FOCUS ON SUSTAINABILITY

PRODUCT DESIGN & TECHNOLOGIY

VCE UNIT 1
AREA OF STUDY 2

SCOPE OF STUDY

Unit 1: Design practices

This unit focuses on the work of designers across relevant specialisations in product design. Students explore how designers collaborate and work in teams; they consider the processes that designers use to conduct research and the techniques they employ to generate ideas and design products. In doing this, they practise using their critical, creative and speculative thinking strategies. When creating their own designs, students use appropriate drawing systems – both manual and digital – to develop graphical product concepts. They also experiment with materials, tools and processes to prototype and propose physical product concepts.

In this unit, students analyse and evaluate existing products and current technological innovations in product design. They achieve this through understanding the importance of a design brief, learning about factors that influence design, and using the Double Diamond design approach as a framework.

In their practical work, students explore and test materials, tools and processes available to them in order to work technologically, and they practise safe skill development when creating an innovative product. This is achieved through the development of graphical product concepts and the use of prototypes to explore and propose physical product concepts.

In VCE Product Design and Technologies, the core focus is a design process that promotes both divergent and convergent thinking to tackle a problem. A design brief highlights a real-world need or opportunity, guiding the creation, development, and evaluation of a product. Through investigation and research, students develop three-dimensional, physical solutions (VCAA, 2023)

As designer-makers, students create innovative and ethical solutions, while gaining insights into the design industry, teamwork, collaboration, entrepreneurship, emerging technologies, and enterprise.

I have included the unit and area of study at the front of my folio so that I can monitor my own progress and understand the purpose and expectations of each outcome. Along with this, I would also attach the assessment rubric my teacher gives the class to guide me as I progress through the unit in meeting the criteria requirements.

Area of Study 2

Generating, designing and producing

In this area of study, students focus on the second diamond in the Double Diamond design approach to develop, trial and test physical product concepts, and make a designed product. Based on the graphical product concepts proposed in Outcome 1, students create prototypes to experiment with the physicality of their product concepts. Trials and tests are conducted to inform, evaluate and critique physical product concepts and to justify the selection of the chosen product concept and its production processes. Students develop a final proof of concept and implement a scheduled production plan to make the product efficiently and effectively. They explore available materials, tools and processes, and develop skills in using them to develop technacy through generating, designing, producing and implementing. Students use various materials, tools and processes to demonstrate how products can be a synthesis of various design specialisations and technologies. They have further opportunities to work individually, collaboratively and in teams to share work, knowledge and skills. Students evaluate their designed product and their contributions to collaborations and teamwork to complete the project.

Outcome 2

On completion of this unit the student should be able to work collaboratively and in teams to trial and test, evaluate and use materials, tools and processes to determine their chosen product concept and produce a product through implementing a scheduled production plan, as well as reflect on and make suggestions for future improvements when working collaboratively and as a team.

DESIGN CONTEXTS

Design specialisations

In VCE Product Design and Technologies, students design and make three-dimensional products using a range of materials, tools and processes. The available resources will vary between school settings; however, where possible they should emulate current design industry practices.

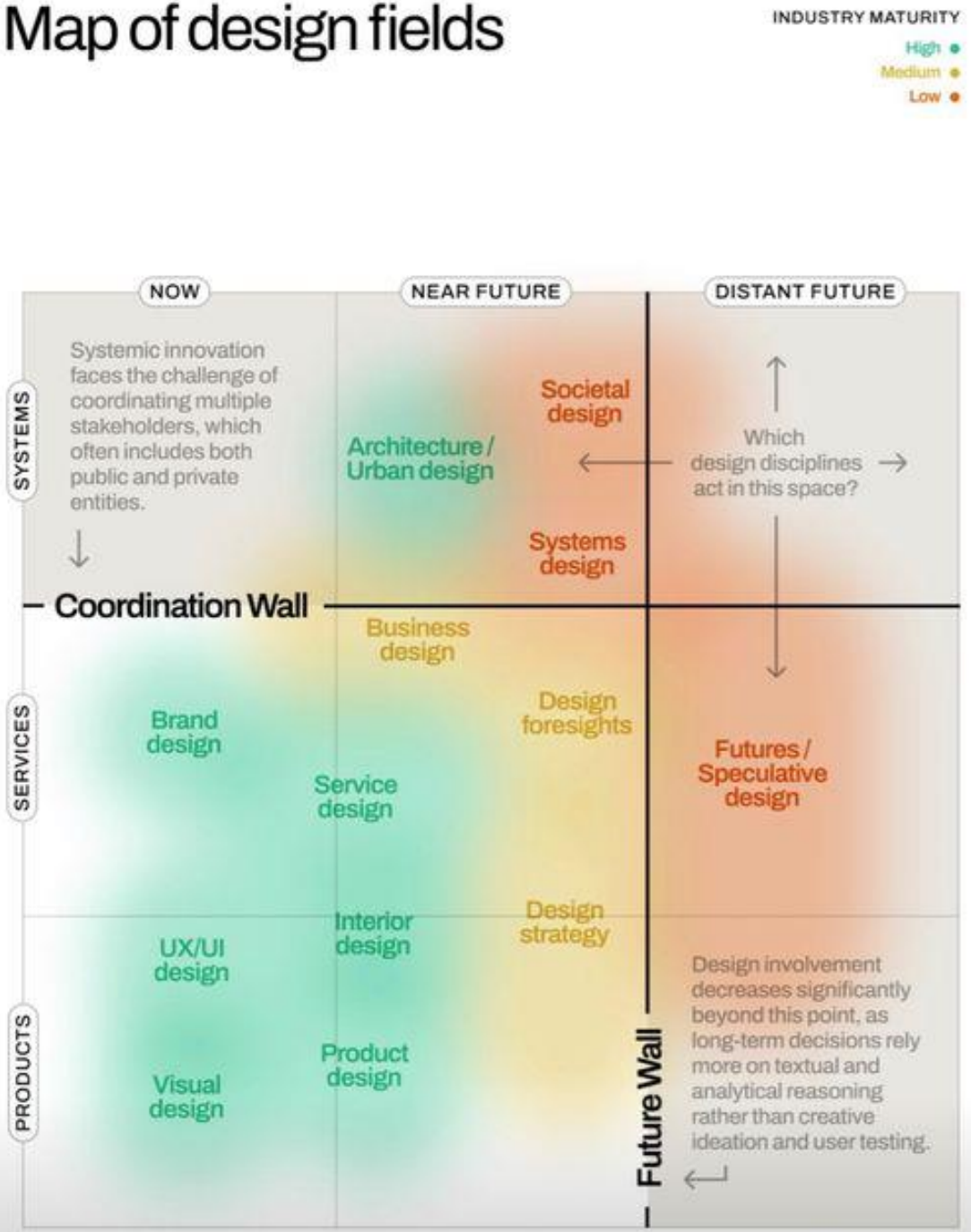
A breadth of experiences should be offered across a variety of materials, tools and processes, allowing students to encounter the diverse nature of design. Isolated experiences with singular materials are not encouraged and should be minimised. Through their practical work, students should become skilled in the inter- and trans-disciplinary nature of design, and come to understand that design specialisations require broad skills, and may combine traditional materials, tools and processes with new and emerging materials, tools and processes. For example, wearable accessories could employ fabric and plastic and be manufactured using traditional textile production processes as well as 3D-printed plastic clips and resin cast components. In this example, students are working across multiple materials and learning a broad range of processes to demonstrate technacy, and also learning how multiple technologies can be successfully integrated.

I have decided to choose textiles as my design specialisation for my VCE design practice, specifically looking at garments and wearable accessories. I have always been fascinated by textiles and fashion design and I think that these areas fit the brief of sustainability in a meaningful way that I am motivated to explore. I aim to experiment and develop skills in low volume production processes (handmade) and CAD modelling during this unit.

Design specialisations and examples	Examples of materials, tools and processes
Textiles – apparel and non-apparel • Garments • Wearable accessories • Soft furnishings • Sports accessories • Toys and recreation	• Modelling using computer-aided design (CAD) • Automated manufacturing, e.g. computer numerical control (CNC) milling and similar production techniques • Production processes, e.g. low volume such as hand-sewing and high volume such as rapid 3D prototyping and laser technology

(VCAA, 2023)

Map of design fields



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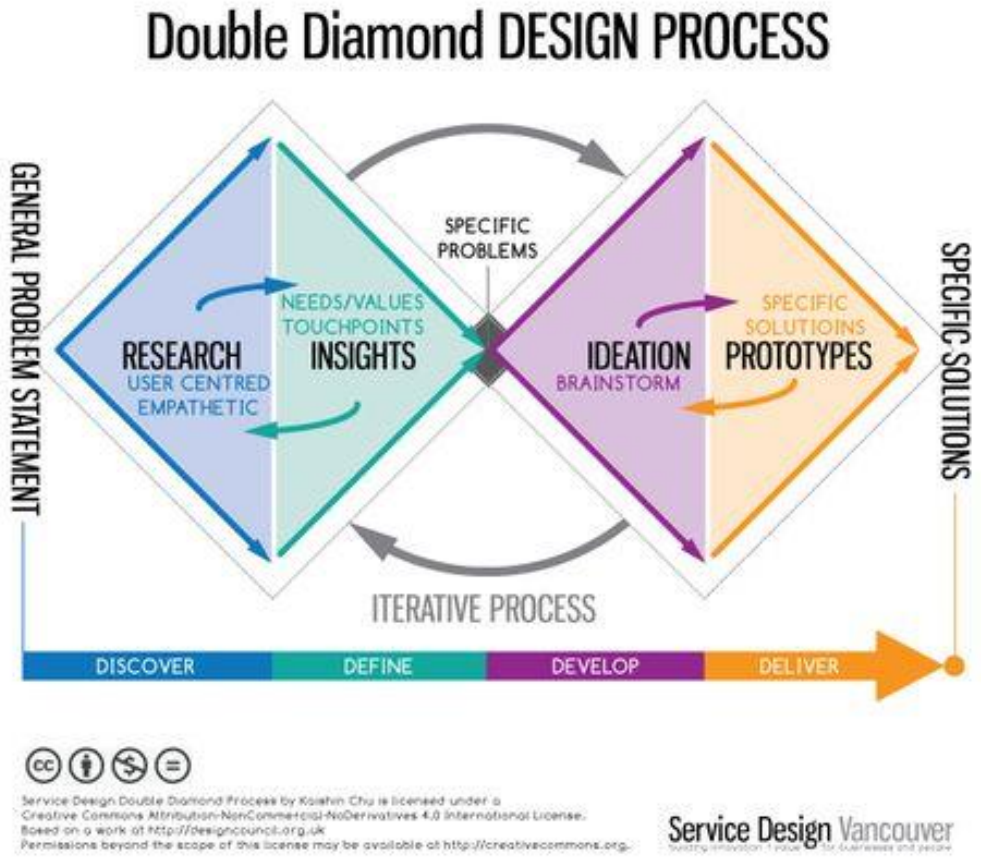
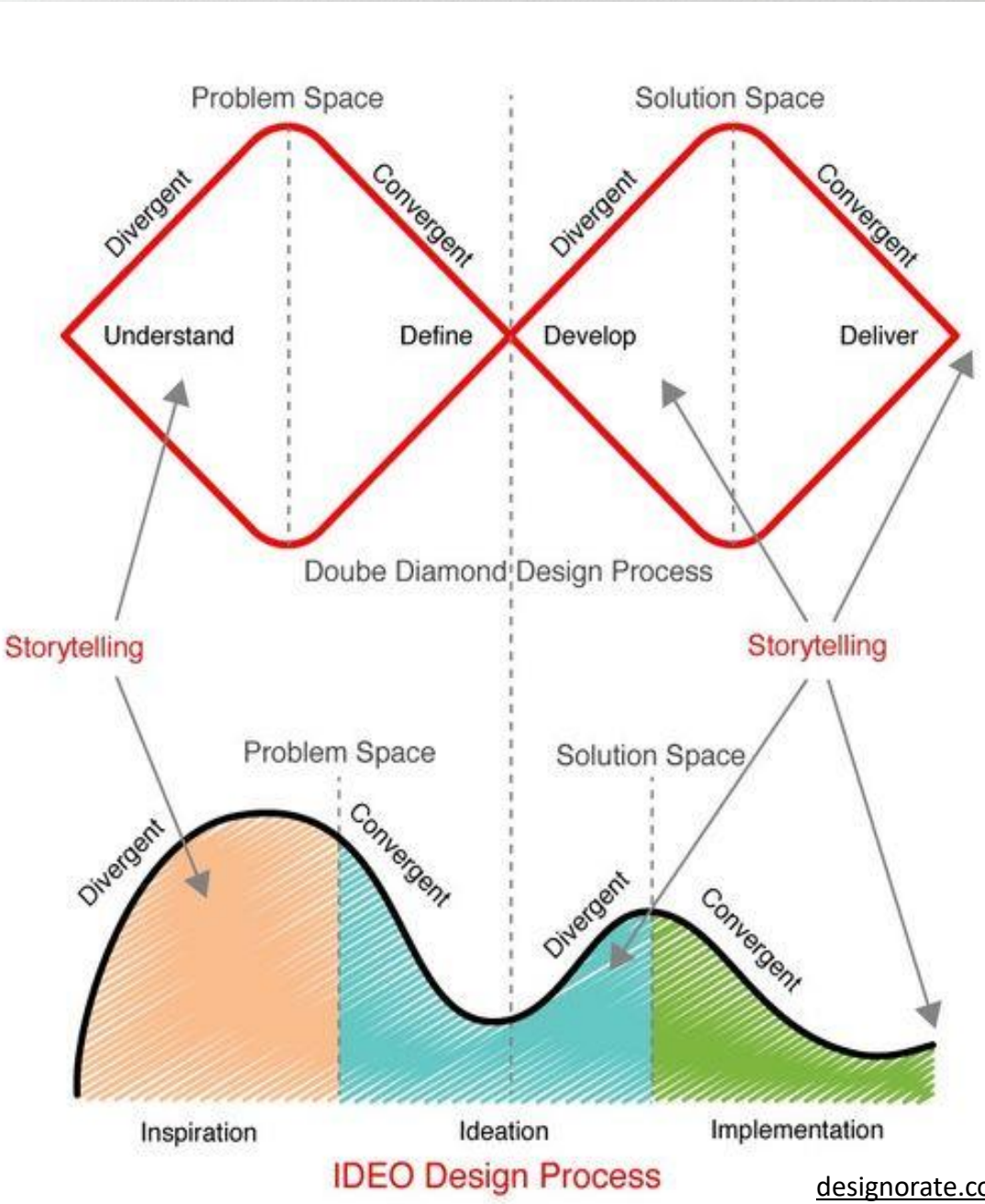
DESIGN FRAMEWORK

This is an iterative design process to help us employ design thinking throughout VCE Units 1-4. It is also a continuation of learning from the Victorian Curriculum F-10 Design and Technologies curriculum previously achieved (e.g. VCD).





designorate.com

First diamond	Second diamond
Activities	**Activities**
Investigating and defining End user needs and opportunities Synthesis of data	**Generating and designing** Graphical and physical product concepts Prototyping, testing, trialling, experimenting, iterations
	Producing and implementing Products
Evaluating Existing products	**Evaluating** Graphical and physical product concepts Processes to make physical product concepts and product Finished product
Planning and managing Organisation of research	**Planning and managing** Organisation of designing Organisation of production through development of scheduled production plan: timeline that includes production steps, estimated times and quality measures; materials and costings list, tools and processes; and risk assessments and safety control measures

(VCAA, 2023)

The Double Diamond design model fosters speculative thinking, enabling students to synthesize information and envision future possibilities. This approach encourages a deep exploration of real needs and opportunities before formulating a design brief, along with identifying relevant considerations and constraints.

Each 'diamond' is overlaid with both divergent (creative) and convergent (critical) thinking activities and used to define and evaluate design decisions and needs.

LEARNING ABOUT THE DOUBLE DIAMOND DESIGN PROCESS

The Double Diamond design process is flexible and non-linear, allowing students to adapt the order of activities based on their individual project's needs.
Each step in the design process can be customized depending on the project's context.

This approach encourages critical thinking, planning, and refinement across various stages:

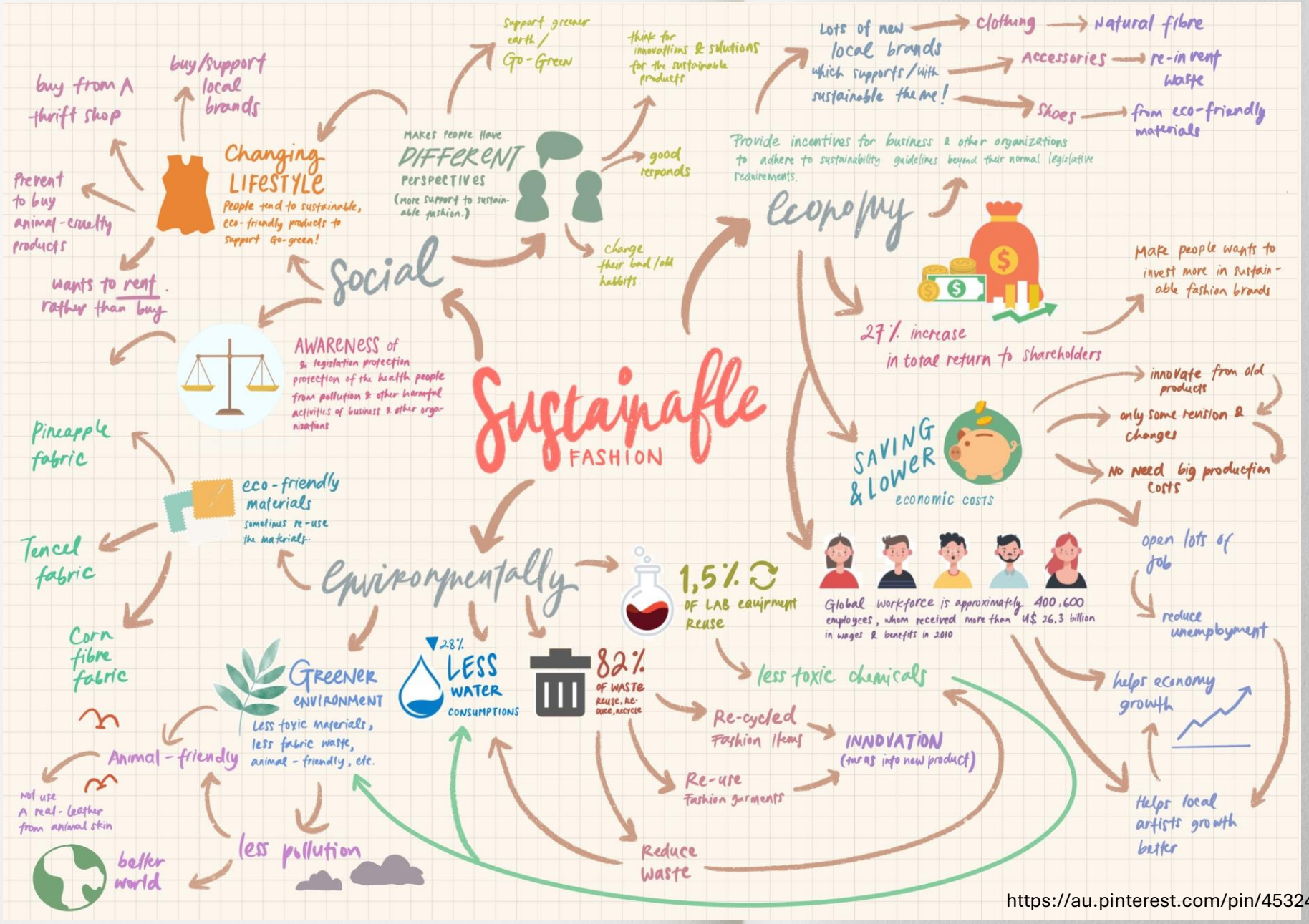
- Investigating
- Defining
- Generating
- Designing
- Planning
- Producing
- evaluating.

It helps students develop and refine three-dimensional prototypes, testing different aspects until a final proof of concept is ready before full production begins.

FOCUS ON DEVELOPING & DELIVERING...

For Area of Study 2, students are meant to focus on the second diamond in the Double Diamond design approach to develop, trial and test physical product concepts, continue from investigation from Outcome 1, prototype and make a designed product.

BRAINSTORMING ON THE CONCEPT OF SUSTAINABLE GARMENT DESIGN



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Shen et al. (2013) contend that there are eight dimensions of the sustainability fashion construct: recycle, vintage, artisan, custom made, fair- trade, locally made, organic, and vegan. Sustainable fashion focuses on designing and creating socially and environmentally responsible products to reduce the industry's negative impact on greenhouse gas emissions, climate change, and social issues (Pires et.al, 2024). Additionally, the enforcement of ethical labour practices, a circular economy and prioritising quality and durability are pivotal for sustainable practice (Shen et.al, 2013).

Sustainable design advocates for products with considered design elements that promote sustainable consumption and marketing by understanding consumer behaviour and bridging the gap between attitudes and actions. This approach involves integrating sustainable materials and practices throughout the entire fashion supply chain, from production to reducing waste and landfilling (Pires et.al, 2024).

Recycled polyester can reduce emissions compared to virgin polyester, but it does not eliminate the issue of microplastic pollution, which persists in both recycled and virgin fibers. Experts like Harding-Rolls advocate for stronger legislation in the fashion industry to create systemic change, pointing out that it remains one of the least regulated sectors.

BRAINSTORMING ACTIVITY:

www.behance.net

Working in small groups to come up with a moodboard exploring the concept of sustainability

www.behance.net

Our group started by doing a mind map of all our ideas and then contributed our own visuals we had found to design a concept board.

EXAMPLES...

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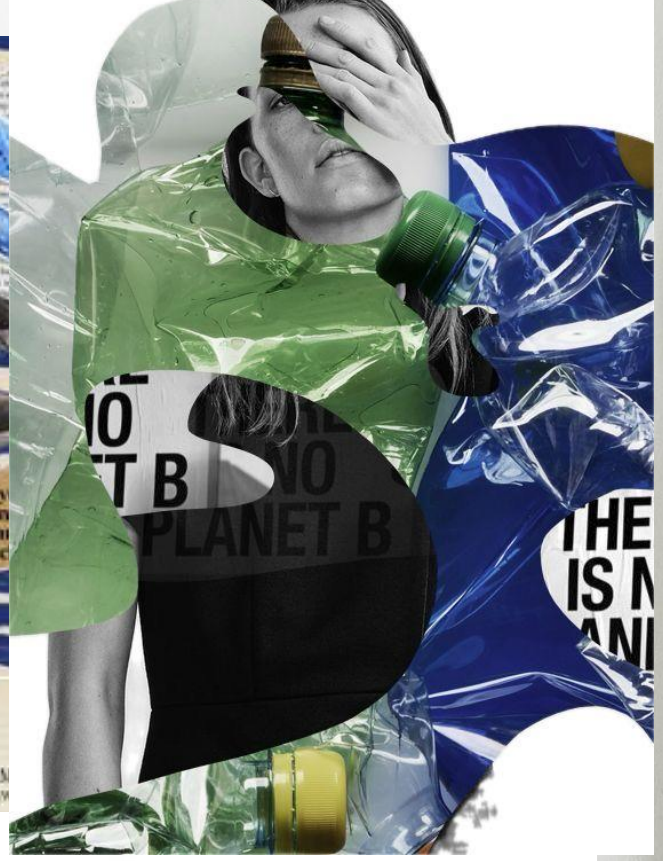


https://au.pinterest.com/Lavanyamodak

MOODBOARD PRESENTATION:
Each collab group shares with the class their ideas and explain what sustainability in fashion design means to them. All students to make a copy of their mood board to place in their folios.

RESEARCH - SUSTAINABILITY

Ecosilver is an eco friendly alternative to newly mined silver. It is made from melting down and reforming 100% recycled sterling silver. Cooksongold is a UK based company where ecosilver is made, they value sustainability not only in their products but work conditions, waste management and environmental policies

Aluminium - one of the most environmentally friendly metals. Recycling aluminium requires up to 95% less energy than producing primary metal.

S-kin studio is a Melbourne based jewellery company. Her pieces are gold filled and sterling silver to reduce waste. She gives 1% of all sales to non for profits working against climate change and protect the planet

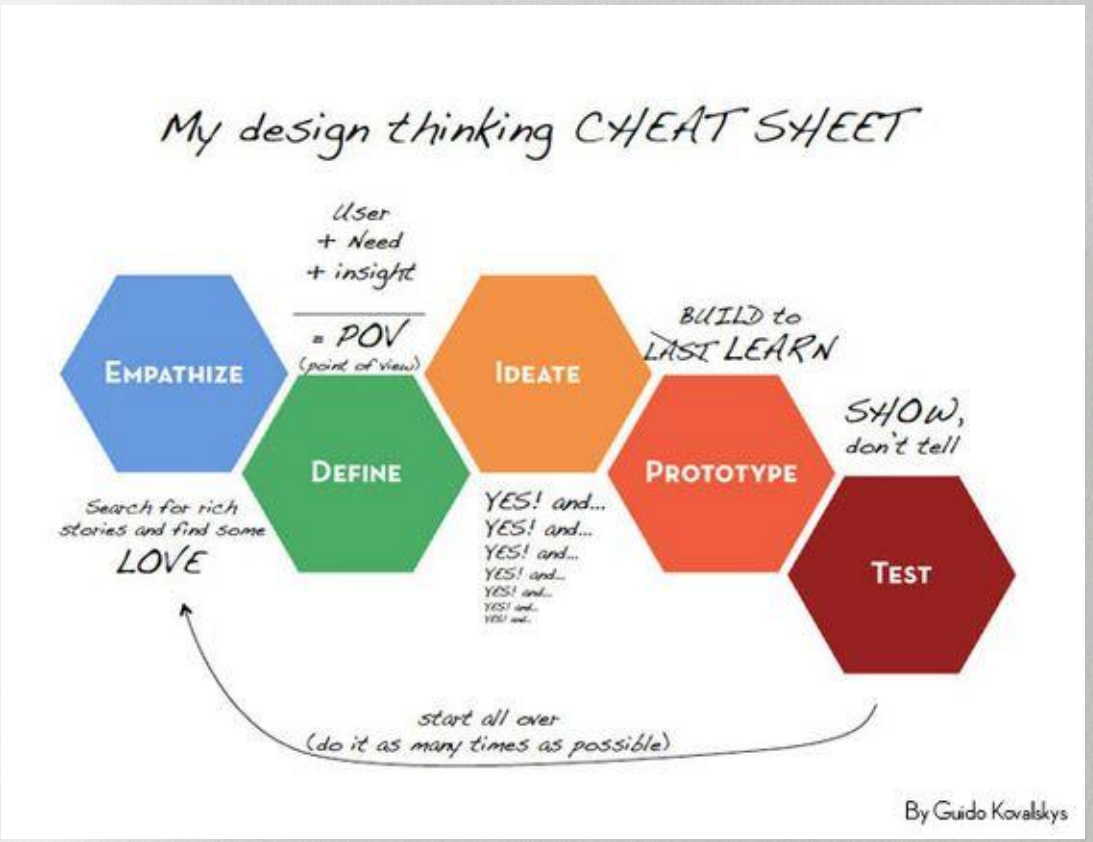
Handmade vs machinery made jewellery

Another ethical brand is HollyRyan located in Sydney and Sunshine coast. They use entirely recycled metals, ethically sourced stones either through fairtrade india or through local australian suppliers

Handmade jewellery is the formation of jewellery by hand rather than the use of a machine. The benefits include less electricity being used in the process, the materials are often ethically sourced compared to big companies who mass produce. Handmade jewellery is often of higher quality than big companies. Factories that mass produce jewellery can contribute to air pollution impacting the environment.

Purpose function and context, User-centered design, Innovation and creativity, Visual, tactile and aesthetic, Sustainability, Economics, Legal responsibilities, Materials and Technologies

RESEARCHING SUSTAINABILITY IN THE CONTEXT OF DESIGN



Environment

How does plastic packaging affect the environment? Refer to the six Rs in your answer.

(9 marks)

http://ed.ted.com/lessons/what-really-happens-to-the-plastic-you-throw-away-emma-bryce

What textiles to choose to avoid Microplastics

✓

Tencel®
Modal
Lyocell
Cotton
Hemp
Linen
Jute
Bamboo
Flax
Jute
Linen
Wool
Cashmere
Silk

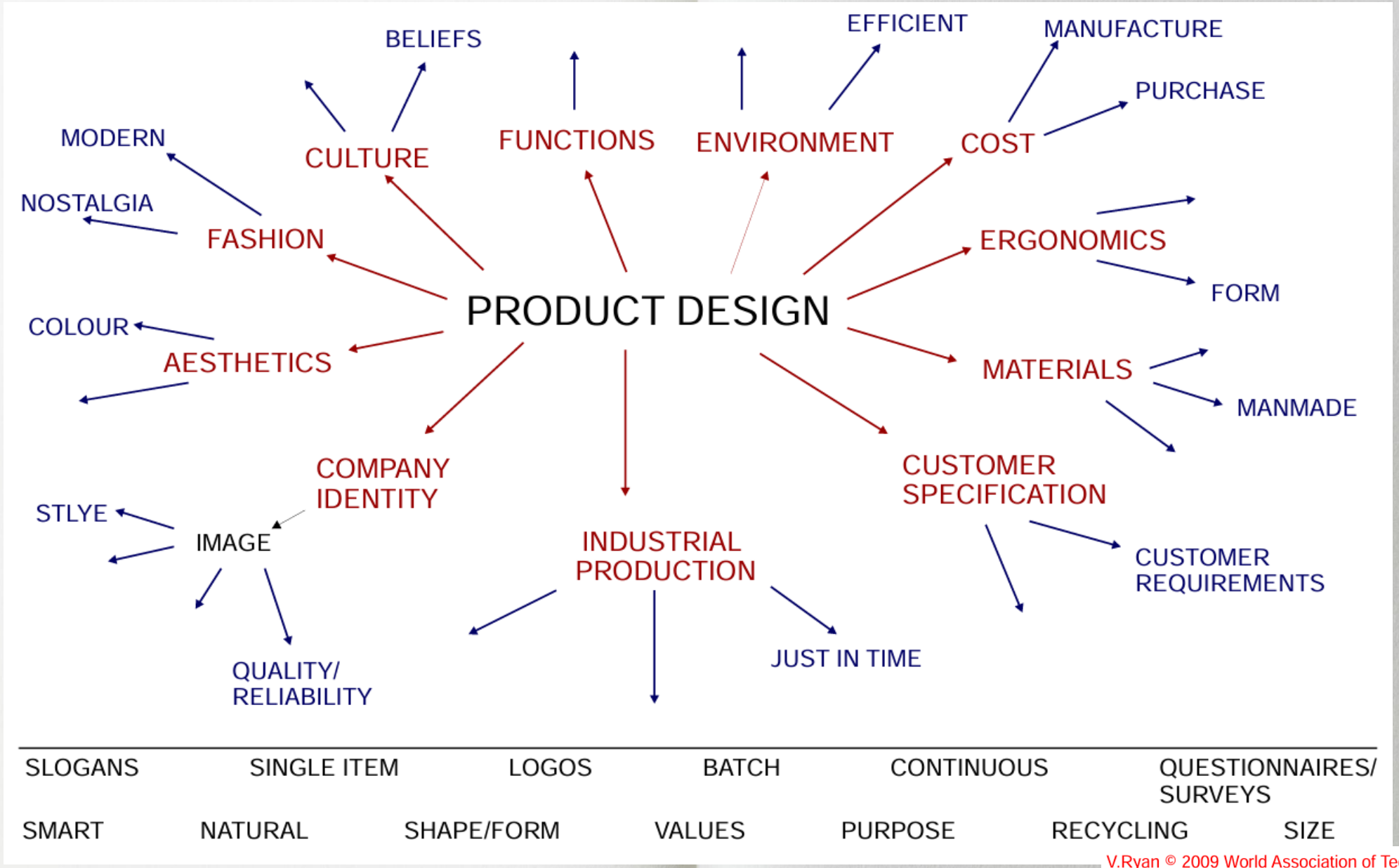
✗

Polyester
Elastane (LYCRA®)
ECONYL®
Nylon
Acrylic
Viscose
Rayon
Fleece
Microfleece
Spandex
Rayon
Acetate

ourgoodbrands

The teacher gave us some homework to research the environment impacts of the products we use daily. Given my design specialisation, I did further research into the use of plastic in the production of textiles.

