

anusha narayan

human-centred design engineer

# about

I am a third year Design Engineering student at Imperial College London. My particular interests lie in the fields of human-centred and UX design, where I work to design products or services that address a problem in my users' lives.



## education

**Imperial College London**

MEng Design Engineering

2020 – 2024

## experience

**MathWorks**

UX Design Intern

July 2022 – September 2022



07443573938



anusha.narayan2002@outlook.com



[www.linkedin.com/in/a-k-narayan/](https://www.linkedin.com/in/a-k-narayan/)



[www.anushanarayan.com](http://www.anushanarayan.com)



London, United Kingdom

## skills

### design skills

interview design

usability testing

personas

journey mapping

design ideation

ergonomics

### design communication

adobe creative suite

figma

presentation design

video editing

### technical skills

mechanics

electronics

fea

robotics

data science

python

javascript

arduino

# contents

---

1



2



3



4



# the period product steriliser

---

**500 million** girls and women are living with period poverty, with underdeveloped countries being most affected. The brief was to design a product which can give girls and women a **long-lasting, hygienic supply** of menstrual products



# ideation



I ideated, using a variety of design techniques such as brainstorming and SCAMPER, to come up with a number of ideas that would fit the brief – to provide women and girls with a long lasting, hygienic supply of period products. I subsequently ranked them based on feasibility, impact and desirability, and decided to develop a form of **period product steriliser**. This would allow period products to be reused multiple times.



# functionality development



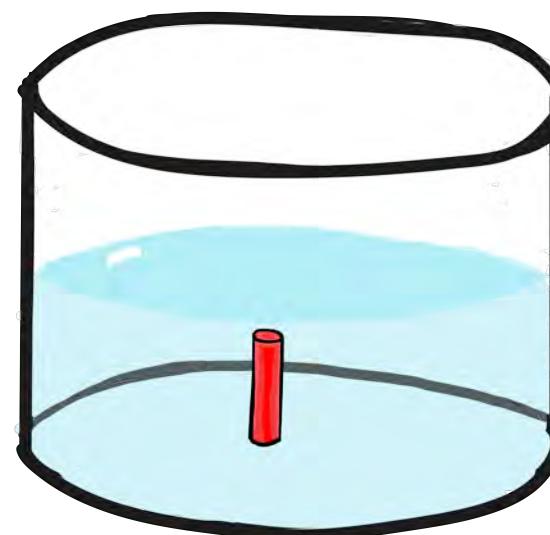
- 1** the problem: some water must remain cold so that the product can be effectively soaked

An insulative material must be chosen for the entire steriliser. An icebox-style system will be in place in the walls of the steriliser. The walls, and subsequently the water will stay cold and allow the period product to soak effectively.



- 3** the problem: some water must remain hot, in order to kill any bacteria

An immersion heater in the water will heat up the water when required, meaning that an electric circuit will be needed. The material of the steriliser must therefore be carefully chosen to be sturdy and impermeable, so that no water can touch the electronics.



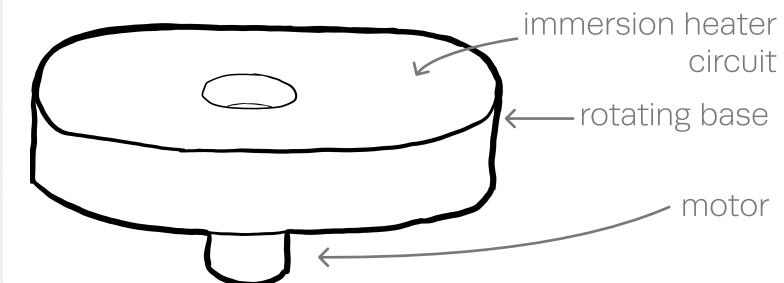
- 2** the problem: water is not readily available so it must stay inside the steriliser

A latch across the top can be opened by the user and the period product dropped in. Water will not splash out, extending the life of the product.



