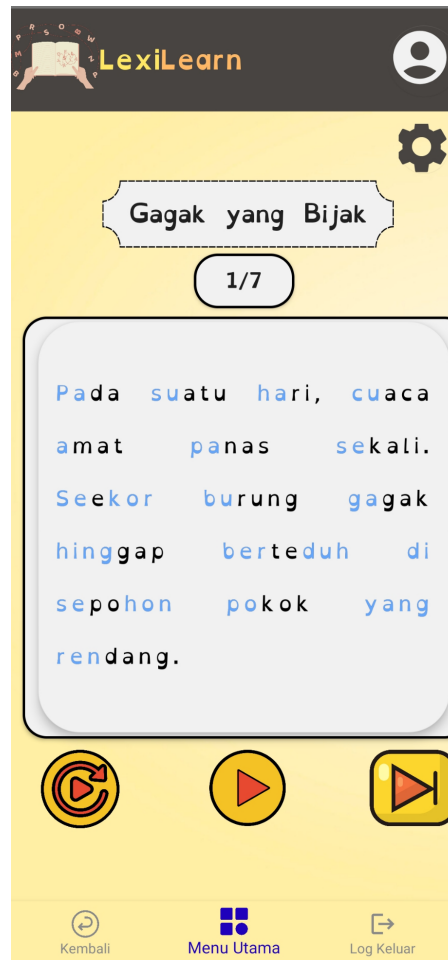


Figure 3.2.26 Reading Interface (Gagak yang bijak)



Figure 3.2.27 Reading Interface (Kasut Merah Saya)

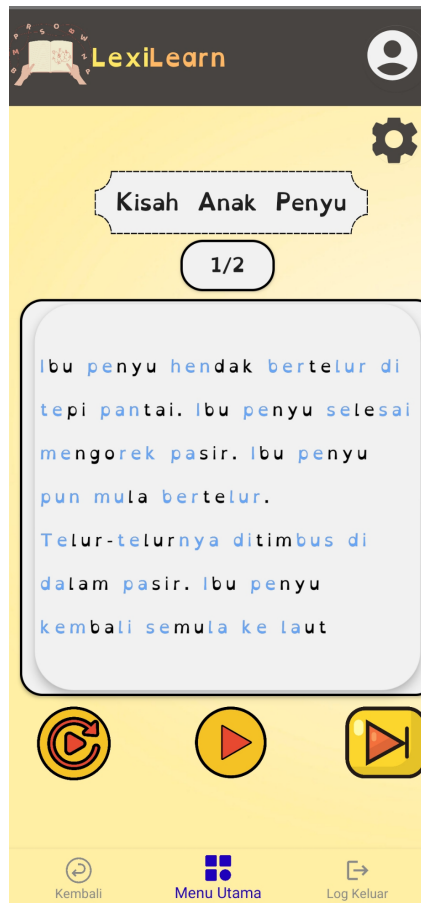


Figure 3.2.28 Reading Interface (Kisah Anak Penyu)

3.2.14 Quiz Spelling

In the “Mengeja” (Spelling) quiz, students are given 10 questions on which they have to spell the correct word for all 10 questions.