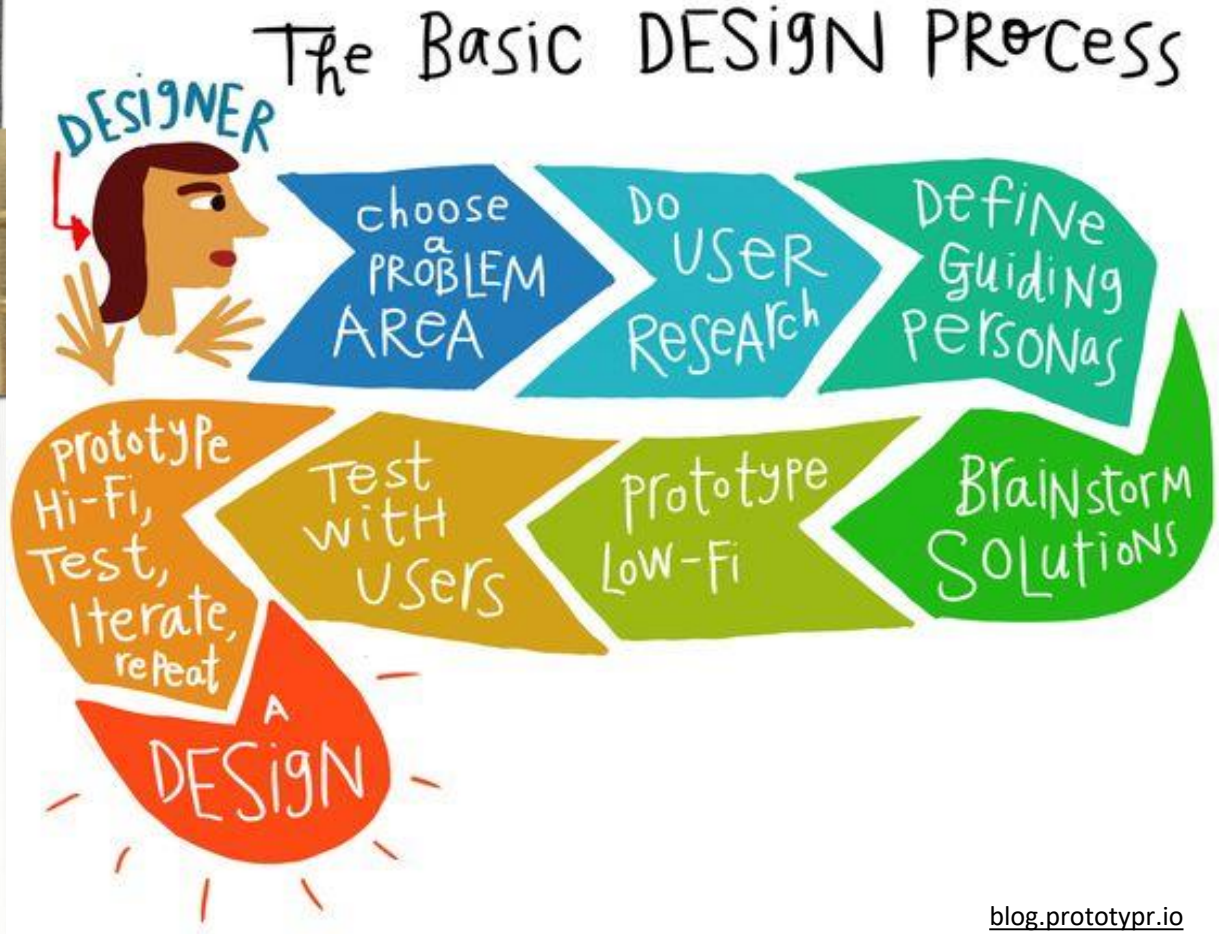
BRAINSTORMING ACTIVITY: WHAT IS PRODUCT DESIGN?



RESEARCHING ABOUT THE DESIGN PROCESS

VCAA (2023) states that in VCE Product Design and Technologies, a design brief is formulated to facilitate the design response to a real personal, local or global design need or opportunity. This is the 'choose the problem area' of the process below.

Over the next few lessons, I will finish my design brief and start doing some user research to inform my design solutions.



blog.prototypr.io

10 Principles of Good Design
Dieter Rams

1 Good design is innovative.

The possibilities for innovation are not, by any means, exhausted. Technological development is always offering new opportunities for innovative design. But innovative design always develops in tandem with innovative technology, and can never be an end in itself.

2 Good design makes a product useful.

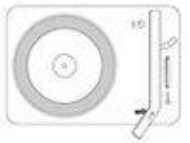
A product is bought to be used. It has to satisfy certain criteria, not only functional, but also psychological and aesthetic. Good design emphasizes the usefulness of a product whilst disregarding anything that could possibly detract from it.

3 Good design is aesthetic.

The aesthetic quality of a product is integral to its usefulness because products we use every day affect our person and our well-being. But only well-executed objects can be beautiful.

4 Good design makes a product understandable.

It clarifies the product's structure. Better still, it can make the product talk. At best, it is self-explanatory.



5 Good design is unobtrusive.

Products fulfilling a purpose are like tools. They are neither decorative objects nor works of art. Their design should therefore be both neutral and restrained, to leave room for the user's self-expression.

6 Good design is honest.

It does not make a product more innovative, powerful or valuable than it really is. It does not attempt to manipulate the consumer with promises that cannot be kept.

7 Good design is long-lasting.

It avoids being fashionable and therefore never appears antiquated. Unlike fashionable design, it lasts many years – even in today's throwaway society.

8 Good design is thorough to the last detail.

Nothing must be arbitrary or left to chance. Care and accuracy in the design process show respect towards the user.

9 Good design is environmentally friendly.

Design makes an important contribution to the preservation of the environment. It conserves resources and minimizes physical and visual pollution throughout the lifecycle of the product.

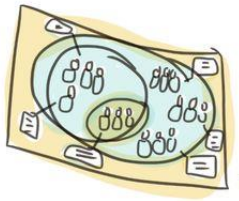
10 Good design is as little design as possible.

Less, but better – because it concentrates on the essential aspects, and the products are not burdened with non-essentials. Back to purity, back to simplicity.

Design Process Deliverables

By Margaret Hagan
April 2015

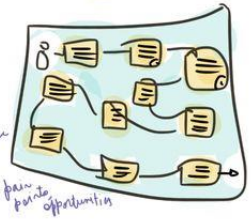
Research



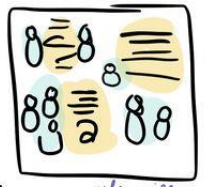
Stakeholder MAP
In your challenge area, who's involved, what are their needs & goals?

Ideas

Process MAP
In your challenge area, what are the workflows, the touchpoints, pain points, opportunities

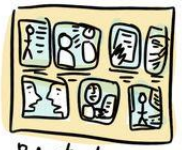


User STORIES
Who will be using, what they want



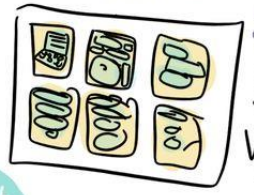
Use Case Situations
When will your design be used?

Prototyping, Testing



Prototype Storyboard
Sketching out how a concept may work

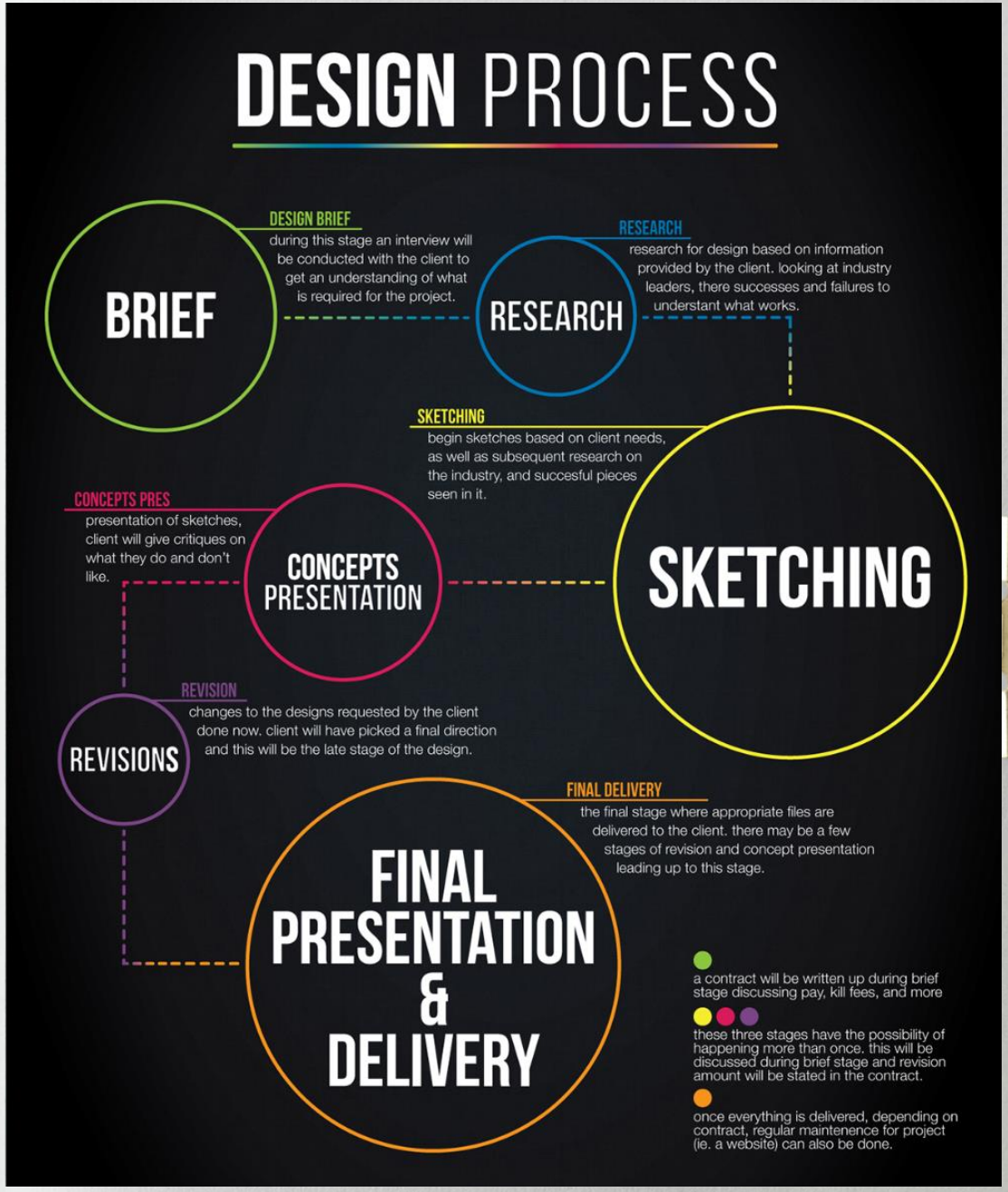
Research Plan
For user tests, what are your hypotheses & questions



Mock-ups of a digital design

Specific Wire-frames

Development



Reading about the factors that influence product design from the study design

Factors that influence product design	Scope of factor as it relates to product design
Need or opportunity	Identification of the purpose for, or of, a product. Considerations include the context and purpose for designing and how a product will be used. Needs and opportunities are identified from research and development, feedback from end user(s), new ideas and knowledge, and new and emerging technologies (including materials). In VCE Product Design and Technologies, the needs or opportunities that are explored must be real.
Function	The purpose of a product that makes it fit-for-use for its intent.
End users	The human and/or non-human 'consumers' of the product for whom or what the product is intended. Considerations of the end users incorporates welfare that includes quality of life; quality of life encompasses culture and religion, emotional and sensory appeal, universal design, demographics, social and physical needs and trends, safety, accessibility, comfort, ergonomics and anthropometric data.
Aesthetics	Relates to the product's form, appearance and feel. Considerations include design elements and design principles. Design elements include point, line, shape, texture, colour (tone, transparency, translucency and opacity). Design principles of balance, contrast, repetition, movement/rhythm, pattern, proportion, asymmetry/symmetry, negative/positive space and surface qualities are used to combine and arrange the design elements. Aesthetics may relate to ethical considerations in design; aesthetics can influence quality of life.
Market needs and opportunities	Designing innovatively and working entrepreneurially require a creative approach to develop new or improved designed solutions to unsolved problems or new needs or opportunities.
	Ethical considerations encompass sustainability. Sustainability and other ethical considerations are concerned with human and non-human welfare and aim at positive impacts and minimisation of harm in regard to what is made and how it is made, for both present and future generations. Ethics can also involve legal responsibilities. The legal aspects of product design include intellectual property (IP), which refers to creations of the mind through intellectual or creative activities. Intellectual property includes copyright, patents, trademarks and registered designs.Australian and International (ISO) standards, regulations and legislation (including OHS) are other legal responsibilities. Products must be produced safely and be safe for the end users
Product lifecycle	The resource inputs that span a product's manufacture; this includes sourcing of materials, useful life and the impact of disposal/reuse.
Technologies: materials, tools and processes	Technologies include those materials, tools and processes that are traditional as well as ones that are new and emerging. Students should know and experience a variety of materials, tools and processes through making and designing products, as well as through researching designs and the work of designers. Materials are selected for use based on their appropriate properties (their performance and behaviour, both chemically and physically under certain conditions) and desirable characteristics (such as visible features). Examples of materials, tools and processes appropriate to this study are listed on pages 15–17.
Ethical considerations in design	Ethics in design is concerned with enabling both individual values (such as more time with family and friends) and public values (such as a fair and just society). This can be realised through products that reflect and enable an end user's values, or by working towards social goals such as belonging, access, usability and equity for the disadvantaged. Inclusive design processes can enact respect and concern for humans and non-humans.

Taken from VCAA (2023) VCE Product Design & Technology Study Design

Define why you are doing the research

↓

Define the problem statement

↓

Define 3-5 research objectives

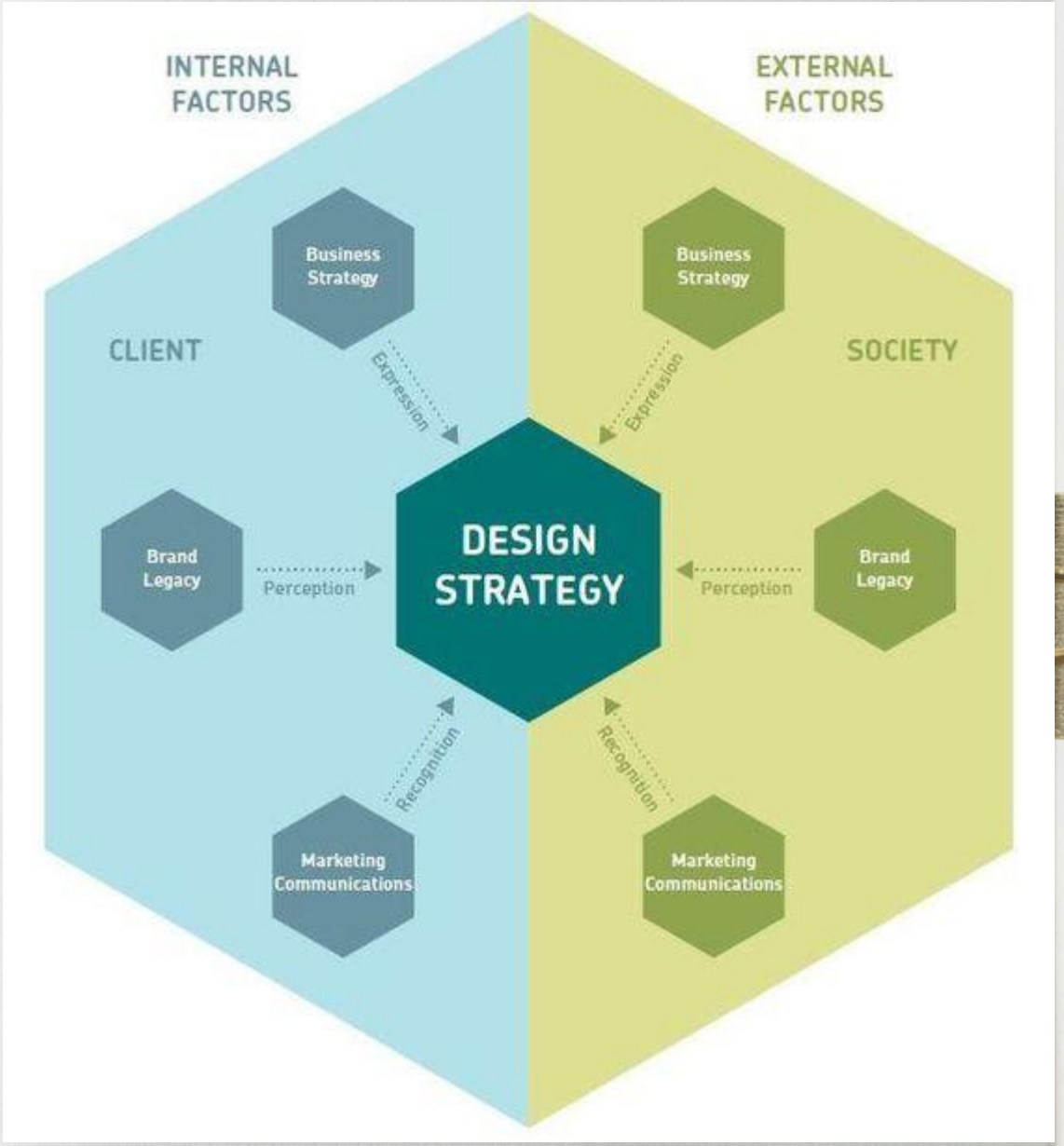
↓ ↓

Generative research answers questions about deeply understanding who users are and what they experience in their daily lives

Evaluative research answers questions about how a product or concept performs when placed in front of a user

↓ ↓

Choose a research methodology

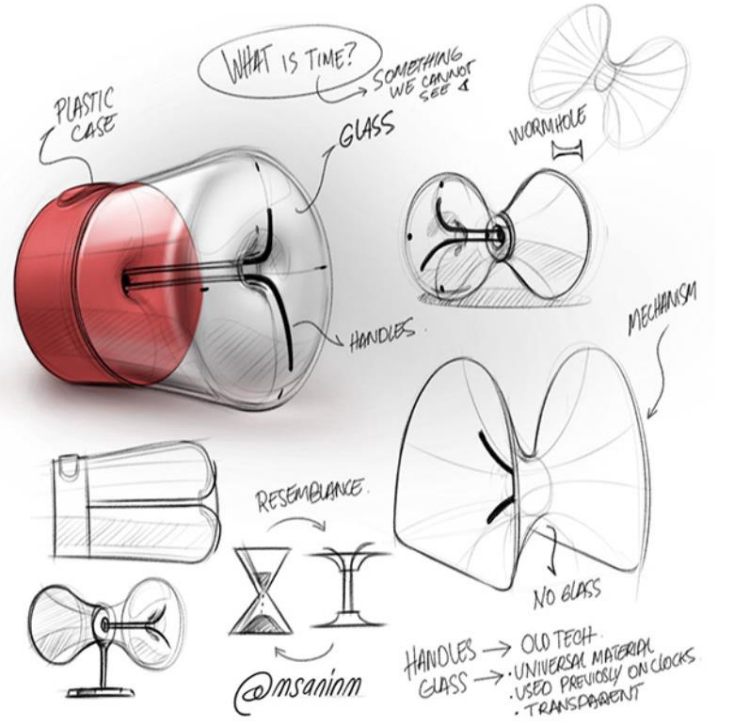


TEACHER DEMONSTRATION:

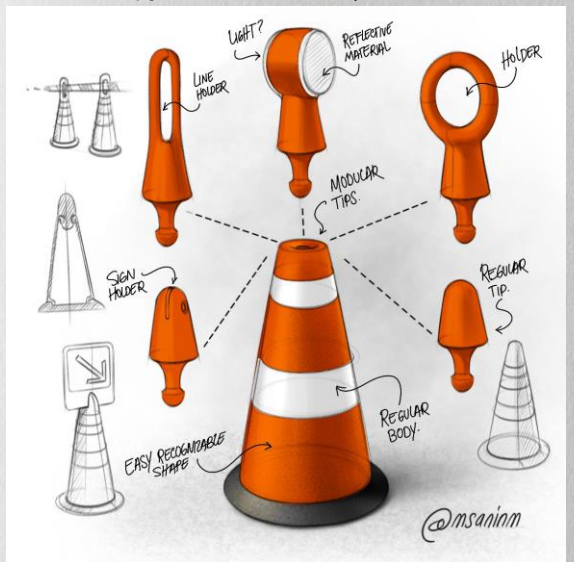
HOW TO ANNOTATE & DOCUMENT YOUR DESIGN IDEAS

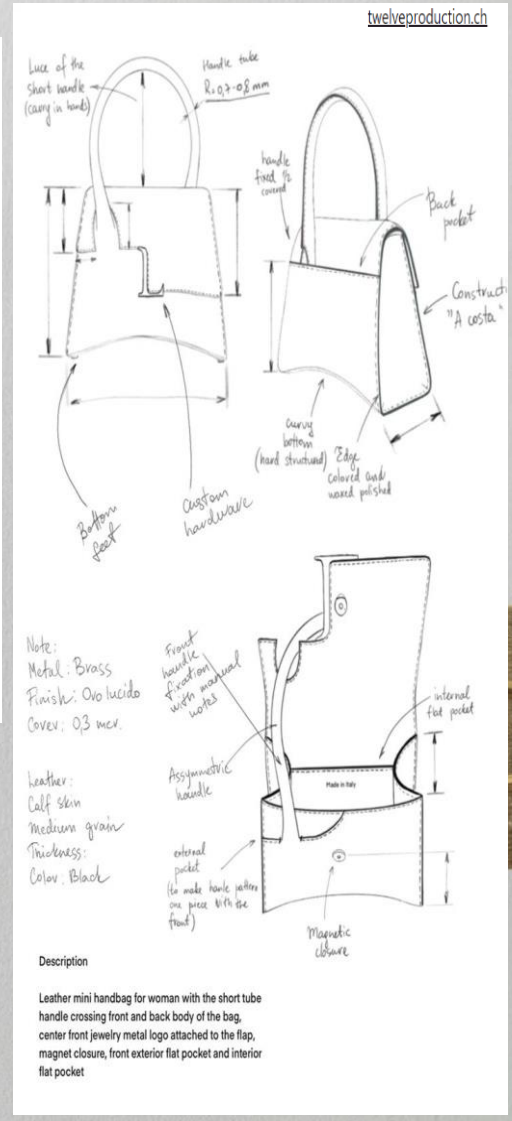
Our teacher showed us some examples of product design sketchbooks so that we can get ideas on how to generate and convey our ideas on the page.

I really liked these examples from designer Mauricio Sapin (2019). Even though they are not textile/fashion design specific... I think it is very effective in how he communicates the functionality and aesthetics of the design ideas. He annotates the different parts clearly and shows the design from multiple perspectives.



I love how this 'exploded view' shows how the compartments all fit together and shows how technology could enable production.





AMIR NOOR ARTIST

conscious CUSTOMER

A CONSCIOUS CUSTOMER SEEKS OUT BRANDS AND PRODUCTS THAT PRIORITIZE ETHICAL PRACTICES, SUSTAINABILITY, AND TRANSPARENCY. THEY ARE MINDFUL OF THE SOCIAL AND ENVIRONMENTAL IMPACT OF THEIR PURCHASING DECISIONS, SUPPORTING COMPANIES THAT ALIGN WITH THEIR VALUES AND MAKING A POSITIVE DIFFERENCE THROUGH THEIR CONSUMPTION CHOICES.

DEAR KNITS

https://www.etsy.com/shop/DEARKNITSS

https://www.recyclart.org/labels-cushion/

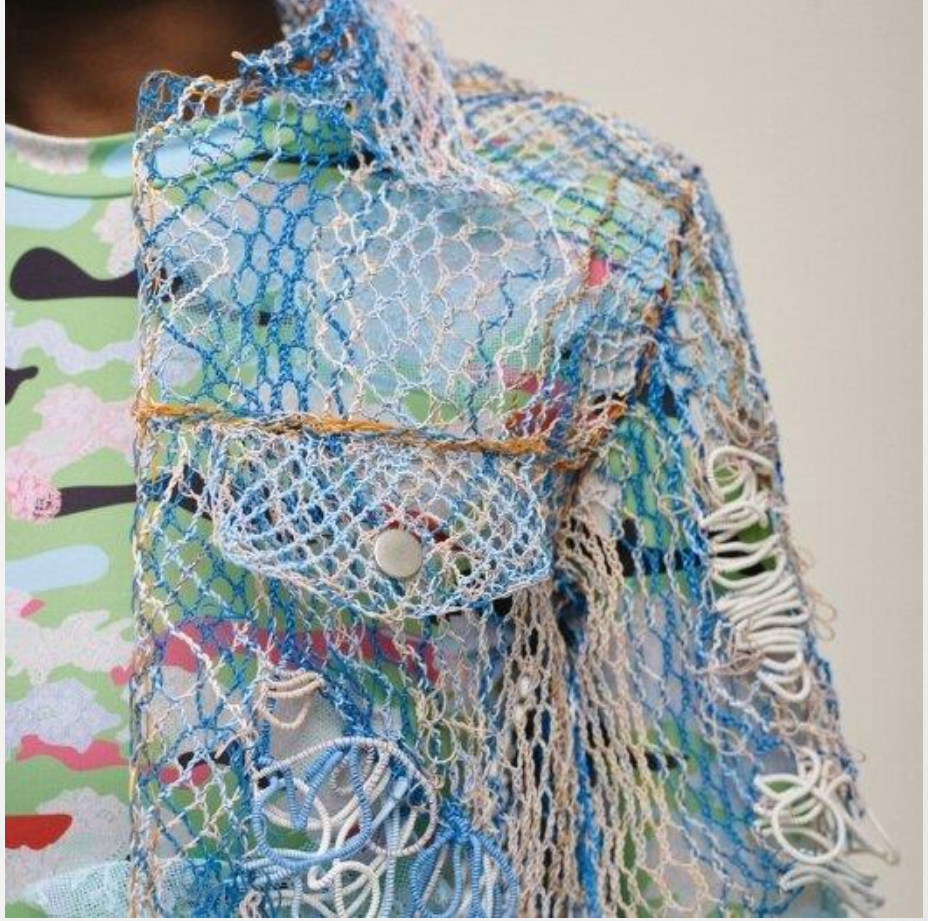
I've started my own research in how textile waste can be turned into products. These are some examples I like that sparks my imagination... such as these pillows made from old garment labels and scraps of fabric upcycled, and this bag that is made from recycled materials

yarnandhooks.com

Redesign is the deconstruction and reconstruction of a garment, with changes ranging from minor details to a shift in silhouette, or transforming a garment's original purpose (Janigo & Wu, 2015).

I have come across so many clever ideas in my research that demonstrate how old pieces of clothing can be turned into something else wearable with a different functionality.

wonderfuldiy.com



Alexandra Șipa was established in 2020 by designer Alexandra Șipa and business partner Lucas Baker. The brand is built on values of transparency, creativity, and sustainability—environmental, economic, and social. Central to their vision is the idea of turning waste into new opportunities, a concept that drives their innovation. The brand is particularly known for its unique handmade wire lace technique, developed through a sustainable lacemaking method using discarded electrical wires. By repurposing these wires, Alexandra Șipa highlights the growing problem of electronic waste, which reached 50 million tonnes in 2020. The materials used are not only eco-friendly but also cost-effective, promoting economic and social sustainability by ensuring workers receive a greater share of the profits from garment sales.

garmentory.com

Researching designers and artists who use sustainable concepts as their subject matter

This recycled dress design is by KES. The brand has crafted from recycled silk charmeuse, that reflects their advocation for the sustainable fashion cycle, where garments can be repaired and transformed into fresh, beautiful pieces. The slip dress features raw-edge patchwork, adding a touch of boldness to its elegance.

EXHIBITION VISIT

"Southern Strands: North Carolina Fiber Art," an exhibition of the work of 40 NC fiber artists.

"When did jeans become the backbone of the fast fashion industry?"

shows the spinal cord shape created by the jeans waistbands, ranging in size from infants to 3X.

"80 Lbs.: Impulse Buy or Key In(Vestment)?"

Exploring the work of Joyce Watkins King

This vest is made from more than 4,000 re-used metal keys, garment labels, fabric, and thread. The weight is just over 80 lbs. which represents the average weight of clothing every person in the U.S. tosses in the trash every year.

Joyce Watkins King

"Ballgown Breakdown"

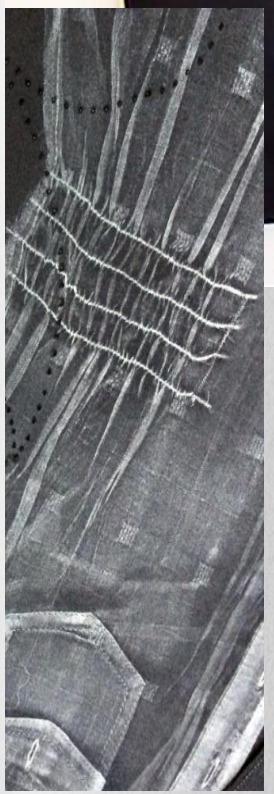
"Shirtwaist Waste: Landfill Slice"

Artist statement:

As a lifelong artist and designer, I have worked in many media, but the call of textiles always prevails. Textiles are part of a universal language that cuts across cultures worldwide, providing beauty, utility, creativity, and symbols for special occasions: births, initiations, proms, ordinations, and weddings. Fabric is a metaphor for how many separate strands (fragile threads) can come together to make something strong and lasting.

I strive to re-use thread, fabric, and findings in my work whenever possible, in opposition to the escalating trend of consuming too much cheap fast fashion, often without consideration for the devastating consequences for growers, labourers, consumers, and particularly the environment.

"Sewing in the Shadows: Disposable Garments, Disposable People?"



"Do you know who made your clothes?", 2018 , ink, hand sewing, machine stitching, paper

Turning trash into textiles...

MA graduate Hayley Grundmann's recent collection takes focus on old towelling and dressing gowns. Sourcing her materials bargain or waste resources, from foam to bin liners – the collection shows the DIY potential of the familiar and the standard.

