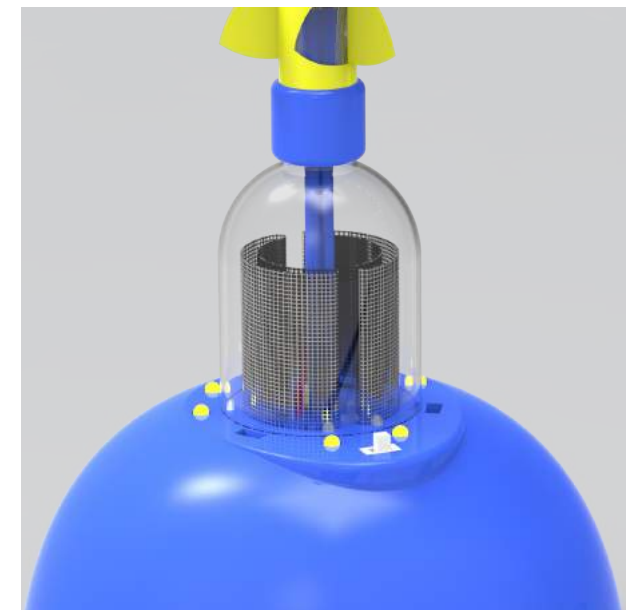


Rebecca Churn

Industrial Designer



Rebecca Churn

🏠 35 York Avenue, Wolverhampton 📞 07975653263 ✉ rebeccachurn@yahoo.co.uk 🎧 behance.net/rebeccachurn



Profile

I have recently completed an Industrial Design and Technology degree (2:1) at Brunel University including a year on the bilateral exchange program at San Francisco State University and am looking for an industrial designer position. During my degree I have worked on a diverse range of projects, encompassing both team and individual projects, which have incorporated graphic, product, web, service and user experience design. I recently undertook a 7 month collaborative project to design a hydrogen powered toy rocket with the toy company Wow! Stuff. As well as valuable experience working to deadlines, commercial design restrictions and electronics prototyping, I developed my CAD visualisation and 3D printing skills.

2012 - 2016 Brunel University BA Hons Industrial Design and Technology 2:1

- **Level 3 Modules:** Major Project **B+**, Contextual Design **B+**, Innovation Management **A**, Human Factors **B-**, Graphic Communication 3 **B**
- **Level 2 Modules:** Design Process 2 **B-**, Design for Manufacture and Communication **B**, Systems Design **B**, Design Applications **A**
- **Level 1 Modules:** Design Process 1 **B-**, Creative Engineering Practice **B**, Workshop with Materials **B**, Graphic Communication **A-**

2014 - 2015 San Francisco State University Bilateral Exchange Program (Design and Industry)

- **Autumn Classes:** Product Design 2 **B+**, Information Design 1 **A**, Graphic Design 2: Typography **B**, Rapid Prototyping and Manufacturing Systems **B**, Internship in DAI **A**, Small Boat Sailing **A**
- **Spring Classes:** Model Development Lab **B**, Rapid Visualization **B+**, Digital Media 2 **A-**, Internship in DAI **A**

2011 - 2012 Stafford College BTEC Foundation Diploma in Art and Design Merit

2004 - 2011 Wolverhampton Girls' High School

- **A levels:** Maths **A***, Biology **A***, Art **B**
- **GCSEs:** 11 (7 **A***, 4 **A**) including English and Maths

Computing



- Using Adobe Creative Suite for web design, photomontages, posters, reports and display boards.
- Creating CAD models (including for use with CNC machinery) and photorealistic renderings.
- Programming using R Studio to create data visualisations and info-graphics.
- Knowledge of HTML, CSS and JavaScript programming languages.

Practical

- Understanding of basic manufacturing processes and materials.
- Prototyping and model making in workshops: working with Wood, Metal, Foam and Plastics.
- Free hand sketching, marker rendering and engineering drawings.
- Electronics programming and circuit building.
- Book design including layout, structure and binding.



Activities

2015 - 2016 Member of Made in Brunel **Branding and Publications team**

- Contributed to magazine documenting our progress through final year.

2014 - 2015 Member of **Design Haus** at SF State

- On campus mini design consultancy that produced work for the international exchange organisations and external clients as part of the Internship in DAI class.

2013 - 2014 President of **The Real Outdoor Group** at Brunel

- Managed a committee: organising and leading trips across the country.
- Included booking accommodation, organising transport, risk assessment and directing people.
- Adapted successfully to unexpected events.

2013 - 2014 Media Officer of **Women in STEM and Design** at Brunel

- Advertised events by designing posters, email communication and producing presentations.
- Promoted female involvement in engineering disciplines.

2013 - 2014 Volunteered **guiding workshop tours** for Brunel Design interview (UCAS) days.

2008 - 2012 Volunteered as a **Brownie Young Leader**

- Worked with children: organising games and activities to keep them entertained and engaged.

Summer 2013 Work Experience in Graphic Design **Born Communication, Wordsley**

- Worked to live briefs including working within existing companies' design restrictions and branding.
- Used Macs and improved at using Adobe Creative Suite.
- Designed a logo, info-graphic, leaflet, business card and brochure.

Summer 2013 Student Sales Team **Endsleigh**

- Experienced actively engaging customers and performing persuasive sales pitches.
- Worked as part of a team: handling objections and managing customer flow.
- Completed paperwork and transactions in a fast paced environment.

May 2012 - September 2012 Voluntary Sales Assistant **Cancer Research, Wolverhampton**

- Gained customer service experience from working behind the till on the shop floor including coping with high volumes of shoppers and handling complaints.

• **Outdoor activities** including hiking, caving and sailing.

• Was involved in the **Circus Skills** society at Brunel and enjoy learning new skills.

• Currently learning to play the **guitar**.

• Studying abroad for a year inspired me to start **learning new languages** (Japanese and French).



Work Experience



Interests



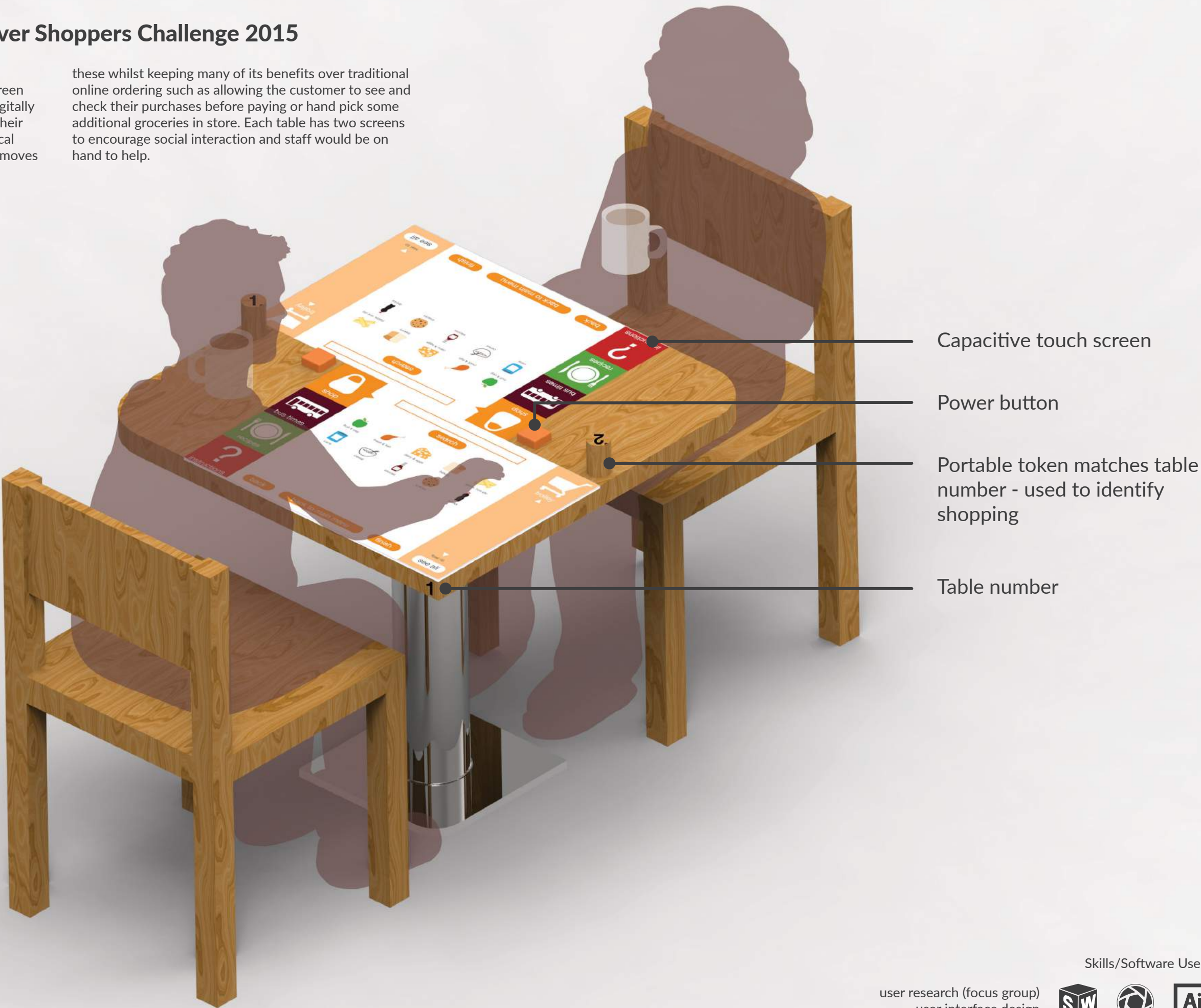
Design Skills

Shopping Café

Third place in Sainsbury's Silver Shoppers Challenge 2015

The brief was to design an inclusive supermarket experience for customers aged 65+. This touchscreen café table ordering system allows customers to digitally order groceries in store to collect and pay for on their way out. Older customers often experience physical difficulties with in store shopping. The concept removes

these whilst keeping many of its benefits over traditional online ordering such as allowing the customer to see and check their purchases before paying or hand pick some additional groceries in store. Each table has two screens to encourage social interaction and staff would be on hand to help.



Skills/Software Used:

user research (focus group)
user interface design



Shopping Café

How the service would work

1



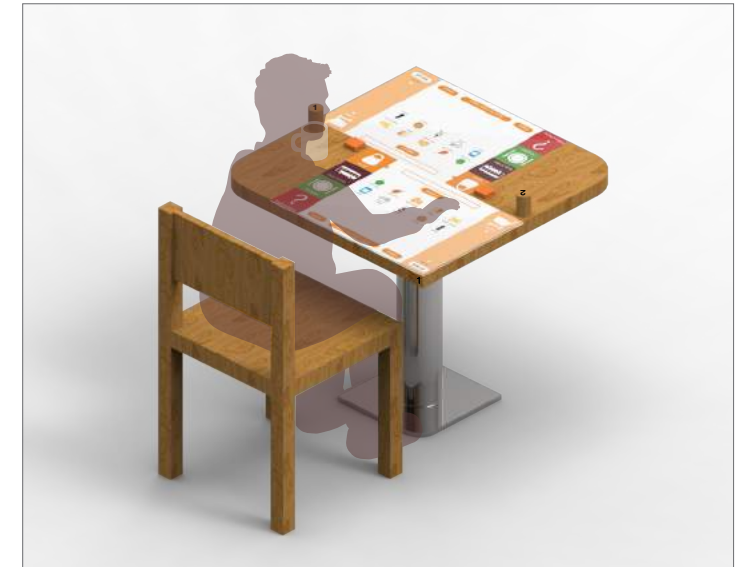
Customer enters café instead of main store.

2



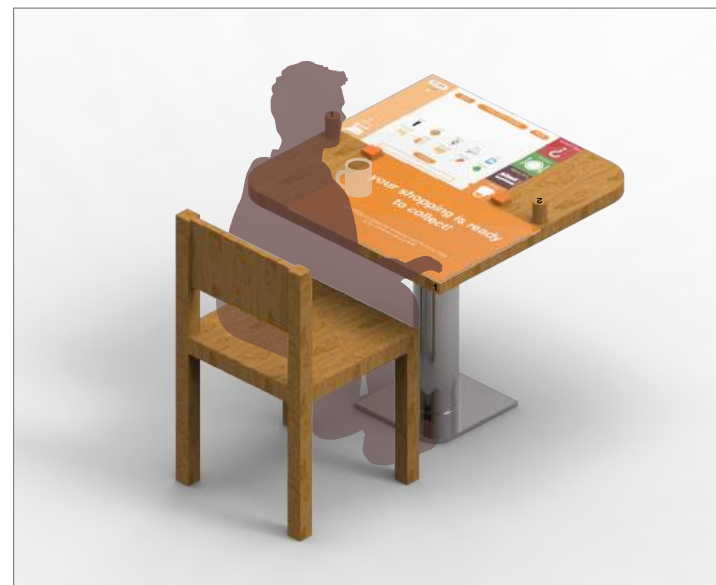
They buy food or a beverage in the café.

3



They sit at a table and order shopping via the touchscreen digital system.

