

SCSV 2113

HUMAN COMPUTER INTERACTION

(Session 2020/2021 Semester 2)

School of Computing
Universiti Teknologi Malaysia

P3 – CONCEPTUAL AND PHYSICAL DESIGN

SMART PLAYGROUND SYSTEM

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(Section 01)

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1.0 Interaction Metaphors

The icon of the smart playground application is a slide which is a facility in the playground so we know that this application is meant to be used in the playground and related to the playground.

The interface metaphor that the playground games used is the quiz. Quiz is fairly common where we just need to choose our answer from the provided options. The application will then reveal the correct answer and the score. The playground games also use colour metaphors that are red for wrong answers while green for correct answers.

The playground games and recycle task use play icon for start as the play button is on a remote control. Users have been familiar with the play icon on the remote control and thus can understand its meaning easily.

The report function uses the metaphor of a complaint report. Users can report broken equipment in the playground with its description and photo and submit it to the administrators or authorities through the application.

In the recycling waste materials task, the metaphor of food delivery is used. Users need to set their name, phone numbers, location and the types of waste to recycle. Then, they can choose whether pick-up at any location or deliver to the nearest centre.

GPS location uses the interface metaphor of the map and the pin allows us to set the address and see the location easily.

The '+' button or icon is used as a metaphor for adding a photo or location. We know that the plus sign '+' means add. Thus, it is a good metaphor to add or upload new photos and locations.

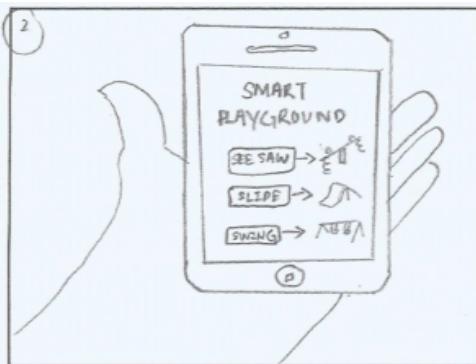
The toggle button for reminder uses the interface metaphor of a power switch. It is easy to understand and easy to use. Users just need one click to turn the reminder on and off.

2.0 Storyboard

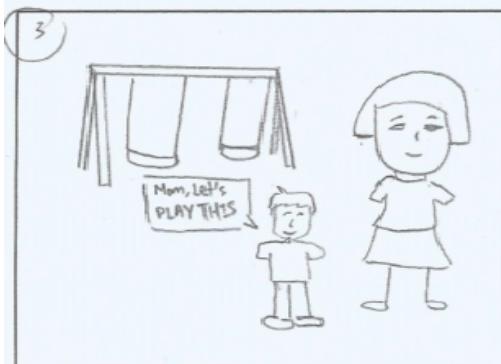
2.1 Task 1: Access the smart playground application



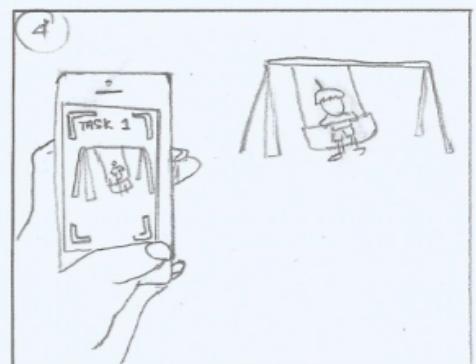
Parent enter the playground with his kid.



Parent turn on the app and choose the game



Parent and kid choose an equipment to play on



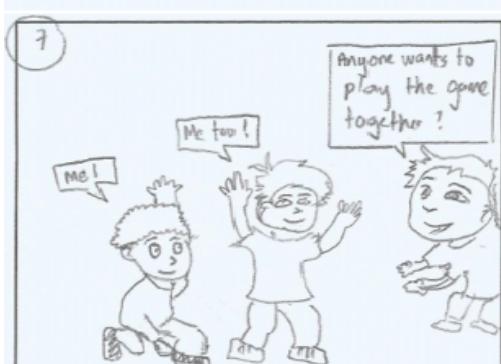
Parent helps to guide his kid to finish the task



Parent teaches the lesson on the app to his kid



Parent invite more kids to play the group games



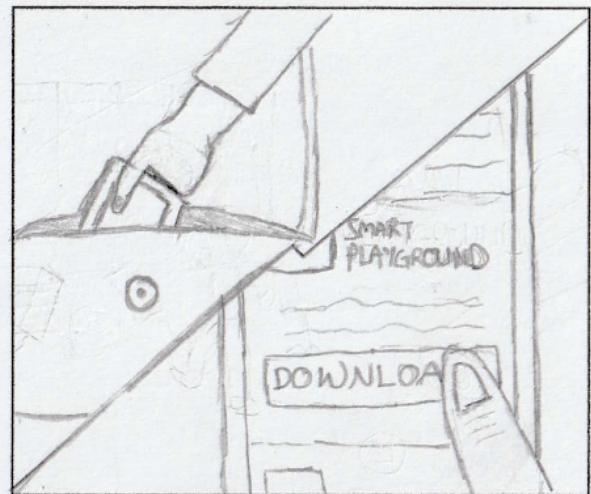
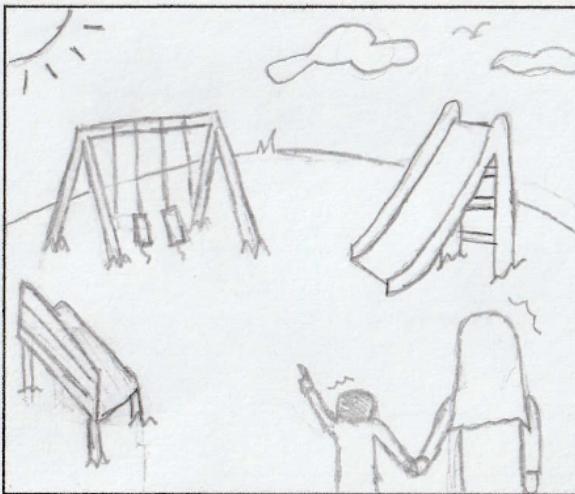
Kids playing on the equipments together



Kids finish the group task together

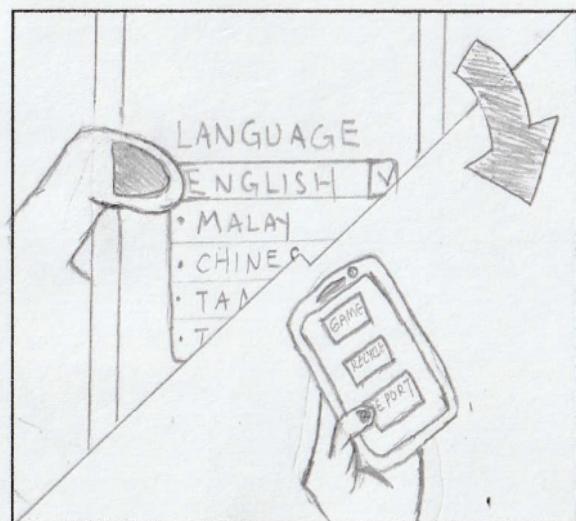
One day, Miss Sabariah brought her son to the smart playground. She wanted to make use of this time to let her son learn through playing. She downloaded the app and opened it once they reached the playground. After her son had chosen equipment in the playground, she guided her son to finish the task for that particular equipment. There was a lesson attached after all the tasks had been finished on the equipment. Miss Sabariah taught the lesson on the app to her son. Miss Sabariah also encouraged her son to invite more friends to play with him together. Her son invited some other stranger kids to play with him to finish the group task on the app. While finishing those tasks, he made friends with other kids in the playground.

2.2 Task 2: Report the broken equipment



Mdm. Sabariah brought her son, Ali to the playground. Ali wanted to play the swing but it was broken.