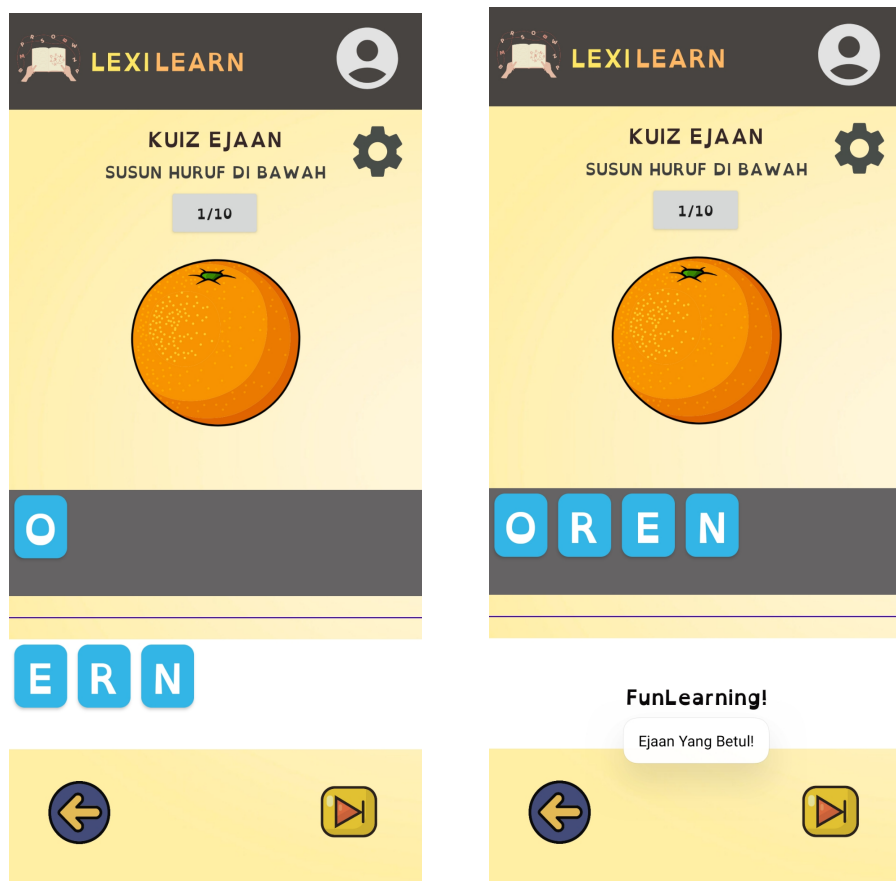


Figure 3.2.29 Quiz Spelling Interface

3.2.15 Quiz Writing

In the “Menulis” (Writing) quiz, students are given 10 questions on which they have to trace the given letter without any guidance.



Figure 3.2.30 Quiz Writing Interface

3.2.16 Quiz Listening

In the “Mendengar” (Listening) quiz, students are given 6 questions on which they have to guess the correct sound by clicking the button and submit the answer.



Figure 3.2.31 Quiz Listening Interface



Figure 3.2.32 Quiz Listening Interface (Popup Correct answer)



Figure 3.2.33 Quiz Listening Interface (Popup Wrong answer)

3.2.17 Brain Test

In the “Uji Minda” (Brain Test) section, students have to match the same pair of words and finish it all.



Figure 3.2.34 Brain Test Interface

3.2.18 Setting Pop Up Page

In the “Tetapan” (Setting) page, the user can set the music background to either turn it on or turn it off just by clicking on the setting icon. And set the music background by clicking on icon music off or on.

