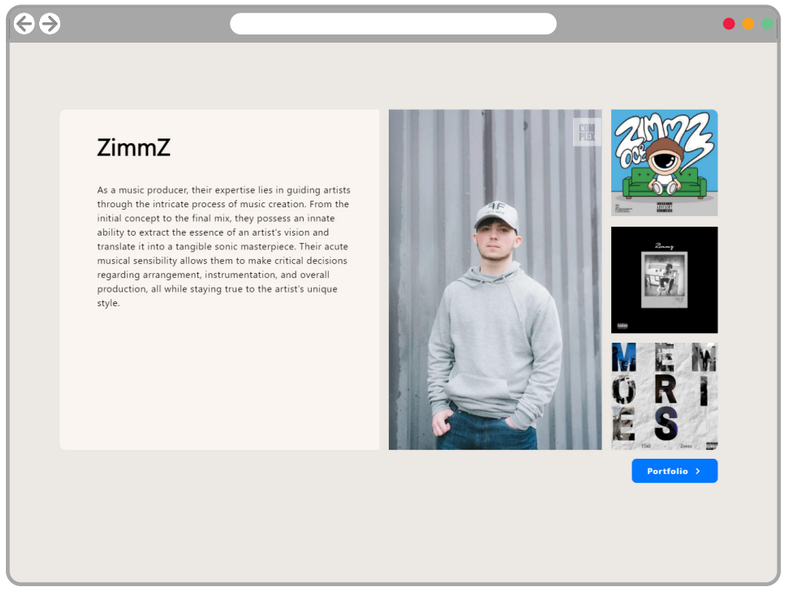
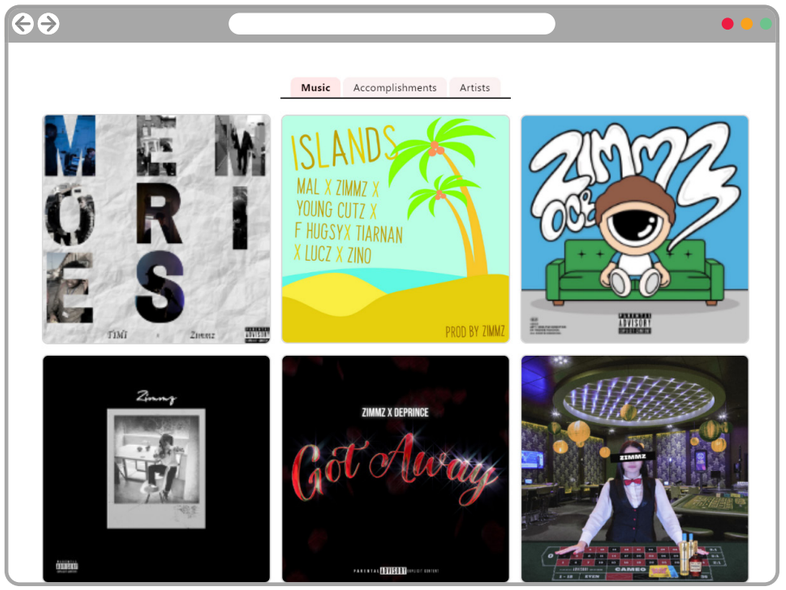
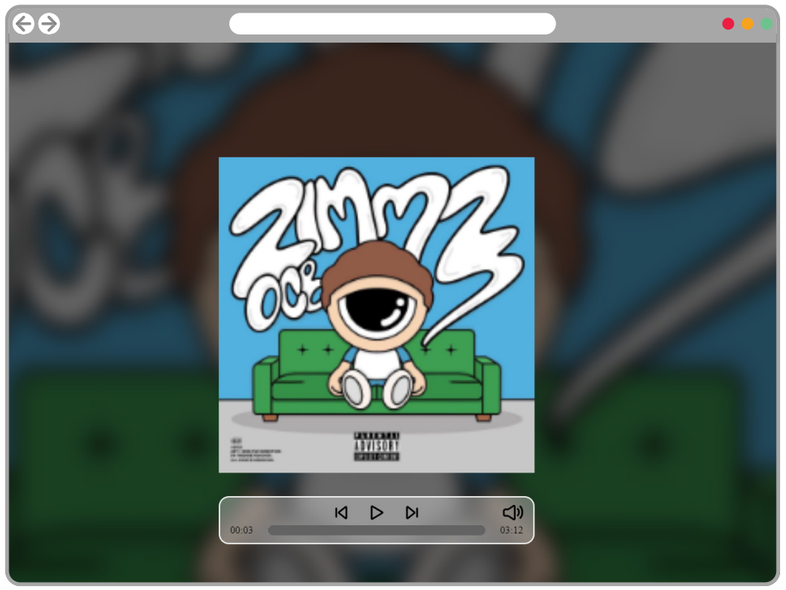
Lucca Muchmore Portfolio

Website

UX design for music artist website.







Navigating A Low Energy Future

My design scenario focused on a future where low energy is valued due to dwindling fossil fuels, demand for clean energy and cost of living.

Research Scope

Pg. 6

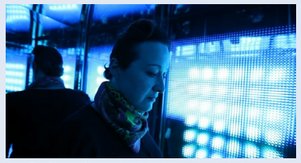
Research Questions and Project Scope

Scope:

The scope of my project will be focusing on low energy everyday interfaces of the future. We use machines every day such as cash points and self checkout kiosks. These objects have a high energy cost to them in order to maintain the convenience to users. I would like to look at the UX of how these new interfaces will affect a user, as well as asking how people will interact and navigate them, ultimately find out what potential there is for a low energy interface. By applying design fiction approaches and research conducted, I want to create a tangible Interface which could have every day use in an every day scenario within the next decade.

Research Questions

1. How will energy use and current demand affect user interfaces in the future?
2. What design principles should be considered when developing low-energy interfaces for different types of electronic devices?
3. What role does user feedback play in the iterative design process of low-energy interfaces and how does it contribute to enhancing the overall UX?



This is a design fiction object; The Photon Shower is a light therapy booth designed as a concept product for Delta airlines to remove/reduce jetlag for flight attendants. Designed by Sitraka (FIG 4)

Context

Pg. 9

Design Fiction

This section analyses design fiction and key figures in the field and their approach to creating design fiction objects.

Approaches to Design Fiction:

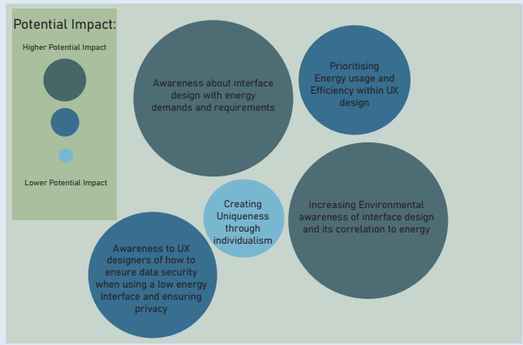
Design Fiction has been approached differently by different designers. Decisions about how to go about creating an object from the future often varies. The following approaches can be mixed and matched.

Influence

Pg. 16

Impact/contributions

Some of the Potential Impacts and Contributions that my projects research and object can affect on The UX Design Space.



Chat GPT 4 created images

Phases Overview

Pg. 17

Overview of the phases and some potential challenges that can arise when carrying out each section.