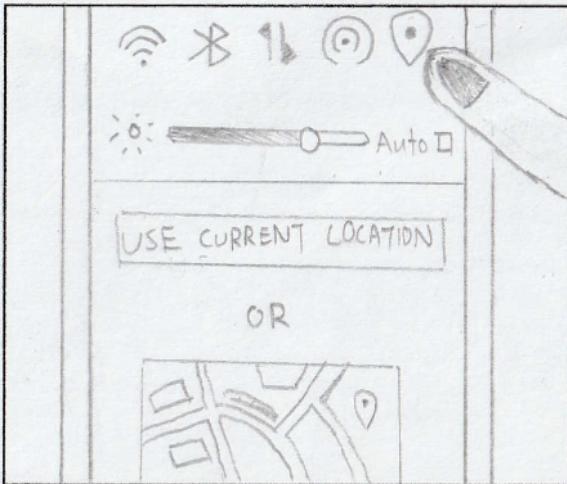
Mdm. Sabariah took out her phone from her bag and downloaded Smartplayground App.



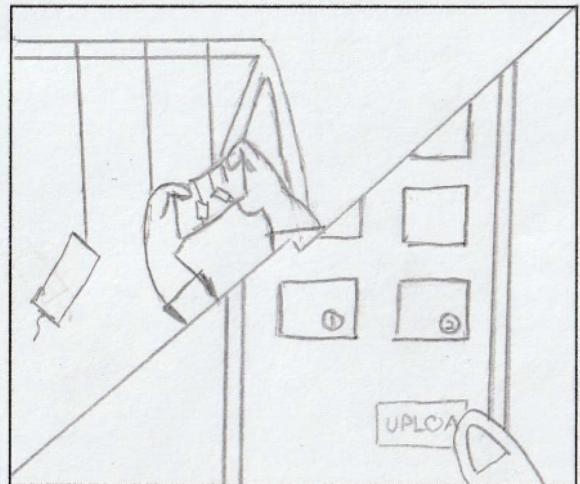
She chose "English" as the language and selected "Report" out of 3 functions in the app.



She filled in her details and signed up her own account in the app.



She enabled the GPS feature in her phone to locate her current location.

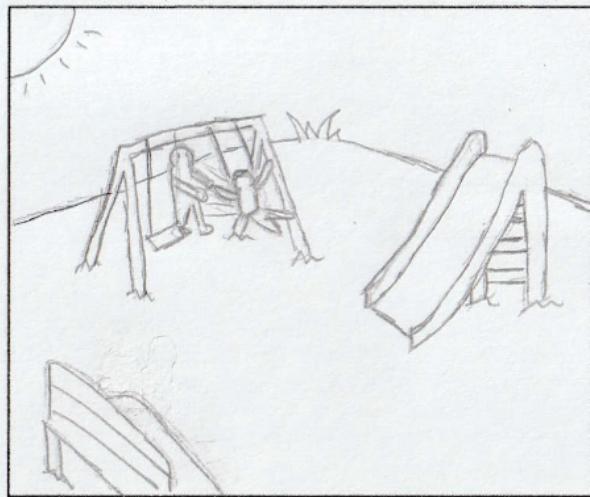


She took photos of the broken swings and uploaded them on the report.



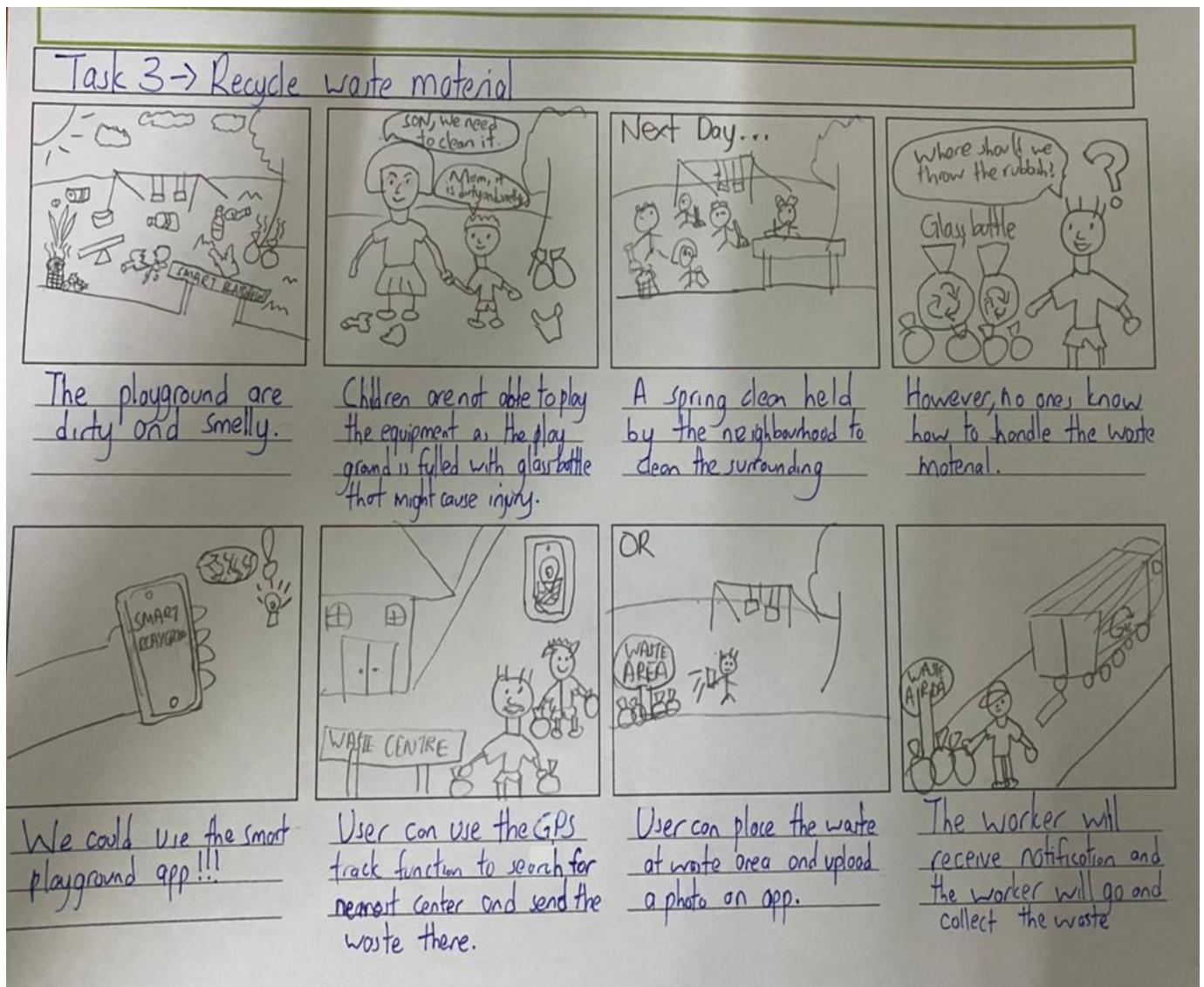
After describing the situation, she submitted the report and received notification about her report has been successfully accepted

