

# Contents

- Initial Research
- Brief & Initial Ideas
- Updated Ideas
- Waste Pick Up App
- Voting App
- Teaching Aid App
- Branding
- Logo
- Further Research
- Prototype
- Final UI



# Initial Research

Initially, we began this project by conducting research into the food wastage problem within schools and ways that this can be solved. An article from The Guardian website which isolates the problems with food wastage in schools by interviewing school caterers to see methods they have found effective in cutting down waste.

Highlighted by how one caterer cut down their school's waste from "8-12kg" down to "2kg" from just using simple methods like cooking with fresh food that was made on the day, and tracking what sells well with students.

Another vital piece of research we found was, an article by LiveScience. This article makes some very important points like; kids dumping their veggies in the trash and giving the thumbs down have exploded on social media since the Healthy, Hunger-Free

Kids Act was passed in 2010. The article goes on to say when recess playtime comes after eating, the children have an incentive to rush through lunch, kids who were given less time for lunch also were less likely to choose healthier options.

An article from Foodtank backed up this concept, citing that food waste is caused by lunches that feature "poor quality produce that's frequently tasteless and/or the wrong size.

FOOD WASTE

## Schooling Food Waste: How Schools Can Teach Kids to Value Food



Green schools  
Teacher's blog

Lunch not landfill: how schools can cut food waste and save money

Food waste costs schools and colleges around £250m per year. But smart thinking could reduce the rubbish and needless spending. Nick Morrison reveals some recipes for success

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About this content

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Nick Morrison

Thursday 22 May 2014 13.51 BST



Schools don't need to pander to pupils' tastes to reduce food waste. Photograph: Christopher Furlong/Getty Images

In the increasingly high-profile battle against food waste, some of the worst offenders are a group we might hope would know better: schools. The education sector produces 13% of all non-domestic food waste in England, throwing out some 123,000 tonnes a year, the bulk of that going straight to landfill.

Most popular



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St Petersburg metro bombing suspect from Kyrgyzstan



Croydon Kurdish community in shock after attack on Reker Ahmed



Tuesday briefing: Tory MPs reject their own Brexit report



Ex-Trump adviser gave energy industry documents to Russian spy, court files show

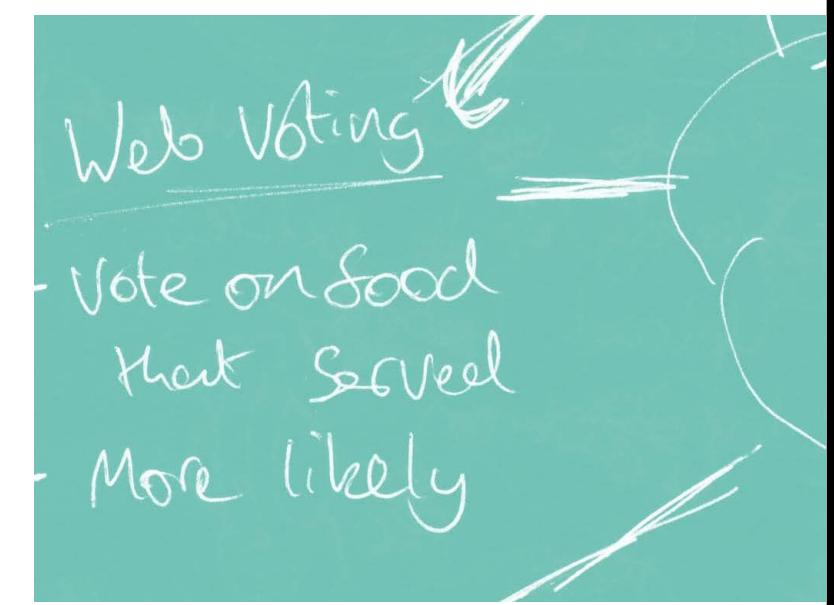
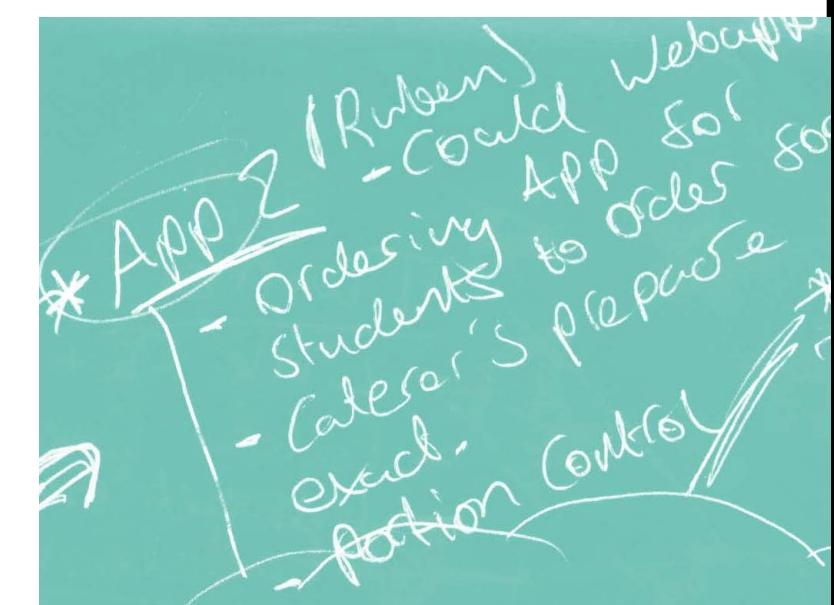
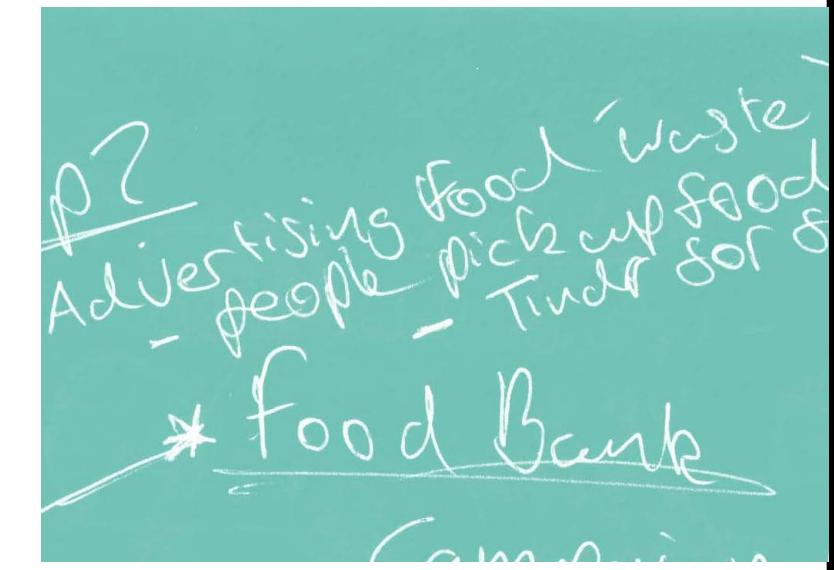
# Brief & Initial Ideas

At the start of the project we were given a brief by IBM that told us to design an innovative solution to help combat some of the issues of food wastage within schools and colleges. They are looking for a PDF of our completed work which describes the problem you solved.

We started to brainstorm our ideas together so we could collaboratively share our thoughts on what to create for this project. Our first concept was an app for the students and the caterers. This app would allow the students to vote on what food they would serve for lunch in their school the following day. We thought this was a strong idea because it gives the students food they want to eat at school, which as our research shows reduces food waste. Our second concept we focused on was a web campaign to have

food banks within schools that students could bring in food that was going to waste. This could all be collected and then deposited at a local homeless shelter or charity. Our final concept was an app that provided a location based service for school caterers to advertise food that was nearly out of date, so that anyone with the app nearby could pick it up and avoid it being wasted.

From our initial feedback we were told that we were focusing too much on the short term, that we should try and come up with a solution for the long term. It was suggested that we look into educating the students, rather than making a short term app solution. From this feedback we have moved on to our final idea which is a educational app that teaches the students how to reduce food waste.



# Updated Idea

One of the most important pieces of feedback we got was that we were focusing too much on making something to reduce food wastage, and were told that we could focus on making something to educate people from the schools or colleges on food waste. Effectively to stop focusing on the short term and try to come up with a long term solution.

After this we then moved onto our current idea, an app that teaches students how to reduce food waste and what they can do at home to make a difference. As a group we then decided that the app should contain the following features; a teaching aid section, a video section, a gamified competition and a reward section.

We thought that if we included a teaching aid section then the

teacher would be able to use this in their lessons therefore exposing the students to more on reducing food waste. As a group it was decided it would be a good idea to include a video section, as having a visual aid could help improve some of the students learning, the videos on this page will be strictly about reducing food waste.

We wanted to have some sort of competition for the students to have between themselves, making the app more fun to use and help to bring the students back to it. This links in with the rewards page, as you will build up points from the challenge and can spend them here. This was important as we wanted to include gamification within the app, this would help the students engage with the app more.



Teaching Aid  
• Lesson plan for educating food waste  
• App/Website

Gamified Competition  
• Food Waste Reduction  
• Gameified  
• Points for Reducing Food waste  
• Promotes competing

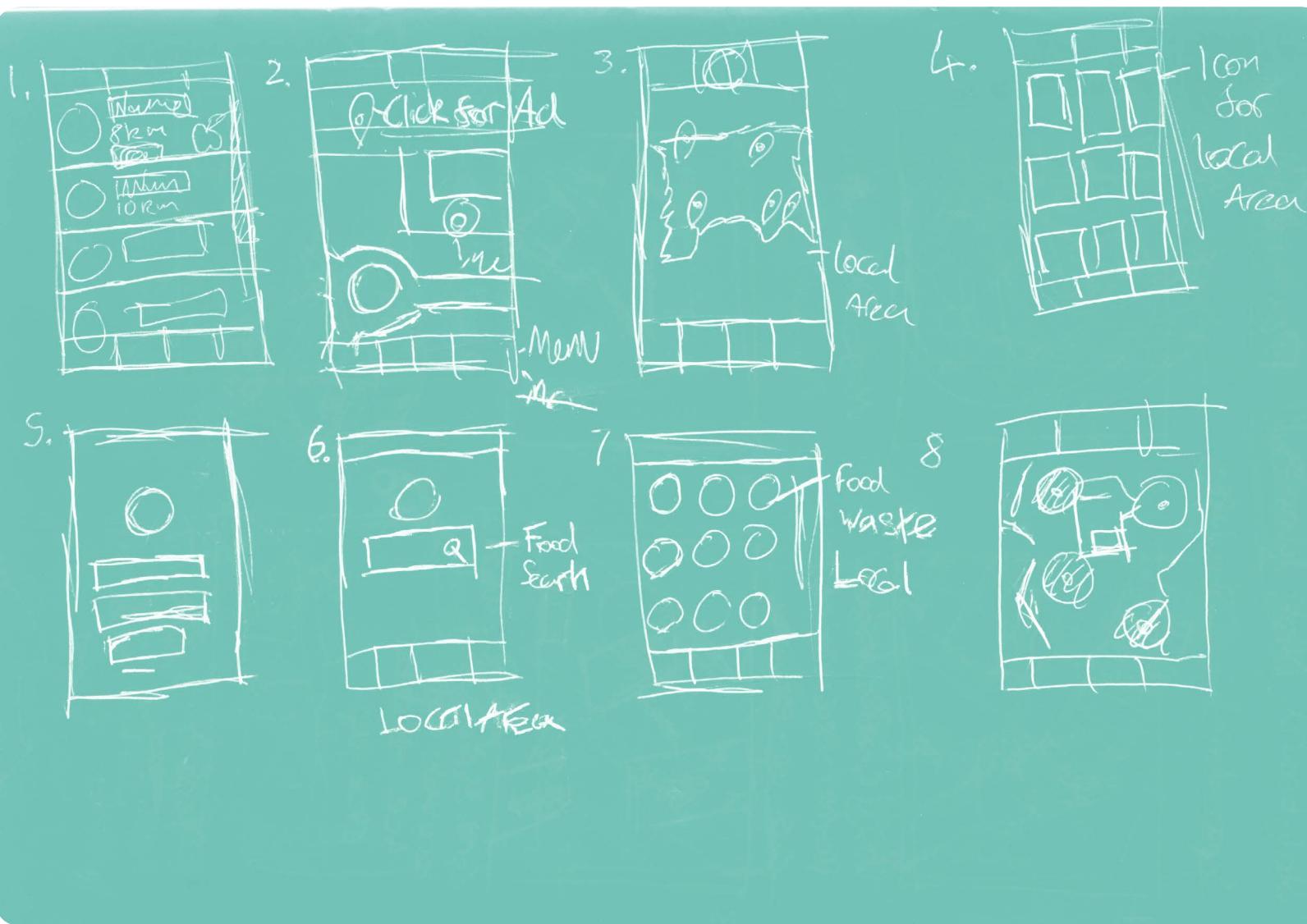
Animation/Videos  
• Motion Graphic informing how to reduce food waste  
• Part of education

# Waste Pick Up App

The idea behind this app was to provide a service to schools or school caterers which they could use to advertise any food waste or nearly out of date food. Users of the app would be able to see these adverts for food waste, and pick up the food from the schools or caterers, so it doesn't go to waste.

