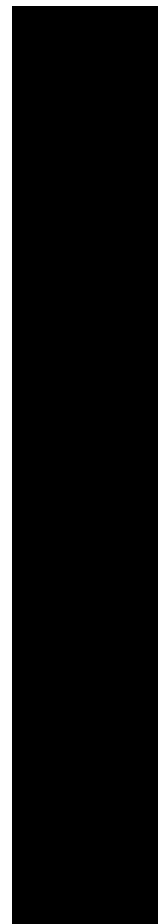


ID STUDIO 7



Capstone
DDR.

CHELSEA DUONG | ID7 STUDENT

weeks 1 to 14.

WK 1 LECTURE

TIPS & HINTS

ai use and declaration

- need to submit statement saying i own the development and work presented
- dont bulk use ai for development of project (obviously)
- statement on what you used ai for then ...
- specify **what was used** and **how it was used**
- be very **specific** in documentation

- consistent progress throughout semester (week 7 - 10 is most critical)

- need solid research + concept and ideation + presentation
- **research is the foundation of entire semester**
- variety of concept and ideas (not in the detailing but the variety !)

- presentation is key ... how to present work (verbal + writing + visual

THINGS TO SHOW IN DDR

- prototypes and people trying out stuff
- map someone out on wall
- evidence of ergonomics
- reviewing work
- model making and prototyping etc
- visualisation + aesthetics + cmf

design festival = end of year exhibition

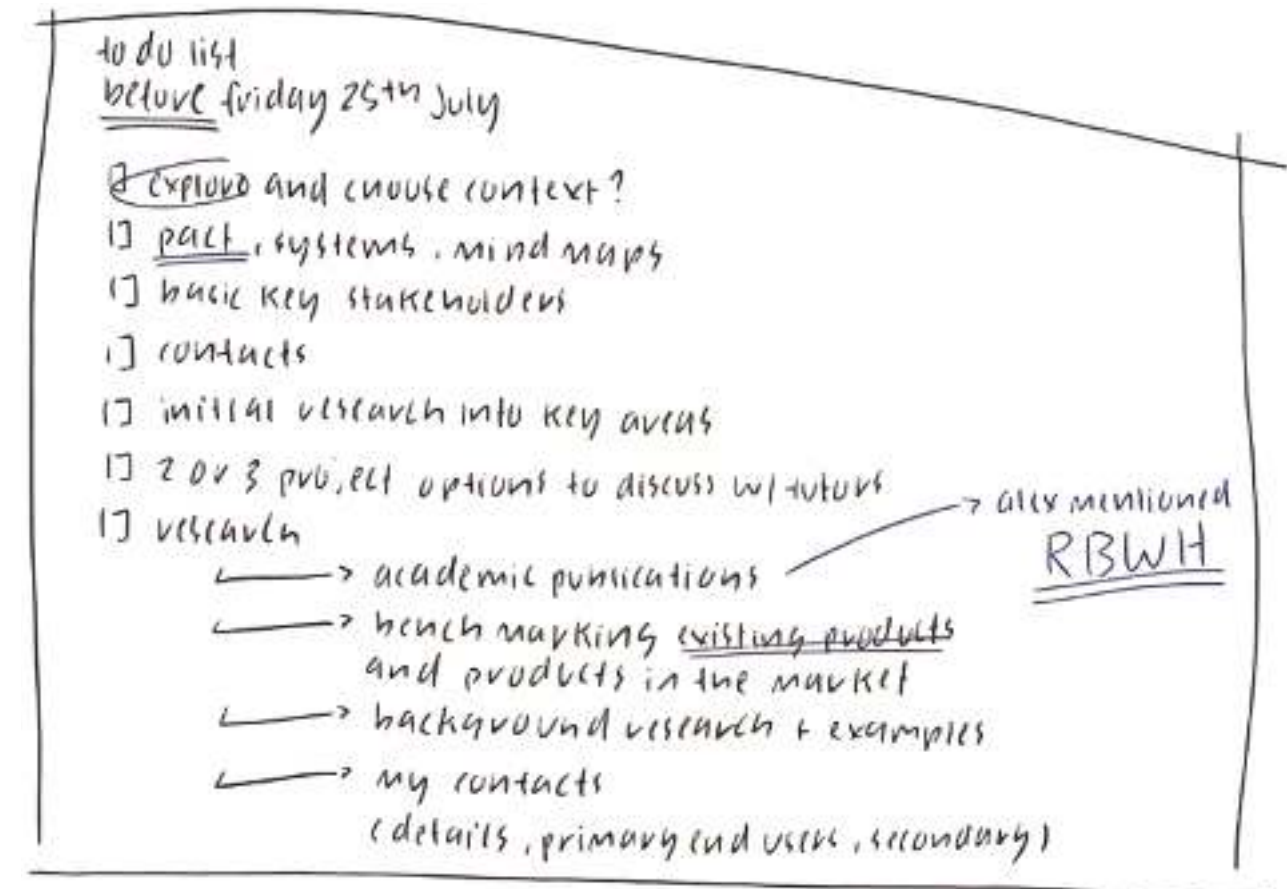
capstone = aware of impact + ethical moral + think practically

EXEMPLAR PROJECTS

rmit projects + monash design + uts projects+ qut projects 2021

wednesday 28th october = final presentation + website + exhibition

pact analysis
mind map for topic exploration
basic key stakeholders
getting contacts (primary and secondary)
is there a need ?
current issues on chosen topic
looking at academic publications
statistics and testing
existing products and research (benchmarking)
initial mood boards
ucd hcd
manufacturing and materials
systems thinking
complex reasoning



PROJECT EXPLORATION

WHAT DO I WANT TO DO THIS SEMESTER ? WHAT AM I PASSIONATE ABOUT ? WHAT INDUSTRY DO I WANT TO TARGET ?

PROJECT PATHWAYS

1 . self initiation project

- passion
- personal interest
- research on the space
- literature review
- what have other people done ?
- dont duplicate things on the market

2 . scientific lead discovered

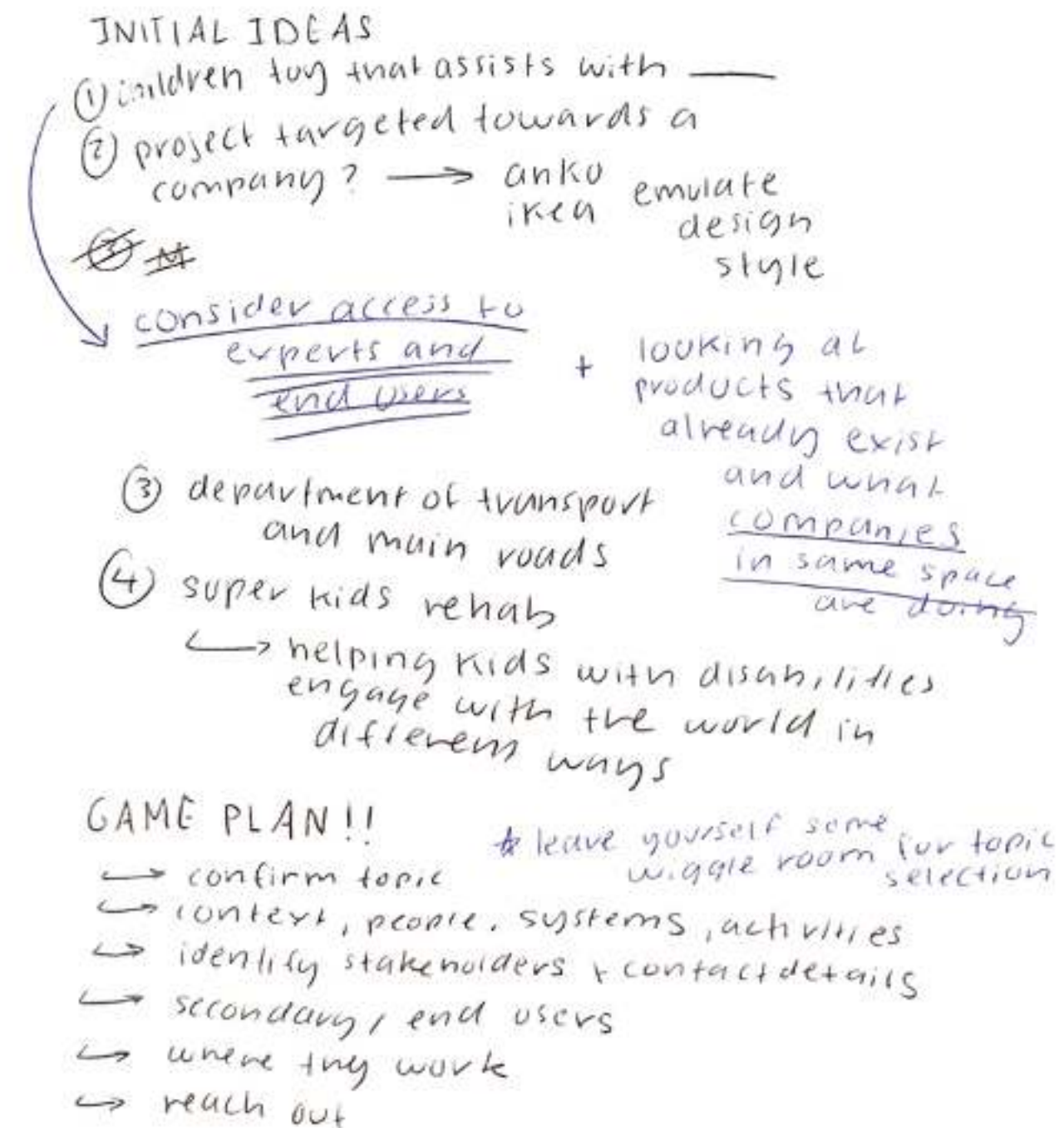
- identify things in others research
- links to research labs in powerpoint presentation
- research that connects to something that you are passionate about

3 . industry linked

- apply for industry linked
- why interested in topic area ... passion etc to cover 1 / 2 page
- other 1 / 2 are skills and expertise that will help
- link to portfolio

TO BEGIN (LECTURE P2)

- literature and research
- capture industry area values
- WHAT HAS BEEN DONE (benchmarking)
- KEEP A RECORD AND REFERENCE LIST
- sketching from day 1
- ethics and qualitative research (starts next week)



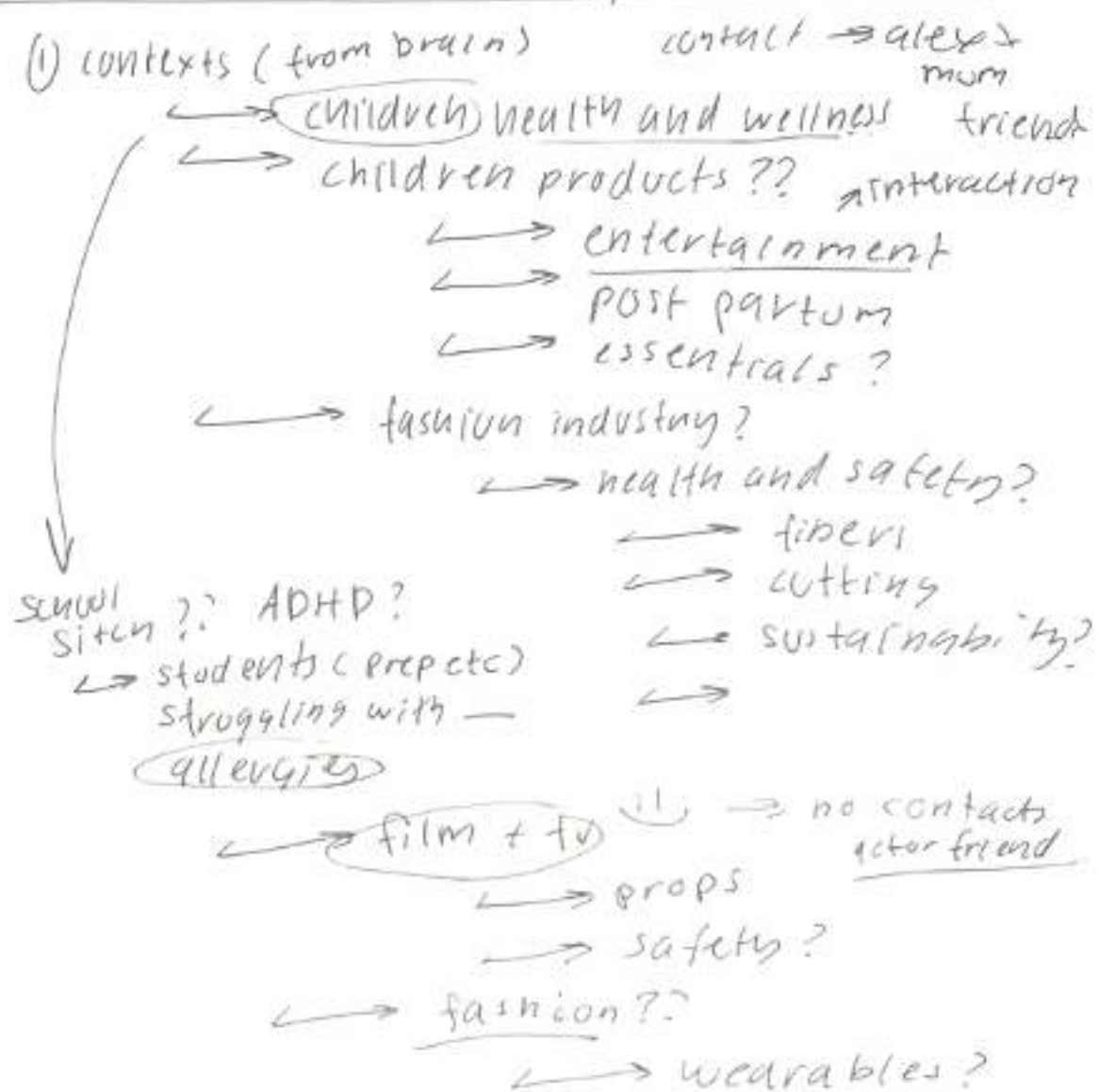
PROJECT EXPLORATION

MORE NOTES ON THE MATTER

Week 1

before friday

- contexts to explore
- confirm topic (pact ~~the~~ + systems)
- key stakeholders + contacts
- research (initial)

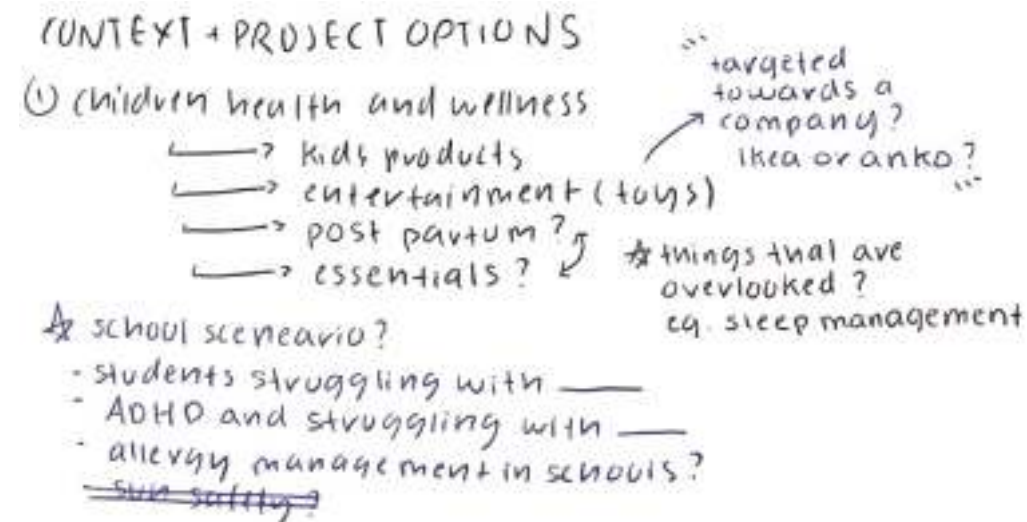


work → keep doing sketching stuff

- research
- connections

TUTORIAL NOTES

AREA OF CONSIDERATION : KIDS HEALTH & WELLBEING



INITIAL RESEARCH QUESTION OPTIONS

- 1 . How can we assist / educate kids on the management of anaphylactic allergies through the integration of interaction and play?
- 2 . How can we utilise interactive and play elements to teach kids on allergy management?
- 3 . In what ways can toy design be reimagined to subtly promote children's awareness and developmental skills? (different route)
- 4 . How can the design of toys be reimagined to support subtle cognitive and emotional awareness and developmental growth in children?

WHERE I CAN MAKE AN IMPACT (AUS) underlining areas im interested in

Health

- Fetal Alcohol Spectrum Disorder
- Overall mental health and wellbeing
- Impact of device and social media usage on health
- Body image
- Sleep
- Neonatal hearing screening
- Medical technology and devices used by children with health conditions

Justice and safety

- Prevalence of child abuse and neglect
- Children's exposure to violence
- Bullying
- Non-parental care living arrangements

Education and skills

- School expulsions and suspensions
- Student engagement (cognitive)
- Quality and time of early learning experiences

Social support

- Parenting
- Play
- Cultural identity
- Children's personal social networks
- Family functioning-related topics
- Shared care arrangements
- Extracurricular activities

Housing

- Impact of physical address

Income, finance and employment

- Parental underemployment

Environment

- Physical environment (built and natural)
- Social environment
- Service availability
- Community governance

PACT :

PEOPLE / CONTACTS

- 1 . alex mum (primary school teacher)
 - + classroom management experience
 - + student experiences
 - + problem solving and knowledge of existing regulations
- 2 . brother and sister in law (primary contact)
 - + daughter has a severe peanut / nut allergy
 - + has experienced anaphylactic reactions (once at a friends house)
- 3 . zoe (primary school teacher friend)
 - + new to the education field
 - + might not have as much experience but potentially different takes on situations
 - + more recent knowledge on health and safety management in schools
- 4 . teachers on social media ?
 - + content discusses "how to" and "teacher tips for"
 - + comments from others who share their experiences
 - + eg. sara james on tiktok

BASIC KEY STAKEHOLDERS

- + children in or out of school (primary)
- + guardians or parents
- + teachers / educators
- + community and their friends (kids)
- + health care providers / paediatrician (depending on the situation (macro or micro)
- + child protection services (macro)
- + entertainment and media creators

tutor discussion

- ↳ take another look at resources
- ↳ identifying challenges through research
- ↳ Is there a need
- ↳ is there a solution on the market already?

RESEARCH

AREA OF CONSIDERATION : KIDS HEALTH & WELLBEING

IS THERE A NEED ?

INITIAL FOCUS : ALLERGY EDUCATION THROUGH THE FORM OF INTERACTION AND PLAY

1 . "We're the 'allergy capital of the world'. But we don't know why food allergies are so common in Australian children."

- Estimated one in 10 Australian children develop a food allergy in their first 12 months of life.
- Research has suggested food allergies are more common in infants in Australia than infants living in Europe, the United States or Asia.

<https://www.theguardian.com/society/article/2024/may/31/australia-allergy-capital-of-the-world-why-are-food-allergies-so-common-in-australian-children>

2 . "Warning after girl, 6, dies from allergic reaction to dairy product."

- She says deaths are rare but "almost always" preventable.
- People concerned about peanuts, tree nuts, fish and shell fish ... but may not be aware that in the last five deaths of children in Australia three were due to milk.

<https://au.news.yahoo.com/warning-girl-6-dies-allergic-reaction-dairy-product-114827542.html>

3 . Allergy awareness adoption. (EVIDENCE OF ACTION BEING TAKEN)

- To support adoption of guidelines National Allergy Strategy developed new 'Allergy Aware' hub for staff working in schools and CEC.
- Provides free evidence based resources including an Implementation Guide, templates and sample documents, plus links to state and territory specific information.

<https://www.allergy.org.au/about-ascia/info-updates/new-allergy-guidelines-to-protect-children-from-severe-allergic-reactions-in-schools-and-childcare?highlight=WyJhcyJd#:~:text=To%20support%20the%20adoption%20of%20the%20guidelines%2C,links%20to%20state%20and%20territory%20specific%20information>

4 . A qualitative investigation into the maternal experience of having a young child with severe food allergy.

- Severe food allergy has potentially life threatening consequences.
- Parental experience (1) having a child with severe food allergy (2) perception of effect of food allergy on family relationships (3) managing challenges associated with severe food allergy.

<https://journals.sagepub.com/doi/abs/10.1177/1359104511415636#:~:text=The%20current%20study%20examined%20parental%20experiences%20of%20childhood%20food%20allergy%20on%20mothers>

6 . Management of food allergy in the school setting.

- Current approach to management remains for students to avoid food of concern and to treat reactions that occur (independence, what if they are not able to? eg. kindergarten).
- Despite efforts of allergen avoidance, children with food allergies still have exposures in preschool and school settings (up to 16 to 18 percent have experienced a reaction in school).
- Schools must be prepped to handle management of reactions in students with no previous diagnosis of food allergy (AREA OF OPPORTUNITY?).
- In survey ... 25 percent of recipients had no previous diagnosis of food allergy.
- Schools are responsible for : creating a safe environment eg. training personnel to recognise and treat anaphylaxis + stock epinephrine in states where legally mandated.

<https://pmc.ncbi.nlm.nih.gov/articles/PMC11250442/#:~:text=Among%20school%20Dage%20children%20in,finfish%2C%20soy%2C%20and%20sesame.&text=Milk%20has%20been%20report ed%20to,in%20kindergarten%20through%20high%20school.&text=The%20current%20approach%20to%20management,experienced%20a%20reaction%20in%20school.&text=Schools%20 must%20also%20be%20prepared,previous%20diagnosis%20of%20food%20allergy.&text=Schools%20face%20the%20responsibilities%20of,mandated%20or%20allowable%20by%20law.>

7 . Managing food allergies at school : A qualitative study.

- Parents and children have experienced psychosocial and financial difficulties, decreased quality of life, anxiety, and depression in the management of food allergies in schools.
- Effective management of food allergies in schools requires children to avoid allergic foods and to have an individualised emergency plan.

<https://www.sciencedirect.com/science/article/abs/pii/S0882596323002257#:~:text=Studies%20have%20shown%20that%20parents,et%20al.%2C%202019>

BENCHMARKING

AREA OF CONSIDERATION : KIDS HEALTH & WELLBEING

★ improvement opportunities?

BENCHMARKING

1. Learning About Food Allergies & Intolerances



PROS

- + designed to help children aged 3 to 8 years understand food-related health conditions in an engaging and age-appropriate way.
- + teaching children to recognise common food allergies and intolerances, the foods that trigger them, and the potential symptoms.
- + through interactive play, children learn how to identify allergenic foods and respond appropriately to allergy-related scenarios, making it an excellent tool for building an inclusive classroom environment.

Educational Benefits:

- + Promotes empathy and understanding of peers with food allergies or intolerances.
- + Enhances knowledge of nutrition and health through recognition of allergenic foods & effects.
- + Builds cognitive skills such as attention, concentration, and classification through gameplay.
- + Encourages respect and inclusion by fostering awareness of dietary needs and safety.

Card sizes:

- + Intolerance cards: 9 (Diameter) x 0.2 (W) cm
- + Food cards: 7.5 (Diameter) x 0.2 (W) cm

Set includes: 8 intolerance cards, 45 food cards, 12 ambulance cards

CONS

- + Lacks depth on cross-contact risks, or managing allergies in real-world settings etc. which is the main issue being faced in classroom / educational settings.

<https://www.teaching.com.au/product/learning-about-food-allergies-038-intro-scenarios?srsltid=AfmBOopkLLTDHmbGsmWbCnRtUgAGCzBydAFUQAR9cDnTz2g>

★ lots of varying products on the market

↓

+ health awareness
+ education
+ health assistive device

4. Medical IDs : <https://australia.universalmedicalid.com/>



PROS

- + worn on body in accessible areas
- + displays wearers name, condition, allergy and emergency contacts, this ensures first responders are able to deliver timely and accurate care during life-threatening moments
- + medical ID jewellery effectively advocate for your health and safety, speaking for you when you can't.
- + Half of all medical errors occur because of mistakes made upon admission or discharge from the hospital.
- + wearing a medical ID bracelet or necklace protects against potentially harmful medical errors.
- + subtle jewellery that blends in with everyday clothes but still easily identifiable via coloration and logo

2. Allz and Andy's Activity Book



PROS

- + coloring and activity book from Asthma and Allergy Foundation of America (AAFA)
- + gives children / families basic understanding of food allergies
- + fun way for children to learn about food allergies in a story format through colouring pages, word finds, crossword puzzles, word scrambles, mazes, and other activities.

3. Patient Identification Wristbands



PROS

- + alerts medical staff to a patient's allergies in case of an emergency.
- + indicate documented allergy to medication and/or a documented life-threatening food allergy
- + key component of patient safety protocols, ensuring that appropriate interventions are taken
- + provides succinct patient information and data.

<https://www.futuremarkinggroup.com/copycat/patient-identification-wristbands-market>

or could I expand my topic and go into just allergy prevention in general rather than children's education in specific?

5. Allergy amulet



Four Easy Steps

01. Insert the amulet into the device.
02. Turn the device on.
03. Press the button to start the scan.
04. The device will display the results on the screen.

PROS

- + detecting allergenic ingredients at levels lower than those known to trigger an allergic reaction in the most sensitive food-allergic individuals.
- + check their food discreetly (not attention drawing)
- + self-motivated tool, it could be unappealing to a younger audience who may lack the motivation, patience or understanding to consistently use the technology.
- + worn around the neck or carried in its custom case, the Amulet's sleek, portable design allows users to savor life's important moments, safely and simply.
- + smallest & fastest food allergen sensor.

CONS

- + can not detect cross contamination, airborne anaphylaxis, skin contact with food, tableware exposure, and untested different parts of dish containing allergens
- + battery life (what if it died and someone could not test their food?)
- + provided data or evidence of its efficiency? NOPE

<https://www.allergyamulet.com/>

★ design concept in the making

BENCHMARKING

AREA OF CONSIDERATION : KIDS HEALTH & WELLBEING

6 . students invent wearable EpiPen for friend



PROS

- + you can wear on your wrist = medicine is always accessible for people with allergies.
- + severe peanut allergy and that it's bulky to carry an EpiPen everywhere
- + increase the likelihood that potential users bring the device with them wherever they may go

CONS

- + breakable eg. walking past soccer field, it gets hit, boom. you're done for.
- + cost of an EpiPen (a brand of adrenaline auto-injector) in Australia is typically between \$80 and \$120... cost of this?
- + still bulky, although an improvement... uncomfy to wear
- + draws attention to the eyes, might not be desired by wearers who find discomfort in their allergies being exemplified (visibility and stigma)
- + durability, heat, moisture, or impact variables?

<https://www.wndu.com/content/news/Bold-students-invent-wearable-EpiPen-for-friend-512542131.html>

★ wearable + portable tech !!

★ app linked devices for health and wellness monitoring

move existing products than anticipated

7 . Project Abbie



could adapt into a button kids wear on their collar of school shirts

identifiable awareness safety

"due to the rapid and unrelenting progression of symptoms and the lack of a reliable diagnostic test for acute allergic reaction, death from anaphylaxis still occurs and prevention remains difficult to achieve."

PROS

- + detect signs of anaphylaxis, alert first responders and auto inject adrenaline (The Checkup, 2019).
- + alert feature could be integrated into proposed design; helping stressed teachers call for help immediately

+ physiological and biochemical signals that occur with anaphylaxis and then develop a wearable device that continually monitors these signals??? (questionable as it doesn't explain how, very airy fairy so far and sounds too good to be true).

+ anaphylaxis is detected -> device alarm patient -> send signals to caregivers by cell phone -> and auto inject epinephrine therapeutic = save lives of children and adults who suffer from severe allergies?? (again...interesting...how does the detection device work? how is it able to detect these things if often users cant themselves until its happening)

<https://wyss.harvard.edu/technology/project-abbie/>

Biochemical and physiological analysis methods are being created to continuously monitor biomarker levels and physical alarm signals help determine anaphylactic risk

"newly developed sensor technology called [abbieSense](#) can detect therapeutically relevant levels of histamine and determine the severity of the allergic reaction within five min

components will be integrated by a proprietary computer algorithm to actuate a response leading to the rapid administration of epinephrine through an engineered wearable epinephrine auto-injector

SUMMARISING INFO

AREA OF CONSIDERATION : KIDS HEALTH & WELLBEING

- there is a need
- aus one of the highest rates of allergic diseases in world
- impacts individuals ... families ... healthcare system etc
- intervention in a school setting ?
- what are my limitations ?
- consent from parents needed
- unethical to get data from children

SUMMARY OF FINDINGS

1 . child welfare

- **physical and mental state affected by allergies**
- allergy prevention and management
- proper care ... supervision ... handling of allergic reactions

2 . allergy management tools

- integrated allergy management plans for each child ?
- packaging eg. coded lunchboxes that help prevent cross contamination or food detection ?
- silicone wristbands worn on wrist (more common for primary school kids rather than high school)

3 . what is the problem ?

- peers lack knowledge about allergies
- high risk in school environments due to **susceptible and chances for unexpected exposure** eg. classroom ... playground ... excursions ... camps etc
- reactions ranging from mild to anaphylaxis
- allergy awareness gap : peers dont know how to recognise or respond to allergies = medical emergencies ... anxiety for students with allergies

and ... WHY IS IT A RISK AT SCHOOL VS AT HOME

- **FOOD SHARING IS MASSIVE** where kids share snacks or lunches containing allergens hence introducing risk
- exposure through shared spaces
- teachers or peers unable to recognise signs of a reaction
- difficulty enforcing food bans or restrictions
- social stigma ... bullying ... peer pressure etc
- cross contamination from cooking areas (if getting food from tuck shop) ... shared surfaces etc
- emergency **response delays**

4 . their environment

- classroom : snacks ... birthday party favours
- eating areas : cross contamination ... sharing food
- excursions and camps : less control over food and environment

MORE SOURCES TO POTENTIALLY LOOK INTO

- + <https://snacksafely.com/2024/04/11-year-old-boy-dies-from-anaphylaxis-after-event-at-prestigious-boys-school/>
- + <https://www.health.vic.gov.au/your-health-report-of-the-chief-health-officer-victoria-2018/child-health/allergies>
- + https://journals.lww.com/jfmpc/fulltext/2019/08090/saudi_teachers_confidence_and_attitude_about.42.aspx
- + <https://www.globaldata.com/store/report/food-allergy-market-analysis/>

why there is a need
for an intervention sources

case studies
and news

RESEARCH LIMITATIONS

AREA OF CONSIDERATION : KIDS HEALTH & WELLBEING

- working with kids / children
 - ↳ cant gather data
 - ↳ parental consent /
 - ↳ ethical concerns
- anxiety risks during discussion
- no access to schools or demographic
- lots of relying on research rather than data collection, primary etc.
- what allergy do i want to cover?
 - ↳ peanuts?
 - ↳ dairy
- severity also, focus on mild or anaphylaxis
- if wanted to focus on schools (main area / challenge) implementation? feasibility?
- avoid stigmatisation

★ was rllly interested in this topic but because of limitations and lack of connections I decided to explore other options...

ANOTHER PROJECT DIRECTION

AREA OF CONSIDERATION : FILM & TV INDUSTRY



- no industry connections
 - hard to access spaces
 - relying on others
 - (don't want to disrupt work schedules, work etc)
 - observation?
survey?
interview?
- } what type of method would suit them best?

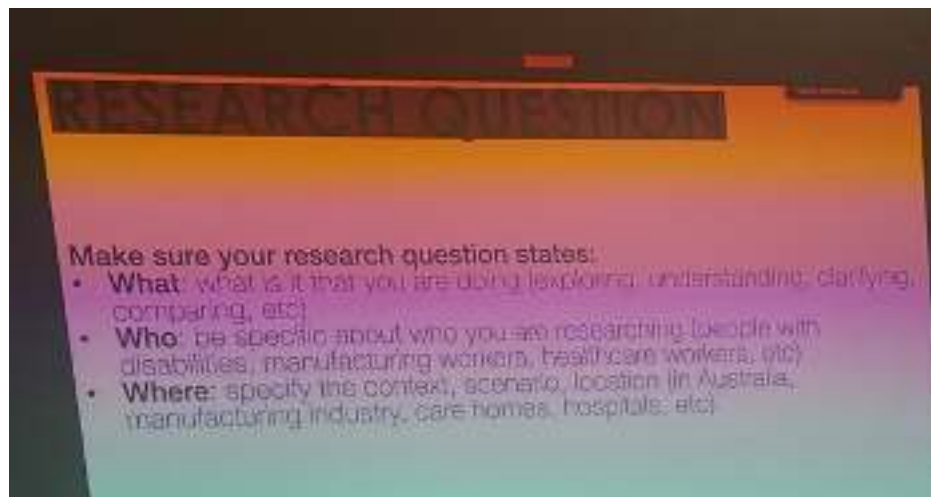
no connections
research was hard to come by
this option died pretty quickly
would have to focus on small productions
NDAS etc.
rules and regulations

WK 2 LECTURE

- qualitative research + design process + ethics
- no proper research until instructed to do so (consent etc. primary research + talking to people to collect data)
- **no research on children (under 18) can not talk or get data directly from children under 18**
- talk to parents or experts of people who deal with those user groups
- no research on people who can not provide consent
- surveys + observations (do it well and to a good standard)
- research is not just about asking people ... its rigorous + standards + certain approach so we can money up the data
- read up on how to do it properly

TO DO LIST

- complete a project synopsis document
- concrete direction of what project is going to be
- agreement on direction of project
- 1 to 8 qualitative research & initial concept (6 - 7 - 8)
- research report and initial concept presentation by wk 8
- prototyping
- technical elements
- tech in product
- detailing, cad, technical resolution
- parts and components of the product
- viable form a business perspective
- desirable from a human perspective
- could lean more to theory or practice but need to be both = somewhere in the middle
- thinking process (how do i go about my process as a designer)
- mood board of direction of project
- the measure of man and woman
- sustainable development goals



- paradigm is a world view setting the standards
- qualitative vs quantitative research

quantitative :

- testing a theory to prove or disprove it
- eg. it is proven that ____ then people will feel negative about ____
- variable + number statistical

qualitative :

- how do people converse in an __ environment
- cant use numbers to explain that

- choose quantitative or qualitative
- research question guides research
- might evolve but its important to begin with one
- eg. exploring impacts of understanding robot human interaction in ____
- eg. how do particular users perceive ____
- eg. what are the motivations to use ____

explanatory :

- view to understand causes
- focus on qualitative analysis on multiple interconnected factors
- why do some students excel at ____
- how does expertise impact the use of specialised equipment
- what factors contribute to improved emotion
- what experienced disabled users in ____
- what are the challenges of x y z

predictive :

- how might ai impact the future of design ideation
- what are the long term effects of x y z
- in what way would experience with emerging technologies etc.

WK 2 LECTURE

ASSORTMENT OF NOTES

- make sure the research question states :
- what eg. what are you doing (explore + understand + clarifying + comparing etc.
- who (stakeholders or the target audience)
- where (specify context + scenario + location)
- qualitative data is complex and rich = fewer participants required
- helps understand meaning

- event sampling
- retrospective sampling
- repeated sampling

- not looking for 30 or 40 +
- focus on bench marking in the report

EXAMPLES FROM PREVIOUS YEARS ON AMOUNT

- 4 interviews
- 3 observations
- 50 + references
- 9 + references
- 70 surveys
- 3 semi structured interviews
- 20 journals
- 3 in depth interviews across 2 sessions
- 20 + academic
- 32 surveys
- 4 interviews
- 20 + academic articles
- 2 expert

ADVICE FOR DATA COLLECTION

- where are they in relation to me
- recording device
- set up of their environment like ?
- recording the things you are doing

qualitative methods

- interviews > recommend semi structure (might as well send them a survey)
- surveys
- observations
- think out loud protocols
- focus groups

- field notes
- text audio
- text
- text video
- images

Methof triangulation – interview, observe,t think aloud

these are minimum numbers :

- sampling + interviews + focus groups : 2 to 3 participants (dependant on length)
- survey from 5 to10 : short answer survey
- observations : 1 to 3 dependant on length
- observations : protocols 1 - 2 depndant on length

AND ANOTHER PROJECT DIRECTION

AREA OF CONSIDERATION : FASHION INDUSTRY

How might we reduce??

worker's exposure to health hazards within textile / clothing production spaces??