~ONE WEEK LATER~



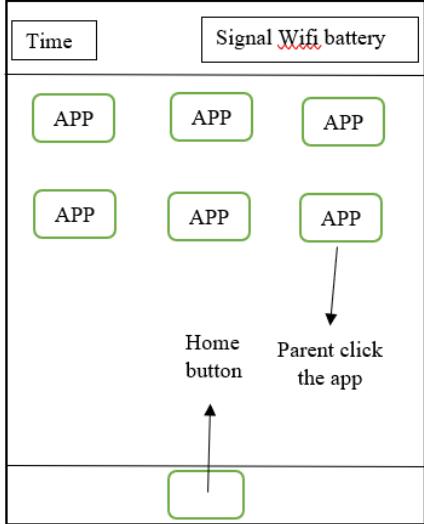
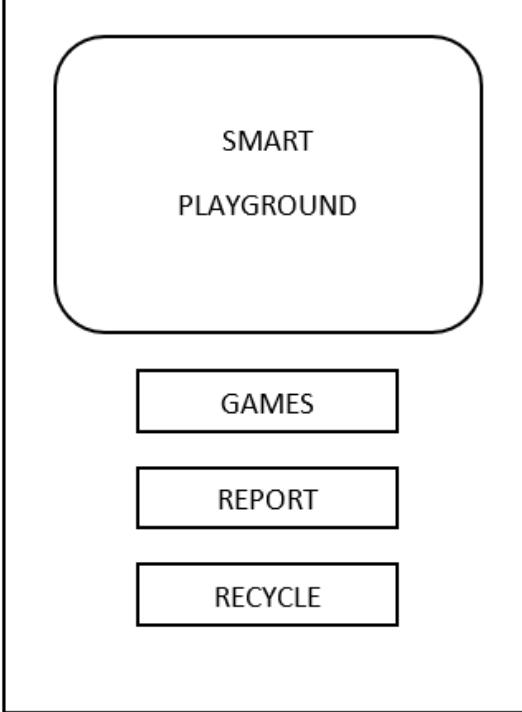
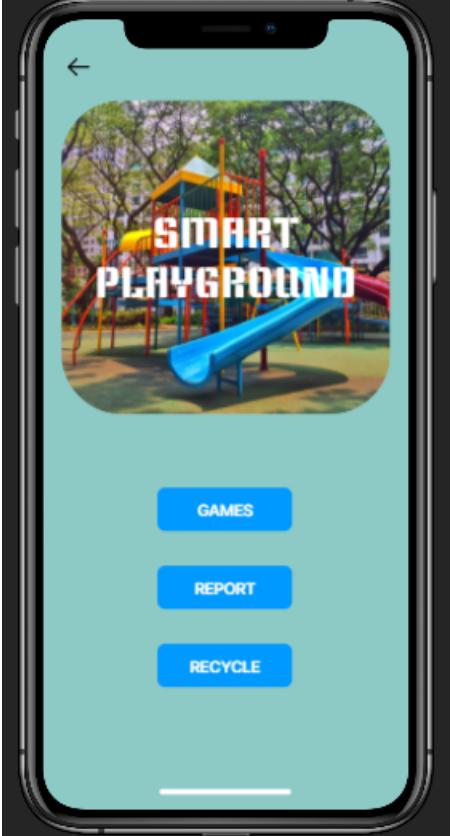
Mdm. Sabariah brought her son to the playground and realised the swing has been fixed in a week time. Now, they can play the swing happily.

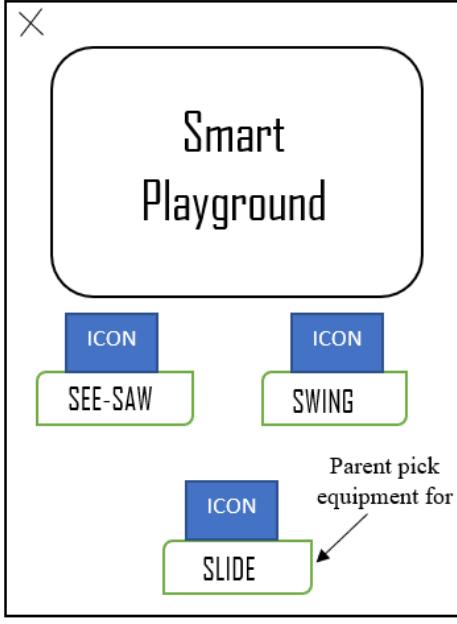
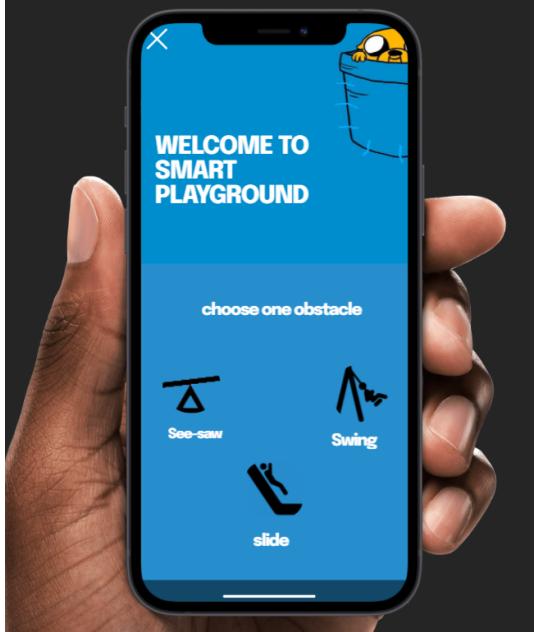
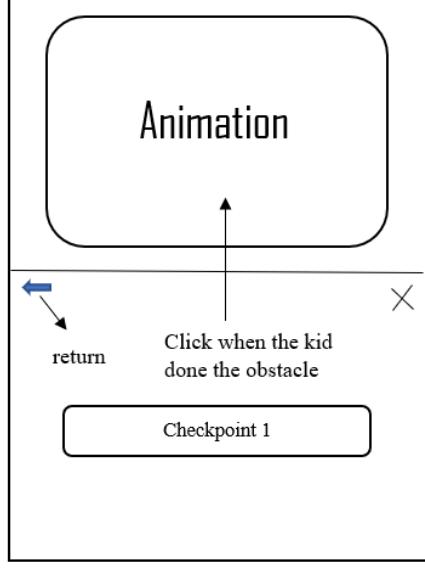
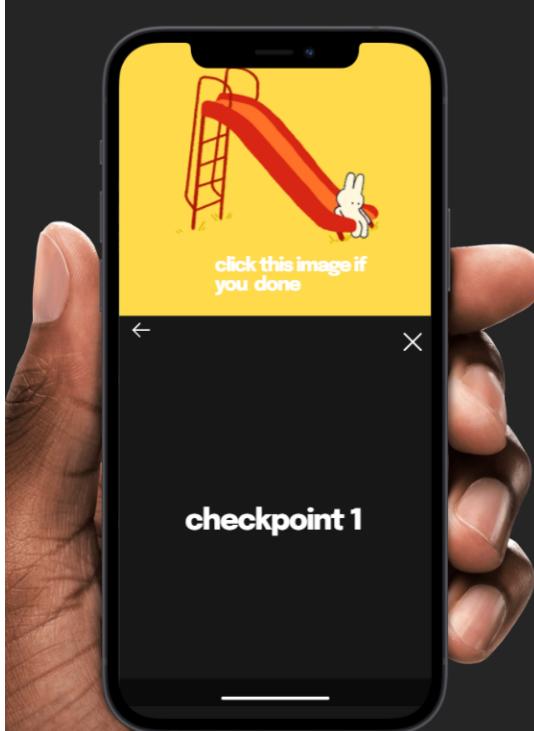
2.3 Task 3: Recycle any waste materials



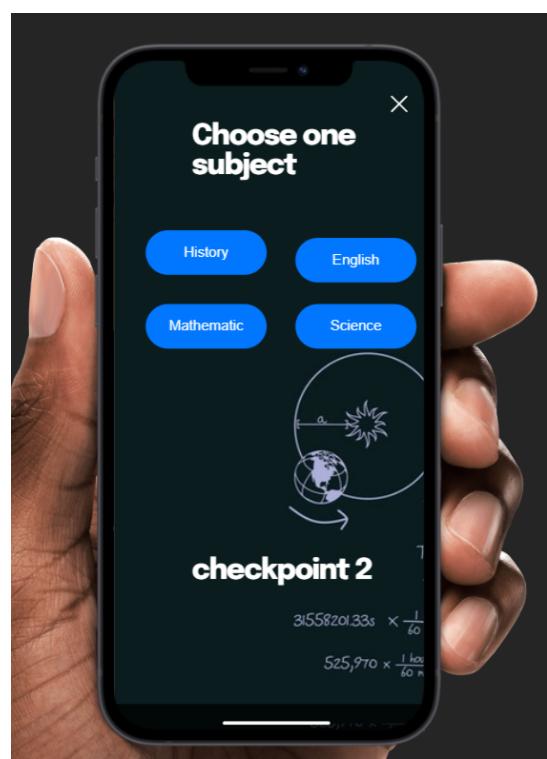
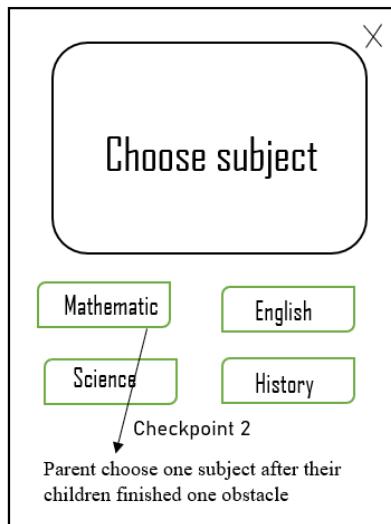
3.0 Interface Design