- 4** the problem: rotating the product whilst it is in hot water will kill bacteria more effectively

The container can be put on a rotating base, the base can also hold the electronics for the immersion heater.



# how it works



## long-lasting

The product must be able to provide a **long-lasting supply** of period products to the user.

**The steriliser cleans period products so that they are ready for reuse, making a normal supply last much longer.**

## hygienic

The product must be **hygienic** and not cause any detriment to the user's health.

**The steam that is injected into the steriliser kills any bacteria, meaning that the products that are reused are hygienic and healthy for the user.**

## discreet

The product must be **discreet** so as to avoid the girls and women being shamed (some cultures consider periods to be unclean).

**The steriliser is completely plain from the outside, thus meaning that it will not draw attention to itself, meaning that it is discreet.**

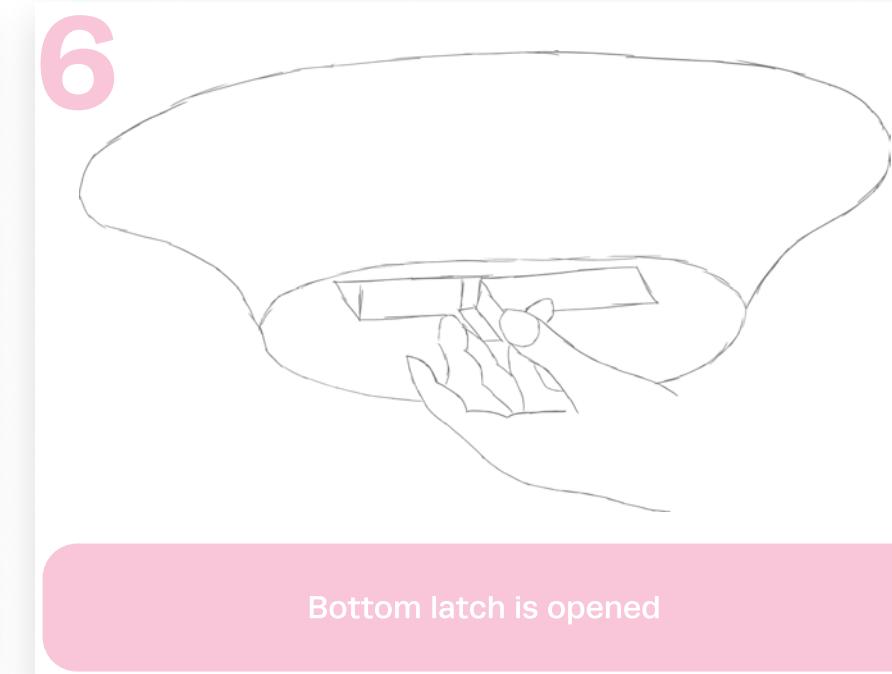
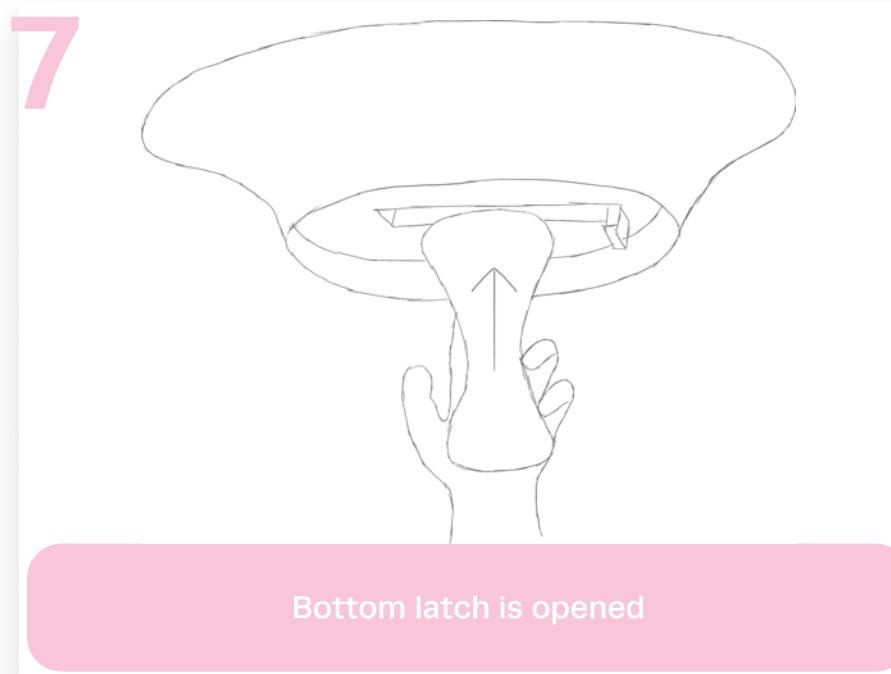
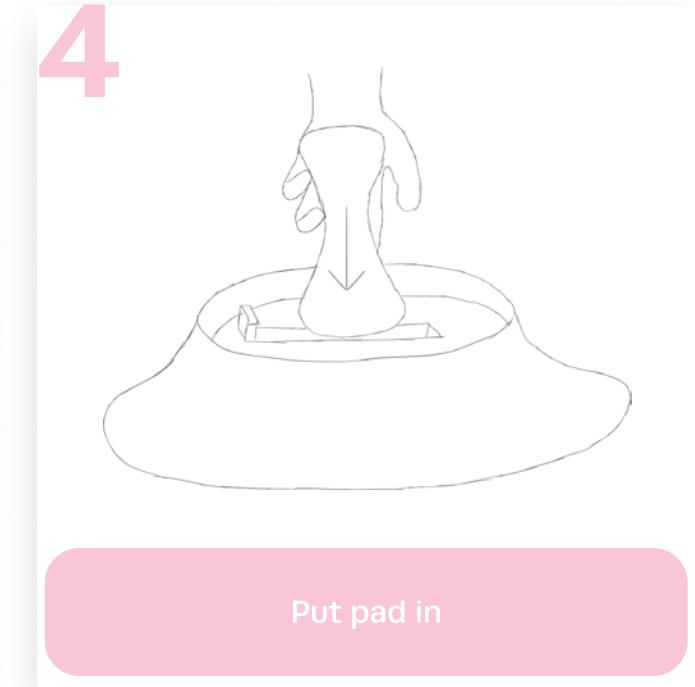
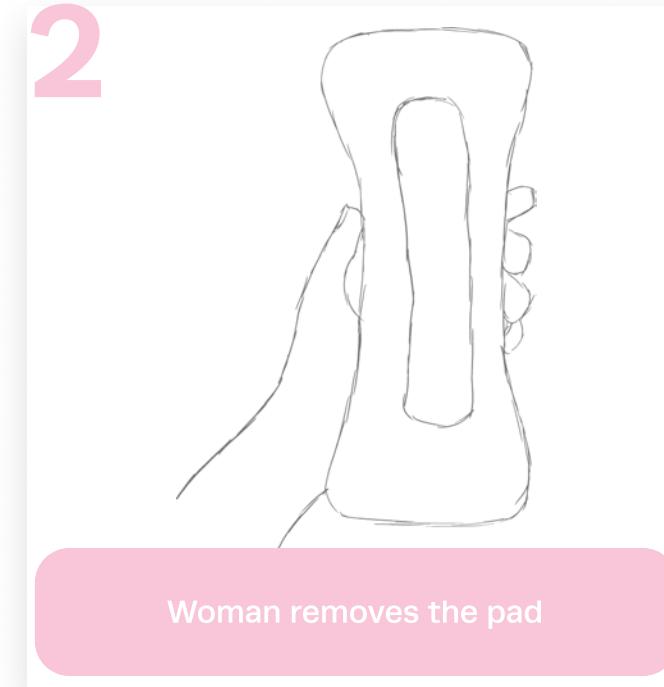
## easy to use

The product must be **easy to use** so that girls and women are able to use it alone without requiring external help.