TECHNOLOGY IN SERVICE OF SUSTAINABILITY

I have been researching this artist's creative approach to using inexpensive, everyday materials like plastic bags, foam tubes, and sponge in their work.

Hayley is motivated by the challenge of making something luxurious-looking from cheap materials, sourcing items from discount stores. She emphasize that constraints, particularly financial, however that they can inspire greater creativity.

By experimenting with unconventional materials like bin liners and sponge, the artist achieves unique textures and effects that could otherwise be created with more expensive materials. While luxury materials are available to us as consumers, we should all find value in resourcefulness and explore alternative, cost-effective options.

Hayley also explains how important a design brief is and should include objectives, constraints, materiality, budget and sustainability.

Her work shows how a designer can use convergent thinking to be able to narrow the focus of the product and refining her concepts and demographic.

KISHAN TEHARA: "M.Y.O.G

Kishan Tehara's graduate collection entitled 'All These Arid Places. He spent his Masters refining his concept 'MYOG,' otherwise known as 'Make Your Own Garments.' The approach includes zero-waste pattern instructions, which he is currently further developing with partner Jakob Sitter. Their research project "explores how AI can predict the future adaptation of outdoor garments based on UN climate change predictions," Kishan explains, "and the second phase involves creating open-source MYOG kits for future garment needs, where access may be limited."

WOVEN WASTE...

Fashion editorial March 2020

Ivano Vitali: Knitted Paper Art

Victor and Rolf upcycled detail

INVESTIGATION: HOMEWORK WORKSHEETS

THINK - DO

THE PRODUCTS ABOVE ARE MADE BY MEN AND WOMEN IN INDIA, THE ORGANISATION NAMED RANGSUTRA, WORK ALONGSIDE IKEA TO PRODUCE AND SELL THESE HANDMADE PRODUCTS.

- WHAT ARE THE ADVANTAGES OF THIS COLLABORATION?

- WHAT FACTORS WOULD NEED TO BE CONSIDERED WHEN DESIGNING AND MAKING THESE PRODUCTS?

PicCollage

GLOBALISATION

- AVAILABILITY OF CHEAP LABOUR IN THE DEVELOPING WORLD

- NEW GLOBAL MARKET FOR TEXTILE FASHIONS

- INCREASING AWARENESS OF TEXTILES FROM OTHER CULTURES

- CONSUMER REACTION AGAINST CORPORATE TRENDS

Impact

TEXTILES COSTS ARE DRIVEN DOWN IN A GLOBAL MARKETPLACE FOR TEXTILES. GROWING DEMAND FOR TRADITIONAL AND ETHNIC TEXTILES AS WELL AS MODERN ONES.

PicCollage

Worksheets made using Pic Collage sourced from: https://au.pinterest.com/misscumbo/

THINK - DO

TASK 1
HOW WOULD YOU DEVELOP THIS DESIGN SO THAT IT COSTS LESS TO PRODUCE?

TASK 2
DRAW A FLOW CHART SHOWING THE ORDER OF MANUFACTURE FOR THIS PRODUCT (INCLUDING QUALITY CONTROL POINTS)

Worksheets made using Pic Collage sourced from: https://au.pinterest.com/misscumbo/

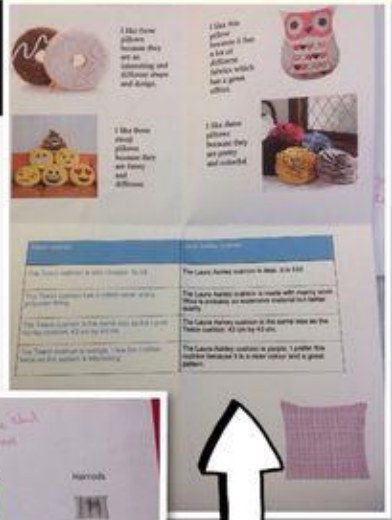
PRODUCT RESEARCH

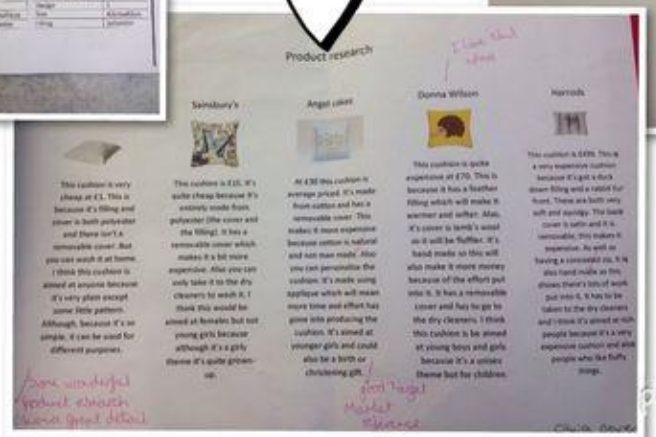
MUST INCLUDE

- A RANGE OF PRODUCTS
- COST AND WHERE THE PRODUCT RETAILS
- TARGET MARKET
- TECHNIQUES USED
- FABRICS USED

IDEAS

RANGE OF PRODUCTS





CREATIVE LAYOUT (TOP TRUMPS)

CLEAR LAYOUT

Eco Clothing Labels Explained

B Corp

A more general certification given to companies that meet rigorous standards of social and environmental performance, accountability, and transparency.

Ecolabel by the European Union

Denotes products with reduced environmental impacts throughout their life cycle.

Fair Trade

Guarantees that farmers and workers involved in production were compensated justly. More of a validation of ethical practices, but also promotes sustainable agriculture.

GCC Brandmark

This brand mark by Eco Age is a validation for individual products or fashion collections that meet rigorous social, ethical, and environmental standards.

Global Organic Textile Standard (GOTS)

Certified textiles contain at least 70% organic fibres; all chemicals used must meet strict criteria. Proper wastewater treatments also mandatory.

Made-By

Assures that a brand operates responsibly with respect to people and the planet.

Oeko-Tex® Standard 100

Ensures that the tested yarns and textiles do not contain illegal substances, regulated harmful substances, or known harmful but unregulated chemicals.

PETA-Approved Vegan

Used by companies that make vegan and animal-friendly clothing and accessories. Companies that use the logo must sign PETA's statement of assurance verifying that their product is vegan.

USDA Organic

Made for organic agricultural practices (like Ecocert, Soil Association, etc.). Therefore, a USDA certification for a shirt ensures the cotton was grown organically, but does not guarantee that the shirt is free of toxic finishes.

World Fair Trade Organisation (WFTO)

A fair trade certification that ensures responsible practices across the supply chain and supports small producers and their communities.

www.moralfibres.co.uk

Source: Thrive by K.Chayne

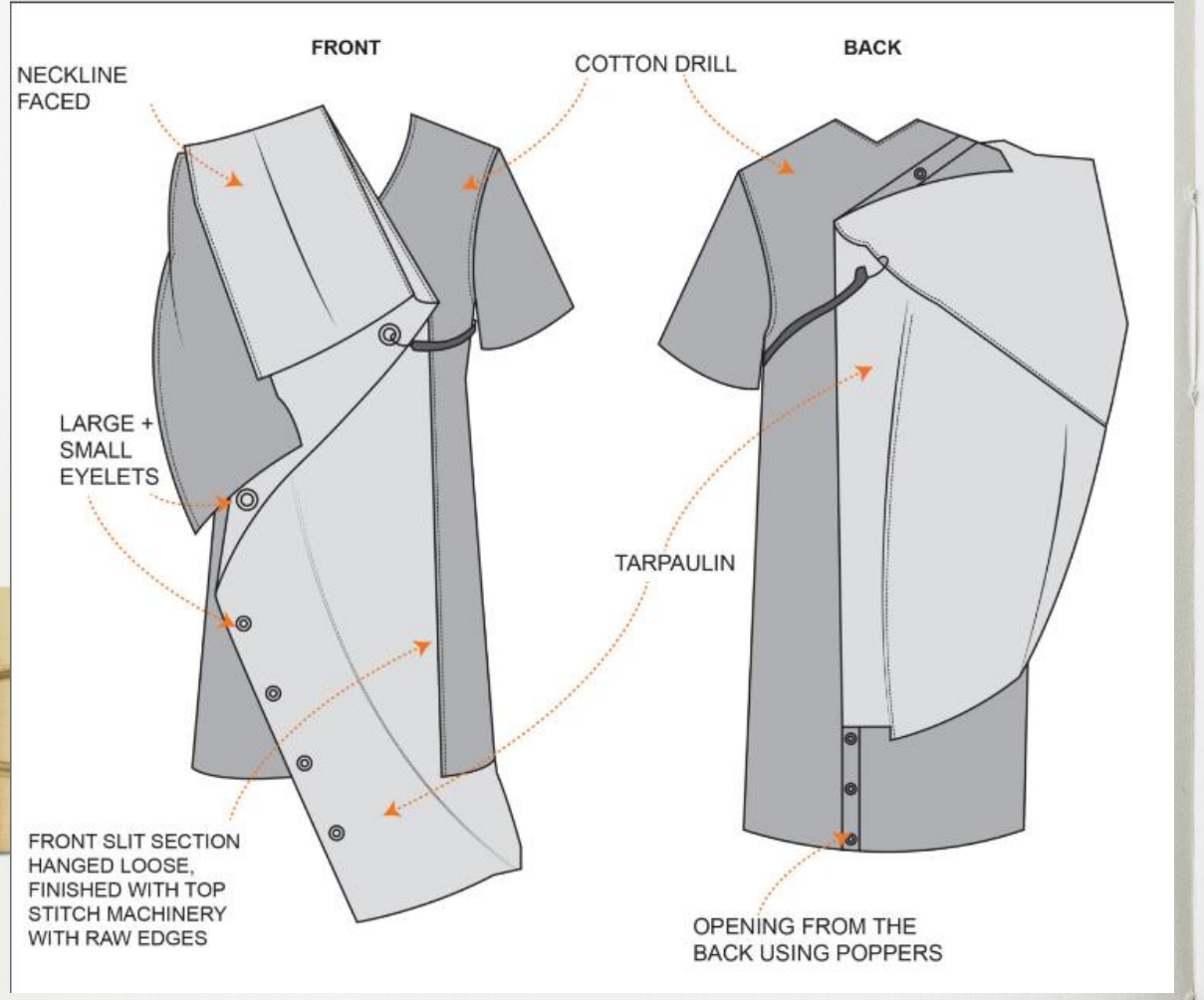
16 Eco Criteria to Define Sustainable Apparel / Ethical Fashion

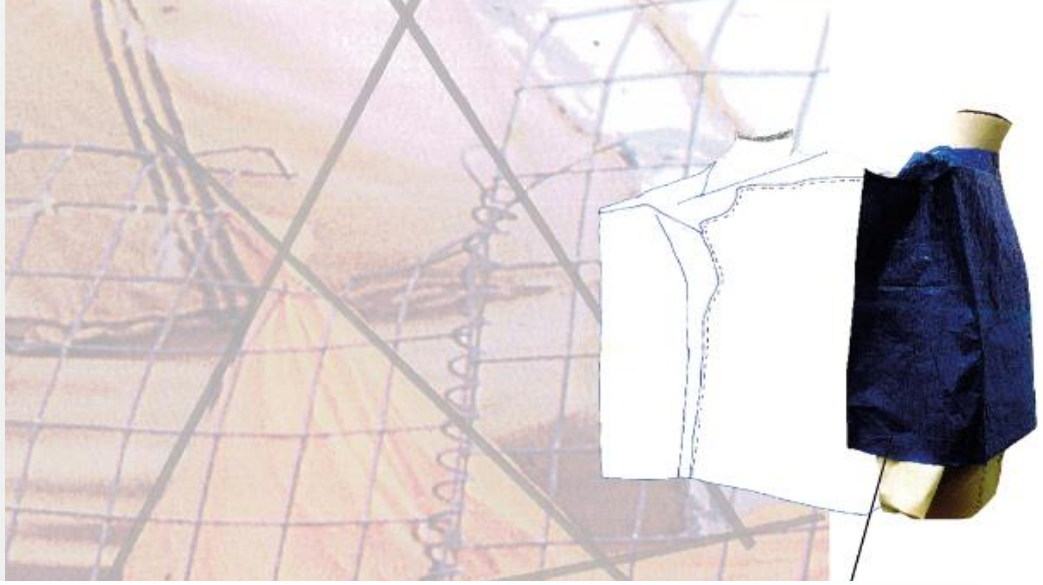
1. Organic fabric
2. Recycled / re-used materials
3. Zero - minimal chemical treatments fabric processing
4. Animal free
5. Eco-friendly printing processes and ink
6. Custom made (made-to-order)
7. Locally made
8. Ethical ,ade / fair trade
9. Fabric waste reduction
10. Green marketing and promote material
11. Eco-friendly packaging
12. Well crafted timeless slow fashion with durable fabric
13. Crafty / handmade with traditional artisanal skills
14. Resource using reduction
15. Vintage second-hand or up-cycled clothes.
16. Take social responsibilities

GREEN TIPS

Provide by Eco Gentlman

READ MORE





T - USED
OLS.

DAVINA AMAJOR:

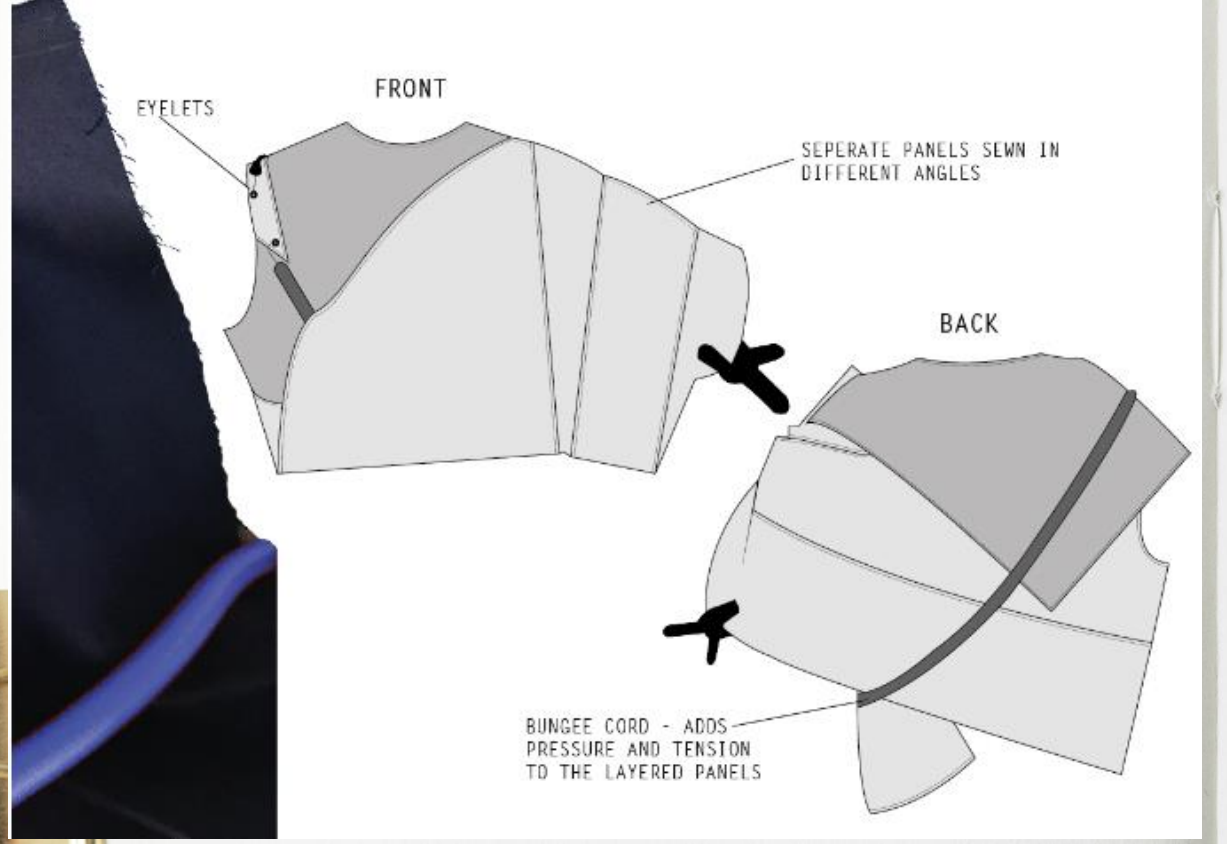
DESIGNER OF MULTI-FUNCTIONAL GARMENTS AND OVERLOOKED MATERIALS

Davina reworks and redesigns the functionality and aesthetic value of worn fabrics that were once undesired, to prevent them from being disposed of...

Through conducting extensive experimentation on how to (re)work fabrics, Davina's collection aims to both reshape and revive materials otherwise overlooked. "By primarily using tarpaulin, I set out to find different ways of using mundane items, giving them new purpose and making them desirable in the fashion industry. Naming the collection '90 Degrees', I started the process through small right-angled shapes and slowly transitioned into larger geometric garments, each complementing the tarpaulin's functionality in a different way. I want to show the industry my ability to produce innovative ideas from overlooked materials, as tarpaulin is really only considered as a shelter for market stalls," Davina states. Angular and asymmetric, the collection embodies a combined vision of functionality and innovation.

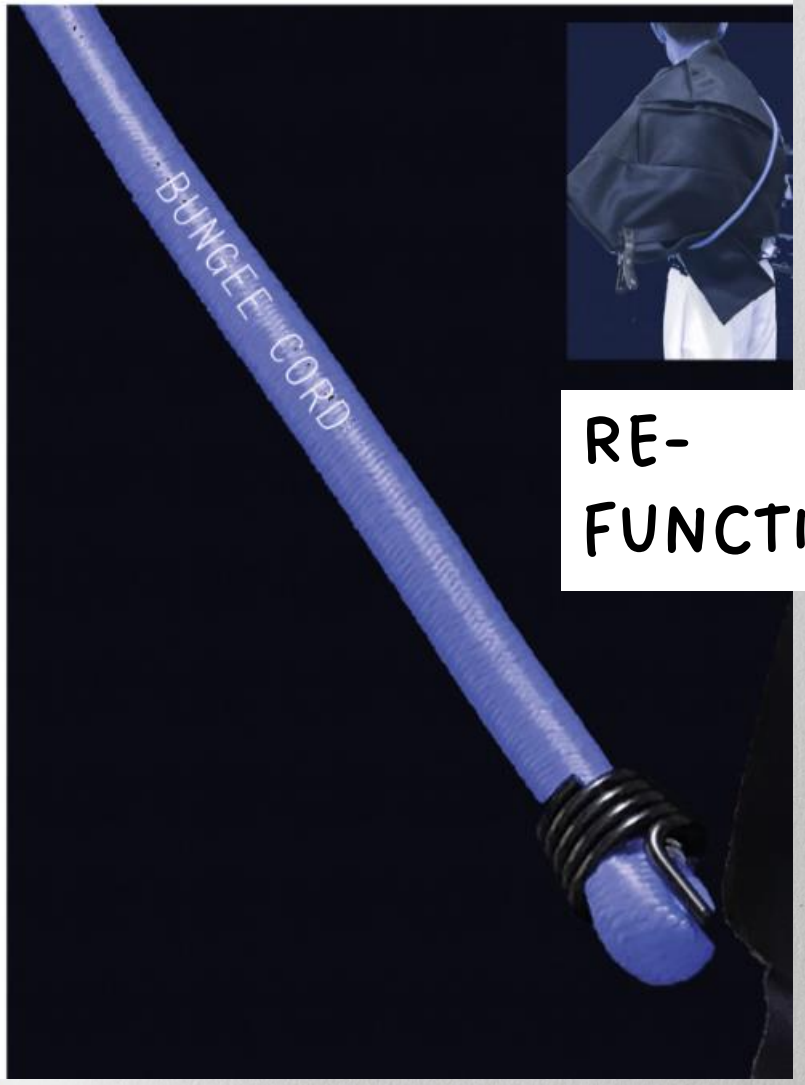
" I hope to focus on purpose and functionality, to create clothing while limiting the amount of material waste, inspiring the next generation"
- DAVINA AMAJOR

Davina emphasises the role of digital media in sustainable fashion development. I find her approach towards product design and technology as being so innovative and something that I hope to draw from in my own design process.



Driven by her passion for computer-based design programs, Davina believes that digitalization is set to push the fashion industry toward a more mindful approach to manufacturing.

"The current way of working has hit its limits," she says in her interview, emphasizing the need for a shift—slowing down, rethinking processes, and re-educating. Davina hopes the fashion system can evolve and adapt to the digital era. Like many young designers, she also advocates for a greater focus on kindness in the industry, calling for respect and fair treatment of workers instead of the exploitation and overworking that fosters stress over trust and creativity.



RE-FUNCTIONALITY

Tenant of Culture, *Cutting Stock* (series), 2021

"By looking extensively at what is no longer desirable, I learn a lot about psychological obsolescence as well as the material trajectories of garments. When they are discarded for good, they enter a different realm.

In a way, my work is not about waste in the sense of garbage or debris but more about the extremities in volume and the speed at which fashion is produced, consumed and discarded."

- Hendrickje Schimmel

Hendrickje Schimmel is known for her incredible sculptural pieces, known under her art pseudonym -Tenant of Culture. I am inspired by the way she transforms garments and materials. She says that her process isn't just about recycling; it's more like giving things a second, third, or even fourth life. She's all about deconstructing, reconstructing, and playing with fabric in ways that make you rethink how we view fashion.

These are from her exhibition titled "Soft Acid." The name itself is a nod to the way acid is used to soften clothes in the fashion world, making them more comfortable for us to wear. But Schimmel pushes it further—she collects second-hand garments from places like eBay, charity shops, and yard sales, and then goes to work on them. She re-dyes, tears apart, and reconstructs these pieces, creating something completely new. The result is sometimes wearable, sometimes not. But what's cool is how the clothes she uses aren't necessarily worn out or ready to be tossed in the trash; they're just no longer new.

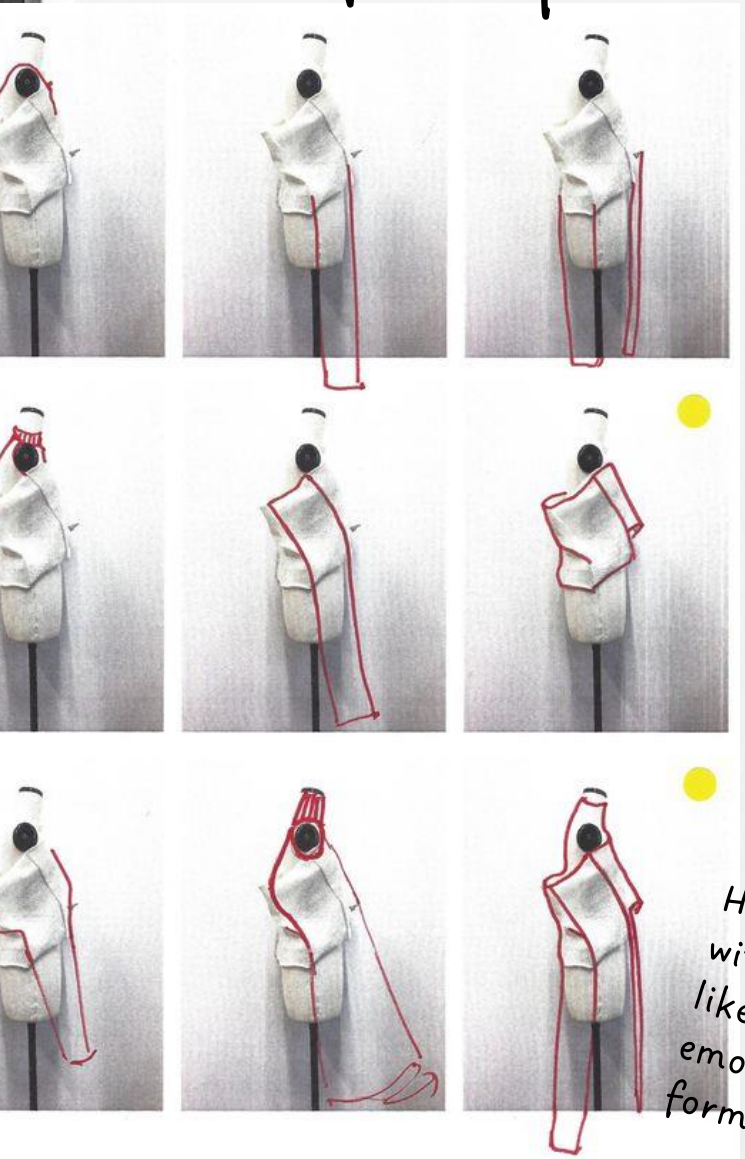
https://www.wallpaper.com/art/piece-unique-oluwole-omofemi-and-bayo-akande-interview

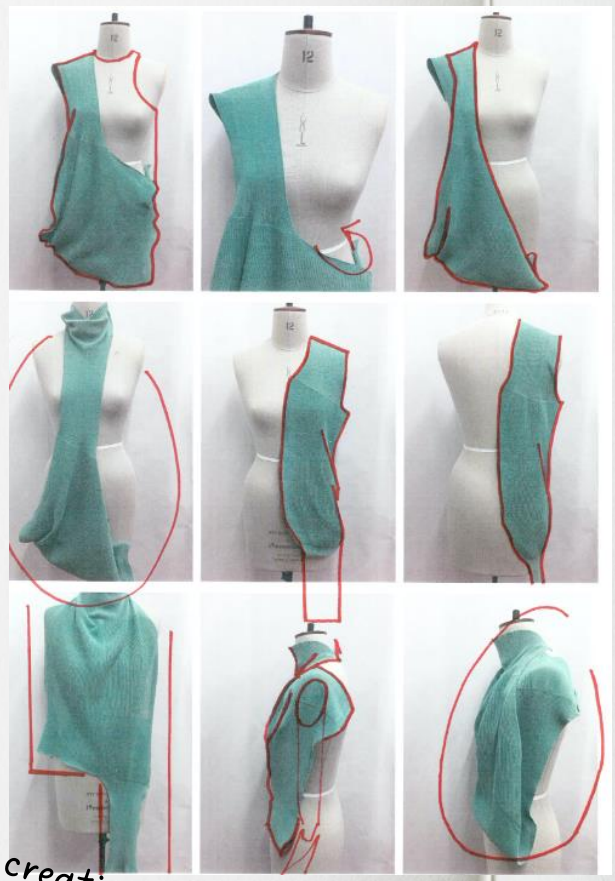
johanna-goodman-imaginary-beings

Artist inspiration: JOHANNA GOODMAN

Goodman's work drew my attention due to her use of collage playing with silhouette, the environment and the body. It is almost as if she is creating a new landscape with the proportionally-exaggerated found materials. The concrete road shapes are particularly interesting as they can inspire new design ideas from something exciting- like the concept of product design through sustainability approach

Ideas for experimentation -





Her creative journey starts with fundamental elements like a line, a shape, or even an emotion, which gradually take form as a garment.

https://1granary.com/designers-to-hire/eleana-burrows/

HOW CAN WE INTEGRATE SUSTAINABLE PRACTICES IN THE DEVELOPMENT PHASE OF FASHION DESIGN?

Often the process of experimentation on the mannequin uses calico or fabric that have similar characteristics of the final design. My research into garment design has made me aware of the multiple toiles needed in refining the design.

Why do we waste so much fabric in the testing phase...can we use approaches where they are used in the later stages for refining design ideas rather than in experimentation?

Rather than cutting metres of calico when exploring form, I could take a more sustainable approach to the toiling process by using fabric scraps to work around the mannequin to capture drape etc. to kickstart the design process, then taking photos on my phone, printing off and draw over with tracing paper to design shapes and silhouettes.

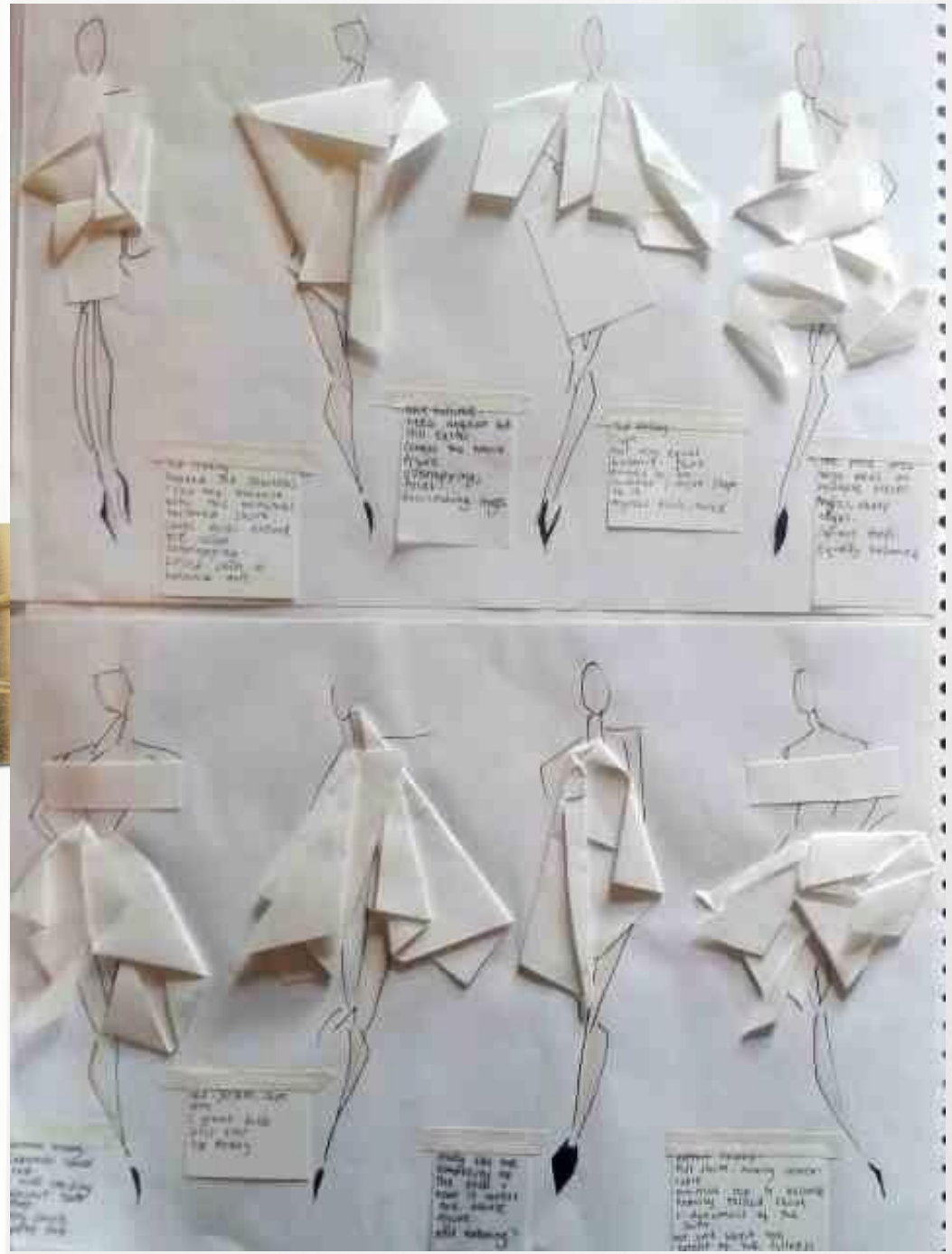
Eleana Burrows highlights the significance of expressing her design ideas through a mix of visuals, text, and sketches. Though her process is deliberate, she relies on her instincts when selecting materials.

