



Har Suyash Bahadur Sinha's portfolio

Applying to MA in Design for Change
at the University of Edinburgh

Projects included

1. Pour: assistive device for blind users
2. Paper potli: craft+AR game for gender awareness
3. Work project at Postman: accessible error signifier
4. VAVE: virtual musical instrument with hand gestures
5. Girl Up Seher volunteer work: graphic design for impact



Pour
Pour

4 week project (Feb, 2020)

Individual project · Under Prof. Swati Pal

Assistive device for visually impaired users to pour safely

WHY? Pouring is a great independent skill

I wanted to experiment with tangible interactions to create a complete experience for visually impaired users to pour confidently.

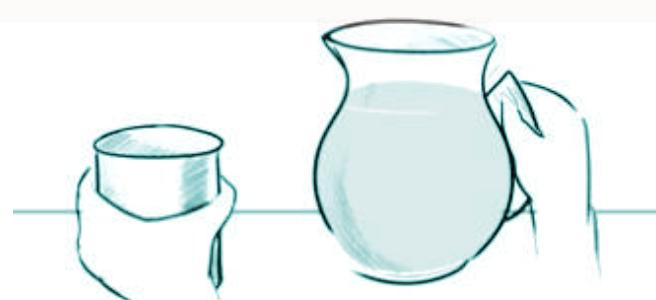
Empathising with the users

Observing blind people pour liquids and conducting a blindfold simulation

I observed several people on YouTube channels who post about living life as a blind person and noticed common issues.

I also visited National Association for Blind (NAB), Worli, Mumbai to interact with visually impaired people. I had a conversation with a lady working in their canteen and another man at the training centre.

Additionally, I performed a blindfold simulation on myself for different scenarios and with different utensils to get a first hand experience.



Locating

"Is the jug perfectly over the glass?"



Aligning

"Oops! I just spilled over the edge."



Pouring

"How much is it filled and how much to tilt the jug?"



Stopping

Analysing problems

Existing solution: electronic level indicator



Existing devices provide audio feedback when the cup is full. However, they **don't ensure safety or accessibility** as-

- Aligning the vessels is challenging and leads to spilling
- Lack of continuous feedback slows users down

Inspiration



“For assistive devices, one needs to consider the **abilities along with the **disabilities** of the user.”**

- Wu, MA and Chang (2006)



“Recognise more than just the **barriers. Understand **motivations** that we all have in common.”**

- Microsoft's Inclusive Design

SWOT analysis to design for accessibility

Simulation can help us experience the problem first hand but it only focuses on the disabilities or what the user lacks.

SWOT (strength, weakness, opportunity, threat) analysis is one way to understand the user more holistically.

Strengths

- S1 Muscle memory and coordination
- S2 Perform tasks step by step
- S3 Good tactile sense
- S4 Easy to pour with small openings

Weaknesses

- W1 Difficulty in aligning objects
- W2 Can't touch hot objects
- W3 Lack of continuous feedbacks
- W4 Handling many discrete objects

Threats

- T1 Hot liquids can cause burns
- T2 Burnt by touching a hot vessel
- T3 Steam rising from vessel
- T4 Dropping and breaking

Opportunities

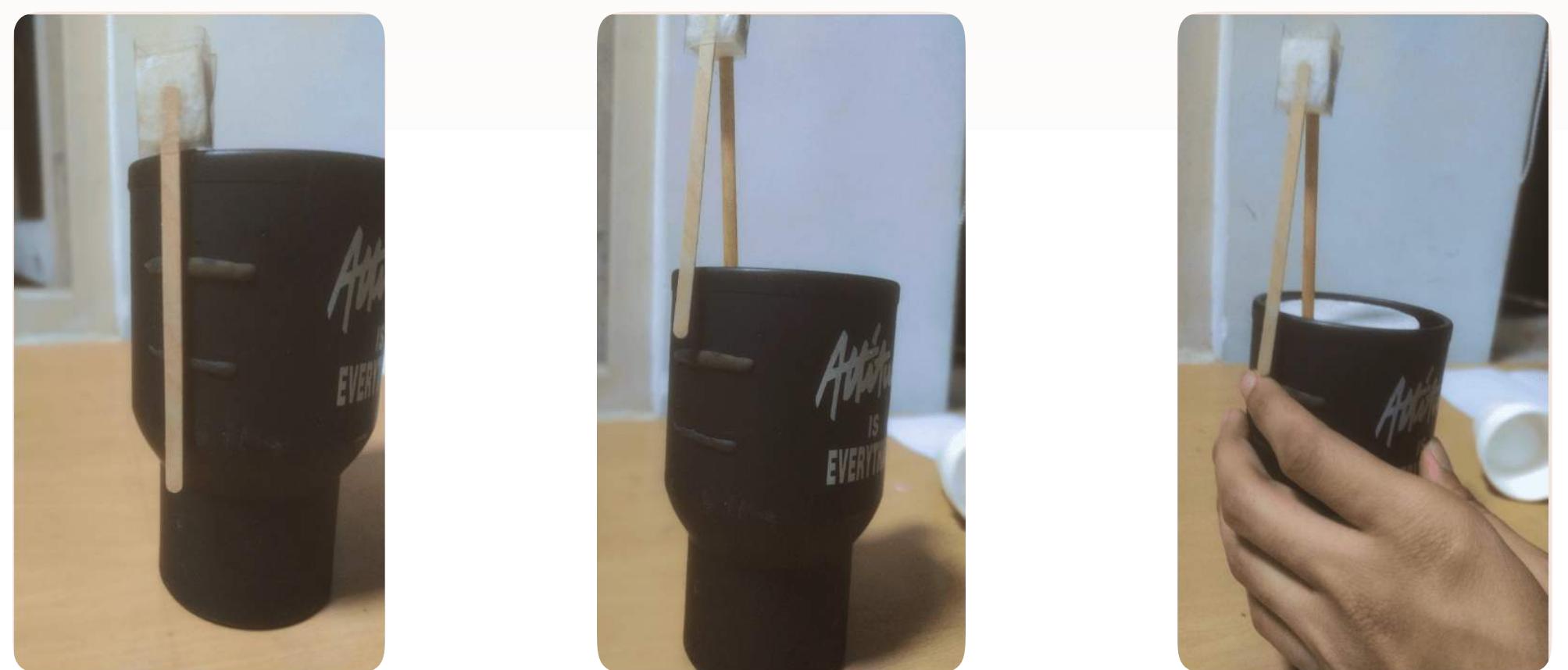
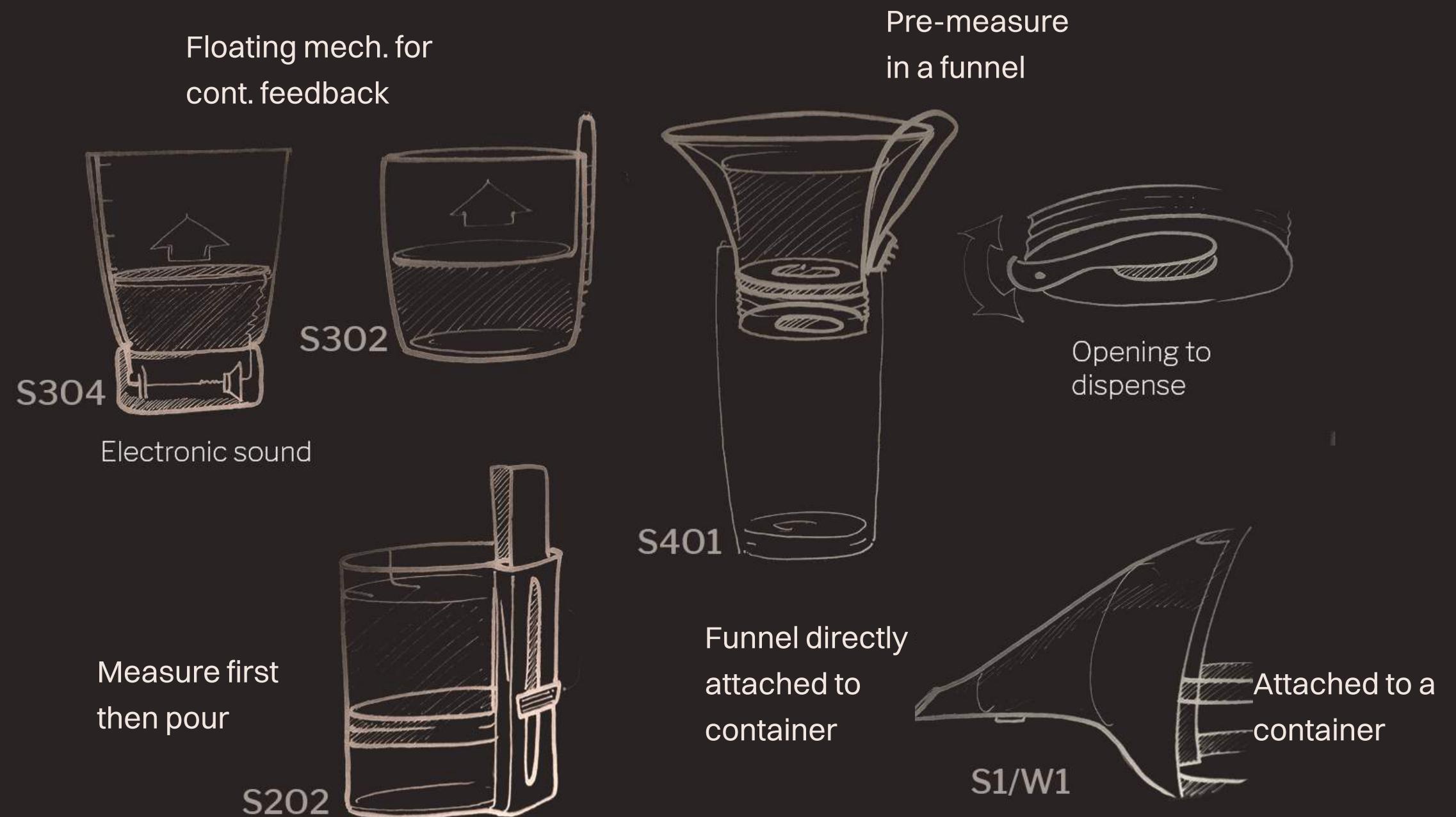
- O1 Device to funnel, filter & measure
- O2 Measure first and then pour
- O3 Separate dispensing system
- O4 Electronic device, audio feedback