**The user simply has to open the top latch to put the period product in, and open the bottom latch to remove it, meaning that they are able to use it on our own.**



# Storyboard





# teddybot

Maths is often considered to be a boring subject for young children. I therefore designed a **robotics maths game** in order to make learning maths a **fun and interactive experience**. The game uses **embedded computing**. It has strong user interaction, and an iterative process.



# manufacture

---

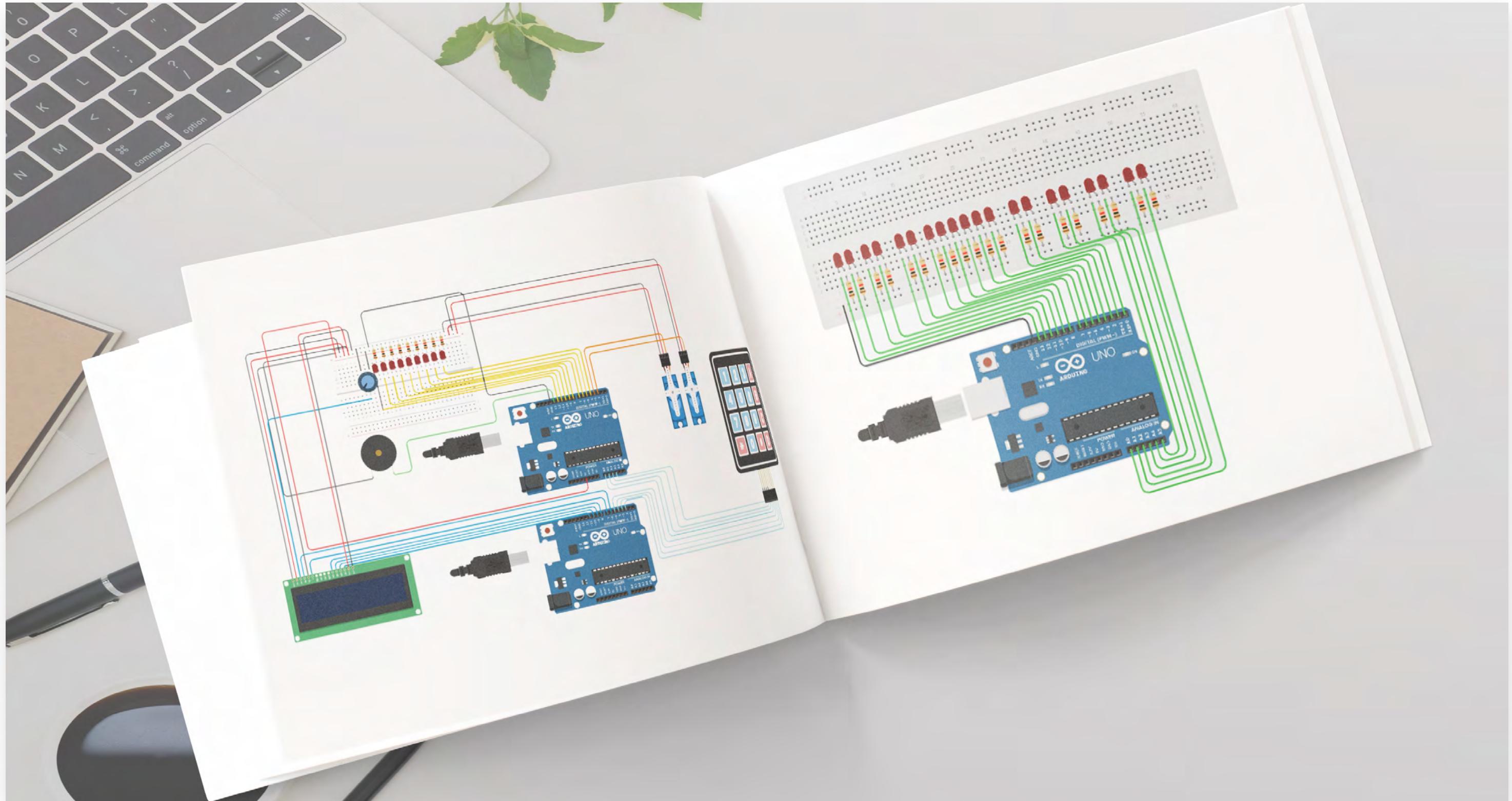
••••

Part of the project was to create a prototype of the design. Due to prototyping limitations, the outer casing was made using plywood. Manufacture involved laser cutting and electronics.