Initial ideas for the UI design of the app were made by quickly sketching out concepts. The concepts that provided a simple layout and journey were taken further to be developed. The concepts that were developed further were based on ideas 1 and 2 because a simple scroll down menu or a location based map to display different adverts for food waste were the simplest way to show the information to the user that was created.

Further development of these ideas, led to the creation of the path that users would take to confirm a pick up of food waste from a school or caterer. The user would start on the map screen, which would display nearby ads for food waste relative to the user's location. Followed by this, the user would confirm what items of food they wanted to pick up on the collect screen. The advertiser would then have to confirm or deny the user's request on the confirmation screen. Finally, the user would receive a notification on whether their request has been confirmed or denied. If it has been confirmed the user will receive directions and time to pick up the food.



# Waste Pick Up App

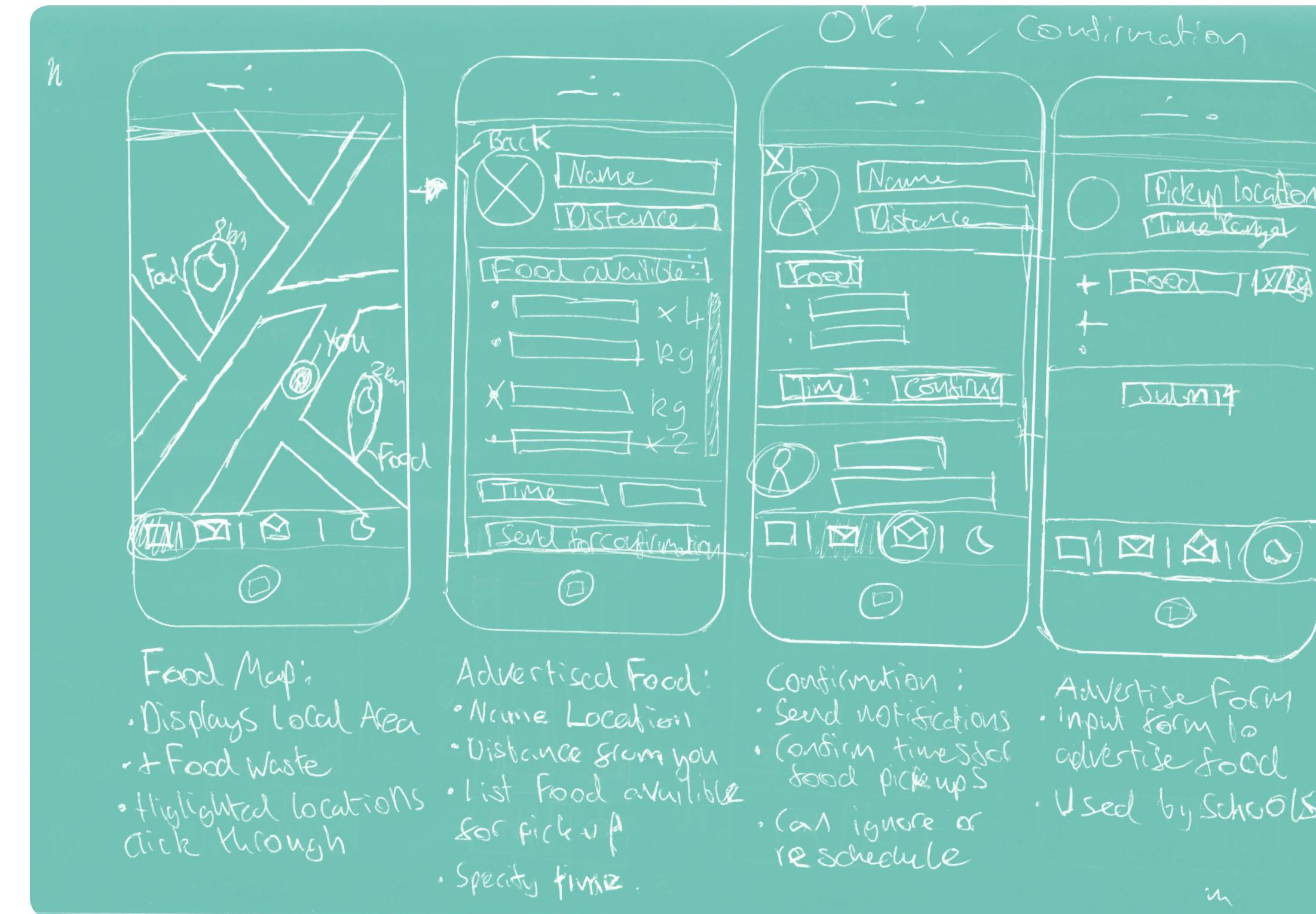


Creating a path for the user to follow through the app to reach their end goal, led to creating more in depth sketches of the app with annotations to make each designs purpose clear.

The ‘Food Map’ sketch shows the concept of a location based map to show user nearby food waste ads. Each location would be interactive, and bring up a sub-menu of the food available from the advertiser.

The ‘Advertised Food’ sketch displays the sub-menu that appears when the users interacts with a location. It shows all the food waste that the advertisers offers and a range of time they are available for it to be picked up. The button at the bottom allows the user to send off their request to the advertiser for confirmation.

The ‘Confirmation’ sketch is what appears for the advertiser when a user sends a request to pick up their food waste. It gives the food the user wants to pick up, and the time they will. The advertiser can confirm or deny the request, which will send a notification to the user.



# Waste Pick Up App

After creating the annotated sketches that detail the main components of the app, the design were mocked up in Photoshop.

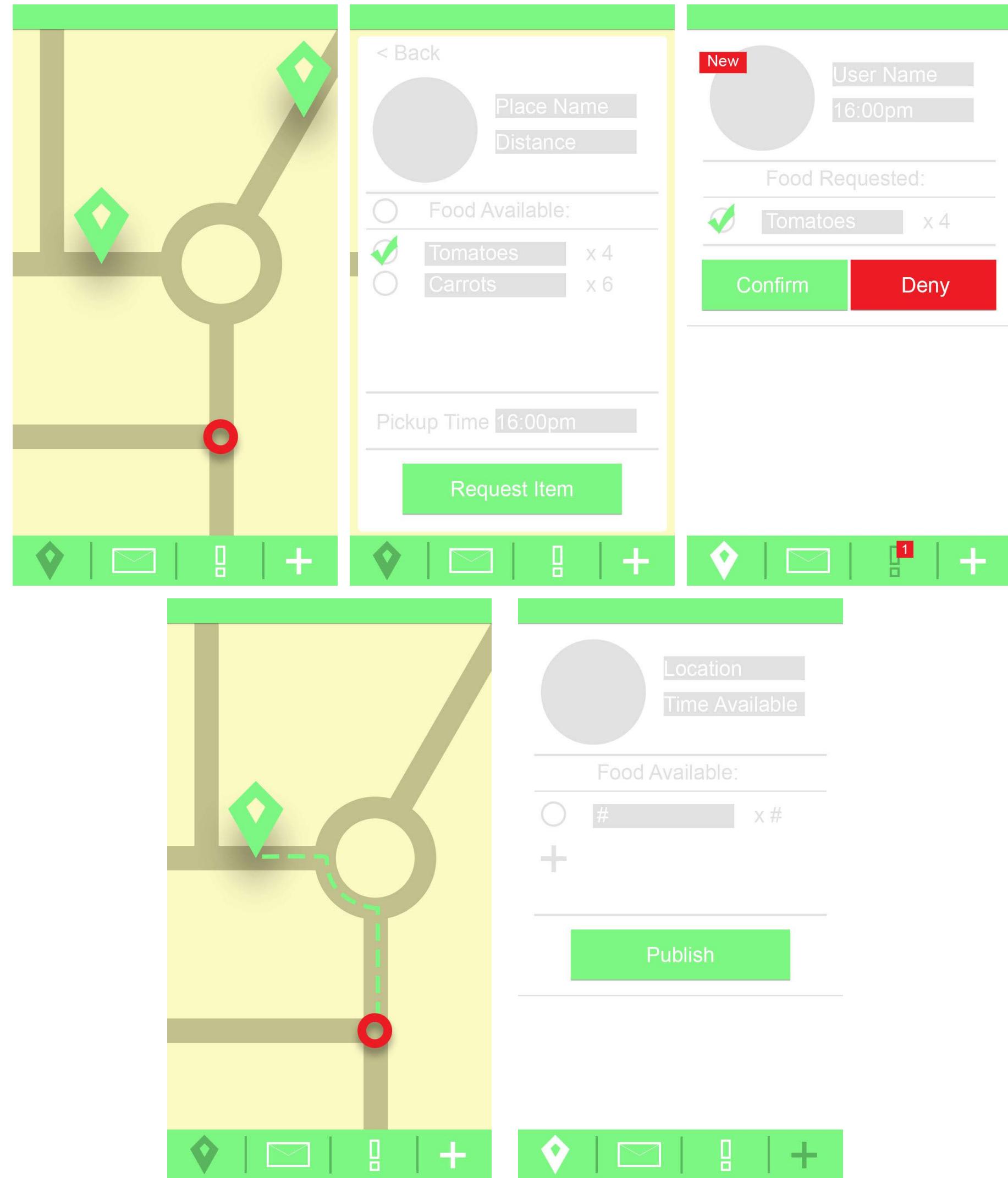
A colour palette focusing on green was used for the mockups because it is a colour that represents ecofriendliness or 'being green' which is an important aspect of the app that should be stressed through the colour scheme.

To contrast green, red has been used to track the user on the map, inform the user of notifications and deny requests.

Icons were created to represent each important section of the app including map, messages, notifications and advert form.

The group decided not to move forward with this idea because it felt non-specific to schools, so whereas it could reduce food waste our brief was focused on schools.