Burrows admits that transforming abstract concepts into functional, wearable clothing is a challenge. For her, practicality is essential, even when it's inspired by something as intangible as a memory or emotion. She emphasizes the importance of understanding materials, acknowledging how textures affect the final design, and insists that material choices must excel in their specific function.

Experimentation with collage to generate ideas

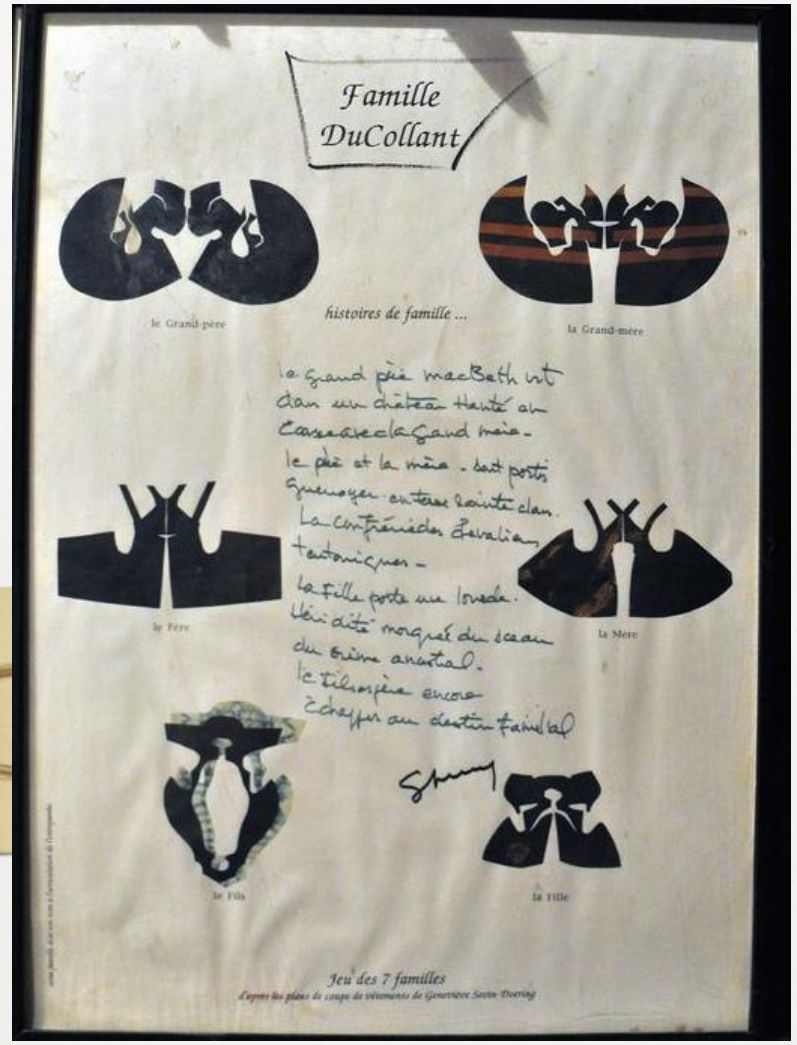
Sketches by :Hayley Grundmann

The above are some examples of exploration in the development phase. Pinning and re-working ideas on the form can be an effective way to explore ideas and new design elements. This student has used found materials and calico scraps on a small-scale mannequin to reduce the amount of wastage and time.



SPORT MAX DESIGN
PROJECT FOR MAX MARA
FASHION AWARD 2015
Winner of Max Mara
Fashion Award 2015.

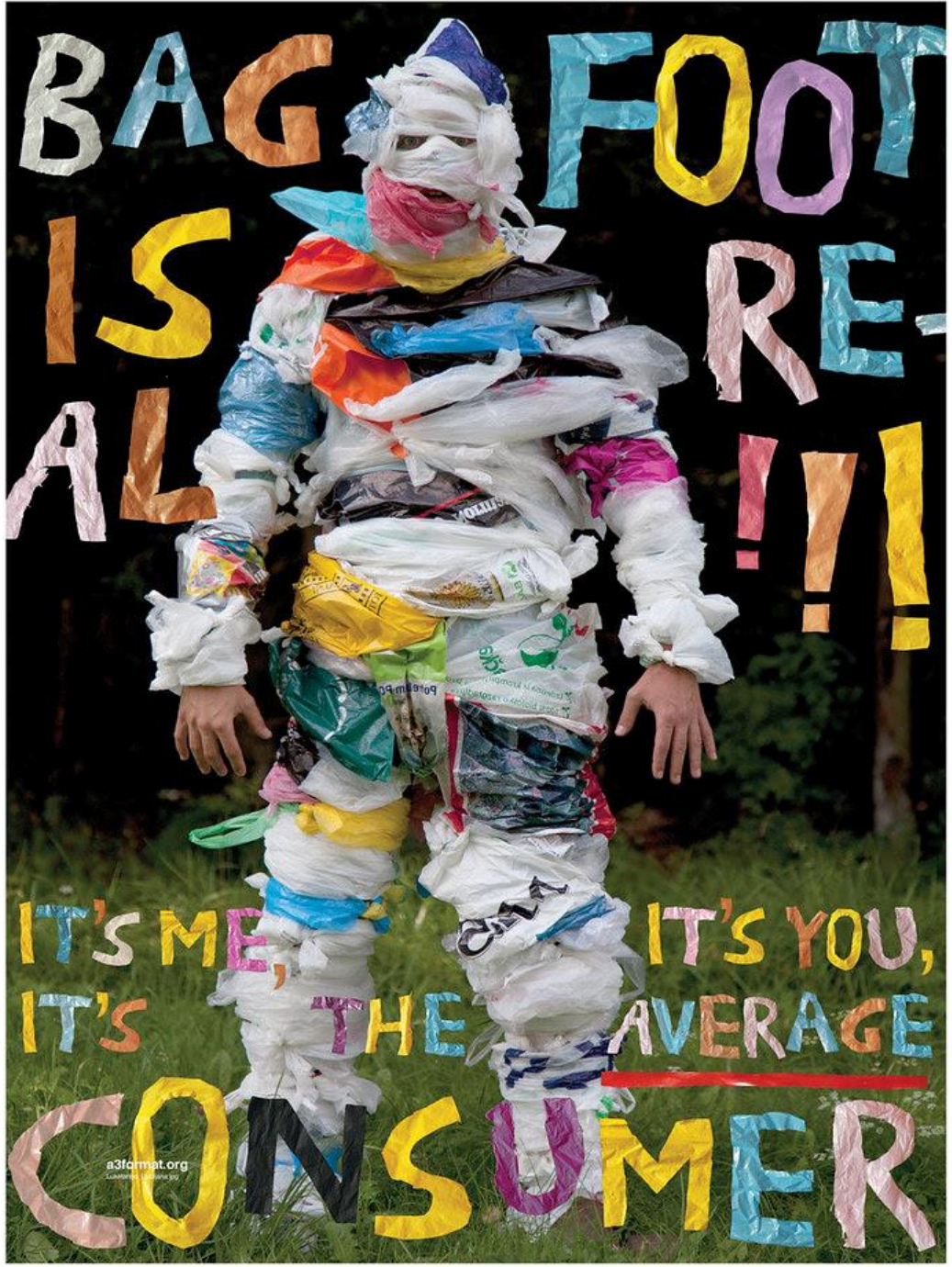
This was a making- workshop we did in class to develop new textures, silhouettes and designs... This exercise involved students folding scrap paper/cardboard /other found materials to generate new ideas. The design concept board above is from Max Mara design awards, however shows how these experimental processes can be refined and translated to a wearable garment product.



https://atacac.com/book/chapter1-5.php

Since the 1970s, French costume designer Geneviève Sevin-Doering has systematically developed and refined a cutting method in which the garment is sculpted from a single piece of fabric on the body, which is termed 'coupe en un seul morceau'. Her work is based on studies of pre-tailoring garment-making, i.e., how the garment was cut before the Middle Ages in Europe and in various ethnic costumes around the world, before the introduction of drafting systems, basic templates, and mannequins (Sevin-Doering, 2004).

Motive part I - Studio practices. This is a revised digital version of the Phd thesis Kinetic Garment Construction, Remarks on the Foundation of Pattern Cutting by Rickard Lindqvist.



"Bag Foot" By: Lukatarina (Katarina Mrvar, Luka Mancini) - Ljubljana

STAYING SOLUTION-FOCUSSED:

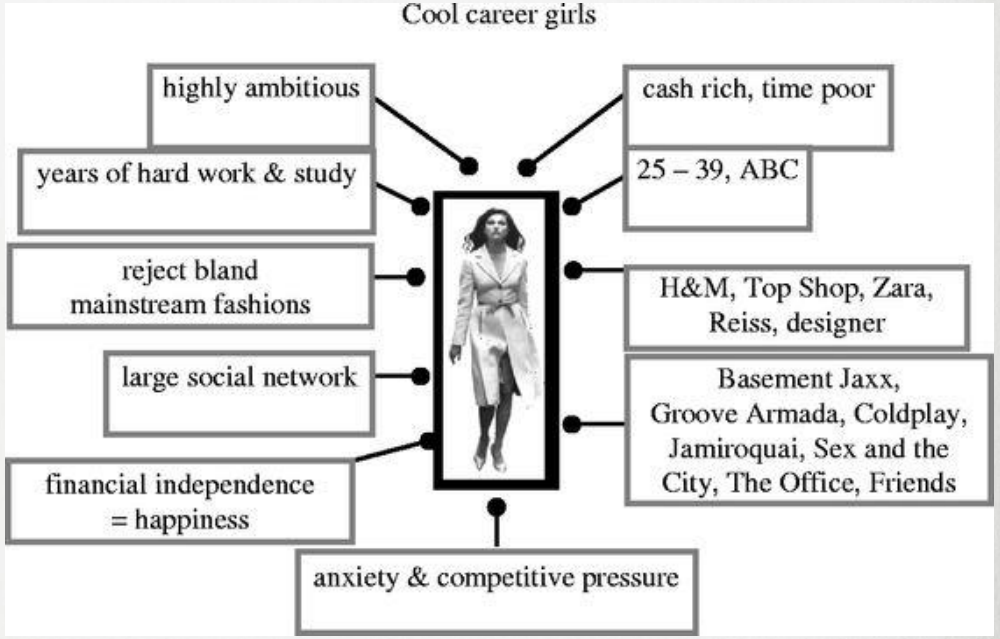
DEFINING THE NEED

Whilst the United Nations started to prioritise the concept of sustainability as a main area of development in 1992, the concept of sustainable fashion products is not understood well; evident in the consumption of fast fashion (Orminski et.al, 2020).

Ritch (2015) expresses concern that generally consumers still have little awareness of the environmental harm that fashion production produces, and that their own environmental beliefs have great influence over their intentions to buy ethical products or sustainable fashion.

'Environmental consumer knowledge' refers to the comprehension of various environmental aspects, including how purchasing decisions affect ecological contexts, recognition of eco-labels, awareness of environmental challenges in specific sectors like clothing and food production, and the capacity to make informed decisions considering environmental factors (Taufique et.al, 2017)

RESEARCH:
ABOUT MY CONSUMER



I have included this example to show how product design is user-centered and we should be designing with them in mind as we develop and refine ideas. The image above deliberately features a client who we would not necessarily associate with the sustainable design movement however it is a good challenge to consider how we could reach the consumer who is time poor and into high fashion trends without much awareness of circular fashion?

Who am I designing for?

Value Proposition

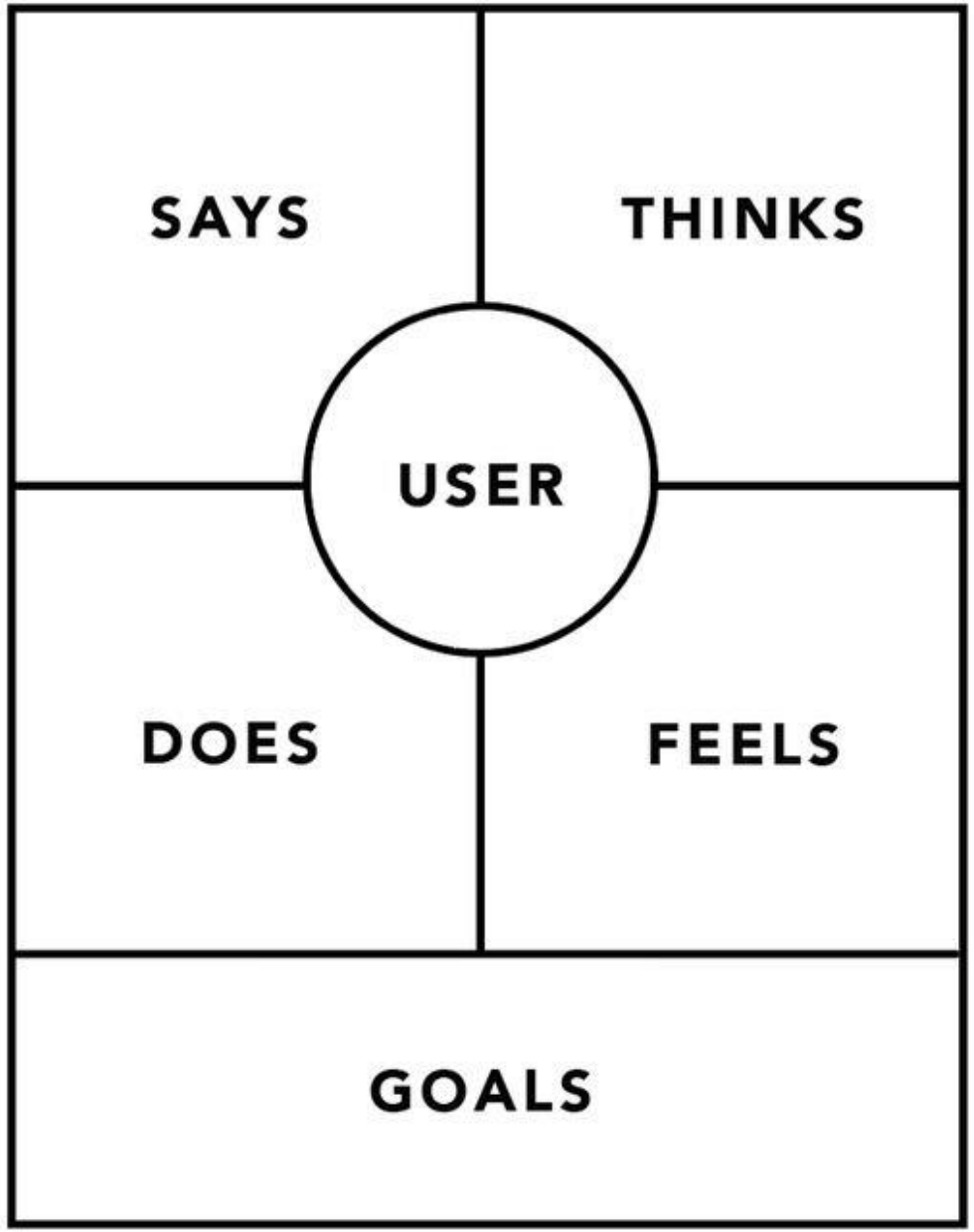
Product/solution _____ with

Key Feature(S) _____ ensures

End Customer _____ always

enjoys _____ Key Benefit .

Online Studio Value Proposition


SAYS
THINKS
USER
DOES
FEELS
GOALS
NNGROUP.COM NN/g


Human Centered Design
Technology
Functionality. Engineering.
Feasability. Realisic. Complex.
Performance
Human Factors.
Ergonomics.
Applied Ethnography.
Individual/Social/
Cultural Levels of
Analysis
Efficiency.
Logic.
Relevance.
People
Consumers.
End Users.
Simplicity.
Usability Testing.
Efectiveness.
Interaction.
Prototyping
User
Experience
Reliability.
Validity.
Business
Vision. Goals.
Business Analysis.
Demographic Analysis.
Budget. Client
Ideation. Participatory Design.
Collective Creativity.
Generative Design Research.
Generative Tools.
Innovation.
Design Research.
Stakeholders.
Branding. Marketing.
Design Thinking.
Market Communication.
Design
Exper Mind Set. Aesthetics.
Creativity. Experimentation.
Visual Design. Critical Design.
Cultural Probes

CONSUMER PROFILE

Target Client Persona

Isabelle Laurence

Age – 28

City – Los Angeles, United States

Income - $50,000 - $75,000

Shopping habits
- Shops repeatedly during the season
- Consistently dedicates part of her discretionary spend ing to personal luxury products of various nature, usage occasions and price points
- Leverages new technologies and tablets
- Values easy shopping, and a product experience that actually feels luxurious.
- Relies heavily on media publications to make purchase decisions and researches products she is interested in.

Attitude towards brand
- Strongly opinionated
- Luxury connoisseur: highest brand awareness
- Lays emphasis on trend, design, comfort, fit, price and innovation

Sources of influence
- Superior in-store service and targeted communication is crucial to drive purchases
- Highly influenced by social networking platforms

Interests
- Fashion, music, films, TV, social networking, magazines, night outs with close friends, indulging in sport activities

Psychological make-up
- Well-informed, tech and trend savvy, fashion and beauty lover, Achiever
- She gains both "inner" experience value and "external" social status by purchasing luxury products

Lifestyle
- Fashion conscious woman who goes to work well dressed, business oriented and aims at building an indi vidual personality
- Spends weekends away in luxurious country houses or spas, an interest in current affairs, passionate about an active and healthy lifestyle, expensive cars and would typically read the higher priced magazines such as Vogue, GQ, Tatler and Harpers Bazaar

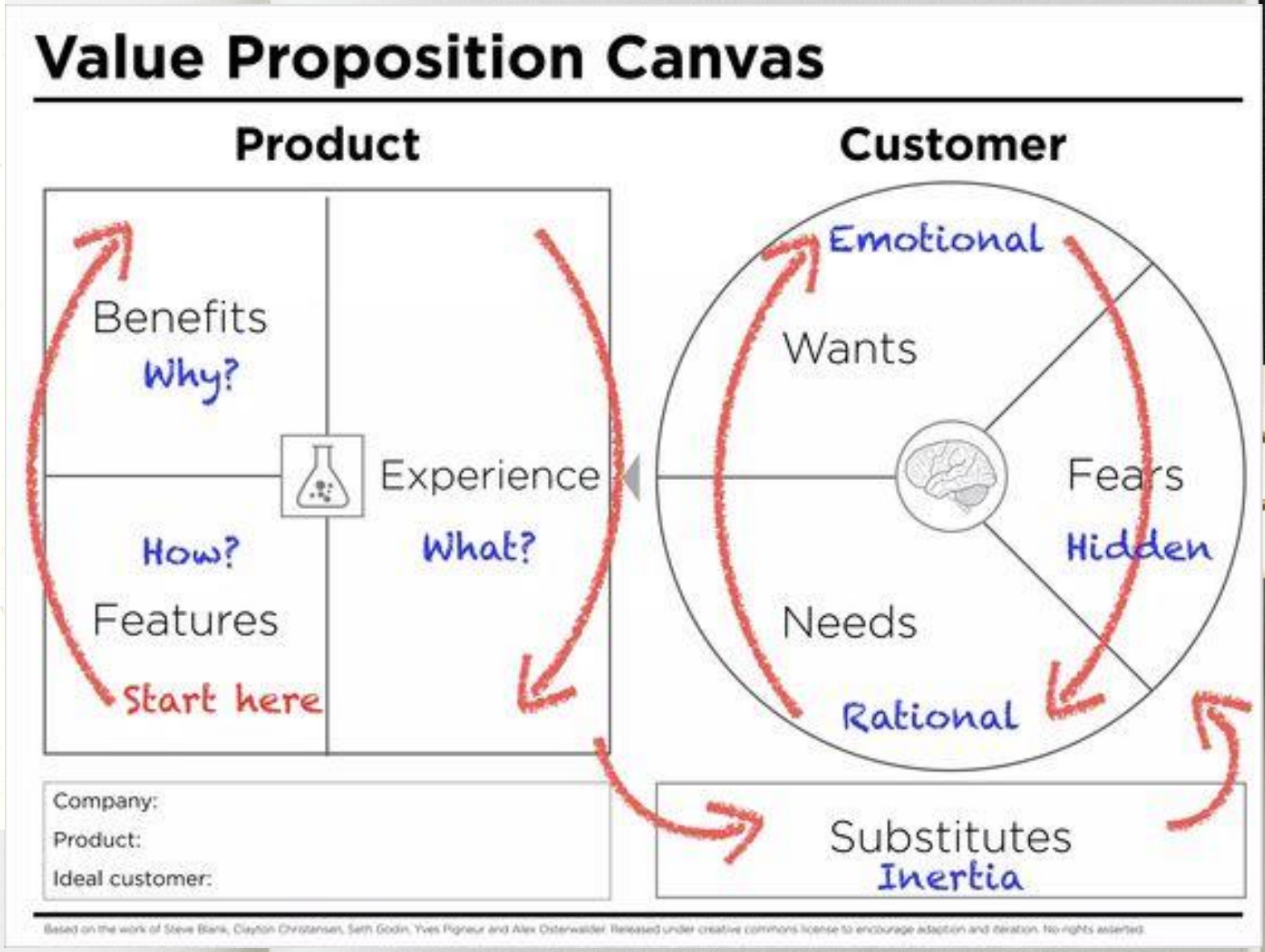
https://www.behance.net/gallery/25648145/Consumer-Profile-Moodboard

Use example above to create your own consumer profile relevant to your design and change this 'typical unsustainable' user into a 'sustainably-aware' one

DEFINE:
Who is your target audience?

BRIEF: come up with a moodboard and profile to demonstrate your research and evaluative thinking

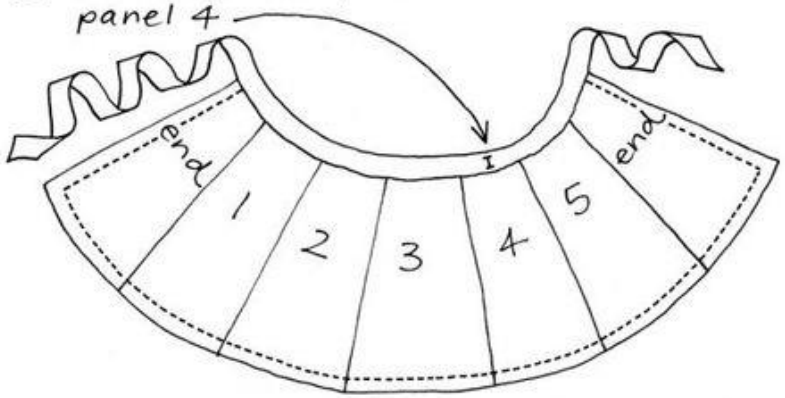
FACTORS TO CONSIDER WHEN DESIGNING...



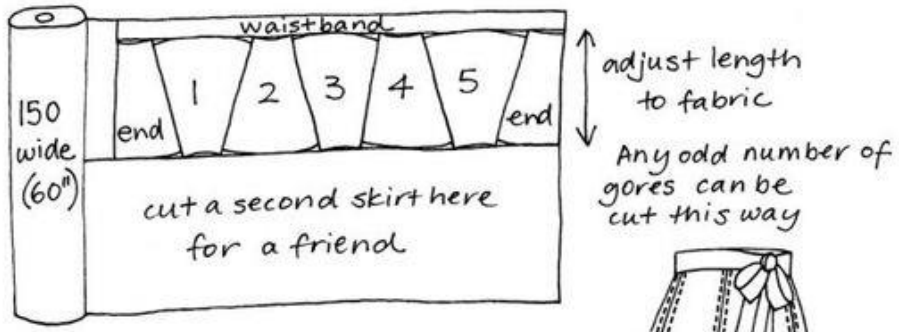
https://au.pinterest.com/pin/453245150016167587/

Liz Haywood's ZERO WASTE WRAP SKIRT March 2017

1. View the 6-gore wrap skirt draft in my blog archives: www.lizhaywood.com.au April 2016
2. Make it a 7-gore skirt: in Step1, divide by 7 instead of 6. Everything else is the same.
3. The buttonhole placement is in the centre of panel 4



4. To cut as a zero waste style:



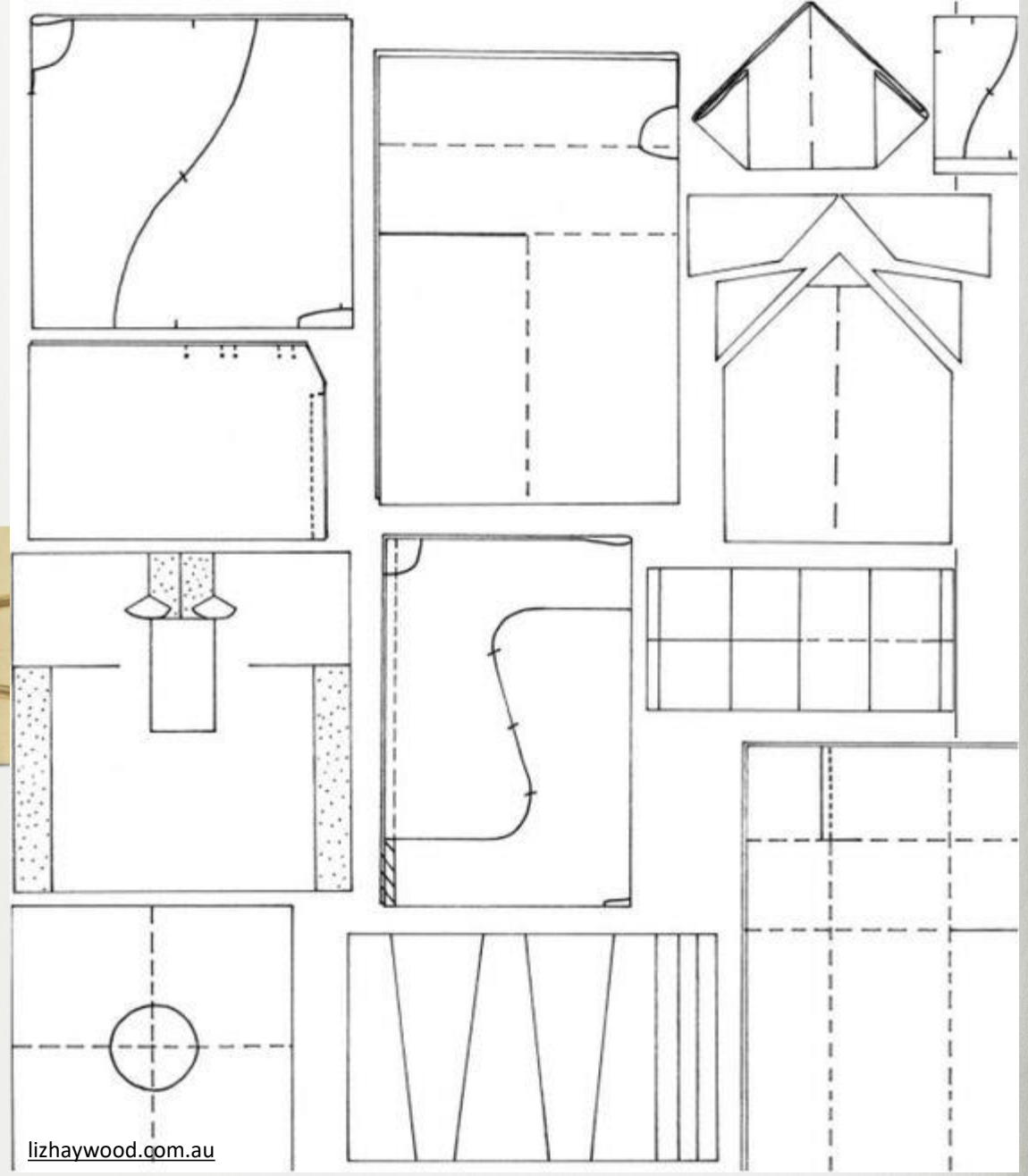
* If topstitching, stitch from the bottom up on each panel

lizhaywood.com.au

INVESTIGATING METHODS & MATERIALS

"Zero Waste Patterns" book by Birgitta Helmersson

Zero waste fashion is a design approach that aims to eliminate fabric waste during the production process. Instead of cutting patterns in a way that leaves behind scraps, designers carefully plan their garments to use every bit of material, ensuring nothing goes to waste. This can involve creative pattern-making techniques or using digital tools to optimize the layout of pieces. The goal is to minimize the environmental impact of fashion by reducing the amount of discarded fabric that typically ends up in landfills. Zero waste fashion is part of a broader movement toward sustainability and mindful consumption in the industry.



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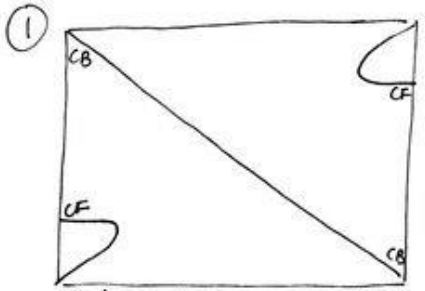
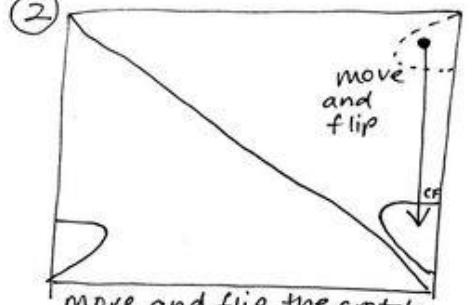
Spiral trousers - page 908 Zero Waste Fashion Design

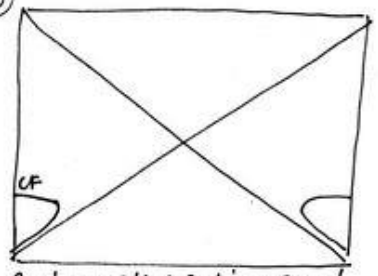
How to adapt the pattern to use fabric with different right + wrong sides.



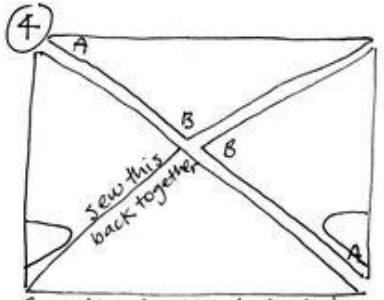
① Original pattern looks like this.



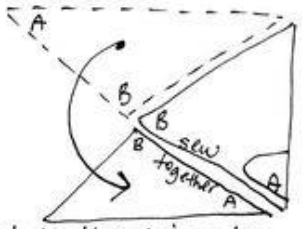
② move and flip the crotch curve.