Start

Phase 1: Research

Objective:

- Secondary Research
- Creating user Persona
- Scenario making

Potential challenges:

Information Accuracy, Relevance of Scope

Phase 2: Ideation

Objective:

- Co Collaborative workshop
- Non participant observation

Potential challenges:

Bias, Time Constraints, Clear Context/goal

Phase 3: Creating and Realisation

Objective:

- Prototyping
- User Feedback

Potential challenges:

Feedback Bias, Feasibility

Phase 4: Completed Deliverables

End

Objective

- Completed Working Prototype

Potential challenges:

Time Constraints

Developing a Low Energy Checkout

From Font choices to colour palette the interface and process document was designed to be low energy.

Design Fiction/ Speculative Design

The phrase "Design fiction" was coined in 2005 and is a form of speculative design to express objects of design from the future. This is written about in the book 'Creating Design Fiction' by Julian Bleecker, who is both an engineer and a designer. He created 'The Near Future Laboratory' in partnership with Bruce Sterling.

In the book *'Speculative Everything' by Anthony Dunne and Fiona Raby 2013* , they talk about the different future scenario in which they show the idea of PPPP which refers to the futures that are possible, plausible, probable and preferable. The aims of my project is that it falls into being a future 'PPPP' scenario, with both the object I have created and my scenario of needing low energy alternative for the future.

Methods and Techniques of Design Fiction

Some techniques that I've used from my original selected approaches to explore design fiction prototyping were:
Scenario: An important step in creating a world for this object to exist and allows for me to conduct my user research and understand how people will interact and behave in a low energy future.
Prototyping : Especially relevant as it allows someone to experience the object and allows for user feedback on how it feels and works. It is the final step to completing my outcome as set at the start.

Key Takeaways

Producing a speculative design based on the near future

Containing 'PPPP' - Possible, plausible,probable, preferable

Exploring design fiction through scenario & Prototyping

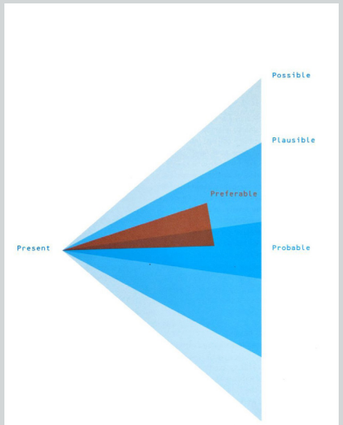


Fig 2. PPPP by Anthony Dunne and Fiona Raby 2013

Analysing Existing Interfaces

Following secondary research into UI/UX energy saving methods and techniques in interface design I looked at and analysed existing interfaces of self checkouts for colour, layout and navigation. I also noted the previous research into what makes a low energy interface to view these through the lens of low energy.

Fig 7. Waitrose Self Checkout by Lucca Muchmore 2024

Fig 8. Sainsburys Self Checkout by Lucca Muchmore 2024

Fig 9. Tescos Self Checkout by Lucca Muchmore 2024

Discoveries from the self ethnographic research:

- Unused space
- Images and videos
- Bright colour scheme
- Idle sitting for long periods of time drawing power
- Scrolling up and down
- Thick text

Key Takeaway

- Self checkouts are currently made with many power hungry components
- Always in a state of power consumption even when not in use

Initial Ideas

Generating via sketchbook some initial ideas for interfaces of the design. I decided to base my interface from the Waitrose self checkout, as it was one of the newer models. Through conducting my interview and non participant approach I established a good basis on how they work for customers and staff who operate the machines.

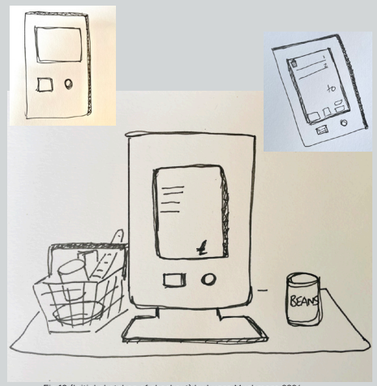


Fig 18 (Initial sketches of checkout) by Lucca Muchmore 2024

In addition to initial ideas and sketches I took part in crazy 8s where I created 8 designs in 8 minutes to help generate different ideas and variations on what it could look like.

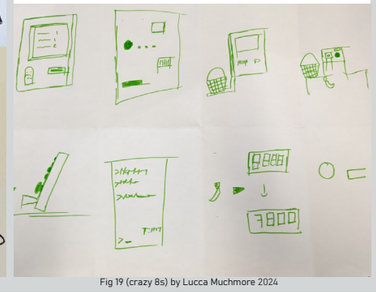
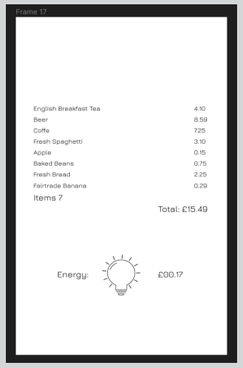


Fig 19 (crazy 8s) by Lucca Muchmore 2024

New Screen / New Interface

Taking on board feedback from my users, I began to make changes to the wire frame with the new screen size.

The new screen would set up to allow only a few parts of the screen to refresh. I also used the same name of product as talking to tutors it would be helpful to add the name of the project to it which would help with its branding, identity and communicates its overall purpose.



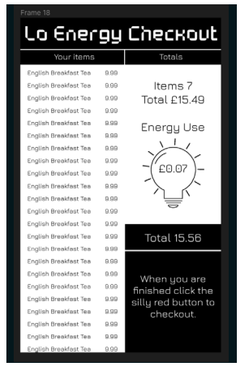


Fig 67. Screen shot of wire frame of GUI interface development by Lucca Muchmore 2024

Rebuilding the Frame

An assembly of all the model components that hold the technology elements together, created in 3d print using filament made from cornstarch.

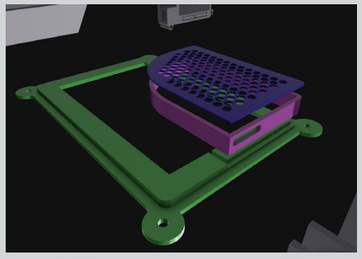


Fig 80. 3d dsign for components by Lucca Muchmore 2024

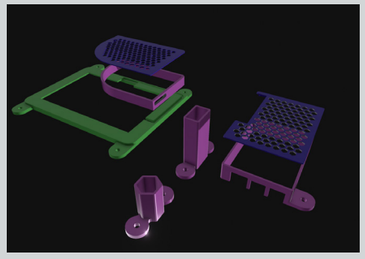
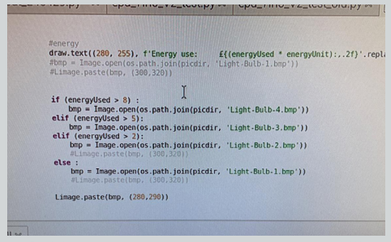


Fig 81. 3d design for the components by Lucca Muchmore 2024

Energy Meter

Iconography

FIG 67.5 light bulb icon changing by lucca muchmore



```
#energy
draw.text((280, 255), f'Energy use:     £{(energyUsed * energyUnit):,.2f}'.repla
#bmp = Image.open(os.path.join(picdir, 'Light-Bulb-1.bmp'))
#Limage.paste(bmp, (300,320))


if (energyUsed > 8) :
    bmp = Image.open(os.path.join(picdir, 'Light-Bulb-4.bmp'))
elif (energyUsed > 5):
    bmp = Image.open(os.path.join(picdir, 'Light-Bulb-3.bmp'))
elif (energyUsed > 2):
    bmp = Image.open(os.path.join(picdir, 'Light-Bulb-2.bmp'))
    #Limage.paste(bmp, (300,320))
else :
    bmp = Image.open(os.path.join(picdir, 'Light-Bulb-1.bmp'))
    #Limage.paste(bmp, (300,320))

Limage.paste(bmp, (280,290))
```

Fig 68. Code of icon changing based on items scanned by Lucca Muchmore 2024

I wanted to improve elements guided by user and peer feedback. It was also important to communicate the energy usage to a user in order to highlight the projects aims.