3.1 Task 1: Access the Smart Playground application

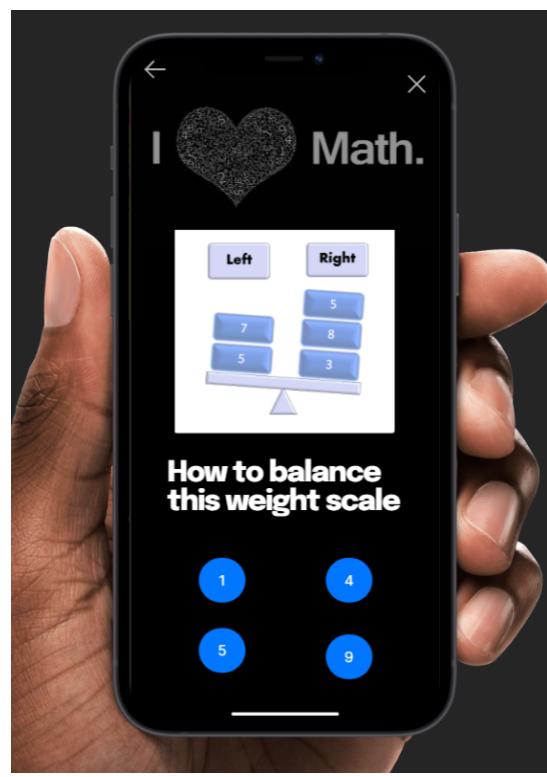
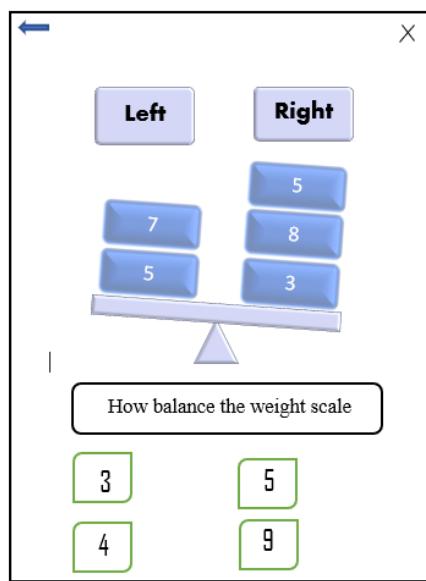
Scene	Wireframe	Mock Up
1		
2		

3	 <p>Exit button</p> <p>Smart Playground</p> <p>ICON SEE-SAW</p> <p>ICON SWING</p> <p>ICON SLIDE</p> <p>Parent pick equipment for</p>	 <p>WELCOME TO SMART PLAYGROUND</p> <p>choose one obstacle</p> <p>See-saw</p> <p>Swing</p> <p>slide</p>
4	 <p>Animation</p> <p>return</p> <p>Click when the kid done the obstacle</p> <p>Checkpoint 1</p>	 <p>click this image if you done</p> <p>checkpoint 1</p>