4



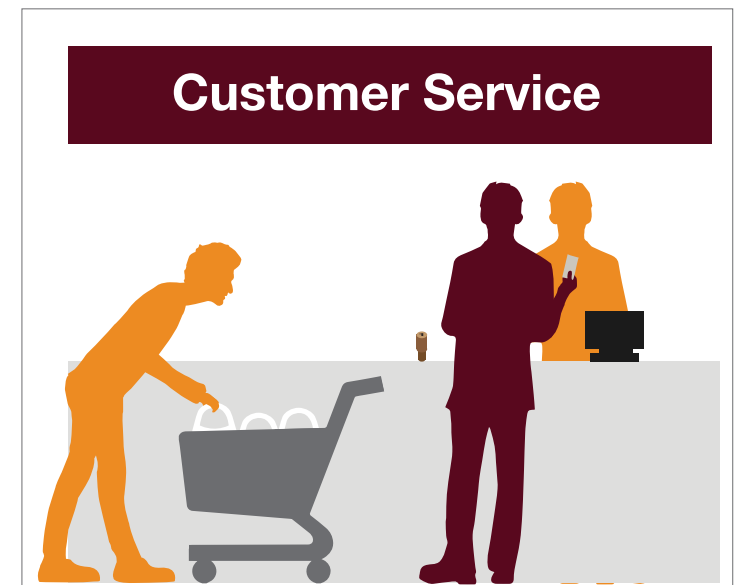
They relax whilst shopping is assembled by store staff. Screen shows alert when shopping is ready.

5



Customer leaves café taking token from table (matches table number).

6



They hand in the token at a kiosk to collect matching shopping and pay.

Skills/Software Used:

user research (focus group)
user interface design



Shopping Café

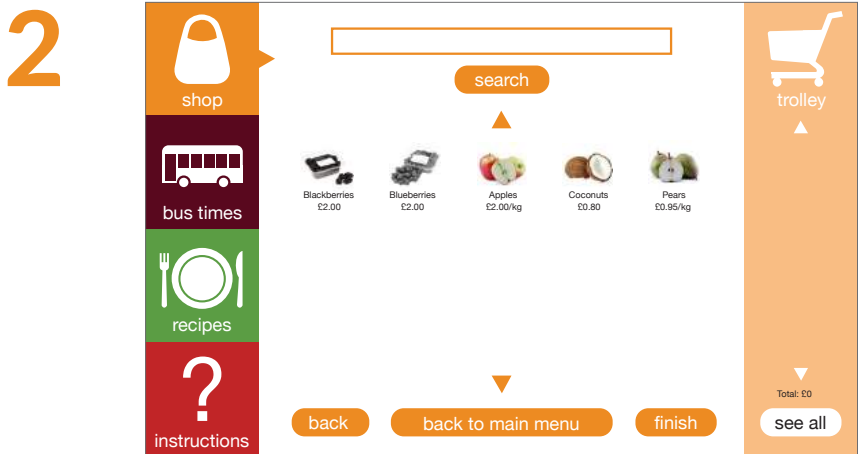
User Interface

The user interface aims to be more intuitive to use than traditional online ordering: plus the customer can also view recipes, check bus times and call for assistance if

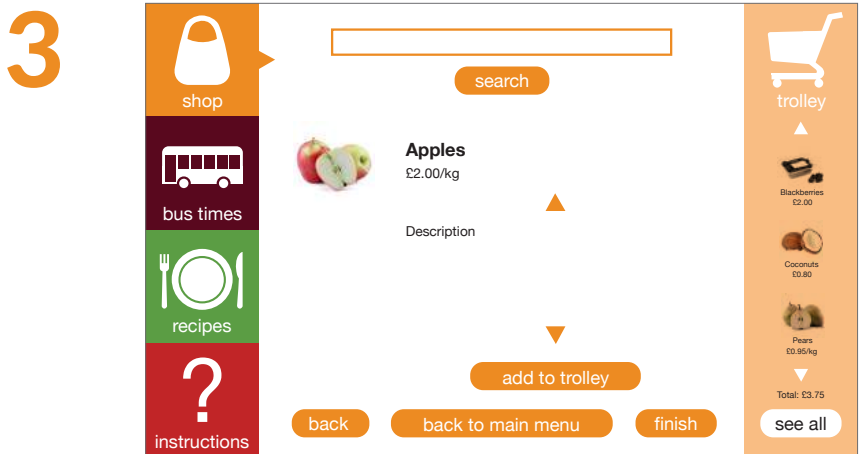
needed. The user selects an option from the left hand menu and can scroll through their virtual shopping trolley in the right hand panel.



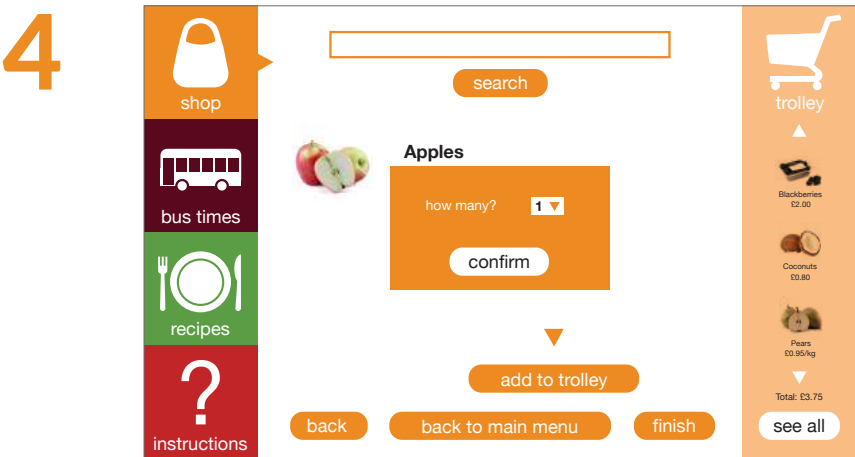
Search for a product or select grocery category (leads to page with sub-categories).



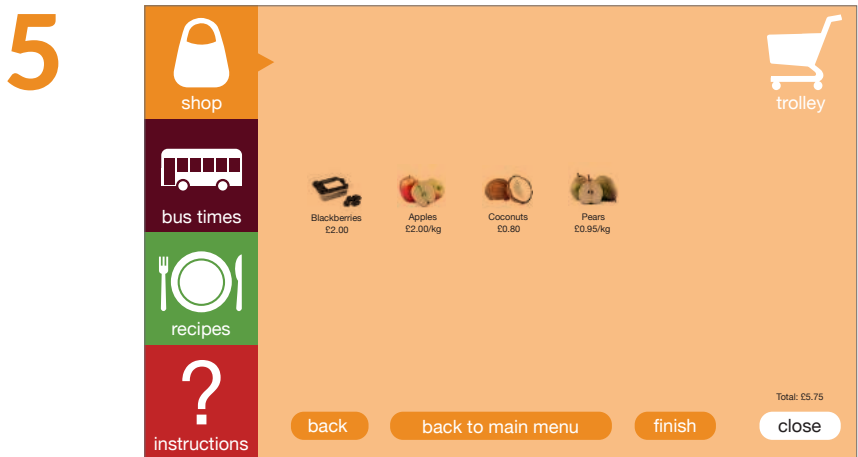
Select specific product.



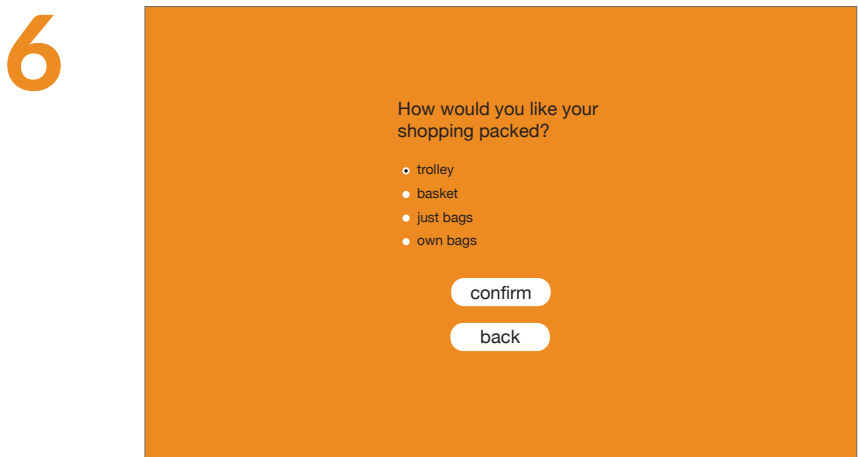
View product details and select to add to virtual trolley.



Pop-up box allows user to select quantity and confirm.



Click button to expand and view all virtual trolley and make any changes.



Click finish, select how shopping is packed and confirm.

Skills/Software Used:

user research (focus group)
user interface design



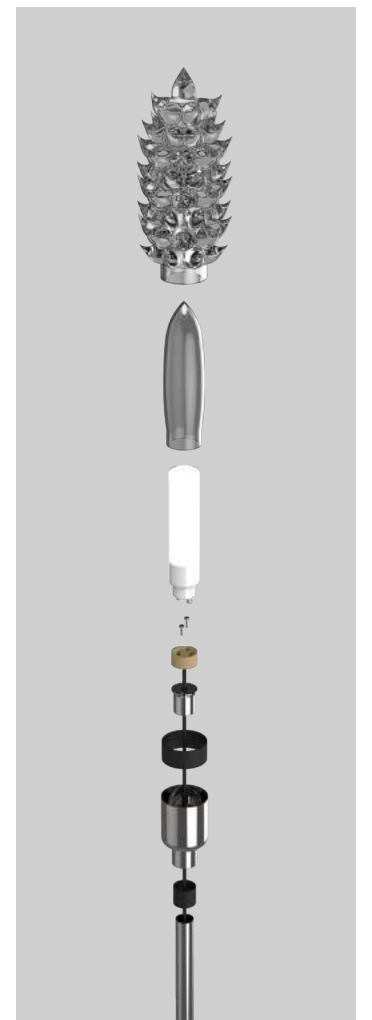
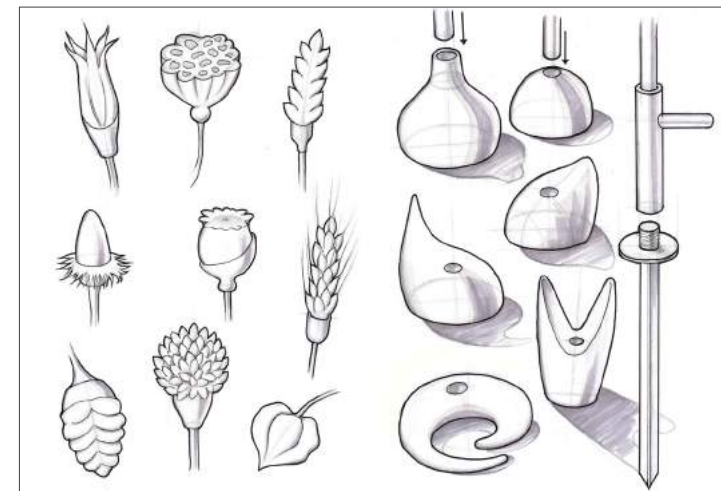


Poaceae

Outdoor luminaire inspired by a grass seed head

Poaceae is designed to be used as decorative ambient lighting for garden gatherings. The luminaire can either be planted directly into the ground with the screw on metal spike or inserted into the accompanying concrete

base for patio use. It would conform to IP65 by using silicone rubber gaskets to seal openings. The design was based around an LED lamp provided by tp24 but could be adapted for alternative bulb types.



Far Left: CAD rendering of final design with concept explanation diagrams

Top Left: Sketches showing possible seed head and base forms

Bottom Left: Prototypes including earlier design iteration with gooseneck cable

Above Left: Aesthetic model

Above Right: Exploded view of luminaire head including outer glass casing, frosted diffuser and lamp.

Skills/Software Used:

prototyping, model making
design for assembly



Aston Martin Brand Future

Empowering women through the father daughter relationship

As part of a group project to reposition an existing brand and develop a range of future products, we discovered that Aston Martin have recently expressed a desire to attract more female customers. We believe that targeting the father daughter relationship is the answer to encourage brand loyalty at a younger age. Drawing on Aston Martin's associations with James Bond, my design

is a locket containing a secret code cracking wheel that aims to make everyday communication more exciting. By sending her coded messages to decipher through a companion app, the father can help develop his daughter's problem solving skills and encourage her to engage in STEM subjects. The locket can only be opened when she has decoded the current message.