# electronics

•••

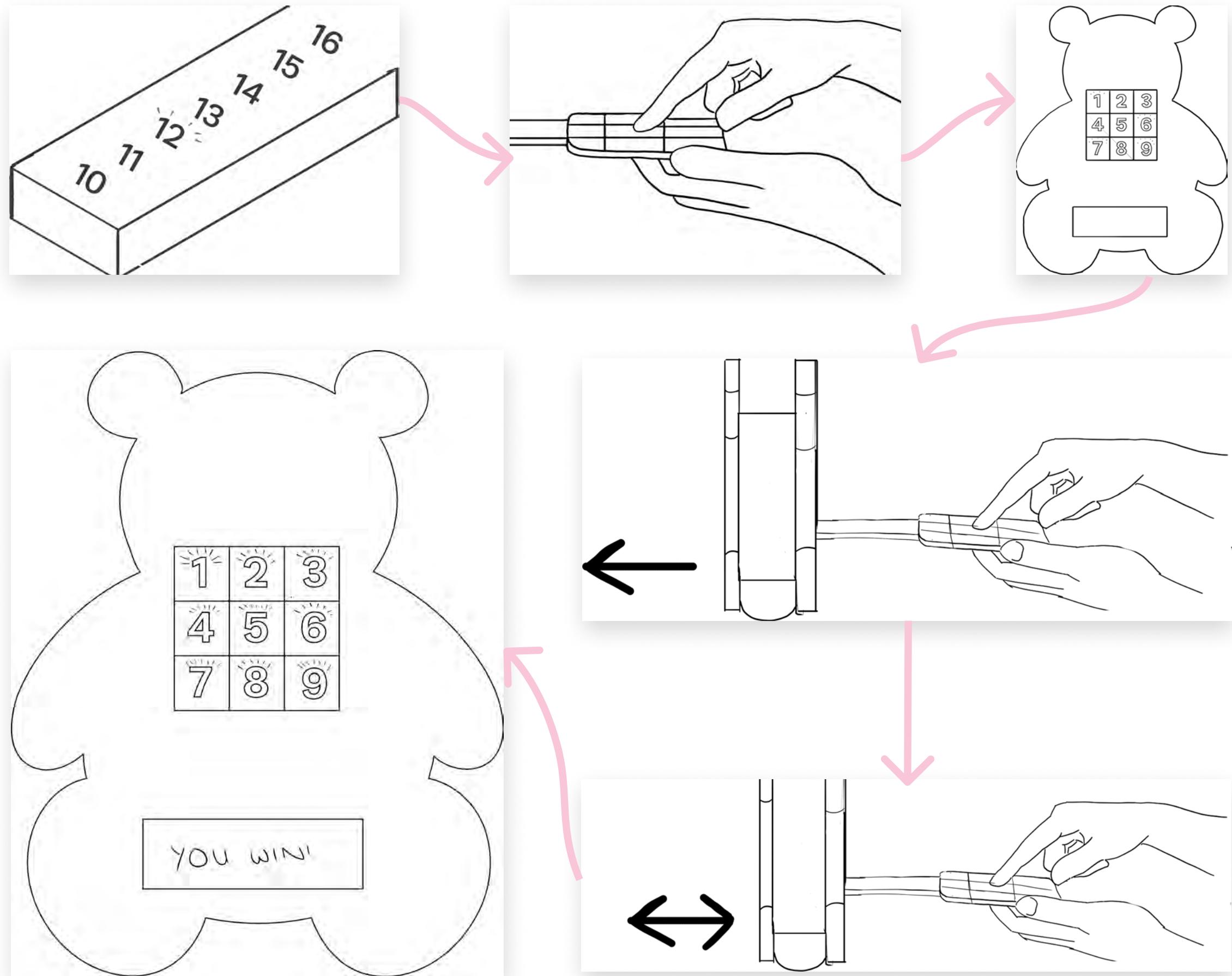


There were two different circuits needed, one for the robot and one for the board. 6 different components were used, an **Arduino Mega**, **LEDs**, a **buzzer**, **servo motors**, an **LCD display** and a **keypad**.

# using teddybot

....

When the board is plugged in, a number will light up – the target number. On the back of TeddyBot, 4 numbers will light up. Using a combination of those 4 numbers, as well as the A and B keys on the keypad, the user must move the robot backwards and forwards, until it reaches the target number.



Back  
to  
School





# the health tracker app

During the Covid-19 pandemic, several young adults reported a decrease in their physical health. I designed the Health Tracker App, a desktop application that could be used to track eating and exercising habits, as well as setting goals and exercise regimes.