How can we alleviate the gradual development of health challenges faced by workers in textile and garment manufacturing spaces??

INITIAL RESEARCH QUESTION OPTIONS

1. how can we alleviate the gradual development of respiratory challenges faced within the fashion industry?
2. What interventions can help reduce the development of respiratory health issues among workers in the fashion industry?
3. How might design interventions reduce worker's exposure to respiratory hazards within textile / clothing production spaces?
4. How does prolonged exposure to airborne particles in fashion production contribute to respiratory challenges and what solutions could mitigate this?
5. How can we implement an intervention methods to monitor and prevent respiratory hazards in textile and garment manufacturing?
6. In what ways can we better protect fashion workers from long term respiratory harm?

FASHION INDUSTRY

IDEA : HEALTH & SAFETY ISSUES SURROUNDING RESPIRATORY HEALTH WITHIN THE FASHION INDUSTRY

CONTACTS WITHIN THE INDUSTRY

1. parents (primary contact) at pacificclothing@yahoo.com.au
 - + tailors and clothing manufacturers for businesses and schools
 - + father and others within the industry lung issues textile dust and microfibres
2. nicole (fashion student at qut)
 - + experience in workshops and internships
 - + knowledge on industry operations
3. fashion students at qut and fabrication workshops

BASIC KEY STAKEHOLDERS

- + clothes tailors
- + material suppliers
- + manufactures
- + fashion designers
- + retail staff and sellers
- + fashion brands and labels that do in house sampling
- + textile manufacturers
- + distributors
- + fashion supply chain

Understanding Stakeholders

Stakeholders in the fashion industry encompass a wide range of groups, including:

- **BRANDS AND RETAILERS** - These entities are responsible for designing, manufacturing, and selling clothing.
- **MANUFACTURERS AND SUPPLIERS** - They produce the fabrics, garments, and accessories.
- **WORKERS** - Direct workers, textile workers, and others involved in the production process.
- **CONSUMERS** - The individuals who purchase and use fashion products.
- **ENVIRONMENTAL GROUPS** - Organizations dedicated to protecting the environment.
- **GOVERNMENT AGENCIES** - Regulatory bodies responsible for enforcing laws and standards.
- **LOCAL COMMUNITIES** - Communities affected by the environmental and social impacts of fashion production.

<https://fashion.sustainability-directory.com/question/why-are-multi-stakeholder-approaches-essential-for-effective-regulation/?text=Understanding%20stakeholders,social%20impacts%20of%20fashion%20production>

fashion industry

↳ parents are apart of it

(tailors / manufacturers)

with their own buisness

↳ contacts to their workers

↳ fashion students

↳ industrial design students

that have to use ppe

↳ touch on issues like
respiratory health

father
has
challenges

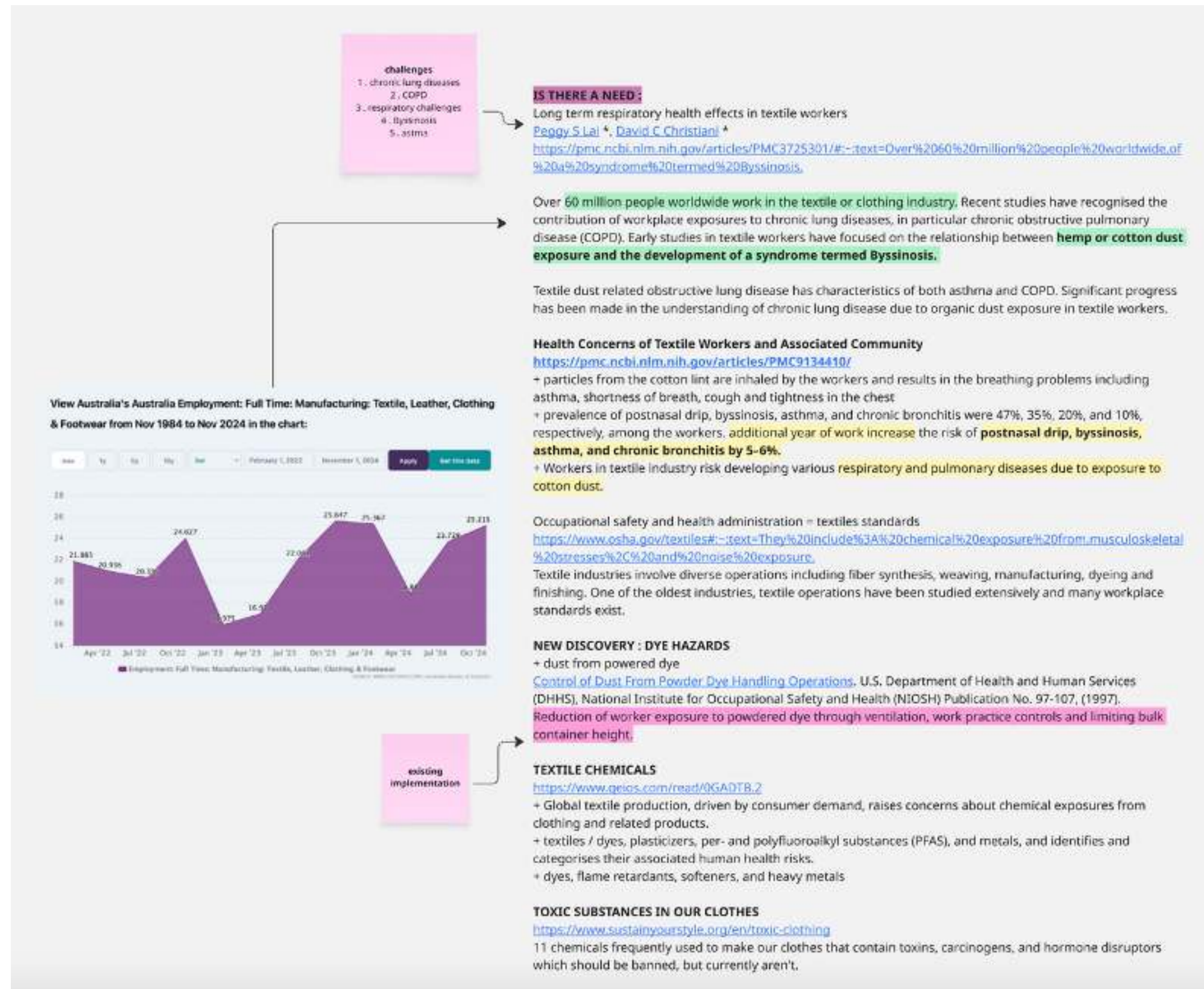
↳ something I love / passionate
about !!

↳ wanting to improve their
workspaces

↳ making a difference
in labour intensive place

UNDERSTANDING INDUSTRY CHALLENGES

AREA OF CONSIDERATION : FASHION INDUSTRY



IS THERE A NEED ?

AREA OF CONSIDERATION : FASHION INDUSTRY

Reduced Cross-Shift Lung Function and Respiratory Symptoms among Integrated Textile Factory Workers in Ethiopia

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7154718/>

+ (2019-2025) on hazardous substances in textiles
+ dyes, plasticizers, per- and polyfluoroalkyl substances (PFAS), and metals, and identifies and categorizes their associated human health risks.

Table 1. Summary of Key Chemical Groups in Textiles and Their Health Risks

Chemical Group	Common Uses	Exposure Routes	Health Risks	Regulatory Status
Phthalates	Plasticizers in fibers	Dermal, inhalation	Endocrine disruption, reproductive toxicity, carcinogenicity	Banned in some regions (e.g., EU REACH); substitution trends observed
PFAS	Waterproofing, fire retardants	Dermal, inhalation	Carcinogenicity, thyroid dysfunction, immune suppression	Some PFAS banned/restricted; delays in substituting PFAS ongoing
Metals	Dyes, pigments, antimicrobials	Dermal, ingestion	Neurotoxicity, carcinogenicity (e.g., Cr, Cd), skin sensitization	Variable regulations; strict limits for Pb and Cd in textiles
Azo Dyes	Colorants	Dermal, ingestion	Metabolic carcinogenic intermediates (e.g., amines, alcohols)	Certain azo dyes banned in EU; others remain unregulated
Biocides	Non-oxidant additives	Dermal	Endocrine disruption, developmental effects	EU restricted; increasing use of substitutes like BHT and BPO
Formaldehyde	Wrinkle-resistant finishes	Dermal, inhalation	Carcinogenicity, skin irritation, respiratory issues	Legal limits exist but enforcement varies globally

environments



Microfiber Emissions from Functionalized Textiles: Potential Threat for Human Health and Environmental Risks

<https://pmc.ncbi.nlm.nih.gov/articles/PMC7022135/>

+ textile industry is responsible for the invisible pollution that is created by textile microfibres
+ microfibers discharged from functionalised textiles exhibit non-biodegradable characteristics and that a considerable proportion of them possess toxic properties



SUMMARY OF NOTES

+ significant need for improved health management in fashion factories
+ workers face a range of health and safety risks due to long hours, poor working conditions, and exposure to hazardous materials
+ lead to injuries, illnesses, and even fatalities
+ urgent need for better health management practices.

WEBS:

1. Studies : garment workers experience high rates of musculoskeletal disorders, respiratory issues, and other health problems due to repetitive tasks, poor ergonomics, and exposure to chemicals and dust.
<https://pmc.ncbi.nlm.nih.gov/articles/PMC10954489/#:~:text=Critical%20analysis%20of%20the%20studies,variou%20departmenc%20of%20the%20factories>
+ nonuse of personal protective equipment (PPE)
+ poor working conditions
+ exposure to chemicals, fine dust, and fibres have on the health, well being, and safety
+ HAS SOME DATA !!

2. Journal of occupation health

"The work environment as described by Chattopadhyay and Gangopadhyay¹⁰ is unhealthy and unsafe within certain sectors of the textile industry, most especially ready-made garment manufacturing units. This has both short- and long-term effects on the health of the workers.¹¹ For example, a study by Paul-Majumder, cited in Ahmed and Raihan,¹³ illustrated various diseases and illnesses among female garment workers."
<https://academic.oup.com/ijoc/article/66/1/ata007/7521975>

"exposure to cotton dust or other fine particles and harmful chemicals used during dyeing led to respiratory disorders and other health problems."
<https://www.worldhistory.org/article/2183/the-textile-industry-in-the-british-industrial-rev/> : in order to keep the cotton thread supple and strong, the atmosphere in a factory was deliberately kept warm and damp. Such conditions meant that many workers suffered health problems, particularly with their lungs.

IS THERE A MARKET ?

Australia Employment: Full Time: Manufacturing: Textile, Leather, Clothing & Footwear

<https://www.ceicdata.com/en/australia/employment-by-sex-and-by-industry-full-time/employment-full-time-manufacturing-textile-leather-clothing-footwear#:~:text=Bureau%20of%20Statistics,Australia%20Employment%20Full%20Time%20Manufacturing%20Textile%2C%20Leather%2C,Person%20th%20in%20Feb%202023,1984-2024|Quarterly|Personth|AustralianBureauofStatistics>

From high fashion to high vis :

<https://ausfashioncouncil.com/wp-content/uploads/2021/05/From-high-fashion-to-high-vis-EY-final-report-31-May-2021.pdf>

Significantly, the report finds our fashion and textile industry contributes more than \$27.2 billion to Australia's economy, generating \$7.2 billion in exports each year. It employs more than 489,000 people, 77% of whom are women.

STATISTICS & TESTING :

Cessation of exposure to cotton dusts leads to improvement in lung function. Recent animal models have suggested a shift in the lung macrophage/dendritic cell population as a potential mechanistic explanation for persistent inflammation in the lung due to repeated cotton-dust related endotoxin exposure.

Other types of textile dust, such as silk, may contribute to COPD in textile workers.

- + Over 60 million people are employed in the textile or clothing industry worldwide
- + Australian fashion and textile industry employs over 489,000 people and contributes \$27.2 billion to the national economy. Women make up 77% of the workforce, highlighting the industry's significant role in female employment. While the industry is a major employer, there are concerns about the aging workforce and potential labor shortages, especially in specialised areas.
- + able to be implemented and expanded into other areas of focus eg. universities, at home, factories etc.

+ exacerbation of health issues in recent years in the 21st century due to globalisation and renewed growth of the textile and fashion industry. To help ensure strict adherence to safety standards by manufacturers within the textile and fashion industry, the International Labour Organization (ILO) developed *code of practice on safety and health in the textile, clothing, leather, and footwear industries, to protect workers and hence limit any harm or threats.*"

EXAMPLES OF SOME REGULATIONS :

- + Employers must conduct regular **risk assessments**.
- + Factories must have a **written OSH (Occupational Safety and Health) policy**.
- + Ensure access to **occupational health services** and **first aid**.
- + Maintain **records of workplace injuries, illnesses, and exposures**.
- + Provide **adequate ventilation, lighting, and temperature control**.
- + Control **dust, fumes, noise, and vibration**.
- + Install **proper waste disposal and drainage systems**.
- + Label all chemicals clearly with **hazard information**.
- + Provide **training and PPE** (e.g. gloves, masks) when handling chemicals.
- + Ensure **safe storage, ventilation, and disposal** of toxic substances.
- + Limit heat exposure with **cooling, rest breaks, and hydration**.

these rules are **not consistently adhered to**, especially in **low-cost garment-producing countries** where many fashion brands outsource production.

SUMMARIES THAT I INITIALLY GOT FROM RESOURCES

- + Textile workers inhale dust and endotoxins that result in byssinosis, chronic bronchitis, asthma-like symptoms, and COPD.
- + Prevalence is high, especially in departments like carding or blowing cotton, and in developing countries.
- + Prevention is hampered by limited dust-control implementation, low awareness or training, and weak regulatory enforcement.
- + A comprehensive, well-enforced prevention strategy is proven in principle—but real-world uptake and effectiveness remain inconsistent.

ACADEMIC PUBLICATIONS FOR LATER

AREA OF CONSIDERATION : FASHION INDUSTRY

academic publications :

- 1 . Role of rest period: an ergonomic study on sewing machine operators
talks more about shoulder, neck, hand and back pains if that was a field I wanted to go into:
https://scholar.google.com/scholar_lookup?title=Role%20of%20rest%20period%20an%20ergonomic%20study%20on%20sewing%20machine%20operators&author=N%20Chandra&author=N%20Dubey&publication_year=2014&journal=Res%20J%20Fam%20Commun%20Consum%20Sci&volume=2&pages=12-14
- 2 . Microplastics' effect on lung airways
<https://pmc.ncbi.nlm.nih.gov/articles/PMC10826726/#:~:text=1.6.&text=Upon%20inhalation%2C%20particles%20larger%20than,1%20%5B61%2C62%5D>
- 3 . A systematic review of work-related health problems of factory workers in the textile and fashion industry
<https://pmc.ncbi.nlm.nih.gov/articles/PMC10964409/>
- 4 . Available Interventions for Prevention of Cotton Dust-Associated Lung Diseases Among Textile Workers
<https://pubmed.ncbi.nlm.nih.gov/27539764/>
- 5 . Death, Injury and Health in the Fashion Industry
<https://www.commonobjective.co/article/death-injury-and-health-in-the-fashion-industry#:~:text=Poor%20health%20and%20safety%20in,injuries%20and%20long%20term%20illnesses.&text=Estimates%20suggest%20that%20around%2027,update%20as%20more%20data%20emerges>
- 6 . The Role of the Fashion Industry and Textiles in Lung Health and Associated Pathogens: A Review
<https://www.heraldopenaccess.us/openaccess/the-role-of-the-fashion-industry-and-textiles-in-lung-health-and-associated-pathogens-a-review#:~:text=References,Allergy%2051:%2023%2D33>
- 7 . Long-term respiratory health effects in textile workers
<https://pubmed.ncbi.nlm.nih.gov/23361196/>
- 8 . UNRAVELLING THE HARMS OF THE FAST FASHION INDUSTRY (harm to humans section pg. 10)
https://www.biologicaldiversity.org/programs/population_and_sustainability/pdfs/Unravelling-Harms-of-Fast-Fashion-Full-Report-2023-02.pdf
- 9 . The impact of formaldehyde exposure on lung inflammatory disorders: Insights into asthma, bronchitis, and pulmonary fibrosis (general health information not related to fashion industry)
<https://www.sciencedirect.com/science/article/pii/S0009279724001480#:~:text=1.,in%20early%20life%20%5B8%5D>
- 10 . data : Effect of microplastics deposition on human lung airways: A review with computational benefits and challenges
<https://pmc.ncbi.nlm.nih.gov/articles/PMC10826726/#:~:text=1.6.&text=Upon%20inhalation%2C%20particles%20larger%20than,1%20%5B61%2C62%5D>
- 11 . Reduced Cross-Shift Lung Function and Respiratory Symptoms among Integrated Textile Factory Workers in Ethiopia
<https://www.mdpi.com/1660-4601/17/8/2741#:~:text=However%2C%20several%20studies%20have%20reported,9%2C10%2C11%5D>
- 12 . AMA article on COVID-19 settings shows that simplifying PPE (e.g., recommending an effective respirator over full gear) can reduce cost and waste while maintaining protection—suggesting analogous thinking might apply in textile environments.
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2832743>
- 13 . The physical effects of wearing personal protective equipment: a scoping review : prolonged use of standard respirators creates discomfort, fatigue and non-compliance—highlighting why factory workers might avoid or remove masks during long shifts.
<https://ijic.info/article/view/22415>
- 14 . Protective gear often absent or misused, even in factories that know the risks; economic constraints and lack of training limit PPE effectiveness.
https://www.jstage.jst.go.jp/article/joh/56/1/66_uiae007/_pdf/-char/en
- 15 . Assessment of respiratory dust exposure and lung functions among workers in textile mill
[https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-10712-0?](https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-10712-0?utm_source=chatgpt.com)
[utm_source=chatgpt.com](https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-10712-0?utm_source=chatgpt.com)

starting point for
more in depth research
later in wk 3-4

PROJECT SELECTED !

WORKPLACE SAFETY IN THE FASHION INDUSTRY : FOCUS ON RESPIRATORY CHALLENGES

Queensland University of Technology
Faculty of Creative Industries
School of Design
Industrial Design
DNB311 ID Studio 7: Capstone
2025.2



DNB311 ID STUDIO 7: CAPSTONE

Project Synopsis

Student Name	Chelsea Duong
Email	n11636548@qut.edu.au chelseaxm3@gmail.com



Project Topic	Enhancing fashion production spaces to support & improve worker health and wellbeing.		
Self-Initiated	☒	Keywords	Occupational health, fashion industry, manufacturing.
Scientific-Discovery	☐	Project Contact *	
Industry-Linked	☐	Email	

Project outline (short summary of project)	OUTLINE : Fashion industry workers (textile and apparel manufacturing specifically) are at a high risk of developing health challenges due to their constant exposure to harmful factors present within their workspaces. This includes airborne cotton dust, micro fibres, toxic dyes, agents etc. that gradually accumulate and contribute to chronic respiratory, skin and eye conditions. AIM : This project aims to learn, explore, and implement a design intervention within existing manufacturing spaces and workflows to improve the environment of workers and reduce risks to their health & wellbeing.
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Tentative Research Question	How might design support the health and wellbeing of fashion workers, by mitigating their exposure to airborne pollutants and toxic substances that are consistently present in their surrounding work environment?
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Participant Contacts	1. Fashion Students at QUT. 2. Owners of Pacific Clothing (a tailoring and clothing manufacturing business). 3. Other contacts pending..
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Ethics Agreement (Confirmation to conduct research to high ethical standards)	☒	Ethics Documents (Confirmation to complete all consent forms before deploying)	☒
Authenticity Agreement (Confirmation that content of report will be your own work)	☒	AI Agreement (Confirmation to use AI responsibly)	☒
Referencing (Confirmation that all information sourced externally will be referenced appropriately)	☒		
Raw Data (Confirmation that all raw data will be removed from report before end of semester)	☒		

research report.

BENCHMARKING

FILTRATION & INDUSTRIAL SYSTEMS FOR FIBRES



1. XFilter microfiber filter

<https://www.esos.com/tables/french/LK020.pdf?text=The%20filtering%20element%20of%20X%20DEU%20filters%20is%20supported%20on%20a%20can%20be%20easily%20replaced>

PROS

- + designed to capture microfibers, tiny plastic fibers shed from synthetic fabrics during washing, before they enter water system
- + help reduce [microfiber pollution](#) in wastewater and environment,
- + washing machine implemented
- + Patented filtration technology works with any washing machine model, ready for scalable use.
- + Captures up to **99% of microplastics** and **80%+ of natural fibres** during laundry.
- + Durable and easy to use, **lasting the machine's lifetime**.
- + Available as internal or standalone units to trap harmful fibres.
- + Protects oceans and waterways by reducing microfiber pollution.

<https://zerotech.com/microfiber-pollution-filter/>

- + High Filtration Efficiency
- + Long-lasting and Integrated Design
- + Easy to Use and Maintain
- + Minimal Energy Consumption;

The efficiency of devices intended to reduce microfiber release during clothes washing :

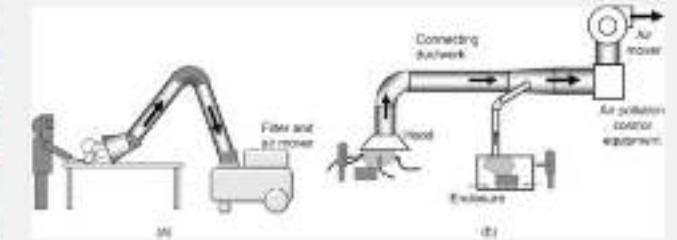
<https://www.sciencedirect.com/science/article/abs/pii/S0048969720339346>

CONS

- Disposal of Captured Microfibres?
- not 100% efficient

IDEAS

- + Filters on Washing Equipment : **filters** in main drainage systems for cutting, dyeing, and washing zones.
- + ventilation and air filtration system? (already exists)
- + monitoring device? (detects amount of fibers in air and activates system)



3. vacs

PROS

- + extract dust, fumes, and fibres directly from sewing machines, cutting tables
- + improves air quality
- + cleaner work environment = Reduces Inhalation of Harmful Particles
- + removes settled dust before it becomes airborne again.
- + Factory workers with **pre-existing conditions** (e.g., **asthma, COPD**) benefit from reduced exposure to triggers.

CONS

- + noise
- + Vacuuming = only for settled dust not suspended microfibres or chemical vapours unless paired with ventilation/filtration systems
- + power consumption



4. Direct-Drive Axial Fan

<https://www.fanquip.com.au/news/product-highlight/ventilation-solutions-for-the-textile-industry-in-australia?sc=bafe-A/mKQc4LPyH5be63R6KDT2BDmW8pK7nPn6P5e2Q2M5JK0hH7h1u>

PROS

- + Managing air pollution : **help move polluted air out**, especially when paired with exhaust or filtration systems. However, **they don't filter** air themselves—so it's only true **if used in a system that includes filtration**
- + push large volumes of air to maintaining consistent humidity and temperature levels
- + energy-efficient than belt-driven systems since they don't require ductwork or belts
- + ideal for facilities needing continuous air circulation.
- + compact design
- + low maintenance requirements make them suitable for a wide range of textile manufacturing environments

CONS

- + noise
- + fibre build up
- + more suited to mass manufacturing warehouses rather than small businesses, tailors etc (energy consumption)
- + **Blows Around Fabric Fibres and Dust not cooled?** -> instead of letting it settle it makes it worse (easier to breathe in when in air, could irritate eyes etc. resulting to more health issues)
- + Interferes with fabric when being layout out, draped etc. when in enclosed, smaller spaces (not fast fashion warehouses)
- + Air contamination risks due to its inability to filter air
- + limited control (1 setting, users cant control speed, noise, etc. just on or off)
- + hazardous if not cleaned / maintained (from the fibre buildup mentioned earlier)

Existing ventilation systems in clothing factories focus on controlling dust and humidity to prevent lung issues like byssinosis (brown lung disease). Common systems include mechanical ventilation, which uses fans to exhaust air and introduce fresh air, and natural ventilation, which relies on building design to facilitate airflow. Purging fans, HEPA filters, and systems that manage temperature and humidity are also employed to maintain a healthy indoor environment.

<https://southernelectric.com/ventilation-systems-for-warehouses-and-factories/>



<https://wfbgroup.co.uk/blog/local-exhaust-ventilation/>



5. Belt-Drive Axial Fan

PROS

- + more adaptable than the direct drive axial fan

6. Centrifugal Fan

PROS

- + ideal for dust extraction and air filtration
- + contaminants are effectively removed from the work environment
- + prevent textile contamination and reduce occupational lung hazards

FILTRATION SYSTEMS FOR FIBRES



7. PPE (protective equipment)

+ Worker health : manage airborne contaminants like dust, lint, bacteria, and viruses, ensuring clean, breathable [air quality](#). Poor air quality can lead to respiratory issues such as aggravated asthma, chronic bronchitis, or other severe health problems. Effective ventilation, combined with proper face masks and personal protective equipment, lowers the risk of respiratory conditions, safeguarding worker health.



Yes, there is a **gap in the market** for solutions to respiratory issues in the fashion industry—especially when it comes to **accessible, affordable, and sustainable health and safety innovations** for **small to mid-sized manufacturers** and **garment workers**.

<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.andandappe.com%2Frequirements-for-personal-protective-equipment%2F&psig=AOvVaw1HIFrv1MGuXQpBuumbXzGj&ust=1753947699517000&source=images&cd=vfe&opi=89978449&ved=0CBkQJhxgFwoTCLD1ldCK5t4DFQAAAAAdAAAAABAY>



In fashion workshops, protective gear is crucial for ensuring safety and preventing injuries. Key items include safety glasses or goggles, gloves (various types for different tasks), respirators or masks, ear protection (earplugs or earmuffs), and appropriate clothing like coveralls or aprons to protect personal clothes.

Studies show varying degrees of effectiveness for these products, with some filters capturing up to 87% of microfibers, [according to Waterless](#) and [Guppyfriend](#) bags capturing around 54%.




<https://www.theguardian.com/environment/2020/oct/26/cosy-bell-microfiber-catching-laundry-ball>

The Cosy Bell is a laundry ball designed to help reduce microfiber pollution from washing machines. It works by both preventing microfibers from shedding off clothes and by tangling and capturing loose fibers before they can escape into the water system, [according to Cosy Bell](#). Studies have shown it can prevent around 31 % of microfiber pollution.

FROM WEBSITE :

- **Reduces microfiber shedding:**
 - The Cosy Bell's unique design helps prevent fibers from breaking off clothes during washing, which is a major source of microplastic pollution.
 -
- **Captures loose fibers:**
 - It also catches loose fibers that are already detached from clothing, preventing them from going down the drain and into the environment.
 -
- **Protects clothes:**
 - By reducing shedding, the Cosy Bell can also help clothes last longer.
 -
- **Environmental impact:**
 - The Cosy Bell aims to reduce the amount of microfibers entering waterways, which can have negative impacts on aquatic life and ecosystems.
 -
- **Cleaning the Cosy Bell**
 - You can clean the Cosy Bell by removing any lint or fuzz that collects on it.




The Uppifriend Washing Bag is designed to reduce the release of microfibers from synthetic clothing during washing, helping to prevent microplastic pollution in our oceans. By containing the fibers that break off during washing, the bag helps keep them out of wastewater and ultimately, our waterways.

https://theecocore.com/reducing-microfibers-washing-bag?srsltid=AfmBOop009_V5e3666f6rD604gphC6n0Qr12w6A1ky_eHw



WK 3 LECTURE

WEEK 3 LECTURE NOTES

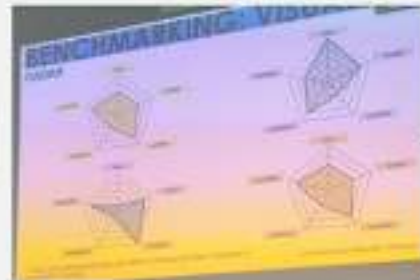
Benchmarking & Research Methods

- + benchmarking first part of research report that you need to do (super important)
- + identifying existing products in the space and field
- + measuring products, services and processes against those of organisations known to be leaders / competitors in one or more aspects
- + **not just about reviewing other products but you need to ANALYSE**
- + **not also just about getting inspiration**

- + comparing or understanding your idea or design in the market to help identify your strengths and weaknesses
- + set aims / objectives / goals and track progress
- + identify innovation against industry standards
- + learn from the best in the industry = what are the top brands
- + avoid recreating existing designs
- + stay competitive - reverse engineer to the best they can (see limitations of design, pick out, understand how they do what they do)

HOW TO BENCHMARK!

1. determine what product category / technology you are designing for (another product that is not a __ but uses the same technology)
2. determine what product are already in the context you are exploring = look at competitors in product category and technology
3. collect relevant images of products and services that they use
 - (how do people access the product eg. gov or purchased by them, private seller, background service etc. and why they are doing it through a service subscription)
4. collect information about the product / service : what markets do they sell them in, in australia, who is the manufacturer etc
5. identify function, features, retail price, form, style, aesthetic (look at a variety of retail prices)
6. identify major similarities and differences eg. all have the same padding, place for air etc etc.
7. identify gaps in the market (none of them have ____, maybe some area of innovation if i find that in my research as well)
8. needs to be incorporated is that you need to generate a visual comparison of that
 - = eg. table and rating them 1 to 1)
 - = radar eg. all my competitors are rilly expensive, opportunity to do a cost effective version, where are the gaps, what arent they doing? eg. poor aesthetic



= matrix / graph : assess the competitors based on x and y dimensions (need to do a little bit of research to be able to understand (d) the size of the brand, strength of brand, how much they dominate the market based on size (but make sure its something you want to talk about the report) price, branding, brand trust, range of products etc whatever

need to find, analyse, access, put it into a visual format (visual thing needs to inform you in some way eg. this graph gave me insight into x,y,z)

Importance of research

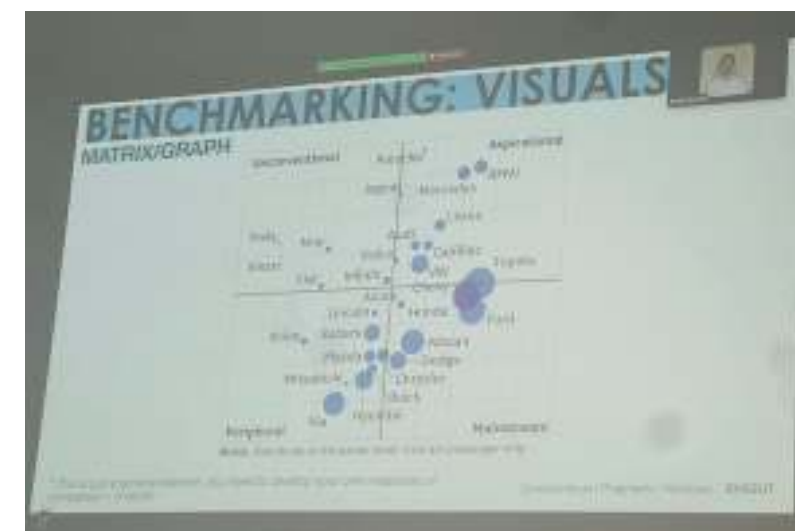
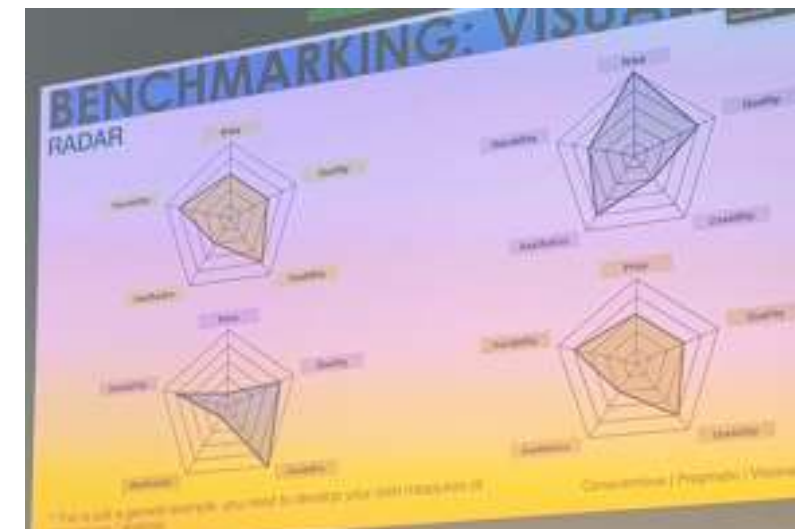
- + research helps identify problem needing to be solved, need for something that needs to be changed.
- justify your position, from the research we identified is was super important that the user could __ (research justified the aesthetic, proportion etc of the design)
- FOCUS ON APPROACH OF A METHOD
- reveal in depth data = problems will come out of the data in a really direct way, perceive and add a little bit of insight to understand its complexity eg. maybe surgeons didnt mention this but maybe its not the tool as they mentioned but the way they do surgery in general
- identify value / meaning
- understanding user needs / hidden needs = uncover the hidden needs
- uncovering something novel

objectives

- + relevance of qualitative research approach (not too much on quantitative)
- + importance of research within a design process
- + strategic position of human centred design
- + prefer to be at the edge of a little bit crazy.
- + what is innovative about your design? what makes it different from others (lacking innovation) why should people buy this and get excited? innovation eg. manufactured, sustainable, mass customisation, new tech in it? what is new and novel about it?
- + innovation vs intervention

+ HAVE CONSENT FORMS READY TO GO!! BY FRIDAY

	competitor 1	competitor 2
quality	1	5
pricing	10	9
style	9	7
tech	3	2
positioning	10	10
reputation	6	5
service	8	7
features		



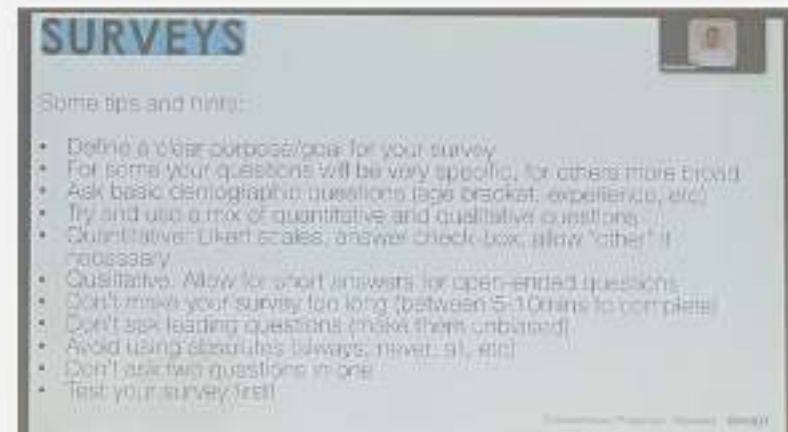
WK 3 LECTURE

RESEARCH METHODS

- + **2 is enough** just do them well, rather than number of methods use
- + **survey, interview, observation, think / talk aloud protocols,**
- + found videos on youtube, go to and analyse that people post that are publicly available, can use that and analyse (use that as a data source)

SURVEYS

- + qualtrics
- + QUT key survey
- + survey monkey
- + google forms



- + eg. open ended questions, anything you want to add?
- + go with brackets of age instead of give me your exact age
- + dont ask leading questions!! (eg. question is written in a way like eg. do you like maccas, or do you dislike maccas (In a negative or positive way) leading them to an answer you want to hear. unbiased!!!! eg. how much do you appreciate eating maccas food from a scale to 1 to 5. explain / elaborate _____. try following up with the opposite. eg. do you like this? what dont you like about it?
- + dont ask 2 questions in 1. do you like eating maccas and what time do you like eating it at.
- + test your survey. make it easy to understand

INTERVIEW (types of interviews)

- + structured
- + semi structures = some in with a set questions
- + open ended = harder, experienced



OBSERVATION

- + **naturalistic** (out in the environment observing the world, how are you going to collect the data? sketch? top down view, note where i am positioned in this space for we can note that in the report)
- + **participant** (go and talk to scooter people, observe them picking up the scooter, using it, do they have a jacket, how do they dress)
- + **structured** (ask them to do particular tasks during that drive eg. you're going to drive like you do normally, asked to do activities during that route)
- + **archival** (publicly available videos etc)

video, audio, notes youve taken, very specific on what youre focusing on in this observation)
establish a recording method. note take, photos, video etc.
even if youre blurring faces you need that image release form
dont make it long. dont use up their time unethically.