Far Left: Locket as part of group product range

Left and Above: Final model of locket

Skills/Software Used:

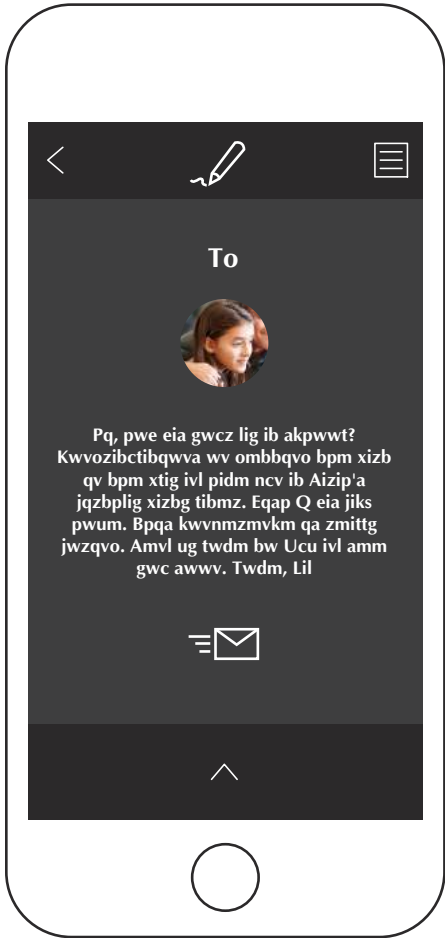
brand analysis, brand repositioning, sketching
storyboarding, styling, model making, teamwork

Aston Martin Brand Future

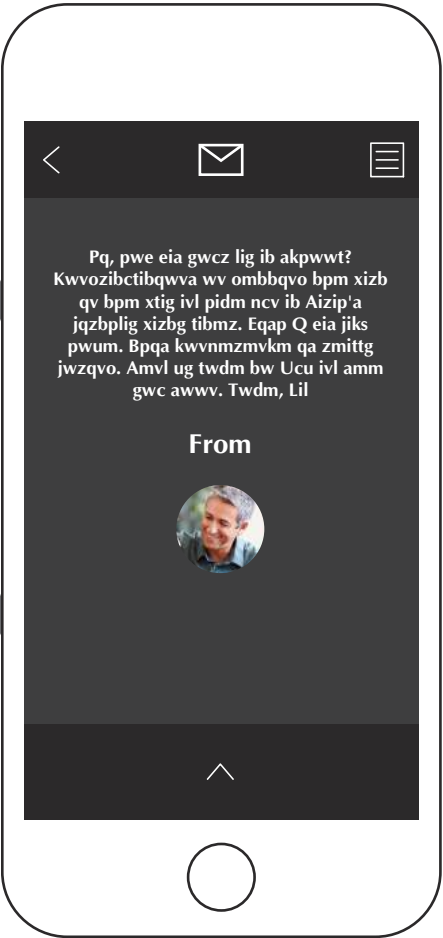
User Interaction with Locket and Companion App

The app teaches the pair how to write and crack coded messages using ciphers. Ciphers replace each letter in the message with a different letter, following a certain rule. The daughter rotates the decoder wheel on the locket to match up different letters to help solve the

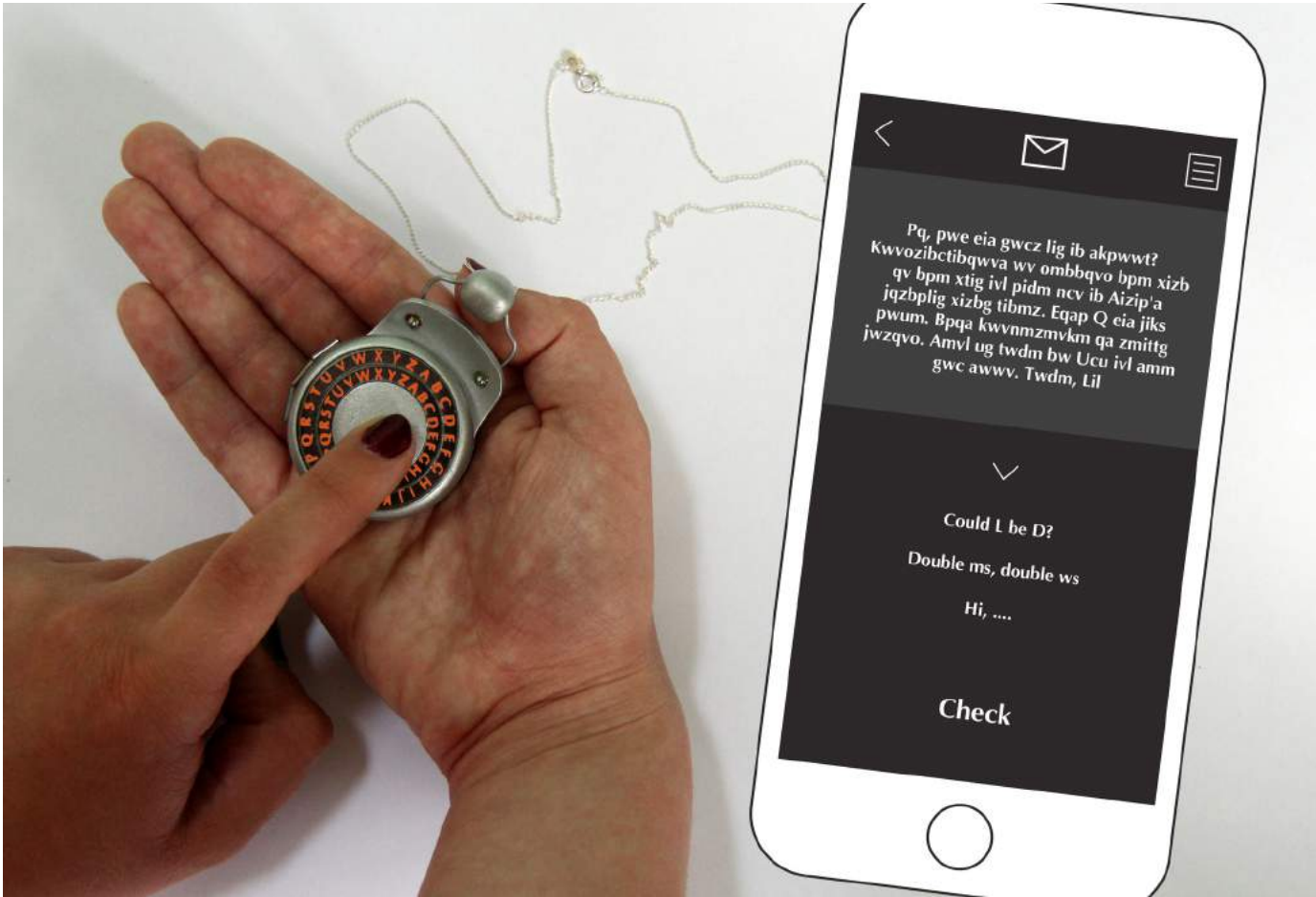
coded message. When she has deciphered the message, the app sends a copy back for her father to check. If she was successful the app wirelessly communicates with the locket to unlock it. A photo, small keepsakes or a prize can be stored inside.



Sending a message on the app.



Receiving a message on the app.



Upon one full turn of the locket's decoder wheel, the letters light up to help decode the message.



Message has successfully been decoded.

Skills/Software Used:

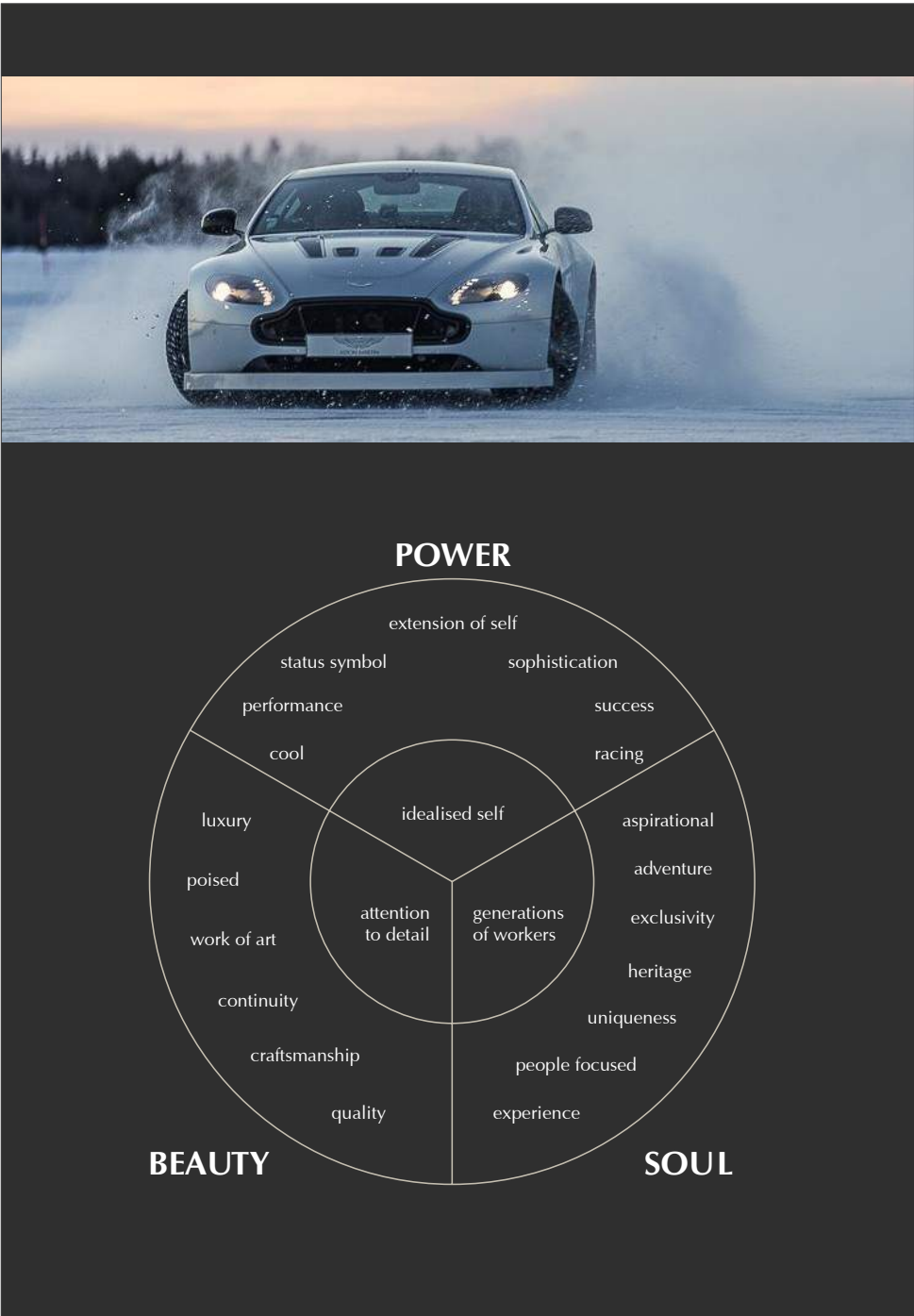
brand analysis, brand repositioning, sketching
storyboarding, styling, model making, teamwork

Aston Martin Brand Future

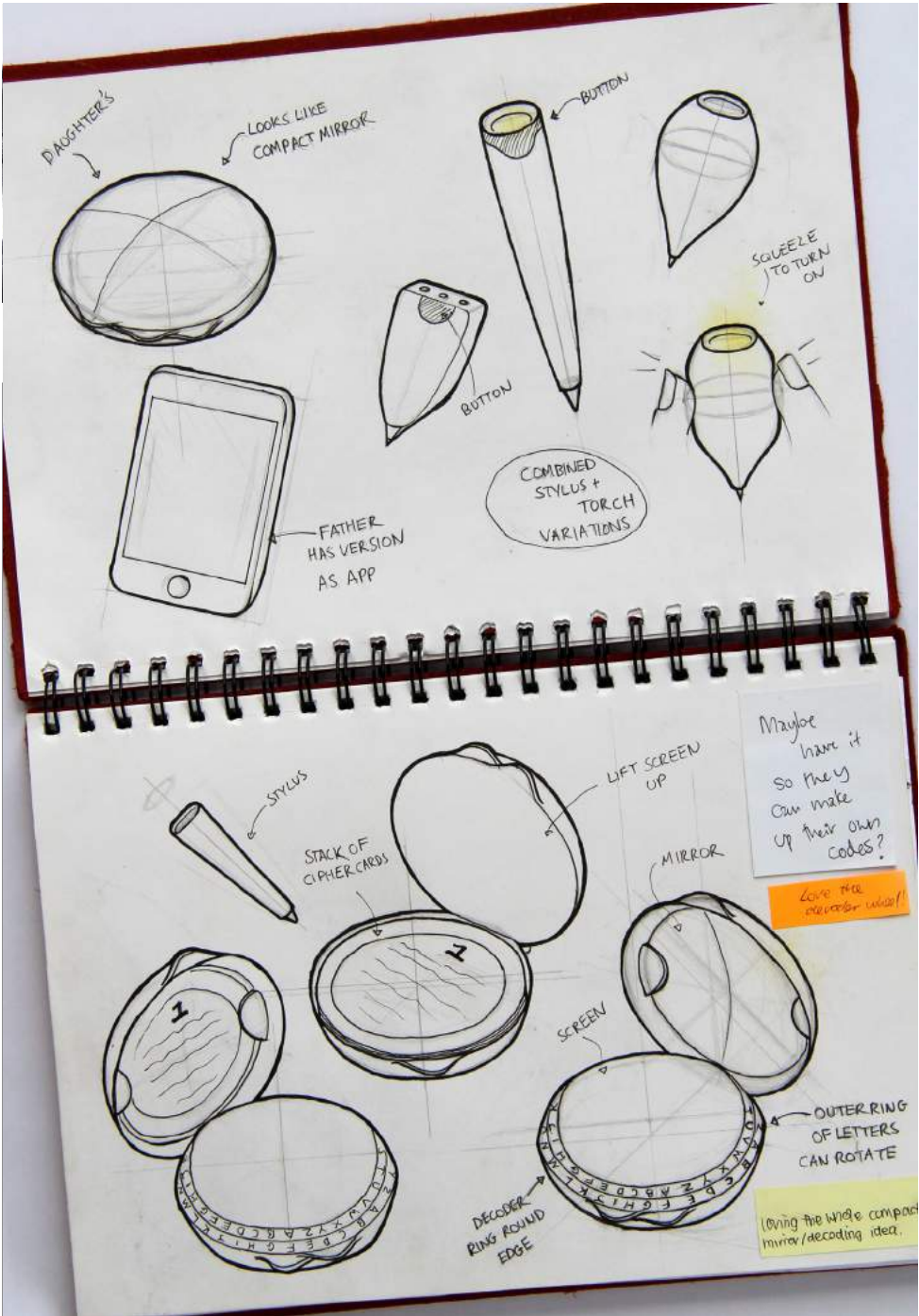
Brand Analysis and Initial Ideation

The following pages include a sample of pages from the log book I used to record my concept development. The initial idea consisted of two messaging devices disguised as everyday objects such as a wallet or compact mirror. I later removed the screen interface as in the future more