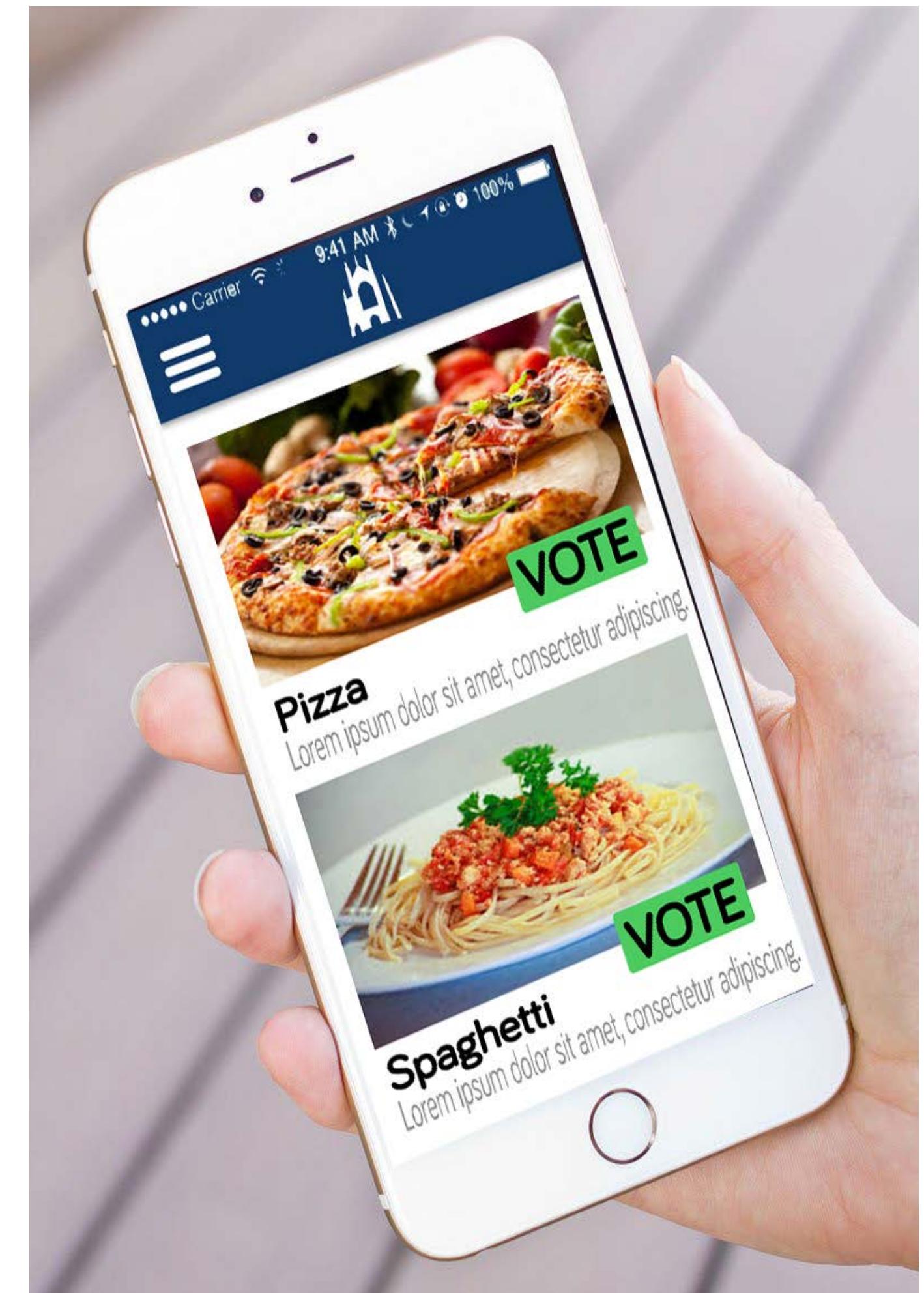
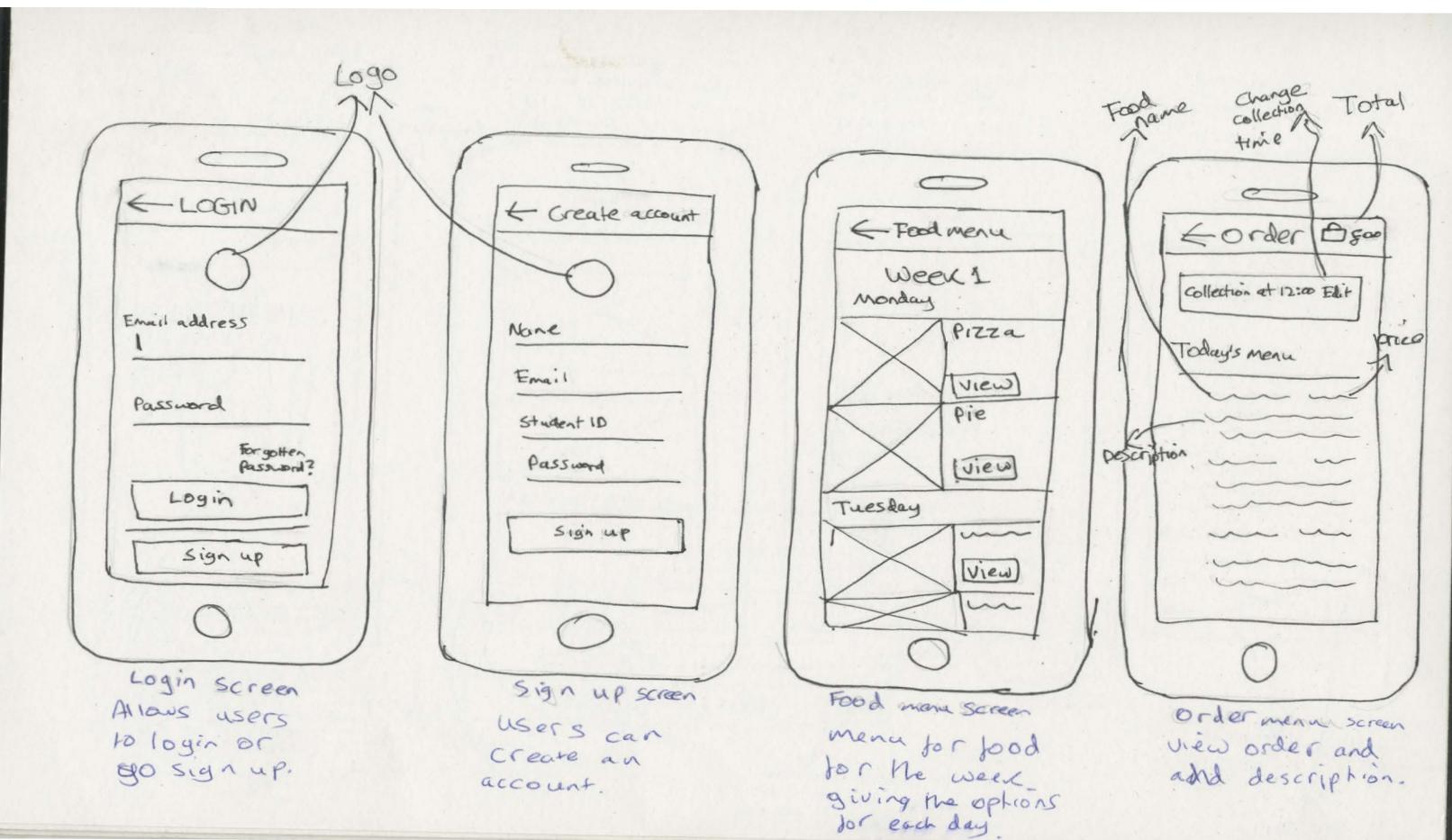
Additionally, the nature of the app would only provide a short term solution to the problem and after our feedback we wanted to focus on long term solutions.



# Voting/Ordering App

The idea for this app is a place for students to be able to vote for the food which would be sold the next day. The thought process on how this would combat food wastage in schools is the students will be voting for food they would like to eat because better food selection would increase the demand.

The app would also allow the students to order the food and then select a collection time and pick up their food. It would also have a portion control, where the students can pick the size of their meal. The students would have the incentive to use the app because it would no need to queue and food wanted to be eaten.

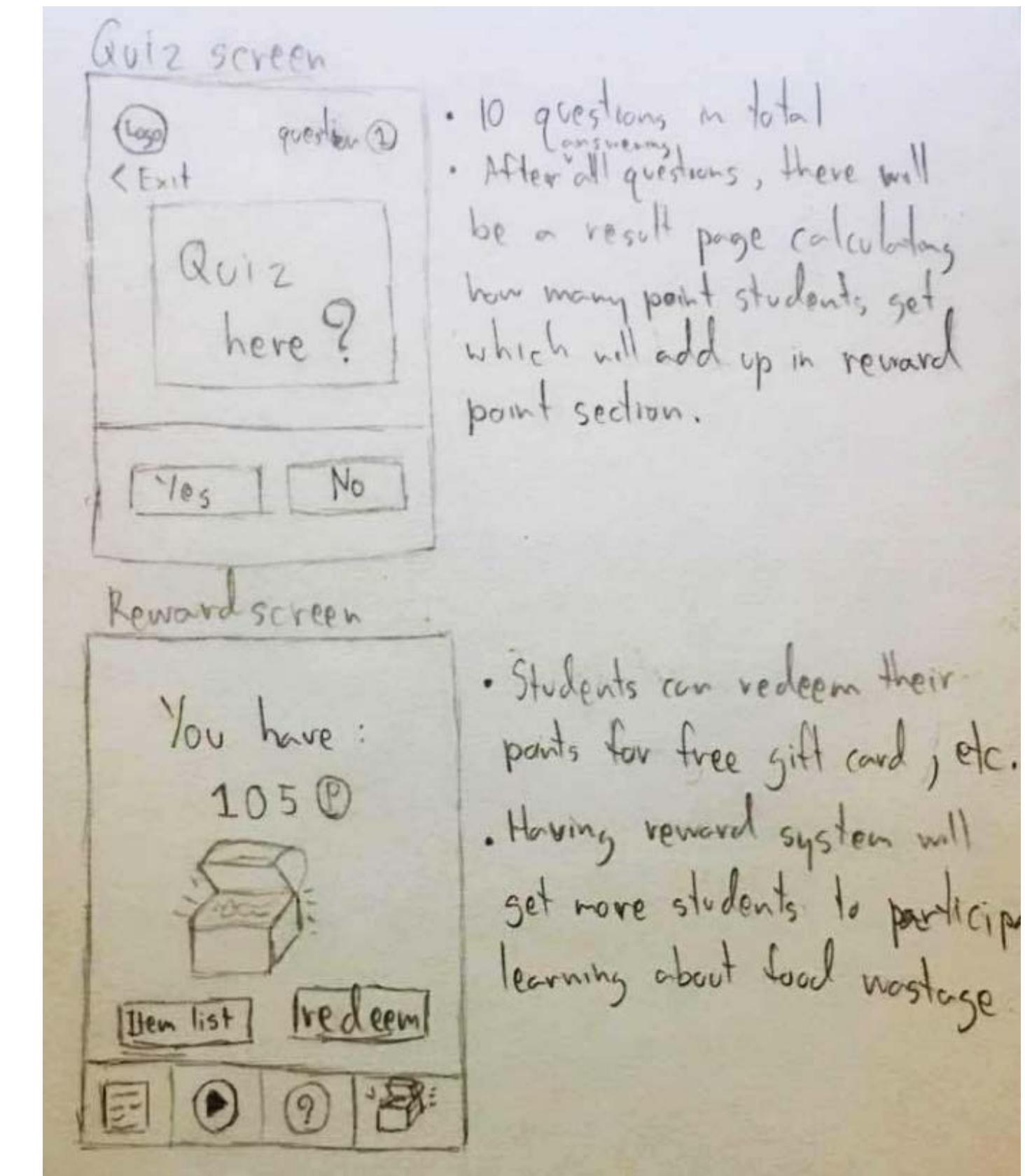
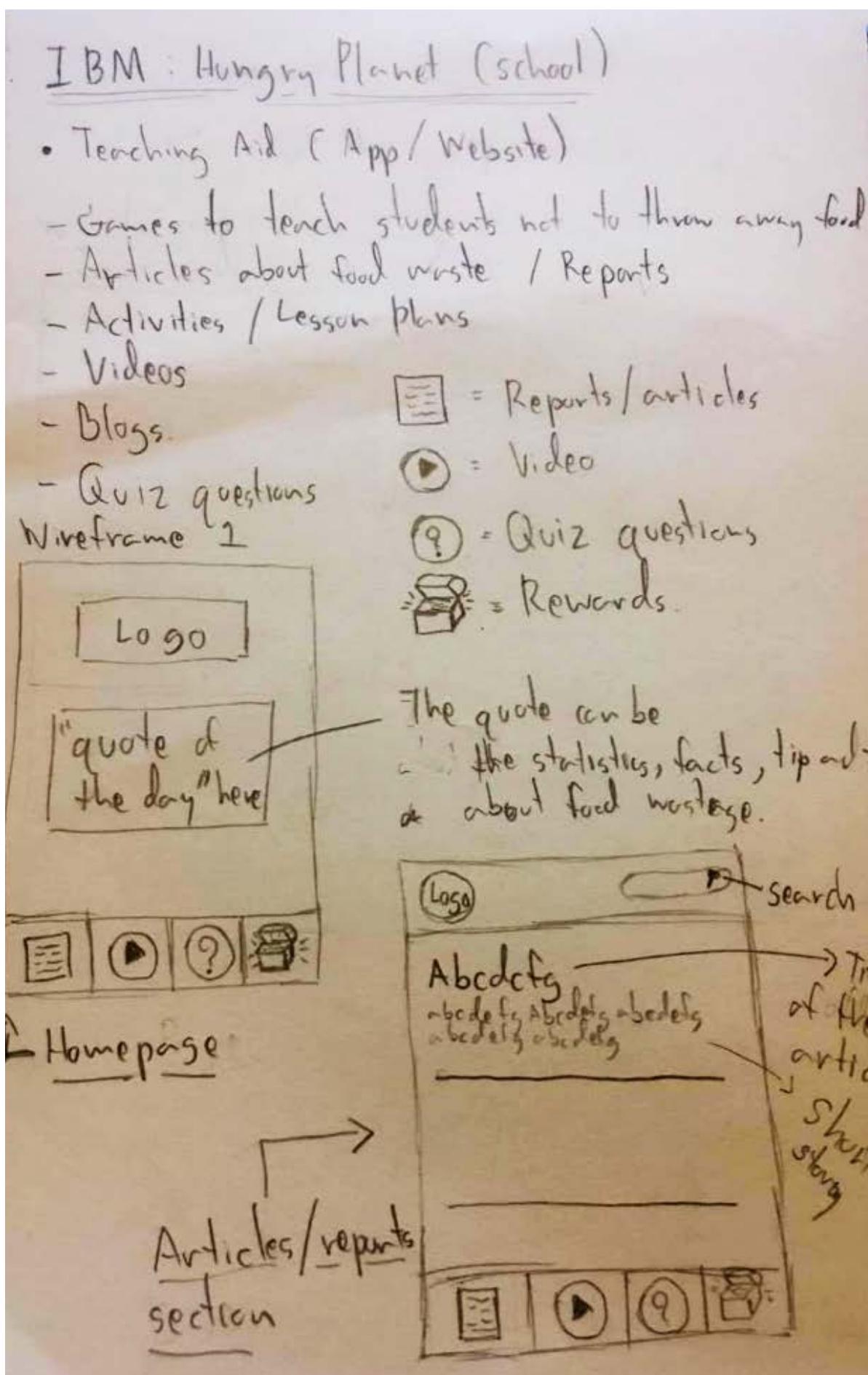


# Educational App

This idea intends to educate students on reducing waste food. It is an application on iPad which the students have with them in class.