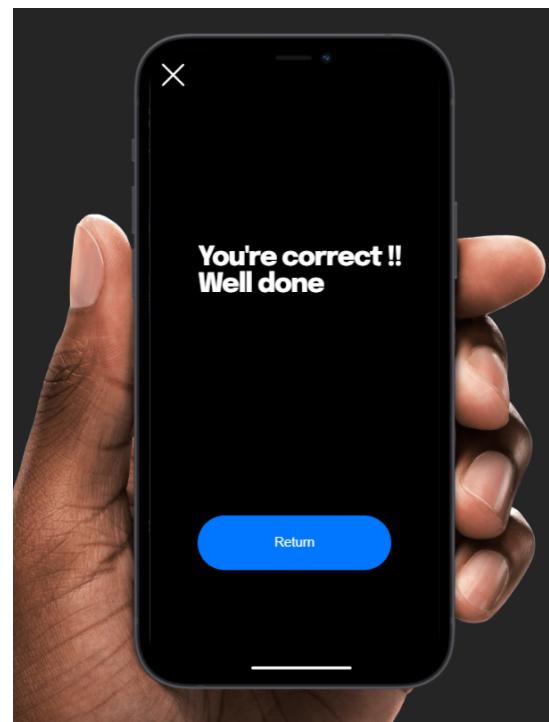
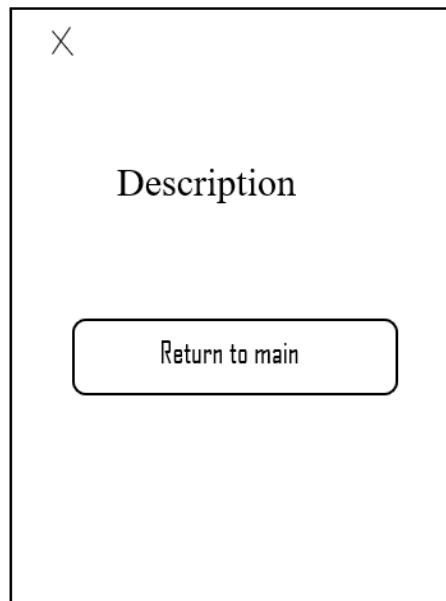
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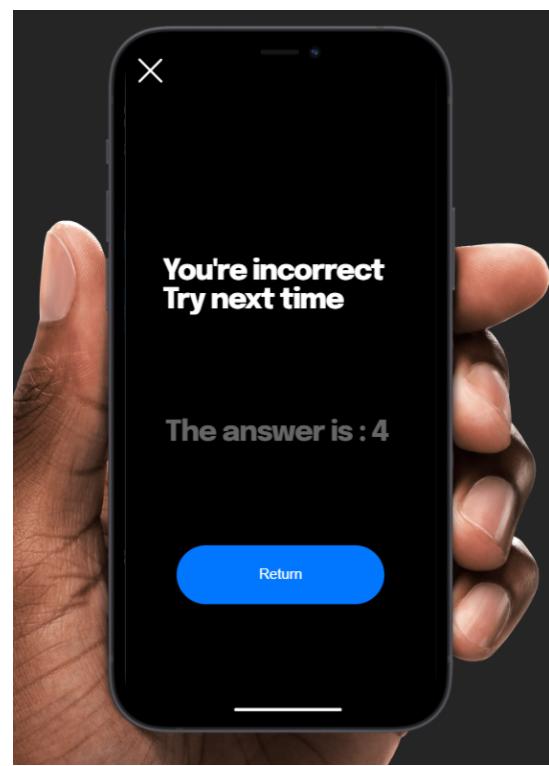
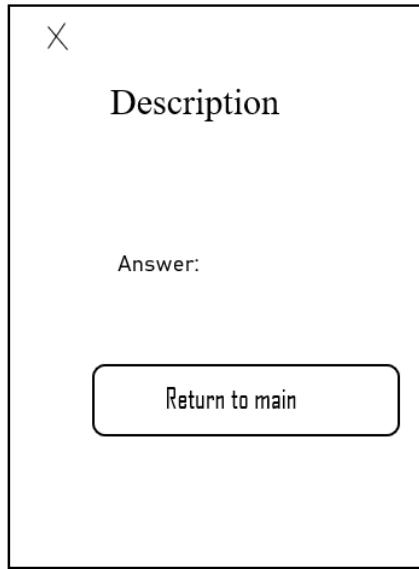
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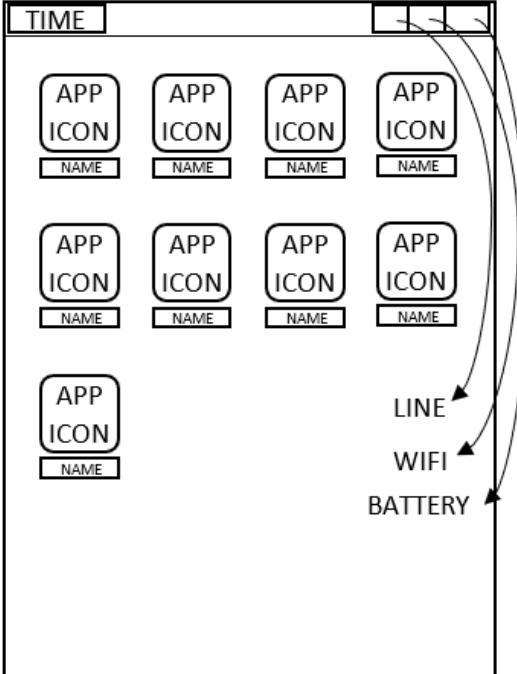
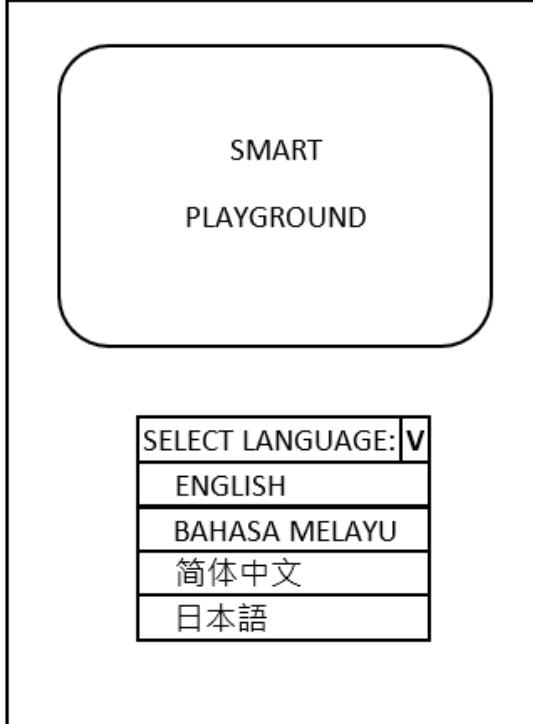
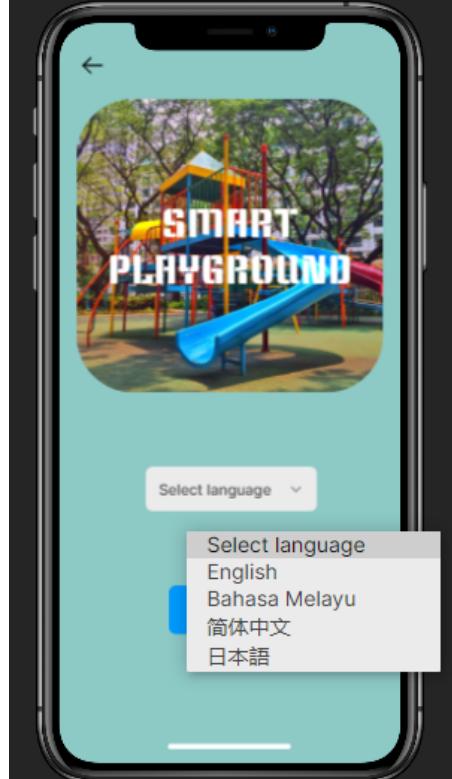
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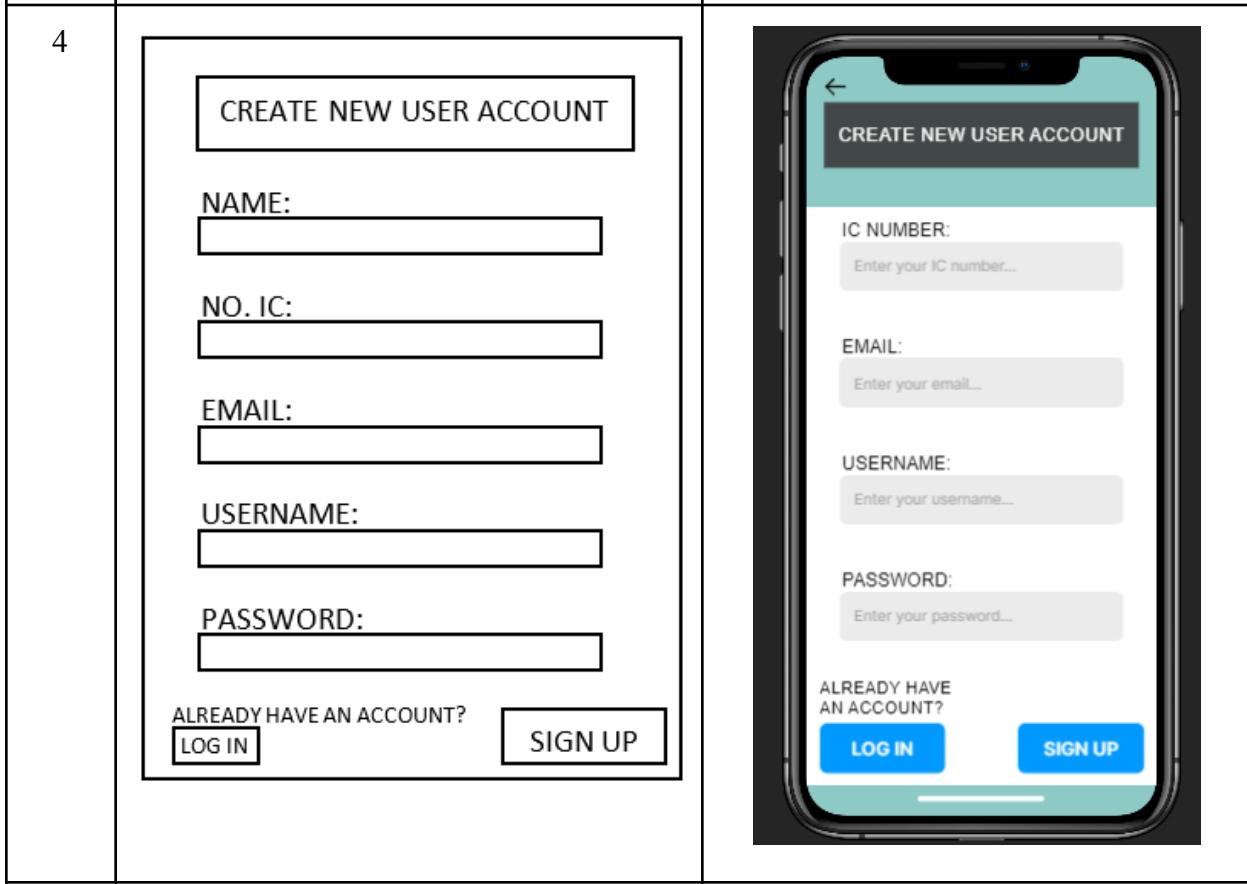
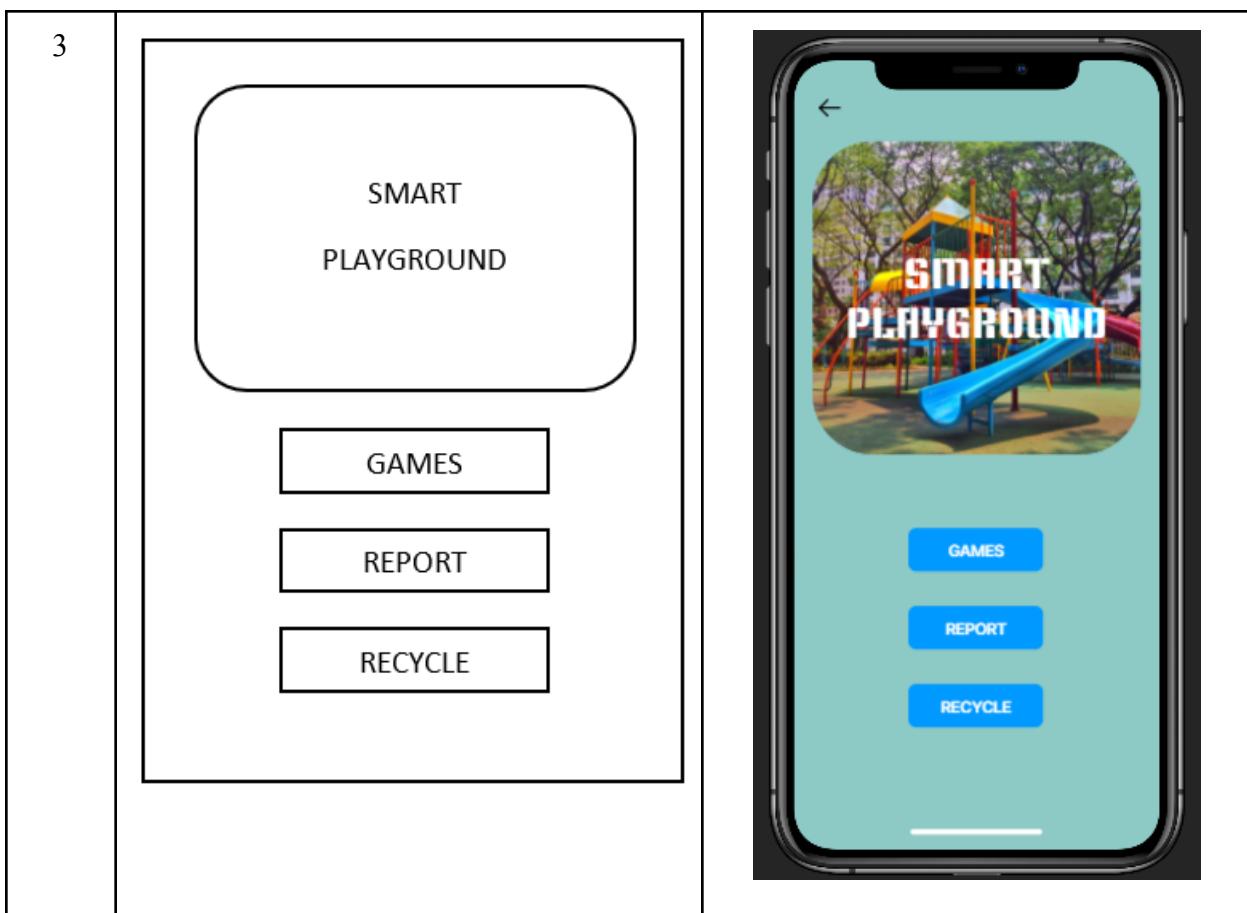