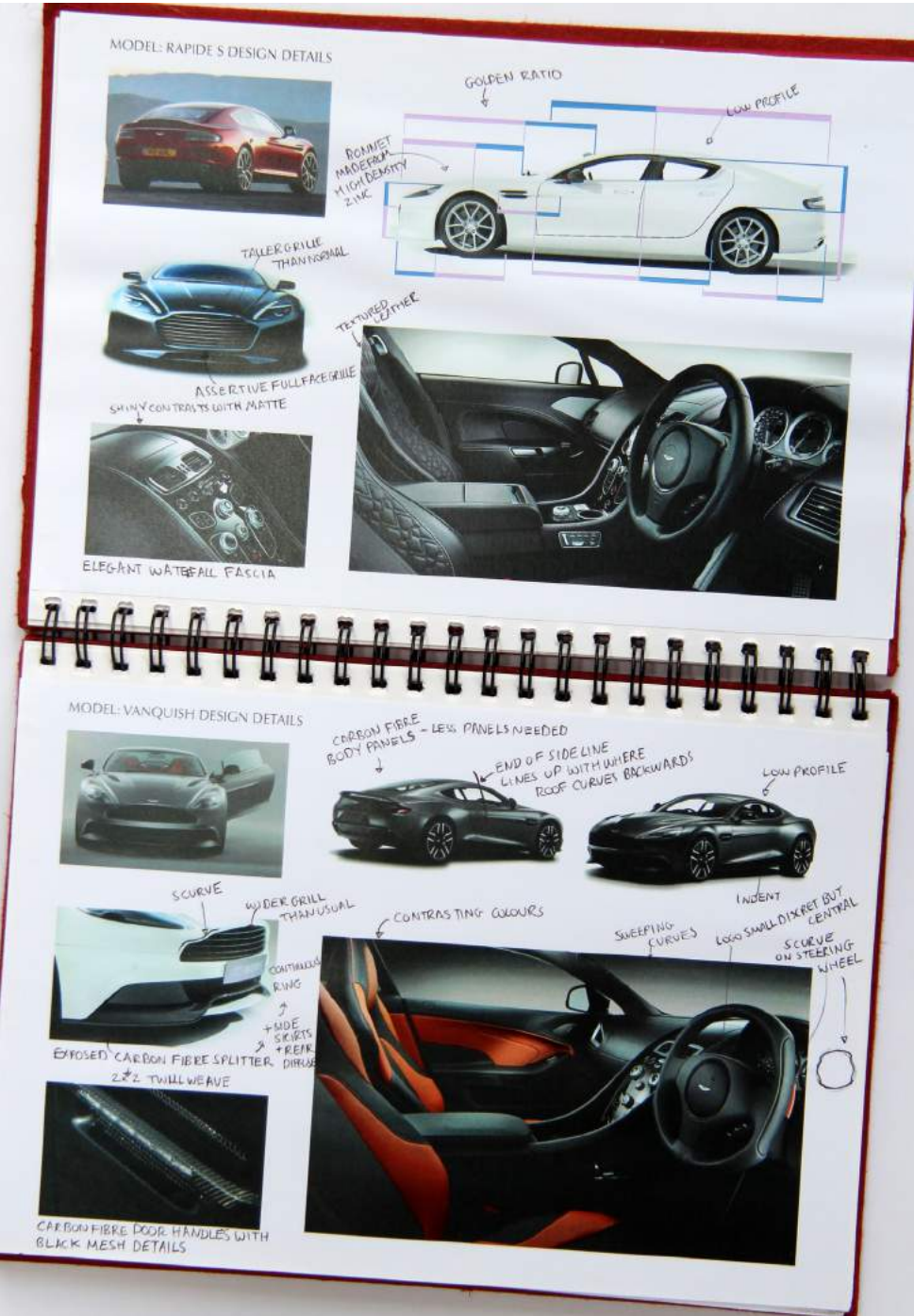
children will have access to smart phones and chose to focus on the daughter's device. I also analysed the 3D language and CMF of Aston Martin's vehicles and their accessory products.



Page from brand repositioning report (brand analysis diagram based on Aston Martin's slogan: Power, Beauty and Soul).



Example of initial concept sketches (compact mirror with stylus concept).



Aston Martin style analysis (3D language and CMF).

Skills/Software Used:

brand analysis, brand repositioning, sketching
storyboarding, styling, model making, teamwork

Aston Martin Brand Future

Design Development

The design evolved into a piece of jewellery on the basis it would likely have greater emotional durability. I discovered there is a gap in the market for STEM or spy toys aimed at girls and that girls prefer toys that encourage social interaction or imaginative play. Elements

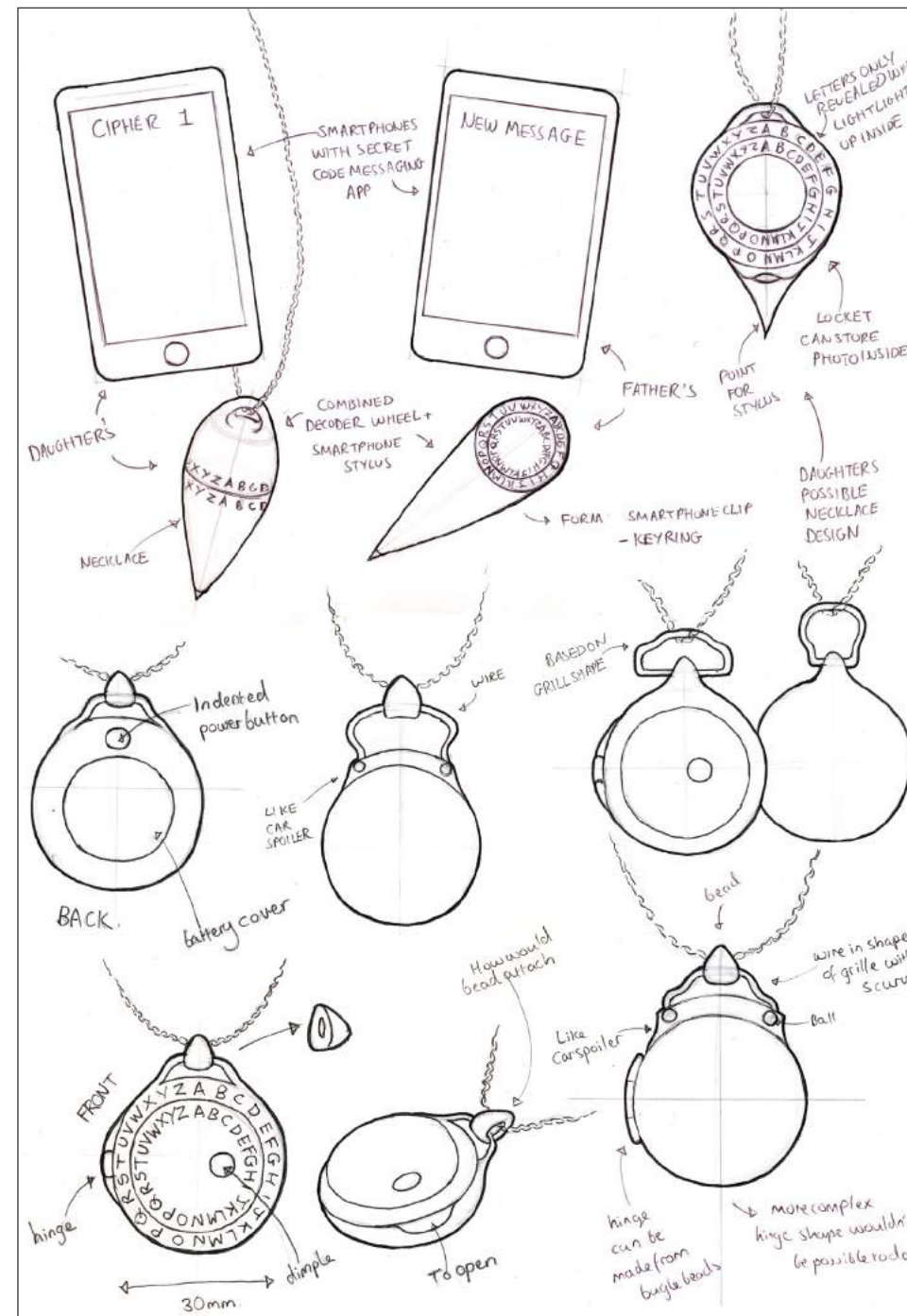
of Aston Martin's 3D language such as the 's curve' and spoiler were incorporated into the design although it then had to be adapted to accommodate the limitations of the modelling facilities available. The father could potentially have a similar device as a keyring.



Sample of sketch models including compact mirror, book and necklace concepts.



Existing product analysis including STEM toys, children's spy toys, girls' accessories and locket features.



Aesthetic detail design of locket.



Final sketch models including laser cut testing.

Skills/Software Used:

brand analysis, brand repositioning, sketching
storyboarding, styling, model making, teamwork

Stressball Mouse

Promotional product - runner up in bpma Student Design Award 2014

This 2 in 1 computer mouse and stressball is designed as a promotional product. The project paid particular attention to materials, manufacturing processes and costing.

It has a Soft Polyurethane Rubber body that can be branded with any company's logo using transfer printing. The mouse has a huge variety of potential markets including financial, tech, medical, office supplies and

online companies. It includes Teflon mouse feet to reduce friction on surfaces and the electronics are protected by an internal hard plastic casing. The components would be assembled using Polyurethane Adhesive and have been designed with feedback from manufacturing companies (used for costing) concerning draft angles, undercuts, corner radii, wall thickness and tolerances. The user can squeeze the stress away as they work.

Part costs are based on a volume of 100,000 units. Costs include tooling, materials and manufacturing.

Left and Right Mouse Buttons, ABS, Injection Moulding, £0.24 each, £0.48 together

Logo, Transfer Printing, 1 colour, 1 position: £0.13, Extra colour/position: £0.053

Mouse Body, Open Cell Polyurethane Foam Rubber, Reaction Injection Moulding, £0.55 each

Electronics Casing Top, ABS, Injection Moulding, £0.25 each

Silicone Mouse Wheel, Off the Shelf Part, £0.04 each

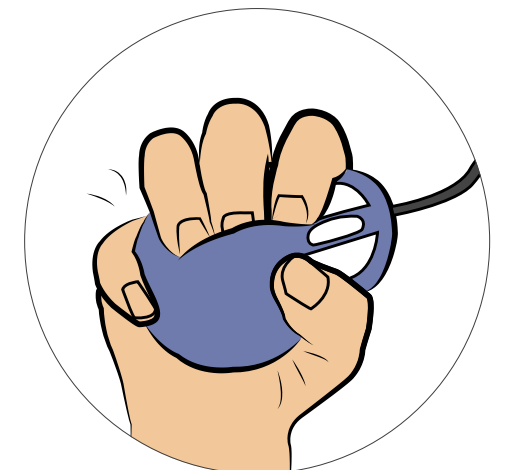
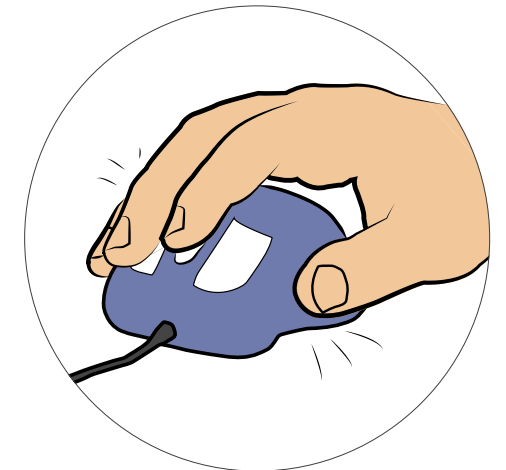
Scroll Wheel, ABS, Injection Moulding, £0.24 each

PCB with Electronic Components, PCB Sheet and Off the Shelf Components, PCB Manufacturing, Printing and Assembly, Approx £0.63 each

Electronics Casing Base, ABS, Injection Moulding, £0.30 each

USB Plug and Cable, Off the Shelf Part, £0.60 each

Mouse Foot Sticker, Off the Shelf Part (Teflon), £0.03 each, £0.12 together (4)