Explorations

Using points from SWOT to ideate

After SWOT analysis, Weihrich (1982) proposed a strategy called the “TOWS”. TOWS maximises the Strengths and Opportunities, while minimising the Weaknesses and Threats.

The corresponding labels with the sketches (**S1O2**, **W1O2**, etc.) indicate the nth SWOT point.



Experimenting with floater mechanism that rises with the liquid, giving cont. feedback

Conceptualising

Criteria for choosing concepts

Safety

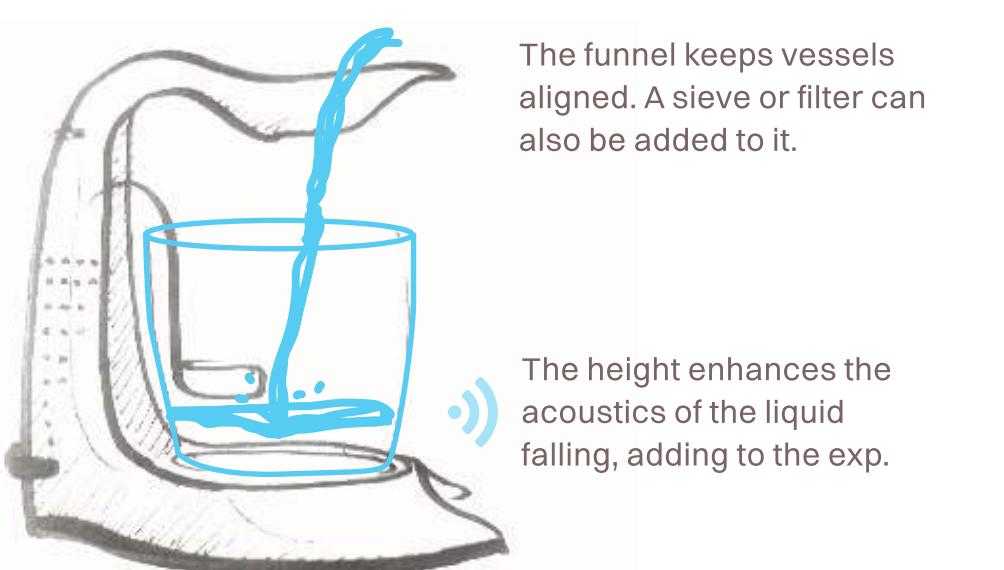
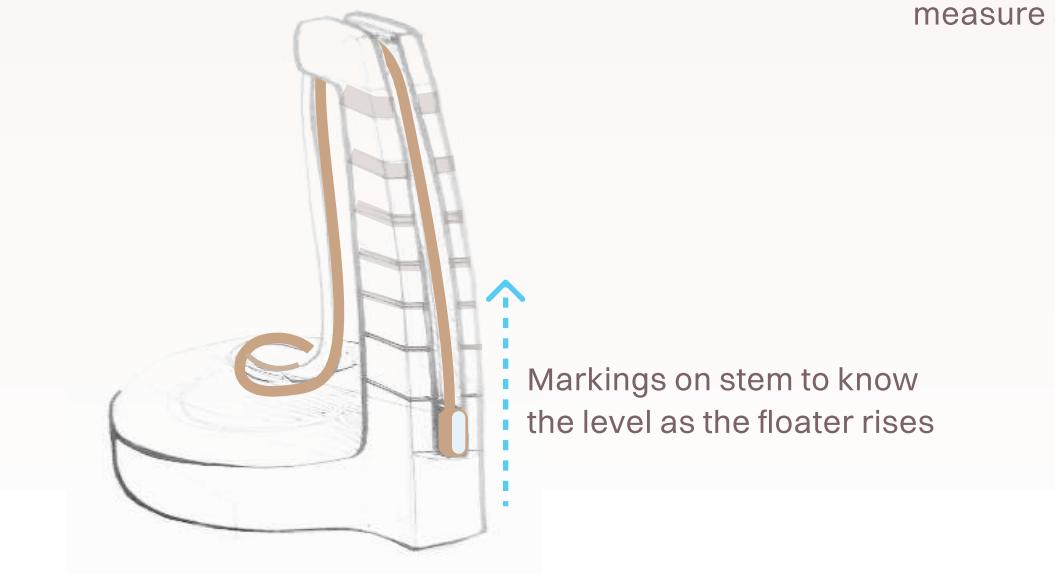
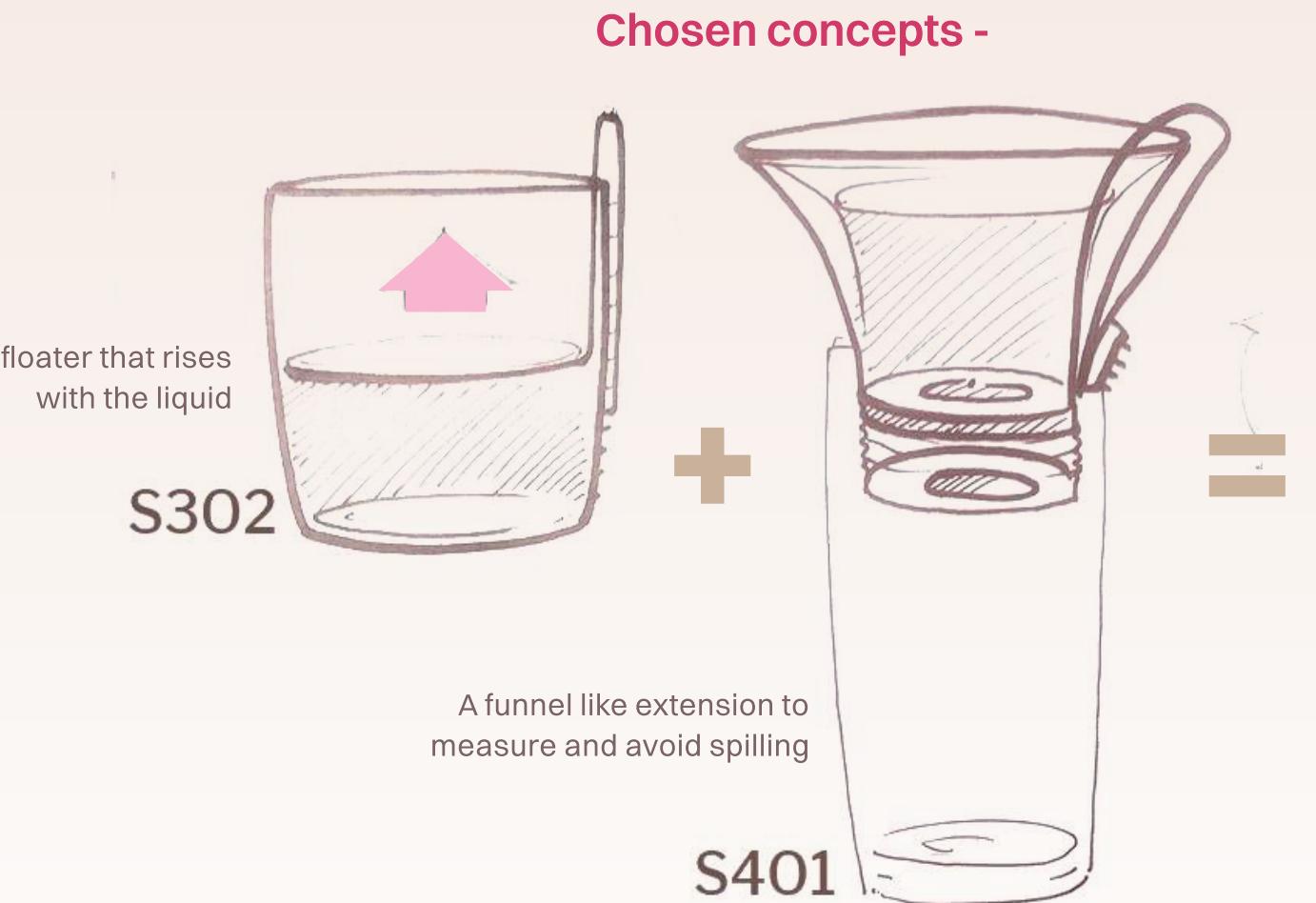
1. No spilling over the edge while pouring
2. Avoid touching hot vessel