Previously in the wire frames I chose to use colour but due to the higher energy used in producing colours my colour palette choices were limited to black and white and so I needed to adapt the design around these parameters.

Through the group discussion it was suggested to use lines around the bulb as to show it brightening and display as more energy is used the brighter and longer the lines get.

Within the code they are set to:

- 0-2 scans
- 2-5 scans
- 5-8 scans
- 8 + scans

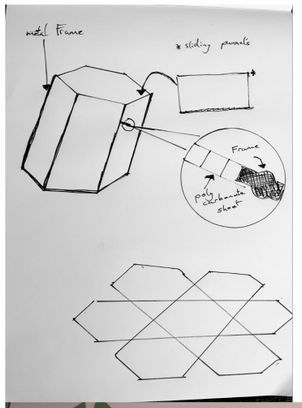
Key Takeaway

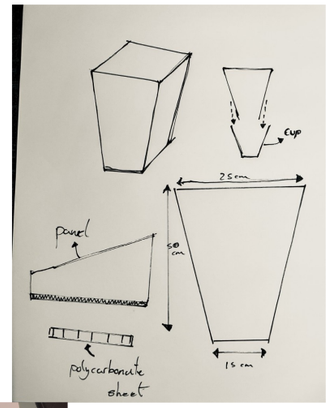
- Using group discussion to develop visual energy clues for the user.
- Discussing the colour palette choice with explanation on why they have been made with Low energy in mind.

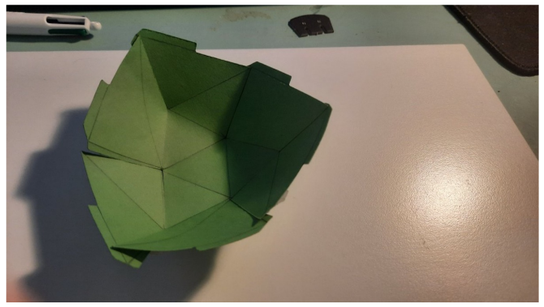
Tiny Arboretum

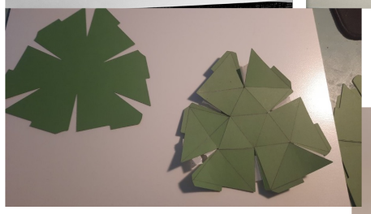
A project that uses tessellating modular building components to create different structures that become arboretums for plant life. These can be on a smaller scale or enlarged to house and control different growing climates for plants.

FMP(Tiny Arboretum): Design development









Through my experiments I have been finalising the shape of the arboretum.

FMP(Tiny Arboretum): Research

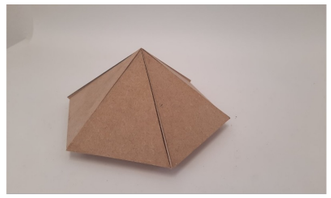
My research into different environments

My research in to artists for design inspiration

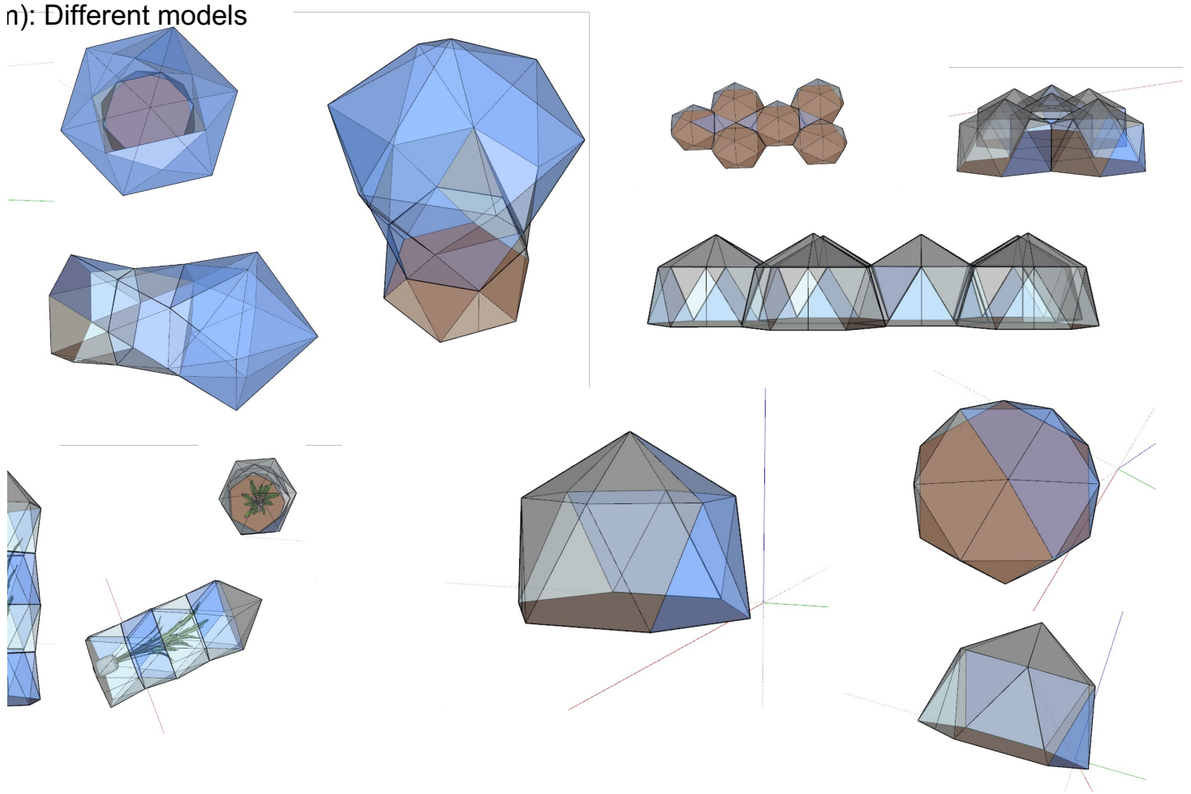
Artists:
Derek Lerner
Nam June Paik
Thomas Heatherwick

FMP(Tiny Arboretum): Design development pt 2

Using different processes I have been able to create repeating triangles which allow me to form different shapes.