There are four sections; article, video, quiz challenge and reward. For article and video section, the application provides the platform for teachers to publish interesting articles or videos about food wastage then students are able to read it anytime.

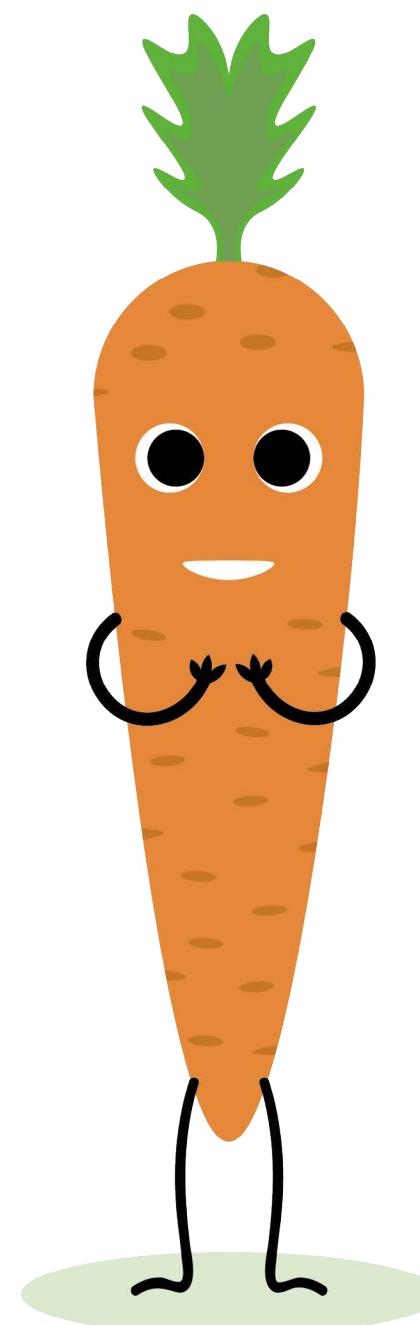
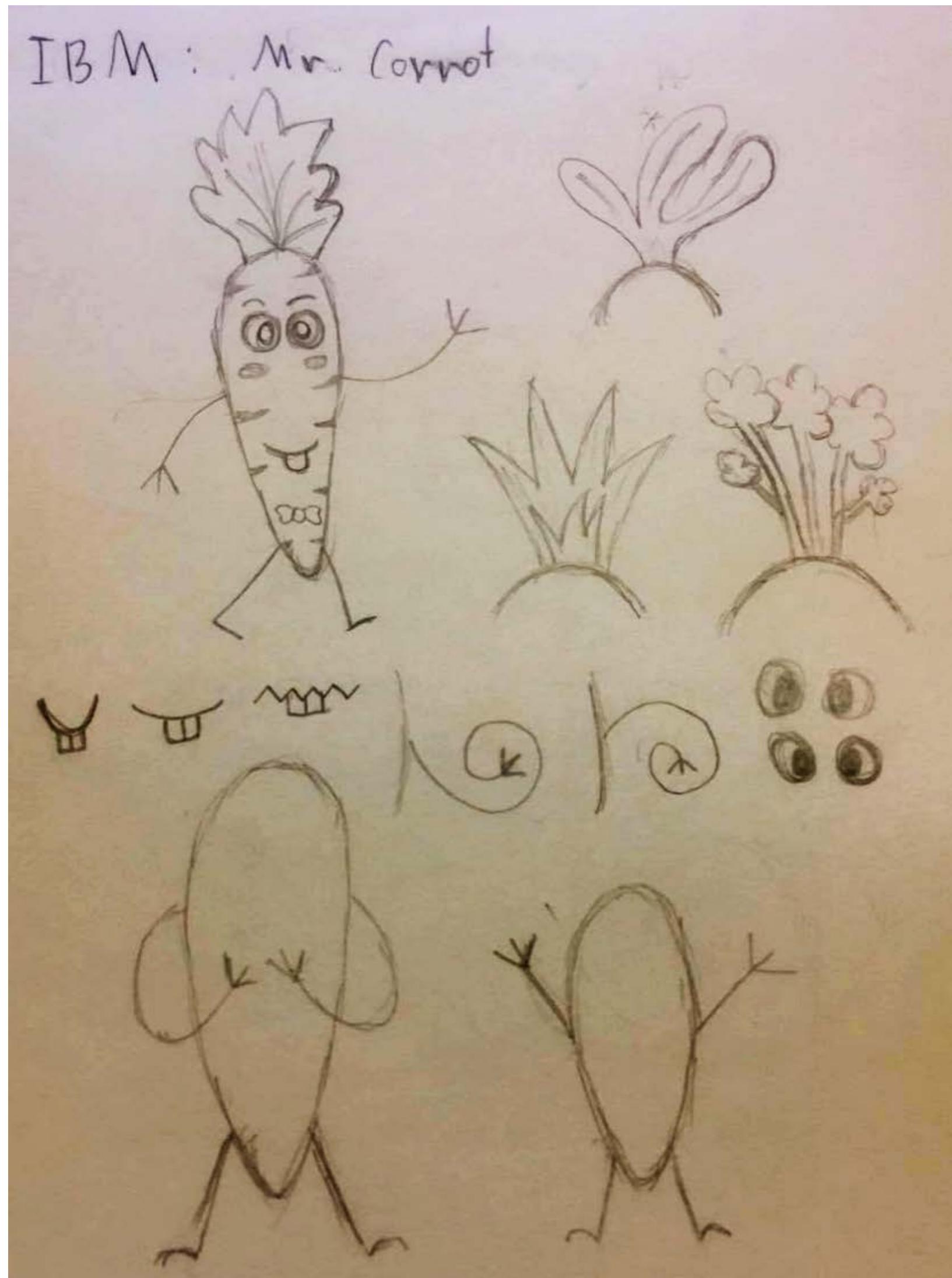
The quiz challenge is the test for students to measure how much they have learnt. After answering all the questions, the result will be converted into "point rewards" which will be add up in the reward section.



- 10 questions in total
- After all questions, there will be a result page calculating how many point students get, which will add up in reward point section.
- Students can redeem their points for free gift card, etc.
- Having reward system will get more students to participate learning about food wastage.

# Educational App

The character design was created to promote the branding of the application. This is the first initial sketch of the character which was going to represent the food that was being waste. The sketch then turned into the character that was created in Illustrator. However, we wanted to develop the design of the in different areas such as colour, body shape and characteristic.



# Educational App



LOGO GO HERE

**DID YOU KNOW?**

We throw away 7 million tonnes of food and drink from our homes every year in the UK, and more than half of this is food and drink we could have eaten. Wasting this food costs the average household £470 a year, rising to £700 for a family with children, the equivalent of around £60 a month.  
Source: <https://www.lovefoodhatewaste.com/why-save-food>

Four yellow buttons at the bottom: document, play, question mark, and coffee cup.

**ARTICLES**

I am looking for...

**City of London launches challenge to boost coffee cup recycling**  
Published on Thursday 26 January 2017 00:55 GMT by Rebecca Smithers  
Every day in the UK, up to 7m coffee cups are thrown away, with less than 1% of these cups (only 1 in 400 coffee cups) thought to be recycled. The main challenge to date has been the plastic film lining the paper cups, which means they are rarely recyclable...

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Four yellow buttons at the bottom: document, play, question mark, and coffee cup.

**VIDEOS**

I am looking for...

**How Recycling Works**  
Published on 11 Jun 2015  
  
Join SciShow as we explore what happens to your stuff after you toss it into the little green bin with the arrows on it.

**How Recycling Works**  
Published on 11 Jun 2015  
  
Join SciShow as we explore what happens to your stuff after you toss it into the little green bin with the arrows on it.

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Four yellow buttons at the bottom: document, play, question mark, and coffee cup.

**Quiz Challenge**

Hello, Welcome to the Quiz Challenge! Are you ready!?



**START** **HOW TO PLAY**

Four yellow buttons at the bottom: document, play, question mark, and coffee cup.

**QUESTION 1**

EXIT



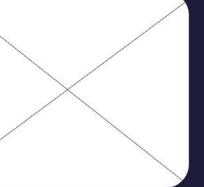
Grass clippings and other yard waste materials can be placed into the brown recycling container.

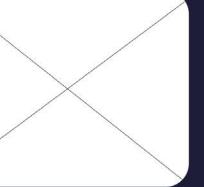
**YES** **NO**

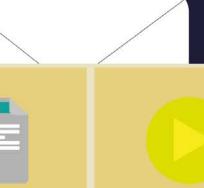
Four yellow buttons at the bottom: document, play, question mark, and coffee cup.

**POINT REWARD**

**YOUR BALANCE:** X,XXX

**GET A FREE CAKE AT COSTA**  
Point required: xxx **REDEEM**  


**GET 15% DISCOUNT AT STARBUCKS**  
Point required: xxx **REDEEM**  


**GET A FREE CAKE AT COSTA**  
Point required: xxx **REDEEM**  


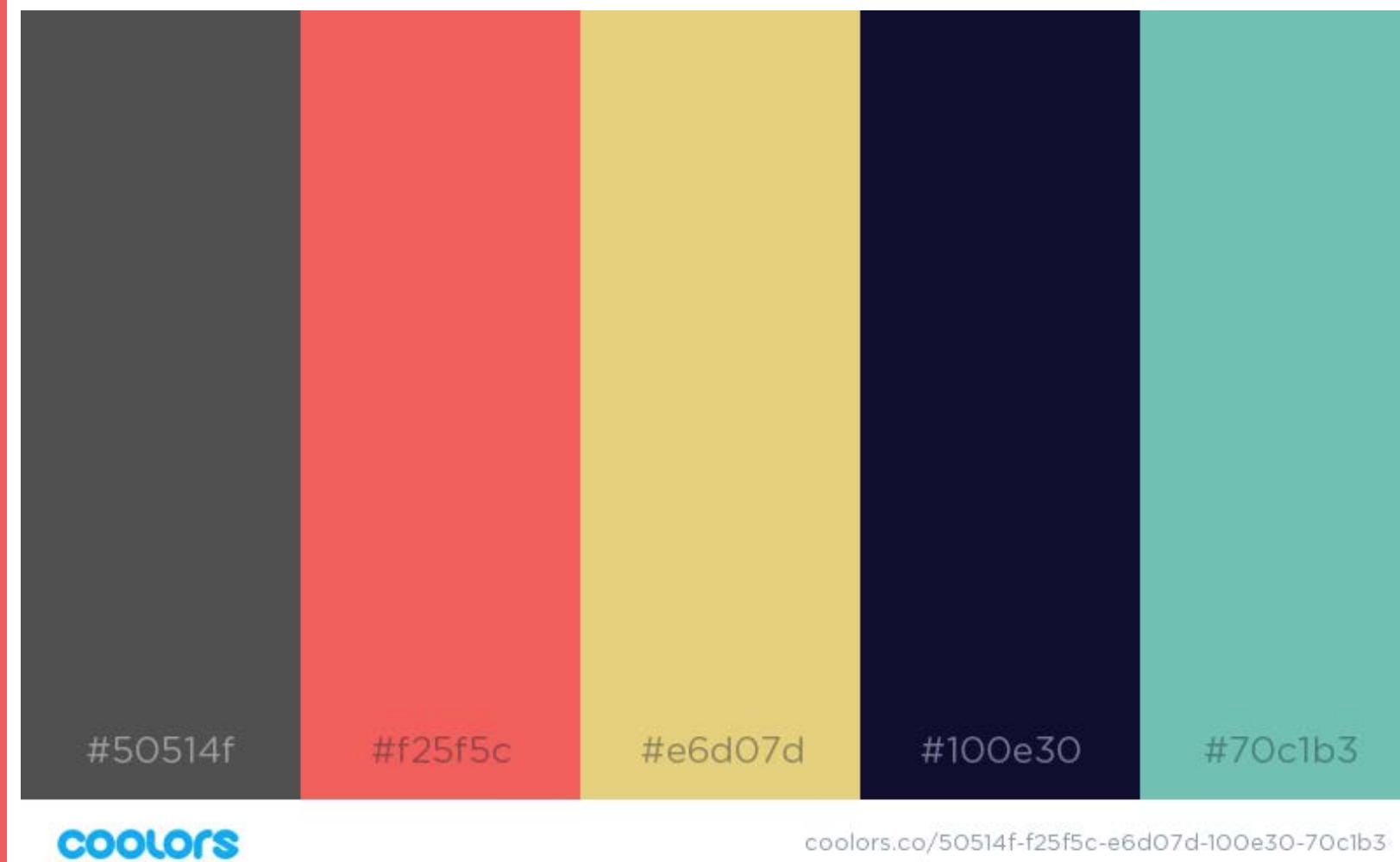
Four yellow buttons at the bottom: document, play, question mark, and coffee cup.