# user research

•••

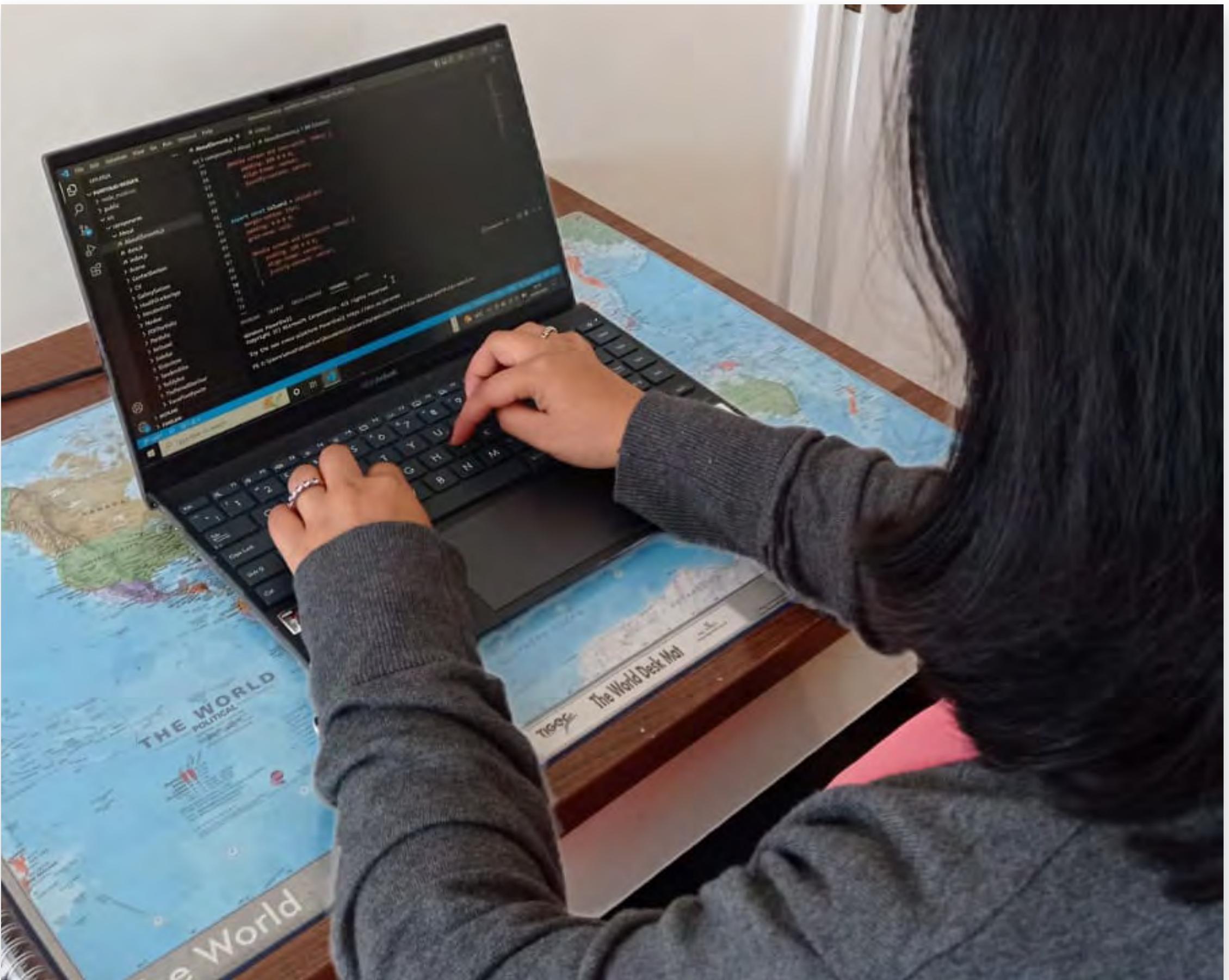


I interviewed several **young adults** about their health, with a particular focus on their **eating and exercising habits** during the pandemic. This allowed me to gain insight into their **pain points**, and generate **requirements** from them.

# code



I coded this desktop application using C# and XAML, which I taught myself during Summer 2021. The editor used is Visual Studio Code