Functionality

1. Pour measured/ desired amount of liquid

Usability

1. Ease of measuring
2. Ease of pouring/ controlling the flow



Form and aesthetics

To avoid a taboo of using assistive devices, the person should look stylish using it and it should be **an appealing experience for the observer**.



Testing in context



The project was completed during the COVID 19 lockdown so it was not possible to test it with actual users. Thus, it was tested at home by blindfolding people. The product was introduced to them only after blindfolding so they have to see only through their hands.



Results

✓ Safe from any contact with hot liquid

✓ Successfully filled 1/4, 1/2 and full cup

Time motion analysis was used to check how fast and confident the user was while pouring.

	Locating	Aligning	Pouring	Total
Control (without the product)	5 sec	2 sec	28 sec	35 sec
With the designed product	1 sec	4 sec	20 sec	25 sec



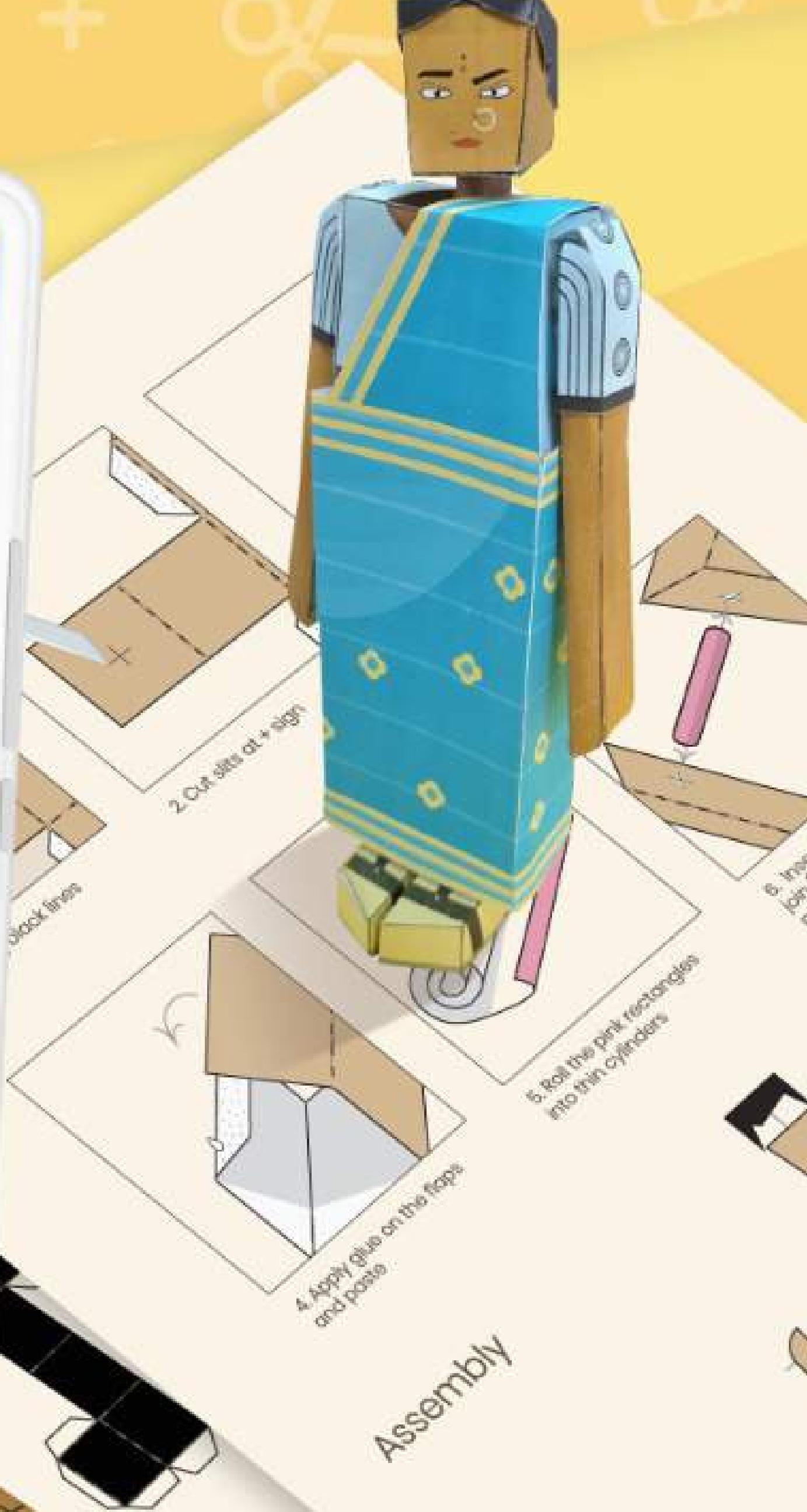
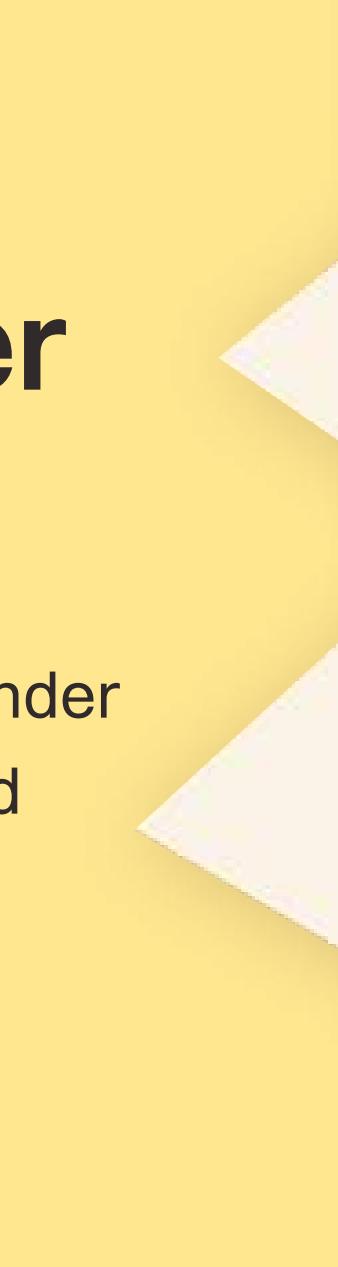
Paper Potli

6 week project (Oct- Nov, 2019)

Group of 2 (contribution: designing paper doll, gender research)

Craft + AR game to dilute gender stereotypes among children

WHY? There still are misconceptions and stereotypes about gender. What starts as an ignorant cultural bias often leads to a toxic and non-inclusive environment for people of various genders.