**ALWAYS NEED TO INFORM PEOPLE ABOUT THE INTERVIEW,
WHAT THE DATA IS BEING USED FOR, MAKE SURE THEY PROVIDE CONFIRMATION THEY UNDERSTAND THIS AND PROVIDE CONSENT!!**

ETHICS LECTURE

APPROACHES TO CONDUCTING RESEARCH

ETHICS LECTURE

- + values in the way you conduct research
- + ethical approaches to conduct research in protecting rights of individuals you are conducting research on
- + what you're doing in this research (data / process of collecting that data)
- + integrity in research + QUT Code of conduct for research = foundational obligations

GOOD RESEARCH:

1. honesty in developing, undertaking and reporting of research
2. rigour: how to conduct good research + surveys etc = not tweaking data even if you get data that is not what you initially thought (you're not going to go and change it to make it look "bountiful" etc.)
3. transparency in declaring interests and reporting research methodology / data / findings
 - eg. tell people you are doing research for ____ (declaring interest)
 - reporting that accurately
4. fairness in the treatment and recognition of others (no pressure, no stress on people)
5. respect for research participants, wider community, animals and environment
 - be conscious and treat community well, no uncomfortable situations
6. recognition
 - if it's in place significant to them be conscious and aware
7. accountability
 - your responsibility, you are accountable
 - you need to make executive decisions
8. promotion of responsible research methods
 - everyone has a role to play to do good research practices
 - it's your job and a professional, do it in a way that is fair to participants

NEED TO TELL THEM / AUDIENCE READING REPORT THE METHODOLOGY OF DATA FINDINGS ACCURATELY (DETAILS ON HOW DID YOU RESEARCH, DID YOU DO IT WELL, HOW DID YOU ANALYSE THE DATA, WHAT IS THE DATA, WHAT IS THE FINDINGS FROM THE DATA ETC)

ACADEMIC HONESTY

- + plagiarism is the presentation of the work as though it is your own
- + **failure to acknowledge the use of ideas or work of others**
- + treat this professionally, including AI or cut and paste from articles without recognition of report
- DDR, PRESENTATION ETC ACKNOWLEDGE PEOPLE'S WORK

MAKE SURE YOU:

1. acknowledge the source of that idea as an in-text reference in the body of assignment (image, quote)
2. list full reference in a reference list at the end of assignment

READ SCHOLARLY WRITING DOCUMENT THOROUGHLY (ON CANVAS)

- + approaching the writing section of report

INFO + CONSENT

1. need to acquire consent from your participants in the form of clear agreement and keep forms
2. need to keep forms for evidence

WHAT I NEED TO DO

provide the following information to participants

1. need to provide accurate and consistent information about project, experiment and what participants will be required to do
2. inform them that information is to be used for the purpose of research in this subject only for design ideation
 1. their responses / involvement is voluntary and they are free to withdraw at anytime
 2. ask if they understand the above information and have them agree in written form (SIGN, DATE, EMAIL, SOMETHING IN WRITING)

INFO + CONSENT

All to complete:

- + General Consent Form (Signed as consent to participate)
- + Recruitment Flyer Document (Information form to be read / understood by all participants)
- + Relevant Method Form (Explaining surveys, focus group, etc)

To complete only if necessary:

- + Recruitment Email Information (if contacting participants via email or if recruiting via social media)
- + Image Release form (if taking photos / videos of participants)

FOR THIS WEEK + NEXT

1. RESEARCH YOUR TOPIC (ARTICLES, RESOURCES, INFORMATION, ETC)
2. COMPLETE PROJECT SYNOPSES THIS WEEK
3. BENCHMARK EXISTING PRODUCTS / CONCEPTS
4. READ CAREFULLY ON HOW TO CONDUCT METHODS (SURVEYS, INTERVIEWS, OBSERVATIONS, ETC)
5. DECIDE HOW YOU WILL CONDUCT YOUR RESEARCH (WHAT TWO METHODS WILL YOU CHOOSE)
6. PLAN HOW YOU WILL DEPLOY YOUR RESEARCH (WHO, WHAT, WHEN, WHERE, HOW)

Not now, but soon:

- Reach out to participants (consent)
- Conduct research (keep a good log of data)

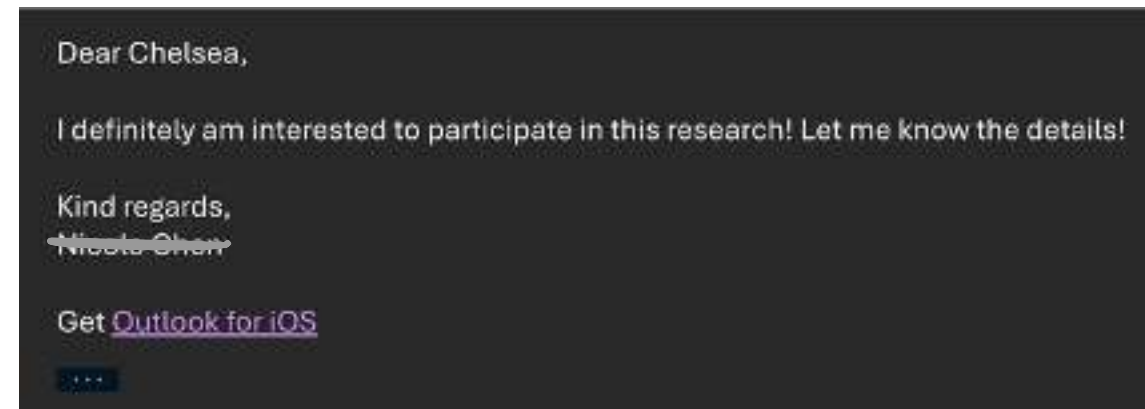
WHAT YOU NEED TO DO

Select methods / recruit participants / deploy research

- Select which two methods you will utilise (minimum)
- Design and develop those methods
- Generate consent forms (include required information)
- Recruit participants
- Deploy study methodically + rigorously
- Collect data methodically + rigorously

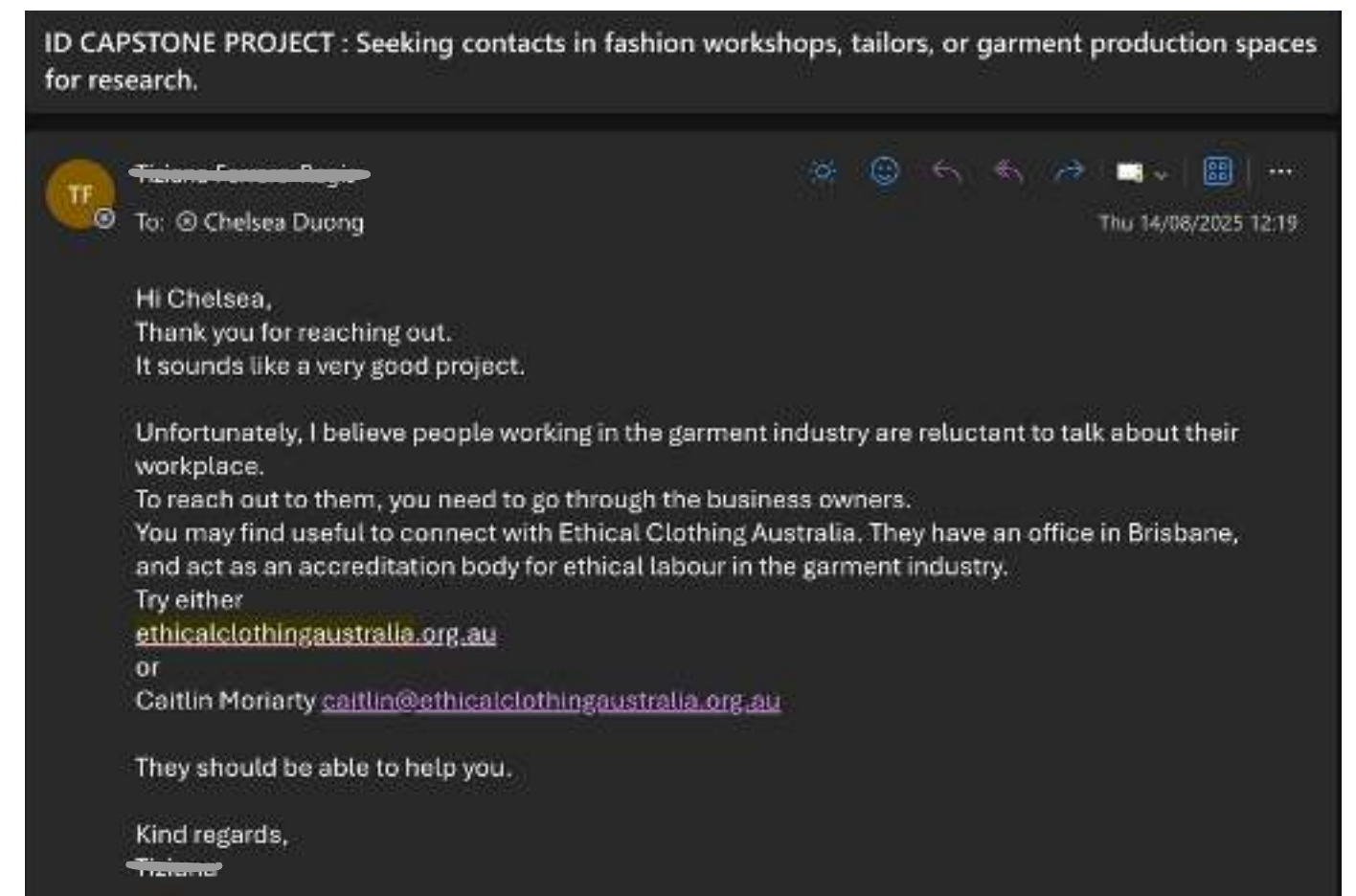
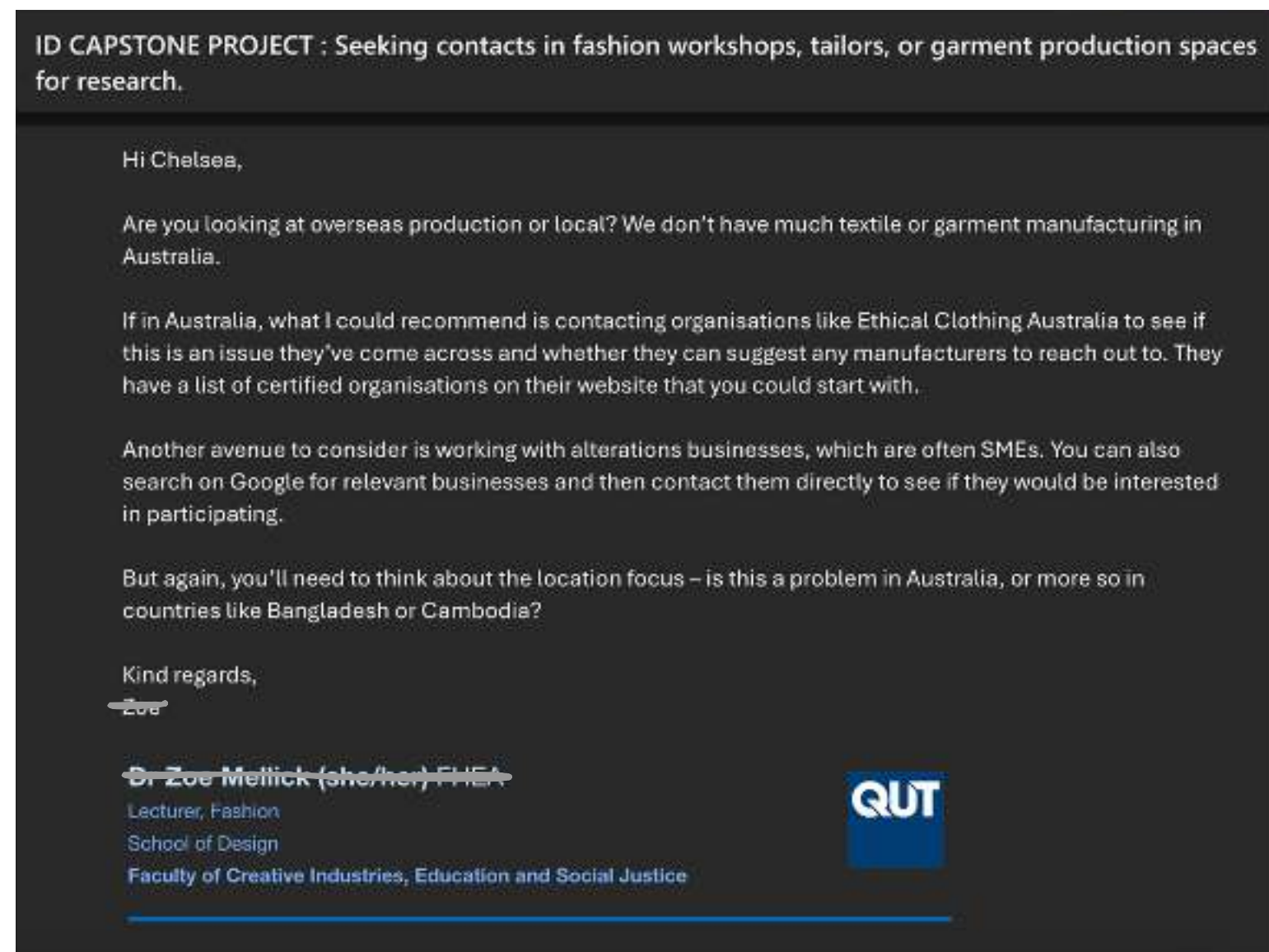
FINDING CONTACTS

QUT FASHION ACADEMIC TEAM & STUDENTS



began forming
connections with fashion
students

★ sent an email out to
ethical clothing as
recommended



PLANNING FOR THE WEEK

WHAT DO I NEED TO ACHIEVE ?

MON	TUE	WED	THU	FRI	SAT	SUN
	attend the tutorial ↓ get more insight and background info and more secondary data ↓ more benchmarking			survey draft questions ↓ aim for 2 versions and feedback		

REPORT RESEARCH

STATISTICS / SCALE OF AFFECT / PREVALENCE IN AUS & OUTSIDE / SEVERITY & IMPACT OF RISK

STATISTICS IS SCARCE BECAUSE :

- Reluctancy to talk about workplace.
- Fashion spans retail, design, manufacturing, and supply chains, all of which are often reported under broader categories like "retail" or "manufacturing" in government or workplace health statistics.
- Many workers, especially outworkers or casual employees **do not report challenges such as respiratory issues, particularly home based garment workers or migrant labourers**, where legal and health protections are weaker.
- **Most occupational health studies in Australia focus on high-risk industries like construction, mining, or healthcare, not fashion.**

CITE PEOPLE AFFECTED :

- National Institutes of Health (NIH) : **over 60 million people worldwide work in the textile or clothing industry.** Long-term exposure to dust can contribute to chronic respiratory diseases like Byssinosis, COPD, and asthma.

<https://pmc.ncbi.nlm.nih.gov/articles/PMC3725301/#:~:text=Purpose%20of%20review,%2C%20and%20restrictive%20lung%20disease>

In 2022, 2.8 (10.8%) million Australians had asthma, and 638,000 had COPD (2.5%)

[https://www.abs.gov.au/statistics/health/health-conditions-and-risks/chronic-obstructive-pulmonary-disease/latest-release#:~:text=COPD%20prevalence%20in%202022%2C%202.5%25%20\(638%2C100\)%20of,COPD%2C%20higher%20than%20any%20other%20age%20group](https://www.abs.gov.au/statistics/health/health-conditions-and-risks/chronic-obstructive-pulmonary-disease/latest-release#:~:text=COPD%20prevalence%20in%202022%2C%202.5%25%20(638%2C100)%20of,COPD%2C%20higher%20than%20any%20other%20age%20group)

Globally, an estimated 384 million people had COPD in 2010, with numbers projected to increase significantly, and in 2021, global population affected was around 213 million people. In Australia, **approximately 638,000 people (2.5% of the population) were living with COPD in 2022, according to the Australian Bureau of Statistics.**

<https://www.abs.gov.au/>

Specific data linking COPD to fashion industry is limited, it is known that textile workers are at risk of respiratory issues, including a condition called byssinosis, due to exposure to cotton and hemp dust. Overall, over 212 million people worldwide had COPD in 2019

<https://www.bmj.com/content/378/bmj-2021-069679>

no statistics on how many people in the fashion industry are affected by asthma; however, asthma is a common chronic condition that affects about 2.8 million Australians, or 1 in 10 people. **Factors exacerbate asthma symptoms in the fashion industry include exposure to dust, mold, or other allergens from fabrics (airborne irritants), chemicals used in textile production, and dust.**

<https://aaafa.org/asthma/asthma-triggers-causes/#:~:text=The%20most%20common%20asthma%20triggers,vary%20from%20person%20to%20person.>

Byssinosis may not be frequently reported or tracked, especially given its low current prevalence, and untracked data due to the moderisation and better dust control in AUS factories. **However, byssinosis is a significant risk for fashion textile laborers, particularly in countries with lower health and safety standards, due to exposure to cotton and other textile dusts.**

<https://www.sciencedirect.com/science/article/pii/S2949918625001251#:~:text=Background,primary%20forms:%20acute%20and%20chronic.>

Australian fashion and textile industry employs more than 489,000 people, with the industry's total workforce growing to over 500,000 by late 2024. large workforce is spread across various sectors, including design, **manufacturing**, retailing, and education.

<https://ausfashioncouncil.com/wp-content/uploads/2021/05/From-high-fashion-to-high-vis-EY-final-report-31-May-2021.pdf>

estimated **27 million people in the fashion supply chain are affected by work-related health issues, which can include respiratory problems from dust and fibers encountered during textile production.** These fibres are a significant concern, particularly in activities like spinning, weaving, and processing, and can lead to long-term respiratory illnesses.

<https://pmc.ncbi.nlm.nih.gov/articles/PMC10964409/>

<https://www.theupcoming.co.uk/2021/12/24/safety-and-health-risks-in-the-fashion-and-textile-industry-heres-how-to-protect-workers/>

no exact Australian figures for lung problems from the fashion industry, but textile dust (e.g., cotton) and chemicals (formaldehyde, VOCs) are known risks. Globally, millions are affected, and **Australia's high textile consumption and waste suggest potential exposure, though local data is limited.**

<https://www.preprints.org/manuscript/202504.1417/v1>

Byssinosis, also known as "brown lung disease" or "Monday fever," is an occupational lung disease caused by inhalation of cotton or jute dust in inadequately ventilated working environments. <https://en.wikipedia.org/wiki/Byssinosis>

PREVALENCE OF RESPIRATORY ISSUES IN WORKERS (INCIDENCE OF ASTHMA / COUGH / LUNG ETC.)

Textile and garment workers experience a significantly higher prevalence of respiratory issues, including asthma, chronic cough, and byssinosis (brown lung disease), due to chronic exposure to dusts like cotton and other airborne irritants. Studies show high percentages of workers suffering from **symptoms such as cough, phlegm, and chest tightness, with byssinosis affecting substantial portions of the workforce, prevalence varies by specific industry, exposure levels, and use of personal protective equipment (PPE).**

In the textile industry, work-related asthma is considerable and several agents such as cotton dust and dyes may cause this condition [7]. prevalence of work-related asthma among textile workers studied in several countries: 9.1% in Thailand [8], 0.9% of women and 1.1% of male textile workers in Croatia [9], 4.0% and 5.0% in Pakistan in 2013 and 2015 respectively [10 , 11].

Work-exacerbated asthma is more common with about 25% to 50% of working adults with known asthma causing exacerbations with asthma symptoms related to their workplace [12]. These symptoms include wheezing, cough, chest tightness, and/or shortness of breath.

<https://www.mdpi.com/1660-4601/18/18/9813#:~:text=The%20strongest%20risk%20factors%20for,to%20their%20workplace%20%5B12%5D.>

Respiratory issues **highly prevalent among fashion (textile) workers due to exposure to textile dust, fibers, and chemicals, with symptoms such as chronic cough, breathlessness, chest tightness, and reduced lung function being common.** Studies shown significantly higher rates of respiratory symptoms and lung function impairment in textile workers ... **Home-based garment workers** face significant risks from dust exposure, highlighting need for occupational health programs in both large factories and **smaller, informal settings.**

<https://pubmed.ncbi.nlm.nih.gov/25122551/#:~:text=A%20cross%2Dsectional%20study%20with,;%20respiratory%20symptoms;%20risk%20factors.>

focus on just aus
or dive outside where
they are more data rich?

move qs
for chris!!

not many statistics online about aus
having reported challenges
→ should I address this in the report?

HOW MICROFIBRES ETC CONTRIBUTE TO LONG TERM HEALTH RISKS

- persistent inflamm in lung = lung stay irritated and swollen for a long time
 - repeated cotton dust related **endotoxin exposure** = Breathing in cotton dust again and again, which contains tiny harmful substances called endotoxins → refers to inhalation or contact with lipopolysaccharide (LPS), a component of Gram-negative bacteria
 - in context of textiles, endotoxin exposure happens because **bacteria can grow on raw materials like cotton, wool, or dust from fabric, and LPS can become airborne. Workers or students in the textile/fashion industry might breathe it in or touch it while sewing, cutting, sanding, or handling fabrics.**
- (USED AI TO EXPLAIN ENDOTOXINS)

FIBER IMPACT

- contribute to long-term health risks through physical damage, chemical toxicity, and acting as pathogen carriers.
- Once inside body, can trigger chronic inflammation and oxidative stress, leading to cell damage and potentially increasing the risk of diseases like cancer and heart conditions.
- chemicals within microfibers leach out, acting as endocrine disruptors and interfering with hormonal systems



- microfibres can adsorb pollutants from environment aka act like sponges, concentrating harmful substances like heavy metals and persistent organic pollutants (POPs), and transport toxins into the body.

AND :

- potential for respiratory issues
- **Inhaled microfibers** can **lodge in lungs**, causing irritation and potentially exacerbating existing respiratory conditions like asthma.
- **long-term effects of chronic microfiber inhalation still under investigation**, but concerns exist regarding fibrosis and other pulmonary complications.
- **Ingestion**, another primary route of exposure = gastrointestinal tract irritation and potentially impact gut microbiome balance.
- gut may be disrupted by constant influx of foreign particles
- **multiple pathways of harm highlight systemic nature of potential health impacts from microfiber pollution**

<https://lifestyle.sustainability-directory.com/question/how-does-microfiber-pollution-affect-human-health/#:~:text=Several%20mechanisms%20have%20been%20proposed,the%20body%20after%20environmental%20exposure>

REPORT RESEARCH

STATISTICS / SCALE OF AFFECT / PREVALENCE IN AUS & OUTSIDE / SEVERITY & IMPACT OF RISK

- body immune system recognises microfibers as **foreign particles**
- this triggers inflammatory responses
- chronic inflammation (key concern) leads to tissue damage and is a known factor in development of various chronic diseases over time.
- **Microfibers often made of plastic and can release chemical additives such as phthalates and BPA, which are known endocrine disruptors.**
- can serve as carriers for bacteria and viruses (ingested or inhaled contaminated fibres potentially increase risk of infection within body)
- microplastic fibers contribute to inflammation, oxidative stress, and intestinal flora disorders when inhaled or ingested.

DUST IMPACTS

- dust from fabrics eg. cotton dust = long - term health risks like **occupational lung disease byssinosis**, a form of asthma and COPD from cotton dust.
- Long term exposure can cause chronic respiratory symptoms, **reduce lung function**, and lead to persistent bronchitis (inflammation of airway), and in some cases, irreversible lung scarring known as pneumoconiosis.

- **particles often invisible and the health effects of exposure can take years to develop = not something people look out for**
- long term health effects caused by dust in the lungs are usually permanent and may be disabling.
- build-up of **dust in lungs cause lung inflammation** and eventually scar tissue (fibrosis) -> breathing impairment.
- **conditions develop slowly and symptoms may not appear until severe**
- **respiratory irritants and sensitisers** cause "occupational asthma" (coughing, wheezing, chest tightness), rhinitis (runny or stuffy nose) and extrinsic allergies (symptoms can include fever, cough, worsening breathlessness and weight loss).
- inhaled dusts become trapped in the mucus that lines the respiratory tract → Inhaled dusts can get into the digestive tract -> cause local effects like gastrointestinal tract irritation.
- can affect other organs and tissues via the bloodstream (e.g. lead).

<https://www.worksafe.qld.gov.au/safety-and-prevention/hazards/hazardous-exposures/hazardous-dusts#:~:text=Health%20effects,are%20respiratory%20irritants%20and%20sensitisers.>

VULNERABLE POPULATIONS

- occupational exposure eg. textile manufacturing lead to higher levels of microfibre inhalation and ingestion, posing increased risks for workers in these sectors
- **Identifying and understanding the increased vulnerability of specific groups is crucial for targeted prevention and mitigation strategies.**

Respiratory Health Effects of Cotton Dust Exposure in Textile Workers

- workers exposed to cotton dust heightened risk of a spectrum of respiratory disorders that pose both individual and public health challenges.
- **Chronic exposure** to airborne cotton dust lead to persistent cough, phlegm production, wheezing, chest tightness and byssinosis
- occupational lung disease parallels asthma
- **Pulmonary function tests frequently reveal a reduction in forced expiratory volume in one second (FEV1) and diminished lung capacities, affirming that even subclinical changes may trigger long-term morbidity.**

DATA HERE

- **health effects compounded by inadequate ventilation, prolonged service duration and the inconsistent use of personal protective equipment.**
- In context of globalised textile industry, epidemiological studies have underscored significant burden cotton dust exposure places on both health of workers and occupational safety frameworks.

<https://www.nature.com/research-intelligence/nri-topic-summaries/respiratory-health-effects-of-cotton-dust-exposure-in-textile-workers-micro-94196#:~:text=Textile%20workers%20exposed%20to%20cotton,workers%20and%20occupational%20safety%20frameworks.>

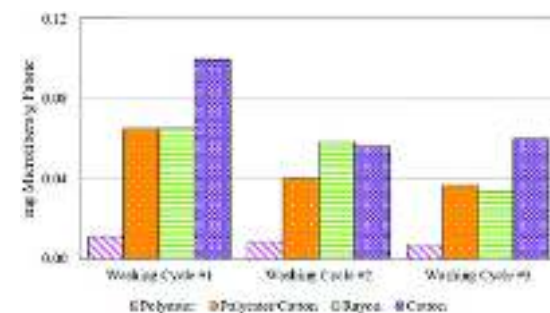
<https://occup-med.biomedcentral.com/articles/10.1186/s12995-018-0194-9>

HEALTH RISKS ONE OF THOSE FACTORS INCUDE RESPIRATORY CHALLENGES

- **est 27 million workers in global fashion suffer work related illnesses and diseases**
- **1.4 million injuries occurring annually**
- workers face risks including long-term illnesses from prolonged sitting and dangerous conditions eg. fires, exposure to toxic chemicals in garment factories, fibres and dust produced from clothing during processes can also pose health threats to consumers.

<https://www.commonobjective.co/article/death-injury-and-health-in-the-fashion-industry#:~:text=Poor%20health%20and%20safety%20in,work%2Drelated%20deaths%20and%20injuries.>

GRAPHS ON MICROFIBERS IN FABRICS



Microfibers generated from the laundering of cotton, rayon and polyester based fabrics and their aquatic biodegradation

https://www.researchgate.net/figure/Mass-of-microfibers-generated-during-home-laundering-after-subsequent-washing-per-mass-of_fig5_332789305

CO DATA

PRO

Death, Injury and Health in the Fashion Industry

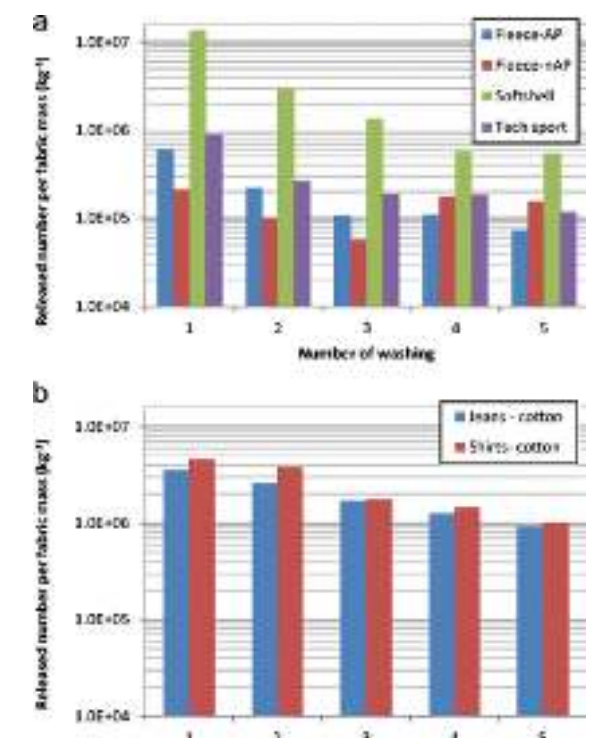
Poor health and safety in workplaces potentially affect millions of workers in fashion supply chains, resulting in deaths, injuries and long-term illnesses.

Key Takeaways

- Estimates suggest that around 27 million workers in fashion supply chains worldwide are suffering from work-related illnesses and diseases.
- There are thought to be 1.4 million injuries in fashion industry workplaces each year – equivalent to an injury rate of 5.6 per 100 workers.
- Data about fashion supply chain deaths, injuries and health is severely limited – no single organisation is tracking factory accidents in the industry.

<https://www.commonobjective.co/article/death-injury-and-health-in-the-fashion-industry#:~:text=Estimates%20suggest%20that%20around%2027,work%2Drelated%20deaths%20and%20injuries.>

Release of polyester and cotton fibers from textiles in machine washings
https://www.researchgate.net/figure/The-numbers-of-released-a-polyester-and-b-cotton-fibers-per-fabric-mass-per-kg-in_fig3_318116063



REPORT RESEARCH

COST & ACCESSIBILITY BARRIERS

Cost and accessibility barriers to protective systems
(advanced ventilation, industrial level PPE etc.)

CHALLENGES

• cost and accessibility barriers for protective systems for fashion homeworkers include : informal nature of work, lack of mandatory provision, limited access to necessary equipment due to **unavailability, cost, space**.

Laundry Workers in Government Hospitals (working with fibres) :

- unavailability of essential personal protective equipment
 - disharmonious work environment
 - low perception of susceptibility
 - **belief about personal protective equipment interference with work performance**
- were identified as the major barriers to personal protective equipment use in the present study :

<https://pmc.ncbi.nlm.nih.gov/articles/PMC7528124/#:~:text=Organizational%2D%20and%20individual%2Dlevel%20barriers,use%20in%20the%20present%20study>

Comfortable Fitting Personal Protective Equipment Challegnes

- **gender specific designs : results in poorly fitting garments**
- **"one-size-fits-all" policies despite varying bodies**
- **discomfort from prolonged wear**
- **Ill fitting or overly tight PPE, such as respirators cause headaches, discomfort, fatigue, and even throw the body out of alignment.**
- **improper fit : renders ppe ineffective (inaccurate fit negate intended protective function -> ineffective against hazards), compromise protection and create new risks**
- **material properties that contribute to discomfort, such as breathability issues or excessive weight.**
- PPE often doesn't account for the natural variation in body shapes and sizes
- Industry-Specific Designs / lack of ergonomic designs for various industries
- Can restrict movement, affecting job performance.

★ accessible to an older audience
who has been in industry for longer

COST

- need a filter (replacable)
- some masks have a max usage before needing to be thrown away
- depending on features and complexity of full face respirator, you can expect to spend between \$100 and \$300 : <https://pksafety.com/collections/respirators-filters#:~:text=Depending%20on%20the%20features%20and,spend%20between%20%24100%20and%20%24300>.

IN AUS SPECIFICALLY :

- disposable P2 respirators can cost \$5-\$10 each
- reusable half-face respirators range from \$50-\$100
- full-face models and powered air-purifying respirators (PAPRs) costing significantly more, from \$300 to over \$3,000

Costs vary depending on the brand (e.g., 3M, CleanSpace), type (disposable vs. reusable), and level of protection required (P2, P3, gas filters).

(CHECK BENCHMARKING)

- dust and fibre ventilation system in AUS varies
- small dust collectors = \$500 to \$6,000
 - large, custom-engineered systems that can range from \$50,000 to over \$1 million.