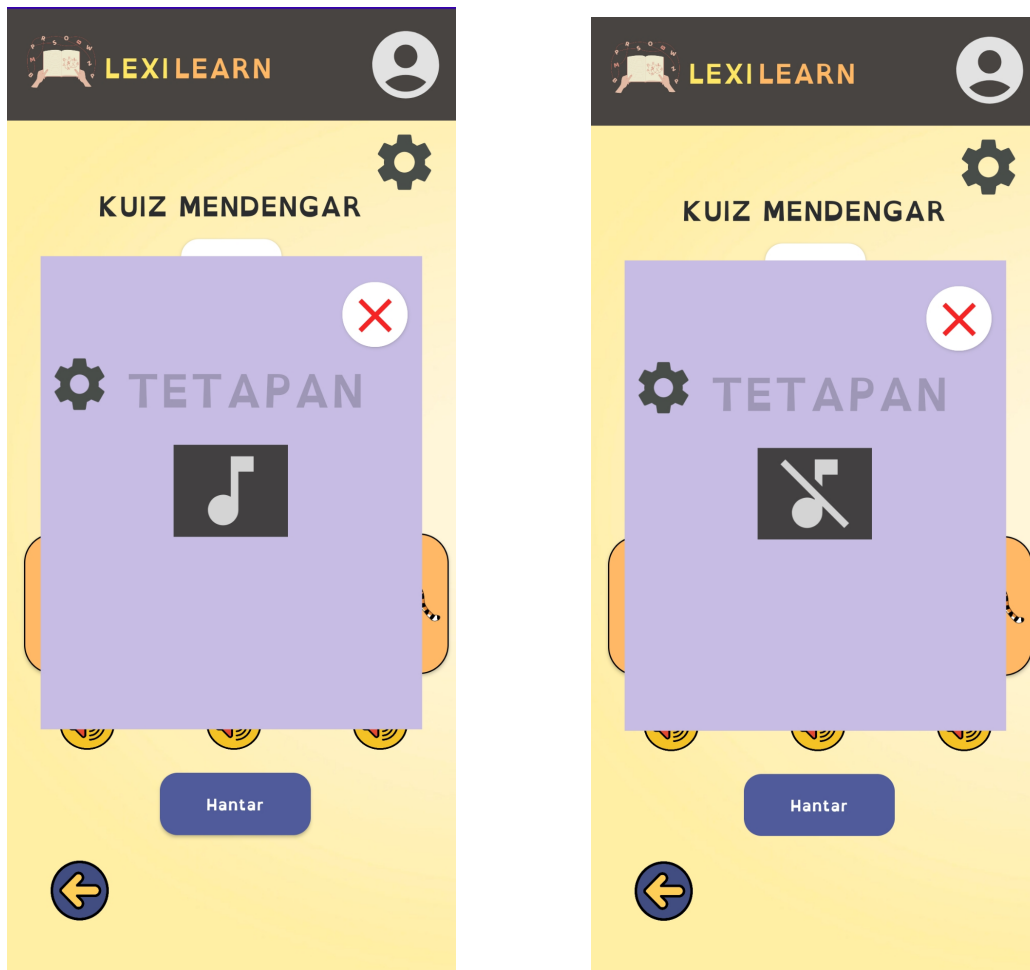
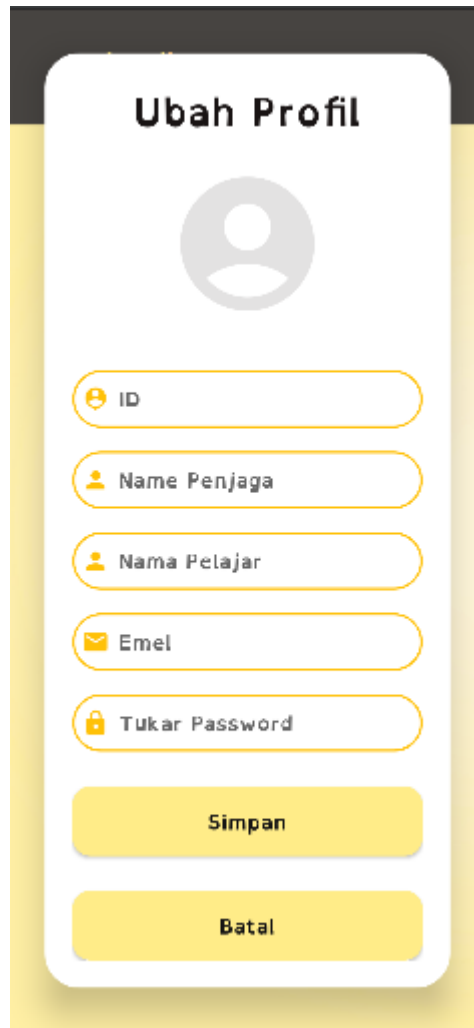


Figure 3.2.35 Setting PopUp Interface

3.2.19 Account Profile Page

In the “profil” (Profile) page, the user can change their account information such as - username, name, email, and even password once they click the button “Simpan” (save) It has set the newly modify information for the student page.



The image shows a mobile application interface for changing a profile. The title is "Ubah Profil". Below the title is a grey circular placeholder for a profile picture. There are five input fields, each with a yellow icon on the left: "ID" (ID card icon), "Name Penjaga" (person icon), "Nama Pelajar" (person icon), "Emel" (envelope icon), and "Tukar Password" (lock icon). At the bottom are two yellow buttons: "Simpan" (Save) and "Batal" (Cancel).