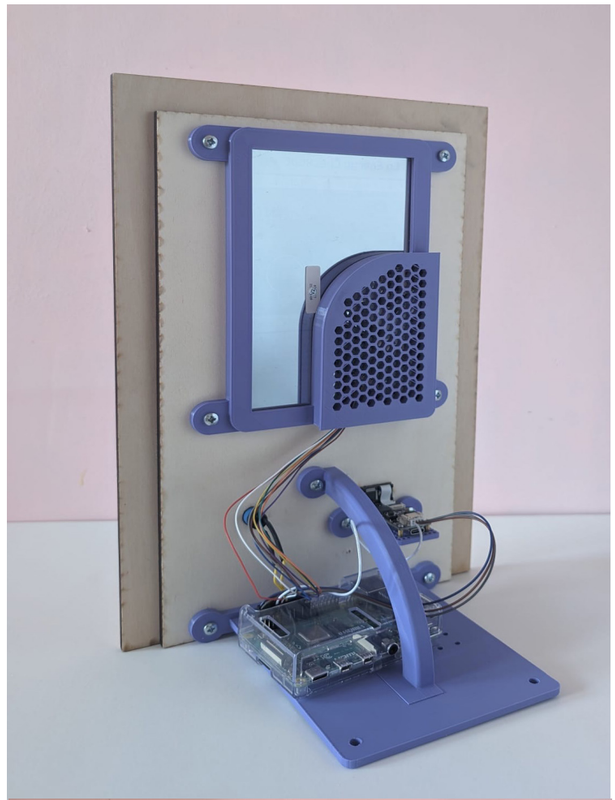


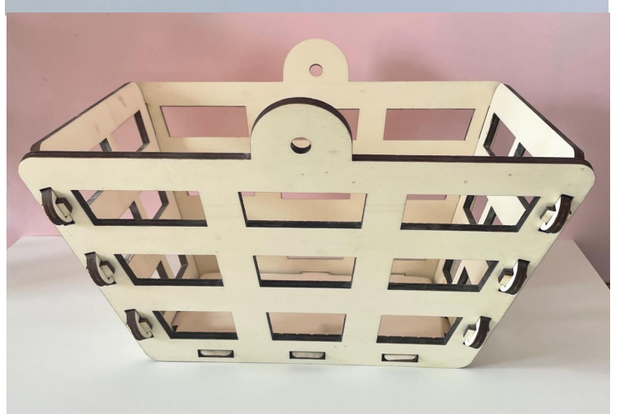
n): Different models

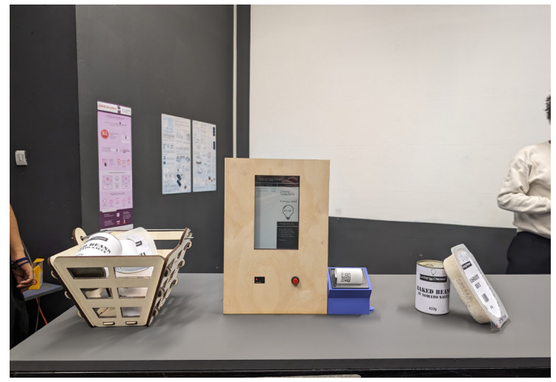


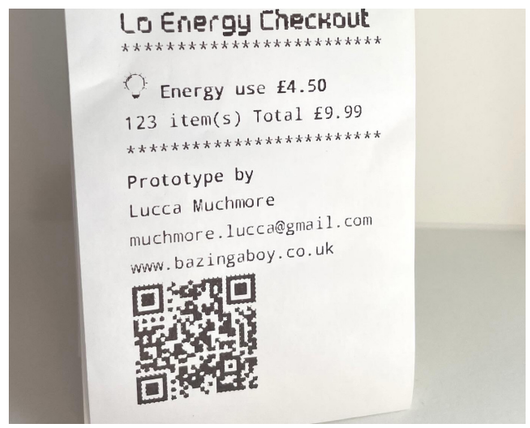
Developing a Low Energy Checkout

Self checkouts are stealth energy use machines - Machines that are always on and never turn off, constantly drawing power. I created a low energy version of a check out, using an interface and components that use approximately 12% of the energy used by a regular checkout



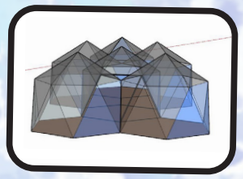


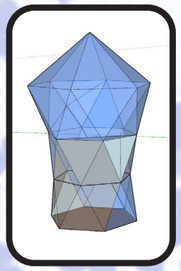




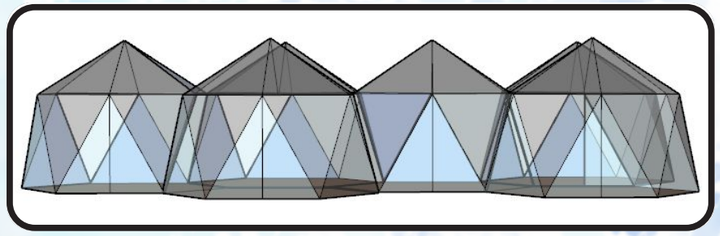
Tiny Arboretum

A Tiny biosphere that can create the best growing environment for any plant, from rainforest settings to deserts. Modular in design and able to grow with your plants. Controlled by app & Raspberry Pi Technology and helps you understand how your plant likes to live.





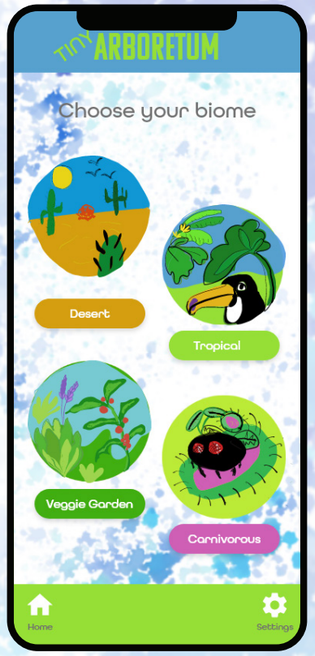
Biome can grow to any desired plant or garden size.

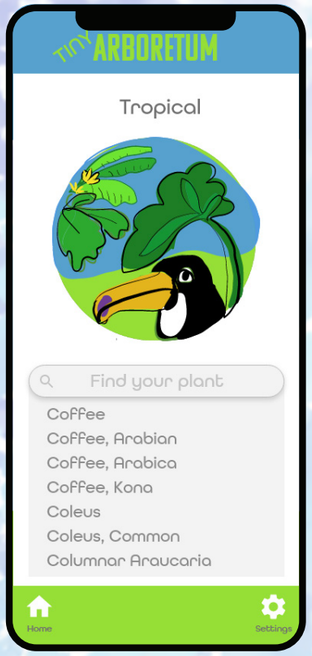


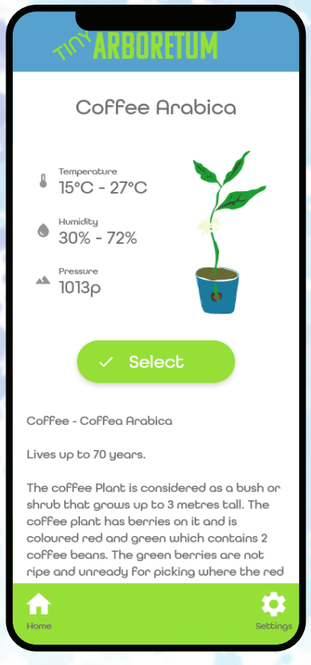
Modular Building Components: Make Your Biome Shape & Join with Magnets.