(price depends on system's size, specific dust and fibre types, required filtration efficiency (like HEPA filters), airflow capacity needed, whether it's a simple portable unit or a complex industrial installation)

<https://airtight.com.au/commercial-dust-fume-collection-a-buying-guide/>

<https://www.tylerbrownwoodworking.com/articles/shop-vac-vs-dust-extractor#:~:text=The%20main%20difference%20between%20a,from%20escaping%20into%20the%20air>

IMPORTANCE OF VENTILATION SHORT READ :

<https://www.fanquip.com.au/news/product-highlight/ventilation-solutions-for-the-textile-industry-in-australia/?srsltid=AfmBOorZgU5EVXPoCRI7L2nnGFidF4aSVFnVIlmNPunC94gBEfBTshRN>

EXISTING SOLUTIONS

ON THE MARKET

product analysis product services processes measured product category, technology, products already in the context being explored, images	determine what product category / technology you are designing for (another product that is not a ____ that uses the same technology) 2. determine what product etc already in the context you are exploring = look at competitors in product category and technology 3. collect relevant images of products and services that they use (how do people access the product eg. govt or purchased by them, private seller, background service etc. and why they are doing it through a service subscription) 4. collect information about the product / service - what markets do they sell them in, in Australia, who is the manufacturer? 5. identify function, features, retail price, form, style, aesthetic (look at a variety of retail prices) 6. identify major similarities and differences eg. all have the same padding, place for air etc etc. 7. identify gaps in the market (none of them have ____, maybe some area of innovation if I find that in my research as well) 8. needs to be incorporated is that you need to generate a visual comparison of that		
analysis	product	services	processes
Product Category Respiratory Protective Equipment (RPE)			
Product Image	Name	Market Price	Reviews
	Safecorp Disposable Mask with P2 Valve Respirator & Carbon Layer - 2 Pack	\$14.70 (2 Pack) Mitre 10 Price	_____
	Product Spec / Details (PROS) + carbon layer filters out odours (built-in carbon layer) enhancing user comfort during prolonged wear. + exhalation valve for improved breathability and comfort + compatible with glasses or goggles (prevents fogging) + dual head strap system guarantees an optimal, secure fit, ensuring mask stays in place during various activities + P2 rated <u>respirator</u> for effective filtration of airborne particles + designed to provide superior protection and comfort + exhalation valve helps to expel hot air and moisture, significantly improving breathability and reducing discomfort. + Ideal for a wide range of tasks, this two-pack of masks offers a reliable solution for protection without compromising on comfort.		
	ADJUSTABLE : adjustable nose clip for a comfortable and tight seal		
	+ P2 respirators designed to filter out at least 94% of airborne particles with a size of 0.5 micrometers or larger (dust ranges from 1 to 100 micrometers µm & micro fibres = 1 µm to 5 mm in length and have a diameter less than 50 µm		
	+ Easily work with glasses or goggles. + Dual head strap for optimum fit. + Exhalation valve to improve comfort by assisting in expelling hot air and moisture. + Recommended for sanding, grinding, building and painting + YES does filter out microfibres (only filter particles, not gases or vapours).		
	2x 10pc Safecorp P2 Disposable Respirator Mask w/ Carbon Valve Dust/Mist/Fumes	\$69.30 (2 Pack) Big W Price 6.93 Each & 13.85 For 2	
	Product Dimensions(mm): 180x140x140mm		
	DIFFERENCE BETWEEN P2 & N95 P2 and N95 masks offer similar protection against airborne particles, but they differ slightly in their certification standards and testing requirements. P2 masks, certified under <u>Australian/New Zealand standards</u> (AS/NZS 1716), filter at least 94% of particles. N95 masks, certified by NIOSH (National Institute for Occupational Safety and Health) in the United States, filter at least 95%. While both are highly effective, P2 masks must also undergo human fit testing, a requirement not mandated for N95 masks under NIOSH standards.		
	Cons (From Research & Online Reviews) + perfect seal crucial for optimal protection, may not be suitable for everyone / situations. + fit of the mask is crucial = to be effective P2 respirators must form a tight seal around nose and mouth. Facial hair _____ can compromise the seal. + NOT SUITABLE for individuals with pre-existing heart or lung conditions... relates to the tight seal and lack of air? does sweat build up in the mask? + breathing, can make breathing more difficult, especially during physical exertion, due to the tight seal and high filtration. + skin irritation and rashes at points of contact after prolonged use + no gaps in the seal between the mask and the face before entering unsafe environment. (trapping particles in the mask results to it being ineffective) + eventually gets moist and becomes hard to breath though		
			

EXISTING SOLUTIONS

ON THE MARKET



3M 6200 Half Facepiece Respirator - Medium

\$49.79
1 Each inc. GST

FILTER COSTS :



Filter Type	Price (inc. GST)
3M 6000 Series High Efficiency Particulate Filter	\$14.95
3M 6000 Series High Efficiency Particulate Filter	\$14.95
3M 6000 Series High Efficiency Particulate Filter	\$14.95
3M 6000 Series High Efficiency Particulate Filter	\$14.95
3M 6000 Series High Efficiency Particulate Filter	\$14.95
3M 6000 Series High Efficiency Particulate Filter	\$14.95
3M 6000 Series High Efficiency Particulate Filter	\$14.95

- Simple and lightweight
- reusable respirator
- Use with 3M gas, vapour and particulate cartridges and filters to provide respiratory protection **against particulates** and a variety of gases and vapours
- **Thermoplastic Elastomer (TPE) face piece**
- Fully complies with Australian Standard AS/NZS 1716:2003
- Filters suitable for use with this respirator are 45061 and 45062
- Filters to be purchased separately



+ front heavy, would be a burdensome overtime and weight head down
+ workers already having to lean downwards to look at work, this would then impact their posture and back negatively overtime, introduces a new issue.

https://www.mitre10.com.au/safecorp-disposable-mask-with-p2-valve-respirator-carbon-layer-2-pack-7374390?srsltid=AfmBOqjB-wuuY6lqDKSWP3zXzV5YmcXMinplStbmmXNu0n2-2XazlwOZE8®ion_id=000020&gStoreCode=783553&gQT=1

https://www.bigw.com.au/product/2x-10pc-safecorp-p2-disposable-respirator-mask-w-carbon-valve-dust-mist-fumes/p/9900845466?srsltid=AfmBOor-Lzhs6jtm6ZZY39_JXtMSc62C413DKT8VvpQsCuhYClf-Vyyc

https://www.signet.net.au/3m-6200-half-facepiece-respirator-medium-68035.html?ngstodp=vlxtcbqnn&utm_medium=cpc&utm_source=google&utm_campaign=2061033728&gad_source=1&gad_campaign_id=2061033728&gclid=CJ0KCCQjwndHEBhQVARIsAGh0p3AInVaz-wTaN1DUEQYFFETdxu4g047xlpnEQ45_5x_p_Q-mQFe30aArvFEALw_wcB

EXISTING SOLUTIONS ON THE MARKET



- Improves mental clarity.
- Breathing clean air reduces stress levels.
- Gain energy.
- More oxygen results in greater brain fuel burning, increasing energy levels.
- Enhance focus.
- More oxygen results in greater brain fuel burning, improving your concentration.

flexible and adjustable air filter that protects against all pollens, mold, pollen, allergens, and bacteria. The Laban Air Mask is tested at RSE RSG center in Sweden, with filtration levels exceeding 99.9% – surpassing industrial-grade protection.

Says clear of related genes thanks to Polygen® MultiCell™ Technology

Adjustable functions for minimal leakage and optimal comfort

Basic tailcoat - could be uncomfortable and cut into the waist

Need sleep
Carbohydrate and alcohol + need rest

Fine, breathable mesh for easy breathing without irritation

Feasible
Polygraphed! Technology that allows find items in between machines.

Available extraction values for optimal brownability

Replaceable filters
Long lasting & replaceable filters

multi-layer filter technology is tested at the TSI BAC center in Sweden showing a 99.99% protection rate against particles down to the size of 0.3µm and 99.99% against pm2.5 pollution. The mask is also tested and certified for international pollution level standards, similar to the US's rural and NIOS respirator standards.

take control of your comfort. With the adjustable earbuds you can create a snug seal and a personalized fit around the face.

claims : Virus
99.9% protection against viruses

Filters down to 1-100 µm particle size

Certified protection and superior comfort. The Unisac Air Mod 3.0 is the world's most advanced car mark parka/gilet in its award-winning, sustainable Swedish design.

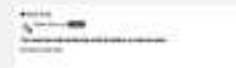
[illegible][View all reviews](#)

Urban Air Mask

\$129

\$64.50

CC-BY



SURVEY

FIRST DRAFT OF QUESTIONS

INTRODUCTION TO THE WORK

This research project is being undertaken as part of an Industrial Design Capstone project at the Queensland University of Technology by Industrial Design student Chelsea Duong. The project aims to identify, explore, and implement a design intervention within existing fashion manufacturing spaces and workflows to improve the environmental conditions of industry workers, to reduce the health and wellbeing risks they currently face. You are invited to take part in this research project due to your involvement as a representative, your lived experience, or professional expertise in this field.

1 . What is your role in the fashion industry ? (select all that apply).

- a . garment / production worker
- b . designer (fashion / textile / product)
- c . pattern maker
- d . tailor / seamstress
- e . fashion student
- ~~f . educator~~
- h . other (please specify)

2 . Does your role involve direct contact with fabrics or exposure to airborne fibres ?

- a . yes
- b . no

~~3 . Does your work environment expose you to dust, fibres, or particles in the air? If yes, please describe~~

4 . What is your primary work setting ? (select all that apply).

- a . factory / production floor
- b . in a studio or workshop
- c . boutique
- d . at home
- e . university / TAFE / school
- f . other (please specify)

5 . Have you ever experienced symptoms like coughing, shortness of breath, chest tightness, eye irritation, inhalation, general irritation etc. when working in environments with fibres and dust ?

- a . yes frequently
- b . yes occasionally
- c . rarely
- d . never

6 . For those who have experienced symptoms, please provide details on what they are.

7 . If applicable, when do these symptoms usually occur ? (select all that apply).

- a . during specific tasks eg. cutting / sewing / weaving etc.
- b . in specific areas of my workspace eg. garment cutting room
- c . only when using specific equipment eg. sewing machines
- d . outside of my workspace and work hours
- e . other (please specify)

8 . If applicable, please provide more details about your answer to the previous question. eg. you could describe or name specific tasks, areas, equipment, or situations that trigger symptoms.

9 . What steps do you take to reduce or prevent symptoms caused by fibres and dust ? (select all that apply).

- a. wearing personal protective equipment eg. masks / goggles / aprons etc.
- b. using ventilation systems or air purifiers
- c. taking regular breaks away from dusty areas
- d. following health and safety practices eg. washing hands / changing clothes
- e. modifying work processes or tasks to reduce exposure
- f. seeking medical advice or using medication
- g. i dont take any specific precautions
- h. other (please specify)

10 . Are there any difficulties or limitations with the ways you currently protect yourself from fibers and dust? If so please describe eg. protective equipment is uncomfortable, restrictive, not effective, ventilation systems are hard to use / understand and noisy, lack of availability or maintenance of protective equipment or systems etc.

11 . Do these difficulties affect your ability to do your work efficiently ?

- a . yes, significantly
- b . yes, somewhat
- c . no, not really
- d . not sure / no

12 . Are there any specific brands, products, or protective measures you personally use or would recommend ?

13 . Research has linked cotton dust and fibers to conditions such as byssinosis, asthma, and chronic bronchitis. From your perspective, are these risks recognised or discussed in your workplace? eg. Are workers informed about long-term health risks? Or are protective measures like masks or ventilation provided and communicated?

14 . How familiar are you with the ways textile, dust, micro fibers, airborne particles etc can affect health?

- a . very aware. i know a lot about the risks and impacts
- b . somewhat aware. i know a little about the risks and impacts
- c . slightly aware. i have heard of some risks but don't know much detail
- d . not aware. i don't know about these risks or impacts

15 . Have you ever thought about how exposure to textile dust, micro fibers, or airborne particles might affect your health in the future?

- a . yes. i regularly consider it
- b . yes. occasionally
- c . no. i have not thought about it
- d . not sure or prefer not to say

16 . Are there any particular tasks or processes where you feel the most fiber or dust exposure happens?

17 . From your experience, what measures in your workplace work well to reduce dust or fiber exposure, and what could be improved?

18 . Imagine there are no limitations. What product, tool, system, or change would you introduce to make working with fibres and dust safer and overall improve your experience when working?

19 . As I'm designing something to help reduce the impact of airborne fibers and dust on workers in the fashion / textile industry, is there anything else you would like to share that I should know?

FEEDBACK & DRAFT 2

DRAFT 2 OF SURVEY QUESTIONS

Feedback on survey q's ~~1st~~ DRAFT 1
+ some questions are long, consider
if instead of eg use for example
+ make use of scale
eg 1-2 or
1 =
2 =
or
strongly disagree

Impediment questions!
- context
- age
- name etc
- ease them into the questions

INTRODUCTION TO THE WORK

This research project is being undertaken as part of an Industrial Design Capstone project at the Queensland University of Technology by Industrial Design student Chelsea Duong. The project aims to identify, explore, and implement a design intervention within existing fashion manufacturing spaces and workflows to improve the environmental conditions of industry workers, to reduce the health and wellbeing risks they currently face. You are invited to take part in this research project due to your involvement as a representative, your lived experience, or professional expertise in this field.

1. Which age group do you belong to ?

- a . 18 - 24
- b . 25 - 34
- c . 35 - 44
- d . 45 - 54
- e . 55 - 64
- f . 65 or older
- g . prefer not to say

2. How long have you been working or studying in the fashion industry ?

- a . less than 1 year
- b . 1 - 5 years
- c . 5 - 10 years
- d . more than 10 years

3. What is your role/s in the fashion industry ? (select all that apply).

- a . garment / production worker
- b . designer (fashion / textile / product)
- c . pattern maker
- d . tailor / seamstress
- e . fashion student
- f . other (please specify)

4. On average, how many hours per week do you spend working in fashion production spaces ?

- a . less than 5 hours
- b . 5 - 10 hours
- c . 11 - 20 hours
- d . 21 - 30 hours
- e . 31 - 40 hours
- f . more than 40 hours
- g . prefer not to say

5. What is your primary work setting ? (select all that apply).

- a . factory / production floor
- b . in a studio or workshop
- ~~e . boutique~~
- d . at home
- e . university / TAFE / school
- f . other (please specify)

6. Does your work environment expose you to dust, fibres, or particles ?

- a . yes
- b . no

5. Have you ever experienced symptoms such as coughing, shortness of breath, eye irritation, or general discomfort when working in environments where fibres or dust are present?

- a . yes frequently
- b . yes occasionally
- c . rarely
- d . never

6. If applicable, please provide details about what symptoms you experience.

7. When do these symptoms usually occur ? (select all that apply).

- a . during specific tasks
- b . in specific areas of my workspace
- c . when using equipment eg. sewing machines
- d . away from my workspace and work hours
- e . other (please specify)

~~8. Please describe any tasks, processes, areas, or equipment where you experience the most fiber or dust exposure and any situation that trigger symptoms. (too similar to question 7)~~

~~9. Adequately protected from dust and fiber exposure in my workplace. (combined with q 17)~~

- ~~a . Strongly disagree~~
- ~~b . Disagree~~
- ~~e . Neutral~~
- ~~d . Agree~~
- ~~e . Strongly agree~~

10. What steps do you take to reduce exposure or protect yourself? (select all that apply).

- a . personal protective equipment eg. masks / goggles / aprons etc.
- b . ventilation systems or air purifiers
- c . regular breaks away from areas
- d . following health and safety practices
- e . modifying work processes or tasks to reduce exposure
- f . seeking medical advice or using medication
- g . i dont take any specific precautions
- h . other (please specify)

SURVEY DRAFT 2

AFTER APPLICATION OF FEEDBACK

11 . Do you experience any difficulties or limitations with the ways you currently protect yourself from fibres and dust? If yes, please describe.

For example, protective equipment is uncomfortable, restrictive, or not effective; ventilation systems are hard use, understand or noisy; equipment is ~~unavailable~~ at home, inaccessible, expensive etc.

12 . Do these difficulties affect your ability to do work efficiently ?

- a . Yes, significantly
- b . Yes, somewhat
- c . No, not really
- d . Not sure / no

13 . Are there any brands, products, or protective measures you use or would recommend ?

14 . Research has linked exposure to fibers to conditions such as byssinosis, asthma, and chronic bronchitis. In your workplace, are these risks recognised or discussed enough? For example, are workers informed about long term health risks? Are protective measures like masks and ventilation provided ?

15 . How familiar are you with the ways textile, dust, micro fibers or airborne particles can affect health ?

- a . Very aware. I know a lot about the risks and impacts.
- b . Somewhat aware. I know a little about the risks and impacts.
- c . Slightly aware. I have heard of some risks but don't know much detail.
- d . Not aware.

16 . Are you concerned about how exposure to these risks might affect your health in the future?

- a . Yes. i regularly consider it
- b . Yes. occasionally
- c . No. i have not thought about it
- d . Not sure or prefer not to say

~~17 . What workplace measures reduce dust or fiber exposure effectively ?~~

17 . Would you consider these existing methods to be effective?

18 . What could be improved ?

19 . If there were no limits, what product, tool, system, or change would you introduce to make working with textiles safer and overall improve your work experience ?

20 . As I'm designing to help reduce the impact of airborne fibres and dust on workers in the fashion industry, is there anything else you would like to share that I should know ?

OTHER QUESTIONS I JUST THOUGHT ABOUT

1 . How effective do you find current protective equipment and safety measures ?

- a . Not effective.
- b . Slightly effective.
- c . Moderately effective.
- d . Very effective.
- e . I do not use protective measures.

2. How severe are your symptoms ?

- a . Mild.
- b . Moderate.
- c . Severe.
- d . Very severe.
- e . I do not experience symptoms.

3 . Please rank the following priorities when choosing a protective method. 1 as top priority and 7 as least.

- a . Ergonomics. Comfort while working.
- b . Ease of use.
- c . Efficiency and minimal disruption to workflow.
- d . Accessibility
- e . Effectiveness in reducing exposure.
- f . Affordability
- g . Aesthetics and appearance.

4 . If you have any additional priorities not listed above, please list them.

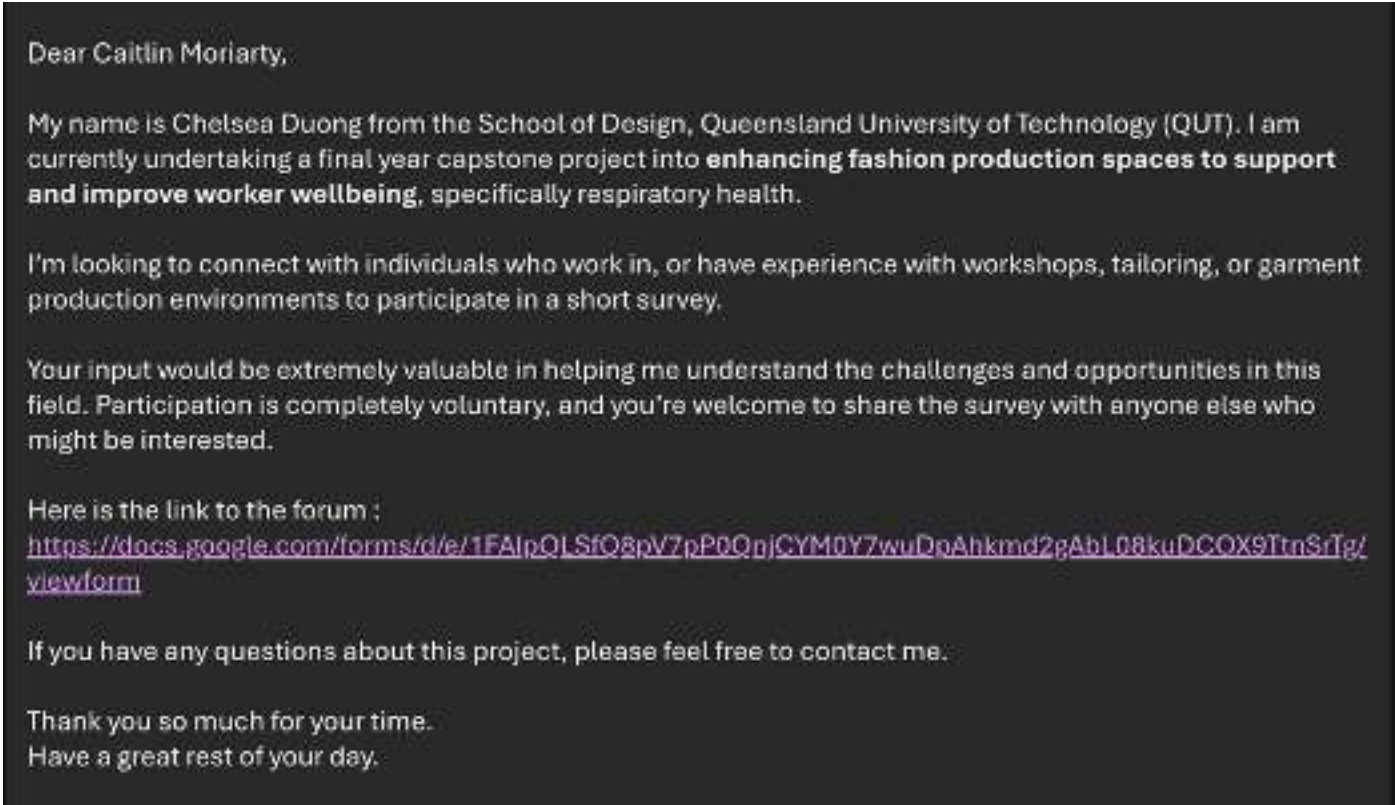
↑ add last two questions ↓

OTHER QUESTIONS CUT OUT :

- 1 . If applicable, are there certain tasks, conditions or environments where protection is difficult to be used ?
- 2 . How do you typically use protective equipment or safety measures in your workflow ?
- 3 . Specific machines, materials, or areas where protective measures are less effective or harder to use ?
- 4 . What factors make it difficult to follow safety procedures consistently ?

CONTACT RESPONSE UPDATE

ETHICAL CLOTHING & OTHER TAILORING OR MANUFACTURING PLACES



sending out
survey links
to try and get
a more diverse
range of survey
participants

age
experience
work
environment
health
etc.



after emailing
was met with
no responses
personal connections
+
relied on qut fashion students
to contact
and spread
the word

SURVEY FINAL DRAFT

ON SURVEY MONKEY

User Experiences : Protective Measures Against Airborne Particles In The Fashion Industry

This research project is being undertaken as part of an Industrial Design Capstone project at the Queensland University of Technology by Industrial Design student Chelsea Duong. The project aims to identify, explore, and implement a design intervention within existing fashion manufacturing spaces and workflows to improve the environmental conditions of industry workers, to reduce the health and wellbeing risks they currently face. You are invited to take part in this research project due to your involvement as a representative, your lived experience, or professional expertise in this field.

Please indicate your age group. *

☐ 18 - 24

☐ 25 - 34

☐ 35 - 44

☐ 45 - 54

☐ 55 - 64

☐ 65 +

☐ Prefer not to say.

What is your work setting? Select all that apply. *

☐ Factory or production floor.

☐ Studio or workshop.

☐ University, TAFE, or other educational settings.

☐ At home.

☐ Other. Please specify.

How long have you been working or studying in the fashion industry? *

☐ Less than 1 year.

☐ 1 - 5 years.

☐ 5 - 10 years.

☐ More than 10 years.

☐ Prefer not to say.

What are your role/s in the fashion industry? Select all that apply. *

☐ Garment production worker.

☐ Designer (fashion, textile, product).

☐ Pattern maker.

☐ Tailor or seamstress.

☐ Fashion student.

☐ Other. Please specify.

Please label the following priorities when choosing a protective method. *

Most important, Very important, Moderately im., Slightly import., Least important.

Ergonomics C...	☐	☐	☐	☐	☐
Ease of use	☐	☐	☐	☐	☐
Aesthetics and ...	☐	☐	☐	☐	☐
Efficiency and ...	☐	☐	☐	☐	☐
Accessibility	☐	☐	☐	☐	☐
Effectiveness ...	☐	☐	☐	☐	☐
Affordability	☐	☐	☐	☐	☐
Acceptability	☐	☐	☐	☐	☐

As I'm designing to help reduce the impact of airborne fibres and dust in the fashion industry, is there anything else you would like to share that I should know?

Long answer text

Would you be open to a brief observation session of you performing your tasks? If so, please enter your email below and we'll send you the details and consent forms. If not, please proceed.

Short answer text

Would you consider these existing methods to be effective? *

☐ Extremely effective.

☐ Very effective.

☐ Somewhat effective.

☐ Not really effective.

☐ Not at all effective.

Research has linked exposure to textile, dust, micro fibres or airborne particles etc. to conditions such as byssinosis, asthma, chronic bronchitis etc. How familiar are you with their effects on health? *

☐ Very aware. I know a lot about the risks and impacts.

☐ Somewhat aware. I know a little about the risks and impacts.

☐ Somewhat familiar.

☐ Slightly aware. I have heard of some risks but don't know much detail.

☐ No I was not aware of the risks and impacts.

Have you ever experienced symptoms such as coughing, shortness of breath, eye irritation, or general discomfort when working in environments where fibres or dust are present? *

☐ Yes frequently.

☐ Yes occasionally.

☐ Rarely.

☐ Never.

☐ I have not noticed.

Do you experience any difficulties or limitations with the ways you currently protect yourself from fibres and dust? If yes, please describe. For example, protective equipment is uncomfortable or not effective; ventilation systems are hard use, noisy, equipment is inaccessible at home, expensive etc.

Long answer text

If there were no limits, what ideal product, tool, system, or change would you introduce or design to reduce exposure to airborne particles and improve work experiences? *

Long answer text

If you have any additional priorities not listed above, please list them.

Short answer text

If applicable, when do these symptoms usually occur? Select all that apply.

☐ During specific tasks.

☐ In specific areas of my workspace.

☐ When using equipment.

☐ Away from my workspace and outside of working hours.

☐ Other. Please specify.

What steps do you take to reduce exposure or protect yourself? Select all that apply. *

☐ Personal protective equipment eg. masks, goggles, aprons etc.

☐ Ventilation systems or air purifiers.

☐ Regular breaks away from work areas.

☐ Following health and safety practices.

☐ Modifying work processes or tasks to reduce exposure.

☐ Seeking medical advice or using medication.

☐ I don't take any specific precautions.

☐ Other. Please specify.

If steps are taken, please describe how you prepare yourself or apply these methods.

Short answer text

Do you have concerns about how exposure to these risks might affect your health over time? *

☐ A great deal

☐ A lot.

☐ A moderate amount.

☐ A little.

☐ Not at all.

On average, how many hours per week do you spend working in fashion production areas? *

☐ Less than 10 hours.

☐ 11 - 15 hours.

☐ 16 - 20 hours.

☐ 21 - 30 hours.

☐ 31 - 40 hours.

☐ More than 40 hours.

☐ I don't work.

If your employer, are their health risks recognized or discussed? For example, are workers informed of the consequences of wearing eg. incorrect or poorly fitted protective systems such as PPE? *

Short answer text

What tools, machines, or equipment do you typically use at work? *

Short answer text

Which tools, machines, or equipment do you notice produce the most airborne particles? *

Short answer text

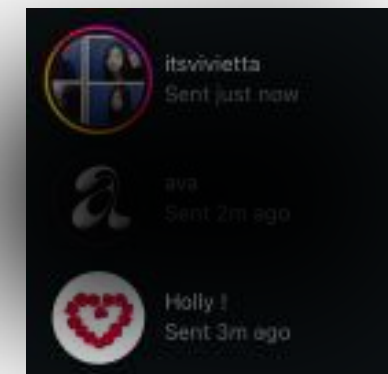
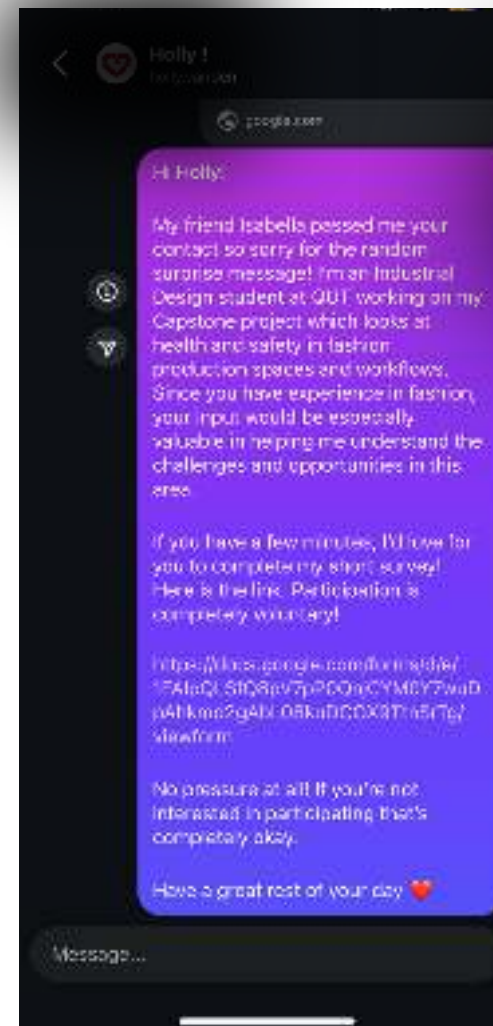
If applicable, please provide details on what symptoms you experience and their severity.

Short answer text

CHELSEA DUONG | ID7 CAPSTONE

SENDING IT OUT

RECRUITING & CONTACTING PEOPLE



★ instagram story to get participants + dm people who own small buisnesses to get a broader perspective!!

Dear Caitlin Moriarty,

My name is Chelsea Duong from the School of Design, Queensland University of Technology (QUT). I am currently undertaking a final year capstone project into **enhancing fashion production spaces to support and improve worker wellbeing**, specifically respiratory health.

I'm looking to connect with individuals who work in, or have experience with workshops, tailoring, or garment production environments to participate in a short survey.

Your input would be extremely valuable in helping me understand the challenges and opportunities in this field. Participation is completely voluntary, and you're welcome to share the survey with anyone else who might be interested.

Here is the link to the forum :
<https://docs.google.com/forms/d/e/1FAIpQLStQ8pV7pP0QnCYM0Y7wuDpAhkmd2gAbL08kuDCOX9TtnSrTg/viewform>

If you have any questions about this project, please feel free to contact me.

Thank you so much for your time.
Have a great rest of your day.

ZM zArchive - Caitlin Moriarty <caitlin@ethicalclothingaustralia.org.au>
To: Chelsea Duong
Mon 25/08/2025 22:52

Thank you for your email. As of December 20th, I am no longer with Ethical Clothing Australia, and unfortunately, I can no longer answer your email. Please direct all future inquiries to Samantha Winnicki Partnership Lead samantha@ethicalclothingaustralia.org.au; they will be happy to assist you.

Reply Forward

SURVEY RESULTS

18-241-5 years/In-school student/Studio or workshop, University TAFE, or other educational settings, At home/5-10 hours/Some/all familiar/At least 1 clearly defined in the workshop but there are no such ventilation systems or masks provided for use/sewing machine, overlocker, heat press, serger, needle, thread, iron/Power tools are occasionally freezing and eye irritation/During specific tasks, I don't take any specific precautions, but at all effective/None is important/Very important/Very important/Very important/Very important/Modestly important/No

25 - 340 - 10 years. Designer (fashion, textile, products), Pattern maker/drafting or production Role, studio or workshop, 21 - 30 hours/week aware. (I never feel about the risks and impacts, but yes it is recognized and discussed with occasional reminders from supervisors, availability of basic masks when cutting fabrics with tools, and some open discussion among co-workers. Don't normally wear masks during sewing. Ventilation systems are installed. Sewing machines, overlockers, pressing irons, fabric cutters. I would say the perimeter but it also depends on the type of fabric being cut/handled. Cotton is bad whereas silk is more forgiving. Yes occasionally. Mild coughing when my throat starts to sore. Sometimes but only on my arms and if it's been a long day. Feet gets itchy. When using equipment, High-volume production rates. For example, layers of fabric being stacked together to be cut. Personal protective equipment eg. masks, goggles, aprons etc.. Ventilation systems or air purifiers. Following health and safety practices. Getting changed into different clothes after work. Latex rollers used. Using masks when needed. Very effective. Masks became hot and damp after extended wear making them uncomfortable. Ventilation systems can be noisy and are often only installed in some parts of the workplace. Most important. Very important. Moderately important. Most important. Moderately important. Most important. Slightly important. Very important. Durability. Something ergonomic, reusable, and understandable. Easy to use. It would be nice for it to be designed to feel like part of my outfit or match the look of existing machines but I can't also see it getting lost in the workplace itself either. It's a lot going on and things get misplaced easily so colour! I might add that workers often skip out on wearing masks on quick tasks if they don't already have one on them, and it's inconvenient to leave workstation, walk all the way down to get a mask and back up to only use the machine for 10 seconds or finishing touches

45-54 More than 10 years. Tailor or seamstress. Studio or workshop. At home. 31-40 hours/very aware. I know a lot about the risks and impacts. A moderate amount. I was not aware before, but over the years of talking to others in the industry has taught me. Sewing machine. Industrial Singer. Fabric cutting shears, ironing press, overlocker, button hole machine, pins, needles, wheel chack, thread, fenglers. Yes frequently. Persistent cough and wheezing sometimes, nose irritation. During specific tasks. Away from my workspace and outside of working hours. Ventilation systems or air purifiers. Regular breaks away from work areas. Following health and safety practices. Seeking medical advice or using medication. Window and keeping space open for airflow. Occasional checkups with the doctor. Somewhat effective. Have a fan installed but rarely turn it on as it just makes the workshop messy. I also have limited space so I can't afford to install a dust extractor. Very important. Very important. Least important. Most important. Very important. Most important. Practical. Does not interfere with my work and is effective.

18 - 261 - 5 years Designer (fashion, textile, product), Tailor or seamstress, Fashion student Studio or workshop, University, TAFE, or other educational settings, At home 11 - 20 hours Sometimes familiar A moderate amount I know dust and fibres are bad for you long term, tutors will tell us to clean up but not really to wear a mask? a lot of the time people work when they aren't around or if they're doing something quick, but most people don't bother it feels like extra hassle Sewing machines, overlockers, mannequin, fabric scissors, hand sewing needles, iron, steam press, pins, fabric dyes etc.) would say the overlocker, but most of the time for me its more with accumulated mess than that flies around Rarely Sometimes my eyes get itchy or sneeze. One time i accidentally breathed with my mouth and a small fleck of dust went right in, that wasnt fun In specific areas of my workspace , When using equipment Personal protective equipment eg masks, goggles, aprons etc If its at uni i will wear a mask, at home however i tend to forget or not be bothered Sometimes affects me mostly work in the uni studio with 10ish other students It gets crowded and messy Fabric scraps everywhere, lots of machines going at once

Sometimes the air feels really dusty, especially when we're all cutting fabric or just working in general at the same time. We don't really have ventilation systems, just a few windows. I've also done some small scale projects at home like tailoring clothes for my friends but it's just me at my desk. I always try to clean up my mess after but it gets hard especially when im working later at night, oops well it sometimes hangs around for a few days and accumulates until mother tells me to clean Very important Very important Moderately important Important Very important Moderately important Less important And emphasis on affordable (he's broke lol) Feels ugly. I just feel awkward with it on especially if no one else is wearing it. Discrete mask fed watercool as well, because in one hand i dont want to throw it out but i also have to because after a bit it gets really gross and develops a smell. So maybe something that can help with that?

25 - 345 : 10 years, Designer (fashion, textile, product) Studio or workshop. At home, 11 - 20 hours, Somewhat familiar, moderate amount, ventilation is not good. Masks are provided (industrial sewing machines, Overlocks, trimmup pieces of lint). Cutting machines. Steam pressers, not too in particular but when working with synthetic fibres it produces alot. Rarely. Randomly. I dont really pay attention to when its just normal if theres dust around you in or out of workshops. Personal protective equipment eg. masks, goggles, aprons etc. Ventilation systems or air purifiers. Regular breaks away from work areas. Following health and safety practices, but really effective? They've put in fans and vents, but honestly, I dont know if they do much and just push everything around instead. They might be able to collect the dust that is in the air but, im not too sure about the ones on the ground in work-space. Skeptical if its effective because if it goes up, past my nose and into the ventilation above, wouldn't it still be inhaling it because you can see dust and stuff floating around in the air when the sun comes through? Very important. Very important. Slightly important. Most important. Moderately important. Most important. Moderately important. Very important.

CODING DATA

SURVEY RESULTS

In your workplace, are these health risks recognised, prepared for or discussed?

I know dust and fibres are bad for you long term. **tutors will tell us to clean up** but **not really to wear a mask?** a lot of the time people won't when they aren't around or if they're doing something quick. But most people don't bother it feels like extra hassle.

Yes it is recognised and discussed with occasional reminders from supervisors, availability of basic masks when cutting fabrics with tools, and some open discussion among co-workers. Don't normally wear masks during sewing. Ventilation systems are installed.

Slightly. They're mentioned occasionally in lectures or workshops, but there isn't much practical implementation. **Masks or protective equipment aren't usually provided**, and ventilation is basic rather than specifically designed to reduce airborne particles.

Not really discussed. Protective equipment like masks and goggles are provided. There are no ventilation systems in the fashion workshops which makes it hard for cleaners afterwards.

There is daily cleaning done in the workshops but there are **no such ventilation systems or masks provided for use**

They are recognised and discussed, as protective equipment is **provided** by the workshop lecturers and tutors

A ventilation system is installed into the workplace. There is recognition of issues

Ventilation is installed. **Masks are provided.**

I use face masks when cutting or sewing fabrics. **These health risks are recognised** and I discuss it often with my husband who also works in the industry.

some health risks discussed, face masks provided for poly-fill

No they are not

I was not aware before, but over the years of talking to others in the industry has taught me.