8



3.2 Task 2: Report the broken equipment

Scene	Wireframe	Mock Up
1	 <p>TIME</p> <p>APP ICON NAME APP ICON NAME APP ICON NAME APP ICON NAME</p> <p>APP ICON NAME APP ICON NAME APP ICON NAME APP ICON NAME</p> <p>APP ICON NAME</p> <p>LINE WIFI BATTERY</p>	 <p>01:05</p> <p>WhatsApp Telegram YouTube Netflix</p> <p>Instagram Twitter Camera Spotify</p> <p>Smart Playground</p>
2	 <p>SMART PLAYGROUND</p> <p>SELECT LANGUAGE: <input type="text" value="V"/></p> <p>ENGLISH</p> <p>BAHASA MELAYU</p> <p>简体中文</p> <p>日本語</p>	 <p>SMART PLAYGROUND</p> <p>Select language <input type="button" value="▼"/></p> <p>Select language</p> <p>English</p> <p>Bahasa Melayu</p> <p>简体中文</p> <p>日本語</p>



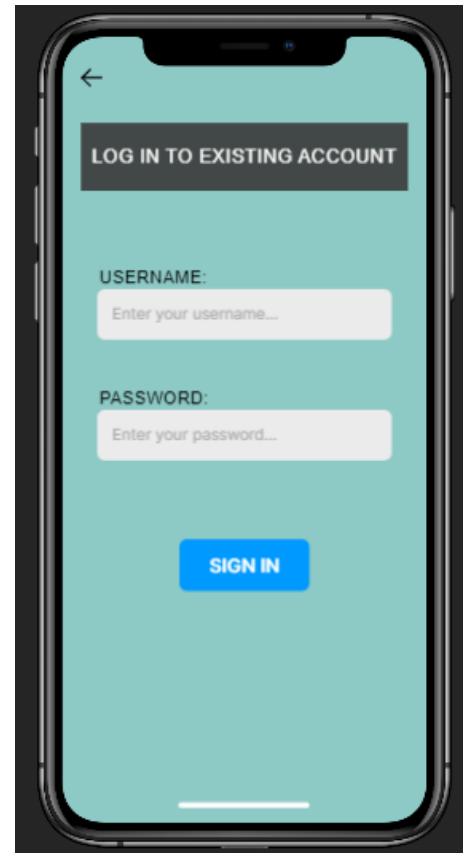
5

LOG IN TO EXISTING ACCOUNT

USERNAME:

PASSWORD:

SIGN IN



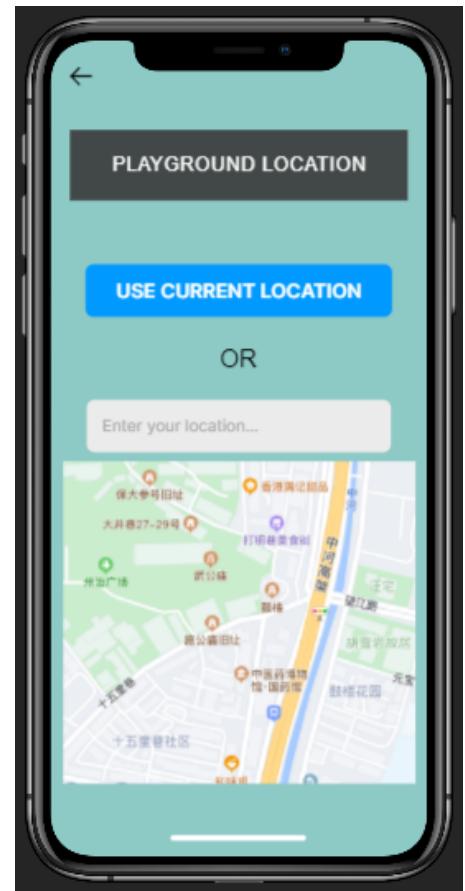
6

USE CURRENT LOCATION

OR

CHOOSE A LOCATION:

MAP



7

EQUIPMENT REPORT

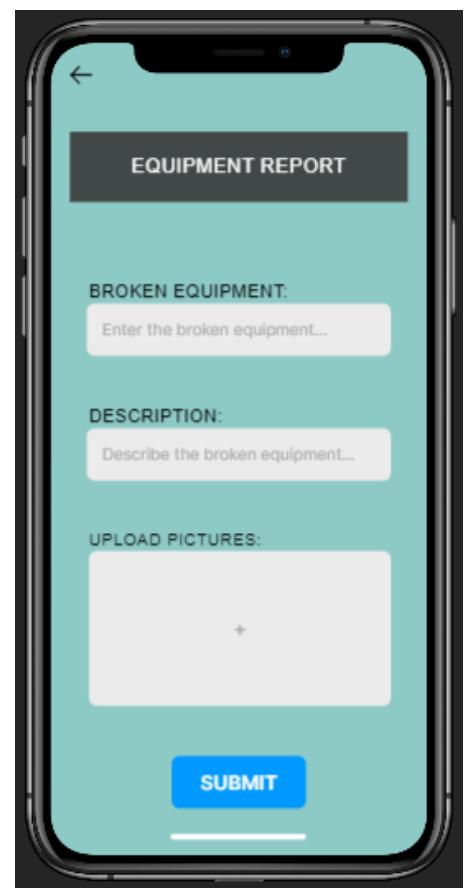
BROKEN EQUIPMENT:

DESCRIPTION:

UPLOAD PICTURES:



SUBMIT

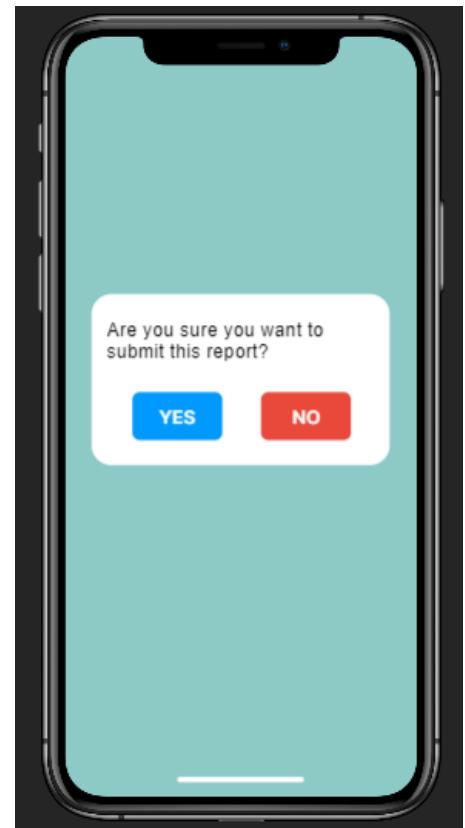


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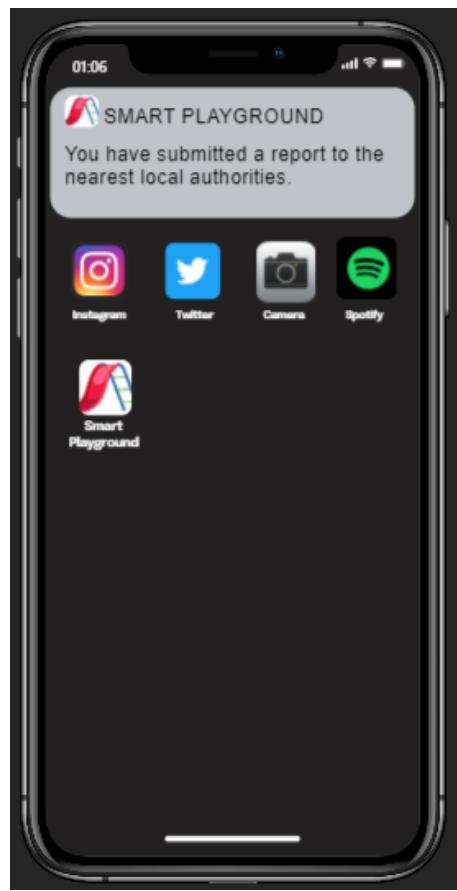
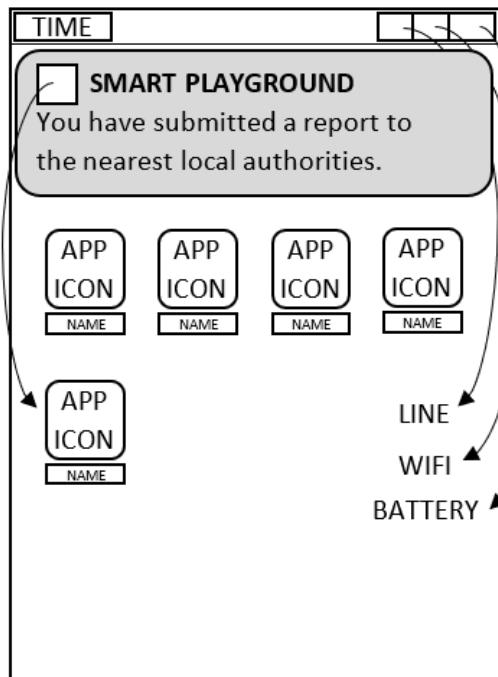
Are you sure you want to submit the report?

YES

NO

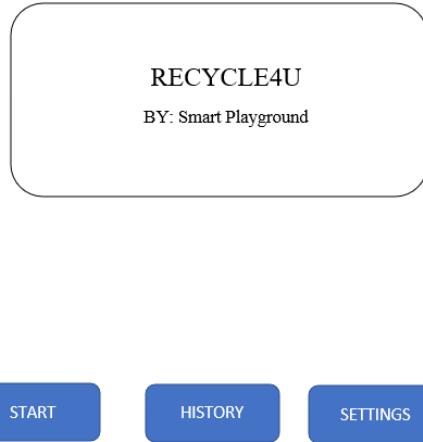
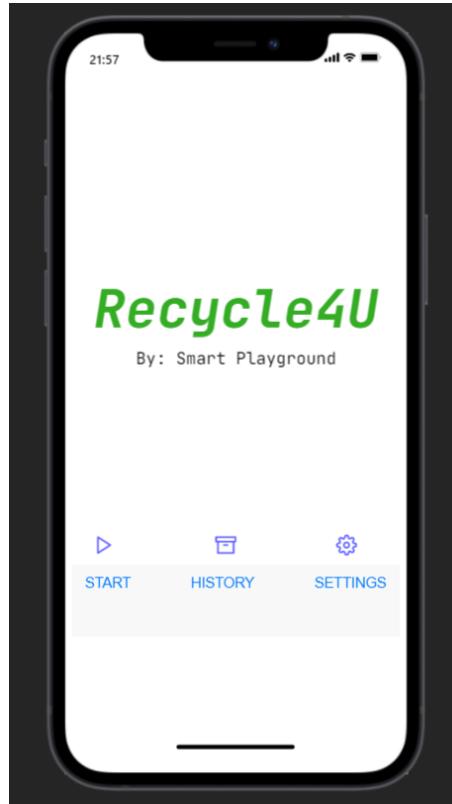
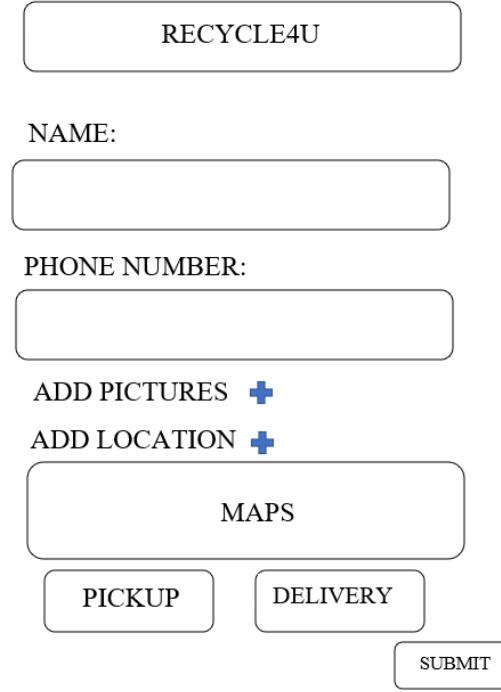
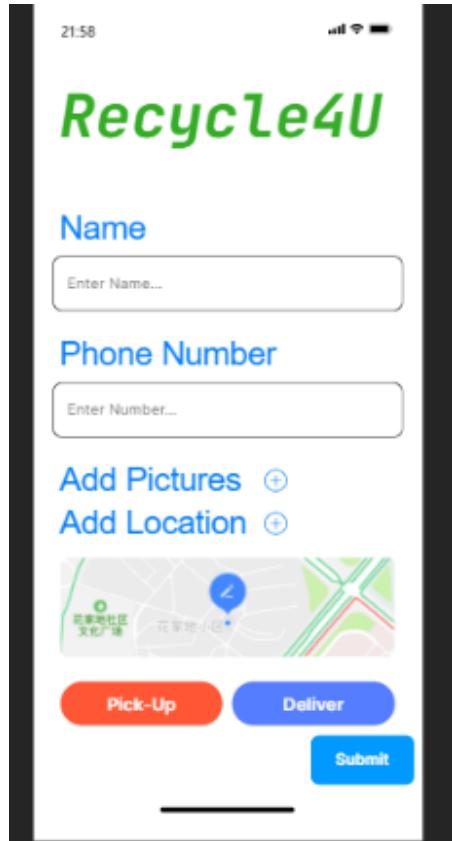


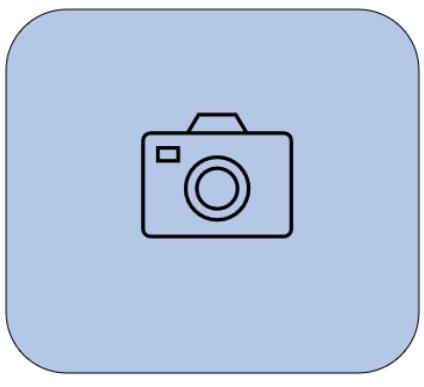
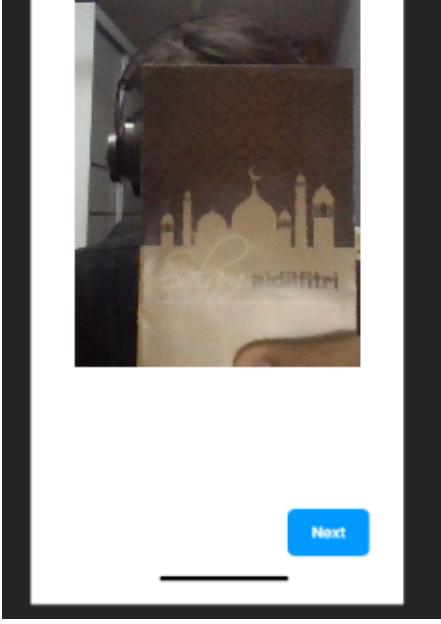
9