Far Left: Exploded diagram of mouse components with materials, manufacturing processes and costs specified

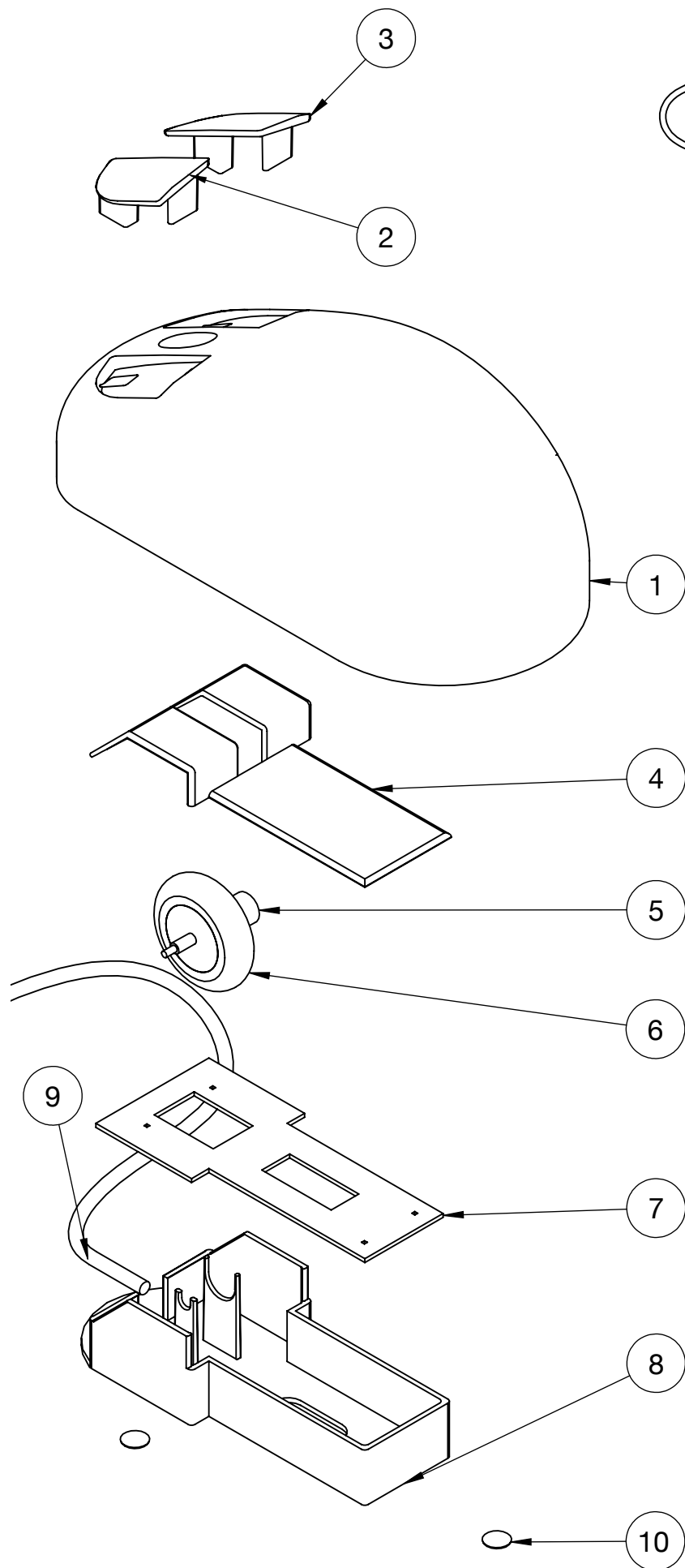
Left: CAD renders of mouse

Above: Illustrations to explain concept

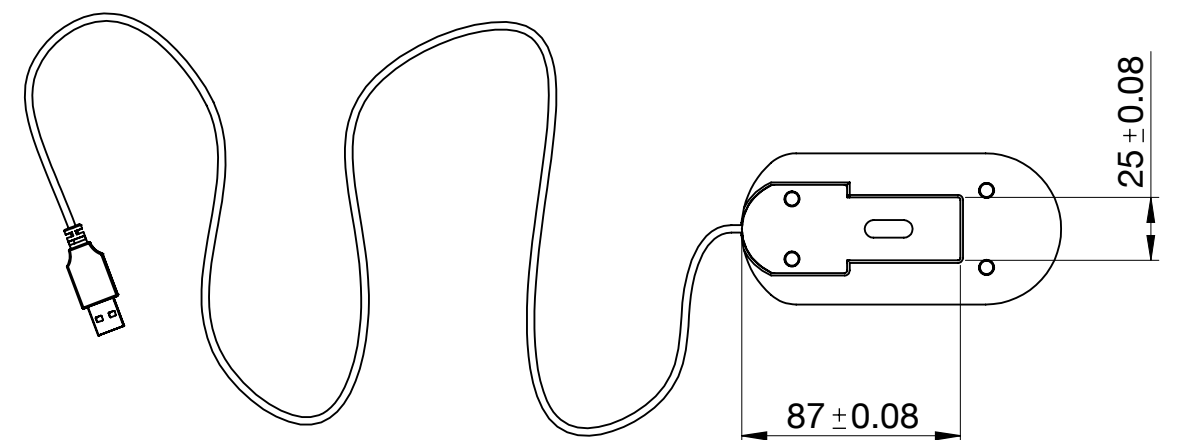
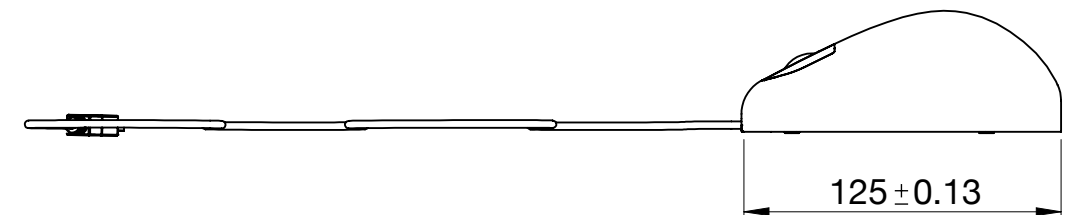
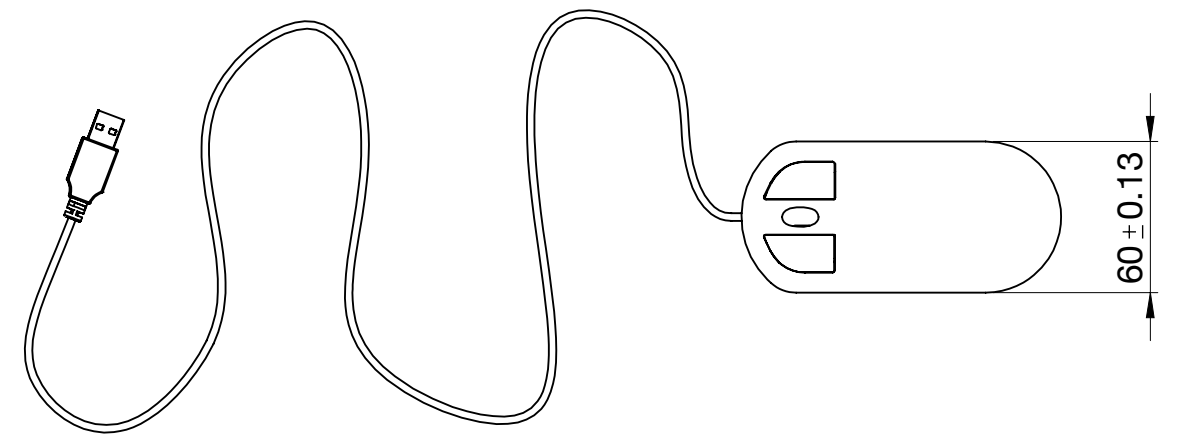
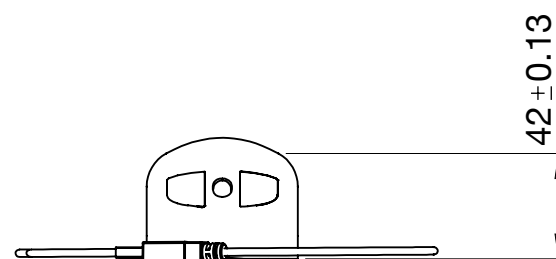
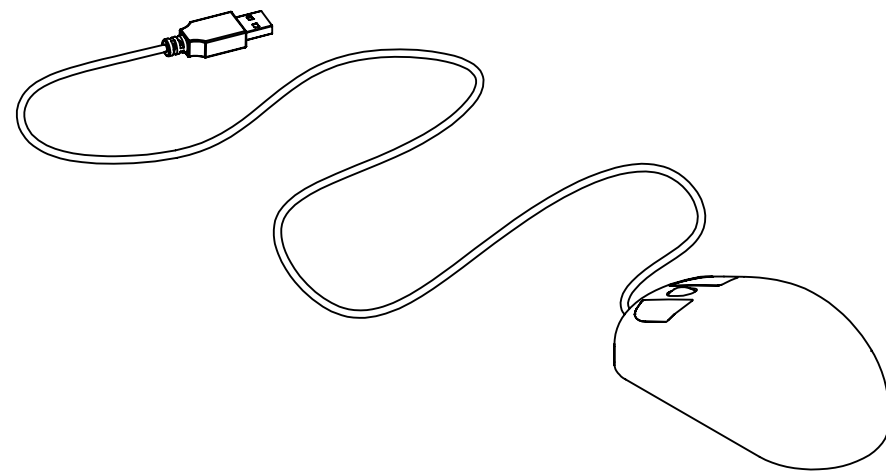
Skills/Software Used:

market research, information design
sketching, design for manufacture





Exploded Drawing
SCALE:1:1.25



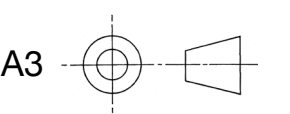
ITEM NO.	Part Name	Material	QTY.
1	Mouse Body	Polyurethane Foam Rubber	1
2	Left Mouse Button	ABS	1
3	Right Mouse Button	ABS	1
4	Electronics Casing Top	ABS	1
5	Scroll Wheel	ABS	1
6	Silicone Mouse Wheel	Silicone	1
7	PCB	PCB and Components	1
8	Electronics Casing Base	ABS	1
9	USB Plug and Cable	N/A	1
10	Mouse Foot Sticker	Teflon	4

Stressball Mouse

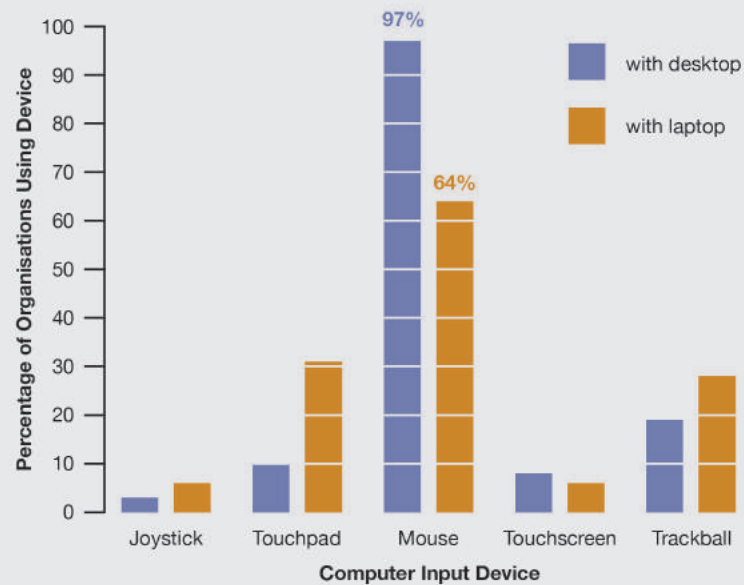
All dimensions are in mm

Tolerances are estimates derived from selected manufacturing processes

SCALE:1:3



Computer Input Devices Used by Work Organisations



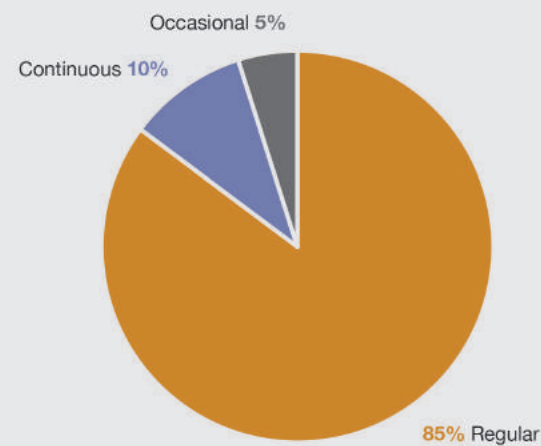
73% of organisations had all desktop users using a mouse