No

T1 : *Recognised & discussed -*

T1 : *Not recognised / not really discussed -*

T2 : *Masks / protective equipment -*

T2 : *Masks / Equipment not provided -*

T3 : *no Ventilation Systems -*

T3 : *yes Ventilation Systems -*

T4 : *Cleaning Practices -*

OBSERVATION

SMALL MANUFACTURING & N TAILORING BUSINESS



OBSERVATION

SMALL MANUFACTURING & N TAILORING BUSINESS



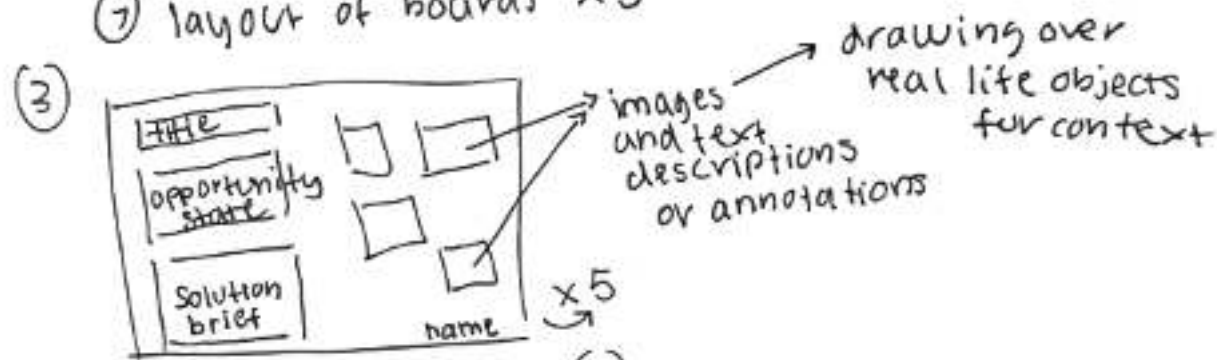
concept pres.

PLANNING SLIDES

PREP FOR INITIAL CONCEPT PRESENTATION

TO DO !! → identify 3 top tools (r, sm, over L)

- (1) themes / pain points → identification
- (2) survey suggestions
- (3) moodboard of existing products → more benchmarking
- (4) analysis of existing / common / standard machinery !!
- ★ (5) ideating → figuring out forms !!
- (6) tutor notes
- (7) layout of boards x 5



ath Sep 2025

wed → step 1-6 !!
thurs → drawings
presentation slides

what i've been doing, this is what i found
↓
key themes criteria?
↓
pain points

TOP TOOLS FOR PARTIAL GENERATION THEMES

- (1) overlocker (50%)
 - (2) sewing machines (31%)
 - (3) rotary cutter (19%)
- } powered equipment

ENVIRONMENTAL CONTRIBUTORS

- (1) type of material being handled = cotton
 - (2) SPACE !!
 - during activities
 - accumulation from busy environment !!
- ★ ARE THINGS EASY TO LOOSE??

PAIN POINTS !!

- (1) discomfort with PPE
 - filter changes and breathability
 - ear pain
 - sweating
- (2) ventilation systems unavailable / inaccessible due to cost and size
- (3) ~~sept heat to if ventilation works or not~~
- (4) unmotivated to use
 - far to get
 - quick jobs = not needed or hassel
- (5) ventilation is LOUD
- (6) ventilation hard to understand
 - signifiers + affordances
 - unclear operation
- (7) crowded workspace (people + things)
- (8) accumulation of fibres in hard to clean spaces
- (9) inaccessible / expensive

REVIEWING REPORT INFO

PREP FOR INITIAL CONCEPT PRESENTATION

OPPORTUNITY

① debris management

- ↳ sweeping scraps into bins with hand
- ↳ residue remaining on machines
- ↳ aprons over clothing
- ↳ cleaning of machines eg. overlocker slot?
- ↳ overlocker disposal holes (redesign?)
 - ↳ how old are those models? look into newer tech to see if this is an old issue and upgrades haven't been made yet!!
- ↳ quick setup
- ↳ compact
- ↳ ventilation system designed for smaller workspaces
- ↳ fibre collection holes
- ↳ compact? modular? ↓
- ↳ filtration device / extraction units
- ↳ workstation vacuums
 - ↳ attachable filtration accessories

NEEDS

- ① work flow integrated
- ② productive!! easy to use
- ③ ergonomic
- ④ affordable
 - ↳ material
 - ↳ manufacturing
 - ↳ accessible
- ⑤ hybrid
 - ↳ desk mounted extractors
 - ↳ furniture
 - ↳ clean up

SURVEY SUGGESTIONS

① compact product

- ↳ students working in shared spaces
- ↳ portable? (something students can own and take back and forth to uni and home)

② comfort

- ↳ mask
- ↳ adaptable to different head shapes
- ↳ aesthetics
- ↳ reusable
 - ↳ issues, smell + sweat
- ↳ vacuum before it can be breathed in
- ↳ collect fibres to be reused eg. stuffing
- ↳ QUIET workstation air purifier
- ↳ lightweight + breathable facial PPE

③ extras

- ↳ easy to take out, install, use
- ↳ don't interfere with work

INITIAL IDEATION

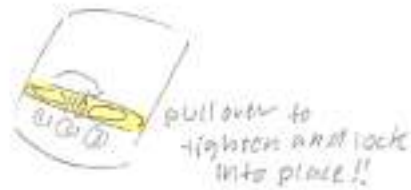
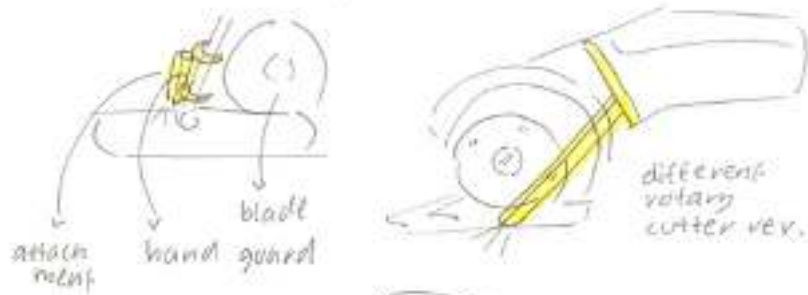
PREP FOR INITIAL CONCEPT PRESENTATION

IDEATION

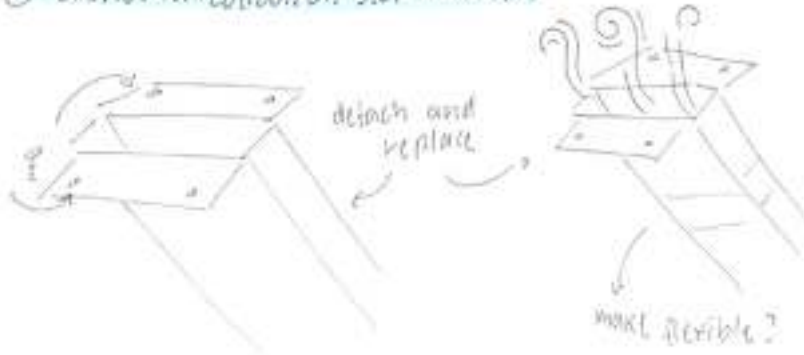
① rotary attachment

an accessory
that clips onto rotary cutters
→ constantly sucking up
fibres when turned on?
→ takes deals with it right at
the source?

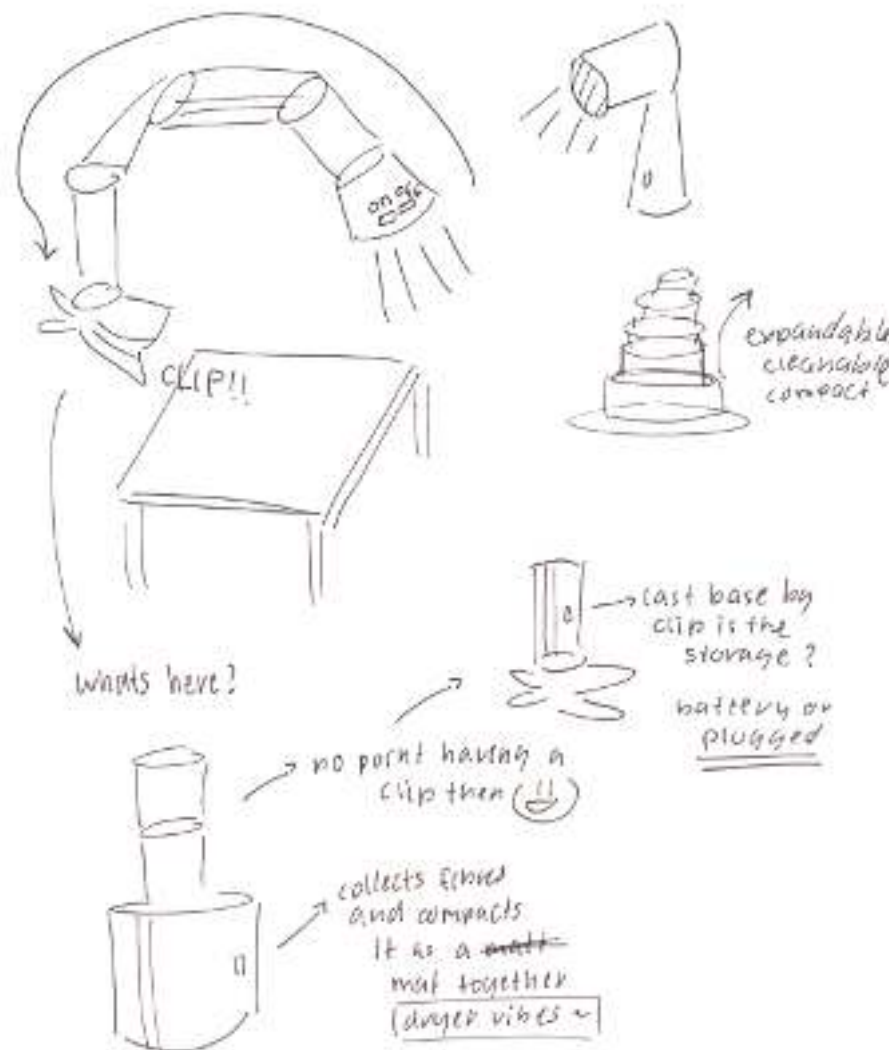
tutor notes!
+ ease of use
+ attach to
existing
+ hand held
+ NOISE
+ quick & work flow



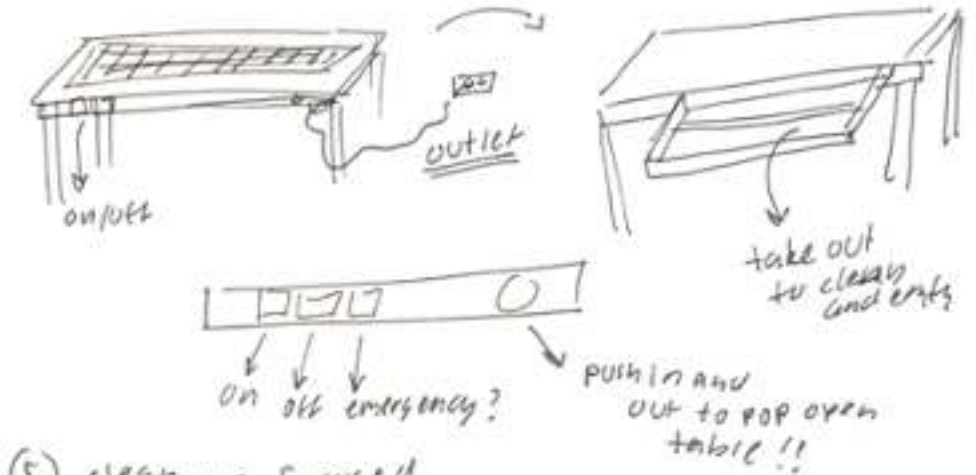
② overlocker collection slot redesign



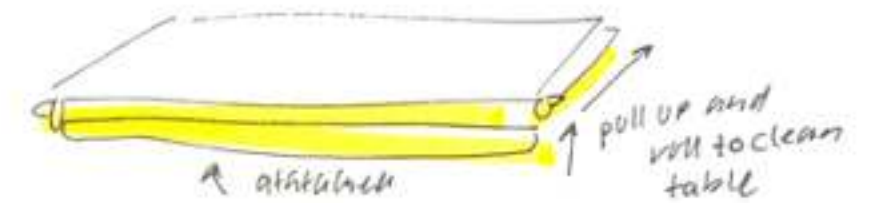
③ workstation extraction hood



④ fibre table



⑤ clean up focused



+ large lint roller essentially
picks up, easy to clean
+ gets residue
+ promotes cleaning

PRESENTATION SLIDES DRAFT 1

PREP FOR INITIAL CONCEPT PRESENTATION



2025

Concept Presentation

Enhancing Fashion Production Spaces to Address Respiratory Health and Safety Challenges

Prepared By
Chelsea Duong
N11636548

12th September 2025

concept 1 : Rotary Attachment

OPPORTUNITY

Recent fashion's cutting trends in rotary methods, especially in areas that are difficult to cut by hand, have led to the use of rotary cutters. However, these tools can be difficult to use, especially in areas that are difficult to cut by hand. The problem is compounded by the proximity of workers to the cutting blade, putting them at risk of injury. Most workers in the industry are not trained in rotary cutting, leading to a high risk of injury.

INTERVENTION

An attachment, portable vacuum accessory that clips directly onto rotary cutters, reducing the risk of injury and dust during cutting. Designed to fit seamlessly into busy production spaces without taking up extra room or disrupting workflow.

PRODUCT RELATION TO RESEARCH

- 1. The research in this area is limited, with most studies focusing on the use of rotary cutters in the fashion industry.
- 2. The research in this area is limited, with most studies focusing on the use of rotary cutters in the fashion industry.
- 3. The research in this area is limited, with most studies focusing on the use of rotary cutters in the fashion industry.
- 4. The research in this area is limited, with most studies focusing on the use of rotary cutters in the fashion industry.
- 5. The research in this area is limited, with most studies focusing on the use of rotary cutters in the fashion industry.



ID 7 CAPSTONE | CHELSEA DUCNG N11636548

concept 2 : Overlocker Debris redesign

OPPORTUNITY

Overlockers are used to finish the edges of fabric, preventing fraying and creating a professional look. However, the process is often messy, with a lot of fabric debris and dust being generated. This can be a health and safety hazard for workers in the industry.

INTERVENTION

A redesign of the overlocker to reduce the amount of debris and dust generated during the cutting process. The redesign includes a new cutting mechanism that is more efficient and less likely to generate debris.

PRODUCT RELATION TO RESEARCH

- 1. The research in this area is limited, with most studies focusing on the use of overlockers in the fashion industry.
- 2. The research in this area is limited, with most studies focusing on the use of overlockers in the fashion industry.
- 3. The research in this area is limited, with most studies focusing on the use of overlockers in the fashion industry.
- 4. The research in this area is limited, with most studies focusing on the use of overlockers in the fashion industry.
- 5. The research in this area is limited, with most studies focusing on the use of overlockers in the fashion industry.



ID 7 CAPSTONE | CHELSEA DUCNG N11636548

concept 3 : workstation Extraction Hood

OPPORTUNITY

Stationary extraction hoods are used to capture dust and debris from the work area. However, they are often difficult to use, especially in areas that are difficult to reach. The problem is compounded by the proximity of workers to the extraction hood, putting them at risk of injury.

INTERVENTION

A redesign of the extraction hood to make it more portable and easier to use. The redesign includes a new extraction mechanism that is more efficient and less likely to generate debris.

PRODUCT RELATION TO RESEARCH

- 1. The research in this area is limited, with most studies focusing on the use of extraction hoods in the fashion industry.
- 2. The research in this area is limited, with most studies focusing on the use of extraction hoods in the fashion industry.
- 3. The research in this area is limited, with most studies focusing on the use of extraction hoods in the fashion industry.
- 4. The research in this area is limited, with most studies focusing on the use of extraction hoods in the fashion industry.
- 5. The research in this area is limited, with most studies focusing on the use of extraction hoods in the fashion industry.



ID 7 CAPSTONE | CHELSEA DUCNG N11636548

concept 4 : Dry Fibre Collection tables

OPPORTUNITY

Stationary collection tables are used to capture dust and debris from the work area. However, they are often difficult to use, especially in areas that are difficult to reach. The problem is compounded by the proximity of workers to the collection table, putting them at risk of injury.

INTERVENTION

A redesign of the collection table to make it more portable and easier to use. The redesign includes a new collection mechanism that is more efficient and less likely to generate debris.

PRODUCT RELATION TO RESEARCH

- 1. The research in this area is limited, with most studies focusing on the use of collection tables in the fashion industry.
- 2. The research in this area is limited, with most studies focusing on the use of collection tables in the fashion industry.
- 3. The research in this area is limited, with most studies focusing on the use of collection tables in the fashion industry.
- 4. The research in this area is limited, with most studies focusing on the use of collection tables in the fashion industry.
- 5. The research in this area is limited, with most studies focusing on the use of collection tables in the fashion industry.



ID 7 CAPSTONE | CHELSEA DUCNG N11636548

concept 5 : silicone fibre rollers

OPPORTUNITY

Stationary rollers are used to capture dust and debris from the work area. However, they are often difficult to use, especially in areas that are difficult to reach. The problem is compounded by the proximity of workers to the roller, putting them at risk of injury.

INTERVENTION

A redesign of the roller to make it more portable and easier to use. The redesign includes a new roller mechanism that is more efficient and less likely to generate debris.

PRODUCT RELATION TO RESEARCH

- 1. The research in this area is limited, with most studies focusing on the use of rollers in the fashion industry.
- 2. The research in this area is limited, with most studies focusing on the use of rollers in the fashion industry.
- 3. The research in this area is limited, with most studies focusing on the use of rollers in the fashion industry.
- 4. The research in this area is limited, with most studies focusing on the use of rollers in the fashion industry.
- 5. The research in this area is limited, with most studies focusing on the use of rollers in the fashion industry.



ID 7 CAPSTONE | CHELSEA DUCNG N11636548

PRESENTATION SLIDES DRAFT 2

PREP FOR INITIAL CONCEPT PRESENTATION



2025

Concept Presentation

Enhancing Fashion Production Spaces to Address Respiratory Health and Safety Challenges

Prepared By:

Chelsea Duong
N11636548

12th September 2025

Concept 1 : Rotary Attachment

OPPORTUNITY

- Worker face mask suffering from issues on machine, not fully fit and not comfortable to wear, that may affect productivity and safety.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.

SOLUTION

A rotary attachment that can be used to help workers breathe easily and safely while working on the machine.

RELATION TO RESEARCH

- Research highlighting the importance of a rotary attachment for workers.
- Research highlighting the importance of a rotary attachment for workers.
- Research highlighting the importance of a rotary attachment for workers.
- Research highlighting the importance of a rotary attachment for workers.

KEY FEATURES

- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.



ID 7 CAPSTONE | CHELSEA DUONG N11636548

Concept 2 : Overlocker Debris Management Redesign

OPPORTUNITY

- Worker face mask suffering from issues on machine, not fully fit and not comfortable to wear, that may affect productivity and safety.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.

INTERVENTION

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KEY FEATURES

- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.



ID 7 CAPSTONE | CHELSEA DUONG N11636548

Concept 3 : Workstation Extractor

OPPORTUNITY

- Worker face mask suffering from issues on machine, not fully fit and not comfortable to wear, that may affect productivity and safety.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.

INTERVENTION

A rotary attachment that can be used to help workers breathe easily and safely while working on the machine.

PRODUCT RELATION TO RESEARCH

- Research highlighting the importance of a rotary attachment for workers.
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- Research highlighting the importance of a rotary attachment for workers.

KEY FEATURES

- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.



ID 7 CAPSTONE | CHELSEA DUONG N11636548

Concept 4 : Fibre Collection Tables

OPPORTUNITY

- Worker face mask suffering from issues on machine, not fully fit and not comfortable to wear, that may affect productivity and safety.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.

INTERVENTION

A rotary attachment that can be used to help workers breathe easily and safely while working on the machine.

PRODUCT RELATION TO RESEARCH

- Research highlighting the importance of a rotary attachment for workers.
- Research highlighting the importance of a rotary attachment for workers.
- Research highlighting the importance of a rotary attachment for workers.
- Research highlighting the importance of a rotary attachment for workers.

KEY FEATURES

- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.



ID 7 CAPSTONE | CHELSEA DUONG N11636548

Concept 5 : Fibre Rollers

OPPORTUNITY

- Worker face mask suffering from issues on machine, not fully fit and not comfortable to wear, that may affect productivity and safety.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.
- Worker wearing mask for protection and safety during sewing.

INTERVENTION

A rotary attachment that can be used to help workers breathe easily and safely while working on the machine.

PRODUCT RELATION TO RESEARCH

- Research highlighting the importance of a rotary attachment for workers.
- Research highlighting the importance of a rotary attachment for workers.
- Research highlighting the importance of a rotary attachment for workers.
- Research highlighting the importance of a rotary attachment for workers.

KEY FEATURES

- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.
- Compact design ideal for workers to use.



ID 7 CAPSTONE | CHELSEA DUONG N11636548

INITIAL CONCEPTS SLIDES

PRESENTATION FINAL P1



2025

Concept
Presentation

Enhancing Fashion
Production Spaces to
Address Respiratory Health
and Safety Challenges

Prepared By :
Chelsea Duong
N11636540

12th September 2025



Concept 1
Rotary Attachment

Concept 1 : Rotary Attachment

OPPORTUNITY

- Reduces time taken cutting consumable materials in fashion area that are difficult to make to make them more efficient and accurate at times contributing to the completion of occupational machinery tasks.
- Provides a cutting tool that can be used to cut fabric to the shape.
- Made to replace the traditional rotary cutting tool that is used to cut fabric to the shape.

SOLUTION

A rotary attachment that can be used to cut fabric to the shape.

RELATION TO RESEARCH

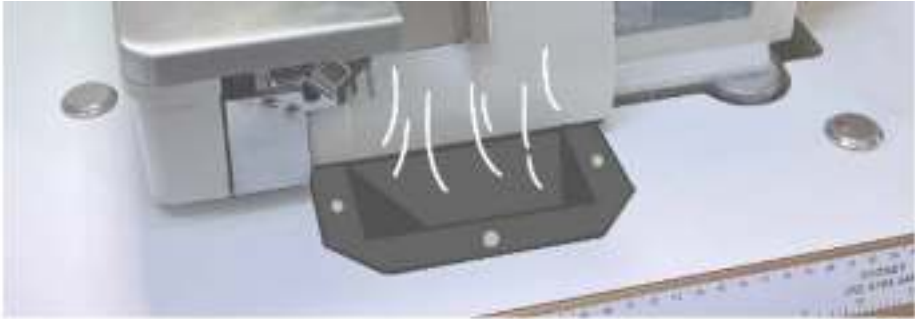
- Research highlighting rotary cutting as a viable source of time generation.
- Research highlighting rotary cutting as a viable source of time generation.
- Research highlighting rotary cutting as a viable source of time generation.

KEY FEATURES

- Customized design that can be used to cut fabric to the shape.
- Customized design that can be used to cut fabric to the shape.
- Customized design that can be used to cut fabric to the shape.



ID7 CAPSTONE | CHELSEA DUONG N11636540



Concept 2
Overlocker Slot Redesign

Concept 2 : Overlocker Slot Redesign

OPPORTUNITY

- Overlockers allow for creating a seam that is strong and durable.
- Overlockers allow for creating a seam that is strong and durable.
- Overlockers allow for creating a seam that is strong and durable.

SOLUTION

A redesigned slot that can be used to cut fabric to the shape.

RELATION TO RESEARCH

- Research highlighting rotary cutting as a viable source of time generation.
- Research highlighting rotary cutting as a viable source of time generation.
- Research highlighting rotary cutting as a viable source of time generation.

KEY FEATURES

- Customized design that can be used to cut fabric to the shape.
- Customized design that can be used to cut fabric to the shape.
- Customized design that can be used to cut fabric to the shape.



ID7 CAPSTONE | CHELSEA DUONG N11636540



Concept 3
Workstation Extractor

INITIAL CONCEPTS SLIDES

PRESENTATION FINAL P2

Concept 3 : Workstation Extractor

OPPORTUNITY

- Existing workstation lacks capture arm and fibre effectively for use
- Existing workstation lacks capture arm and fibre effectively for use
- Existing workstation lacks capture arm and fibre effectively for use

SOLUTION

A compact workstation system that attaches to existing workstations.

RELATION TO RESEARCH

- Combines effectiveness of environmental systems with UVB technology
- Supports high fibre generation with workstation in use
- Combines safety and security with workstation in use
- Provides safety features for workstation in use

KEY FEATURES

- Compact workstation system that attaches to existing workstations
- Supports high fibre generation with workstation in use
- Combines safety and security with workstation in use
- Provides safety features for workstation in use



ID 7 CAPSTONE | CHELSEA DUONG N1816540

Concept 4 : Fibre Collection Table



ID 7 CAPSTONE | CHELSEA DUONG N1816540

Concept 4 : Fibre Collection Table

OPPORTUNITY

- Existing workstation lacks capture arm and fibre effectively for use
- Existing workstation lacks capture arm and fibre effectively for use
- Existing workstation lacks capture arm and fibre effectively for use

SOLUTION

A compact workstation system that attaches to existing workstations.

RELATION TO RESEARCH

- Combines effectiveness of environmental systems with UVB technology
- Supports high fibre generation with workstation in use
- Combines safety and security with workstation in use
- Provides safety features for workstation in use

KEY FEATURES

- Compact workstation system that attaches to existing workstations
- Supports high fibre generation with workstation in use
- Combines safety and security with workstation in use
- Provides safety features for workstation in use



ID 7 CAPSTONE | CHELSEA DUONG N1816540

Concept 5 : Fibre Table Rollers



ID 7 CAPSTONE | CHELSEA DUONG N1816540

Concept 5 : Fibre Table Rollers

OPPORTUNITY

- Existing workstation lacks capture arm and fibre effectively for use
- Existing workstation lacks capture arm and fibre effectively for use
- Existing workstation lacks capture arm and fibre effectively for use

SOLUTION

A compact workstation system that attaches to existing workstations.

RELATION TO RESEARCH

- Combines effectiveness of environmental systems with UVB technology
- Supports high fibre generation with workstation in use
- Combines safety and security with workstation in use
- Provides safety features for workstation in use

KEY FEATURES

- Compact workstation system that attaches to existing workstations
- Supports high fibre generation with workstation in use
- Combines safety and security with workstation in use
- Provides safety features for workstation in use



ID 7 CAPSTONE | CHELSEA DUONG N1816540

The End.

the prototype.

FEEDBACK FROM PEERS

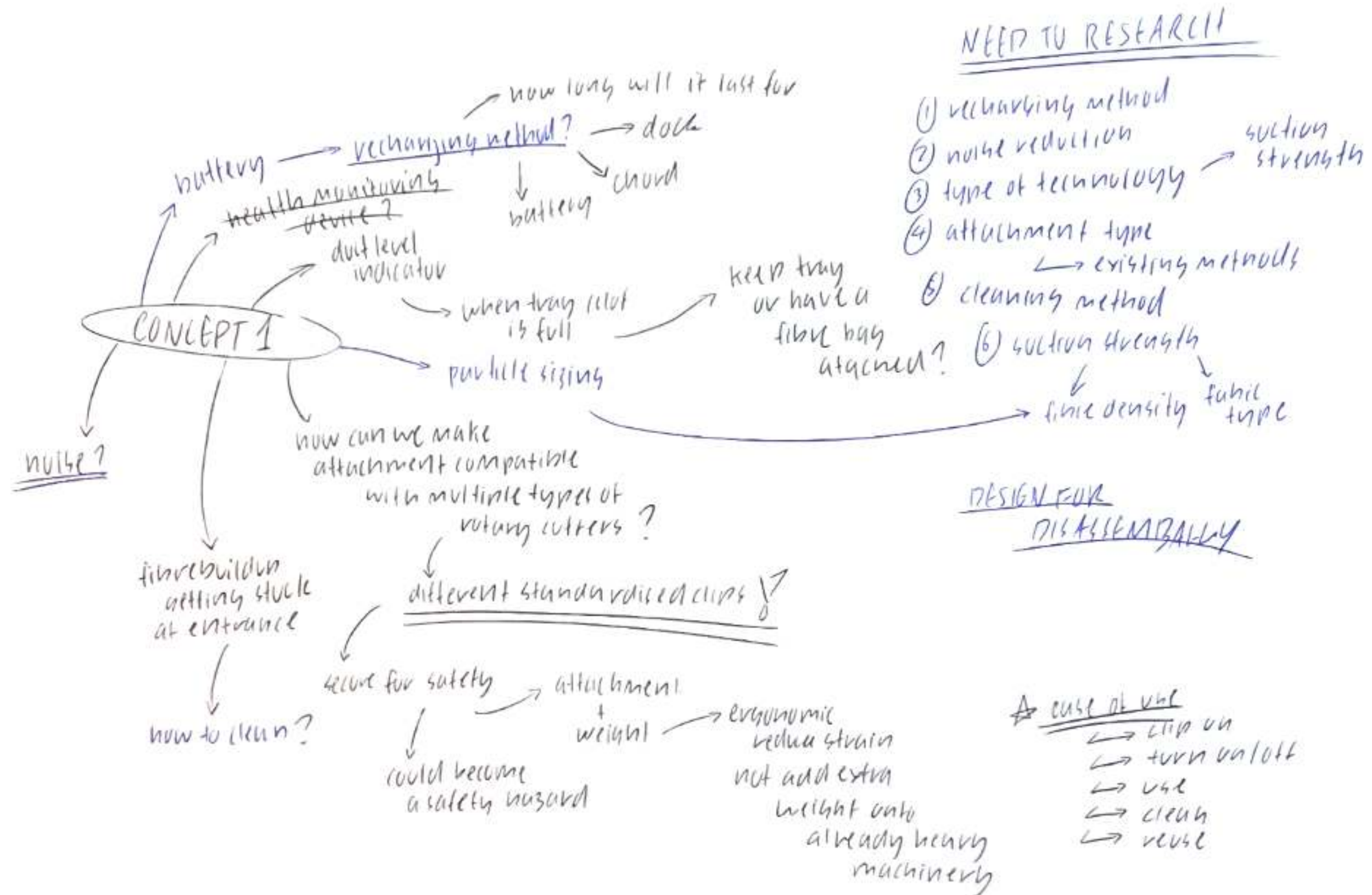
FROM THE CONCEPT PRESENTATION

- liked the extractor and rotary attachment the most
- i think for the extractor if you went with it would be cool to make it **modular** so it can become smaller for easy transport
- (taking it to the studio and then taking it home)
- incorporating some sort of **telescopic mechanism**
- loveeee rotary attachment
- i love how small and compact it is
- maybe a **carry case** with it so that it does **not get lost easily**
- i wonder **what kind of technology or fans** you would be able to use in something so small to fit inside of that
- really excited to see how they turn out
- lint roller esk concept is really cool too !! maybe it could be **tucked under the edge of the table** so that it is flush and does not interfere when the users are using the table
- could put it on some sort of **track so that it can roll over the table easier** for people who may find it hard to control
- fibre collecting table could maybe be **an attachment rather than in built ?** something that is offered to more people rather than them having to buy a whole new table
- could have a mesh lining similar to that of a dryer ?
- when you pull out the lint collection thing mesh lining on bottom and then mesh over top with a hole for fibres to go
- overlocker slot redesign : **no notes**
- i think it is perfect as is !!
- incorporates into existing systems now so it would be easy for integration
- maybe bin thing it collects into could be **stored easily under the table** so it is not in the way ? like a **thin rectangular shape ?** but honestly it is fine as is



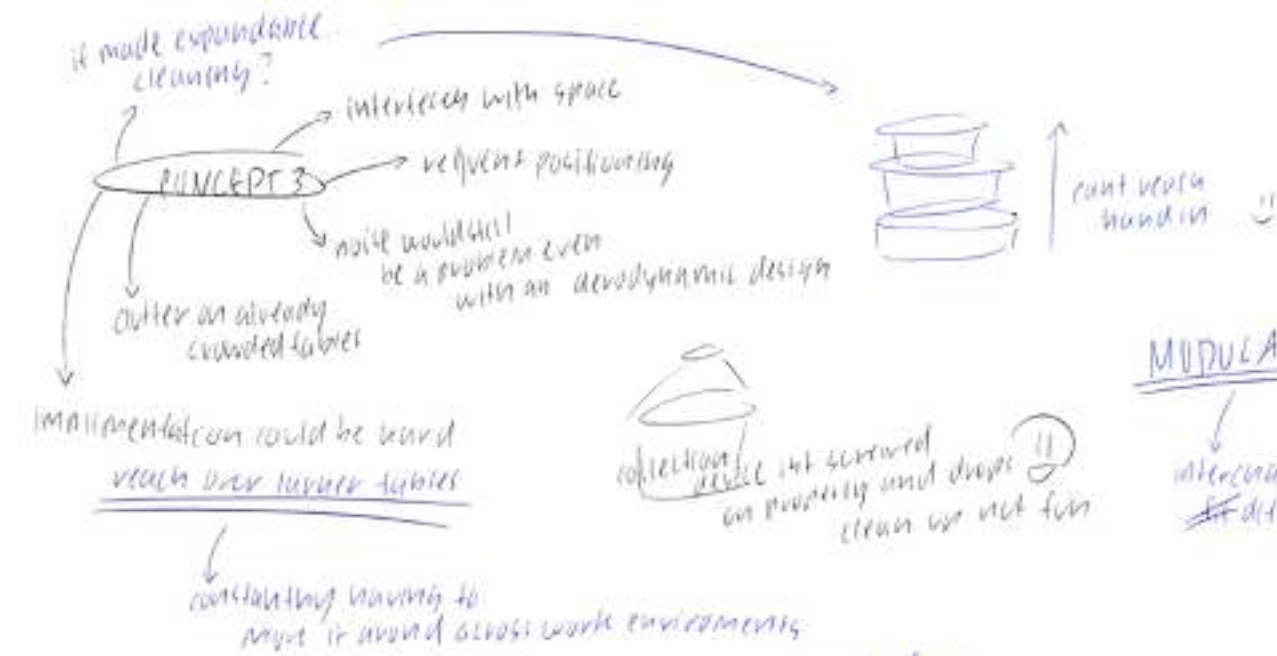
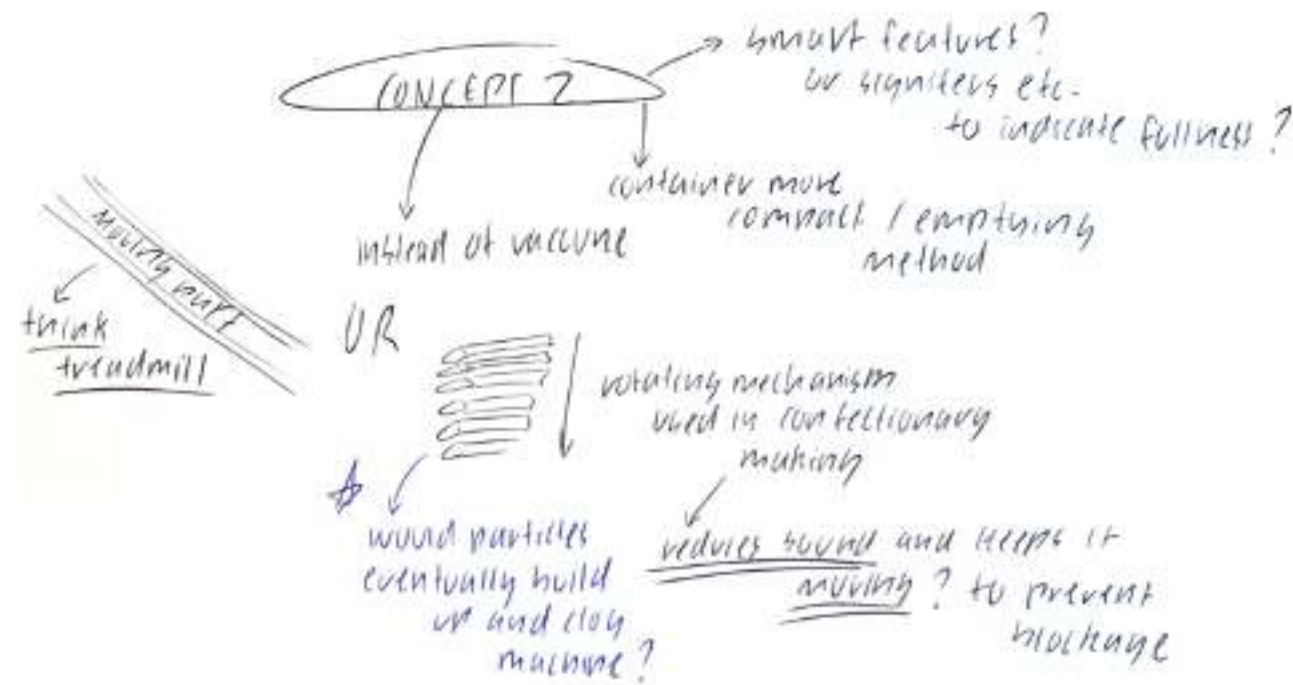
CONCEPT 1 EVALUATION