Understanding gender and society

Insights from primary research



Gendered parenting

Only girls are expected to do house chores

Boys are told to be strong and not cry



Confusion and taboo

Gender is still perceived as binary

LGBTQIA+ considered western concepts



Harms of stereotyping

Boys get bullied for expressing femininity

Discrimination at work based on gender bias

“Only my wife looks after kids as I have to earn money”

-Male taxi driver



“We don’t like dancing as it is girly. We like to watch them dance”

-Government school boy

“We are a traditional family and don’t like discussing gender”

-Mother of a high school girl

“We hear about LGBTQ on social media but all this will spoil our kids”

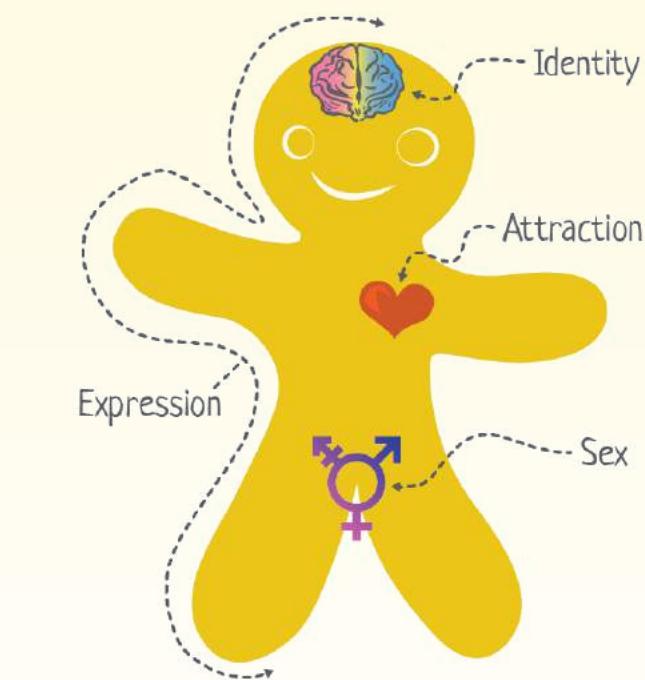
-Mother of a high school girl

Inspiration from secondary research

Sam Killermann’s Genderbread Person illustrates different dimensions of gender and separates them from biological sex.



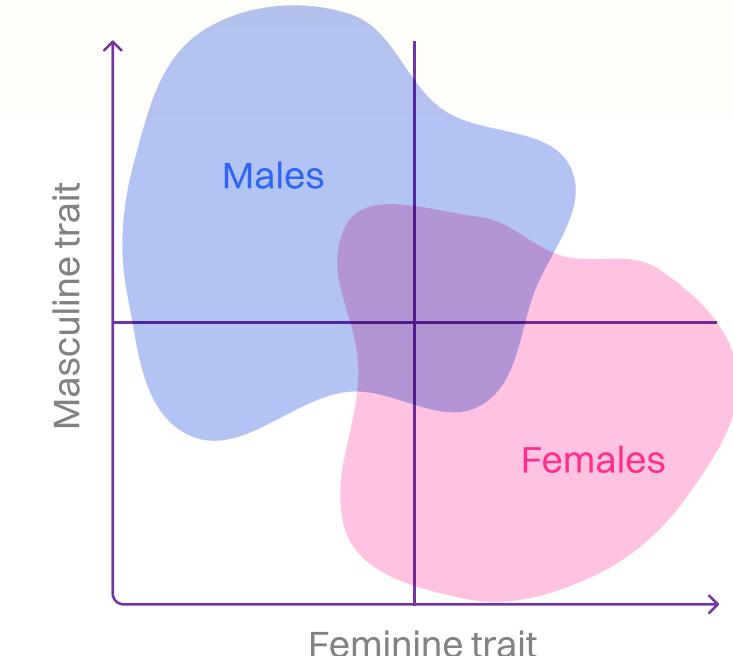
Sam Killermann
(Artist, author)



Sandra Bem’s Sex Role Inventory statistically shows how we can be both masculine and feminine and how it is healthier.



Sandra Bem
(Psychologist)

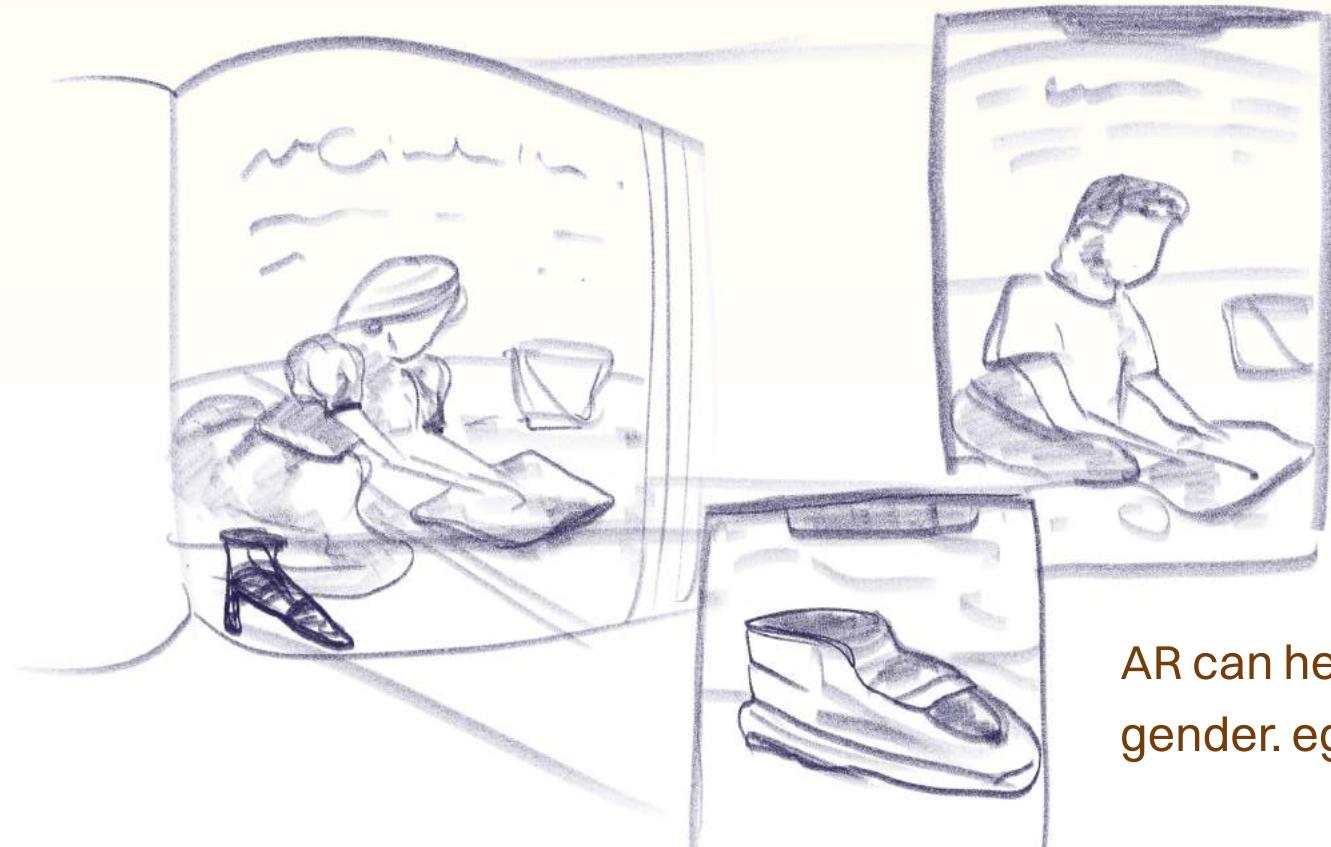


Explorations

How might we dilute gender stereotypes for children to show gender roles and expressions do not have to be determined by their biological sex.

Idea #1 AR stories

A lot of stereotypes are reinforced through traditional stories.
AR can add another dimension on top to explore.



Looking at the storybook through an AR app can let children experiment with the gender.

AR can help explore other expressions of gender. eg. Cinderella with a sneaker.