# Branding

For the branding for our app, we wanted to use a font which was easy to read but also childlike in a sense. The font had to appeal to children and allow them to engage with the content displayed in front of them. We ended up using a font named 'Sugar Punch', it was cartoon style but could easily be read, which fitted in well with the rest of the app.

We have produced a logo aimed at children and feel it is a cute cartoon character, which will draw in the children. We feel it fits along with other logos in the same category.

Before selecting our colour palette, we did research into what type of colours children responded to best. We found that kids respond best to bright colours. With this information in hand, we selected a colour that best suited our app.



*October Twilight Waste Matters*

**Kitten Bold**

**SUGARPUNCH**

**Corben**

**MP Sippin On Sunshine**

*Waste Matters*

**WASTE MATTERS**

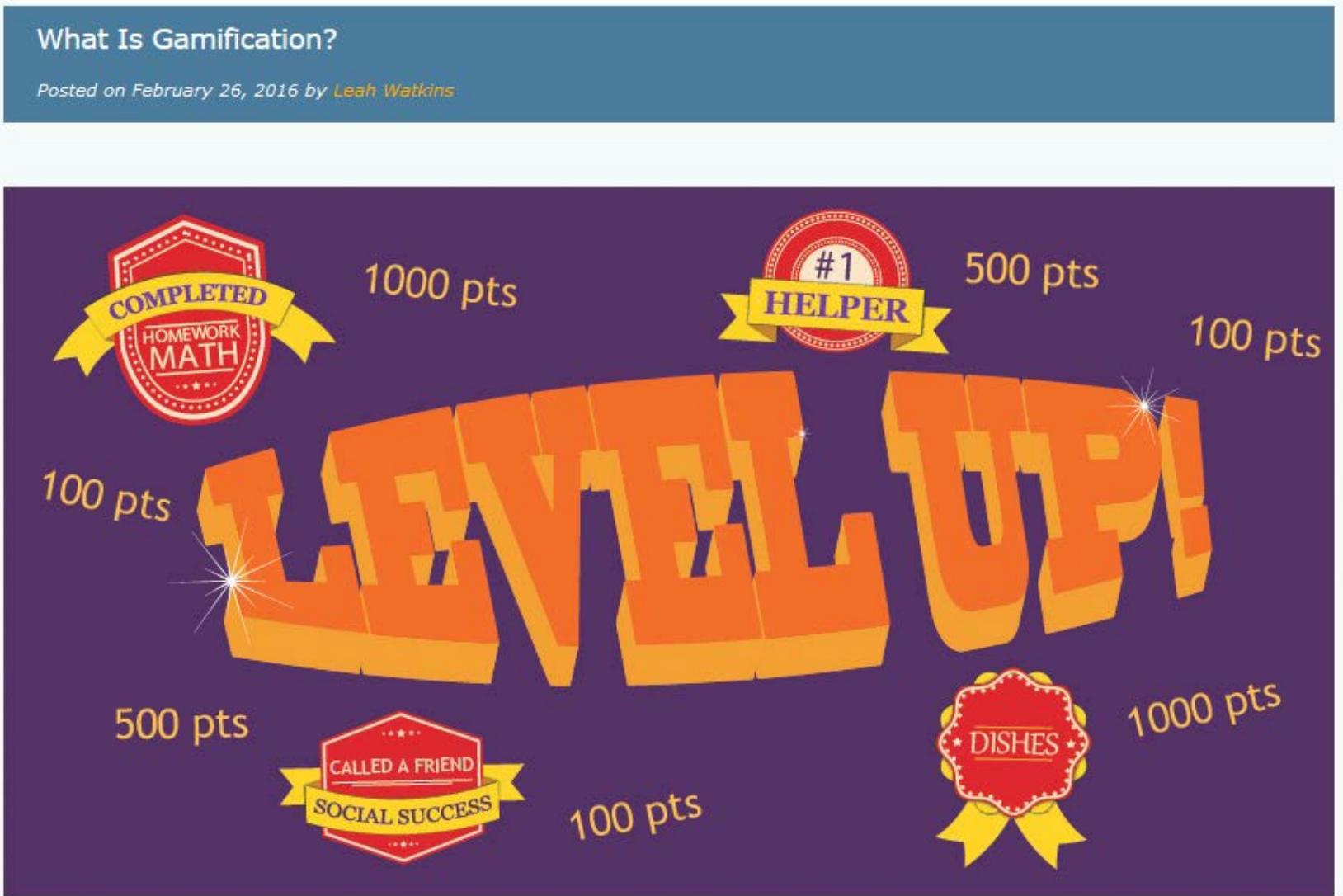
**Waste Matters**

**Waste Matters**

# Further Research

After our IBM presentation we wanted to justify our choice of creating a gamified app for children.

Additionally, we wanted to see if there were any design decision we could add or change to make sure our app could appeal to primary school children as much as possible.



## Designing Web Interfaces For Kids

By Trine Falbe

August 10th, 2015

Interfaces, Psychology, User Experience

## Designing For Kids Is Not Child's Play

By Becky White

January 20th, 2016

Kids, Research, Usability



"vast **majority** of kids (about **91%** by some estimates) play video games..."

"Game-based learning is **active learning**;"

(learningworksforkids.com)

"kids under the age of 7 mostly use **touchscreens** and apps (and **mostly games**), not browser-based applications and websites."

"children's apps use **full screen menus** to help kids navigate to different app sections"

(www.smashingmagazine.com)

# Prototype

When creating the prototype we first had to consider what would be the best software to make it in. After doing some research into this we decided we would use ionic. Ionic is a free and open source mobile SDK for developing native and progressive web apps with ease.

When approaching this as a development project, it was important to consider and research into every aspect of the app. The first part of the app that was researched into was the login section for the students and staff. After researching into this area we managed to find this guide <http://jasonwatmore.com/post/2014/05/26/angularjs-basic-http-authentication-example> It gave a very in depth, step by step tutorial on how to setup a simple login page with HTTP Basic Authentication using AngularJS,

and keep the user logged in after the page is refreshed. By following this guide we have managed to create a login page. Once this had been created we soon realised that the students would need a way of registering their accounts. After looking into the previous guide we found another, written by the same person on how to add a register section to the login page.

For the challenge section we thought it would be best to have a quiz. After doing some research into this, we found that you could make a quiz with just Html, css and some Javascript. There are also hundreds of examples online and we are drawing some of our ideas from CodePen.

Preview

Q Q C X

## Login

Username

Password

Login

Register



# Logo

The development stage of the logo/character which we had created in Illustrator. We had produced many shapes that are recognisable as carrots. Then created different kind of Iris and the head on top.

We wanted to make our characters branding look smart so we created circle and square glasses. The earth is to represent students from all around the world being able to learn how to stop food wastage. After that, we tried to match the eyes, body and head together and choose the best looking one.

As a group, we decided to name the app "Waste Matters". We tried several types of fonts which could be used for the name. We decided to use the font called "Sugarpunch" because that is what we have used in the UI designs and also it is easy to read.

*October Twilight Waste Matters*

**Kitten Bold**

**SUGARPUNCH**

**Corben**

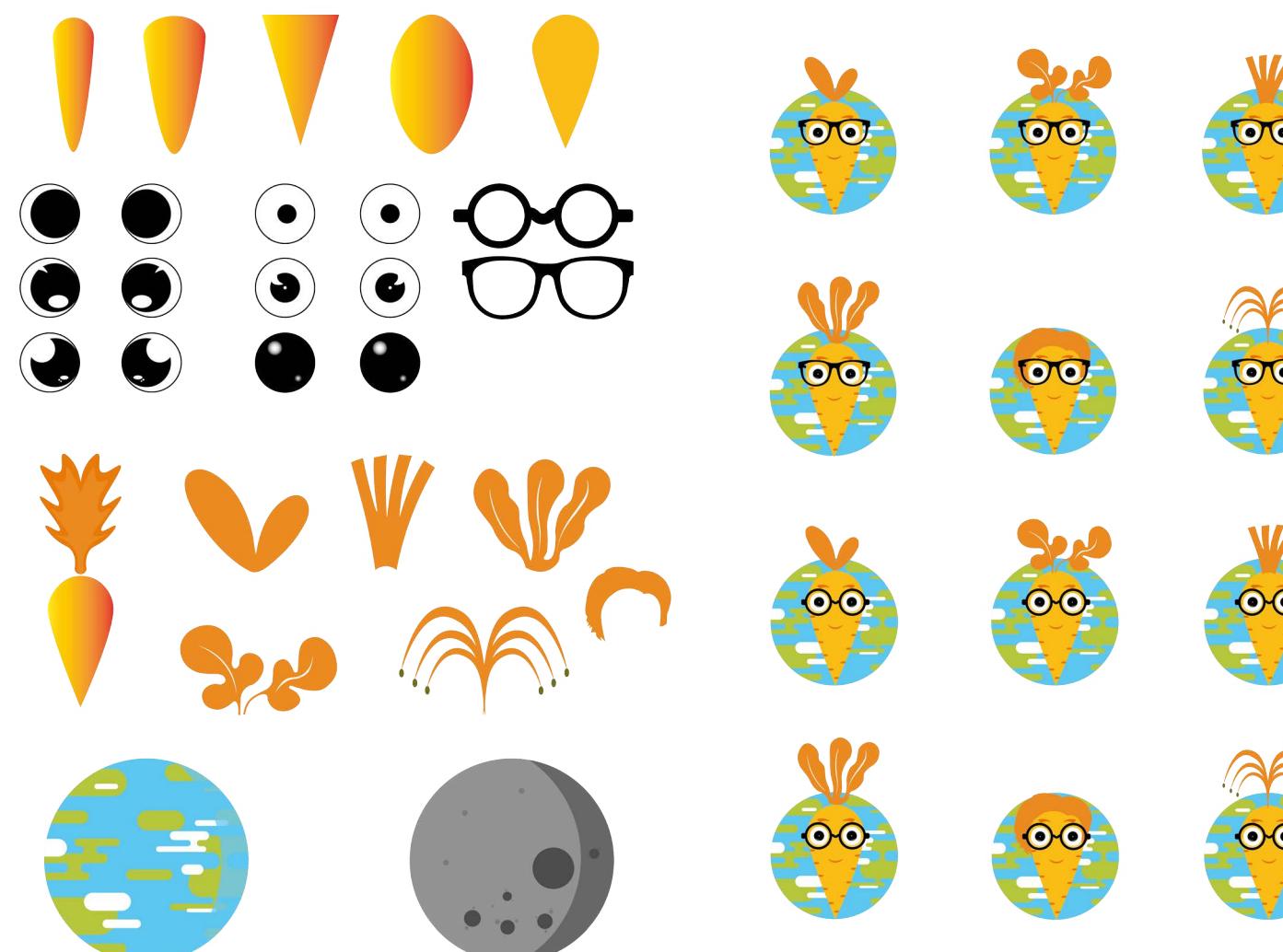
MP Sippin on sunshine

**Waste Matters**

**WASTE MATTERS**

**Waste Matters**

**Waste Matters**



# Sitemap

Before starting to update the designs, it was clear we needed to create an updated site map for how the new version of 'Waste Matters' layout guides the users are through the app.