BEFORE CONCEPT REFINEMENT



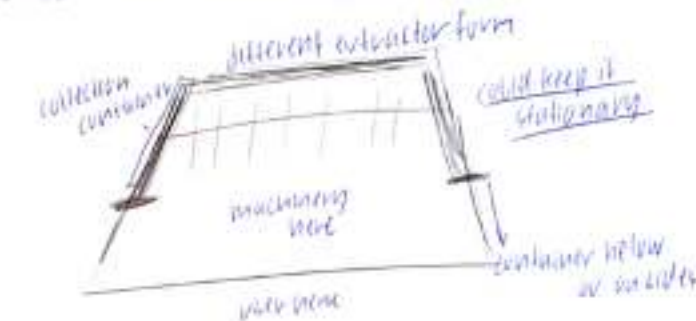
CONCEPT 2 & 3 & 4 EVALUATION

BEFORE CONCEPT REFINEMENT



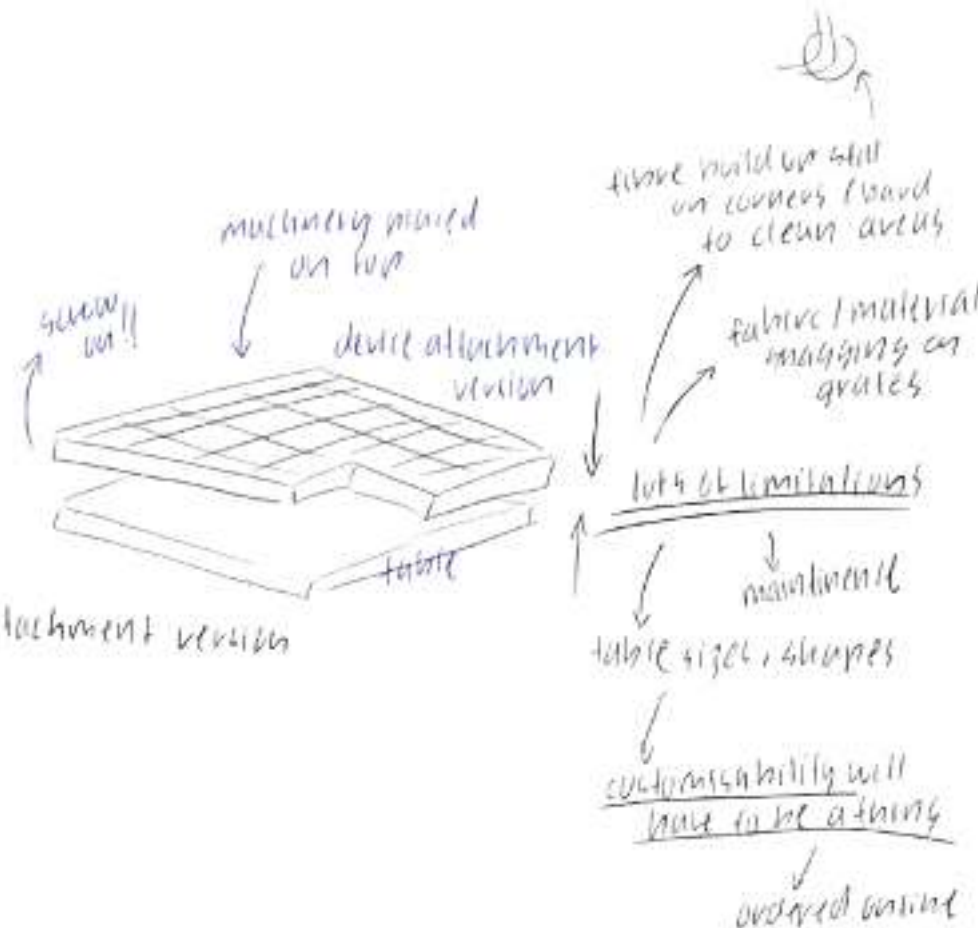
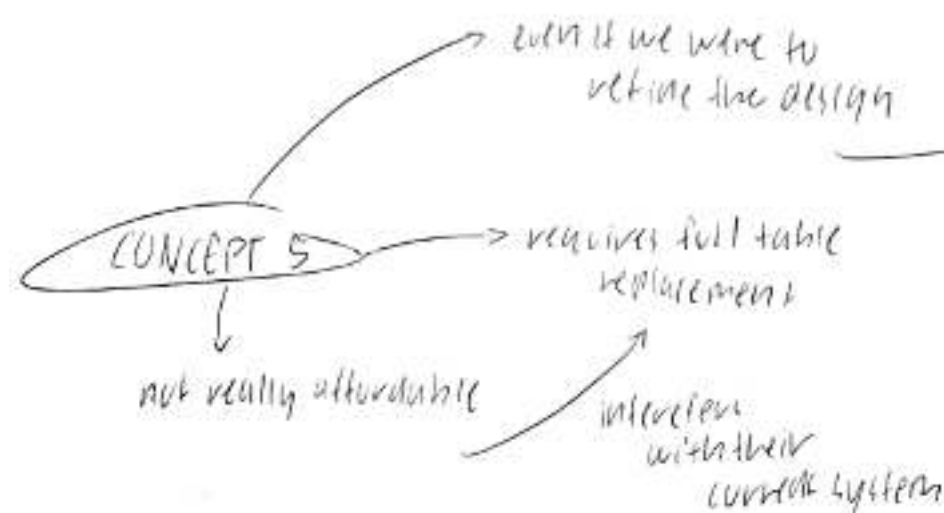
IF PERSUED

- noise reduction
- materials
- transportation around
- attachments



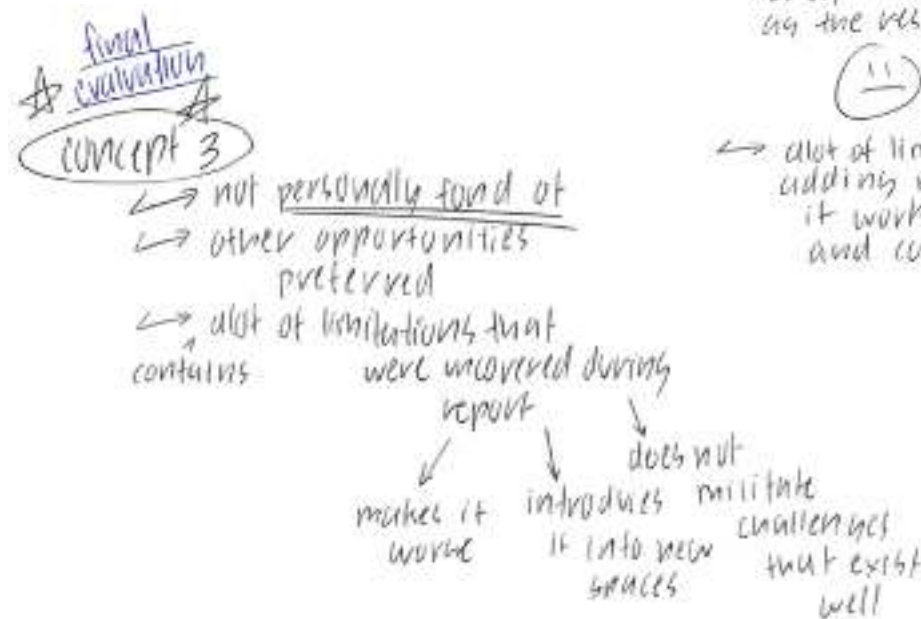
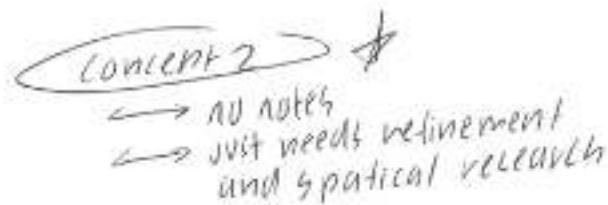
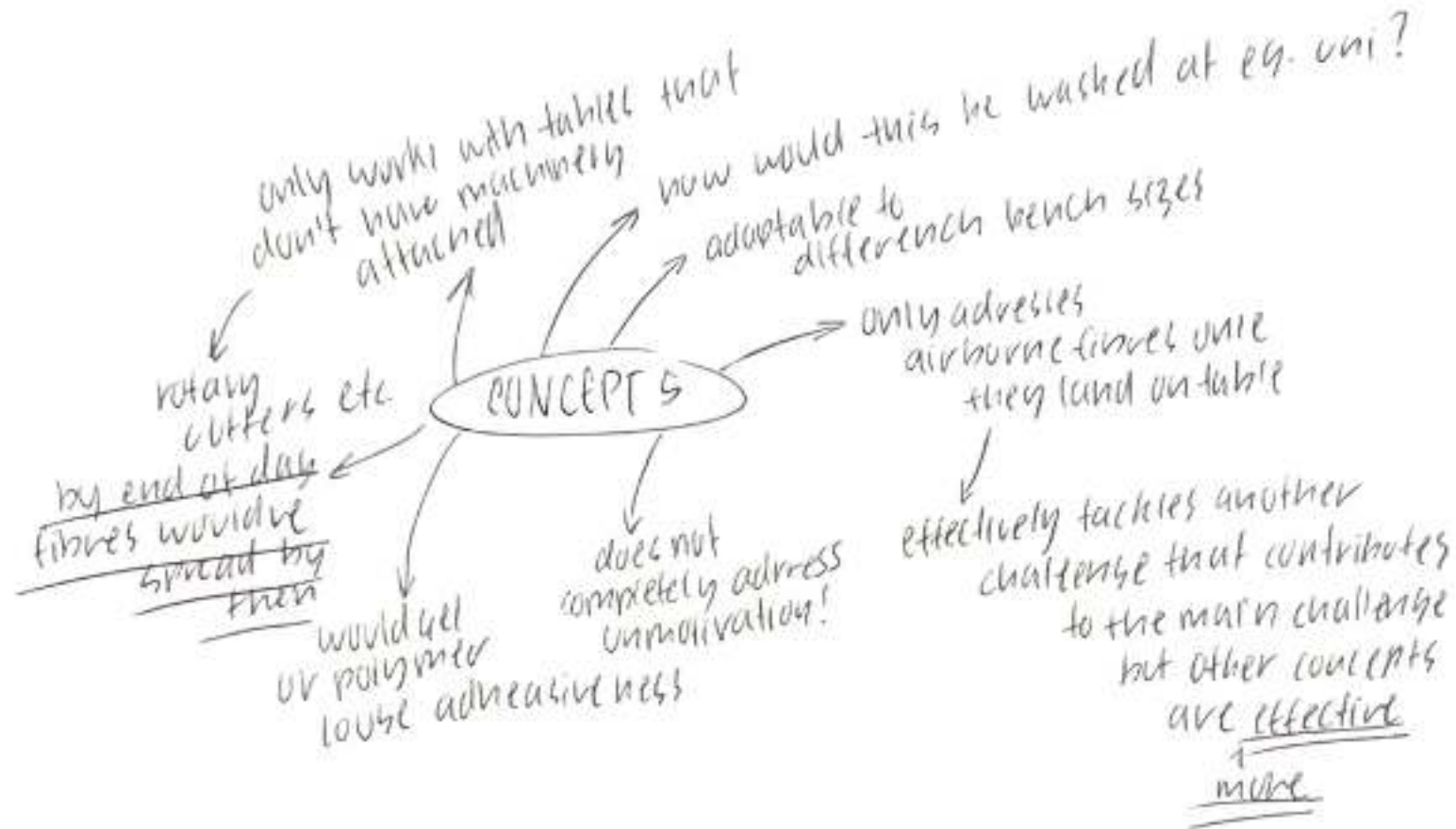
RESEARCH

- environments outside of report
- power source
- space available under overlockers
- slot sizing



CONCEPT 5 EVALUATION & THOUGHTS

BEFORE CONCEPT REFINEMENT



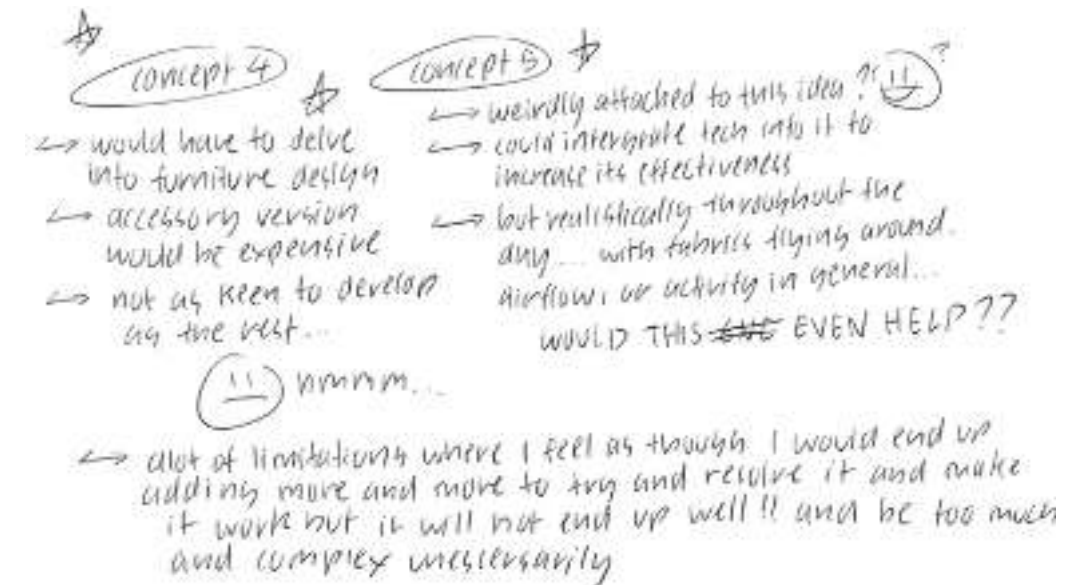
TO DO LIST

- 1) research
- 2) aesthetics
- 3) application into spaces
- 4) CMF
- 5) technology

FRIDAY

- 1) talk to Chris about 2 narrowed down concepts
- 2) prototyping!!

concepts 1 and 2



CONCEPT 1 REFINEMENT



TECHNOLOGY RESEARCH

CONCEPT 1 REFINEMENT

https://www.amazon.com.au/Hygieia-Filter-Cordless-Vacuum-Cleaners/dp/B0B9S279M8/ref=asc_df_B0B9S279M8?mcid=a93811b2d0cb387084b185bbe7b0e15&tag=googleshopdsk-22&linkCode=df0&hvadid=712358871977&hvpos=&hvnetw=g&hvrand=5452158559021064194&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9068968&hvt_argid=pla-2008269558863&psc=1&gad_source=1



tech that clean fine power garbage include vacuums with hepa filters for capturing microscopic particles

is it expensive to custom make a hepa filter ?
what is the smallest standardised / off shelf size they go ?

smallest effective HEPA filter particle is 0.3 micrometers (μm)
0.3 μm is the standard for a true HEPA filter, making it effective

I ASKED CHATGPT :

For commercially available "true HEPA" filters used in **air purifiers, vacuums, and HVAC, cleanroom units, smallest standard sizes** you find are:

- **round / cartridge HEPA filters** : ~70 to 100 mm diameter (3–4 inches), sometimes smaller for handheld vacuums and mini desktop purifiers.
- **panel HEPA filters (rectangular)**: common minimums are around 150 × 150 mm (6 × 6 inches) or 120 × 240 mm (about 5 × 10 inches).
- used in small purifiers or equipment housings.
- **HVAC / cleanroom standard modules** : start larger (305 × 305 mm / 12 × 12 inch), designed for airflow in ducts & ceiling grids.
- for **consumer devices** → as small as ~70 mm (3 in) across.
- for **industrial cleanroom filters** → smallest standardised size is usually
- **305 × 305 mm (12 × 12 in)**.

Anything **smaller than this** is generally considered a **specialty/custom part** (like mask inserts or proprietary cartridges), not a standard interchangeable HEPA filter.

1 . collection tray :

- Captures most of the fibres and dust immediately as they're cut.
- Makes disposal and cleaning easy.
- Reduces the amount of debris that reaches the filter.

2 . HEPA filter :

- catches the **fine particles and airborne fibres** that the tray can't hold.
- protects the user from inhaling tiny fibres that are most harmful to the lungs
- ensures vacuum exhaust is clean and does not blow particles back into workspace

so : tray handles bulk collection ... HEPA filter handles fine & invisible particles
both gives maximum protection and keeps maintenance manageable

but to collect microfibres and dust : HEPA filter alone

tray becomes less essential because debris is so fine it will not pile up like larger fibres

HEPA Filter Only (**defs will have either way**)

- Perfect for airborne microfibres and very fine dust
- keeps particles from escaping into air
- requires regular cleaning or replacement (**3 to 6 months** under normal use)
- **washable HEPA (synthetic) filters ? what is the difference**

Collection Tray :

- stops larger fibre clumps or dust that could clog HEPA filter ...
- maintenance easier

probs should keep the tray as it prevents blockage and helps capture larger particles first
also stops the filter needing frequent replacement

POWER ?

Lithium-ion (Li-ion)

- Lightweight, high capacity, rechargeable ...
- Usually built from **18650 cells** (cylindrical, 18×65 mm) or flat **Li-Po packs**.
- Voltage: usually **3.7 V per cell**, but vacuums often use **2–3 cells in series (7.4–11.1 V)** for stronger suction.

CONCEPT 1 REFINEMENT



- + elongated bodies
- + minimal decorative elements
 - high focus on function + professionalism
- + muted / darker colours
- + mixed use of shapes
 - industrial colours greys, blacks etc.
 - evokes feeling of dependability, safety, sturdiness, confidence, durability
- + utilising colour to highlight safety features
- + purposeful colour placement handy!!

linked → utilitarian

- + mixed materials
 - ↔ metallic
 - ↔ soft firm rubber for grip or matte plastics
- + could incorporate texturing
- + FORM derives function
- + screws, bolts etc etc are not hidden
 - ↔ exposed
 - ↔ easier access for repairability

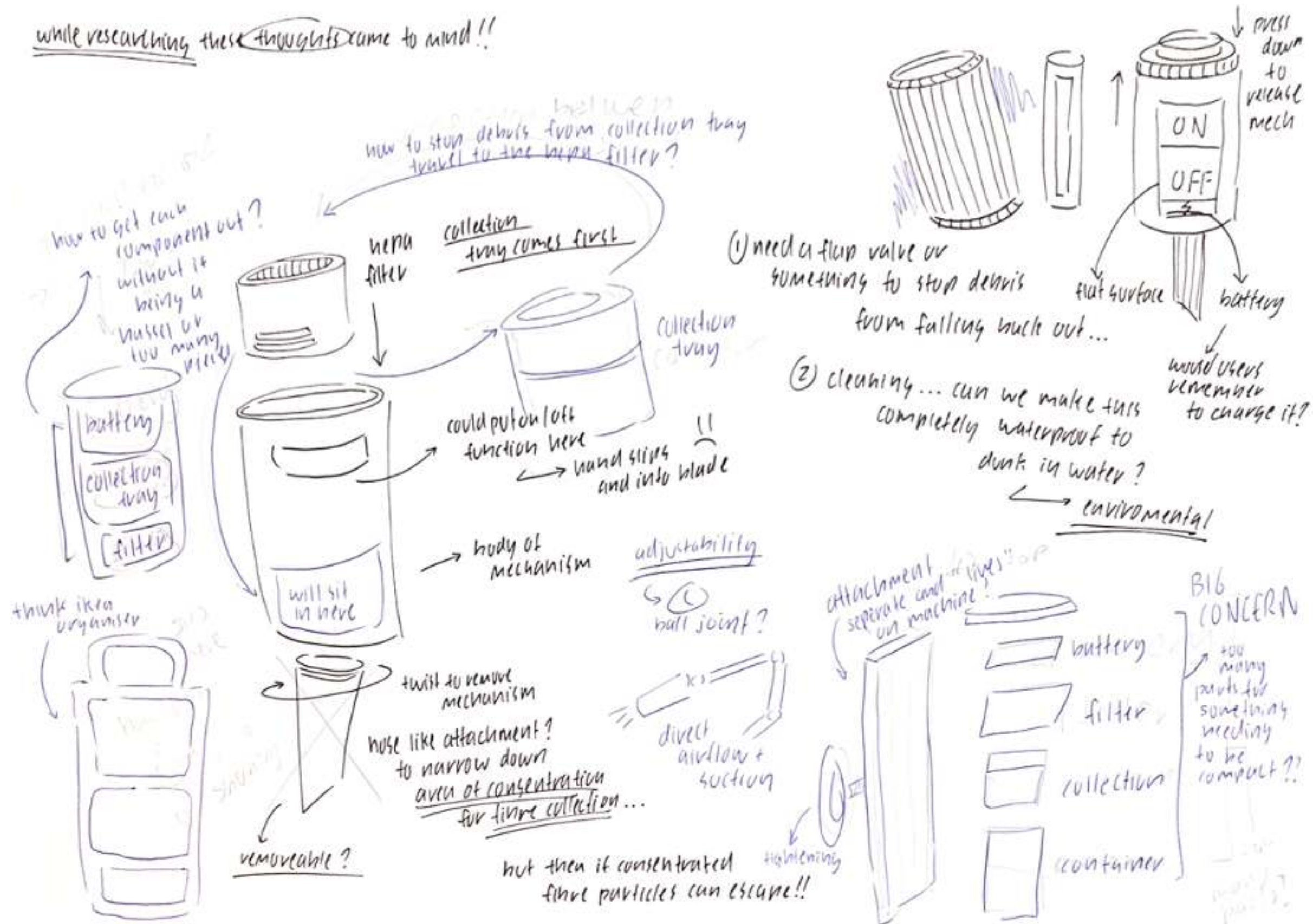
sometimes a brighter
colours in newer gen models

- ↳ not industrial
more small business,
hobby/ at home
based manufacturing
- ↳ highlight branding

★ make product brand stand out

THINKING SKETCHES

CONCEPT 1 REFINEMENT



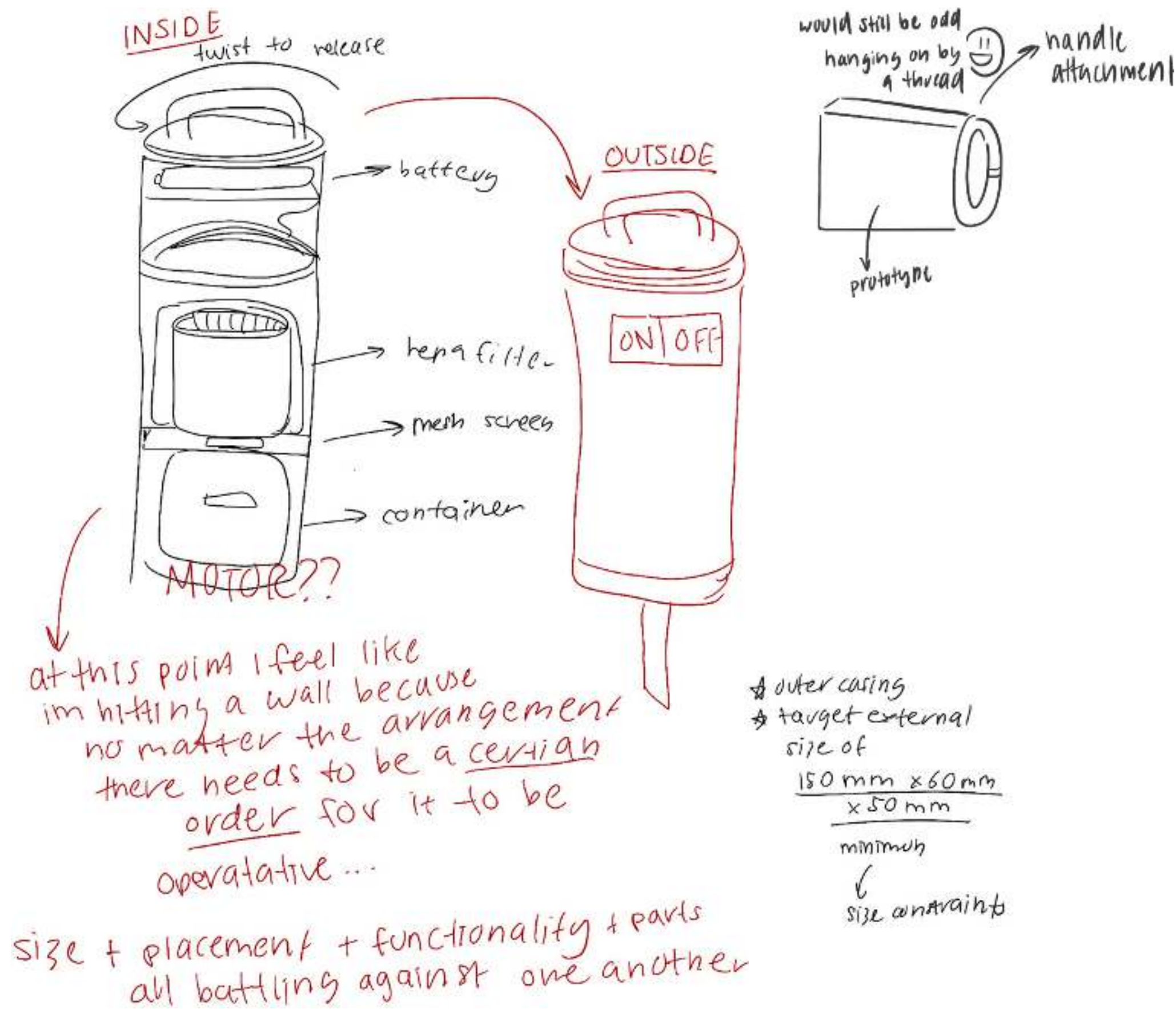
GOING BACK TO PLACEMENT

CONCEPT 1 REFINEMENT



MORE SKETCHES + ABOLISHMENT OF CONCEPT 1

CONCEPT 1 REFINEMENT



FINAL THOUGHTS

It's a cool concept but won't work with all the parts needed to make it functioning.

DESIGN CRITERIA

CONCEPT 2 REFINEMENT

AREA TO DESIGN FOR

functionality : efficiently collect overlocker fibres and scraps from source to prevent buildup and manual cleaning

integration : fit into existing table lint slots without significant modifications needed

sustainability : durable and repairable / able to be disassembled for easy cleaning and parts replacement

maintenance : easy to clean and remove and reassemble for daily use in workshop environments

user comfort : reduces airborne fibre exposure / skin contact / respiratory irritation

portability & storage : compact form suitable for tight workspaces / collapsible tube aids space efficiency and customisability to space

CONSIDERATIONS FOR USERS

- noise : suction system operate quietly enough not to disrupt users in shared workspaces
- safety : no exposed moving parts / sharp edges / safety hazards etc
- ease of use : simple to turn off and on / plug / minimal setup / compatible with existing systems / does not require modification of workflow
- hygiene : prevents direct contact with fibre buildup / easy to empty and clean / pulls fibres downwards away from users upper body
- accessibility : operable for 99 percentile of users

MUST :

- fit existing overlocker table slots
- capture fibres and scraps efficiently at source
- signifiers to indicate fullness
- suction or power sources
- safe to use
- operate quietly and effectively without interrupting activity
- simple to disassemble for maintenance

SHOULD (USEFUL) :

- made from durable materials
- collapsible tube for easier cleaning and adaptability for better spacial fit
- modular so parts can be replaced individually.
- filter to trap microfibres before they enter collector

MUST NOT :

- require permanent modification to existing tables or machines
- release fibres back into environment when in use
- create excessive noise / vibration
- obstruct workspace visibility or limit overlocker function

DESIGN CRITERIA

CONCEPT 2 REFINEMENT

MUST	fit existing table slots	work with current overlocker setups without mods
	capture fibres and scraps at source	prevents buildup and airborne particle spread
	no safety hazards	be easy to remove and clean
	be safe to handle	suitable for shared environments
	operate quietly	
SHOULD	simple cleaning	
	alert users when the collector is full	
	be modular and repairable	
	allow part replacement over full disposal	
COULD	match the aesthetic of exisiting equipment	
	offer interchangeable part sizes	
	customisable for different workspace demands	
MUST NOT	require permanent table alteration	interfere with machine performance
	release fibres back into air	
	obstruct sewing or trimming area	

ERGONOMIC CONSIDERATIONS

CONCEPT 2 REFINEMENT

- slot and collector positioned within comfortable reach
- handles or tabs or on buttons shaped for easy grip and touch
- lightweight to prevent strain
- opening aligned with natural trimming direction for smooth sweeping motion
- system = low vibration and noise for comfort
- visible signifiers from seated position without awkward leaning

MECHANISM RESEARCH

CONCEPT 2 REFINEMENT

<https://www.globalcma.com.au/product/fix-it-correction-tape/>



Enclose the chain/wheel in a protective housing.
Use self-cleaning teeth or brushes.
Use a smooth belt instead of chain for fewer nooks for fibres to trap.



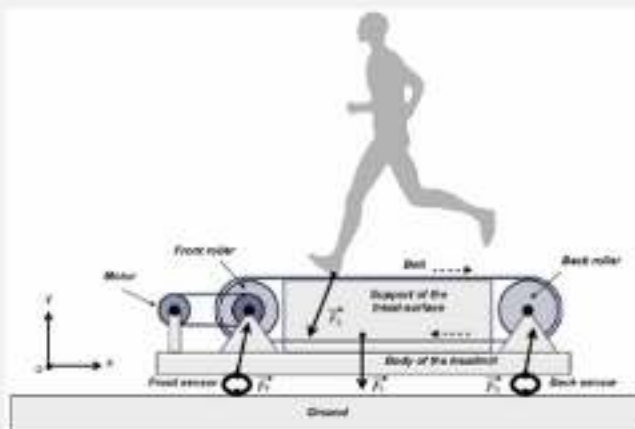
TECHNOLOGY

- similar to bike mechanisms and correction tape or treadmills
- have a flexible plate on top that moves the fibres downward into the slot and then back up
- have a flap at the end that scrapes off the pile of dust and microfibres as well into the container so it does not go underneath and clog ... wait clogging ... what happens if the microfibres clog the chain ...
- chain or wheel dependant to facilitate movement
- PRO it will be quieter than vacuum technology

POWER SOURCE

- battery = limited run time / needs recharging / hassle if it runs out during work
- cord = continuous power however considerations for cable management needed eg portability when cleaning
- motor or wheel or crank

<https://docs.sram.com/en-US/publications/6sfLCOGTn6FE98W8vXLqm0/UM%20-%20Chains>



https://www.researchgate.net/figure/Schema-of-an-instrumented-treadmill-The-interrupted-arrows-represent-the-direction-of_fig1_258959087

1. DC Gear Motor

- integrated gearbox to reduce speed and increase torque
- high torque at low RPM (good for moving plates / flaps)
- can run on low voltage batteries (6-12V typical) and corded power
- control speed with PWM
- compact and widely available (off shelf availability)
- for **continuous chain / belt or plate motion**

2. Stepper Motor

- precise control of position without the need for additional brakes
- but noisier than DC motors
- requires stepper driver circuit ...
- less torque (force that causes rotation) at higher speeds unless geared

3. Brushless DC (BLDC) Motor

- efficient / long lasting / low noise motor
- used in drones and small appliances
- high efficiency and low heat (wait why is this one kinda perfect)
- quiet and smooth operation
- longer lifespan than brushed DC motors
- requires an electronic speed controller (ESC) and is slightly harder to integrate

researching into
vacuum technology
↳ ways to make
it quiet !!

TECHNOLOGY RESEARCH

CONCEPT 2 REFINEMENT



MATERIAL FOR TABLE SLOTS :

- protex industrial overlockers : stainless steel or heavy duty plastic
- resistance to corrosion / wear / high speed operation of overlockers
- ABS or polycarbonate = go a long time without cracking or deforming
- much lighter than metals like steel
- plastic does not rust or corrode when exposed to moisture / oils / cleaning solutions
- smooth surfaces where dust and fibres dont stick
- cheaper to manufacture and replace



COLLECTION BIN MATERIALS

- ABS / polycarbonate / HDPE
- lightweight and easy to remove for emptying
- resistant to corrosion
- cheaper to produce and replace
- might need an anti static coating ?

DO OVERLOCKERS / SERGERS PRODUCE LOTS OF HEAT TO WARP ABS ETC ?

- YES PRODUCES HEAT (BUT ITS MORE WARMTH THAN ANYTHING EXCESSIVELY HOT)



WHATS STOPPING OVERLOCKING SLOTS FROM GOING STRAIGHT DOWN ??

- interferes with users sitting position
- if we did something similar to images on the left ... how much volume could it hold before getting full ?

NO HEPA FILTER NEEDED

- HEPA filters are for **airborne particles**
- system **physically moves fibres into a bin** using a plate and flap
- hence the particles are captured **before they become airborne**
- no airflow = no need to filter air

MOOD BOARD

COLOUR PALLETS / EXISTING EQUIPMENT / FORM INSPO



MEASURING & ANALYSING

LOOKING AT THE EXISTING SYSTEM



MEASURING & ANALYSING

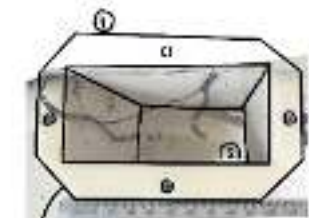
LOOKING AT THE EXISTING SYSTEM



FORM IDEATION : TRAY

CONCEPT 2 REFINEMENT

- + Key technologies
- + Key functions
- + human factors, form, aesthetics



currently 2 connection pieces slot + opening



why? easier installation
way to combine to prevent debris from accumulating in open areas? and to take tabs away to create?



could keep as 2 separate pieces but

so product = 3 removable parts!!

part 1 = slot opening



have a pull to close lid?

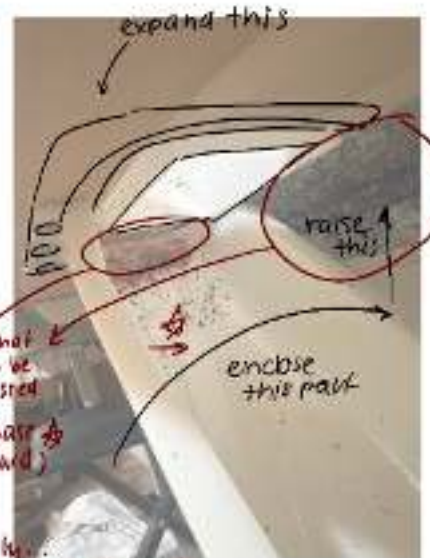
why? what purpose does it serve?

end of day close? not much point + waste of materials

+ this does not need to be redone??