31% of organisations had all laptop users using a mouse

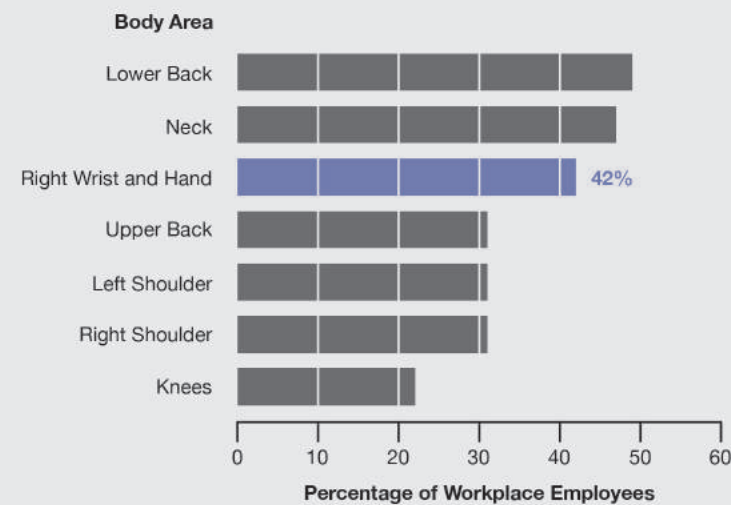
85% of workplace employees reported muscular pains in the last 12 months

42% of workplace employees had pain or discomfort related to using a mouse

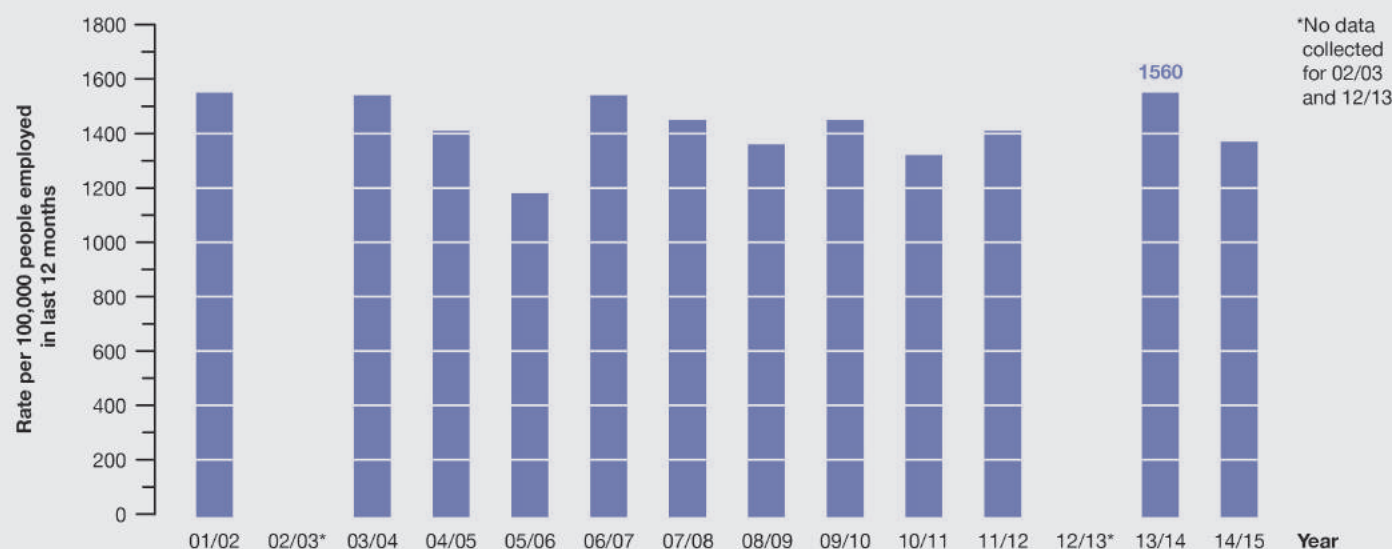
Intensity of Mouse Use by Workplace Employees



Pain or Discomfort Experienced by Workplace Employees Over Last 12 Months



Prevalence of Work Related Stress in Great Britain

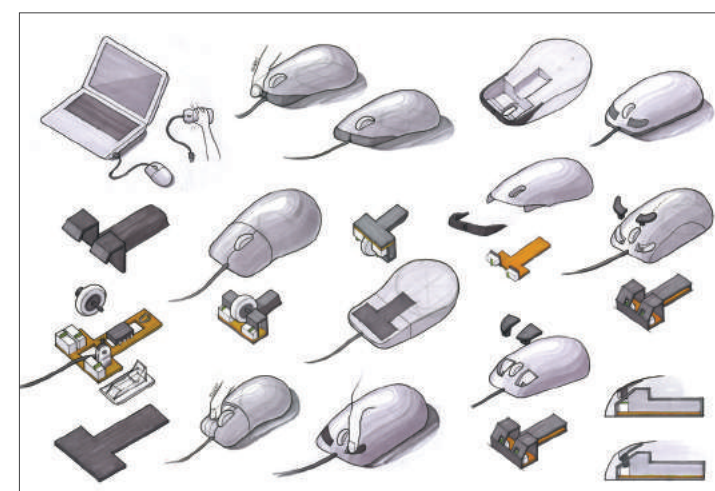
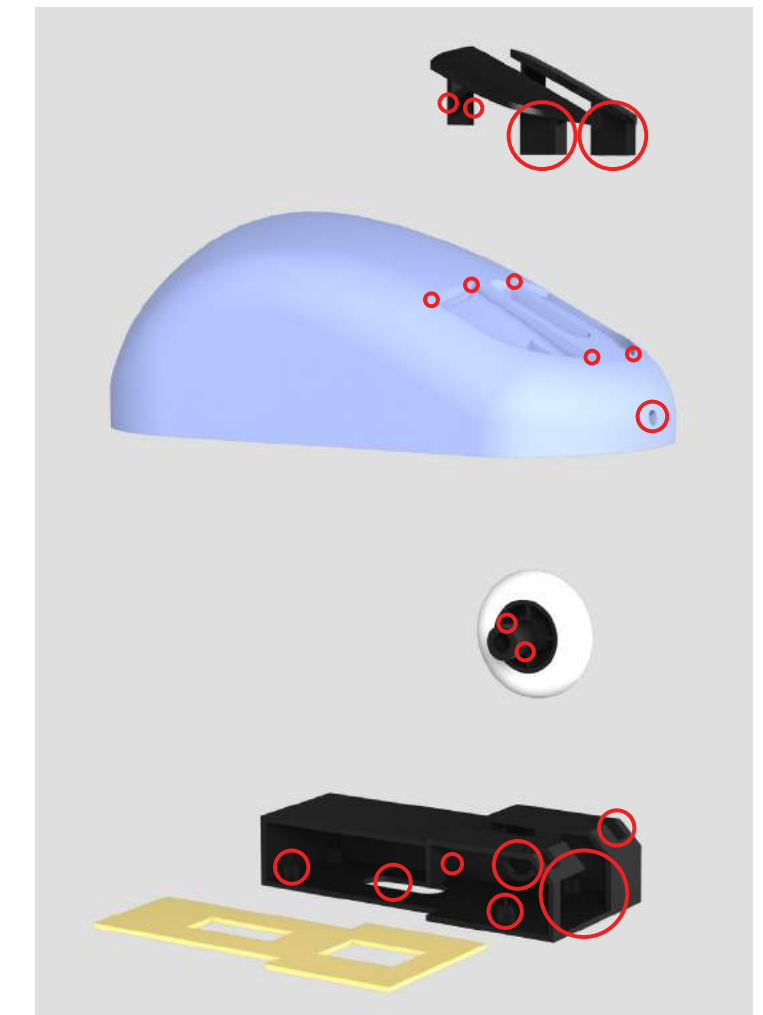


Stressball Mouse

Design Development

The design process included brainstorming general ideas (of which the stressball mouse was the most promising), market research to justify the user need and taking apart an existing mouse, in order to estimate how to condense the PCB, so the maximum volume could be used for the

stressball part. I also worked out how to integrate the buttons with the PCB. The components were designed using CAD and sent to manufacturing companies to gain feedback on how to improve and optimise their design.



Far Left: Info-graphic showing market research into computer mouse usage and stress in the workplace to justify the product's usefulness.

Top Left: Taking apart an existing computer mouse to see how it works.

Bottom Left: Concept sketches focusing on the design of the buttons and internal casing.

Above: Earlier design iteration in CAD. Problem areas for manufacturing are highlighted.

Skills/Software Used:

market research, information design
sketching, design for manufacture

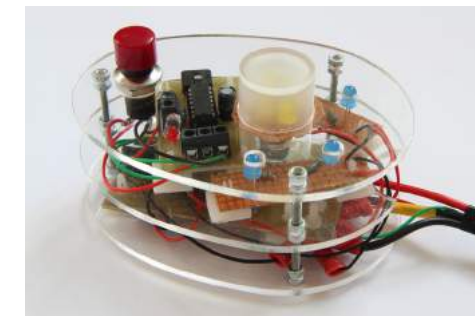
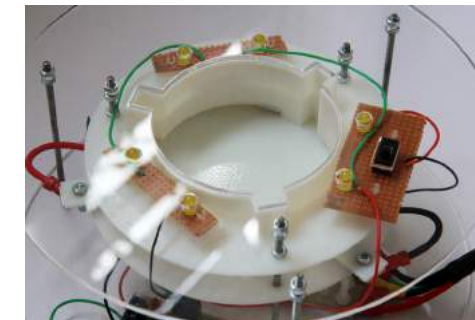


Hydrogen Rocket Toy

Designed in collaboration with Toy Company Wow! Stuff

This rocket toy aims to be both fun and educational for children and adults aged 8 upwards. A safe volume of hydrogen is generated through electrolysis of water allowing the user to learn about electrochemistry as well as basic rocket science in action. It is a closer replication

of how a life-size space rocket works than other types of toy rocket currently on the market, such as those powered by compressed air. The design allows the user to see how the rocket works and includes necessary safety features such as an emergency stop button.



Far Left: CAD rendering of fully assembled rocket

Left: Prototype (fully assembled and as separate parts)

Centre: Close-ups of prototype

Right: CAD renderings of rocket in stages of disassembly

technical research, intellectual property understanding, product analysis
risk assessment, sketching, prototyping, electronic circuit building, oral presentation

Skills/Software Used:

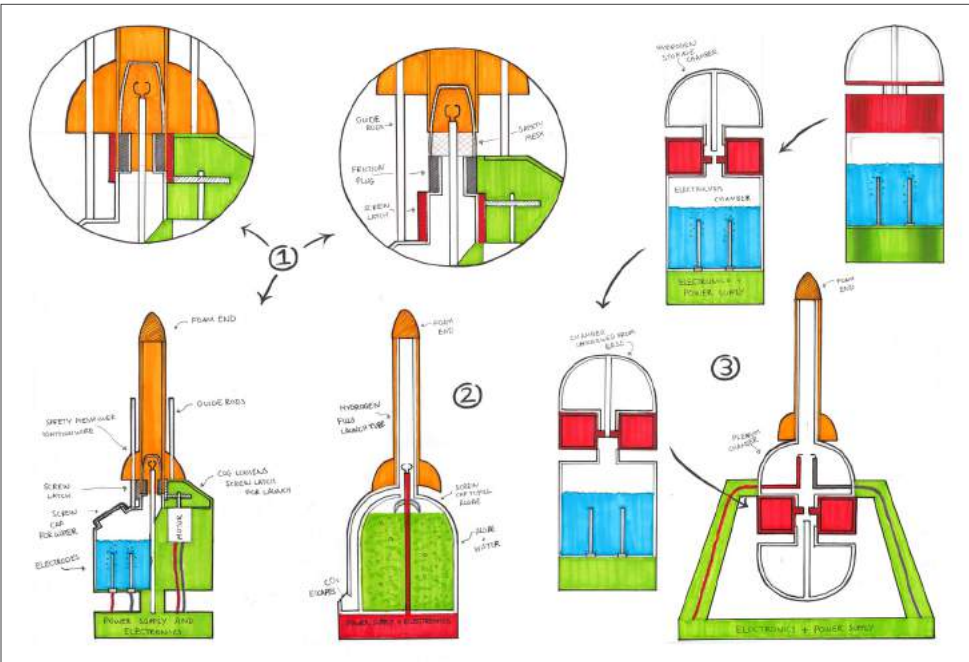


Hydrogen Rocket Toy

Design Development

I first discovered a competitor product that had previously been on the market with an associated patent. My initial approach was to brainstorm concepts to avoid infringing this patent; but as these would have potentially had a negative impact on the rocket's efficiency, I then carried

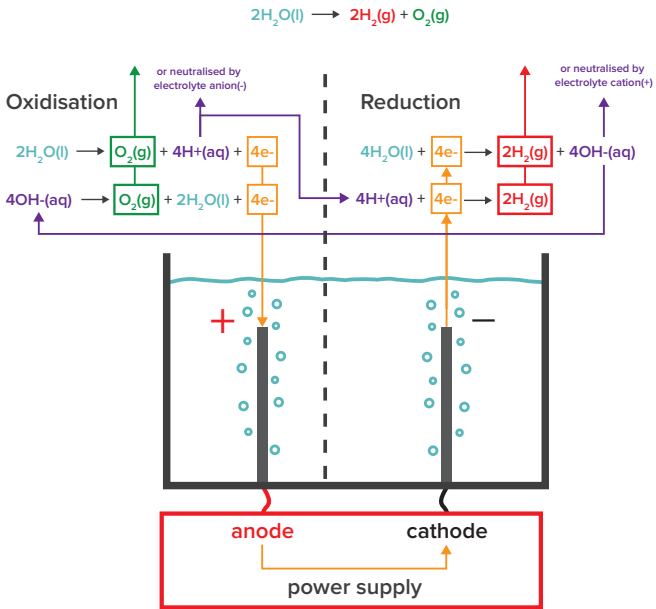
out user testing with the product to see how it could be improved upon. Development shifted to optimising the efficiency of the electrolysis system and location of the gas igniter (whilst making both visible to the user) in order to improve the rocket's reliability.