③ Cut another diagonal line through the recangle



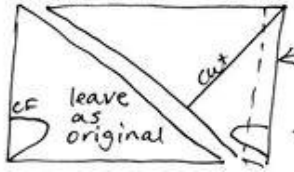
④ Sew the lower left triangle back together again. Mark the remaining pieces as shown A + B



⑤ Rotate the triangles + sew them together. You should now have a pair to give you left and right legs

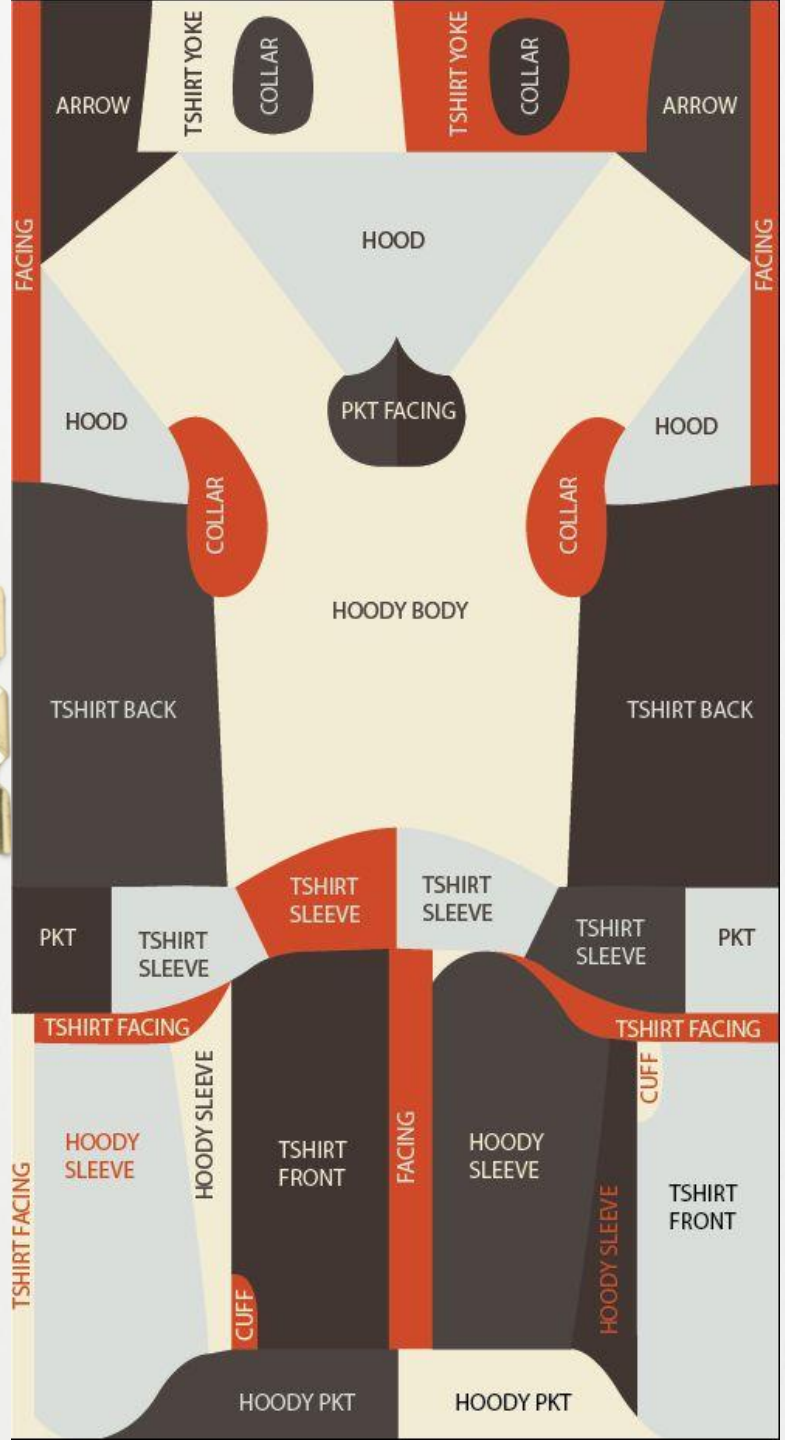
⑥ The extra seams should end up about here

⑦ Just a thought: might only have to do this to one leg:

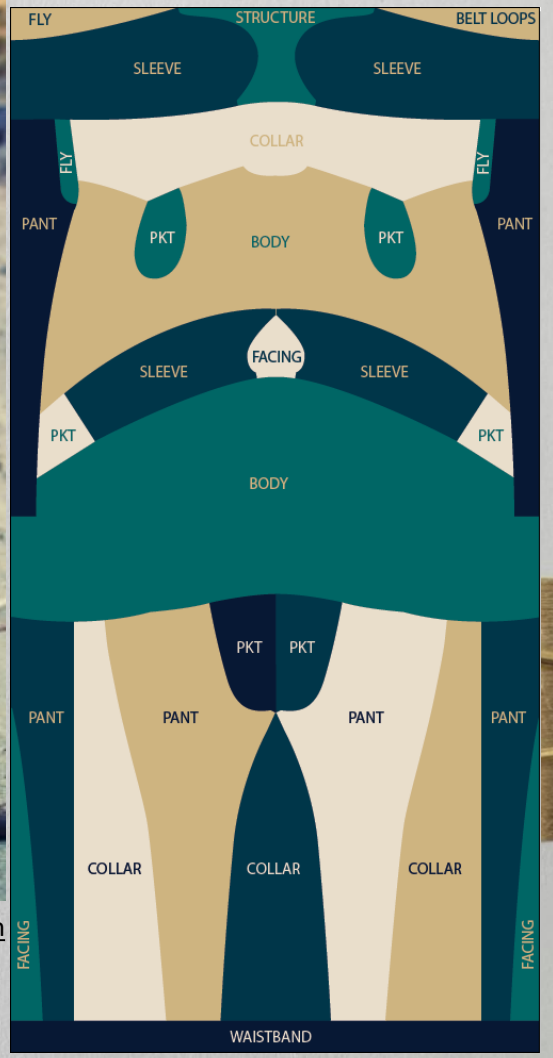


add 2cm to this edge, cut diagonally, then rotate and sew as step ⑤

3-1-2020
Cheers!
Liz Haywood



hollymcquillan.com



Holly Mcquillan designs products from zero waste patterns which explore the possibilities of embedding multiply garments in one pattern. For example, the menswear design has been embedded with zero-waste design and can be used as a hooded jacket, hoodless jacket or a draped t-shirt. Increasing the value, wearability and the longevity of the garment is another sustainable approach, as well as reducing wastage during the whole production process.

Filament

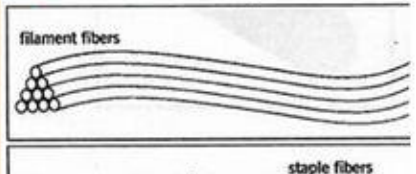
FILAMENT FIBRE IS FIBRE THAT COMES IN CONTINUOUS TO NEAR CONTINUOUS LENGTHS FOR USE. SILK, TAKEN FROM THE COCOON OF A SILKWORM, IS A FILAMENT.

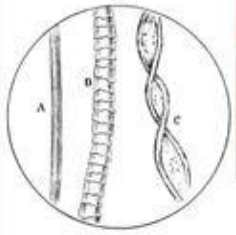
SYNTHETIC FIBRES CAN ALSO BE MANUFACTURED AS FILAMENT. IF THE FILAMENT IS THEN CUT INTO DISCRETE LENGTHS, IT BECOMES STAPLE FIBRE.

Staple

STAPLE LENGTH IS A PROPERTY OF STAPLE FIBRES. STAPLE IS REFERRING TO THE AVERAGE LENGTH OF A GROUP OF FIBRES OF ANY COMPOSITION.

STAPLE LENGTH DEPENDS ON THE ORIGIN OF THE FIBRES. NATURAL FIBRES (SUCH AS COTTON OR WOOL) HAVE A RANGE OF LENGTHS IN EACH SAMPLE, SO THE STAPLE LENGTH IS AN AVERAGE. FOR SYNTHETIC FIBRES WHICH HAVE BEEN CUT TO CERTAIN LENGTH, THE STAPLE LENGTH IS THE SAME FOR EVERY FIBRE IN THE GROUP.





CHOOSING MATERIALS

IT IS IMPORTANT TO CHOOSE MATERIALS THAT ARE FIT FOR PURPOSE. CHOOSING A FABRIC WITH THE APPROPRIATE QUALITY AND COST WILL ENSURE THAT A PRODUCT WILL SUIT THE TARGET MARKET. WHEN MAKING FABRIC CHOICES, ASK YOURSELF THE FOLLOWING QUESTIONS:

Fibre content:
SHOULD YOU USE NATURAL OR SYNTHETIC FIBRES?

Fabric construction:
SHOULD YOU USE WOVEN, KNITTED OR NON-WOVEN?

Manufacturing processes:
SHOULD YOU USE DYEING, PRINTING, MECHANICAL FINISHING OR CHEMICAL FINISHING?

End use of the fabric:
WHAT ARE YOU MAKING, EG JEANS, SPORTSWEAR OR A SEATBELT?

Maintenance:
WHAT ARE THE AFTERCARE REQUIREMENTS OF THE PRODUCT?

THE FIBRE CONTENT, FABRIC CONSTRUCTION AND FINISHING PROCESSES DETERMINE THE FABRIC'S AESTHETIC, FUNCTIONAL AND COMFORT PROPERTIES

Aesthetic Properties
- HANDLE
- DRAPE
- COLOUR
- APPEARANCE

Functional Properties
- STRENGTH
- DURABILITY
- CREASE RESISTANCE
- FLAME RESISTANCE
- STAIN RESISTANCE
- WATER RESISTANCE
- AFTERCARE
- COST

Comfort Properties
- ABSORBENCY
- BREATHABILITY
- ELASTICITY
- SOFTNESS
- STRETCH
- WARMTH

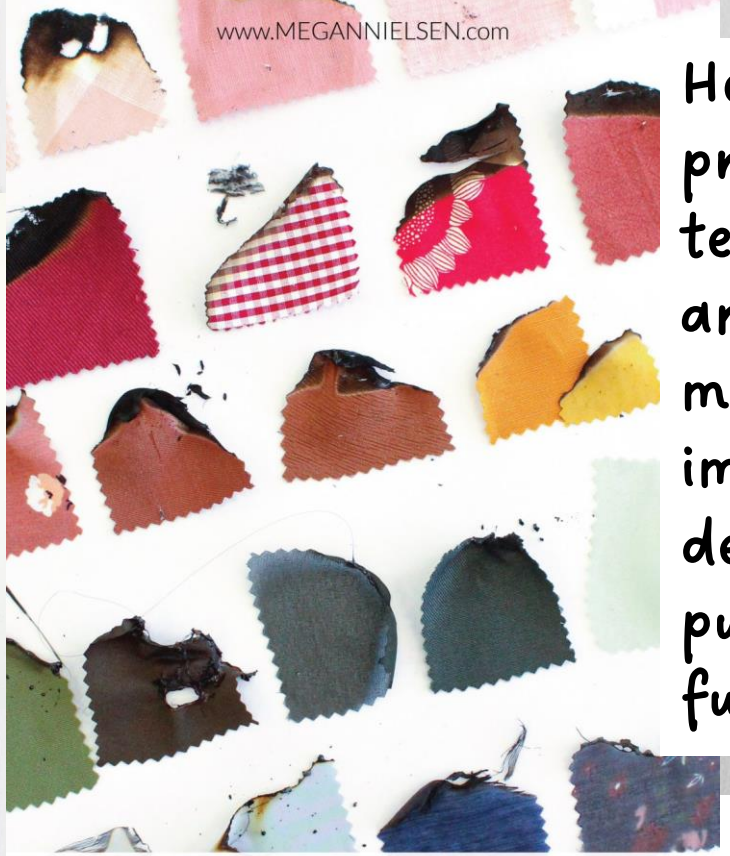
AREA OF STUDY 2:

"Trials and tests are conducted to inform, evaluate and critique physical product concepts and to justify the selection of the chosen product concept and its production processes."

"They explore available materials, tools and processes, and develop skills in using them to develop technacy through generating, designing, producing and implementing.

Students use various materials, tools and processes to demonstrate how products can be a synthesis of various design specialisations and technologies" (VCAA, 2023)

INVESTIGATION INTO FABRICS



How does process, technology and materiality impact your design, its purpose and functionality?

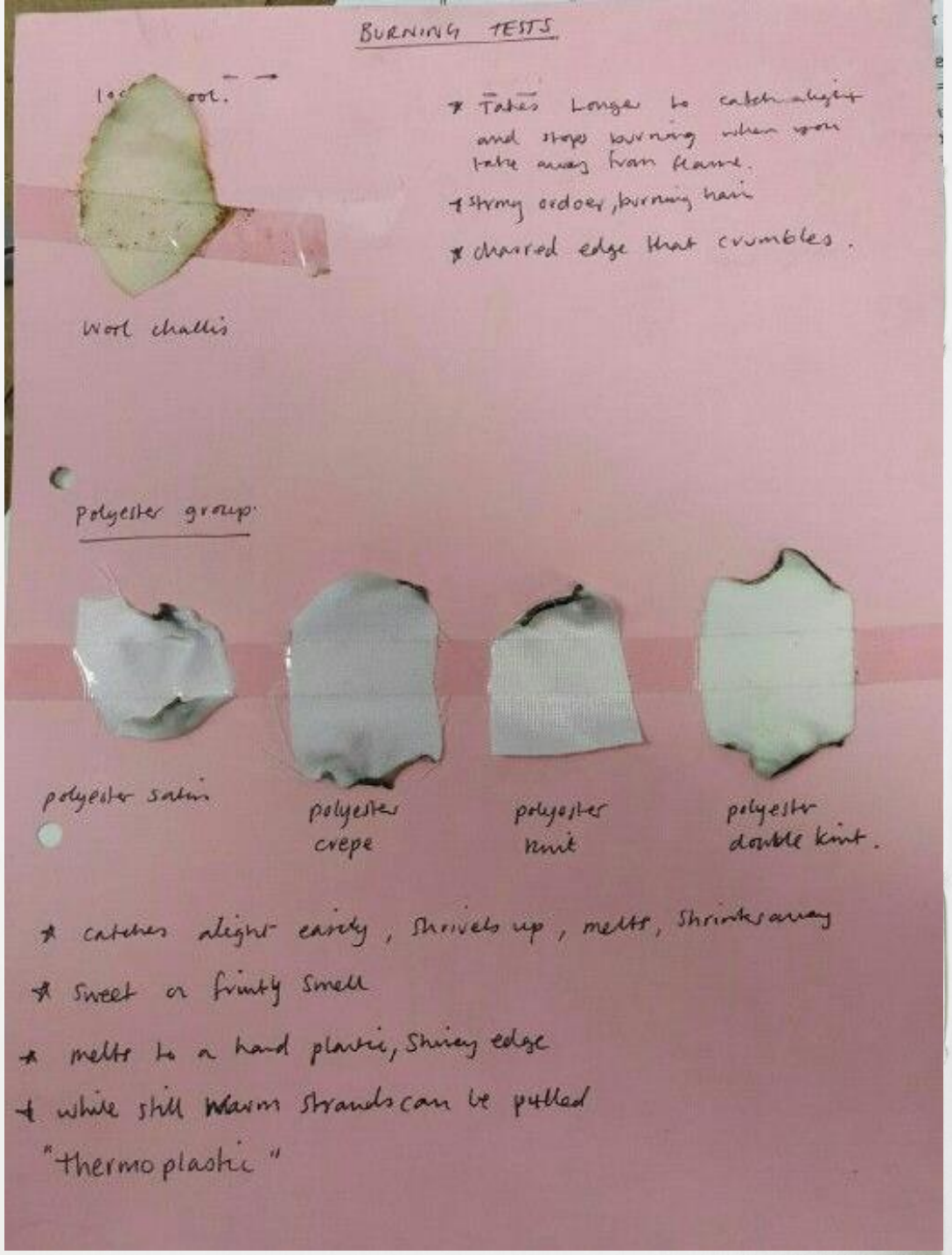
testing your textiles:
HOW TO IDENTIFY FABRIC COMPOSITION WITH BURN TESTS

Part of the research and development phase is doing fabric burn tests to understand the characteristics of different fibers and how they were produced.

Often with upcyling or using found materials- it is important to determine what they might be composed of if there is no label, as this will inevitably affect the functionality and also longevity for the user. We're looking at 3 main groups of fabric - *cellulose, synthetic and protein* .

When doing a burn test, we can look at how the fabric reacts to the flame, how it ignites and burns, what it smells like, what colour smoke and flame it has and what is left over once it has been burnt.

https://corefabricstore.com/blogs/news/how-to-burn-test-fabric



If I am to use mixed composition fabrics, determining their content can be difficult and often impossible. This is especially the case when the fabric is made up of multiple fibres of the same category (cellulose, synthetic or protein) as the reaction tends to be indistinguishable from an unblended fabric. It's when the categories of fibres are mixed however, that our burn tests can still be useful, and we can get at least a hint of what the fabric is composed of. For example- Linen and cotton have very similar burning properties, so we'd expect that it would scorch, burn quickly with white or grey smoke and deteriorate into ashy residue.

Linen

Findings for when linen was burnt:

- Doesn't shy away when it encounters a flame
- It scorches first, then ignites and burns quickly, even when removed from the ignition source
- As it burns you'll notice a yellow flame and white or grey smoke
- When the flame is extinguished, it does have a small amount of afterglow
- Like all cellulose fibres, it produces an odour of burning paper or wood

Cotton

- Cotton is widely used for its strength, breathability, affordability, and versatility, found in both heavy and lightweight fabrics.

- Softer and smoother than linen, cotton is more elastic but prone to creasing.

- When burned, cotton behaves similarly to linen but with key differences:

- Burns with a yellow flame, smells like burning paper or wood, and produces white or gray smoke.

- Scorches at first but may flare briefly, then burns quickly and continuously after ignition.

- Has a strong afterglow when the flame is extinguished.

- Produces light, feathery ash, or black ash if mercerized (a process that increases strength, dye absorption, and luster).

https://blog.megannielsen.com/2022/07/testing-your-textiles-how-to-use-burn-tests-fabric-characteristics-to-identify-composition/

Processed Cellulose Fibres

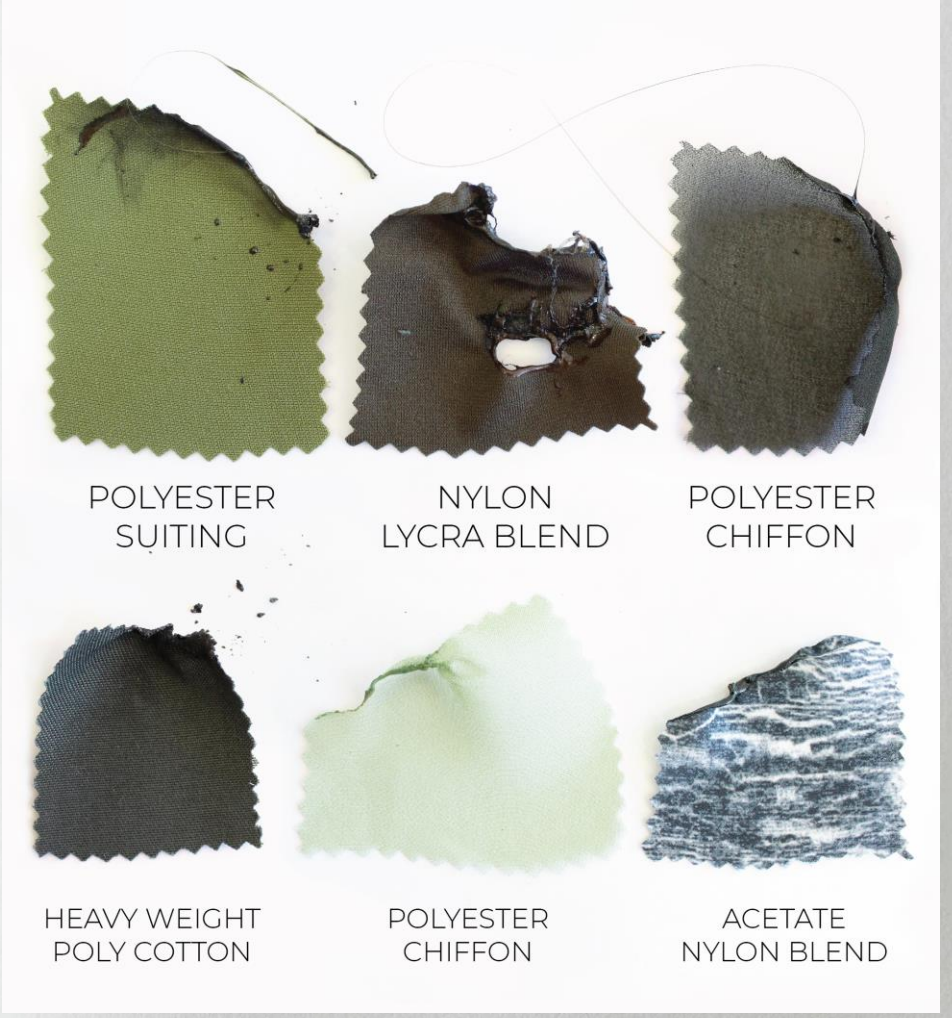
Processed cellulose fibers are an interesting middle ground between natural and synthetic materials. While they undergo a chemical process like synthetic fibers, they are made from renewable sources like wood pulp rather than petroleum-based products. This makes them man-made natural fabrics.

They share some characteristics with natural cellulose fibers, such as breathability and an easy tendency to crease, but also have the smooth drape typically found in synthetics.

When burnt, these fibers behave much like natural cellulose fabrics, such as cotton or linen. They burn rather than melt, producing light smoke, yellow flames, and a smell similar to burning paper.

The residue left behind is a gray ash that disintegrates easily. Compared to cotton, rayon (a common processed cellulose fiber) tends to have less afterglow once the flame is extinguished, though some lingering burn may still be present.

Additionally, these fabrics can sometimes curl slightly as they burn.



The second group of fibers includes synthetic fabrics, which are man-made by combining chemical monomers into polymers through a process called polymerization. These fibers are usually resistant to creasing, not very absorbent or breathable, but they dry quickly.
When exposed to a flame, synthetic fabrics shrink away before touching it, and either briefly catch fire and melt, or just melt without a flame. If they do catch fire, the flame is bright orange, sputters, and burns slowly. They also produce thick black smoke and harmful fumes with a sweet chemical smell.

Wool

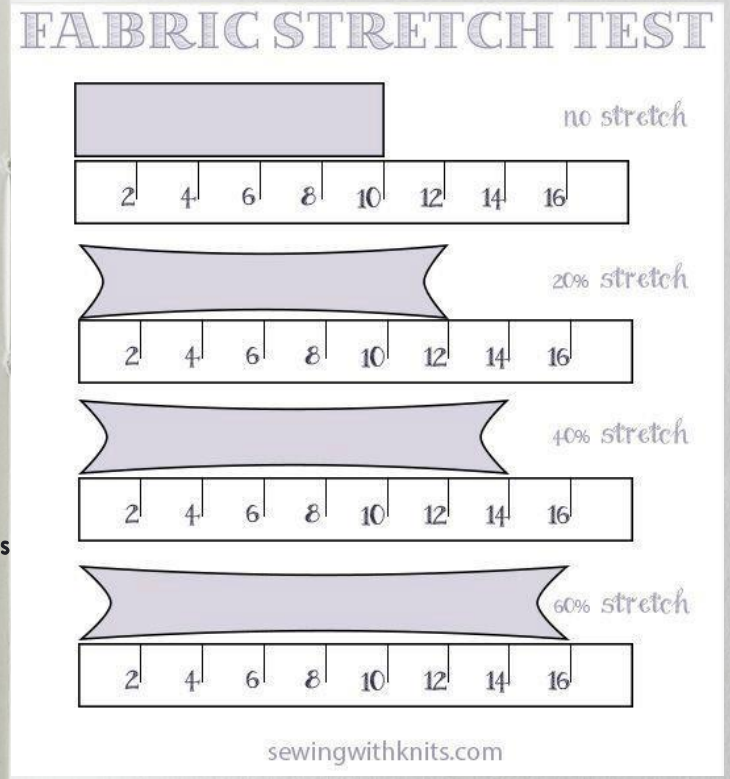
WOOL COTTON BLEND | MID WEIGHT WOOL TWILL | MERINO WOOL JERSEY | UNKNOWN WOOL BLEND KNIT

Protein fibres are breathable, biodegradable, highly absorbent and have good elasticity, meaning they can hold their shape better and don't crease as easily as cellulose fibres. Another interesting characteristic of protein fibres is that they have relatively low flammability - especially wool!

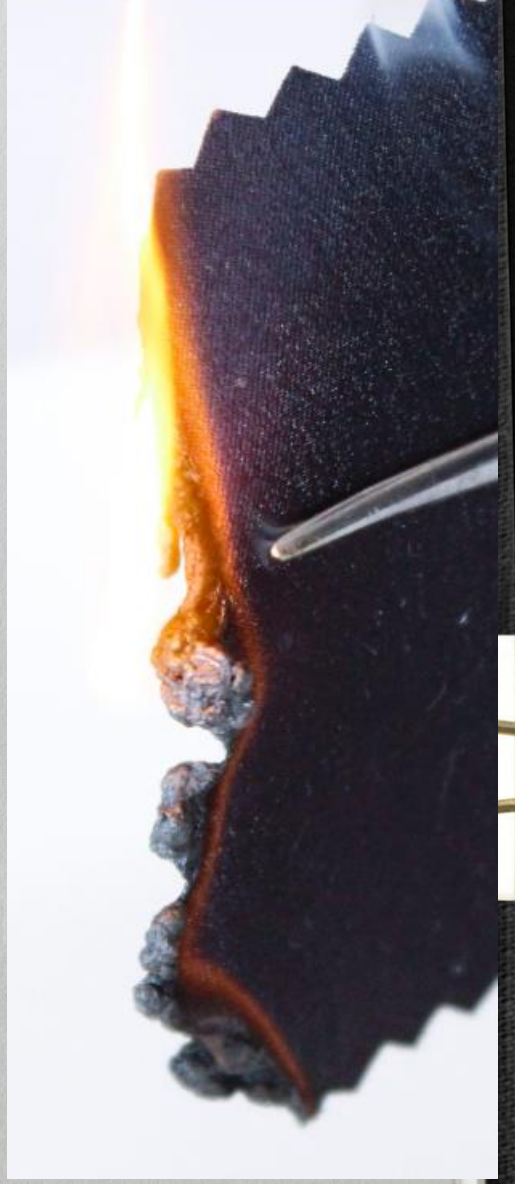
- Its smoke is a light grey and it has a potent odour of burning hair or feathers
- Hollow, black & irregular textured and shaped beads form on the burnt fabric edge that tend to look tight and drawn in

Silk

LIGHT WEIGHT SILK COTTON VOILE | SILK CREPE DE CHINE | SILK COTTON VOILE | SILK CHIFFON PRINT | LIGHT-MID WEIGHT SILK SATIN



Another factor to consider when choosing a fabric or upcycling old/used fabrics is the stretch. Often older garments or textiles from dead stock or op shops have lost their stretch qualities overtime and this might affect the end outcome and functionality of my design.



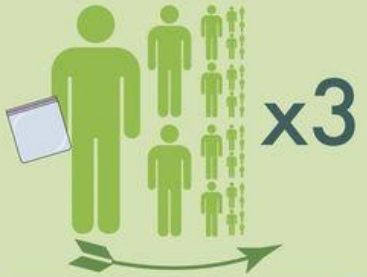
Let's take a look at PLASTIC BAGS

See, There's a problem with them. **A BIG ONE**

Consumption

One million plastic bags are used each minute. The US alone consumes 380 billion single-use plastic bags each year.

Waste



One plastic bag takes over 400 years to decompose, meaning it will be around 15 generations from now.

Costs

The average American family spends $85 a year on single use sandwich bags.

Solutions

Eco SnackBags can replace up to 1500 single-use plastic bags for a family of four each year.

Help support the environment by backing the Eco SnackBag at bit.ly/ecosnackbag

Sources:
http://www.reusethisbag.com/reusable-bag-infographics/how-a-landfill-works.php
http://www.greeniacs.com/GreeniacsArticles/Consumer-Products/Plastic-Bag-Facts.html
http://www.noryc.org/policy/advocacy/childrenandfamiliesfacts
http://www.reuseit.com/reusable-lifestyle-guides/
http://money.usnews.com/money/blogs/my-money/2013/04/02/how-much-food-does-the-average-american-waste
http://florida.sierraclub.org/suncoast/documents/TheProblemwithPlasticBags.pdf
http://www.universetoday.com/14824/distance-from-earth-to-mars/

Make Plarn

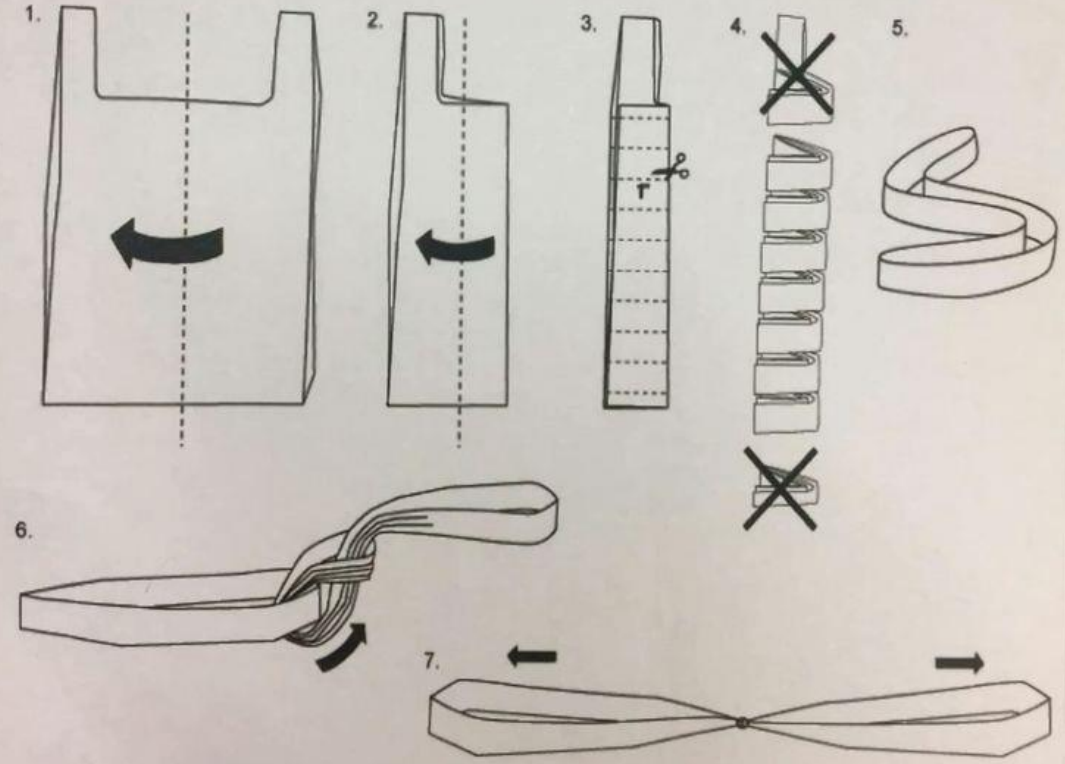
Plarn is short for "plastic yarn." Plarn is made by cutting plastic grocery bags into strips, which are then strung together into a single long strand.

You can use plarn instead of regular yarn to crochet sturdy, reusable tote bags, purses, doormats, and more.

How to make plarn:

- Lay bag flat and fold it in half lengthwise.
- Fold bag in half again.
- Cut folded bag into loops, discarding handles and bottom.
- Knot loops together to form a single strand.
- Roll the strand into a ball and crochet or knit as you would with yarn.

Plarn HOW TO MAKE IT.