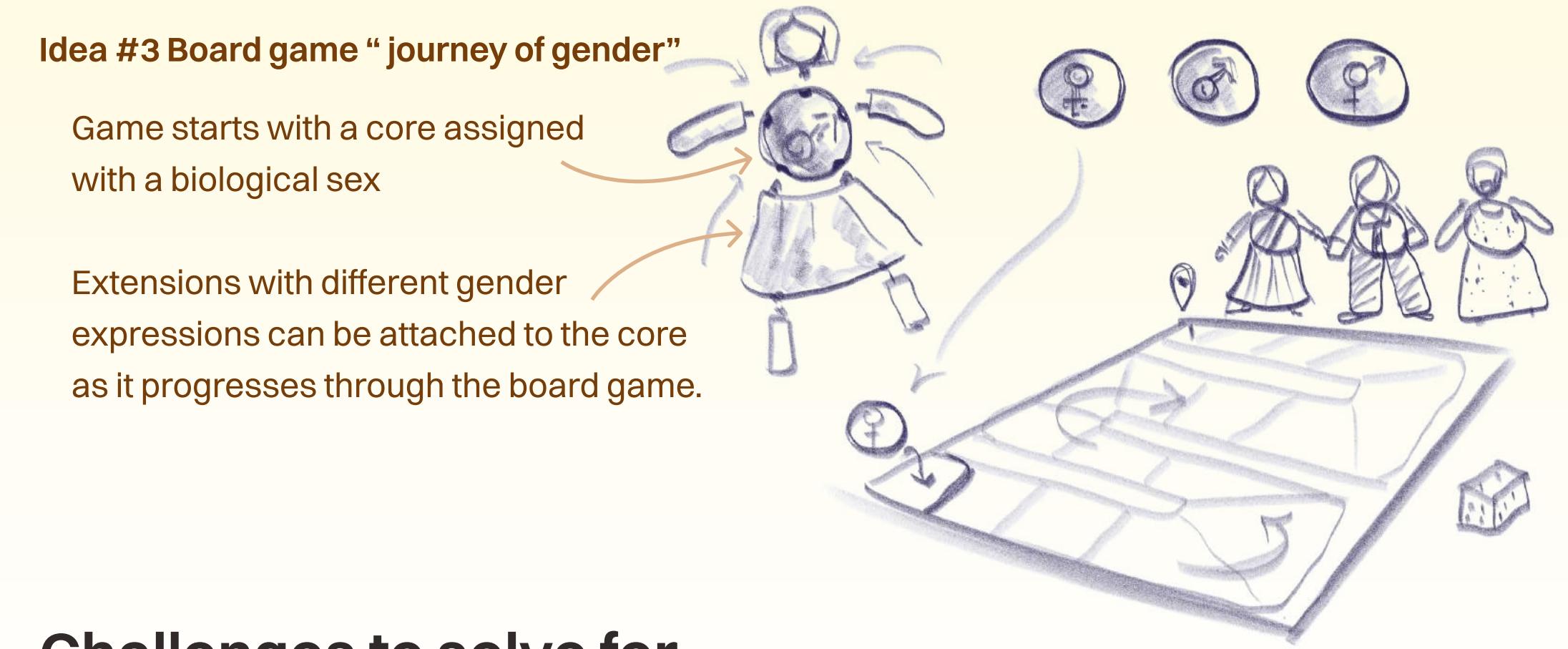
Idea #2 AR Avatar

This is a basic idea that build on AR filters to help people explore and express different expressions of gender and explore gender identities.

Idea #3 Board game “journey of gender”

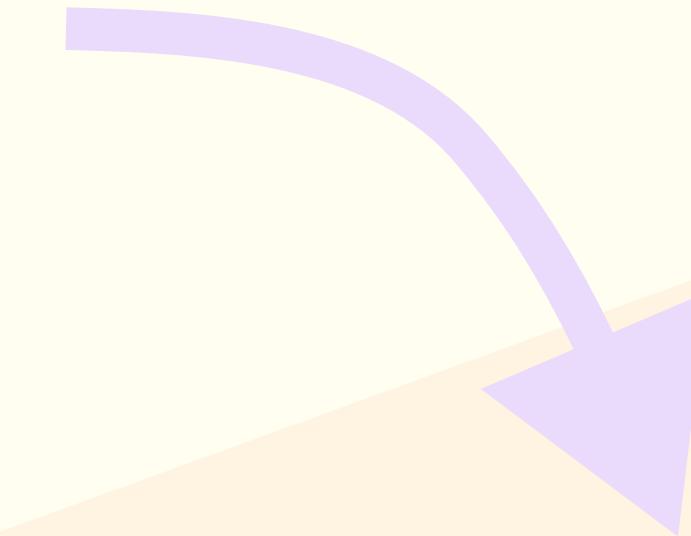
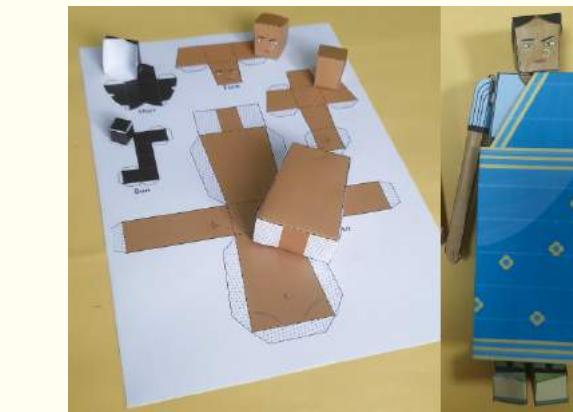
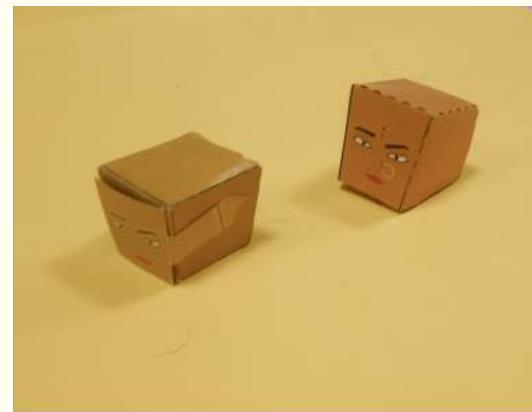
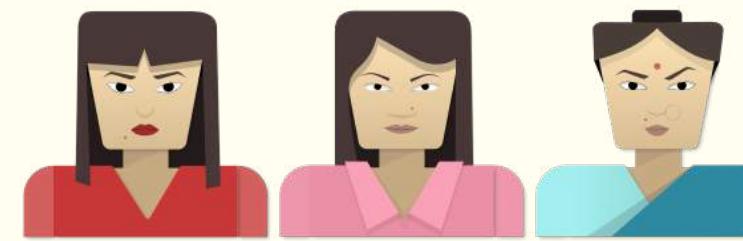
Game starts with a core assigned with a biological sex

Extensions with different gender expressions can be attached to the core as it progresses through the board game.



Challenges to solve for

- Androgynous characters in games are often seen as absurd. The game must be **based in real life around real people**
- Show nobody is 100% Feminine or Masculine **without any jargons**
- It should be easy to advertise the game and **make parents buy** without treating it as a taboo.

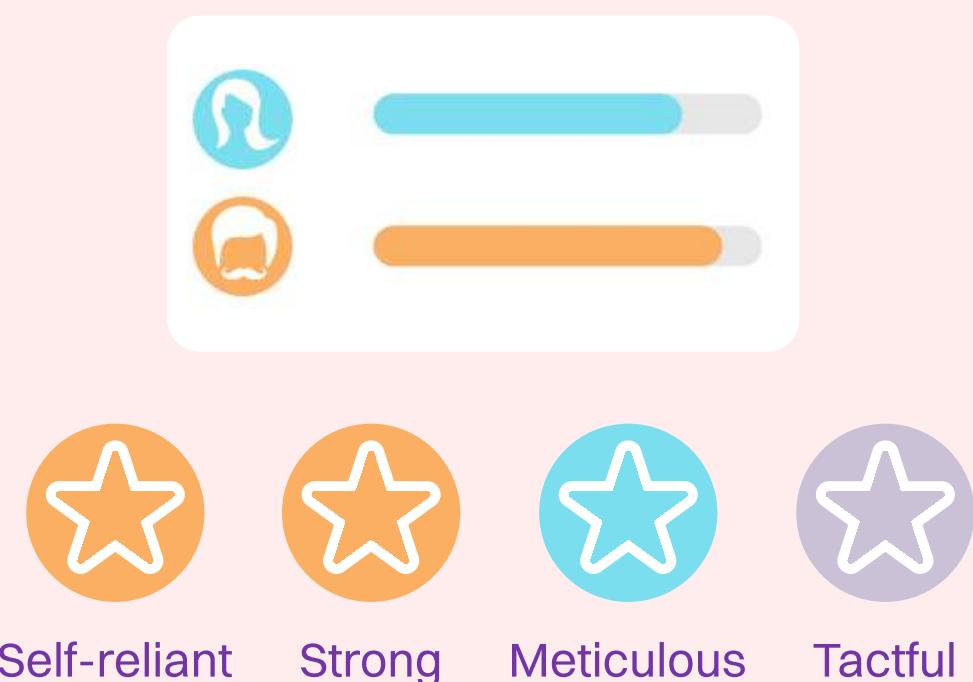


Express through avatars:

Children can design them on the app, print templates and craft 3D dolls. Dolls are popular children toys to role-play and this makes children learn to make things.