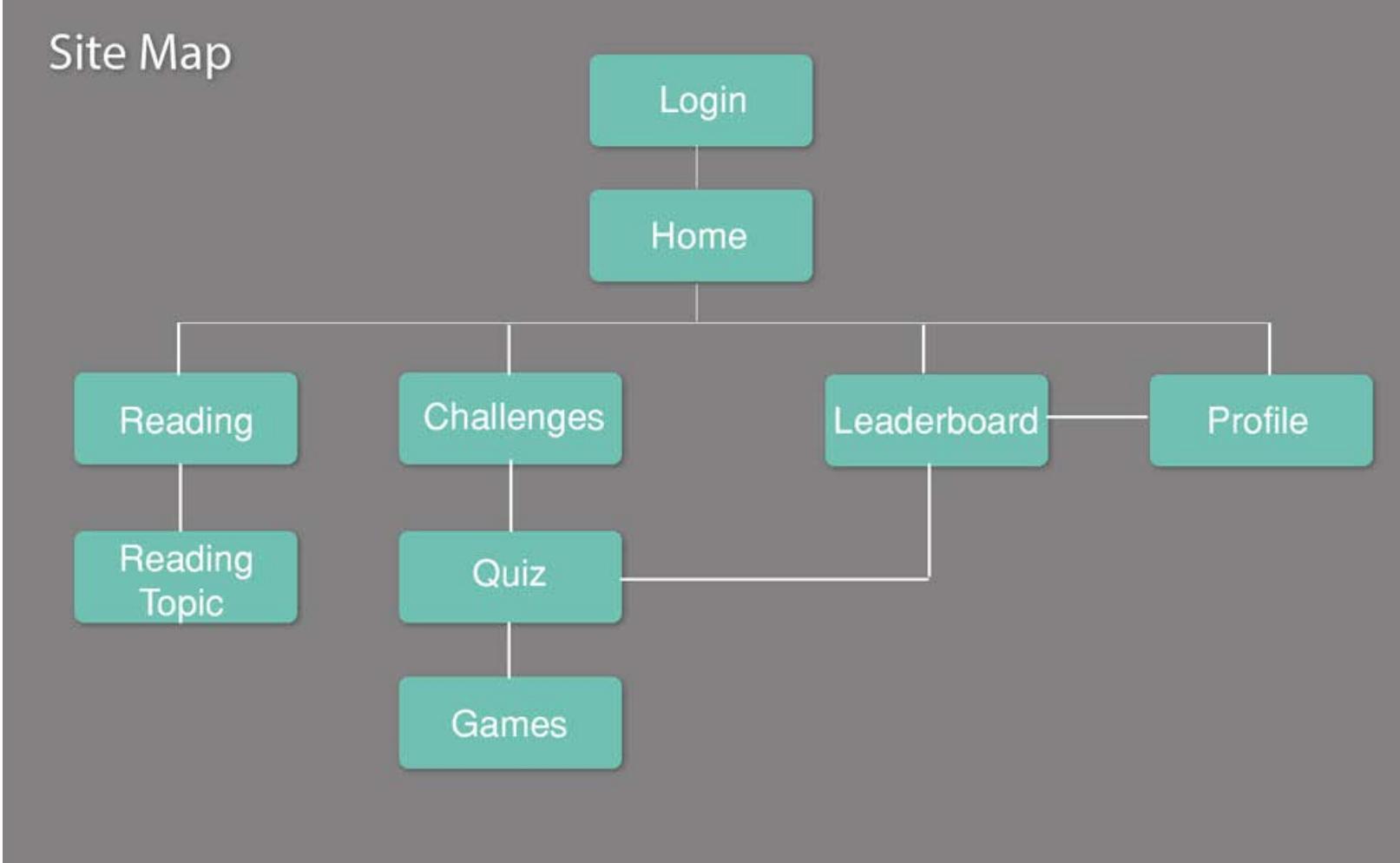
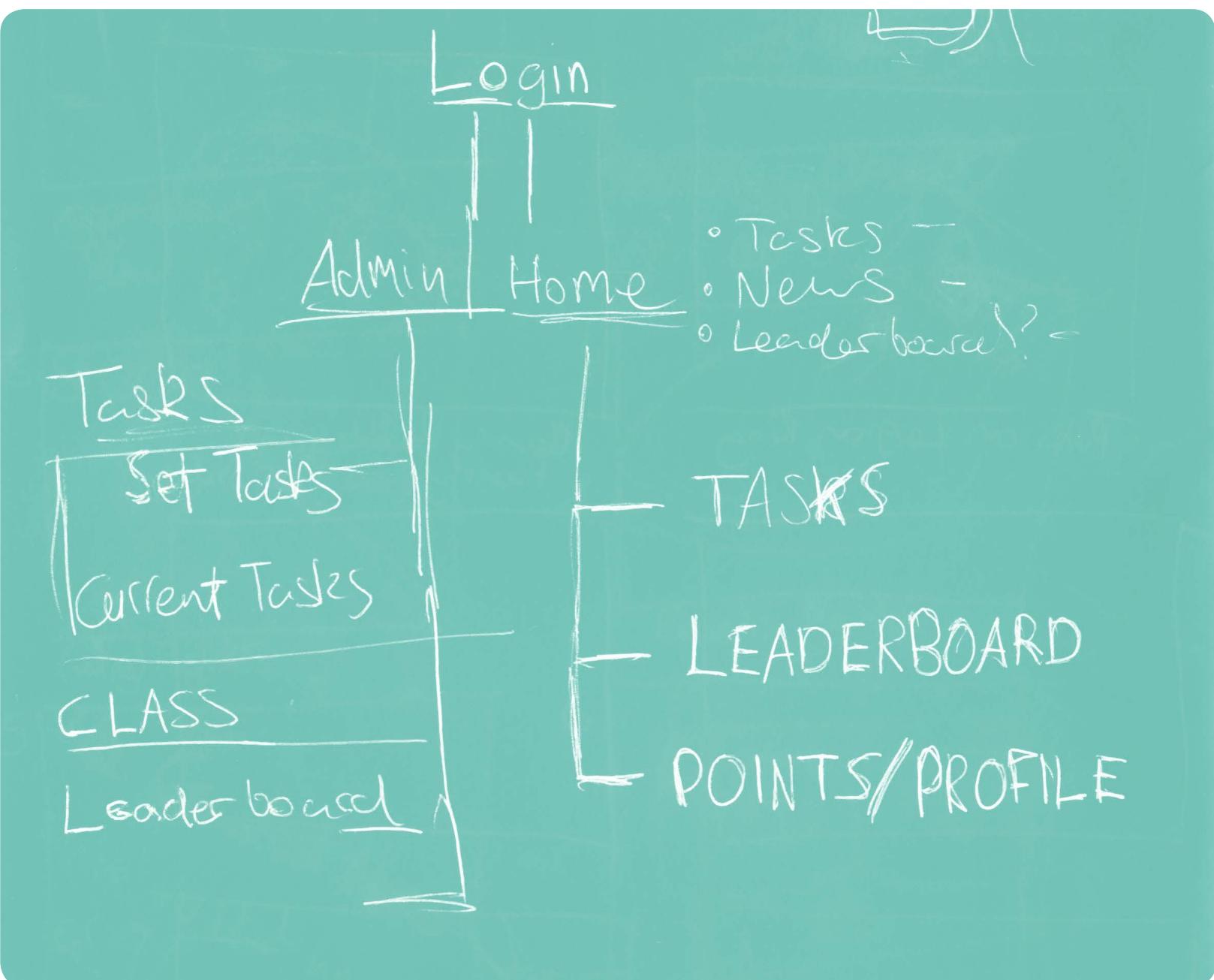
When sketching the site map, it had to be ensure that there was a login screen that would allow students or teachers to login.

The main sections of the app are the 'Tasks' page which has been renamed to 'Challenges' which will contain the quizzes or games for the users to play.

The 'Reading' page which was added after the sketch, which will contain information that the challenges will be based on.

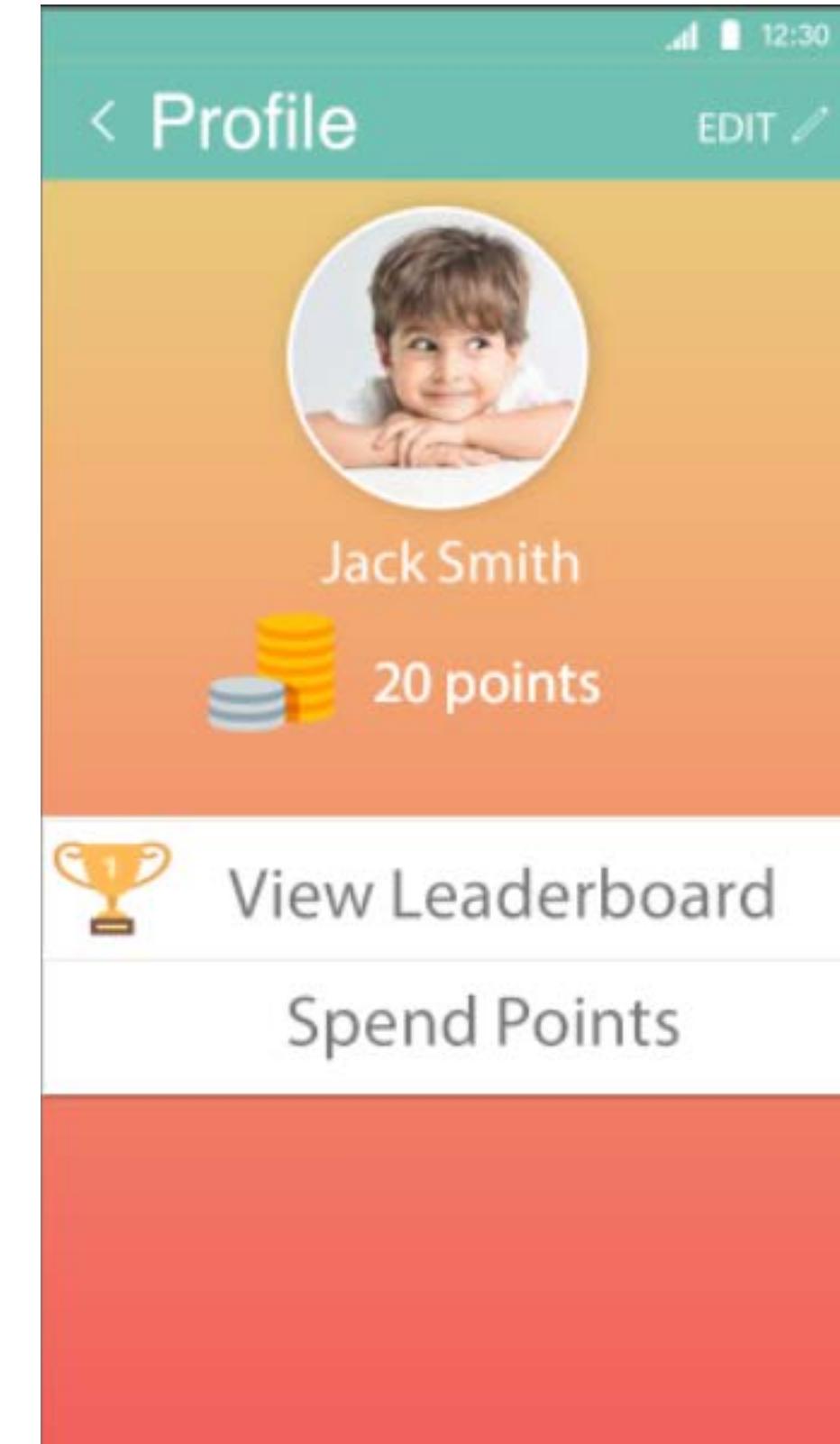
The 'Leaderboard' which will show the ranks of students by points in the class or year.

The 'Profile' page will display the users personal profile and display their points and any badge or achievements from completing challenges or reading.



# UI Designs

We came up with some different UIs that were not really based around kids to see how our app would look like for an older student.