This is a dress I designed and made entirely made from garbage bags sewn together into a gown for the brief of an 'eco-couture' fashion show. The plastic bags were easy to sew with, had structured drape and created the floaty movement when the model walked to mimic sateen fabric.

Factors to consider...

- The longevity of the garment
- Lack of breathability due to the plastic materiality, especially degradation due to sweaty areas e.g. upper body corset and underarm area.
- Secure fastenings? Currently sewn together with an invisible zip but might be further reinforced with metal hook & eyes?
- Accessibility is somewhat functional- the model was able to take it on and off easily however the plastic may be likely to tear easily and break

Repurposed plastic bag design

Back features invisible zip down centre seam

Braided plastic as decorative detail around waistline and front corset- this also offered reinforcement for longer wearability

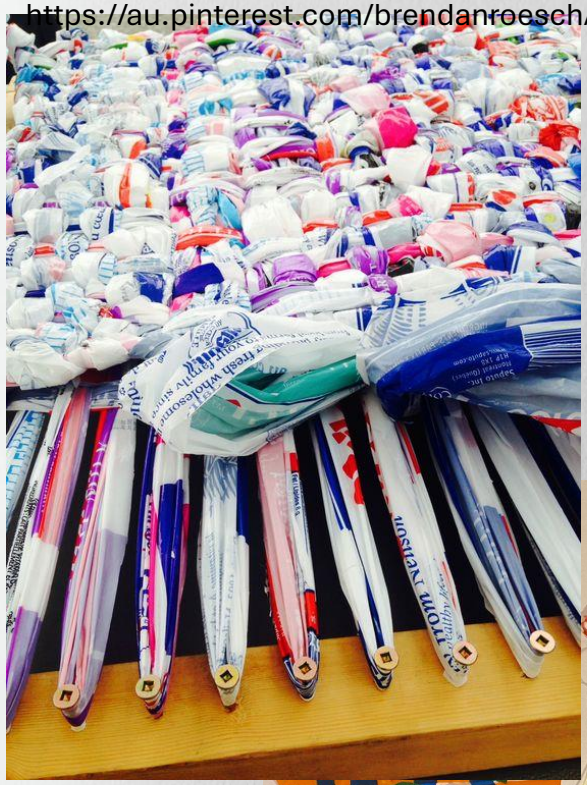
jessicadenhartog.nl

upcyclemystuff.com

EXPERIMENT & DEVELOP PHASE:

Methods & materials

https://au.pinterest.com/brendanroesch/

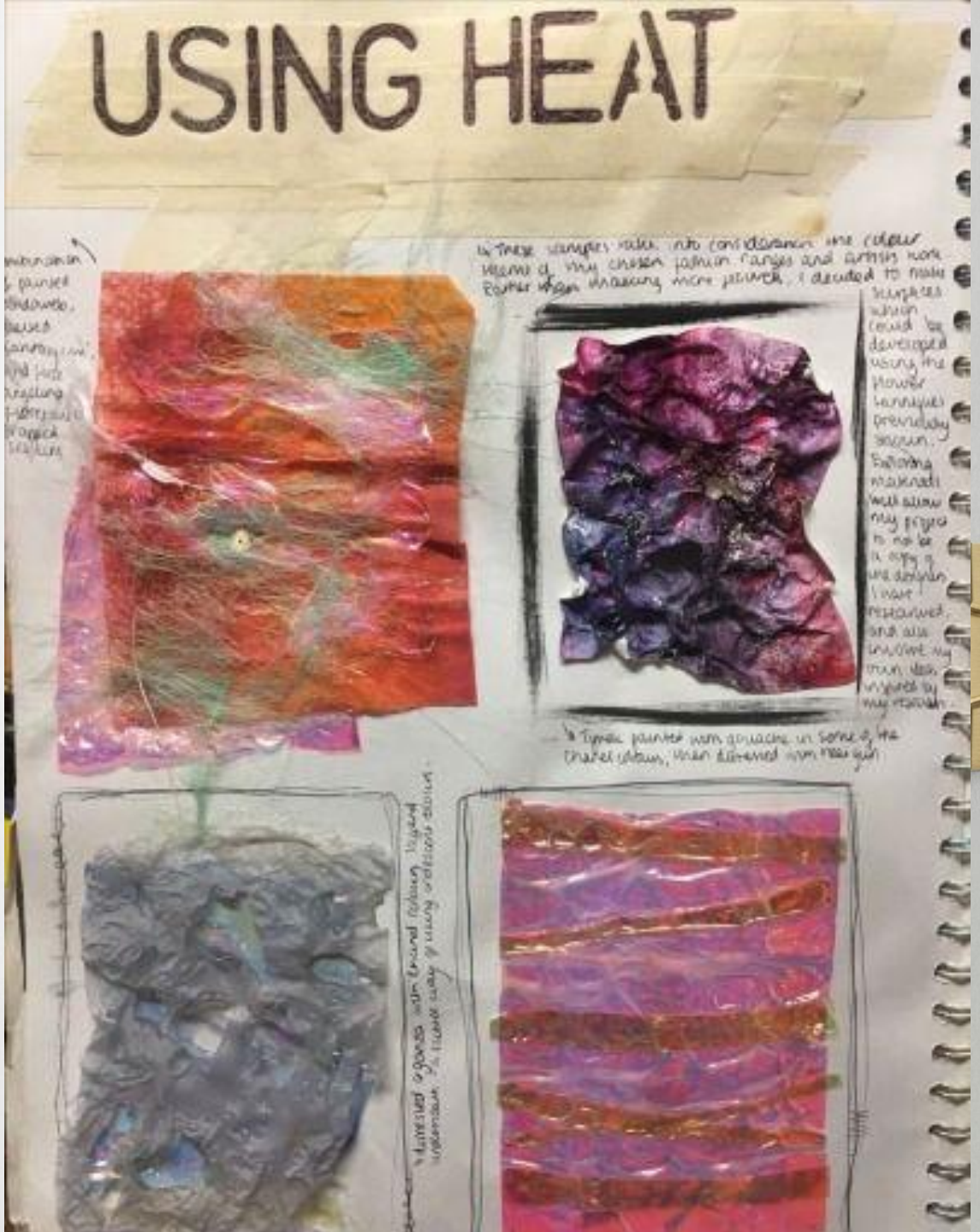


mikeslade15.wordpress.com

www.dabbled.org/2009/05/tutorial-fusing-plastic-or-how-to...

EXPERIMENTING WITH NEW TECHNIQUES AND MATERIALS:

Break down of steps in fusing plastic bags using everyday tools ie. Baking paper and an iron.



https://au.pinterest.com/pin/453245150016079350/

https://au.pinterest.com/pin/453245150016079348/

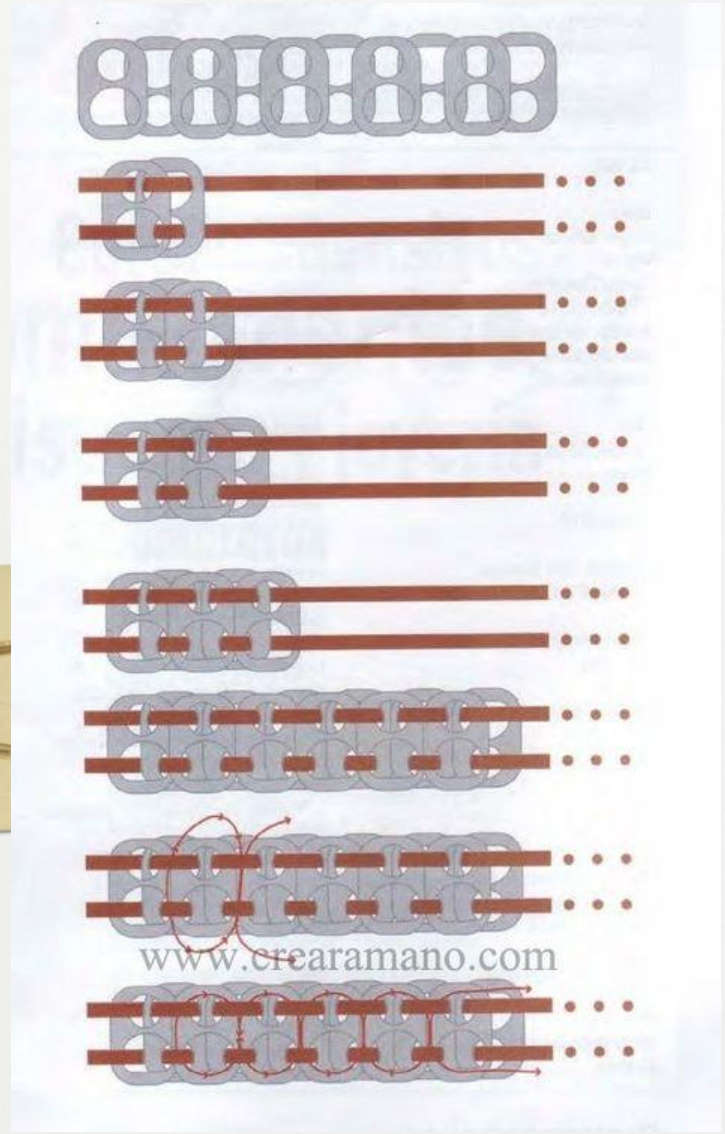
https://www.proteanart.com/

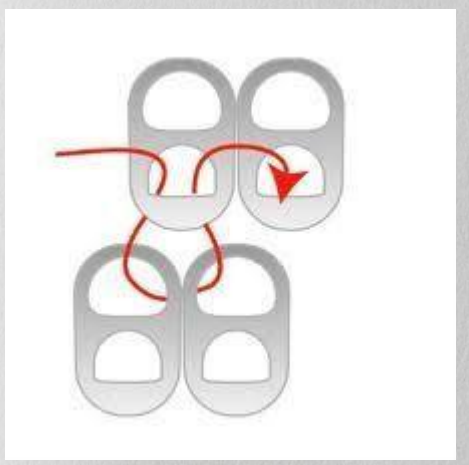
https://au.pinterest.com/pin/453245150016167240/

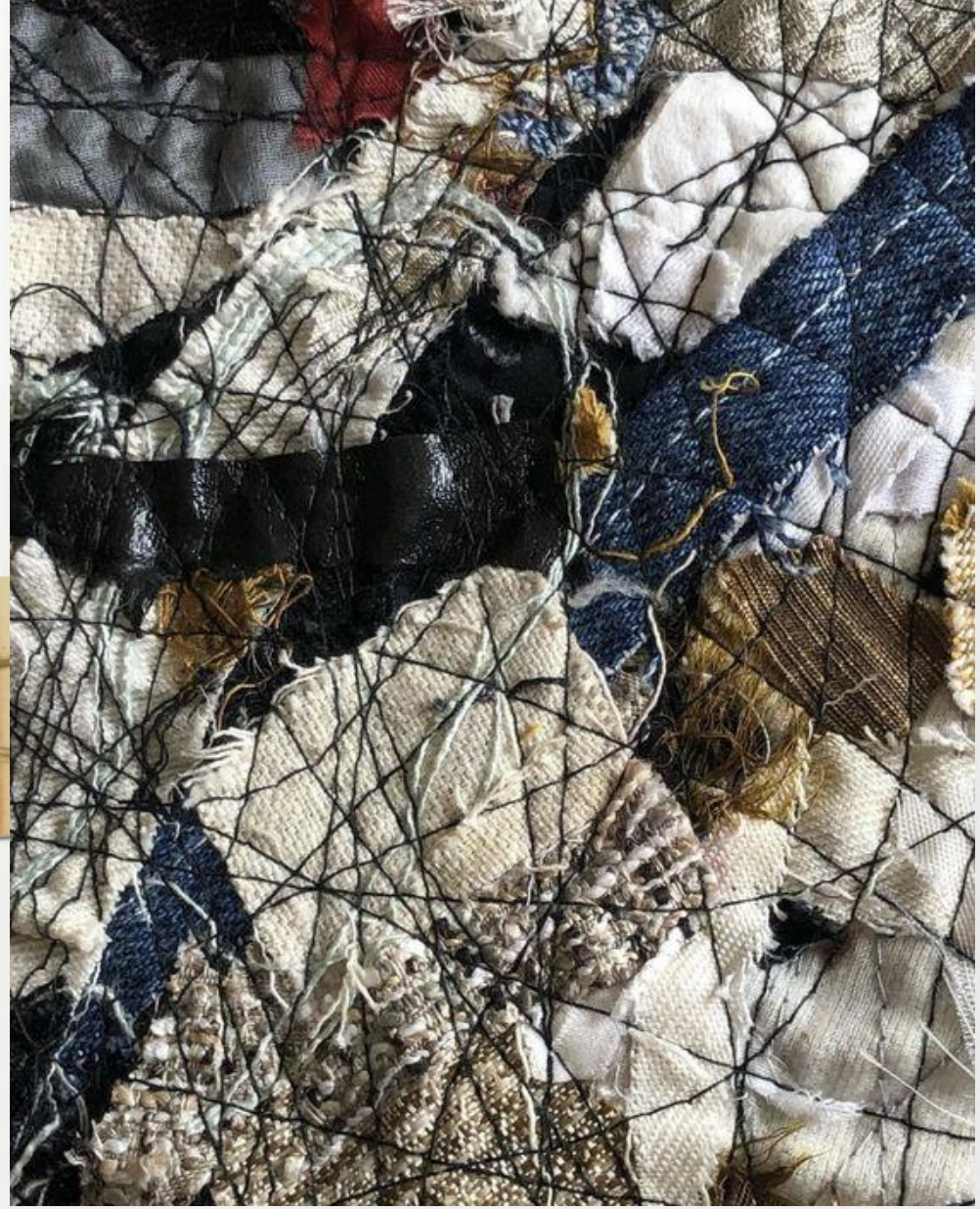
https://www.selvedge.org/blogs/selvedge/crafting-with-plastic

Josh Blackwell is a textile artist and designer who has been collecting discarded plastic bags from streets, cupboards and cars for more than 15 years. He then goes on to intertwine these with colourful wool yarn, silk thread and patterned cloth to create amazing embroidered pieces, which have very little to do with the generic appearance of plastic and more to do with inspired abstract compositions, in all possible shapes, varying in texture and colour.

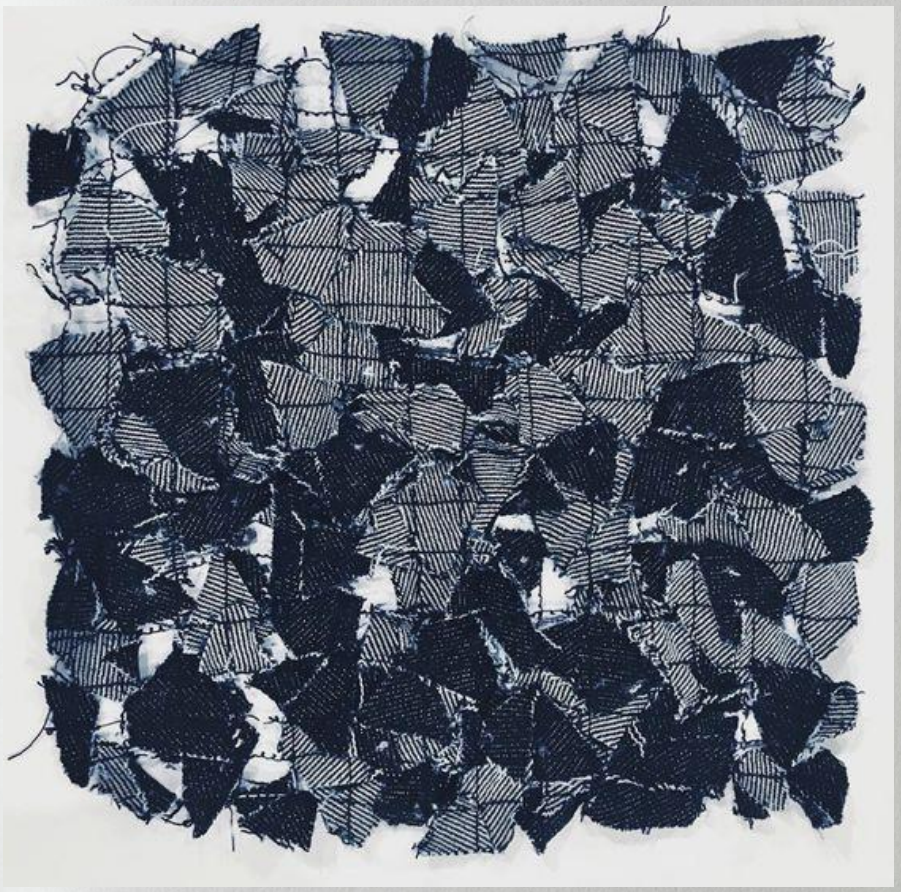
myupcycledlife.blogspot.com


www.crearamano.com

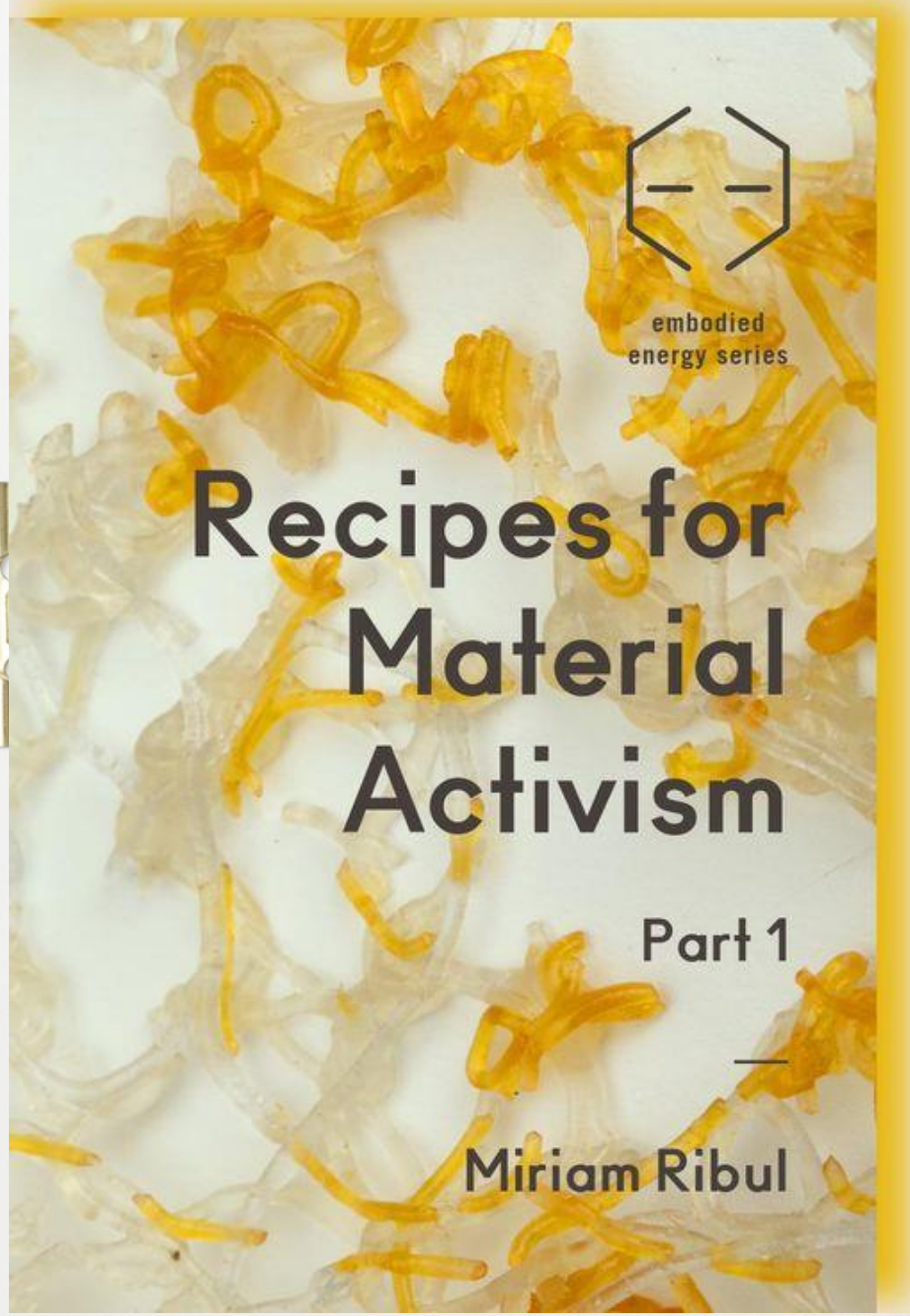




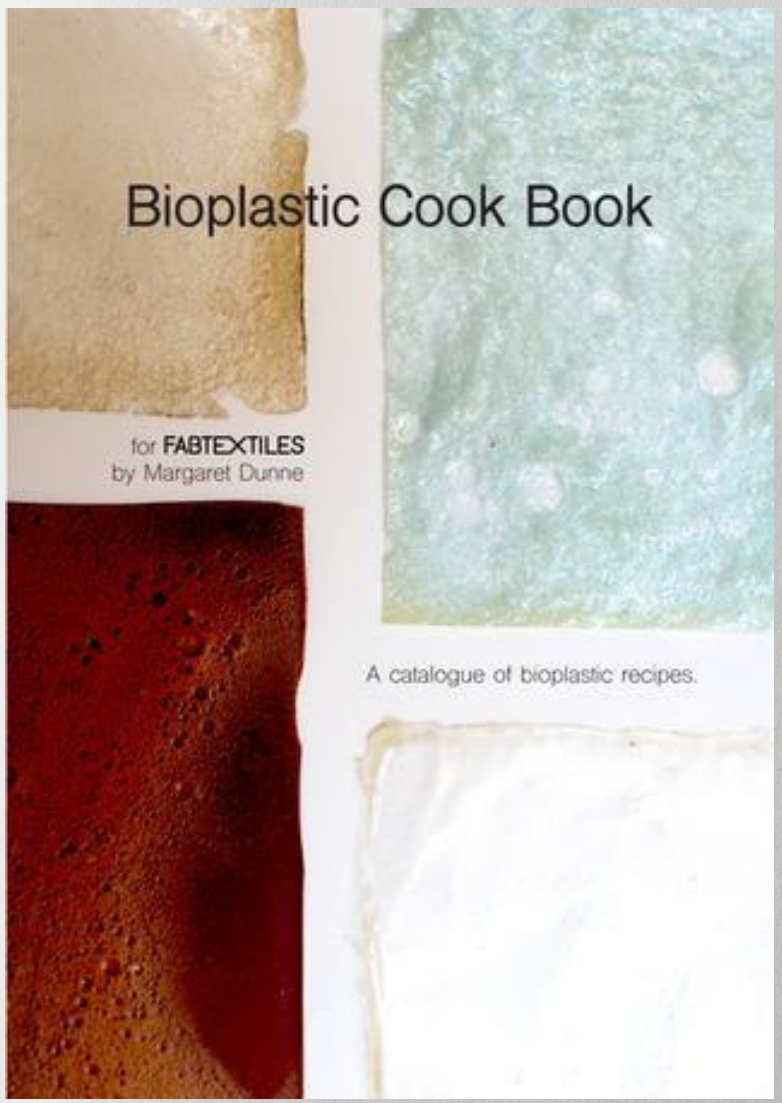
What equipment, tools and techniques can I use ?

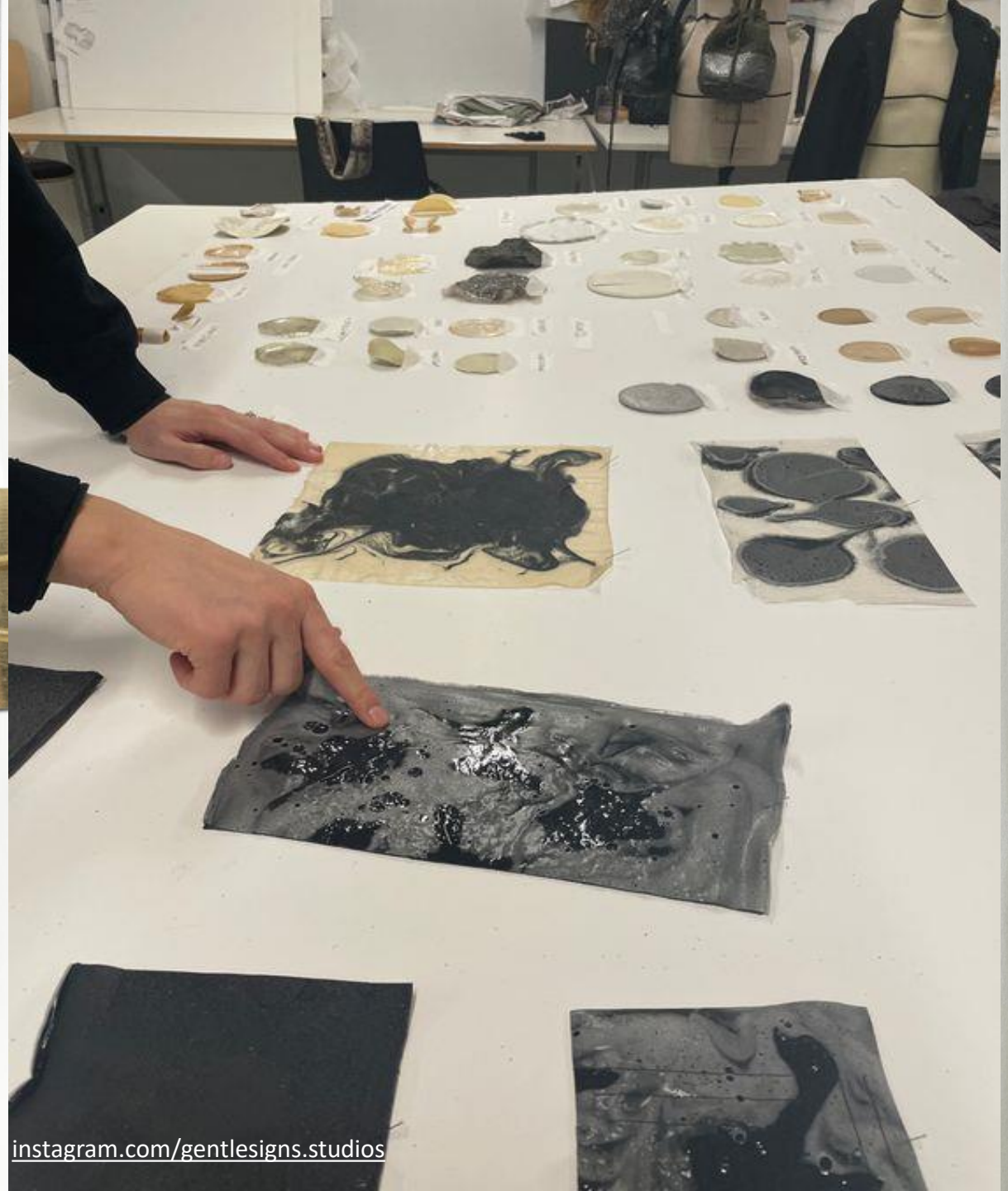


https://issuu.com/miriamribul/docs/miriam_ribul_recipes_for_material_a

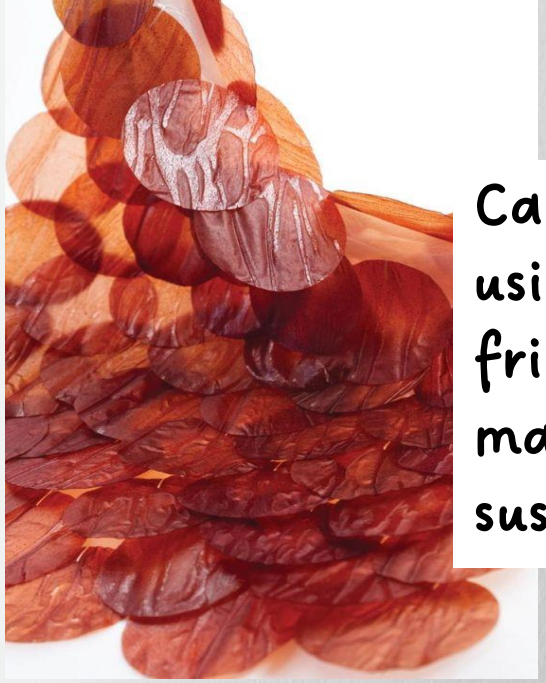


DESIGN MEETS BIOSCIENCE & TECHNOLOGY





instagram.com/gentlesigns.studios



Can new textiles be made using environmentally-friendly & natural materials towards sustainable design?

Bio-fabrics are considered sustainable materials for several reasons:

•Renewable Resources: They are made from natural, renewable sources like plants (e.g., cotton, hemp, bamboo) or algae, which can be regrown, reducing the depletion of finite resources.

•Biodegradable: Many bio-fabrics break down naturally over time, causing less environmental harm compared to synthetic fabrics that can take hundreds of years to degrade.

•Lower Environmental Impact: The production of bio-fabrics typically requires fewer chemicals, less water, and generates less pollution than the processes used for synthetic materials.

•Reduced Carbon Footprint: Since bio-fabrics come from renewable sources, their carbon footprint is generally smaller, particularly when organic farming practices are used.

Experimenting creating leather with SCOBY and different natural dyes

fabtextiles.org

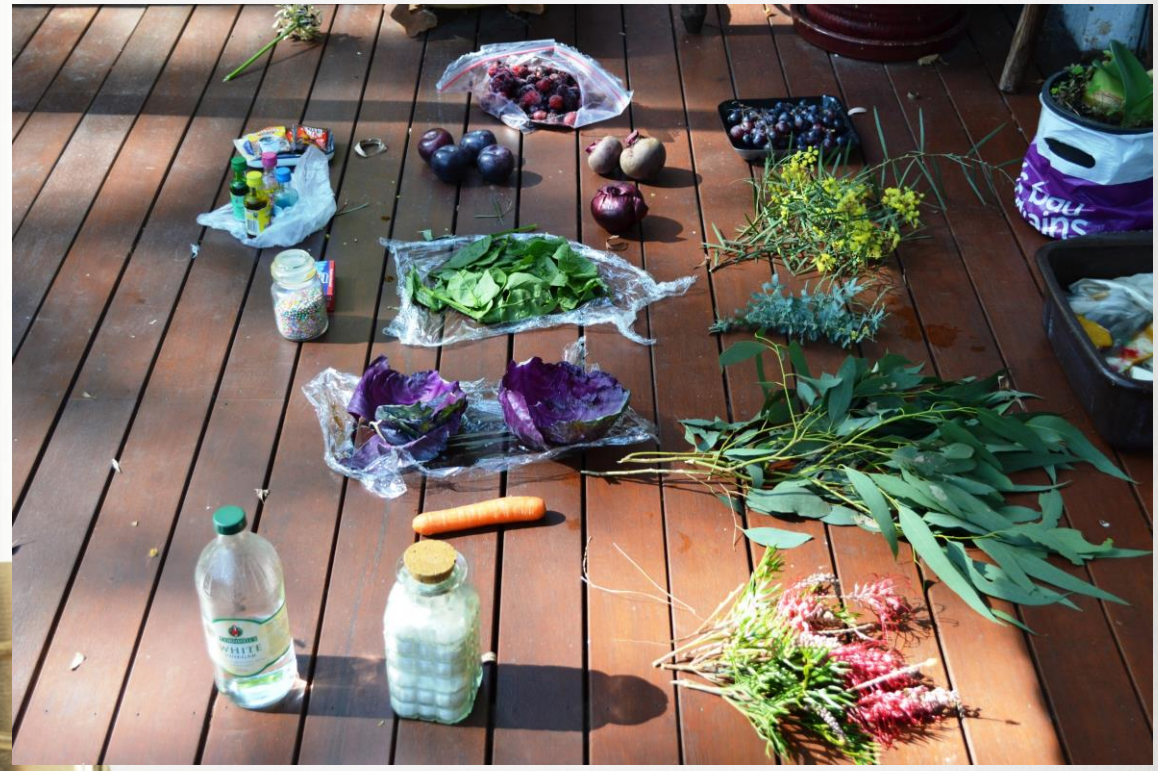
Avocado Waste: Bioplastic and Molds — Material Lab

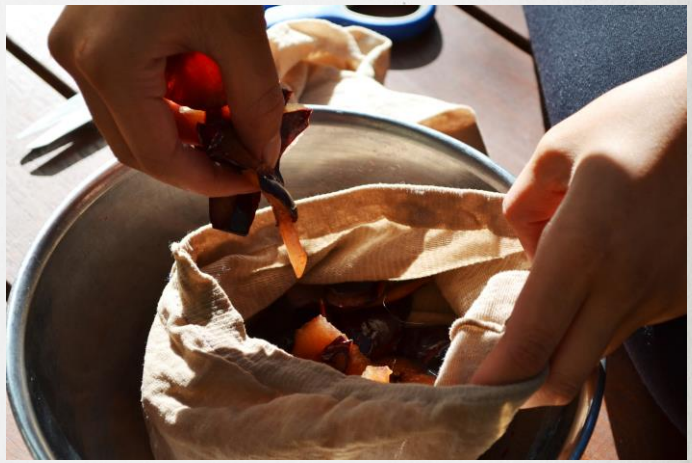
The garment industry is increasingly recognising the need for a change in traditional use of fabrics, thus investigating alternative innovative materials such as bacterial cellulose and bio-based fabrics (Karpova et.al, 2022).