★ FINAL THOUGHTS for now

top part does not need to be redesigned
could potentially change

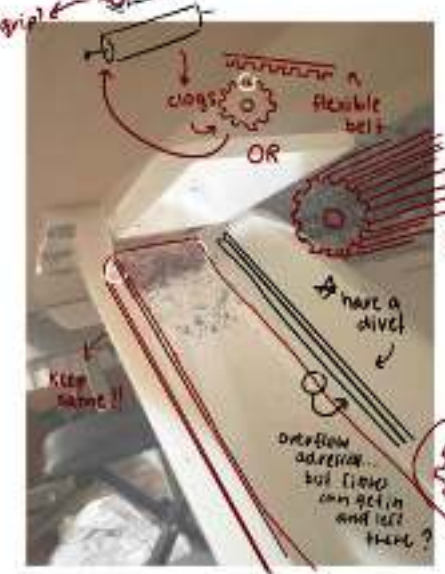
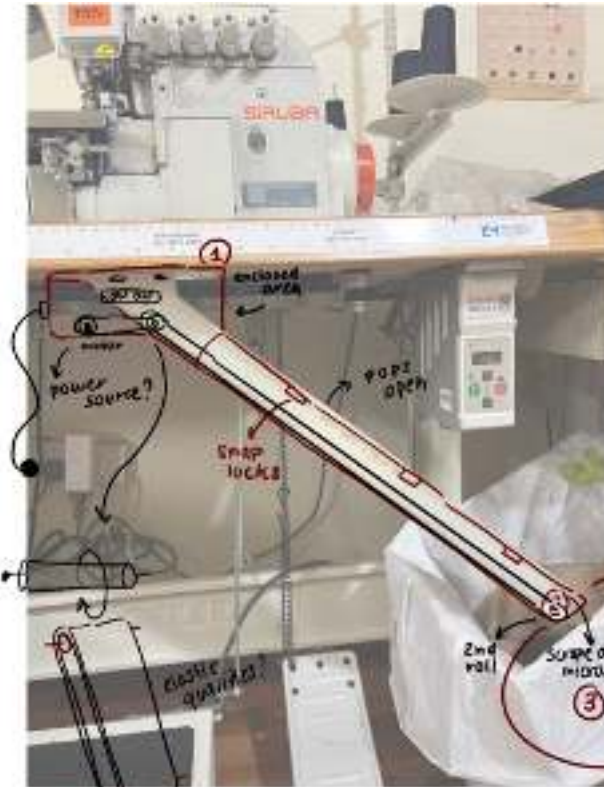


gaps that need to be addressed (shift base forward)
actually... if motorized its fine!!

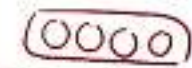


ELIMINATE detachable idea... the screws are enough to keep it as 3 existing parts only

but if there is a gap at the end to screw off... wash isn't enough... wash, spray it down?



x 3 of these across design OR



empty space

fibers building up there?

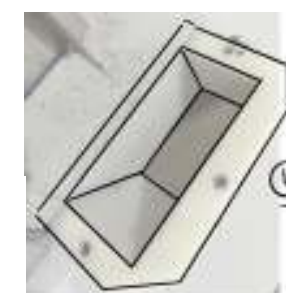
could make it hollow but enclosed to prevent buildup in that area

HOW TO PREVENT??

wall plug
AC + DC adapter?
motor driver
motor
speed knob

★ basic idea down.
now need to go in with more detail via sketch + prototyping.

having a hard time visualising and getting down what's in my head so I decided to move ahead to prototyping as an ideation technique
1st → basic sketch of parts



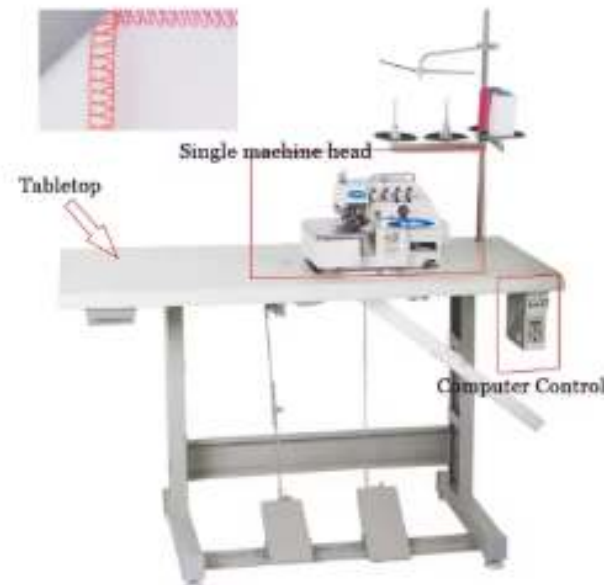
Key feature:
① might do it just for caution if time?? → undecided
② fully enclosed structure with a snap open feature for cleaning → wait... make it clear??
③ able to be disassembled for parts replacement!!
④ adjustable

AESTHETIC OF CURRENT TOOLS

CONCEPT 2 REFINEMENT



- + compact
 - boxy shapes
 - rounded corners
- + mix of metallic and glossy colours
- + colours = light gray hues
 - white
 - beige
 - visibility
- with accent colours
- ↙ a stark contrast
- + smooth textures
- + labeling
- + minimal design



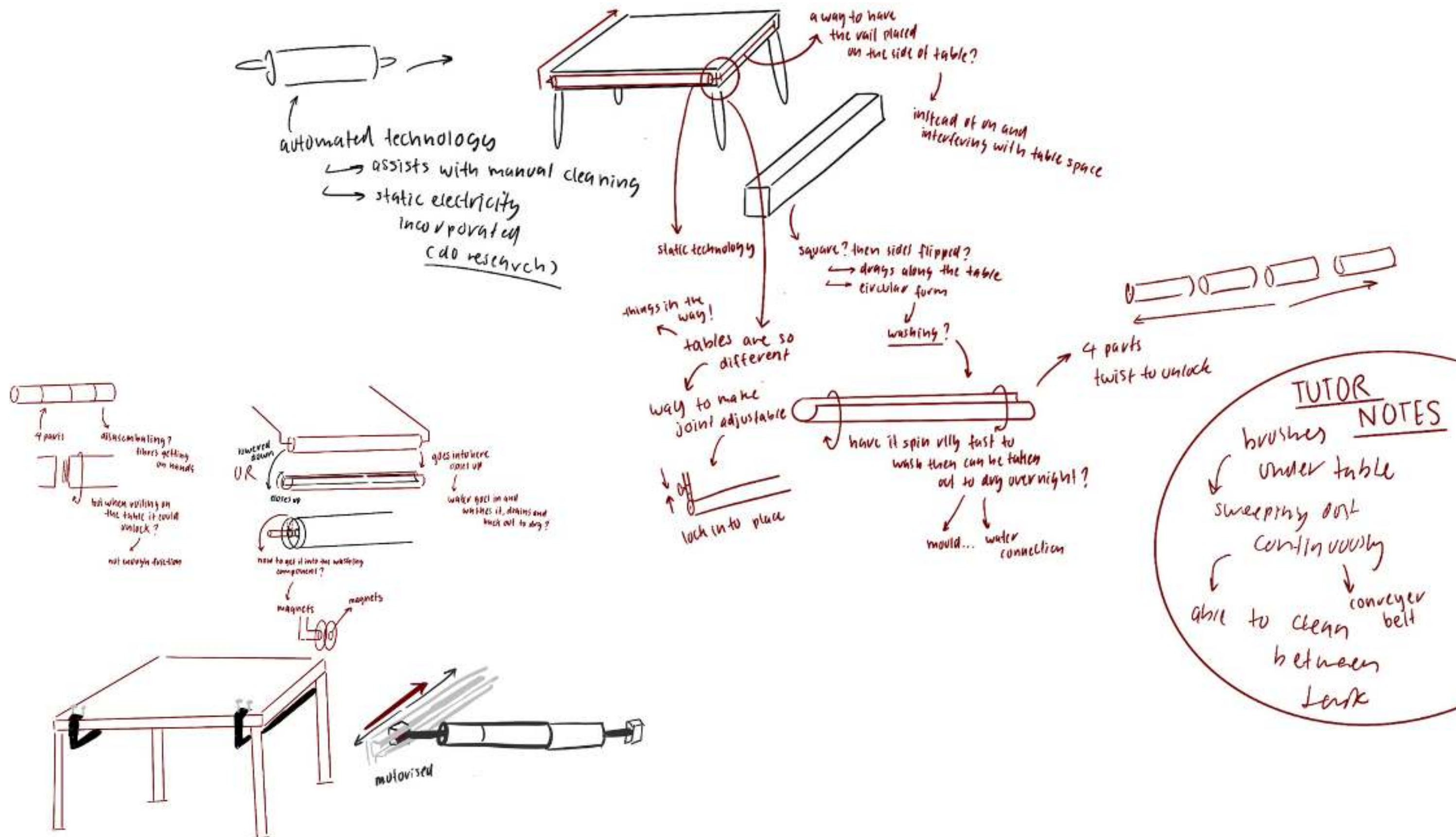
TUTOR CHAT

CONSIDERING A DIFFERENT OUTCOME

- ★ tutor chat !!
 - ↳ talking about innovation
 - ↳ looking into static electricity and its implementation
 - ↳ going back to drawing board

RE DEVELOPMENT OF CONCEPTS

GOING BACK TO THE DRAWING BOARD ONCE AGAIN



PROTOTYPING

CARDBOARD FORMS

OBSERVATIONS

+ shorter end of table

→ out of the way

→ less material = length reduced

→ stop button etc
right by users hand

(flip prototype)

+ reduce thickness of rod
= smaller wash

+ will have to be custom to
each table

have custom parts listed

1 attachment type

1 secure

1 thinner internal base

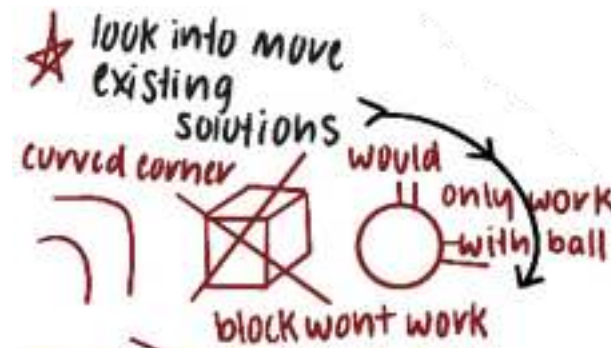
+ sensors

+ what happens if users
push the prototype too
close to wall?

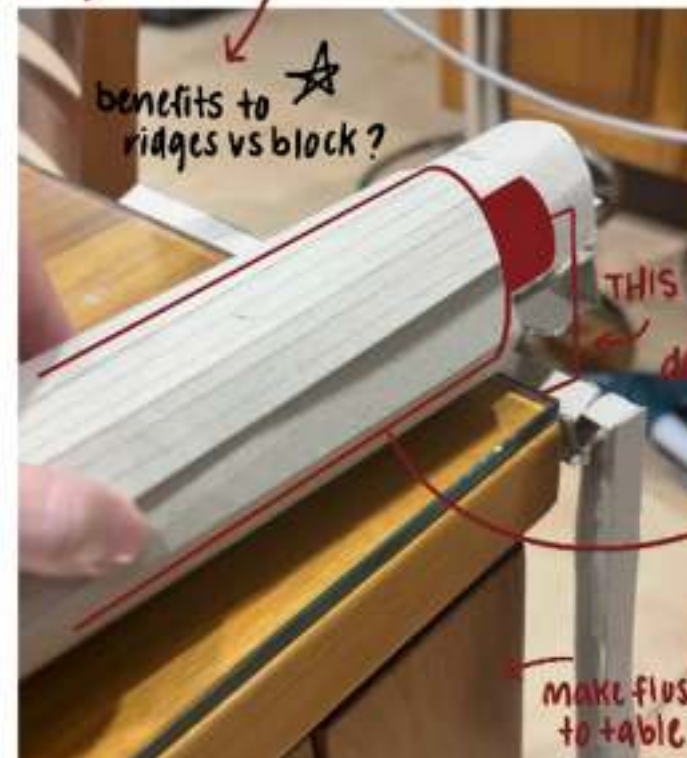
stops it
in its
tracks
↑ scratches
wall?

things to take into consideration

user testing!



wrist strain
with option
one!!

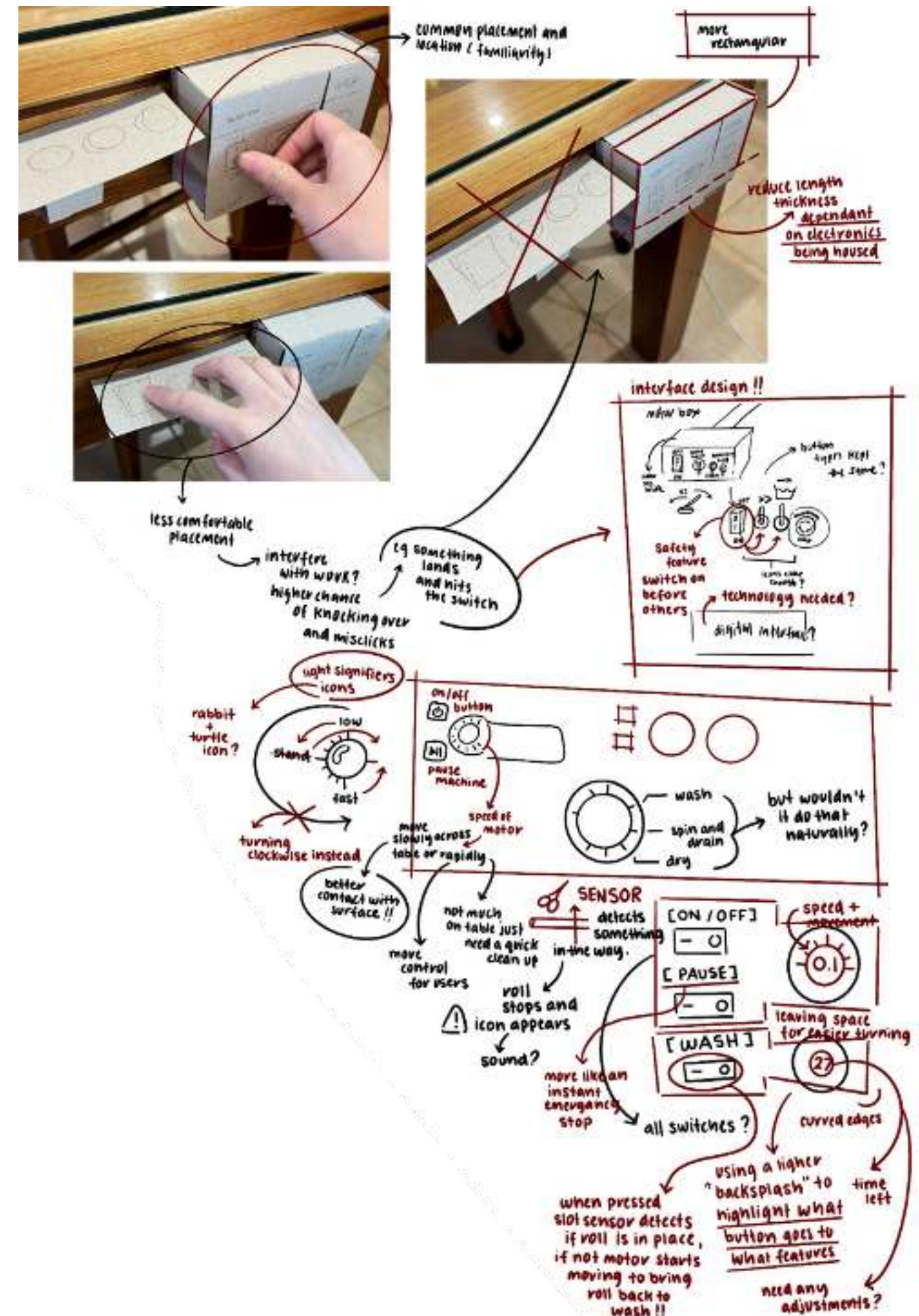
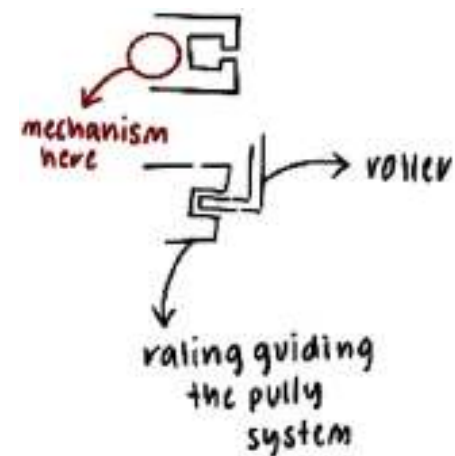
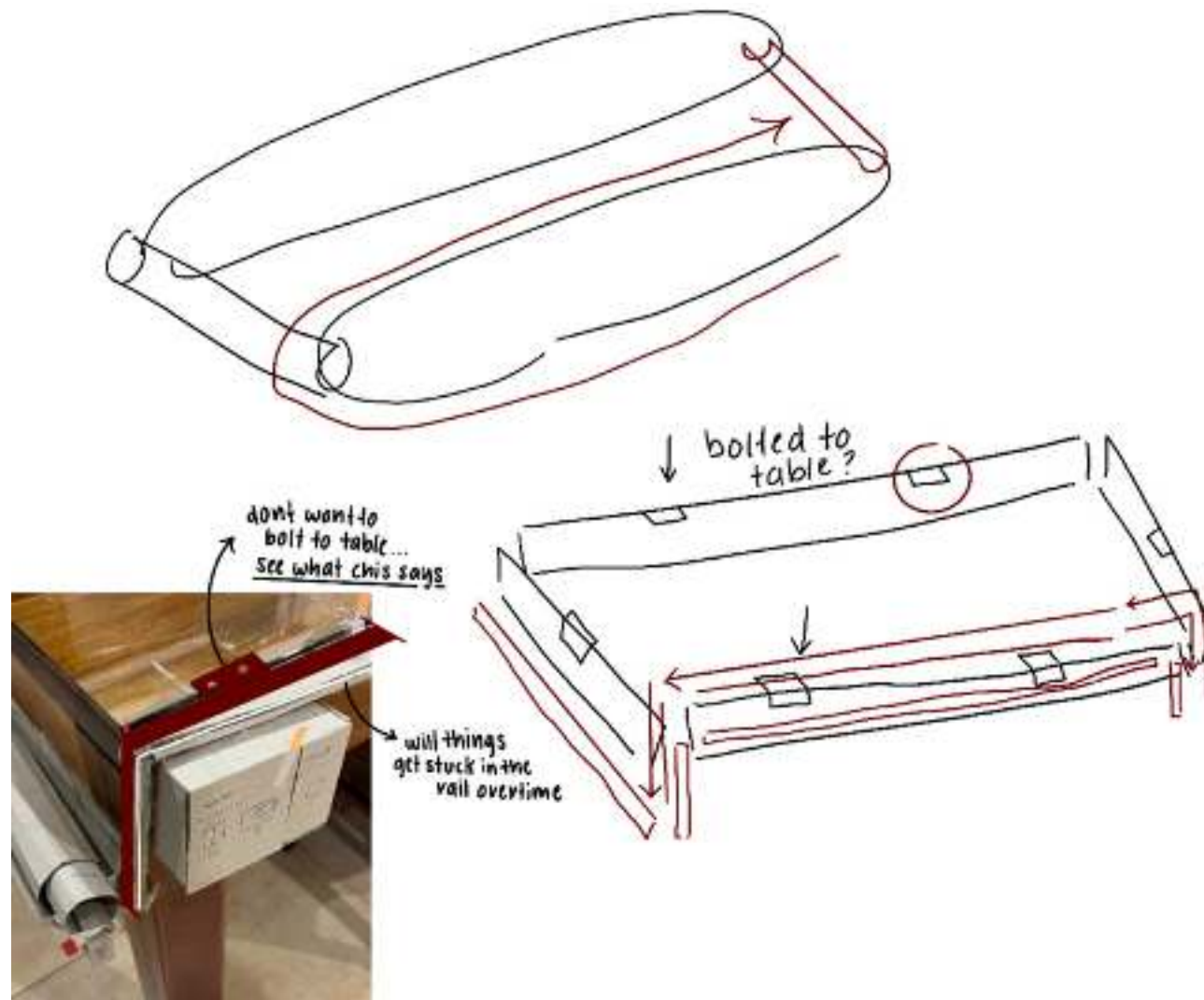


no rotation
just directional
change

but that means
rail would have
to be above table..

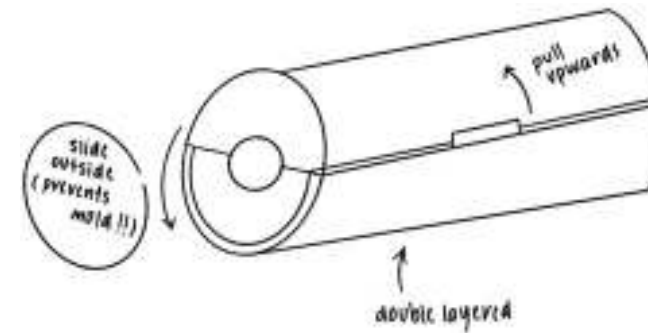
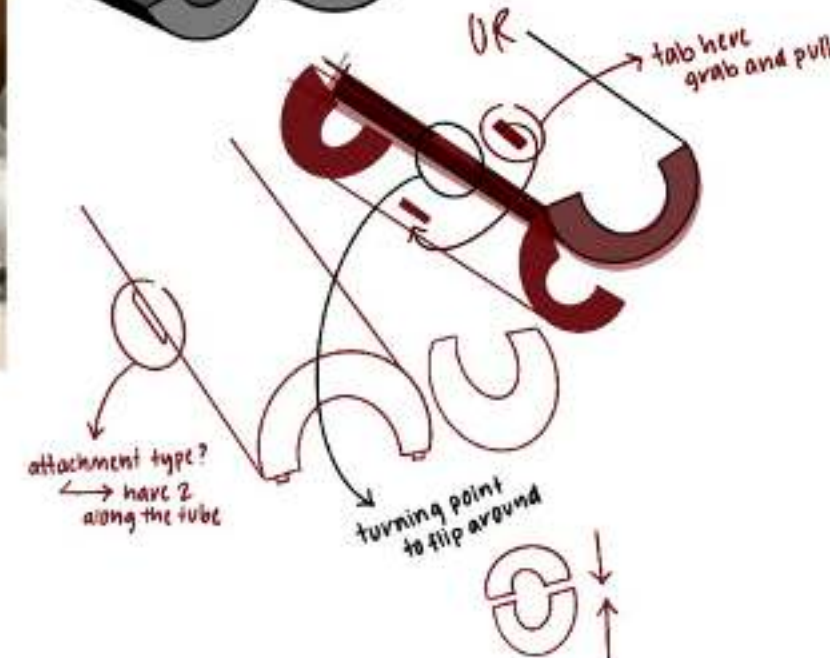
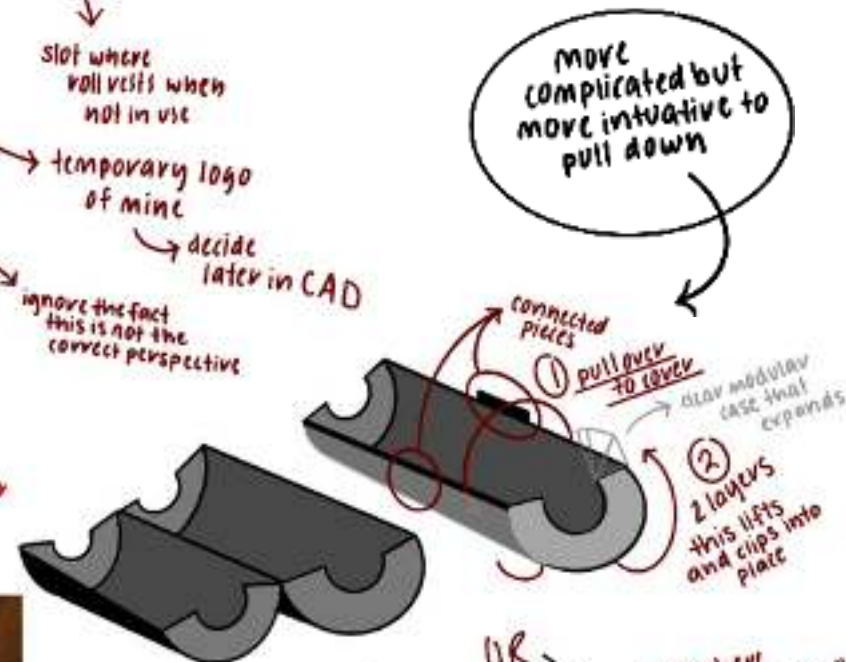
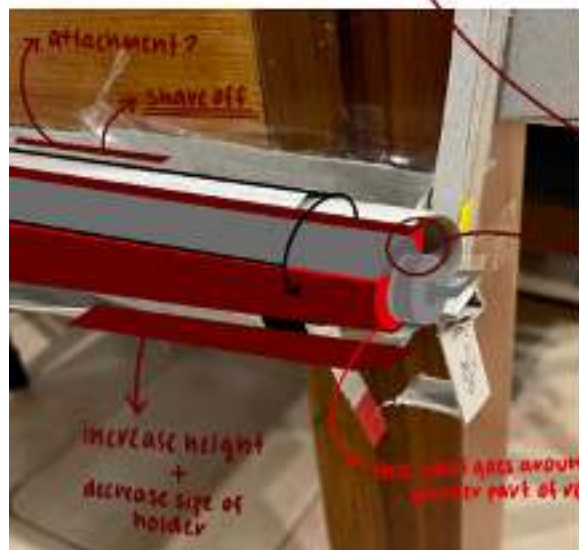
PROTOTYPING

CARDBOARD FORMS



PROTOTYPING

CARDBOARD FORMS



lots of tables have something underneath

tables are often not pressed against wall in studios



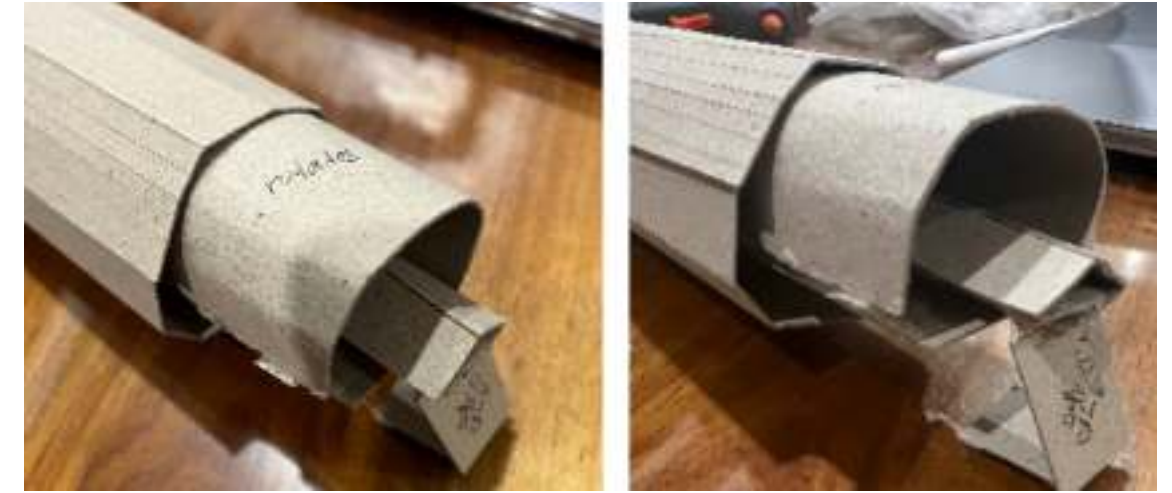
showview

attach to end of table, less commonly used / stood around by people!! + reduce material usage

another way to store? could do under table...?

PROTOTYPING

CARDBOARD FORMS



- need to do
- ① turning point of roller
 - ② technology = sensor → things
static material?
material
washing system
 - ③ attachment
to table
 - ④ closing attachment
 - ⑤ rails / motor
and getting inside

ERGONOMIC CONSIDERATIONS

CONCEPT 5 REFINEMENT

- automatic rolling and cleaning reduce repetitive hand motions and bending
- compact side mounted design minimises reach distance across large tables
- customisable rail length allows setup to match user height and tables
- rounded edges and smooth surfaces prevent accidental knocks or scratches
- simple button controls (move + wash + pause)
- hands free cleaning process supports users with strength and tiredness
- easy access to filter compartment
- clear lid provides visibility
- quiet operation
- flush to table and below to ensures it does not obstruct users during work

TECHNOLOGY RESEARCH

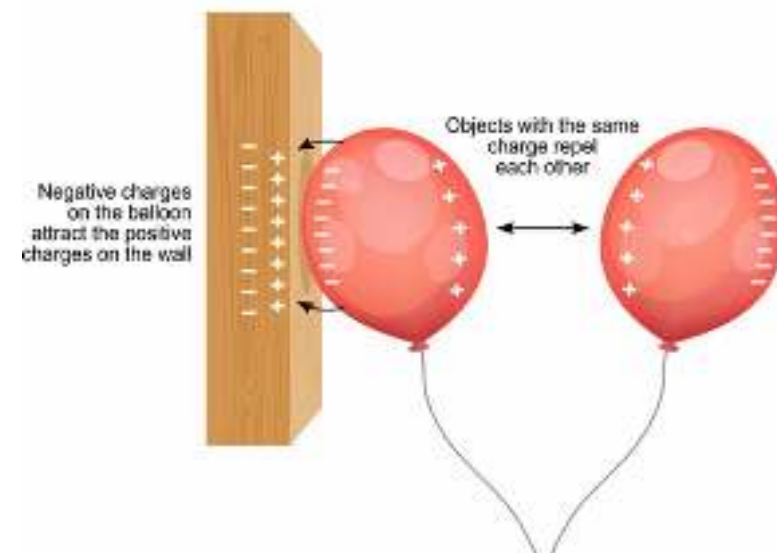
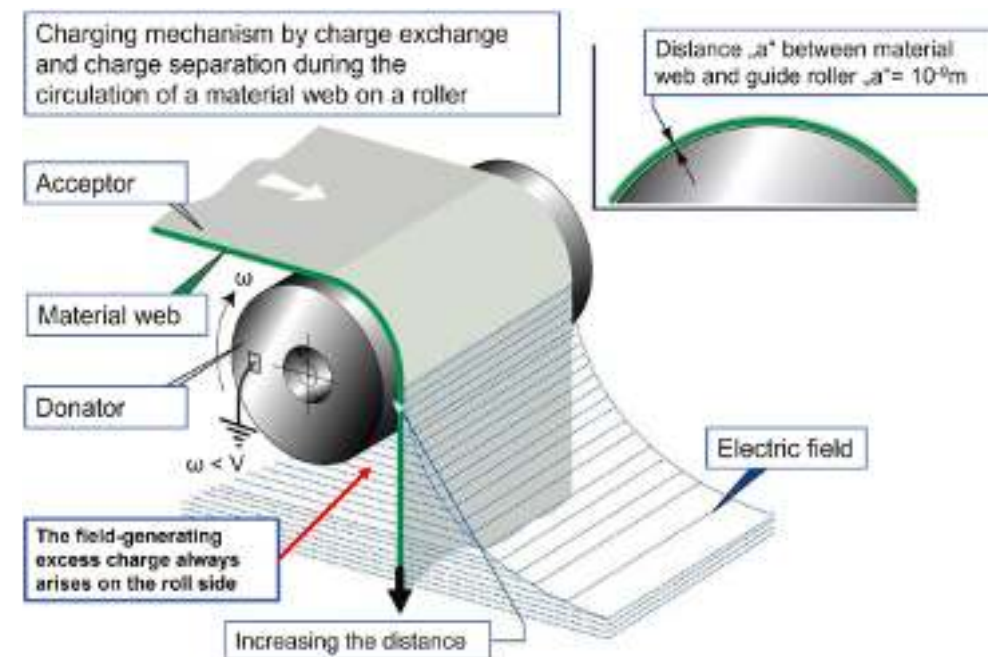
DEVELOPMENT OF CONCEPT 5

TECHNOLOGY : STATIC MATERIAL

- textiles generate static electricity due to friction between fabrics
- fabrics are poor conductors with high electrical resistance
- during production and processing : friction / stretching / compression / peeling / hot air drying lead to static electricity in fabric
- synthetic fibres prone to generating static electricity = low moisture absorption hence making charge transfer and accumulation easier during friction

<https://darongtester.com/all-about-textile-static-electricity/>

- static charge on fibres **makes dust cling & makes threads jump**
- make roller grab it ... using static to improve pickup ... reduce cling to hands and stop lint from re attracting after you clean ...
- roller surface actively charge incoming fibres to electrostatically attracted and stick to the roller ... then release at scraper collection station by neutralising the charge ...



- static material can pick up eraser shavings and dust
- electrostatic force created can attract these small particles
- electrostatic cleaning methods are effective for small dust particles that a broom or vacuum might miss

OCCURS WITH FRICTION ... HOW CAN WE MAKE THIS CONSTANT AND CONTINUOUSLY CHARGED ?
CAN WATER WORK OR BE IMPLEMENTED FOR AN EASY CLEAN OFF ?

- **increase buildup and retention through friction between two insulators ... simultaneously limiting grounding**
- static electricity continuously charged in technology
- ionisers that emit ions to neutralise charges or employ grounding methods to continuously bleed off charge

CHRIS SUGGESTED A BRUSH ... OR A TWO STEP PROCEDURE ...

- would be cool to have the static technology ...
- brush then going over with a tacky surface makes a good pair ...
- is there a way to make the singular roll a brush AND a tacky surface ?

- FIRST : brush agitates + tribo charges and loosens debris
- SECOND : tacky roller mechanically + electrostatically captures it.

1 . BRUSH (static friction stage)

- loosen fibres + generate static charge through friction
- bristles are soft nylon or PET that rub against the table surface
- to causes tiny charges to build up on both the fibres and the brush = dust and microfibres become electrostatically charged hence making them easier to attract and increase effectiveness of capture

TECHNOLOGY INTEGRATION

DEVELOPMENT OF CONCEPT 5

2 . TACKY SLEEVE (adhesive + pickup)

- capture charged fibres / dust efficiently
- sleeve made of washable TPR or silicone that regains its tackiness after dried
- under is a conductive mesh layer (thin stainless steel or conductive fabric).
- fibres hit this roller = it sticks mechanically (tackiness) and electrostatically (attraction)
- roller conductive mesh connects to ground through a 1 MΩ resistor which allows slow charge bleed off so surface never overcharges but stays attractive

3 . water rinse station

- roller moves into a misting / water chamber
- water jets rinse away residue while roller spins rapidly to wash away fibres and dry whilst it washes and drains
- water drains through a fine filter to trap microfibres so do not go into water system (filter bag that can be reused)

HMMM can : conductive mesh connects to ground through a 1 MΩ resistor go into water ?

- not safe at all ... would work if users take the roller apart to rise ...
- or replace water aspect with brushes that travels to one end of the brush to the other while spinning to brush off microfibres whilst it gets sucked into something for collection

FINAL 2 OPTIONS

1 . water cleaning + tacky surface roller

- washed and reused multiple times, ... reducing waste from disposable wipes or paper towels
- restoring the rollers tackiness without needing extra chemicals or adhesives

CONS !! (i asked chatgpt for flaws in my design)

- roller must fully dry before reuse
- dealing with drainage ... splashing ... leaks ... wastewater disposal = adding extra design complexity
- frequent rinsing and mechanical rolling can wear down or degrade tacky surface especially if its soft silicone or TPR
- if water collects in the housing ... mould or unpleasant smells can develop inside the roller compartment
- clean the washing chamber ... tray ... drains regularly to prevent lint and fibre clogging
- water near motors ... wiring or grounding systems must be carefully isolated to prevent electrical hazards
- if wastewater containing microfibres is not filtered before disposal it could contribute to environmental pollution downstream

EVERYTHING WAS ALREADY TAKEN INTO CONSIDERATION EXCEPT FOR THE ONE HIGHLIGHTED IN RED !!