# Final UI

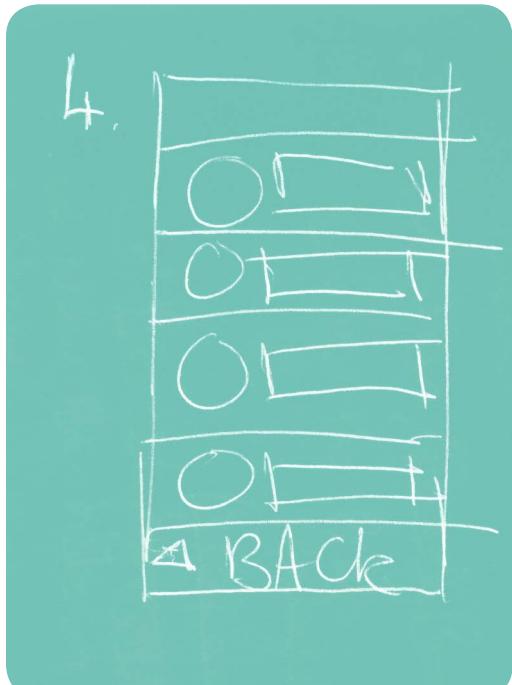
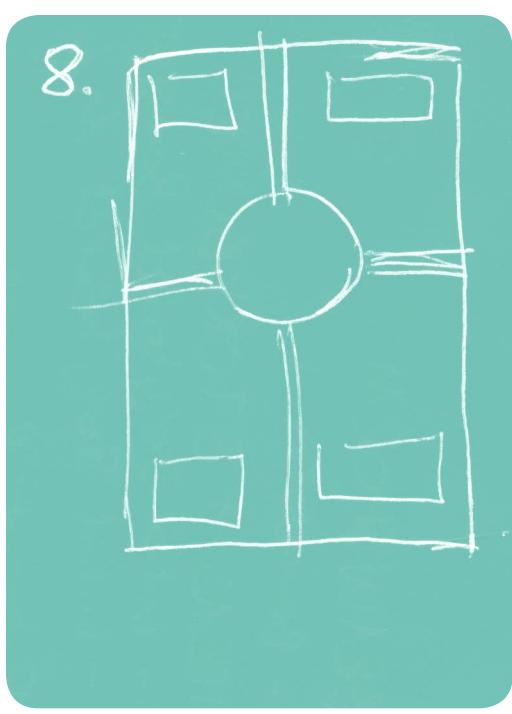
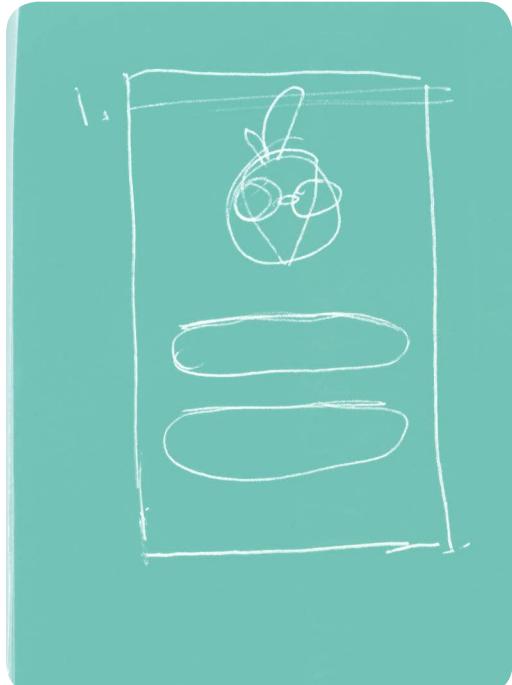
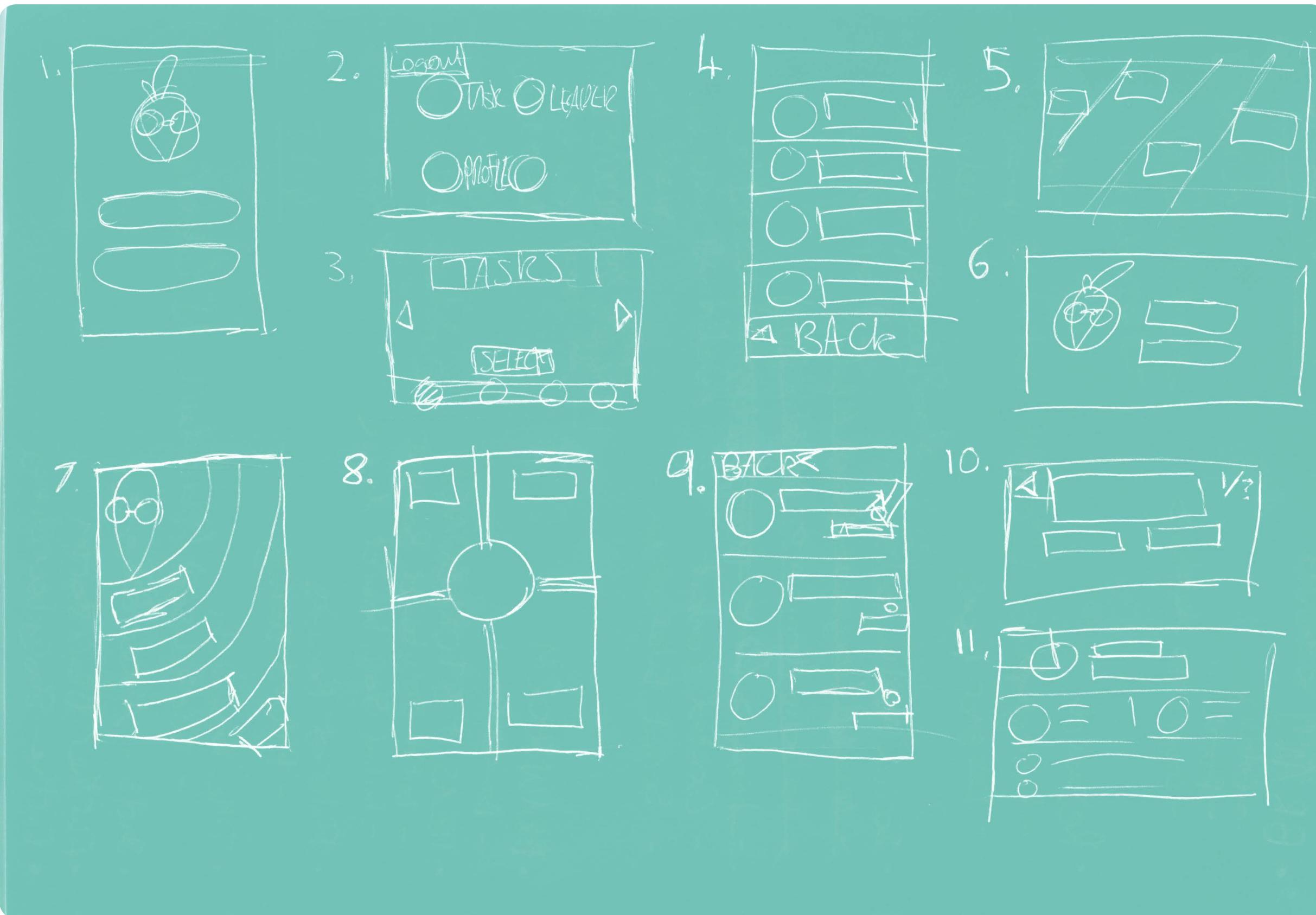
Updating the UI designs started by looking at the previous designs and applying feedback we had received on them. This included having whole screen menus for children to easily operate, and making the background a lighter colour so that items on a page were clearer.

Initial creating new concepts for design by quickly and simply drawing out eleven ideas for the design.

The best ideas from these sketches we took further to develop. This included sketch 1, to use as a login screen for the device.

Sketch 8 as the main menu design, as each section takes up a quarter of the screen and is easy for children to interact with.

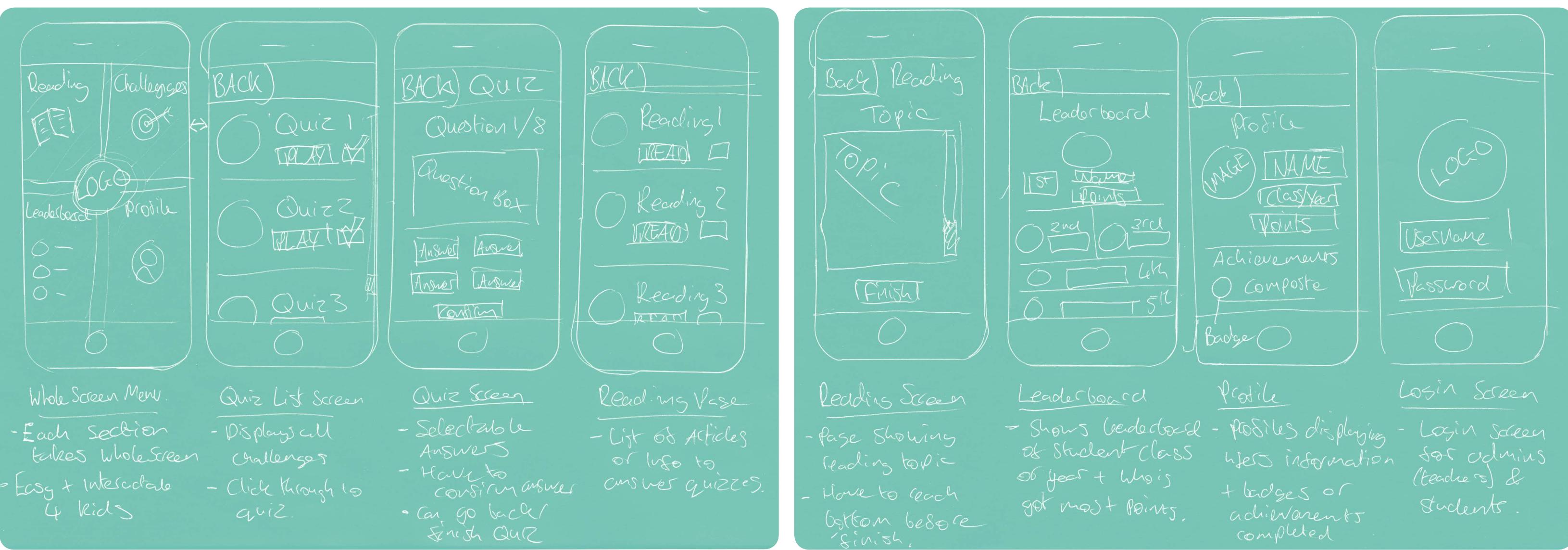
Additionally, sketch 4 was used to further develop the design of the sub-menus for each section.



# Final UI

Moving further with the quick sketch ideas, annotated versions of each important section were made to show the design and journey through the app.

Additionally, the 'Challenges' and 'Reading' sub-menus have been worked on so they lead to a 'Quiz' page or 'Reading' page respectively. Quiz pages contain the quizzes on reducing food waste. Reading pages host information that users can read and learn from, which they can be tested on in the quizzes.