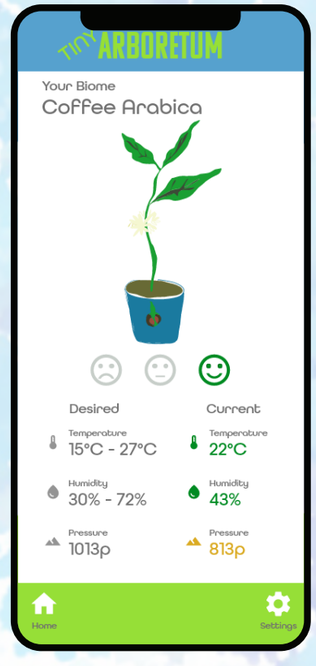
Growing a Coffee Plant

User Friendly App:
Select your plant & grow in it's optimum environment.









Raspberry Pi technology:
Can control the growing environment* Using controlled heat pads, fans and more..

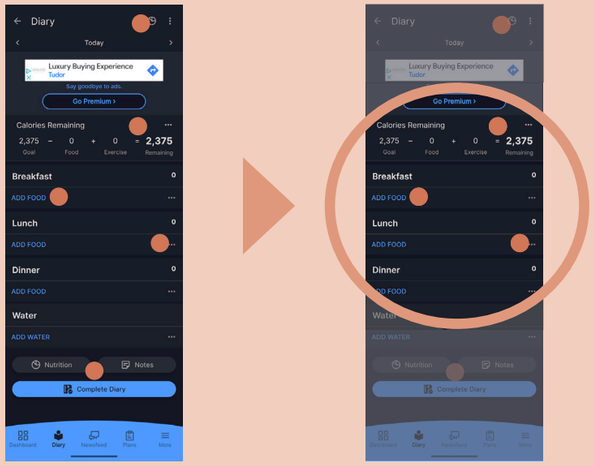
*Currently controls Temperature- Moisture & Light to follow..

Grow any plant to any scale from your kitchen table, through to a walk-in biosphere rainforest at the top of a snowy mountain or space. It has potential to grow for food or materials.

My Fitness Pal Case Study

Project that undertakes different forms of in depth research to understand how a fitness app is engaged with by users and the design and user challenges it faces in order to create solutions for a user experience

Autoethnographic Research > Exploring The Diary Component From A Users Viewpoint

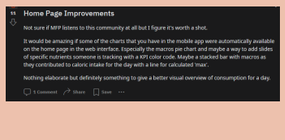


After conducting initial autoethnographic research we needed to develop and narrow the interaction which helped to provide key insights on both a first and second level.

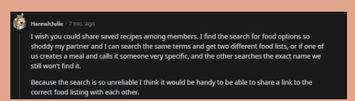
Online Ethnographic Research > Research Progression

The evolution of my research question was to gather more data and then get more specific, this was managed through three iterations of the research questions.

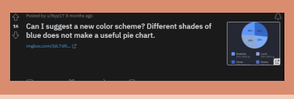
1 What are the main user issues that occur when using the my fitness pal?



2 What is confusing about the interface or what can be improved in the diary feature?



3 What are some issues with the scanning and adding food to the diary?

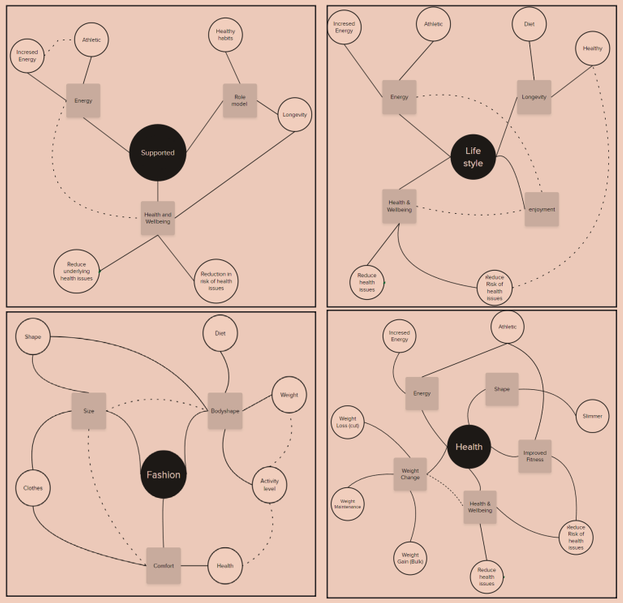


System Maps

The process of developing the system map involved trying to make the relationships clear between the stakeholders.

It needed to show the branches that come from this and also how they affect each other and any two way relationships.

Each system map uses a persona type and evaluates the stakeholders that affect the main stakeholder.



Key Insights

User Group

HEALTH

Action

Recording food portion size to get correct macro nutrients and calories

Outcome

Choosing the correct portion/serving size efficiently quickly

Restriction

Serving sizes are not standardized and have unusual portion sizes and don't use a constant size

User Group

LIFESTYLE

Action

Checking progress through the day and week an being able to clearly see

Outcome

See clearly and have a good general idea of the remaining calories

Restriction

Total calories for day is too small, colour scheme doesn't work well and is plain text.