Figure 3.2.36 Account Profile Interface

3.2.20 Parent Page (Progress)



Figure 3.2.37 Parent (Progress) Interface

3.2.21 Parent Page (Achievement Badge)



Figure 3.2.38 Parent (Achievement Badge) Interface

4.0 TEST DESCRIPTION AND RESULTS

4.1 UNIT TESTING PLAN

Table 4.1 Unit Testing Plan of LexiLearn

UNIT TESTING PLAN (UTP)						
No.	Test Case Name	Test Procedure	Pre-condition	Expected Result	Tester	Result (Pass/Failure)
1.	Play Button Page	User are required to click on the play button	User are required to open the App first.	User will directly go to the next Page which is Role Selection Page.		Pass
2.	Role Selection Page	Users are required to choose their role - either parents or a student and click on the button itself.	None	User will go to the login page upon clicking the button Role.		Pass
3.	Login Page	Users are required to insert ID, email and password onto the field and click the button“enter”.	None	Successful Login user will go to the next page - 1. User that choose Parent Role will go directly to the Parent Dashboard 2. User that choose Student Role will directly go to Student Homepage Unsuccessful Login -		Pass
4.	Registration Page	Users are required to insert the Parent Name, Student Name, ID, Email, Password and confirmation Password onto	Users must follow the password format authentication.	User will directly go back to the login page.		Pass

		the field and Click button “Register”.				
5.	Forgot Password Page	Users are required to insert their email used by their registered account and click “reset password”.	None	A message will be send to the email that the user inserted before.		Pass
6.	Setting Button	User click on the setting button	None	A pop up setting window will appear.		Pass
7.	Setting Page	Users can make a selection to set the setting to either turn the music off or the music on by pressing the icon music button.	None	Music background will stop or start and the icon will change.		Pass
8..	Edit Profile	Users can edit their information as well as their password.	Users are required to insert the old password if they make a modification on their profile or either a new password.	User account profile has been updated.		Pass
9	Homepage Page	User are required to make a selection on which one they wanna go - Quiz, Lesson or ScoreBoard	None	1. Quiz Button - User will directly go to Quiz Page 2.Lesson - User will directly go to Lesson Page		Pass

				3.Scoreboard - Users will directly go to the Scoreboard Page.		
10	Quiz Page	Users are required to make a selection from the 4 categories which are - Spelling Quiz, Listening Quiz, Writing Quiz and Brain Test.	None	Users will directly go to the page based on which one they select either Spelling, Listening, Writing or Brain Test.		Pass
11	Lesson Page	Users are required to make a selection from the 4 categories which are - Spelling, Listening, Writing and Reading.	None	Users will directly go to the page based on which one they select either Spelling, Listening, Writing or Reading.		Pass
12	Scoreboard Page	Users are required to click on Scoreboard Button.	User must completed the Lesson or Quiz to received the badge	Users are able to see their achievement badge based on their completion for Quiz or Lesson from the 4 Section.		Pass
13	Quiz Listening Page	Users are required to click the audio button to hear the sound and select the correct answer based on the given choice.	None	I. Correct answer - Users will receive a pop up to notify them of the correct answer and sound effects will be played too. . Ii. Wrong answer - User will receive a pop up window notifying its the wrong answer and a sound effect will be played.		Pass
14	Quiz Writing Page	Users are required to	None	User will receive a feedback once the		Pass

		trace the letter based on the given Alphabet.		user successfully trace the letter correctly.		
15	Quiz Spelling Page	Users are required to drag and drop the given letter onto the answer container to form the correct word based on the picture.	None	I. Correct Word Spell - User will received a feedback to notify its the correct word spell Ii. Incorrect Word - Users are able to rearrange the letter back again.		Pass
16	Brain Test Page	Users are required to match the same word card.	None			Pass
17	Letter Selection Page	User are required to select letter either the capital or small letter to trace	None	Users will directly go to the Letter Page based on their Selection before.		Pass
18	Letter Tracing Page	Users are required to traced the alphabet.	None	Users will receive feedback saying tracing is successful as well the letter pronunciation will be played and a pop up window for the letter based on user choose.		Pass
19	Replay Pop Up Button	User are required to clicked on the button	User must be on the Tracing Alphabet Page	A pop up window for the current letter page will appear with an image example and word.		Pass
20	Audio Button Pop Up	User are required to clicked on the button	Users must first click on the replay pop up button.	An audio will be played pronouncing the letter as well as the word example for each pop up window for the letter.		Pass