DYES-LOW IMPACT

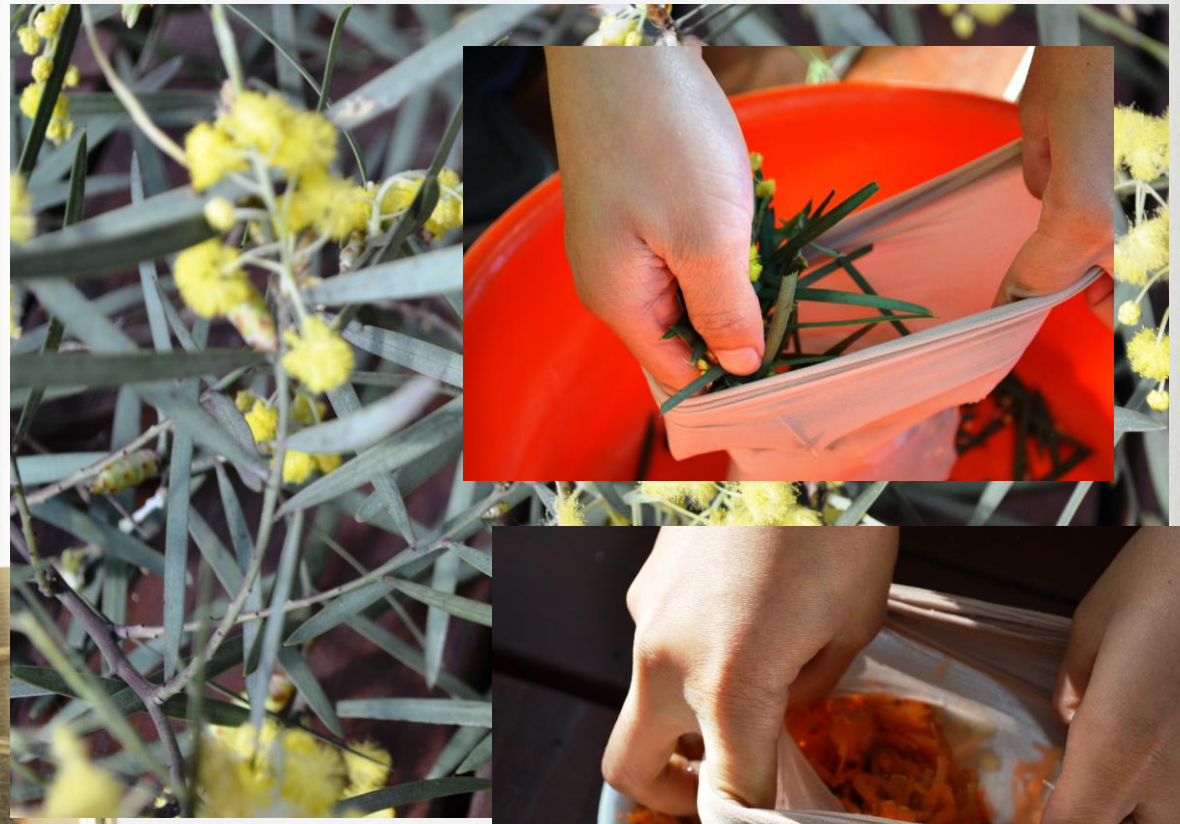
Low-impact dyes are dyes that have been classified as eco-friendly. Generally speaking this means they contain not harmful toxins or mordants and requires less rinsing and have a high absorption rate which reduces the amount of water waste.

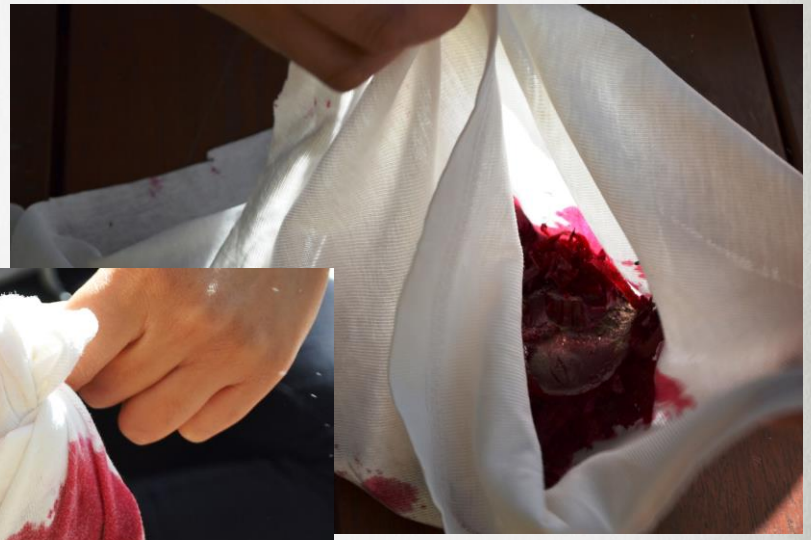
TRIAL PHASE: ECO-DYEING & ECO-PRINTING



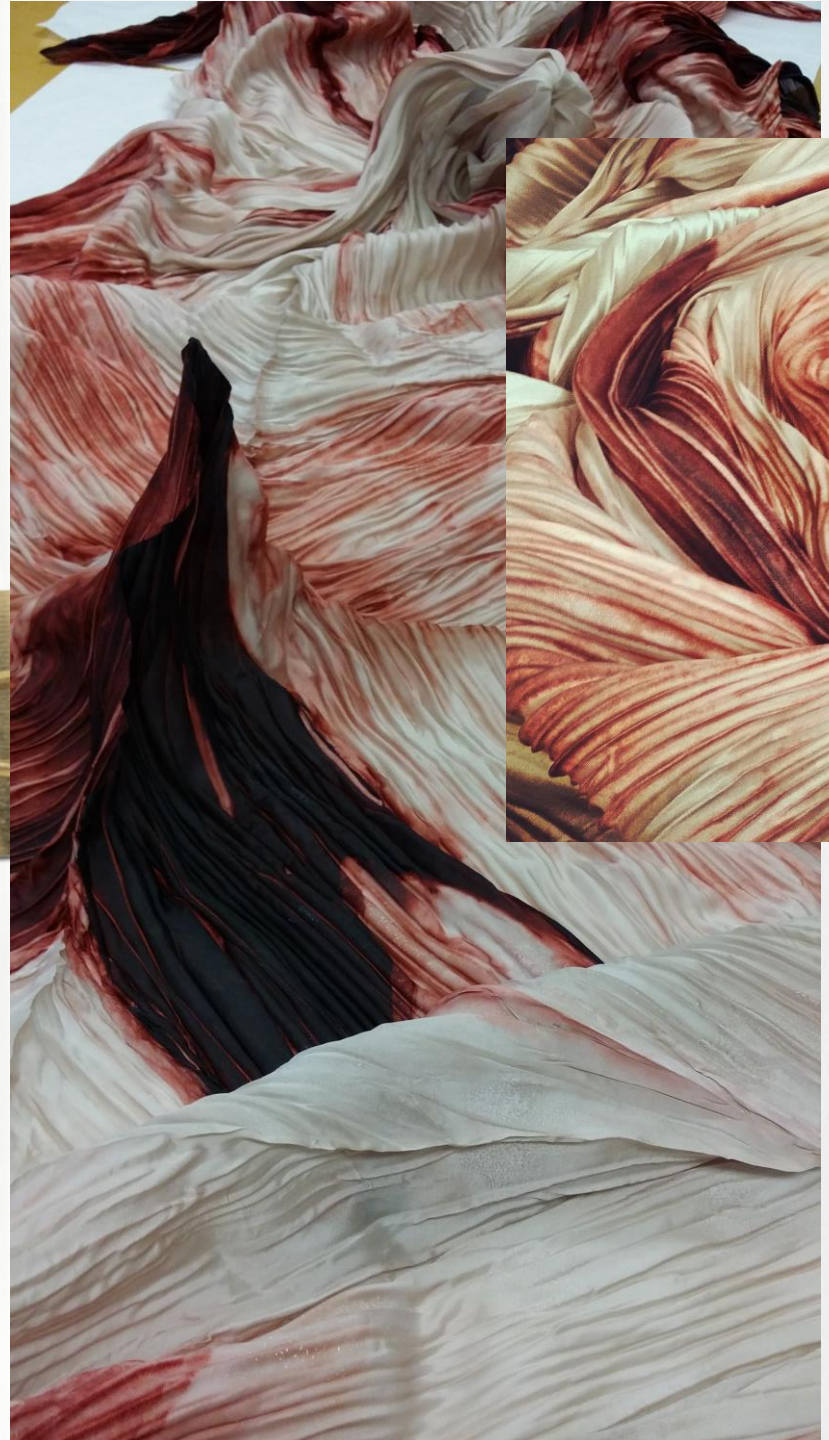


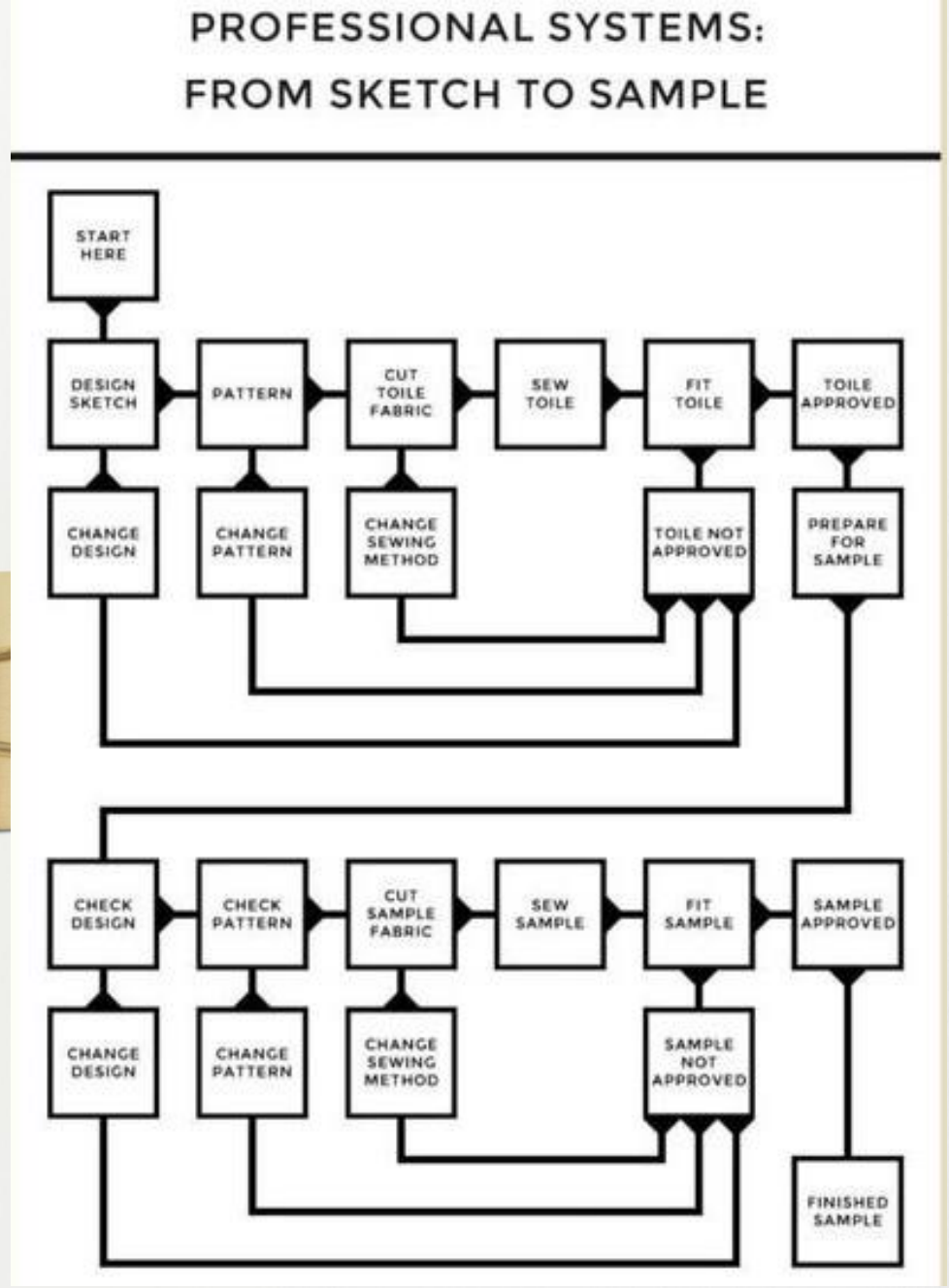
Using natural materials like organic wool and natural colorants offers a safe and environmentally friendly alternative to harmful synthetic dyes (Almaki & Tawfiq, 2023). As part of my eco-dyeing process- I use a range of materials such as vegetables, fruits, herbs, expired food/drink products and local plants. I aim to utilise tools and materials that are not new to ensure there is less consumption during the production of printed fabric. For example, I used old stockings that are unwearable anymore as reusable dye nets to place the plants in. I experimented with a variety of different fabrics to test which would take the natural dyes better. All these fabrics were remnants therefore I conducted a burn test to find out composition during the exploration stage.





RESULTS





How Patterns Work by @assembil books"

The necessary shifts of attitude towards a more sustainable approach to this industry also requires an awareness of sourcing, production and distribution.

RISK ASSESMENT

Step, process, material, or equipment	Hazard	Possible injuries	Level of risk		Safety precautions or controls needed to minimise risk
			Likely?(H/M/L)	Serious? (H/M/L)	
Mark out the sheet of stainless steel.(Case steel size = 1408 x 460)	Scribe	N/A	N/A	N/A	N/A
Cut the big piece of steel at the place where the door will be. This will allow the whole Case to be bent so minimal visual appeal will be lost from welding and other processes to bend the metal.	Guillotine.	Cutting off your fingers or hands	L	H	Safety guards and correct training given to user.
Bend the piece of steel	Metal bender	Crushing you fingers (very unlikely as the user often will have to use both hands on the metal bender to bend the sheet metal).	L	H	Correct training given to the user
Cut out the multiple holes and slits on the case.	CNC plasma cutter Press drill CNC machine	CNC plasma cutter: Damage to eyes Press drill: Clothing getting caught in the machine as well as swarf cutting the user. CNC machine: Flying swarf could cause injury to the user.	L	H	CNC plasma cutter: Use a welding helmet. Press drill: Wear tight fitting clothing and safety glasses, also don't use your hands to clear the swarf from the drill blade. CNC machine: Put guards on the CNC machine of use a water jet to stop particle's from flying everywhere.
Cut all the copper pipe to length.	Pipe cutter Brobo saw	Pipe cutter: N/A Brobo Saw: Cutting pipe in a Brobo saw can sometimes get	M	H	Pipe cutter: N/A Brobo Saw: Go very slowly when cutting pipe on the Brobo

Risk and safety assessments such as the template above, and the principles of occupational health and safety, are integral to practices and systems in VCE Product Design and Technologies. They must underpin all practical work and theoretical responses..

Refer to: Australian Code for the Responsible Conduct of Research (2007, updated 2018), issued by the National Health and Medical Research Council (NHMRC), Australian Research Council and Universities Australia.

CRITERIA: PROJECT PLANNING & MANAGEMENT

SCHEDULED PRODUCTION PLAN

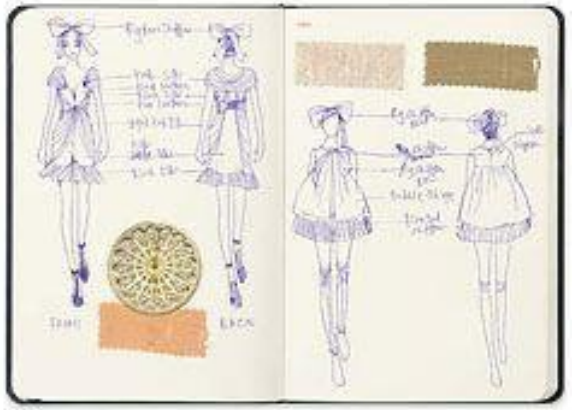
Garment	Step	Process (indicating materials when necessary)	What I need (machines etc.)	Risks Involved	Quality measure	Estimated time (hrs)
Outer Jacket	Preparation 1	Print out initial pattern for outer garment using the selected "ADIFF blanket jacket"	-pattern template -lined paper -pins -Scissors -mannequin -pins -sewing machine -calico		Pattern pieces are consistently the same shape and size and match up correctly. The use of rulers and pins to ensure the pattern is accurately drawn and cut out.	0.5
	2	Cut out calico pieces, pin together and place on the mannequin.				1
	3	Manipulate pieces to better meet the chosen design, and mark such adjustments using a pen.				1
	4	Create a desired pocket pattern for both the arms and front.				0.5
	5	Place mock up on an end user representative and ensure that the garment sits as desired and provides adequate movability, if needed make any minor adjustments.	-End user representative - Pins -Chalk		User a ruler to measure out the pieces accurately.	0.75
	6	Trace out new patterns on dotted paper and cut out pieces.	-Friction pen -Scissors		Using a ruler to correctly draw out patterns, pins to hold the pieces down, not to move when drawing around it.	1
	Production 7	Cut out the final pattern on the coated poly poplin silver, insulation and lining materials.	-Scissors -Pins		Pinning the fabric and using weights so it doesn't move when cutting.	1
	8	Cut out pocket patterns for the lining and interfacing.				0.75
	9	Cut out collar pieces and interfacing to fit the pattern.	-Scissors -Iron -Pins -Collar piece			0.5
	10	Bond the interfacing pieces to the pockets to reinforce their strength.	-Rip stop pocket pieces -Interfacing for pocket pieces -Iron		Use of pins and weights to ensure that all pattern pieces are correctly lined up and sewn,	0.5
	11	Sew pockets together.	-Sewing machine			1.5
	12	Mark out wear pockets are to be sewn, placed and sewn on the outlet layer using a zipper foot.	-Chalk -Sewing machine -Zipper foot -Quick unpick			1.5

Zoe Nunn, Product Design and Technology – Textiles, Criteria 4

Source: Victorian Curriculum and Assessment Authority (VCAA)

AREA OF STUDY 2:

"Students develop a final proof of concept and implement a scheduled production plan to make the product efficiently and effectively." (VCAA, 2023)



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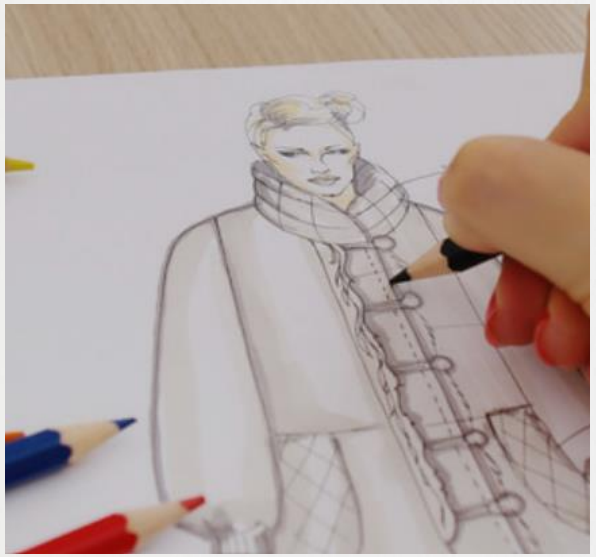
https://1granary.com/designers-3/the-digital-future-of-kanmin-kim/

https://au.pinterest.com/pin/453245150016188546/

Folio process-
Making sure evidence of idea generation is documented effectively

artsthread.com



FAITH Contemporary / faith by Jessica

Silk lapel Blouse

SIZE WOMEN'S SMALL

FABRIC

Silk chiffon - Base

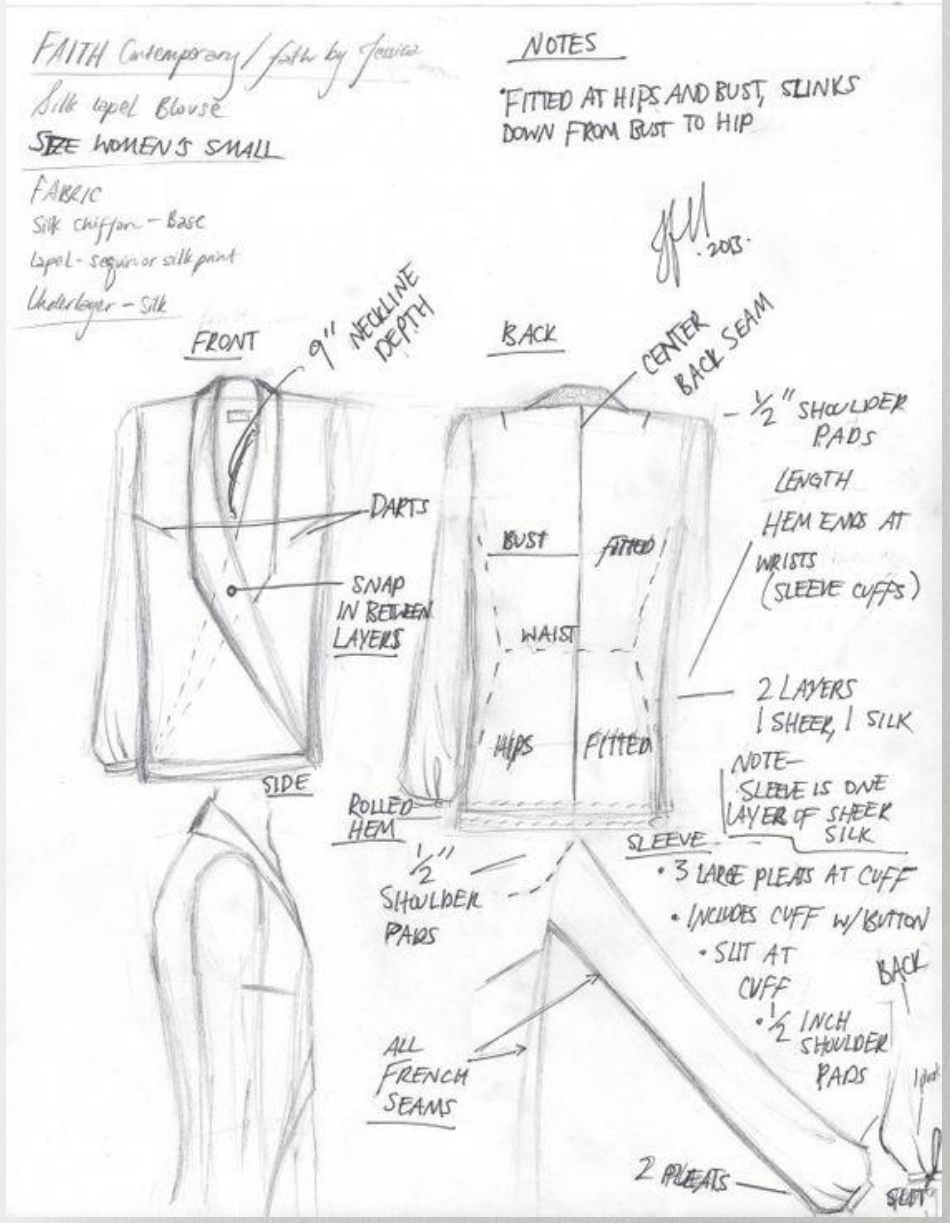
Lapel - sequin or silk print

Underlayer - Silk

NOTES

*FITTED AT HIPS AND BUST, SLINKS DOWN FROM BUST TO HIP

gfl. 2015.



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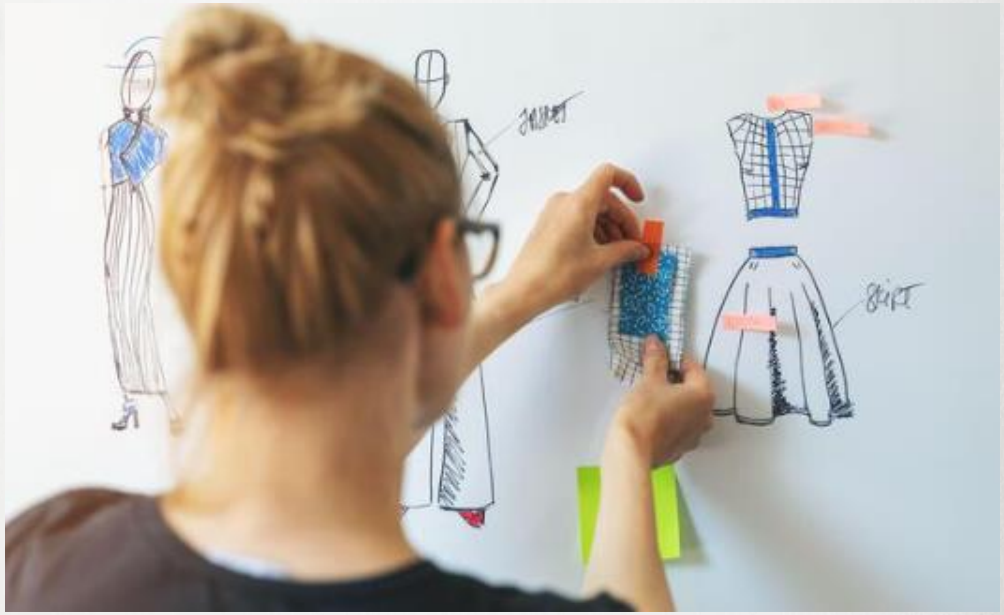


https://www.alamy.com/stock-photo/fashion-design-drawing

https://www.freepik.com/

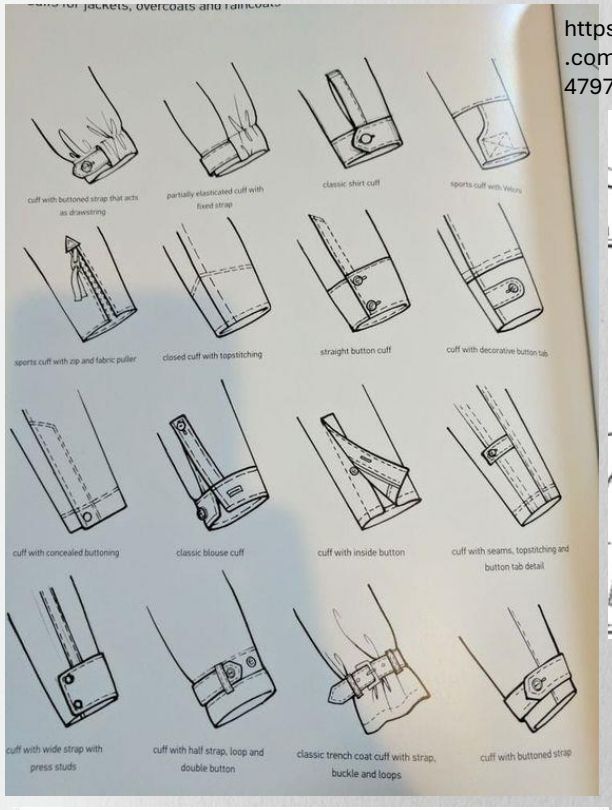
How to Callout Construction for a Garment — Points of Measure.com

ISO Stitch Terminology — AMERICAN & EFIRD, INC — Page 1 of 4

Stitch Drawing: Top View As Sewn	Stitch Drawing: Bottom View As Sewn	ISO 4915 Number	Common Application	Requirements	Stitch Description
Single Thread Chainstitch		101	Basting Stitch for Tailored Clothing, Bag Closing	Specify SPI.	Stitch formed by a needle thread passing through the material and interlooping with itself on the underside of the seam with the assistance of a spreader.
Single Thread Chainstitch or Lockstitch Buttonsew, Buttonhole or Bartack	* 304 Lockstitch is preferred when stitch security is a Must.	101 or 304	Buttonsew, Buttonhole, or Bartack	1) Buttonsew - specify stitches per cycle (Ex. 8,16, 32) 2) BH - specify length & width (1/2", etc.) 3) Bartack - specify length & width of tack.	Knit Shirts - Buttonhole length generally is 1/2 inch, is placed horizontally, with approximately 85-90 stitches
Single Thread Blindstitch	No stitch visible on the Bottom or Outside of Sewn Product	103	Blindstitch Hemming, Felling, Making Belt Loops	Specify 1) SPI 3 - 5 SPI 2) Non-skip or 2 to 1 skipped stitch	Stitch is formed with one needle thread that is interlooped with itself on the top surface of the material. The thread passes through the top ply and horizontally through portions of the bottom ply without completely penetrating it the full depth.
Lockstitch - Most Common of All Stitches	Bobbin Thread on Bottom	301	Topstitching, Single Needle Stitching, Straight Stitching	Specify SPI.	Stitch formed by a needle thread passing through the material and interlocking with a bobbin thread with the threads meeting in the center of the seam. Stitch looks the same top & bottom.
Zig Zag Lockstitch		304	Intimate Apparel, Athletic wear, Infantwear, Exercisewear	Specify 1) SPI 2) Throw or width Zig-Zag (1/8", 3/16", 1/4")	Stitch is formed with a needle and a bobbin that are set in the center of the seam and form a symmetrical zig-zag pattern. Also, used to identify bartacking and lockstitch buttonsewing and buttonholing.
Chainstitch	Looper Thread on Bottom	401	Single Needle Chainstitch - Mainseams on Wovens	Specify SPI.	Stitch formed by 1-needle thread passing through the material and interlooped with 1-looper thread and pulled up to the underside of the seam.
Zig Zag Chainstitch	Looper Thread on Bottom	404	Zig-Zag Chainstitch for Infantwear and Childrenswear: Binding, Topstitching, etc.	Specify 1) SPI 2) Throw or width Zig-Zag (1/8")	Stitch is formed with a needle and a looper that are set on the underside of the seam and form a symmetrical zig-zag pattern.