User Group

FASHION

Action

Recording food to see macro nutrients and calories

Outcome

Locate and interact with the add food button and find food for a meal

Restriction

Interface becomes clunky and cluttered as the day proceeds

User Group

SUPPORTED

Action

Look at progression though the tables and numbers

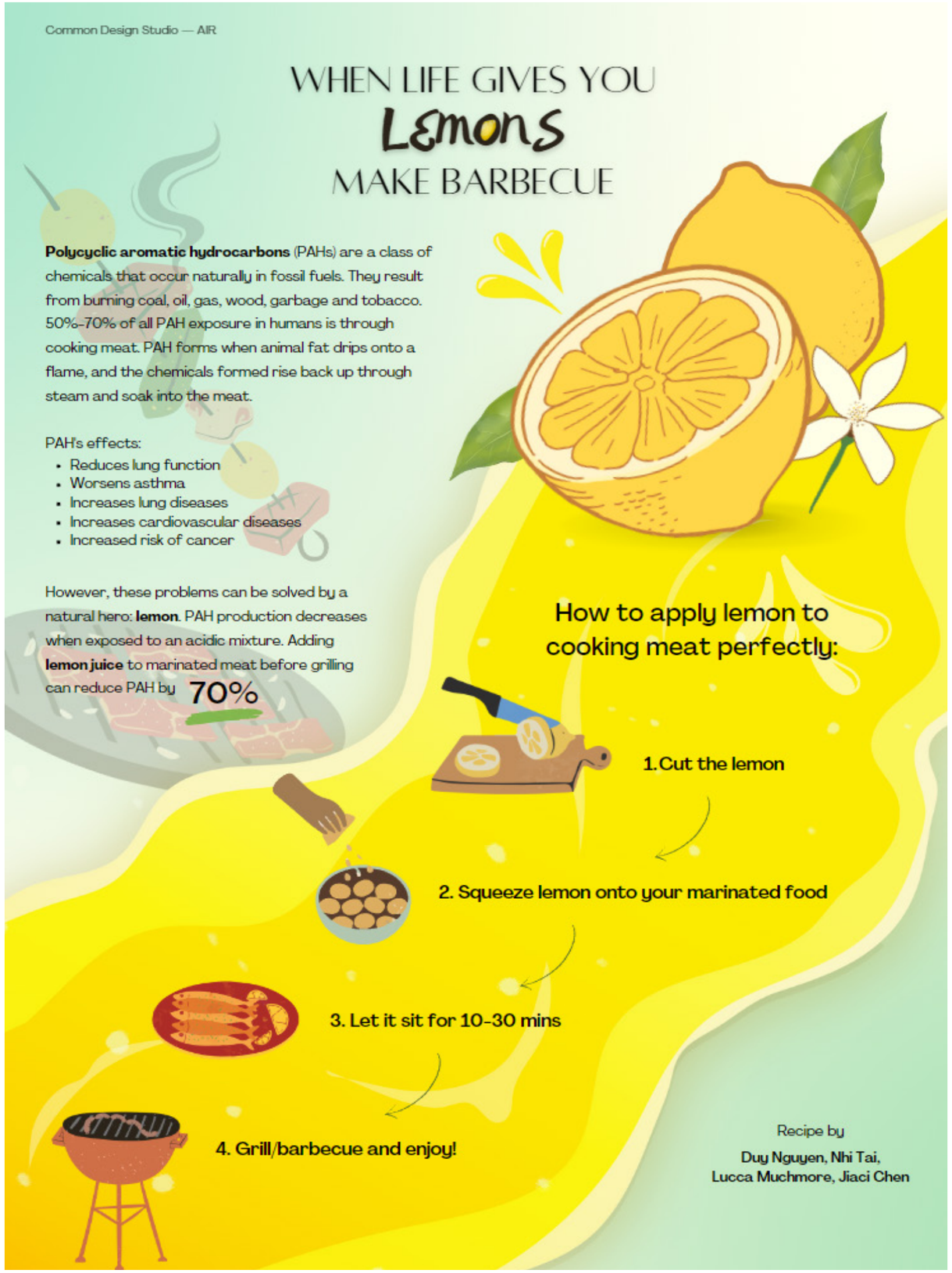
Outcome

See a clear what and how much they have consumed over weeks/months

Restriction

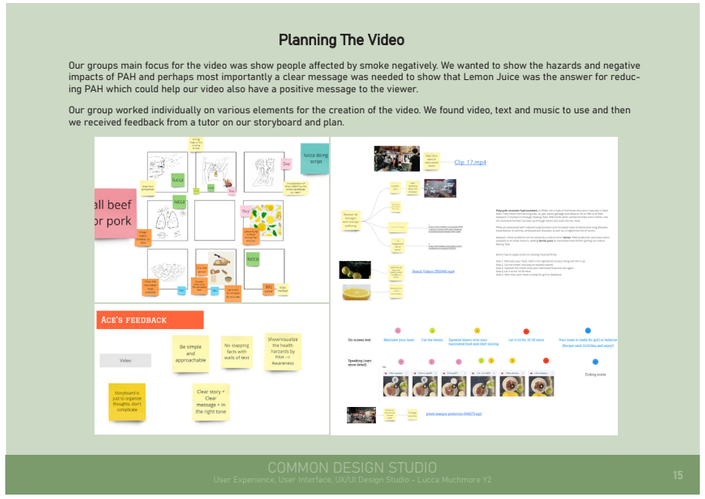
Inability to clearly see progression and analyse what food has become a problem

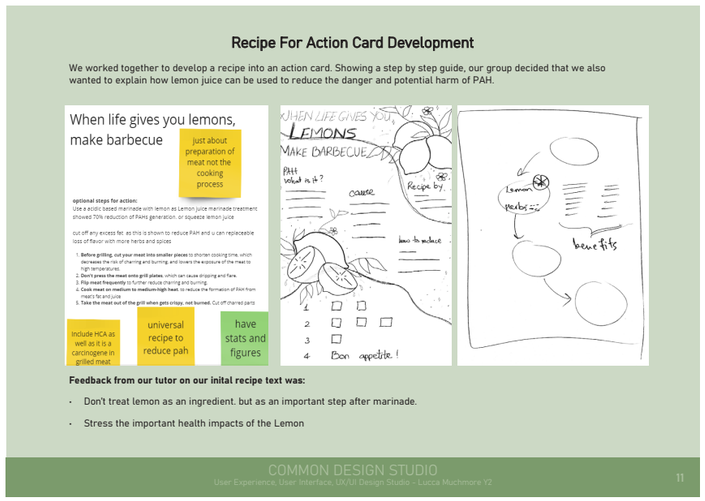
Each key insight from the user groups is supported with some key pieces of evidence, such as interviews and online ethnographic research. Developing the personas help one understand who they types of users are on the app, what their motivations are and how they experience it. One of the main goals of conducting the research was also finding efficient solutions to user frustrations. The results of the different kinds of research could be used to prototype, develop, and ultimately help inform change helping to improve an apps popularity and ratings.



Common Design Studio

International collaborative project - part of a design competition for show in Melbourne Australia. We partnered with different groups to devise creative solutions to an environmental problem, in this case the concept was 'Air'.

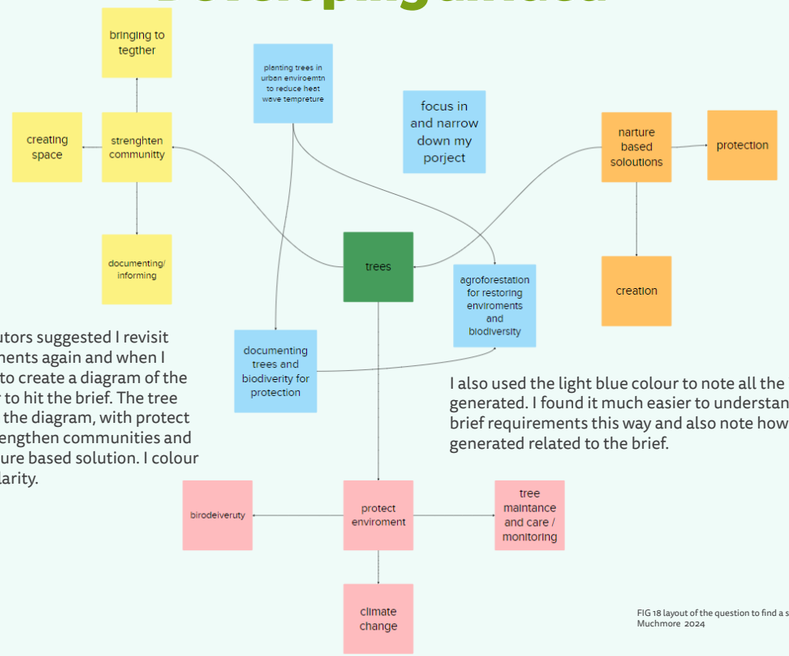




Big Tooting Tree Quest

Community App quest that sets out to engage & strengthen local communities through biodiversity & tree life.

Developing an Idea



After one of my tutors suggested I revisit the brief requirements again and when I did this I decided to create a diagram of the key areas in order to hit the brief. The tree focus is central in the diagram, with protect environment , strengthen communities and importantly a nature based solution. I colour coded these for clarity.

I also used the light blue colour to note all the ideas generated. I found it much easier to understand the brief requirements this way and also note how the ideas generated related to the brief.

FIG 18 layout of the question to find a solution by Lucca Muchmore 2024

Idea

The central focus within the app would be to focus on the Earth's total collection of carbon with an understanding of this at local community level. The carbon capture which could be seen as 'game points' , would be collected from the monitoring and caring for local trees in which everyone was able to contribute. Happy bi-products would be physical activity, engagement with nature and also being part of a strengthened community interest area.