21	Listening Page	Users are required to make a selection from which of the Three Categories they wanna go - Animal, Transportation, or Human Sound and Act.	None	Users will directly go to the page based on the user categories selection.		Pass
22	Audio Button	User are required to press on the button	None	An Audio will be played.		Pass
23	Back Button	User are required to press on the button	None	Users will directly go back to the page before.		Pass
24	Spelling Page	Users are required to make a selection from which of the four Categories they wanna go - Animal, Transportation, Things or Fruit.	None	Users will directly go to the selection page based on user choice.		Pass
25	Pop Up Tutorial Page	User will received a pop up window with a video showing tutorial for the gameplay	User must be in the Lesson Page which is - Spelling and Writing Page.	The tutorial Video will start playing.		Pass
26	Next Button	User are required to press on the button	None	User will directly go to the next page.		Pass
27	Reading Page	Users are required to	None	Users will directly go to the selection page		Pass

		make a selection from the four categories.		based on user choice.		
28	Log Out	User are required to press on the button	None	User will automatically log out from the app and it will exit the user from the application.		Pass

4.2 INTEGRATION TESTING PLAN

Table 4.2 Integration Testing Plan of LexiLearn

INTEGRATION TESTING PLAN (ITP)						
No .	Test Case Name	Test Procedure	Pre-condition	Expected Result	Tester	Result (Pass/Failure)
1	First Page	User are required to click on the play button	Application is Running	User will directly go to the next page		Pass
2	Role Selection Page	User are required to select the Role on the Role Selection Page	None	User will directly go to the login page.		Pass

3.	Login Page	Users are required to insert ID, email and password onto the field and click the button“enter”.	None	Successful Login user will go to the next page - 1. User that choose Parent Role will go directly to the Parent Dashboard 2. User that choose Student Role will directly go to Student Homepage Unsuccessful Login -		Pass
4.	Registration Page	Users are required to insert the Parent Name, Student Name, ID, Email, Password and confirmation Password onto the field and Click button “Register”.	Users must follow the password format authentication.	User will directly go back to the login page.		Pass
5	Home Page	User are required to make selection from the 3 section which is Quiz, Lesson, and Scoreboard	None	Users will directly go back to the selection page.		Pass
6	Quiz Page	Users are required to make a selection based on the 4 sections which is - Spelling, Writing,	None	Spelling - User will directly go to the Spelling Quiz Writing - User will directly go to the Writing Quiz Listening - User		Pass

		Listening and Brain Test.		will directly go to the Listening Quiz Brain Test - User will directly go to the brain Test Quiz Page		
7	Homepage navigate to Profile	Users are required to click on the icon profile that is located on the top right screen on every page except - First Page, Login, Register, Role and Forgot Password Page	User must be logged onto the Application	Users will directly go to the Account Profile no matter on which page user are located on.		Pass
8	PopUp setting Window	Users are required to click on the setting page icon.	None	A pop up window Setting will appear whenever on which page users are on.		Pass
9	Lesson page	Users are required to click on any of the 4 categories - Spelling, Writing, Listening and Reading	None	Spelling - User directly go to the spelling page Writing - User directly go to the Letter Selection page Listening - Users directly go to the Listening page. Reading - Users directly go to the Reading page.		Pass
10	Spelling Selection	User are required to	None	User will directly go to the		Pass