TECHNOLOGY INTEGRATION

DEVELOPMENT OF CONCEPT 5

CONS !!

2 . making dust and microfibres become electrostatically charged hence making them easier to attract on the roller ... then using a brush inside the chamber to take it off
(WHERE WOULD IT GO AFTER ? moisture could be applied ... if its brushing against the roller to get the particles off ... that would just cause more friction hence making it stick

- increase static attraction
 - could loosen fine dust and microfibres into air = spreading them around the workspace
 - moisture could also damage sensitive materials or electronics if integrated
 - electrostatic forces highly sensitive to humidity and material type ... **some fibres / material types wont stick**
-
- could just have a regular brush that brushes first (travel across table ... goes up ... across then down ... the back to its slot ...
 - then do the tacky roller surface afterwards to pick up the microfibres

IF I INCORPORATED THE STATIC TECH : expensive ... too many limitations etc etc ... want to keep it cost effective for users

FINAL THOUGHTS : cool technology but to conceptualise it ... integrate ... wiring etc ... NOPE (also too many limitations)

SENSORS !!

TECHNOLOGY INTEGRATION

DEVELOPMENT OF CONCEPT 5

MATERIAL SELECTION / OPTIONS

1 . gel based adhesive ROLLER

- designed to be washable ... after being rinsed with water adhesive surface is refreshed and ready for reuse
- polystyrene ethylene butylene styrene (SEBS) : type of elastomer that forms the reusable tacky surface on some rollers ?

2 . acrylonitrile butadiene styrene (ABS) FOR THE MAIN BODY HOUSING ?

- hard and rigid plastic
- impact resistance and durability
- commonly used for injection moulding

3 . polycarbonate ... acrylic PMMA PETG ... high density polyethylene (HDPE) FOR THE CLEAR TOP CASING

TURNING POINT OF ROLLER

- curved edges ... pulley system

RAILING WHERE IT SLIDES ALONG

TECHNOLOGY : SENSOR

TECHNOLOGY : WASHING SYSTEM

ATTACHMENT TO TABLE

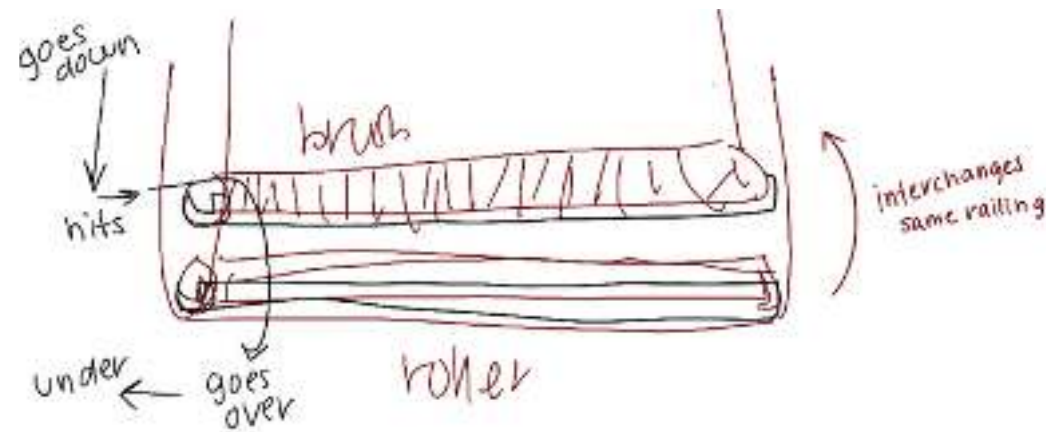
- could bolt to the table
- clamp ?

CONSIDER FOR FINAL PROTOTYPE AS SAID BY TUTOR :

- assembly and cad
- ergonomics
- how people use it and interact with it

CAD REFERENCE PHOTOS

DEVELOPMENT OF CONCEPT 5



cleaning system for my roller design.

Which option do you think would be more effective

1. water integrated into the system so it automatically washes the roller
2. having users take the roller out to wash it manually?

Another idea I had was to include a removable tray or container that stores the water. It could be replaced weekly, filter out the collected microfibres and dust for reuse, and have a drain plug on one end so users can empty it easily.... or have it connected directly to the water system?

concerned that the water system might make the design overly complex... so I'm wondering whether it's better to keep it simple or explore the integrated version further...

benchmarking for costings
mockups for a table, showing in context

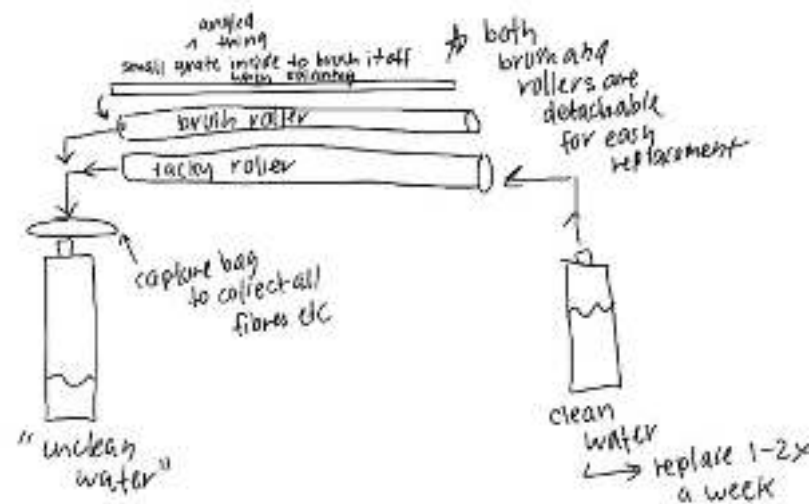
to summarise - not doing a 2 step process but an interchangeable one instead! less complicated and does not make the design feel too heavy and get in the way.

★ Same casing as water system
↳ collection? how to push into one same filter bag for disposal with water roller?

Considerations for drainage system

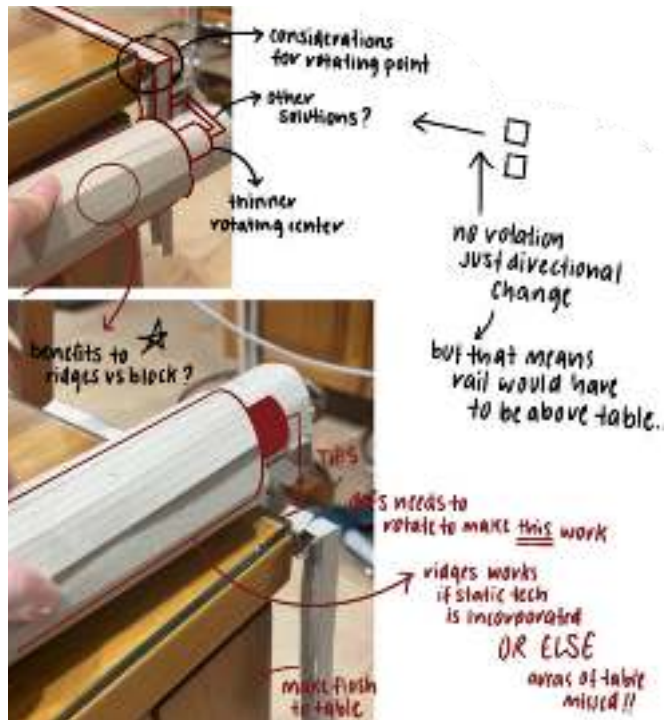
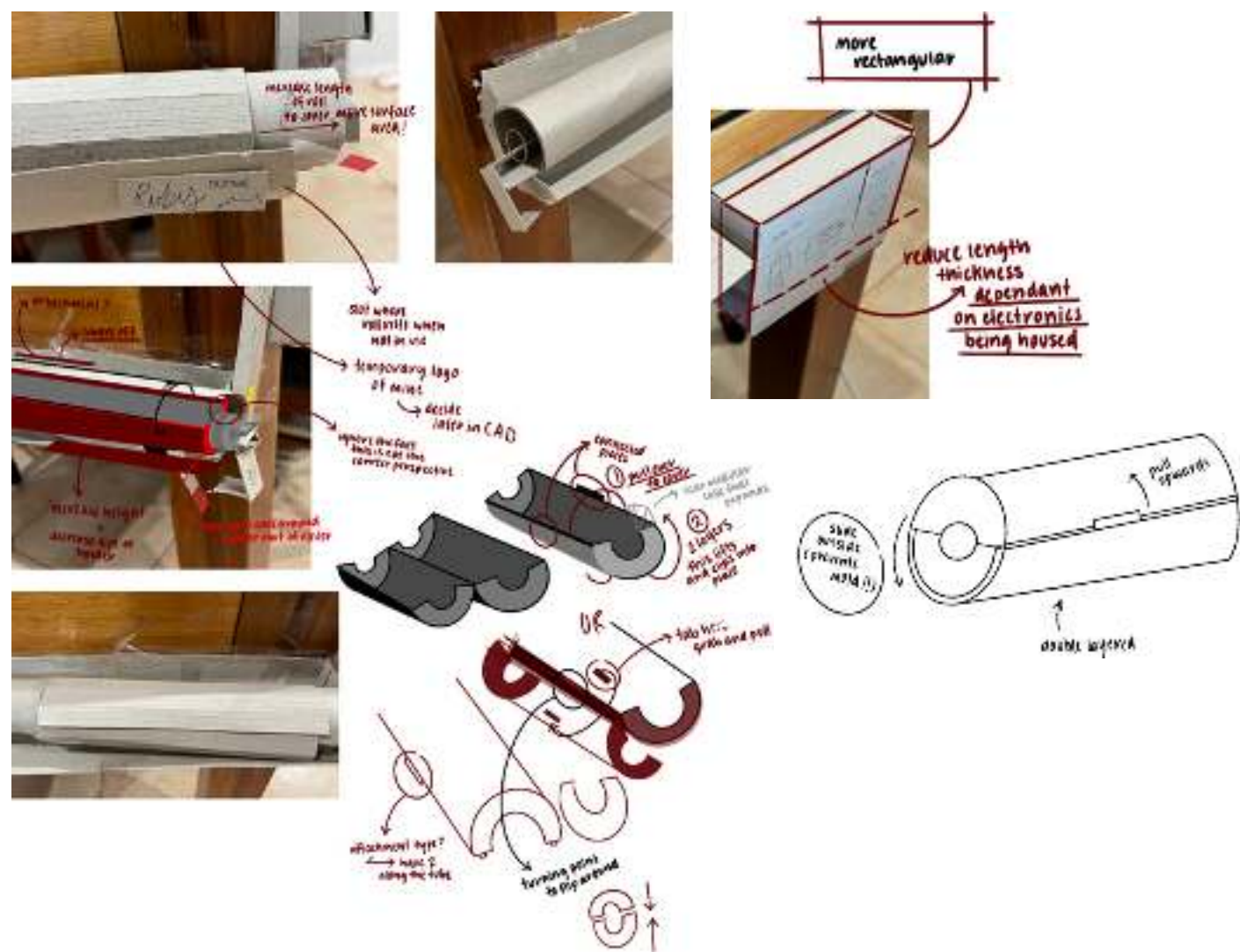
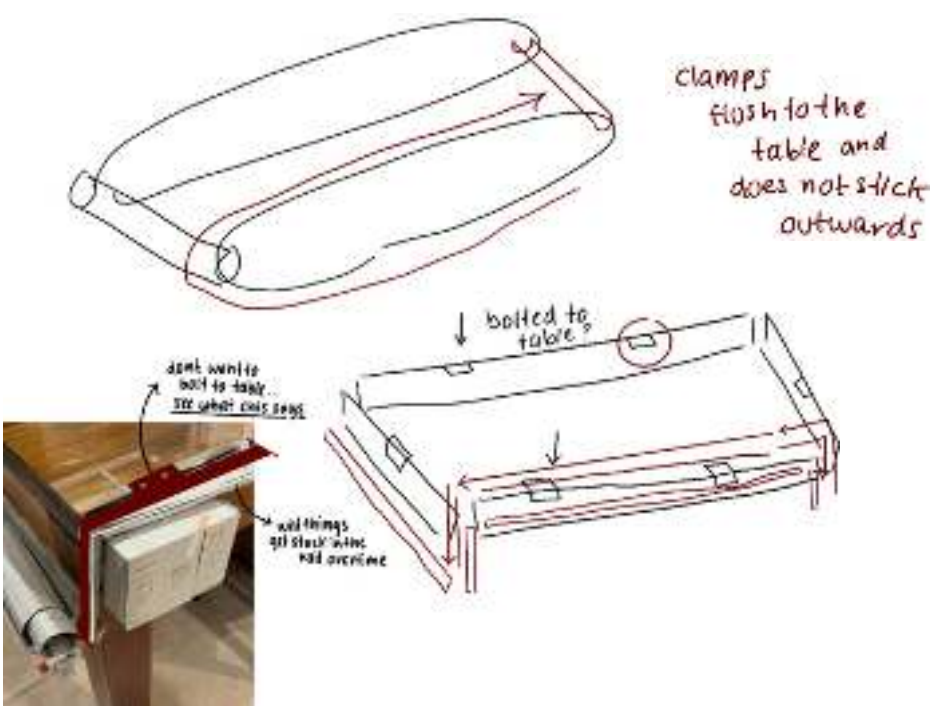
- ↳ 2 container prevent microfibres entering water system
- ↳ protects clogging...

BUT!! inconvenient to replace/drain?
tripping hazard??



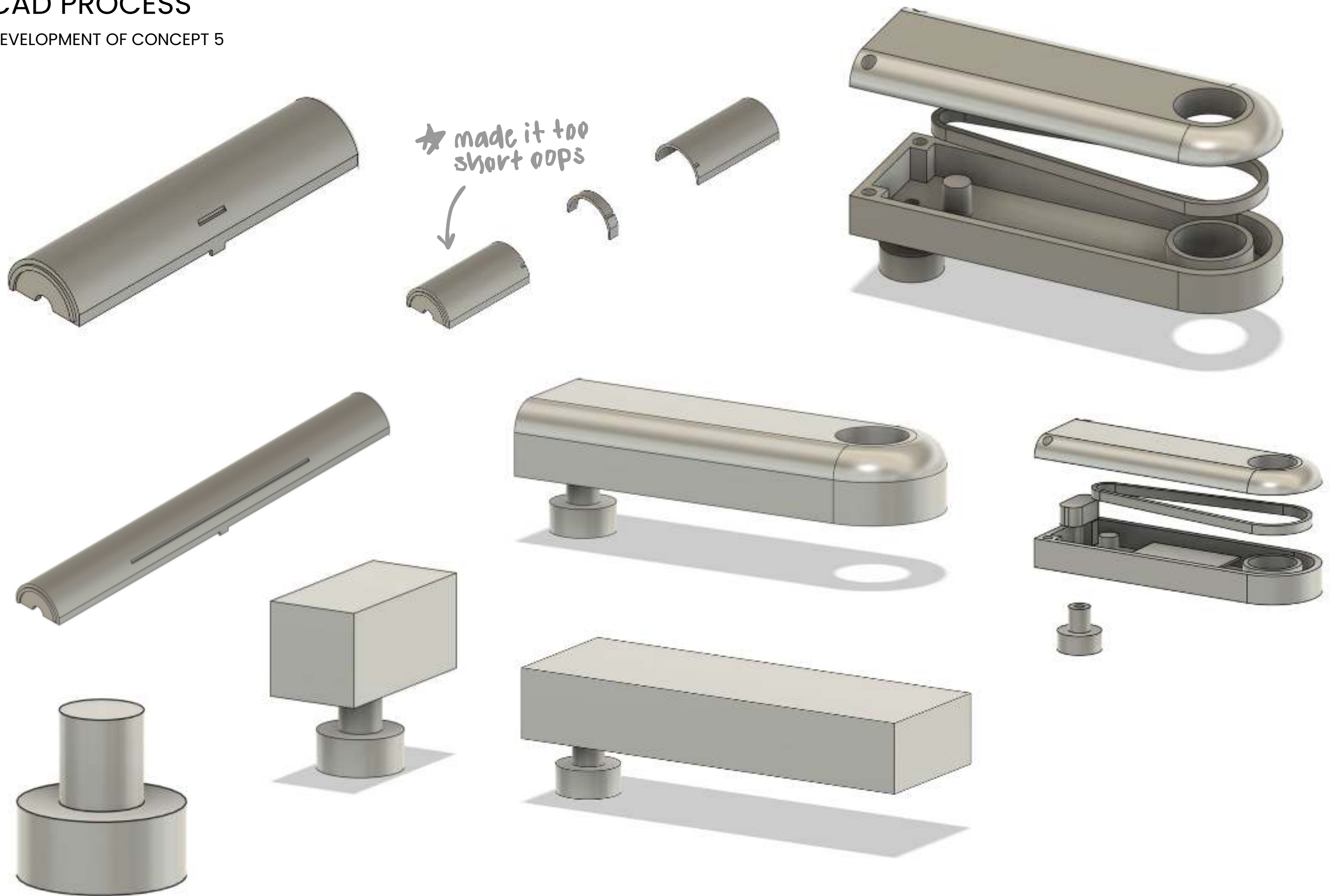
CAD REFERENCE PHOTOS

DEVELOPMENT OF CONCEPT 5



DEVELOPMENT OF CONCEPT 5

DEVELOPMENT OF CONCEPT 5



CAD PROCESS

DEVELOPMENT OF CONCEPT 5



MAKING FINAL

FINAL PROTOTYPE



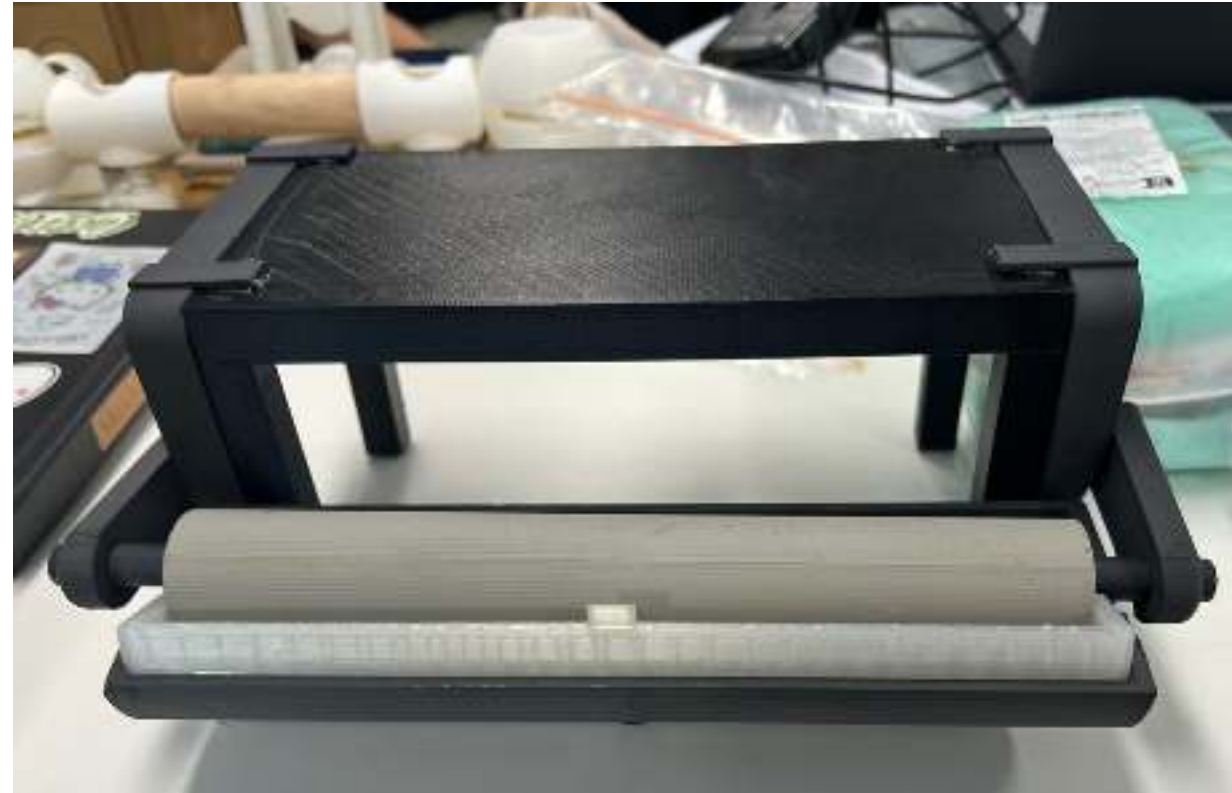
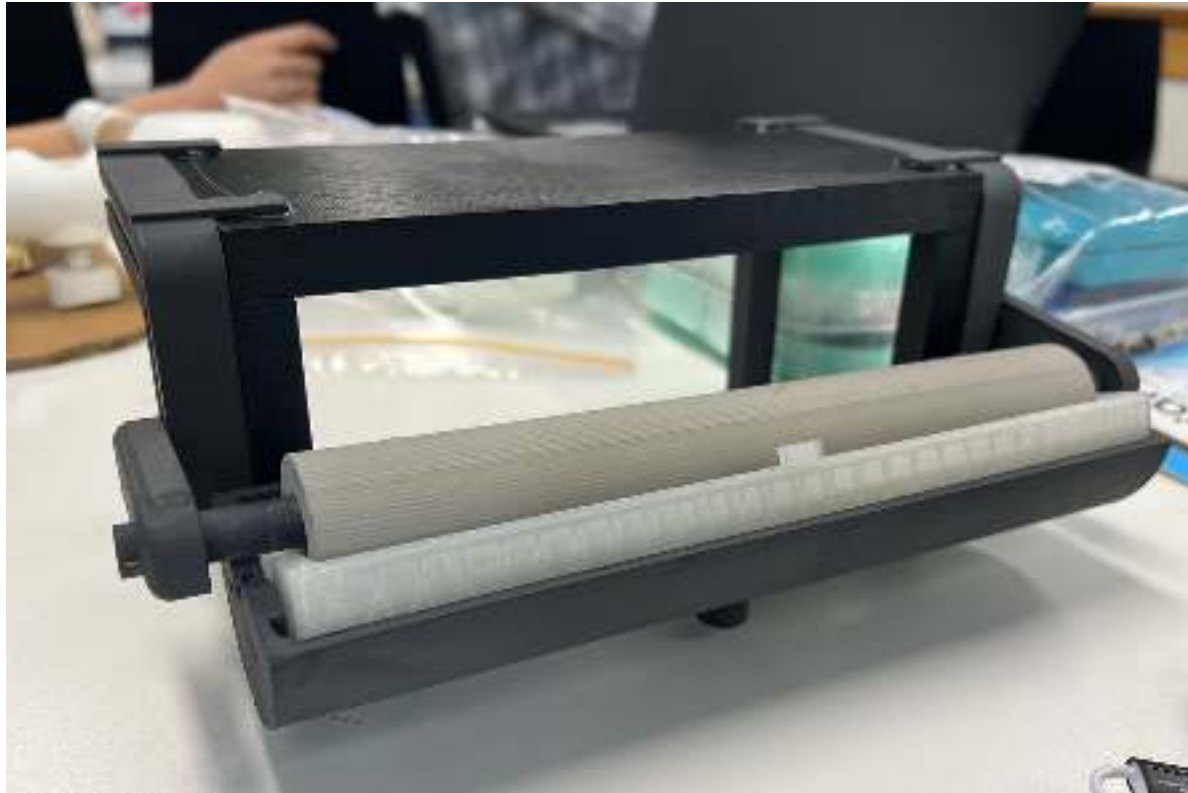
MAKING FINAL

FINAL PROTOTYPE



MAKING FINAL

FINAL PROTOTYPE

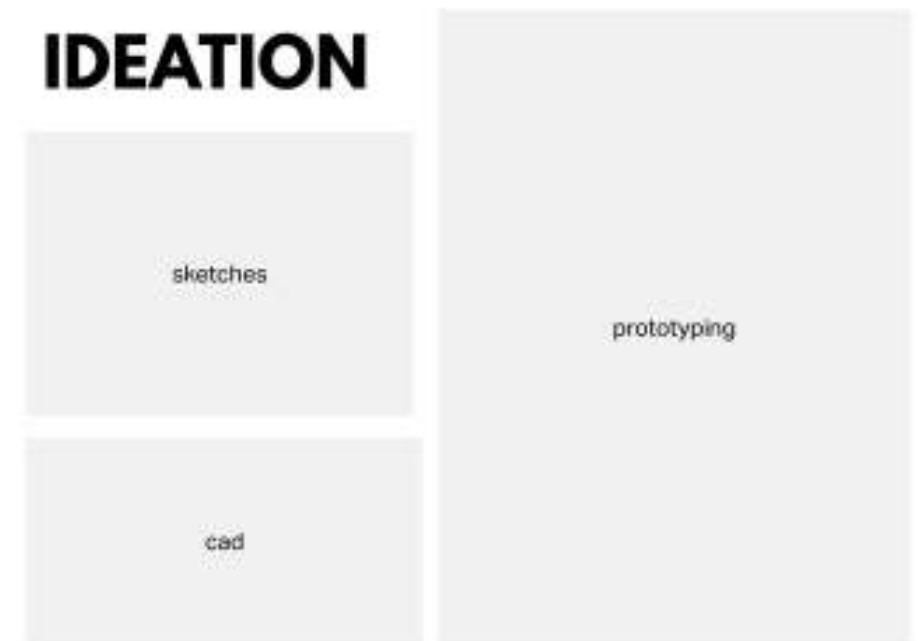
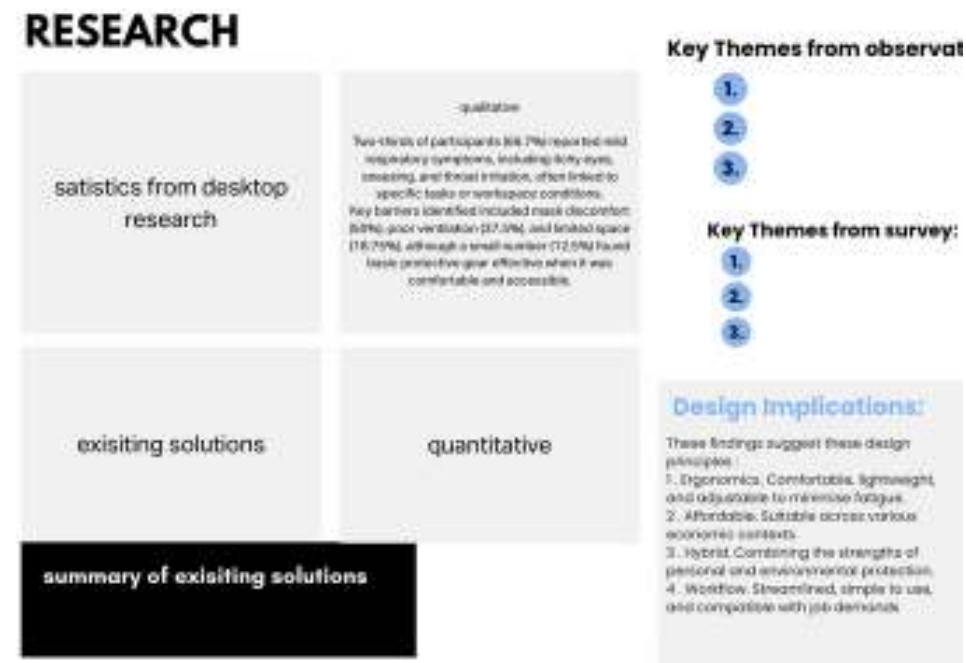
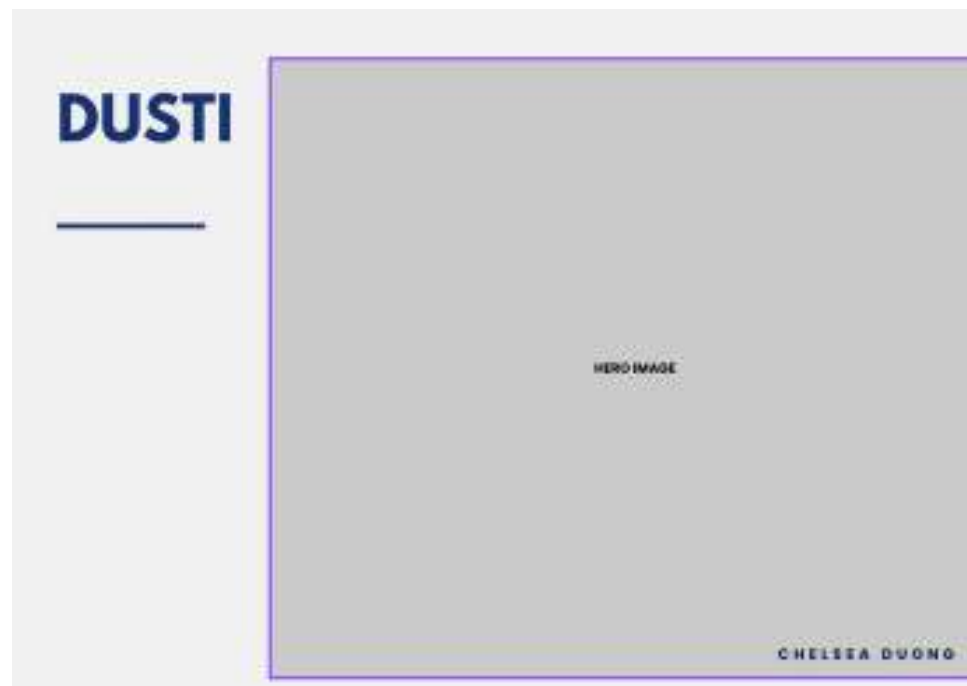


MAKING FINAL

FINAL PROTOTYPE



FINAL PRESENTATION



**(FINAL DESIGN)
RENDER**



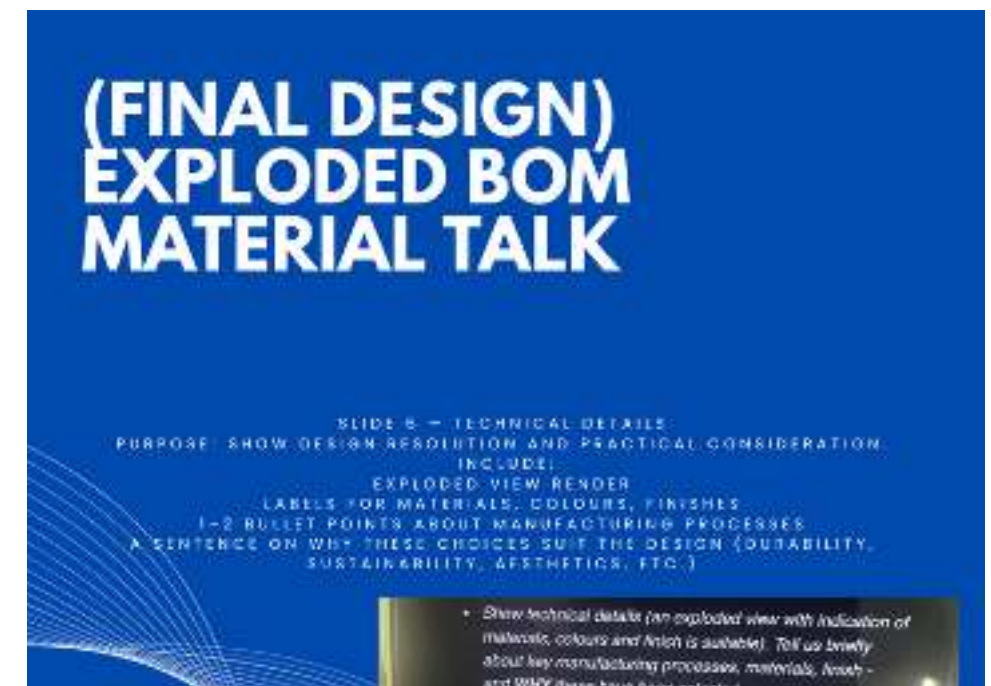
SCENARIO OF USE

SLIDE 4 — USER EXPERIENCE / CONTEXT OF USE
PURPOSE: SHOW HOW PEOPLE USE YOUR DESIGN
AND WHY IT'S MEANINGFUL.

INCLUDE:
A STORYBOARD, SCENARIO, OR USER JOURNEY
SHOWING REAL-WORLD INTERACTION
PHOTOS OR RENDERS OF THE PRODUCT IN USE
CALLOUTS EXPLAINING HOW IT BENEFITS YOUR KEY
USERS/STAKEHOLDERS

MAKE SURE TO EXPLAIN HOW THE DESIGN IS USED BY USERS / STAKEHOLDERS IN CONTEXT (VARIOUS WAYS TO DO THIS, INCLUDING USER EXPERIENCE MAPPING, STORYBOARDING, ETC)

IMAGES OF DIFFERENT TYPE OF MATERIALS FOR
DIFFERENT ROLLER TYOES



PRESENTATION SLIDES

FINAL PRESENTATION



RESEARCH

27 million
are impacted by
occupational health concerns

irritation or ingestion
of particles trigger an
immediate inflammatory response

prolonged exposure leads to
chronic pulmonary dysfunction

discomfort & fatigue often cause
psychological distress

Existing Solutions

- environmental systems: dynamic & efficient but costly and inflexible
- popular affordable & accessible but uncomfortable causing incorrect use
- home appliances: ergonomic but limited in larger environments

60% safety respondents reported factors including discomfort, environmental concerns, limitations with current technology

respiratory effects are influenced by both task and environmental factors

- environmental measures and cleaning helps but remain inconsistent
- frequent surface contact prompts face hygiene
- fatigue impacts cleaning routines leading to buildup
- fibre and dust concentrated on workplace surfaces

Key Themes

1. Ergonomics
comfortable to use

2. Affordability
suitable for various economic contexts

3. Hybrid
combining different elements

4. Workflow
compatible with tasks

IDEATING

Indecision about direction

sensor cable attachment

ambidextrous redesign

flexible surface

Diagram illustrating the integration of a sensor into the desk structure, showing the sensor cable attachment, the ambidextrous redesign, and the flexible surface.

Sketches showing various components and configurations of the desk, including the sensor cable attachment, the ambidextrous redesign, and the flexible surface.

Sketches showing various components and configurations of the desk, including the sensor cable attachment, the ambidextrous redesign, and the flexible surface.

DUSTI

A 3D rendering of the DUSTI desk, showing a dark wood-grain top and a silver adjustable arm mechanism.

DUSTI

A 3D rendering of the DUSTI desk, showing a dark wood-grain top and a silver adjustable arm mechanism. A red silhouette of a person is shown sitting at the desk.

FEATURES VIDEO

Chelsea Duong presents :

A video player interface showing the title 'FEATURES VIDEO' and the presenter 'Chelsea Duong presents :'. A play button icon is visible in the center.

CHELSEA DUONG | ID7 CAPSTONE

PRESENTATION SLIDES

FINAL PRESENTATION

SCENARIO OF USE

1

Secure desired attachment if it is not already in place.

2

Turn the machine on to select a function.

3

Roller moves across the table collecting loose microfibre.

4

Once roller completes its cycle and returns to charging, users are notified.

5

Activate wash to spin and rinse roller, cleaning off fibres.

6

After wash, fibres collect in a filter. Water returns to system.

7

The filter is periodically removed and emptied.

8

Leave lid open to air dry, or wipe it down for the next use.

EXPLODED VIEW

1 Motor Housing: ABS Plastic Dark Grey Matte Finish

2 Rolling: Aluminium Natural Silver Anodised Finish

3 Mounts: Aluminium

4 Lid: Hard Coated PC Translucent

5 Backing: Aluminium

6 Screw: Off-Shell

7 Water Jets: Polypropylene

8 Water Filter Pipe: Aluminium

9 Interchangeable Roller: TPE & Silicone Based Gel Tacky Surface

10 Housing: ABS Plastic Dark Grey Matte Finish

11

THANK YOU FOR LISTENING