FIG 11 carbon collected goal by Lucca Muchmore 2024

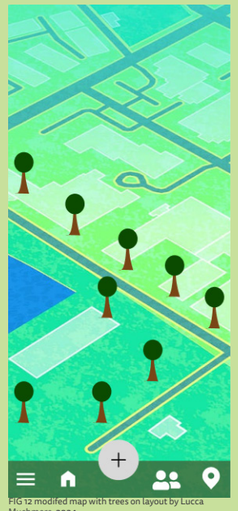


FIG 12 modifed map with trees on layout by Lucca Muchmore 2024

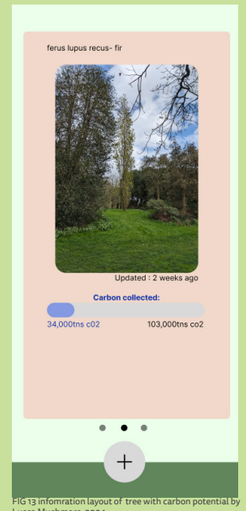


FIG 13 infomration layout of tree with carbon potential by Lucca Muchmore 2024

Trip to my local park

Following my idea generation, I took a trip to my local park, Tooting Common. The aim was to generate ideas that strengthen community in my design. I wanted to consider this on a very local level which would allow me to understand users, communities and also local flora and fauna. I wanted users to be able to learn from the experience in an engaging and accessible way.

FIG 19 ltrees in local park by Lucca Muchmore 2024

I developed a modified idea of reporting biodiversity on and around the trees on Tooting Common. It could be an opportunity for community to see the tree as an ecosystem and users can engage with the monitoring and care-giving to particular trees or locations and in turn gain specific knowledge about their environment. Users would also be able to develop a shared community interest of learning, nurturing and observing their local environment that would strengthen community through knowledge gained, regular observations and engagement.

Creating Wireframes and a Board

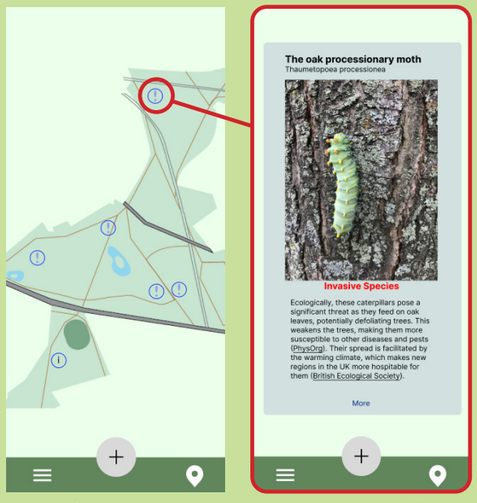


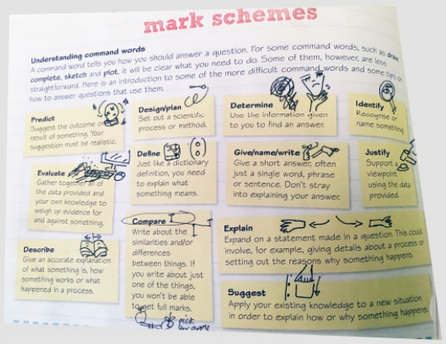
FIG 26 interaction in the app by Lucca muchmore 2024

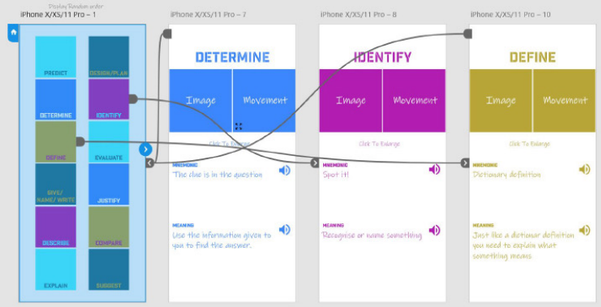
*Upon clicking of information icon a map will pull information.

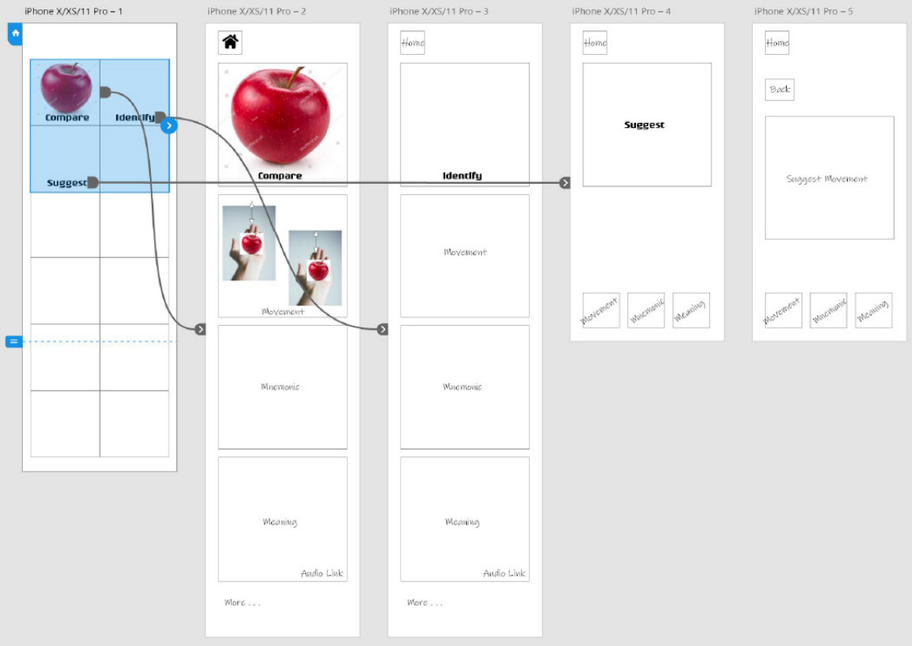
Following the creation of my simplified map, I went on to add it to the app screen. The information icons are featured to signify when a sighting of an mammal, insect, arachnid, bird or reptile has been found. After it is reported it would then be labelled as a local, invasive, endangered or rare species. The app could have the potential to extend to all plant life with particular interest such as the Common's acid grassland and the rare biodiversity it holds which could also be monitored.

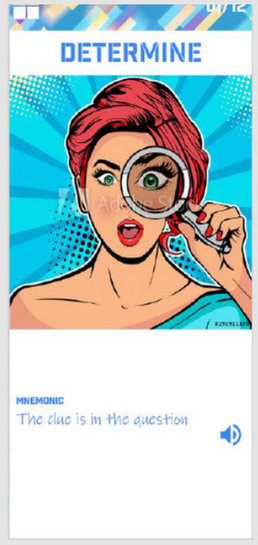
Concept Education App To Assist With Working Memory

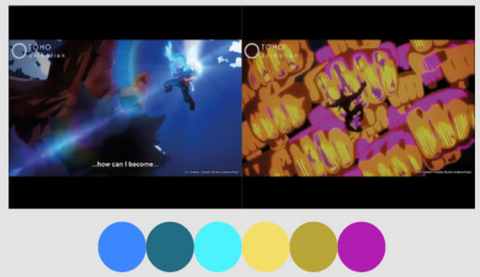
Created as a concept to assist education, this app sets out to aid those with working memory issues and targets different areas of a users brain in order to help them answer exam questions. Each keyword slide gives you a visual image, movement, a mnemonic and meaning. In this case I based the exam on GCSE Science in which the keywords used, in the question denote how you must answer the test.