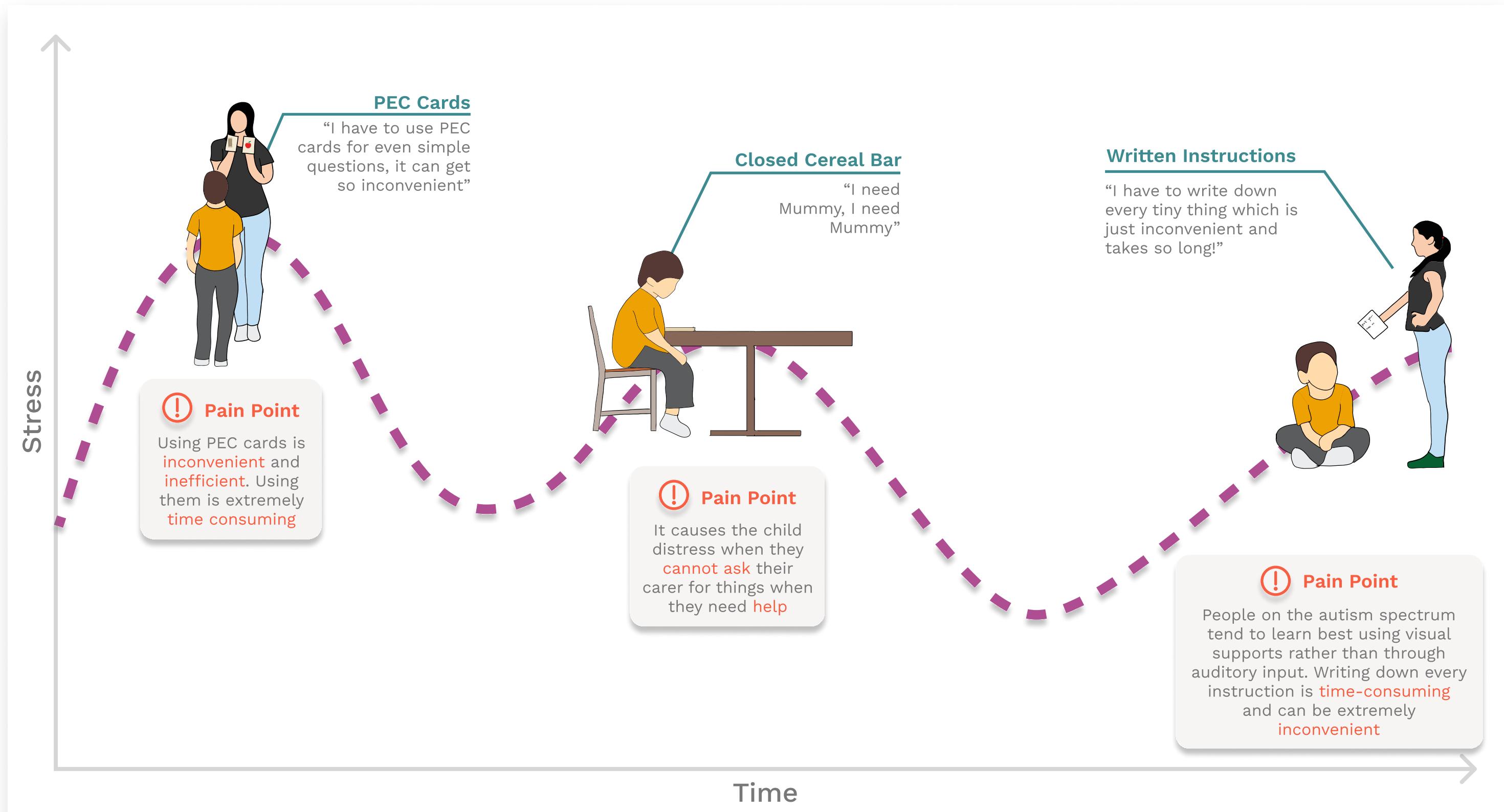


# the U Me

Children who suffer from severe autism often find communication extremely difficult, even with the people closest to them, such as their parents and carers. As part of a group project, we designed the U Me, a two way communication device allowing severely autistic, non-verbal children, to communicate with those close to them.

# empathy mapping

ooooo



I carried out an exercise of empathy mapping, to produce a user journey, detailing the stresses that both the child and carer go through on a daily basis. From this, I developed a concept of a two-way communication device, designed to address the pain points identified above.

# concept development



Legend: pros (green dot), cons (purple dot)



The image displays various concept sketches of game controllers, categorized into pros and cons.

**Pros:**

- A simple oval shape with a central button cluster.
- A rectangular shape with a central button cluster.
- A standard game controller with a central button cluster and side buttons.
- A cloud-shaped controller with a central button cluster.
- A cloud-shaped controller with a central button cluster and side buttons.
- A small handheld device with a central button cluster.
- A large handheld device with a central button cluster and side buttons.
- A large handheld device with a central button cluster and side buttons.
- A large handheld device with a central button cluster and side buttons.
- A large handheld device with a central button cluster and side buttons.

**Cons:**

- The shape is uniform meaning it could easily be held the wrong way.
- Easy to distinguish between buttons and instruction lights.
- The shape is not uniform meaning it is more intuitive to hold it the correct way.
- Joystick is harder to use for children with dexterity issues.
- Separation between buttons of carer/child are not as clear.
- Small buttons - may not be large enough for images.
- Clearer separation between buttons and instruction lights.

Below the sketches, there are several physical prototypes of the controllers made from clay or similar material, showing different shapes and button layouts.

# product assembly process

.....

The U Me works in conjunction with an accompanying app on the carer's phone. They communicate using Bluetooth. When the child presses a button on the device, they will receive visual and tactile feedback, through an RGB LED, and vibration motors. If the carer sets an instruction on the app, an icon will then show up on the pixel display of the U Me. The device will also vibrate, letting the child know that they have a task to complete.



# product usage

.....



U Me