Initial concepts to avoid patent infringement



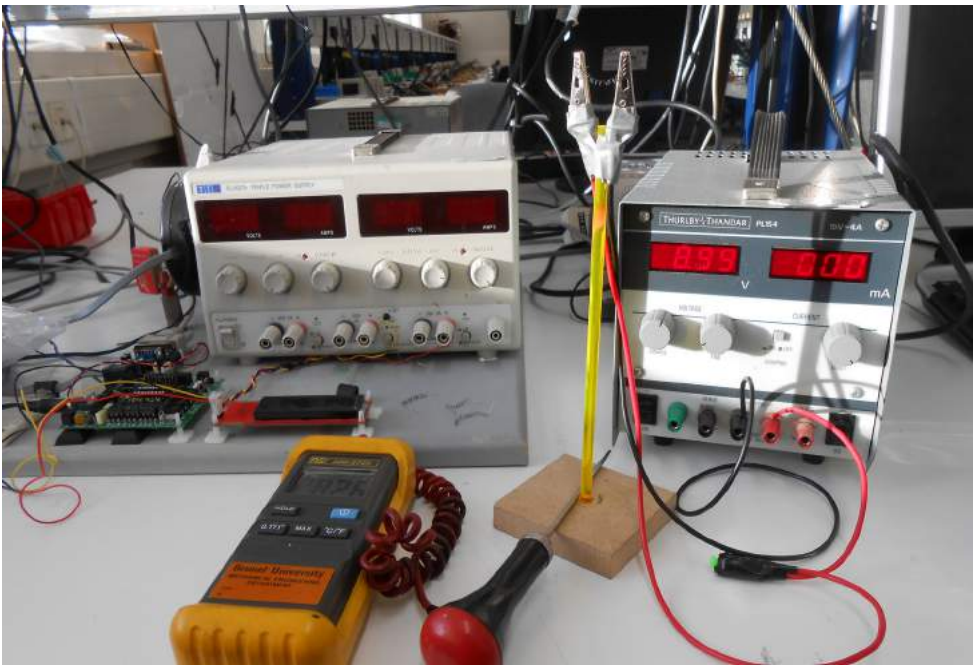
User testing with competitor product (Estes Hydrogen Rocket)



Scientific research (electrolysis)



Electrolysis experimentation



Ignition mechanism testing (resistance wire)



Early prototype testing (adjusting electrodes and igniter position)



Skills/Software Used:

technical research, intellectual property understanding, product analysis
risk assessment, sketching, prototyping, electronic circuit building, oral presentation



Hydrogen Rocket Toy

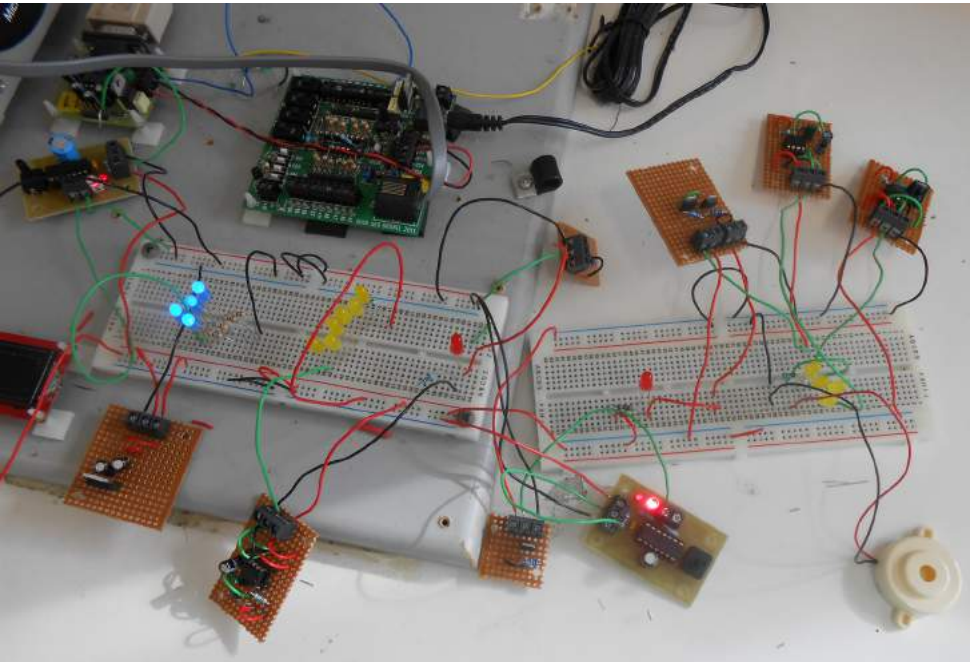
Design Development Continued

After finalising the design of the electrodes, I continued by prototyping the electronics which included design iterations of the user interface. Suspense was added to the user interaction by incorporating an LED countdown into the controller. The rest of the process

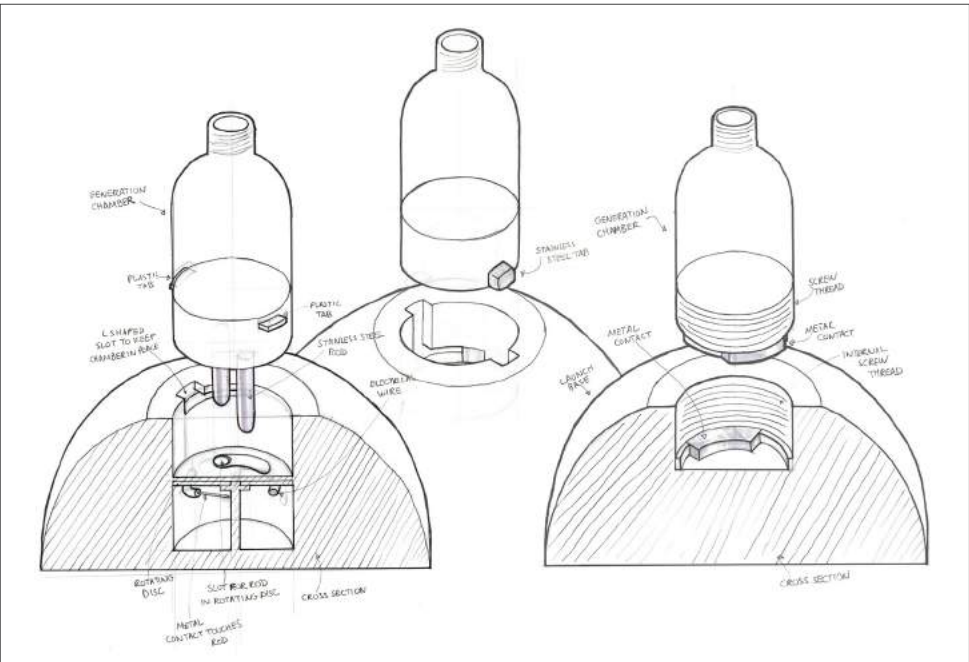
focused on the design of the components and their assembly incorporating appropriate safety mechanisms. A mock-up of the potential packaging was also produced as an exercise in how the rocket would be marketed.



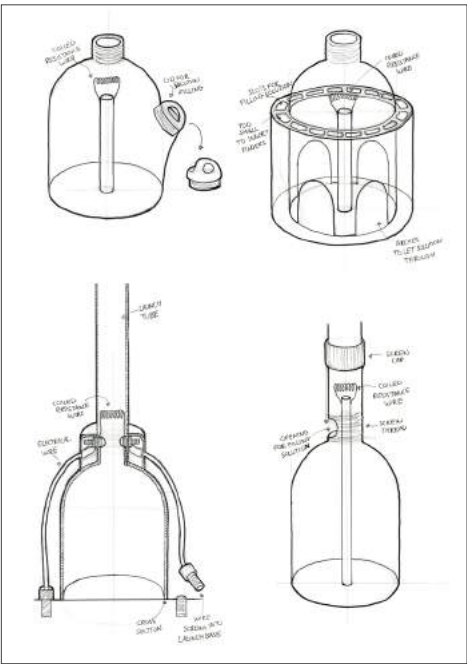
Electrode design



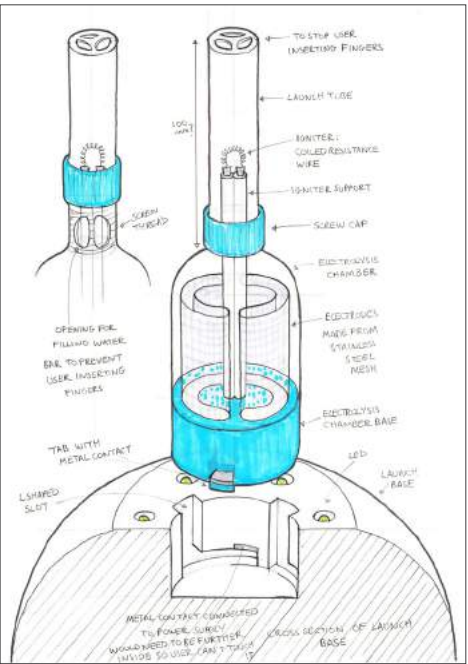
Electronic prototyping



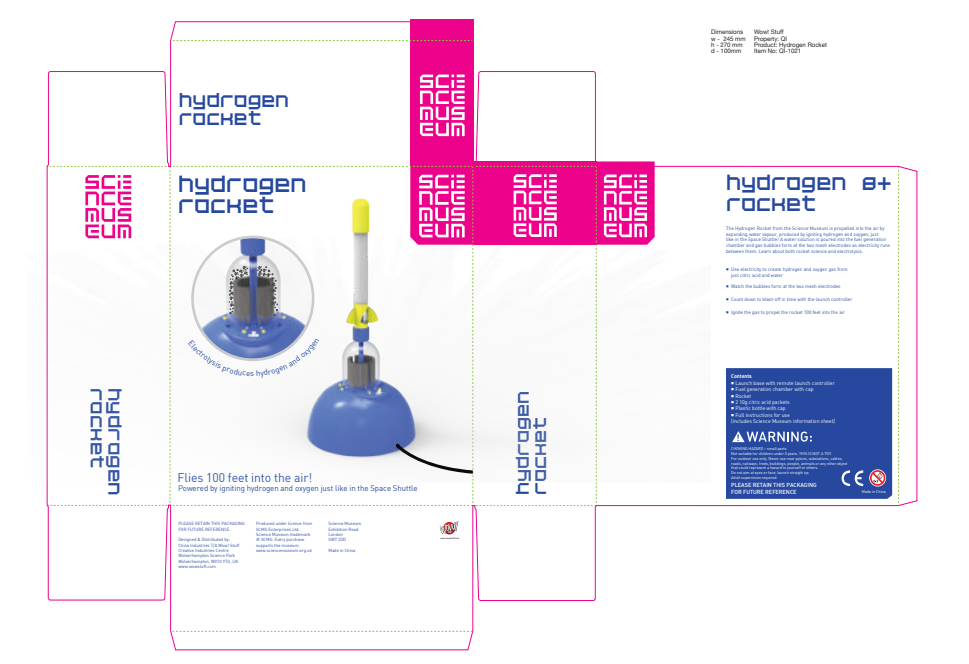
Assembly design sketches



Detail and component design



Advanced prototyping



Packaging mock-up design

Model Making

A selection of products and presentation models I have made

I can use a variety of techniques such as CNC machining, laser cutting, 3D printing and hand modelling; working

with materials such as wood, metal, foam, fabric, clay and plastics.