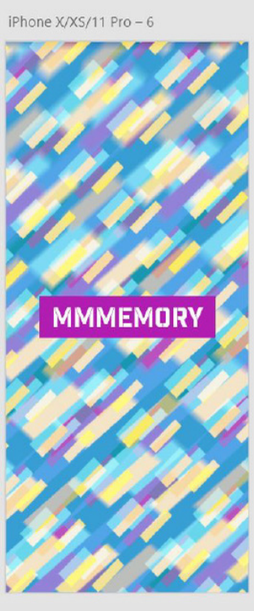


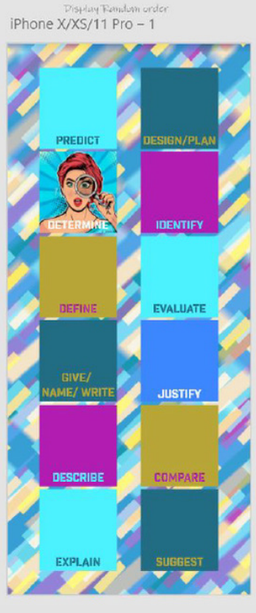


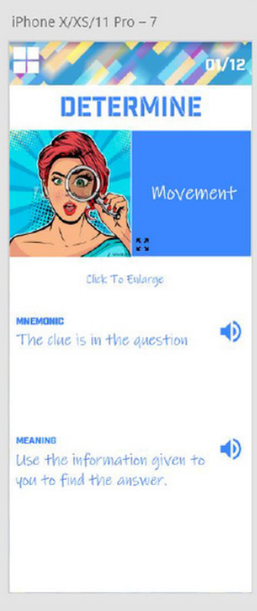


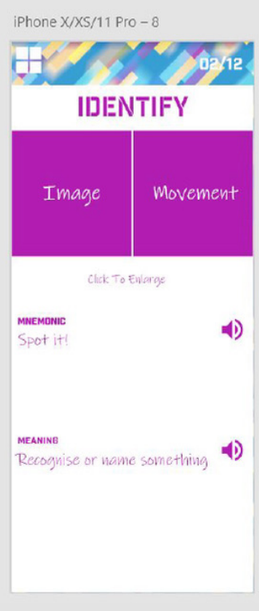


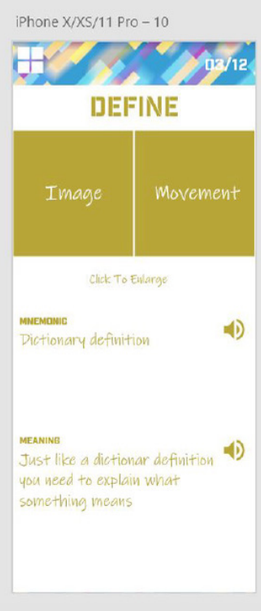












My love of cogs helped me devise a new form of recycling bin that helps crunch up recycling using cogs and handles in a fun way. It is aimed at families and designed to encourage children to engage with the process of recycling in a fun way.

#7 Recycling Bin Ideas [2/4] Big Dog Bin

This design carries out the function of reducing the space used by waste. The mechanism in this design works by allowing rubbish to fall down through a chamber where it meets two cylindrical objects which have cogs either side which allow a user to rotate

Front facing view

an external lever which will the move the cogs, which in turn will allow the rubbish to be condensed to a smaller size,ultimatley saving space in the bin. It is inspired by the mechanism found in a fresh pasta making machine.

The opening for the bin would be in a hatch located in the nose area of the dog.This would allow rubbish to enter the system.There is also a door located in the back of the object that allows for the collection of flattened rubbish to be removed.

This design is a form over function design as it has a high reliance on its aesthetic in order to capture the attention of users by way of colourful design and some humour to ultimatley attract users to use the design.

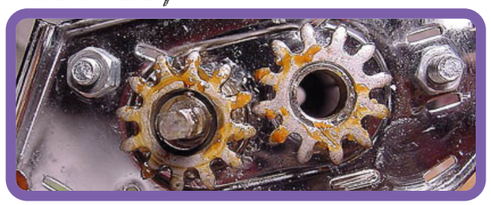
A Big Dog

Backfacing view

The size of this design will be around 1 metre 65 centimeters as this allows a lot of people to use the bin as this is just below average height (“176.8cm (5’9.6”) for a man, 163.7cm (5’4.4”) for women”.) One of the reasons for choosing this size is capacity, It could allow enough space for the mechanism, as well as enough space to hold the rubbish.

When creating this design I had tailored it to my specification which said, “my product will have a simple look and be user friendly whhich I hope would give it a wide accessibility for the age range. It should also have bright colours to engage the user” The specifications have influenced my design, including using removable parts such as where you extract the rubbish and also the overall aesthetic.

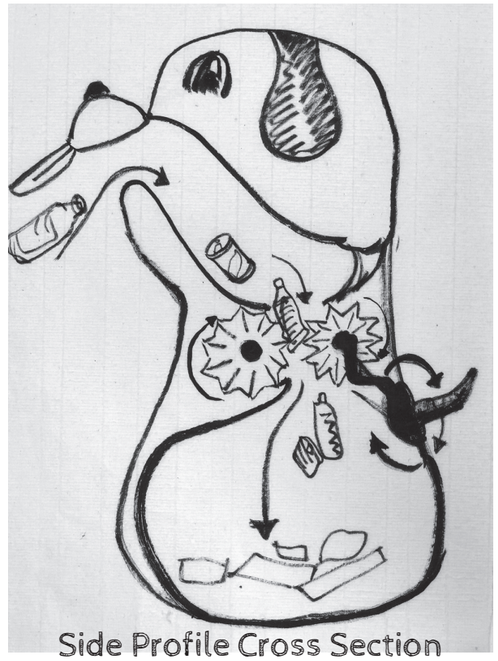
A Good Boy



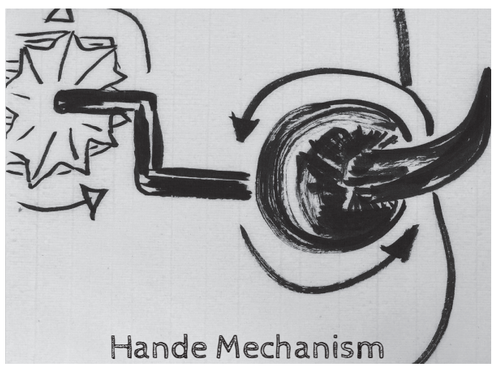
I’ve chosen traditional dog colours, with patches and a Kawaii (cute)feel which I hope provides a wide range of attraction and inclusion to users, regardless of gender or age.

When examining materials to be suitable for the design I have had to consider a few factors such as price, durability-for optimum weathering, as well as impact or collisions by users or objects.Importantly I need to consider the overall aesthetic of the material and whether it would match the design.

Wood, plywood or flexi ply would be good as you can add many different finishes to improve durability, such as paint or varnish finish. I would like to incorporate an acrylic material into my design to ensure nice bold colours and allow for the product to stand out. I could feature spots of bright colours in specific areas such as the tongue of the dog or the eyes.



Side Profile Cross Section



Hande Mechanism