Explain through gender traits:

For each role done in AR, We allot a balance of masculine and feminine traits. It demonstrates how something like cooking that is considered a woman's role, has aspects like working with dangerous tools and self-reliance that are typically considered masculine.



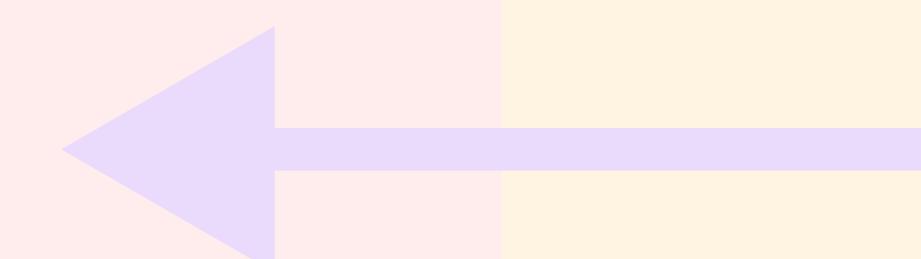
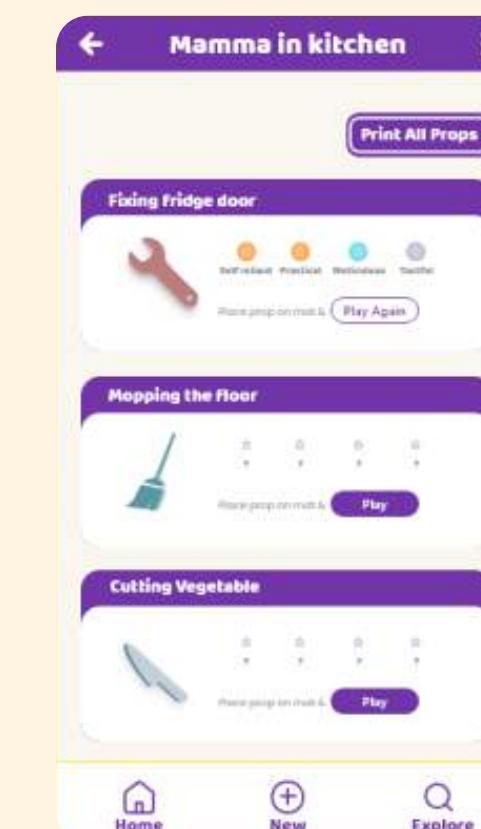
Gender traits taken from the Bem sex role inventory without explicitly labelling as masculine or feminine.



Paper Potli: the concept

Explore through AR role-play:

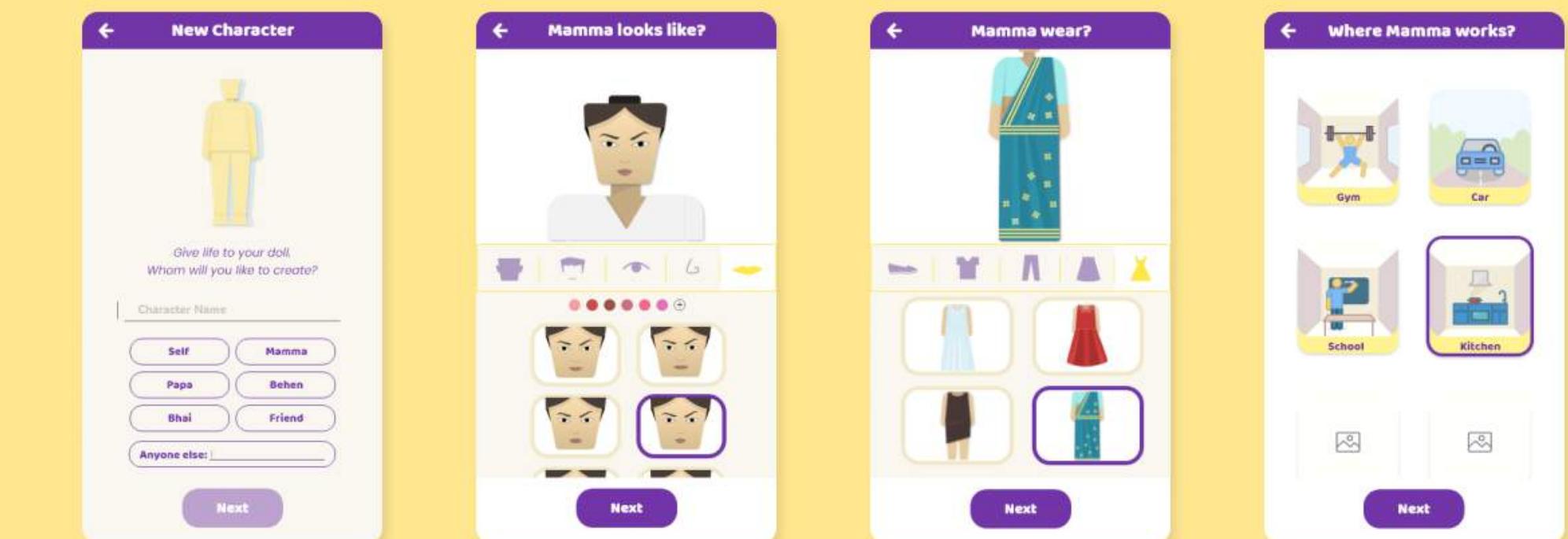
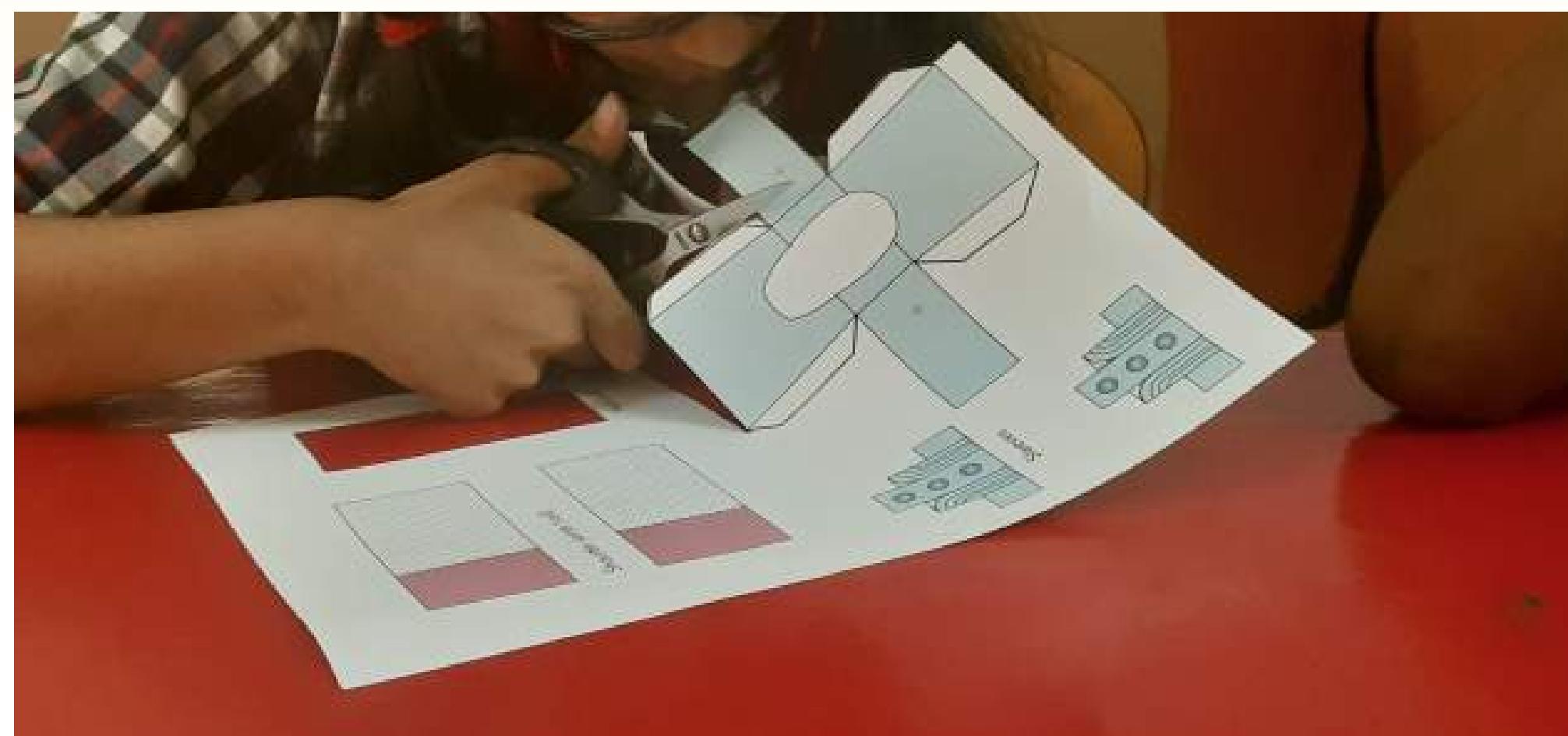
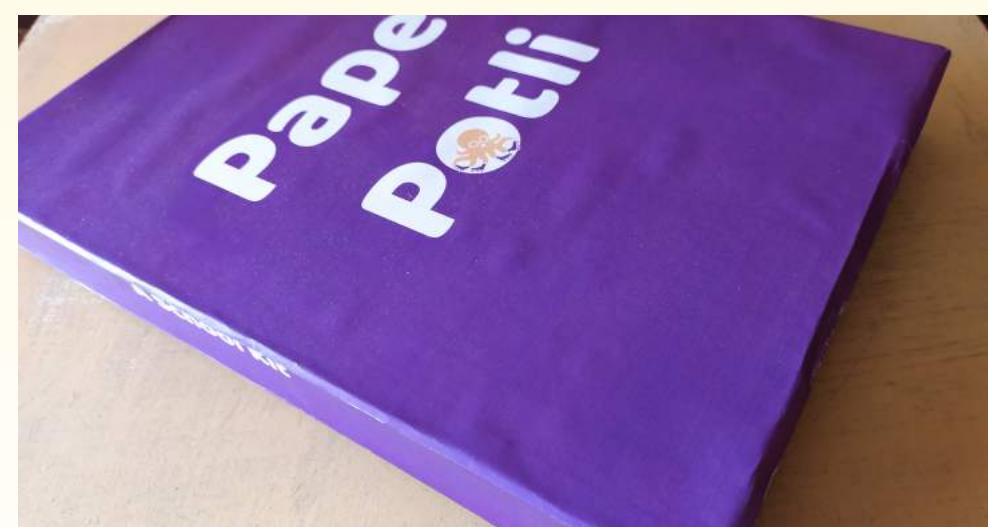
The paper doll comes alive in AR and can perform tasks. Children pick up stereotypes from their environment eg. observing their mother in the kitchen. The AR world aims to create extension of the real world.