Top Far Left: Icing pen inspired by kitchenware brand Joseph Joseph (includes extra nozzle and a flower nail)

Bottom Far Left: Pen design inspired by industrial designer Tord Boontje

Above: Classroom furniture set for school children including rocking chair (pair's project)

Bottom Left: Flat-pack jewellery stand designed to be produced using a laser cutter

Bottom Right: Beehive: one of a batch of five produced as a team (manufacturing instructions were provided by another team)

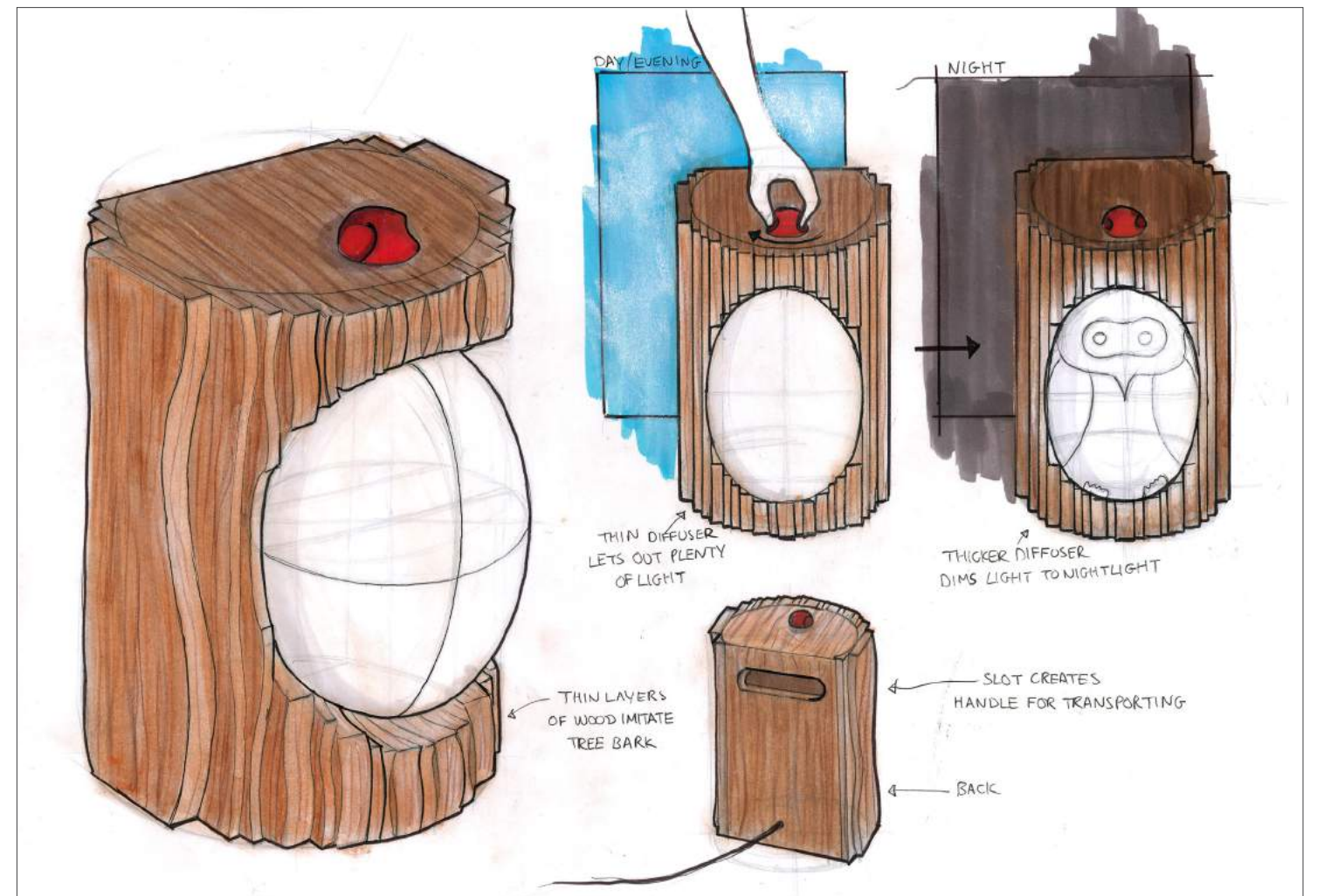
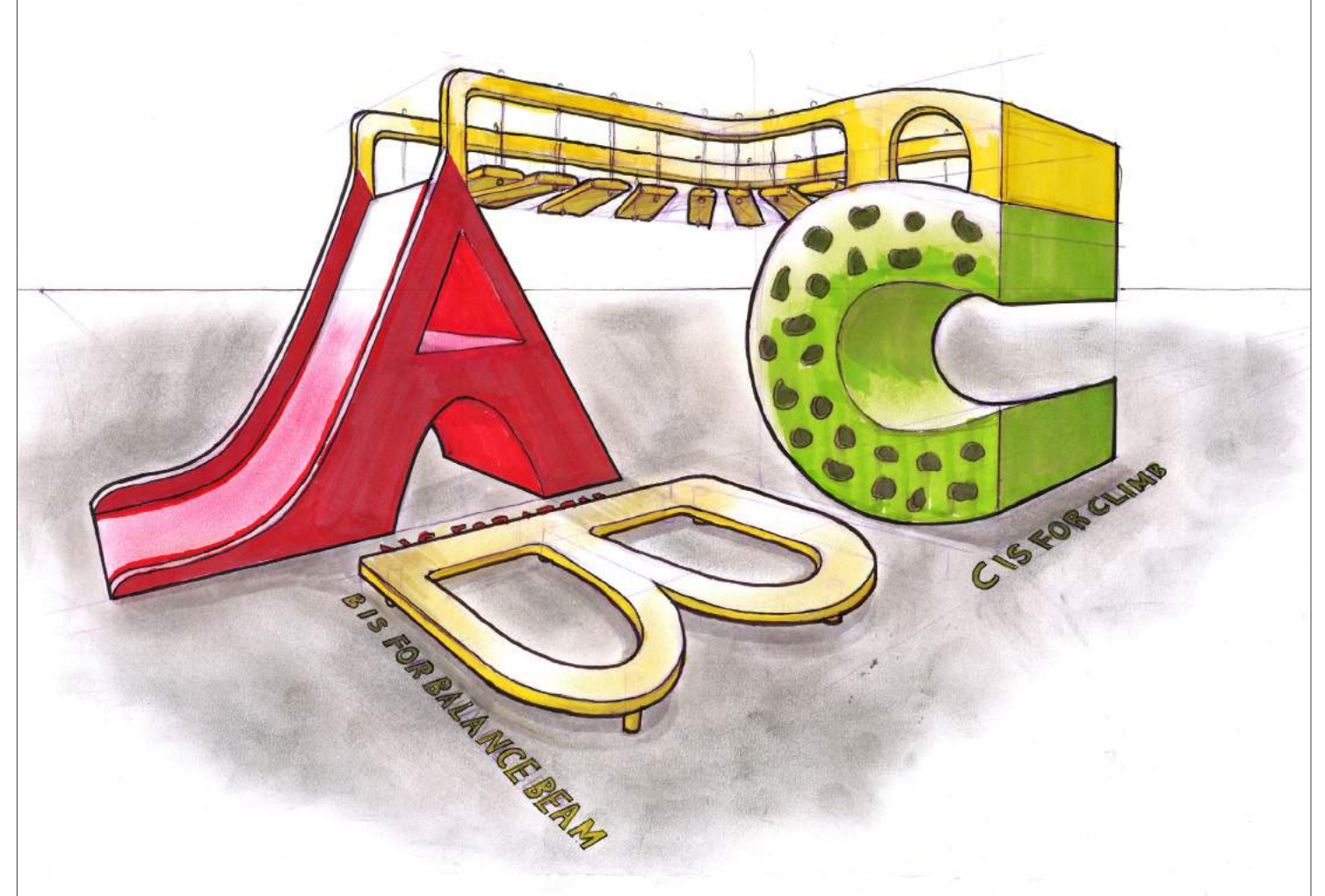
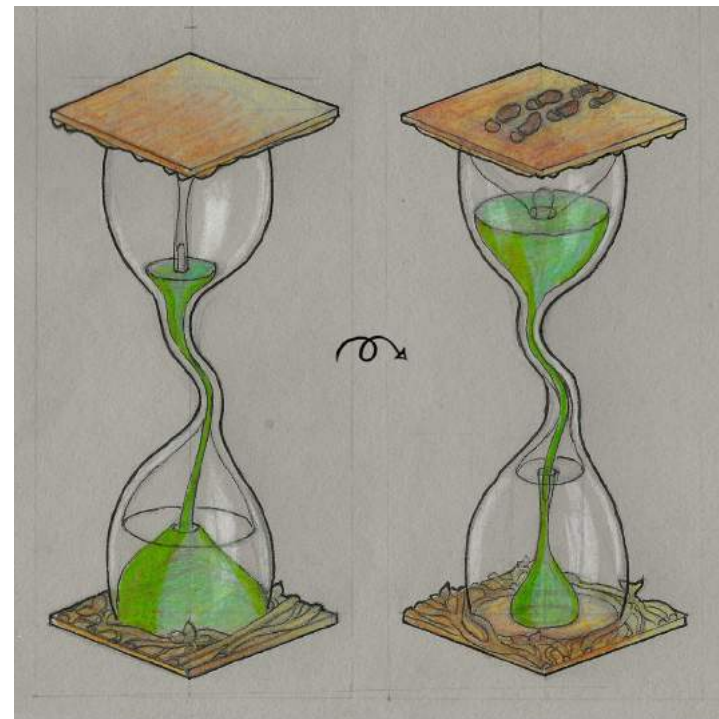
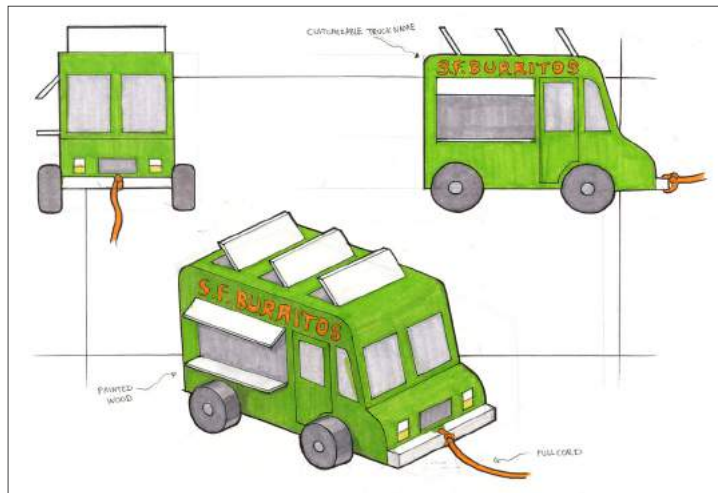
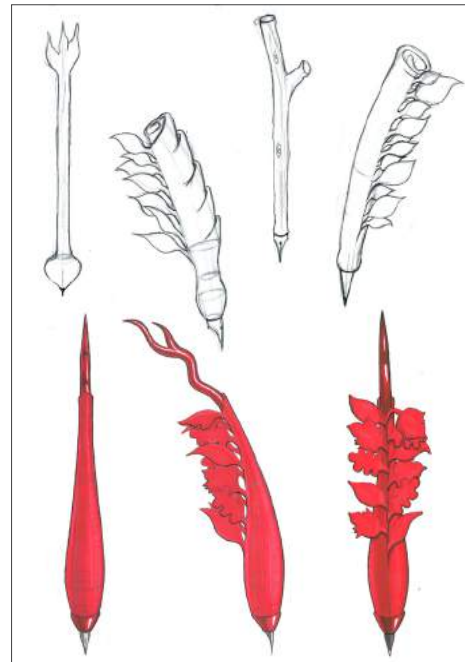
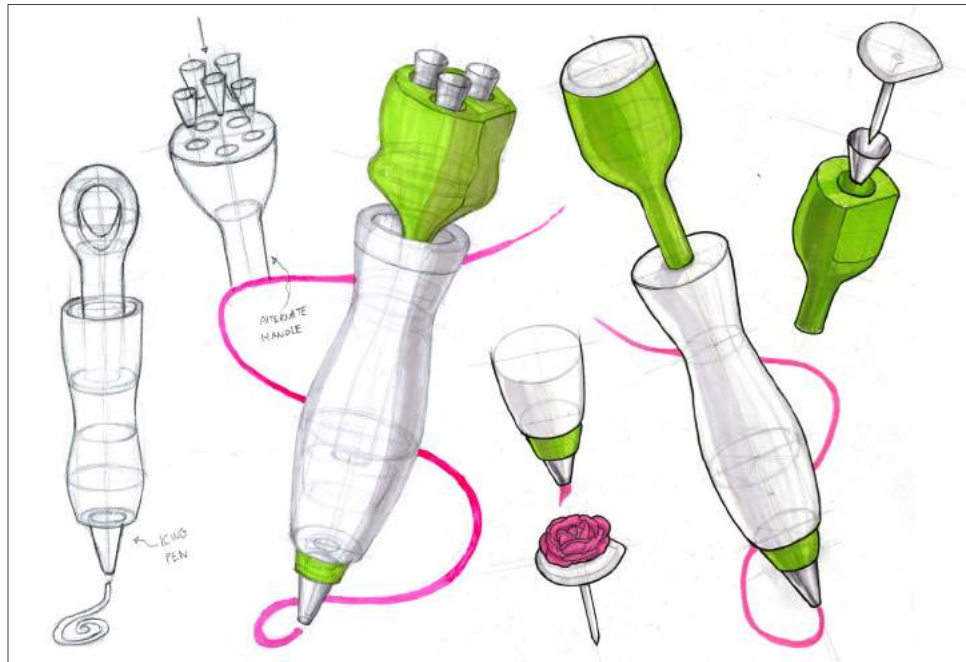
Skills/Software Used:

brand/style analysis, styling, model making
CNC machining, laser cutting, teamwork

Sketching and Rendering

Used as an ideation technique and for concept presentation

I use a variety of rendering techniques involving markers, pastels and pencil crayon.



Above Top: Icing pen sketch development

Above Bottom: Concept for children's pull toy

Top Right: Sketch development for leafy pen

Bottom Right: Graduation trophy concept (for most sustainable design project)

Top Far Right: Children's playground design

Bottom Far Right: Children's day and night light concept

References

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Stressball Mouse

Health and Safety Executive, (2002). *Ergonomics of using a mouse or other non-keyboard input device*. [online] Available at: <http://www.hse.gov.uk/research/rrpdf/rr045.pdf> [Accessed 11 Jul. 2016].

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