	Page	select from which 4 categories they wanna play which is - Transportation , Animal, Things and Fruit		gameplay page from which categories they choose		
11	Letter Selection Page	Users are required to select from which Capital letter they wanna choose or they can navigate to the next page to pick a small Letter.	None	Users will go directly to which letter they choose.		Pass
12	Tracing Letter	Users are required to trace the letter based on the chosen alphabet they pick.	User must first click to select the letter button.	Finished Tracing - Received feedback to notify user as well as audio background will be played pronouncing the letter that user has done tracing and a pop up window will appear.		Pass
13	Pop Up Letter Window	I. Users are required to click on the button audio to play the audio on the pop up window.	I. User must first are on the tracing letter page Ii. User must first finish tracing the letter.	Audio will be played pronouncing the letter as well as the word.		Pass
14	Scoreboard Page	Users are required to click on Scoreboard Button.	User must completed the Lesson or Quiz to received the	Users are able to see their achievement badge based on their completion		Pass

			badge	for Quiz or Lesson from the 4 Section.		
15	Quiz Listening Page	Users are required to click the audio button to hear the sound and select the correct answer based on the given choice.	None	I. Correct answer - Users will receive a pop up to notify them of the correct answer and sound effects will be played too. · Ii. Wrong answer - User will receive a pop up window notifying its the wrong answer and a sound effect will be played.		Pass
16	Quiz Writing Page	Users are required to trace the letter based on the given Alphabet.	None	User will receive a feedback once the user successfully trace the letter correctly.		Pass
17	Quiz Spelling Page	Users are required to drag and drop the given letter onto the answer container to form the correct word based on the picture.	None	I. Correct Word Spell - User will received a feedback to notify its the correct word spell Ii. Incorrect Word - Users are able to rearrange the letter back again.		Pass
18	Brain Test Page	Users are required to match the same word card.	None			Pass
19	Listening Page	Users are required to make a	None	Users will directly go to the page based on the user		Pass

		selection from which of the Three Categories they wanna go - Animal, Transportation , or Human Sound and Act.		categories selection.		
20	Spelling Page	Users are required to make a selection from which of the four Categories they wanna go - Animal, Transportation , Things or Fruit.	None	Users will directly go to the selection page based on user choice.		Pass
21	Reading Page	Users are required to make a selection from the four categories.	None	Users will directly go to the selection page based on user choice.		Pass

5.0 MAJOR FINDINGS AND DISCUSSION

5.1 The Advantages of the Project

- I. In the parent page, parents can track their children's learning progress.
- II. In this app, lessons, quizzes, and mind tests are designed to help students with dyslexia in improving their abilities to recognize spelling, writing, reading, and comprehension.
- III. The app does not contain any advertisements.
- IV. The score board reflects the student's progress and proficiency level.
- V. The app contains a flashcard game to help students improve their memory skills.

5.2 The Disadvantages of the Project

- I. iOS users cannot use this app as it is specifically developed for the Android platform.
- II. Since this app includes login and registration features, users are required to have an internet connection to access it smoothly.
- III. The settings do not include a button to mute sound effects.

6.0 RECOMMENDATION AND CONCLUSION

6.1 Recommendation

- I. LexiLearn application with valuable features for improving spelling, writing, reading, and comprehension skills for students with dyslexia.
- II. User-friendly interface and accessibility features, including dyslexia-friendly fonts and adjustable text size.
- III. Music control feature to adjust or mute background music.
- IV. "Edit Profile" feature for personalizing user information.
- V. Parent tracking and progress monitoring dashboard for parents to monitor their child's progress, view completed lessons, and quiz results.

6.2 Conclusion

In conclusion, the development of LexiLearn, a mobile application designed specifically for dyslexic children, holds immense promise in addressing the challenges associated with learning to read, write, spell and comprehension accurately for individuals with dyslexia. Early detection of this disorder is crucial, and LexiLearn aims to provide effective support to dyslexic children by targeting their language skills, improving short-term memory capabilities, and enhancing problem-solving abilities. The interactive design of LexiLearn offers personalized solutions tailored to each student's unique needs, utilizing visual and auditory cues to create engaging and effective learning experiences.

By involving guardians in the learning process, LexiLearn promotes better communication between educators, parents, students, and other allies, contributing to emotional stability, which is vital when dealing with learning disorders like dyslexia. The project team's expectation is to harness expert insights and employ strategies such as user feedback and questionnaires to continually enhance LexiLearn's effectiveness in facilitating the educational journey of special needs students. Through these efforts, LexiLearn aims to maximize its efficacy in providing positive outcomes and empowering dyslexic children in their educational endeavors.

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