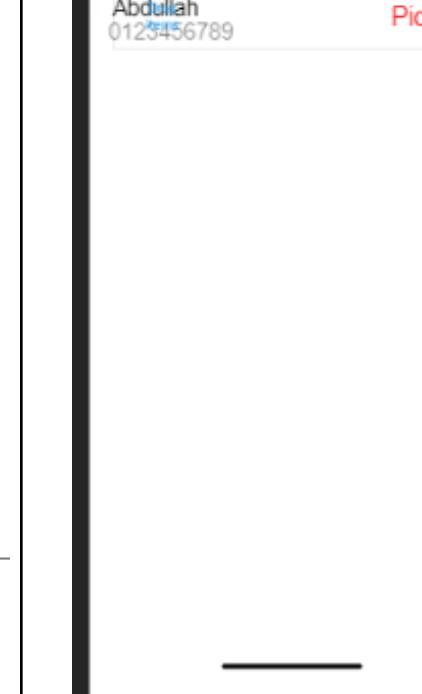
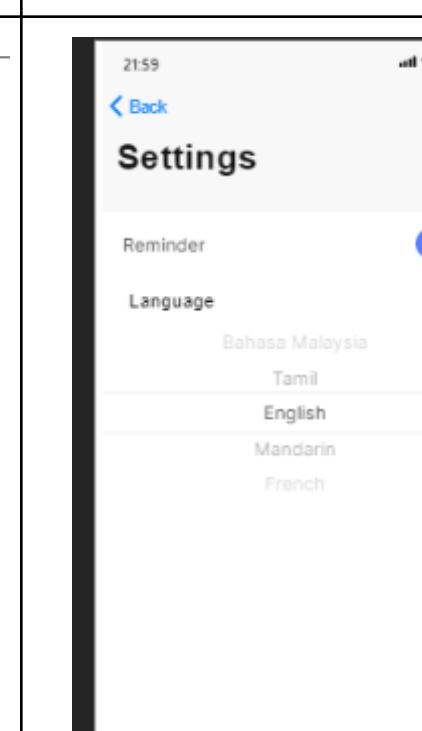


3.3 Task 3: Recycle any waste materials

Scene	Wireframe	Mock Up
1	<p>TIME</p>	
2	<p>SMART PLAYGROUND</p> <p>GAMES</p> <p>REPORT</p> <p>RECYCLE</p>	

3		
4		

5	<p>CAMERA</p>  <p>NEXT</p>	 <p>21:59</p> <p>Back</p> <p>Camera</p> <p>Next</p>
6	<p>MAPS</p>  <p>NEXT</p>	 <p>21:59</p> <p>Back</p> <p>Maps</p> <p>Get your access token</p> <p>Recycling Centre ></p> <p>Your Location ></p> <p>Next</p>

7	<p>HISTORY</p> <p>USER'S NAME</p> <p>USER'S NUMBER</p> <p>PICKUP/DELIVERY</p>	 <p>21:59</p> <p>Back</p> <h2>History</h2> <p>Abdullah 0123456789</p> <p>PickUp</p>
8	<p>SETTINGS</p> <p>REMINDER</p> <p>ON/OFF</p> <p>LANGUAGE</p> <hr/> <hr/> <hr/>	 <p>21:59</p> <p>Back</p> <h2>Settings</h2> <p>Reminder <input checked="" type="checkbox"/></p> <p>Language</p> <p>Bahasa Malaysia</p> <p>Tamil</p> <p>English</p> <p>Mandarin</p> <p>French</p>

3.4 Justification of the layout screen design based on Shneiderman's Eight Golden Rules

1. Consistency

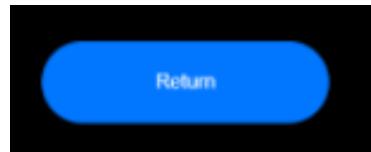
Consistency requires objects or actions to be the same as the situations. For example, we use an identical terminology which is playground's slide to represent our 'Smart Playground's application icon.



Smart Playground's application icon

2. Shortcuts

Shortcuts occur when users want to reduce the number of interactions as the frequency of use increases. It will also help users to increase the pace of interaction. For example, the home button is the simple shortcut created for users to go back to the home page.



Return Button in Task 1

3. InformativeFeedback

An informative system feedback should exist for every operator action. For instance, when the users click any buttons or icons, the buttons and icons will be popped out to let the users know that they have been clicked.



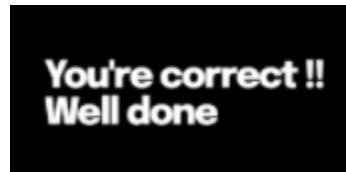
Switch in task 3 toggles to the right when it is clicked by user



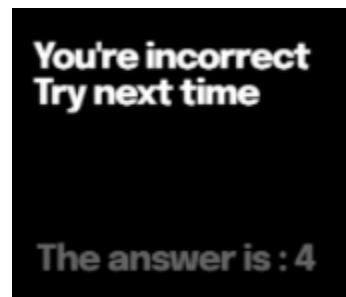
Switch in task 3 toggles to the left when it is clicked again by user

4. Dialogue

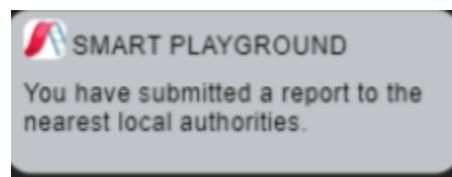
This rule is good to be applied when designing an interface. It is because the function is to keep users informed about what is going on. For example, in task 1, the application will let the users know if the answers are correct or wrong. Another example is in task 2, users will be notified after the report has been made through users' emails.



Dialogue shown in task 1 when user answered correctly



Dialogue shown in task 1 when user answered wrongly



Dialogue shown in task 2 when user submitted a report

5. Error Handling

If the users made an error, a good system should be able to detect the error and let the users know about it. For example, when users accidentally use letters to fill in the IC section, the system will notify the users about the mistake. This rule is good for the system to operate well without errors.

IC NUMBER:

Only number is allowed to be entered in the IC section in task 2

6. Permit reversal of actions

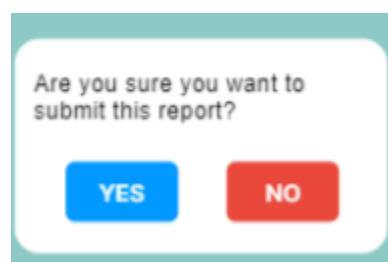
Permit reversal of actions refers to undo and redo functionality. Users often perform actions by mistake. This will require them an emergency exit to leave the action and go back to the previous action. For example, we use the ‘back’ icon at the upper left corner for users to leave the unwanted action without having to go through an extended process. The system makes sure that the mistake does not interfere with the workflow of the system.



“Back” icon in task 3

7. Support Internal Locus Of Control

Support internal locus of control means users are in charge of the system and the system responds to their actions. The system is designed to make users the initiators of actions rather than the responders. For example, in task 2, after the users clicked the ‘submit’ button for the report, they will be asked if they are sure to submit or cancel it.



Notification popped up for confirmation in task 2

8. Reduce short-term memory load

A good system design should be kept simple to avoid overload in terms of human memories. This is because there are limitations of human information processing in short-term memory. For example, we design the system to be simple as it could be to ease the users to use it. In task 1, we use visual pictures to represent the equipment options.



Visual pictures used to represent equipment option in Task 1

4.0 References

Shneiderman's 8 Golden Rules of UI Design | Yellowchalk Design. (n.d.). Retrieved June 2, 2021, from <https://yellowchalk.com/blog/8-golden-rules-of-interface-design/>

Shneiderman's Eight Golden Rules of Interface Design. (n.d.). Retrieved June 2, 2021, from <https://faculty.washington.edu/jtenenbg/courses/360/f04/sessions/schneidermanGoldenRules.html>

Shneiderman's Eight Golden Rules Will Help You Design Better Interfaces | Interaction Design Foundation (IxDF). (n.d.). Retrieved June 2, 2021, from <https://www.interaction-design.org/literature/article/shneiderman-s-eight-golden-rules-will-help-you-design-better-interfaces>