# Final UI

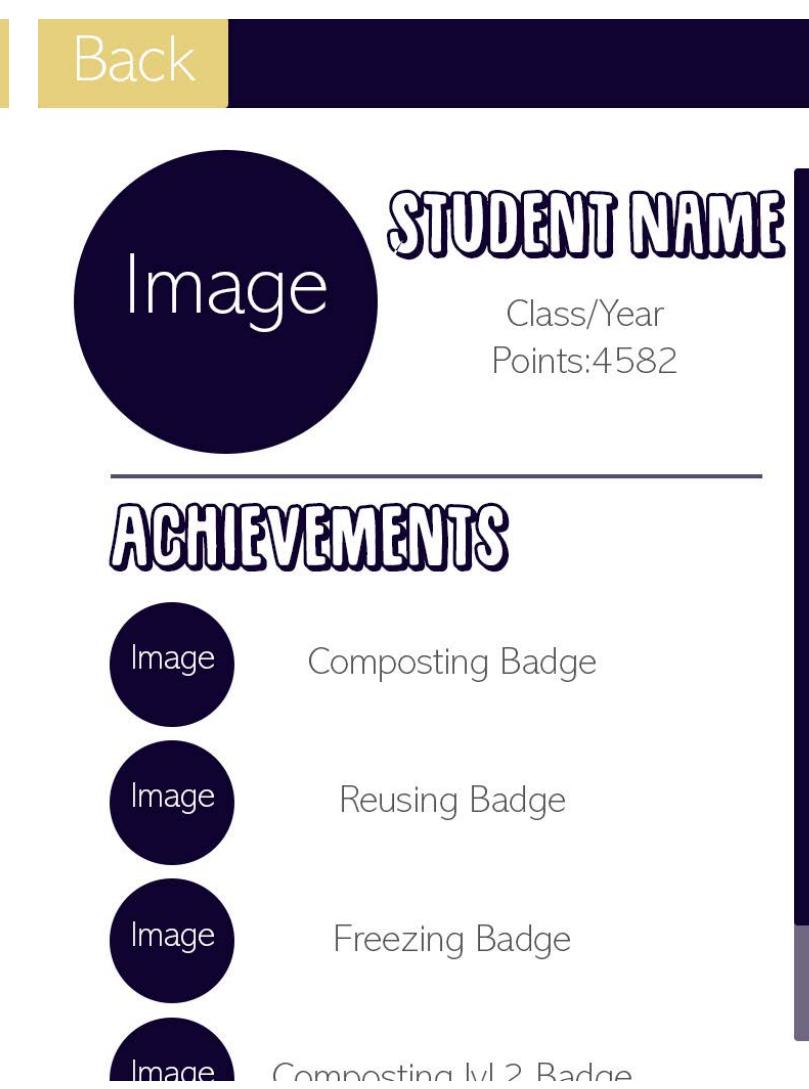
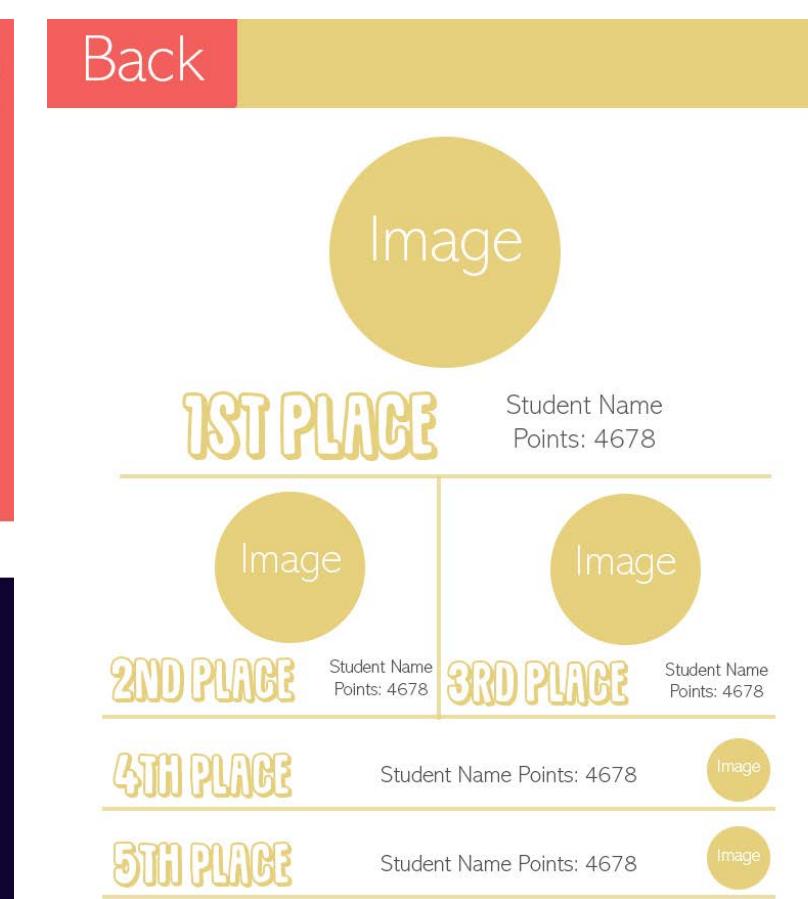
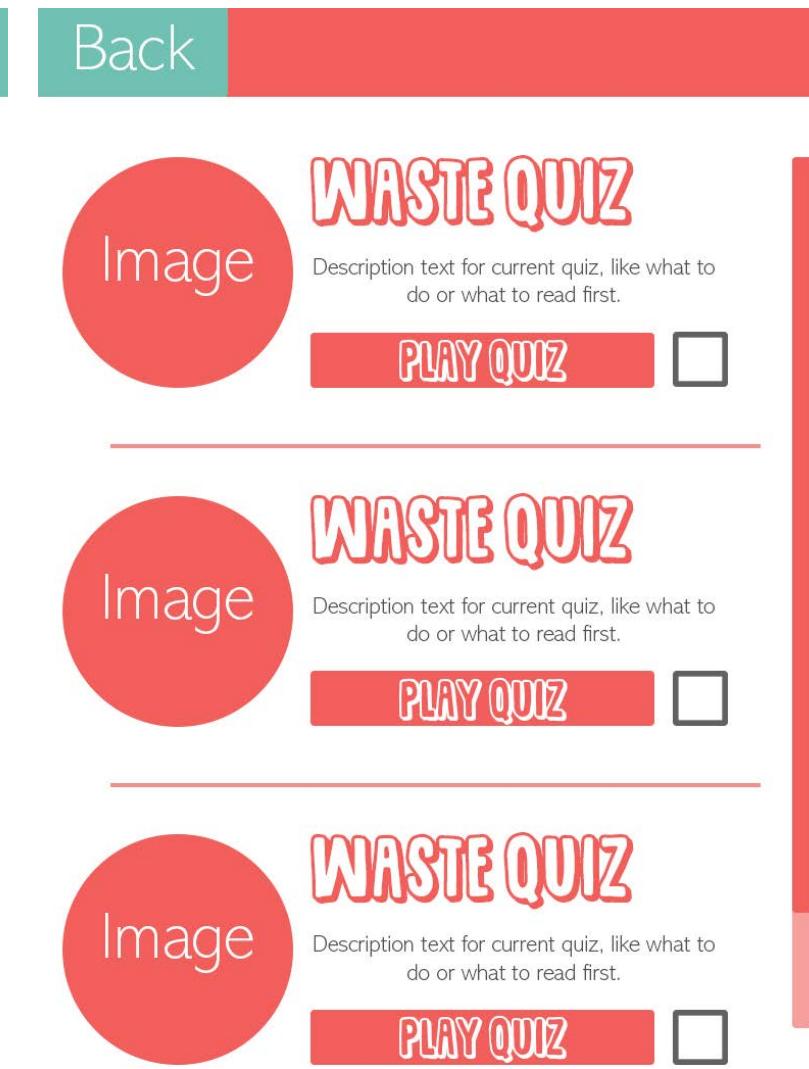
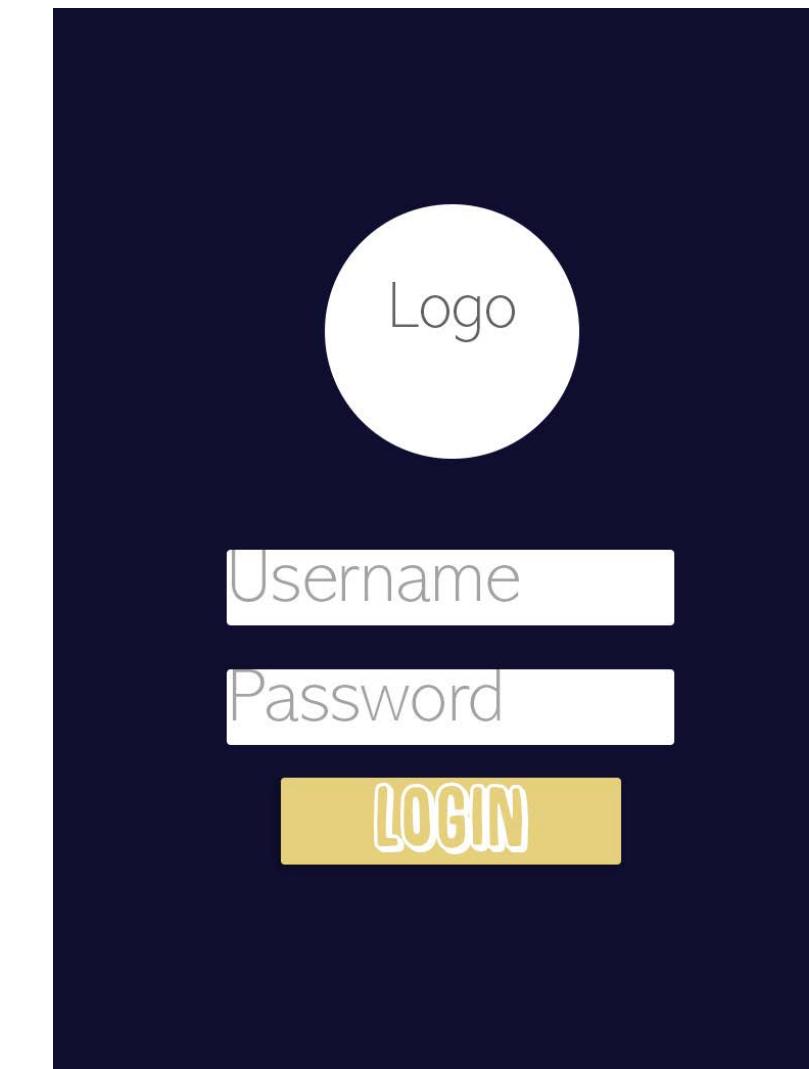
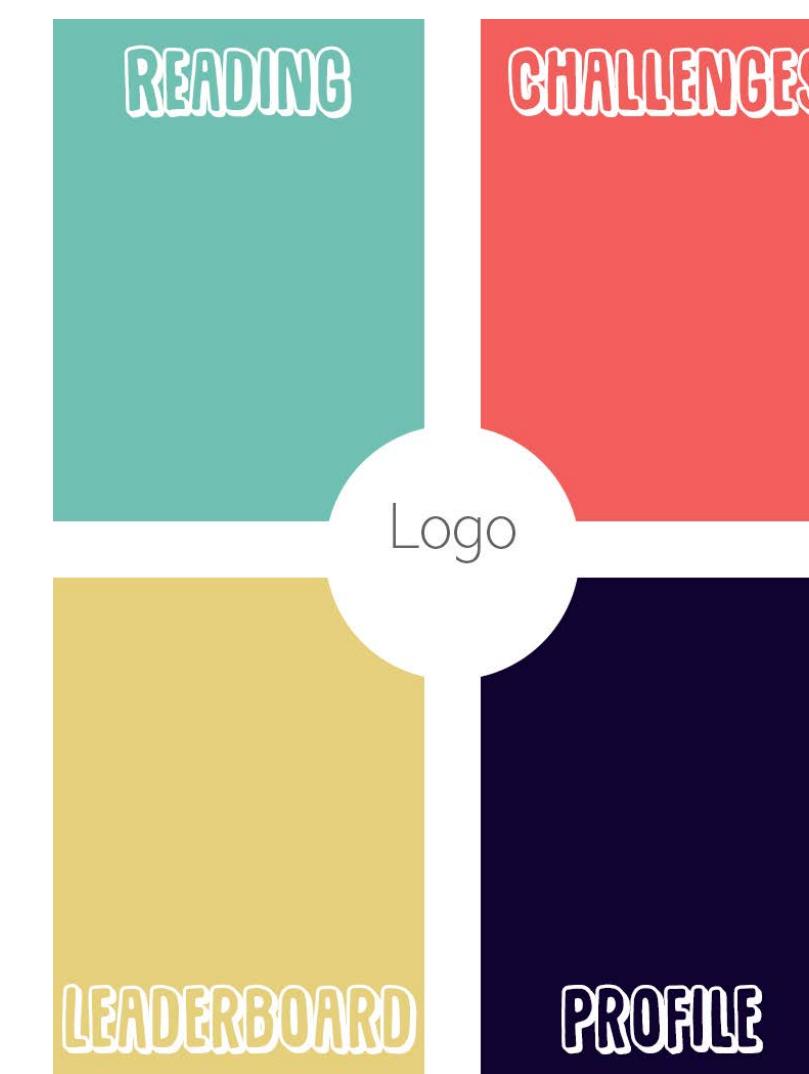
Developed mockups of the sketches were produced in Photoshop using the brand colours to separate each section of the menu and make it clear to the users which section of the app they are on.

Each sub-menu uses a similar layout as to not confuse the user, keeping 'Sugarpunch' font for headings and 'Extra Light Abadi MT Std' for type.

The Reading and Challenge sections each have buttons that takes the user through to information to read or a challenge to play, respectively.

The Profile section contains the user's information and badges or achievements they've earned from completing reading or challenges.

The Leaderboard section gives a list of the users rankings in terms of points earned by completing reading and tasks.



# Final UI

The Reading section of the app allows users to access information on topics about reducing food waste. These information topics can be set by an admin/teacher to their class. When completed information topics provide points to the user which appears on their profile. To complete or finish a information topic the user has to reach the bottom of the page before they can press the 'finish' button and collect their points.

The Challenge section of the app allows users to access quizzes or games that are based on information provided in the Reading section of the app. An example quiz would consist of multiple choice questions with one answer each, the user would have to select and answer before being able to move on to the next question. Once confirmed

the page will inform the user on the correct answer, and the context to why it is correct.

The image displays four wireframe screens representing different sections of the app:

- Reading Section:** A teal-themed screen titled "READING" with a "READING TOPIC" section containing text about reducing food waste. It features three circular "Image" buttons labeled "COMPOSING", "REUSING", and "FREEZING", each with a "READ" button and a checkbox. A large red "FINISH" button is at the bottom.
- Challenge Section (Waste Quiz):** A red-themed screen titled "WASTE QUIZ" with a "QUESTION 1/8" section containing a question. It features three circular "Image" buttons labeled "WASTE QUIZ", each with a "PLAY QUIZ" button and a checkbox. Below the question are four colored buttons: "ANSWER 1" (yellow), "ANSWER 2" (light green), "ANSWER 3" (blue), and "ANSWER 4" (orange). A large blue "CONFIRM" button is at the bottom.
- Reading Section (Continuation):** A teal-themed screen showing a continuation of the reading topic, featuring three circular "Image" buttons labeled "WASTE QUIZ", each with a "PLAY QUIZ" button and a checkbox.
- Reading Section (Continuation):** A teal-themed screen showing a continuation of the reading topic, featuring three circular "Image" buttons labeled "WASTE QUIZ", each with a "PLAY QUIZ" button and a checkbox.