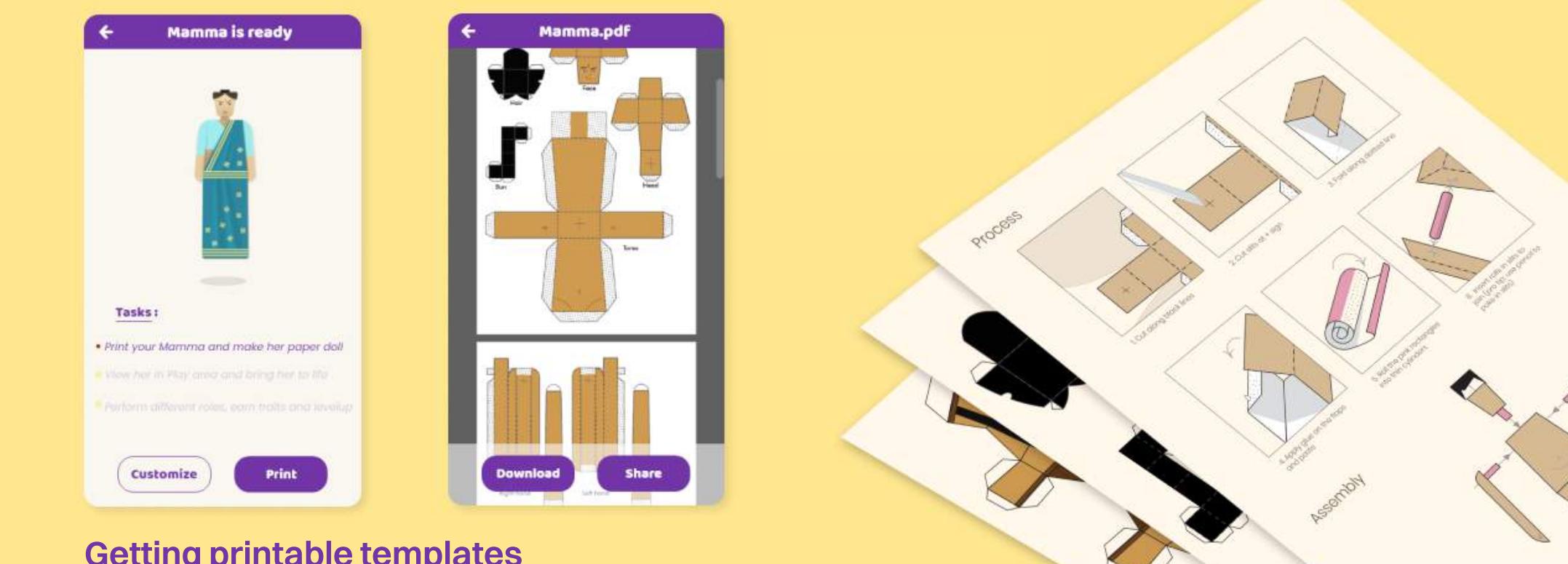
Paper Potli- the system

Reaching people through craft workshop kits

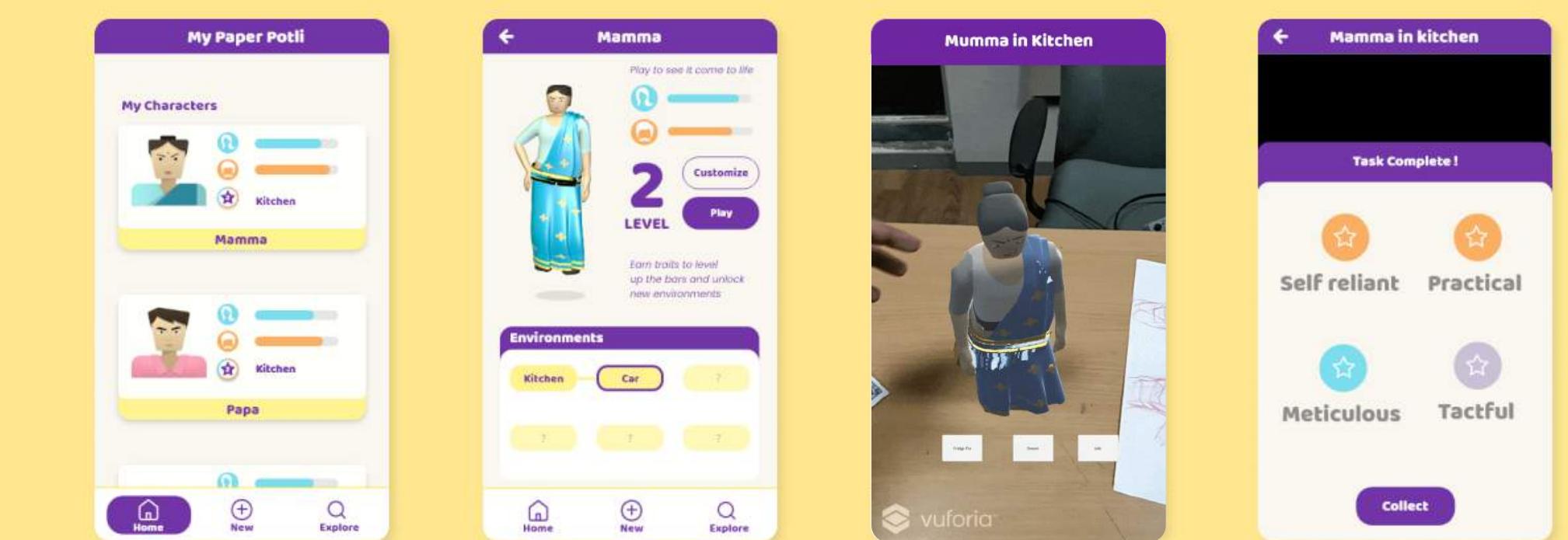
We intended to tap into the system through craft workshops in school. Providing craft toolkits called Paper Potli (Potli means a bag or kit). A craft kit for workshops with instructions to create the paper dolls and then explore using the app.



Creating an avatar of a familiar person



Getting printable templates



Performing roles with the doll in AR to earn a balance of masculine and feminine traits

Postman

Accessible error signifier

Feb 2022 (2 weeks) • Work project at Postman Inc. • UI/UX design

Explorations

Design element	Resolved	Unresolved
Box	<p>Element property used- Solid fill</p> <p><code>{{{variable}}}</code></p>	<p>property used- <u>doted stroke</u></p> <p><code>{{{variable}}}</code></p> <p><code>{{{variable}}}</code> !</p> <p>Adding error icon for more emphasis</p>
Highlight	<p>property used- no highlight</p> <p><code>{{{variable}}}</code></p>	<p>property used- use highlight</p> <p><code>{{{variable}}}</code></p> <p>Other option was to use underline but not used to avoid conflict with spell checks in browser or OS.</p> <p><code>{{{variable}}}</code></p> <p><code>{{{variable}}}</code></p>
Value	<p>bold content primary</p> <p><code>{{{variable}}}</code></p>	<p>regular content tertiary</p> <p><code>{{{variable}}}</code></p>

Created by Suyash Sinha
Last updated: Feb 14, 2022 • 3 min read • 1 7 people viewed

Ground rules-

- Don't rely only on colour for the binary info eg. red-green.
 - Use colour for only attention, making something stand out.
 - Unresolved should communicate some negative/warning feedback but not harsh error. (tbt)
 - Resolved should communicate some positive feedback but shouldn't be very loud all the time.
 - Both should feel like from same family and a unit separate from URL with affordance of hover.

One of my projects at Postman was a small change big impact story. We had to redesign the way variables were represented when they had an error. While advocating for colourblind accessibility which was often neglected, I went through systematic explorations and user testing to get the team's confidence. It was evident how accessibility makes product easier to use for all (as shown in data).

baseURL

baseURL

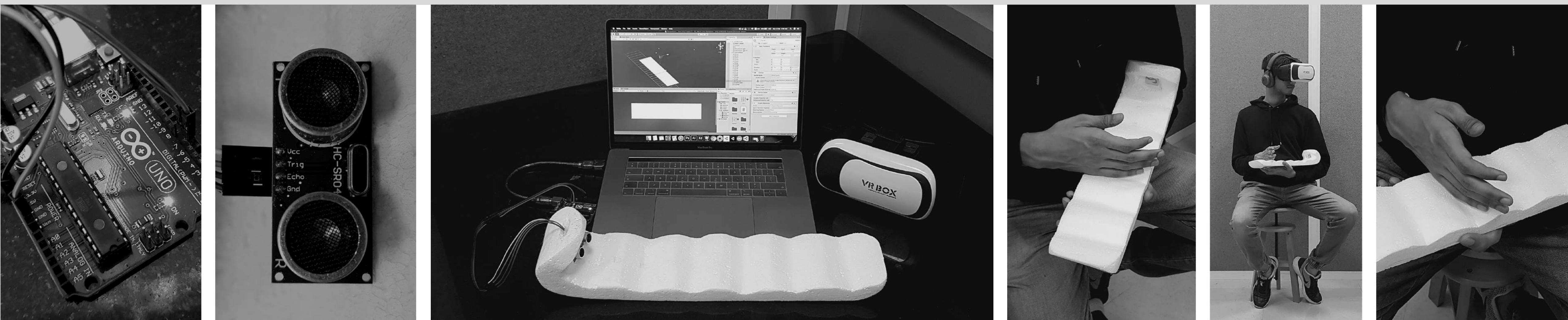
Adding a subtle background to highlight error



Users facing the variable error reduced from ~10% to ~6%

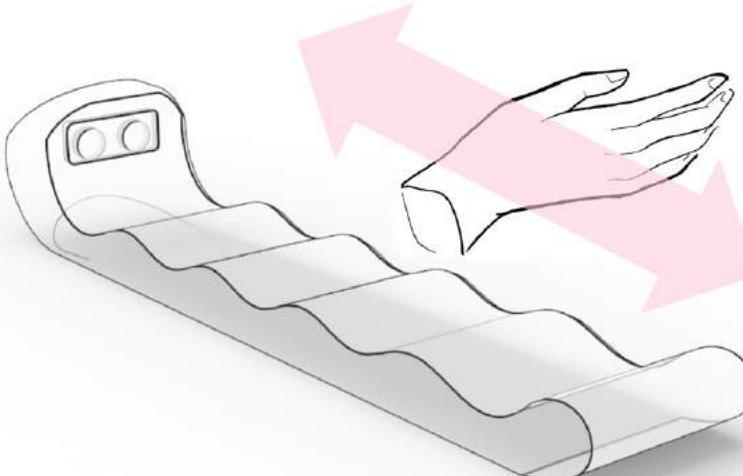
VAVE Gesture based musical instrument

Jan 2020 (3 weeks) • Group of 2 (my contribution: prototyping with sensors and Arduino + physical prototype)

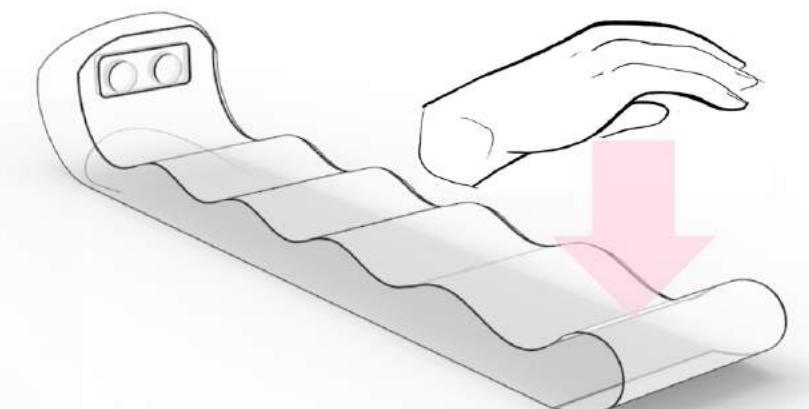


VAVE is a handy instrument played by waving and making other hand gestures over it. The physical instrument was to have a tangible mode of interaction while the music was played electronically by detecting the position of hand through an ultrasonic sensor and mapping it to musical notes using Arduino, processing and Audio Helm extension in Unity.

PLAYING THE NOTES



VOLUME FADE



Misc. at Girl Up Seher

Graphic design • Design for social media campaigns • Volunteering with Girl Up Seher



While working with Girl up Seher, an organisation dedicated towards gender equality, I got the opportunity to design social media posts for several campaigns such as on menstrual hygiene. I used imagery with real-life textures, photo manipulation and illustrations to provoke emotions while maintaining an aesthetic appeal.

SUSTAINABLE OPTIONS

Switching to sustainable menstrual hygiene options is recommended to reduce one's carbon footprint and to align with some of Sustainable Development Goals (SDGs) by the United Nations. It also helps with improving the disposal system in place for menstrual hygiene.

Making a switch to cloth pads, menstrual cups and period panties can make all the difference and can all reduce the woe of constant disposal.



- PPE kits are quite thick and it makes people sweat a lot, especially during summers. Within a few hours, a lot of women are completely drained of energy during this time. They mistake period blood for sweat and don't even realise that they've started menstruating.
- Society has conditioned us not to talk freely about these things, so they're also hesitant to inform their peers or seniors when such a situation arises.