Stitch Drawing: Top View As Sewn	Stitch Drawing: Bottom View As Sewn	ISO 4915 Number	Common Application	Requirements	Stitch Description
2 Needle Bottom Coverstitch	Looper Thread on Bottom	406	Hemming, Attaching, Elastic, Binding, Coverseaming, Making Belt Loops	Specify 1) Needle spacing (1/8", 3/16", 1/4") 2) SPI	Stitch formed by 2-needle threads passing through the material and interlooping with 1-looper thread with the stitch set on the underside of the seam. Looper thread interlooped between needle threads providing seam coverage on the bottom side only.
3 Needle Bottom Coverstitch	Loocer Thread on Bottom	407	Attaching Elastic to Men's & Boys Knit Underwear	Specify 1) Needle spacing (1/4") 2) SPI	Stitch formed by 3-needle threads passing through the material and interlooping with 1-looper thread with the stitch set on the underside of the seam. Looper thread is interlooped between needle threads providing seam coverage on the bottom side only.
2 Needle Chainstitch with Cover Thread	Looper Thread on Bottom	408	Attaching Pocket Facings to Jeans & Chino Casual Pants		Stitch formed by 2-needle threads passing through the material and interlooping with 2-looper threads with the stitches set on the underside of the seam. A top spreader thread is interlaced on the top side of the seam between the two needle threads.
2 Thread Overedge	Single "purl" on Edge	503	Serging & Blindhemming	Specify 1) Width Bite (Ex. 1/8", 3/16", 1/4") 2) SPI.	Stitch formed by 1-needle thread and 1-looper thread with purl on edge of seam for serging or blindhemming ONLY.
3 Thread Overedge	Common Overedge Stitch	504	Single Needle Overedge Seaming	Specify 1) Width Bite (Ex. 1/8", 3/16", 1/4") 2) SPI.	Stitch formed with 1-needle thread and 2-looper threads with the looper threads forming a purl on the edge of the seam. For overedge seaming and serging.
3 Thread Overedge	Double "purl" on Edge	505	Serging with Double purl on Edge	Specify 1) Width Bite (Ex. 1/8", 3/16", 1/4") 2) SPI.	Stitch formed with 1-needle thread and 2-looper threads with the looper threads forming a double purl on the edge of the seam for serging ONLY.
Mock Safety Stitch	2 Needle Overedge	512	Seaming Stretch Knits, Wovens	Specify SPI.	Stitch formed with 2-needle threads and 2 looper threads with the looper threads forming a purl on the edge of the seam. 512 – right needle only enters the upper looper loop. Stitch does NOT chain-off as well as 514 Stitch
2 Needle 4 Thread Overedge	2 Needle Overedge	514	Seaming Stretch Knits, Wovens	Specify SPI.	Stitch formed with 2-needle threads and 2 looper threads with the looper threads forming a purl on the edge of the seam. 514 – both needles enter the upper looper loop. Preferred over 512 Stitch because it chains-off better.

Stitch Drawing: Top View As Sewn	Stitch Drawing: Bottom View As Sewn	ISO 4915 Number	Common Application	Requirements	Stitch Description
4 Thread Safetystitch		515 (401+503)	Safetystitch Seaming Wovens & Knits	Specify 1) Needle spacing & bite - Ex.: 1/8"- 1/8", 3/16"- 3/16" 3/16" – 1/4" 2) SPI	Combination stitch consisting of a single-needle chainstitch (401) and a 2-thread Overedge stitch (503) that are formed simultaneously. Uses less thread than a 516 stitch; however, many manufacturers prefer a 516 stitch.
5 Thread Safetystitch		516 (401+504)	Safety Stitch Seaming Wovens & Knits	Specify 3) Needle spacing & bite - Ex.: 1/8"- 1/8", 3/16"- 3/16" 3/16" – 1/4" 4) SPI	Combination stitch consisting of a single-needle chainstitch (401) and a 3-thread Overedge stitch (504) that are formed simultaneously.
2 Needle 4 Thread Coverstitch		602	Binding A Shirts, Infants Clothing, etc.	Specify 1) Needle spacing (Ex: 1/8", 3/16", 1/4") 2) SPI	Stitch formed with 2-needle threads, a top cover thread and a bottom looper thread.
3 Needle 5 Thread Coverstitch		605	Lap Seaming, Coverseaming, Binding on Knits	Specify 1) Needle spacing (Ex: 1/4") 2) SPI	Stitch formed with 3-needle threads, a top cover thread and a bottom looper thread.
4 Needle 6 Thread Coverstitch	Flatseamer/Flatlock	607	Flat or Lap Seaming Knit Underwear, Fleece, etc.	Specify SPI	Stitch formed with 4-needle threads, a top cover thread and a bottom looper thread. Preferred over 606 stitch because machines are easier to maintain.



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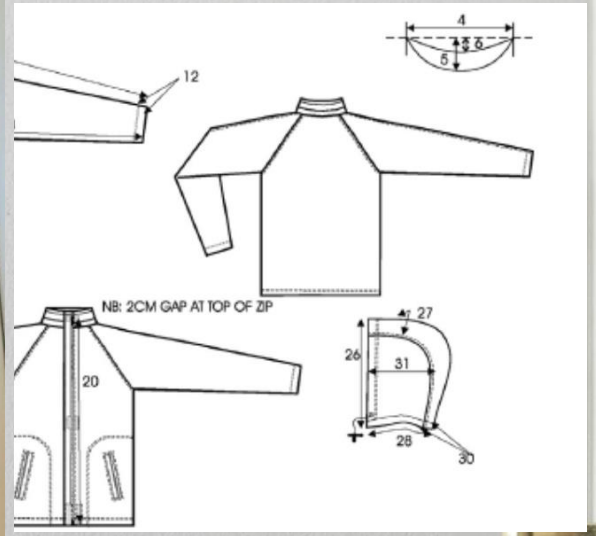
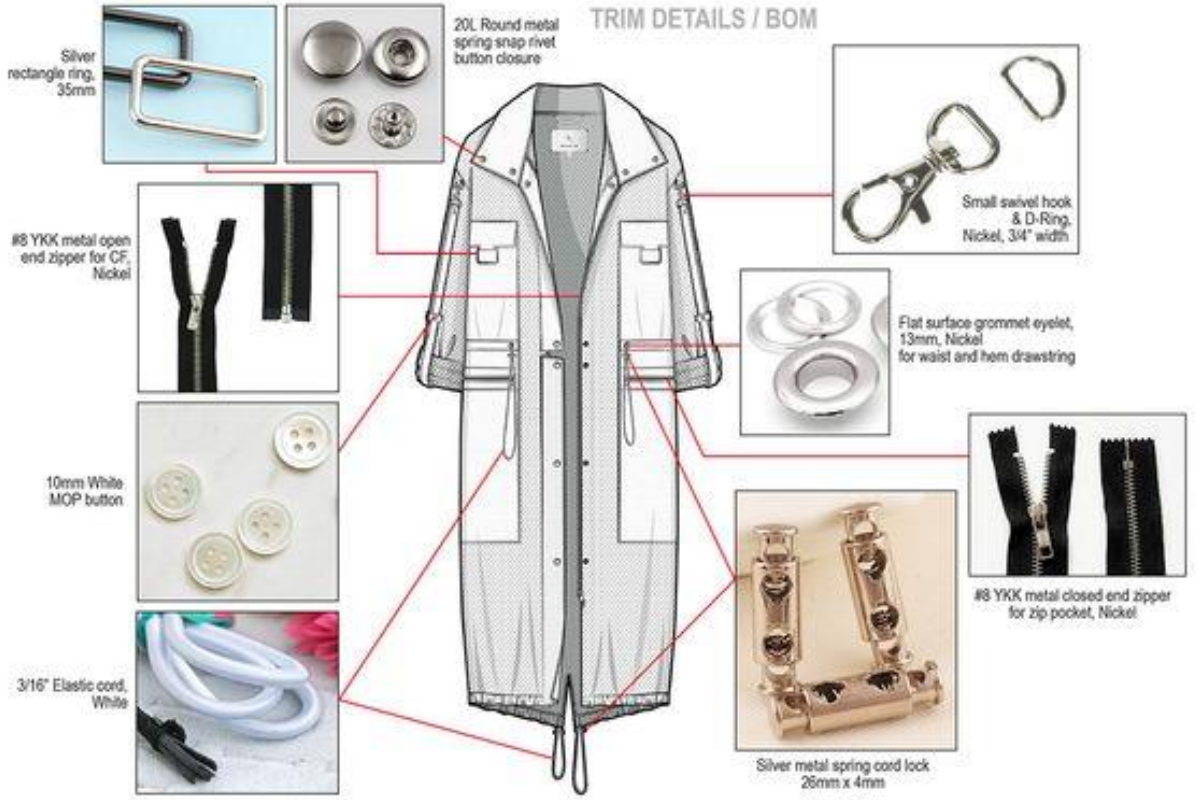


These examples show how digital technology can be used towards product design. It is important to consider the product's functionality for the end user. Details might include fastenings or hardware or different stitch types...

mypracticalskills.com

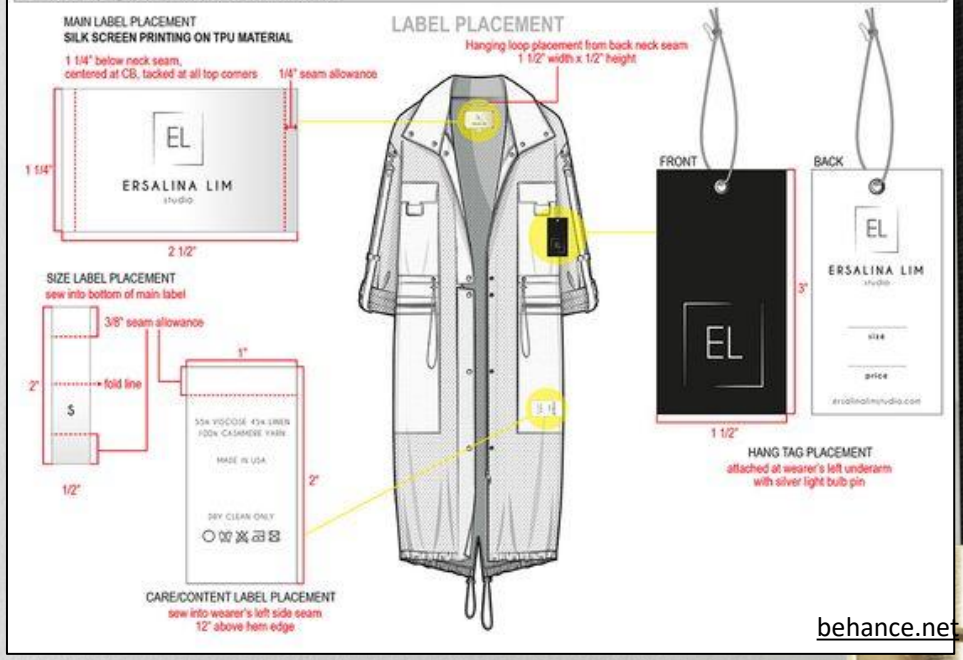
PRODUCT DESIGN TECHNOLOGY

SEASON	SPRING SUMMER 2021	DESIGNER	EL ERSALINA LIM	SIZE RANGE & [SAMPLE SIZE]	[XS] S M L XL
STYLE #	LOOK 8 - JACKET	DATE	05/11/2019	VENDOR	
DESCRIPTION	SLOUCHY OPEN KNIT UTILITY JACKET				

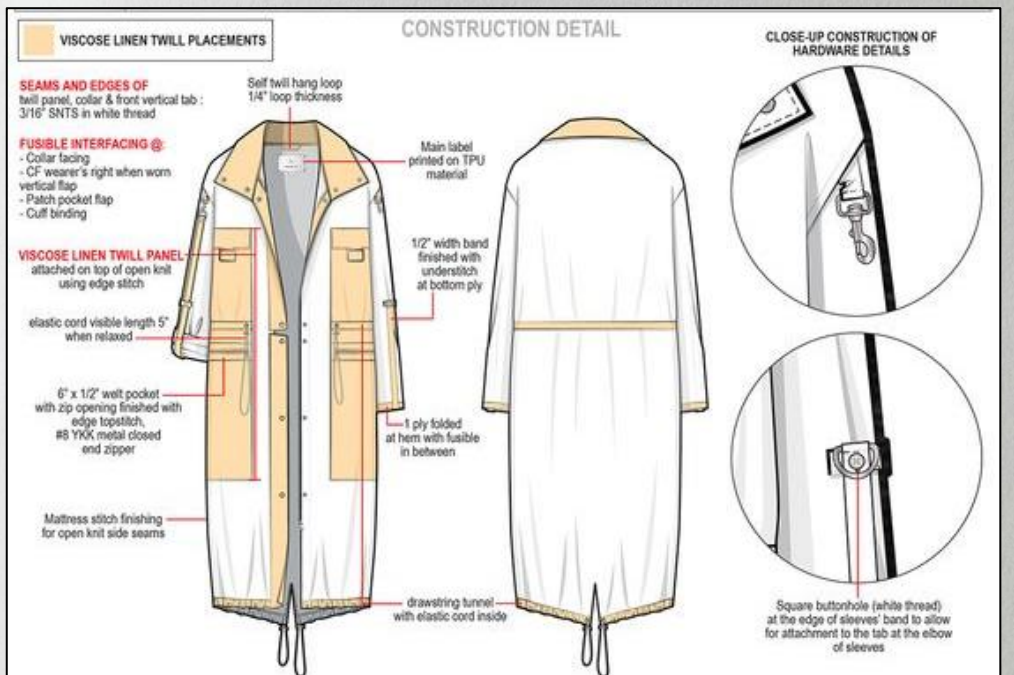


TECHNICAL SPECIFICATIONS

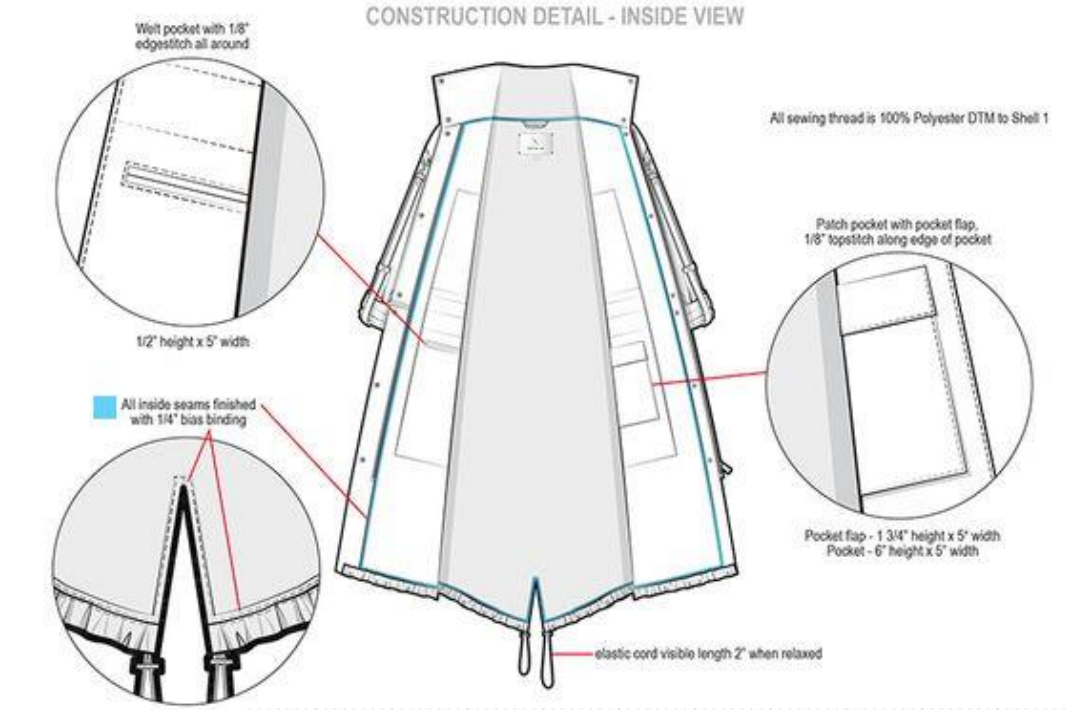
SEASON	SPRING SUMMER 2021	DESIGNER	EL ERSALINA LIM	SIZE RANGE & [SAMPLE SIZE]	[XS] S M L XL
STYLE #	LOOK 8 - JACKET	DATE	05/11/2019	VENDOR	
DESCRIPTION	SLOUCHY OPEN KNIT UTILITY JACKET				

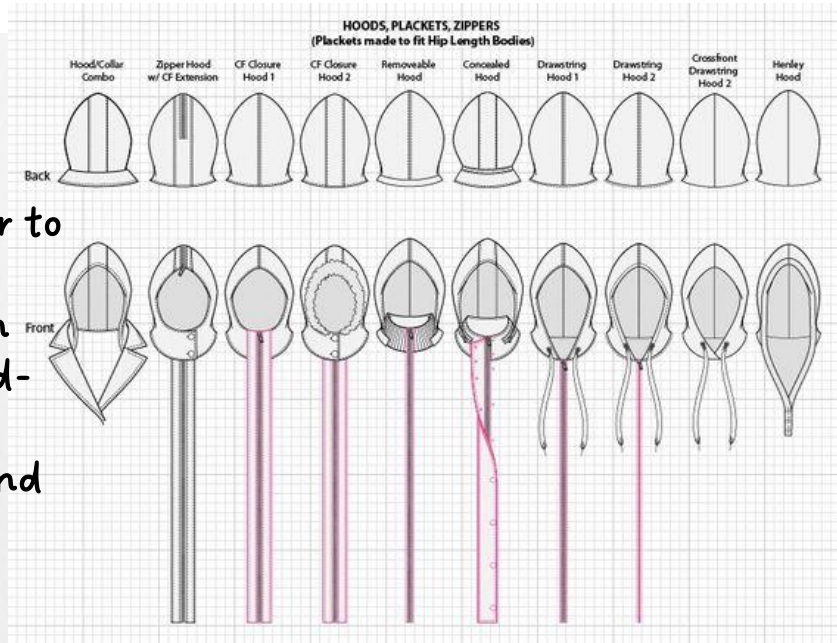


behance.net



SEASON	SPRING SUMMER 2021	DESIGNER	EL ERSALINA LIM	SIZE RANGE & [SAMPLE SIZE]	[XS] S M L XL
STYLE #	LOOK 8 - JACKET	DATE	05/11/2019	VENDOR	
DESCRIPTION	SLOUCHY OPEN KNIT UTILITY JACKET				

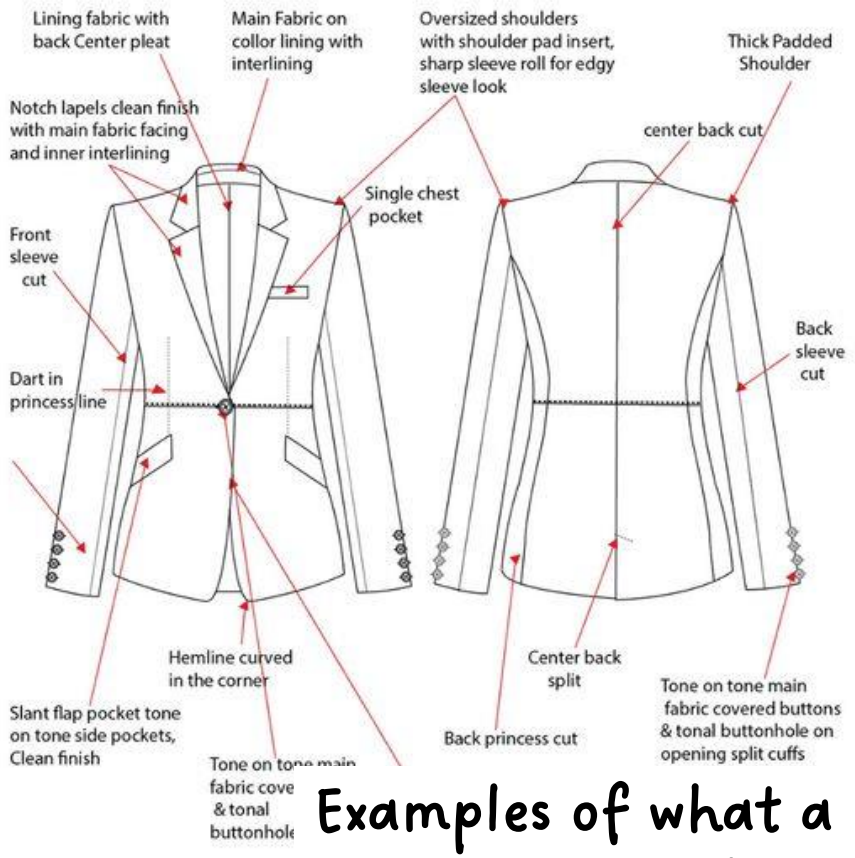




Using Illustrator to come up with different design ideas for a hood-making sure to include front and back views.

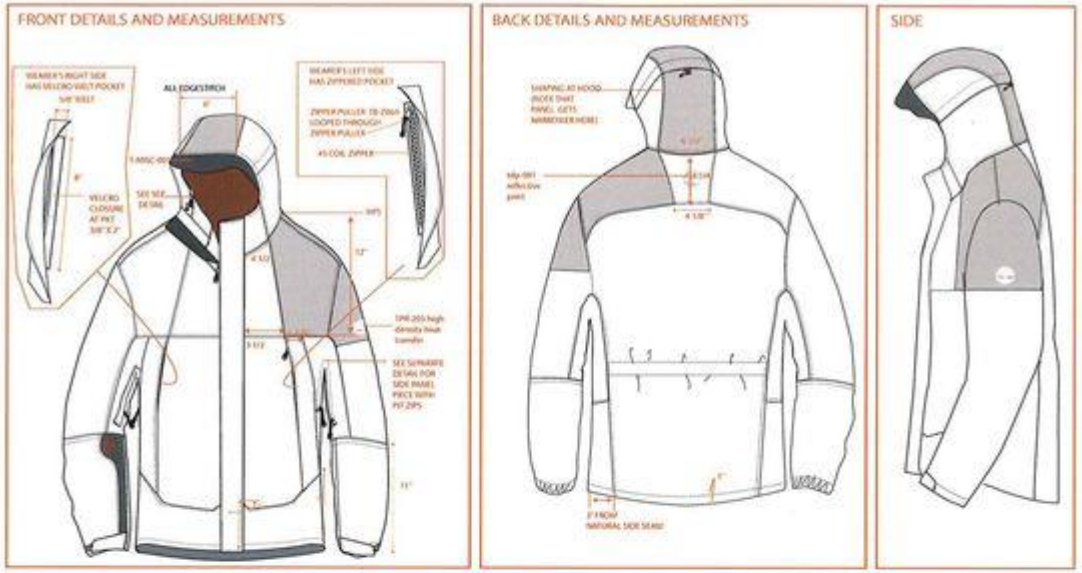
Project: Suit Collection	Client: Victoria Semenova	Date:
Category: Women Blazer	Look: 01 Design: 01	Style: POWER SUIT
Main Fabric: Wool	Lining Fabric: Polyester	
Description: Slim fit one button Single- breasted notch lapel jacket with ecentuated shoulder pinch waist fully lined		

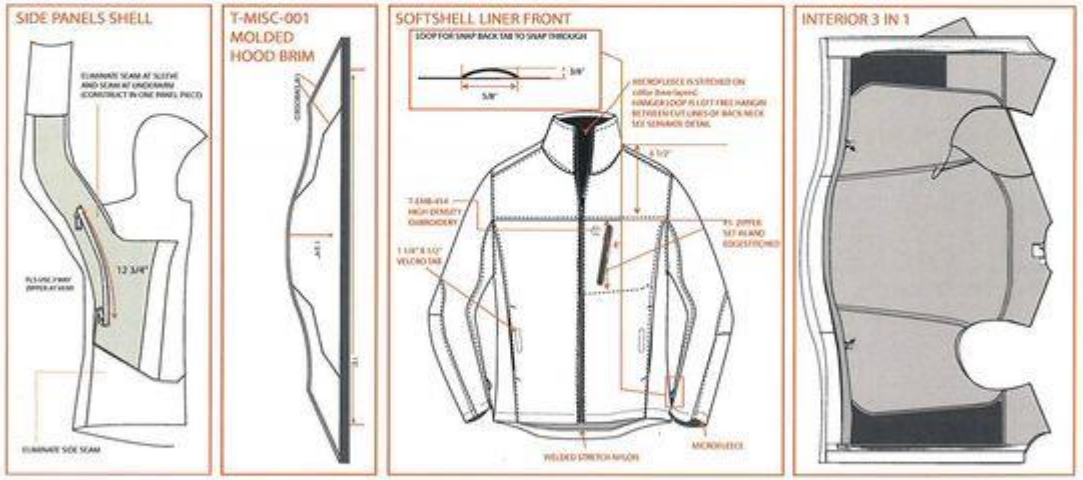
WORKMANSHIP



behance.net

Examples of what a garment technical specification sheet may look like for use in production





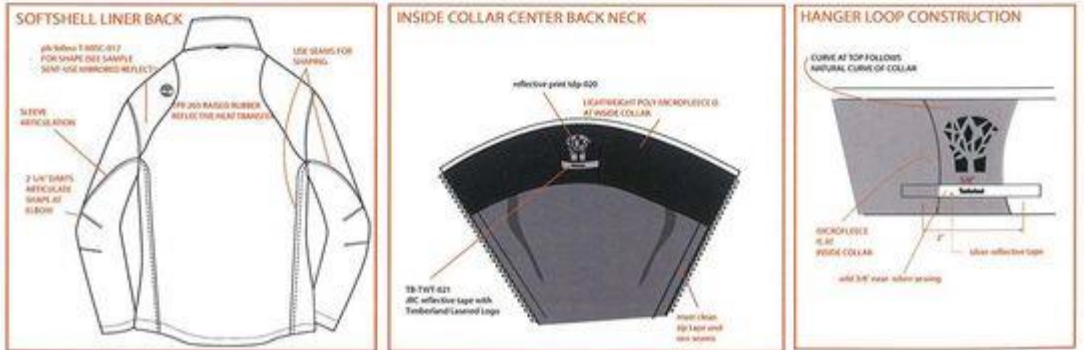
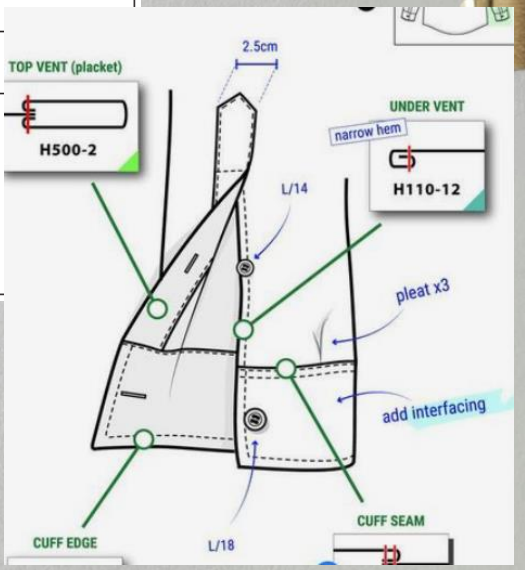


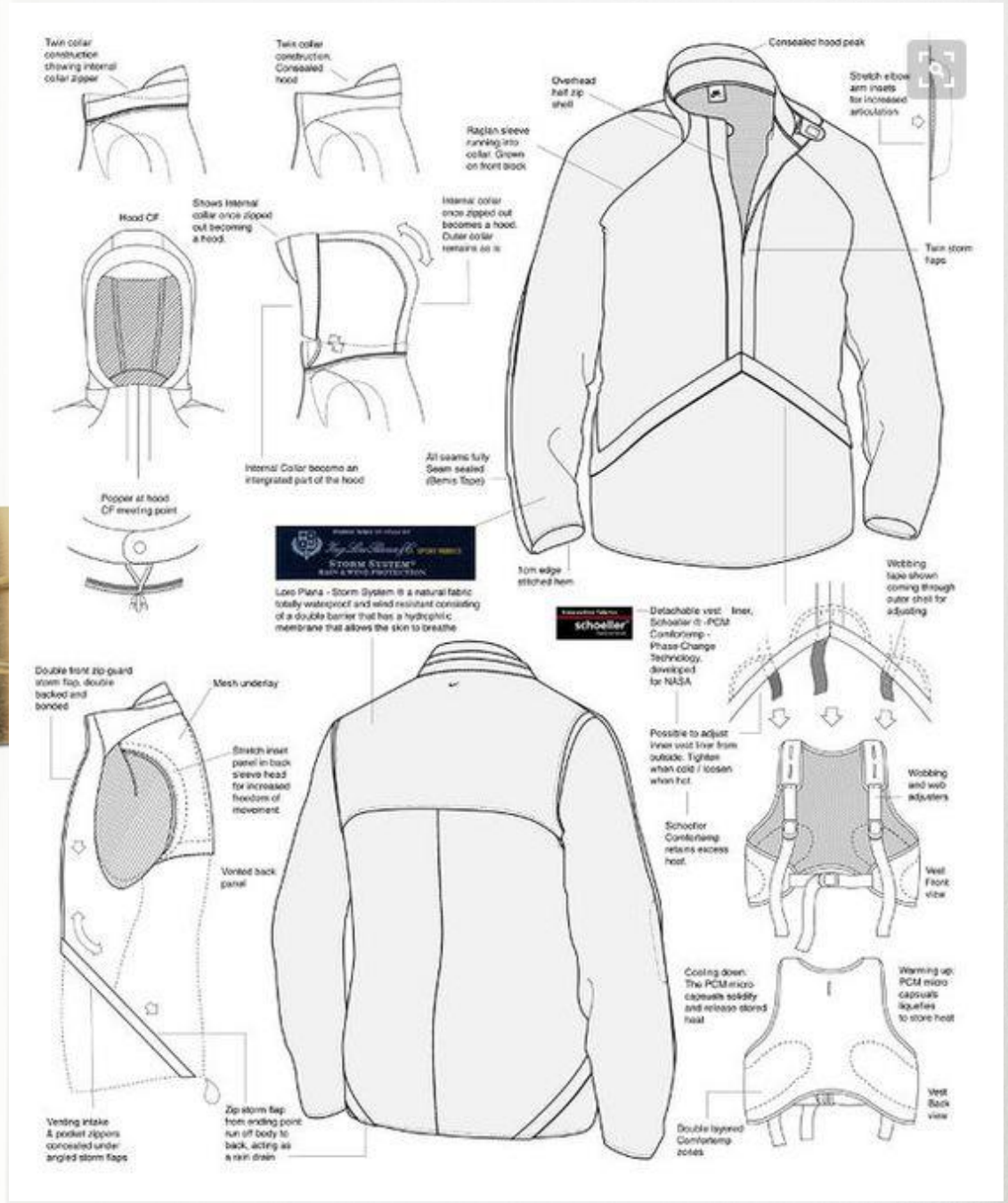
Photo by Rebecca Frantzis on behance | 2009 Timberland Styles and Details, Techpacks and Concept Boards

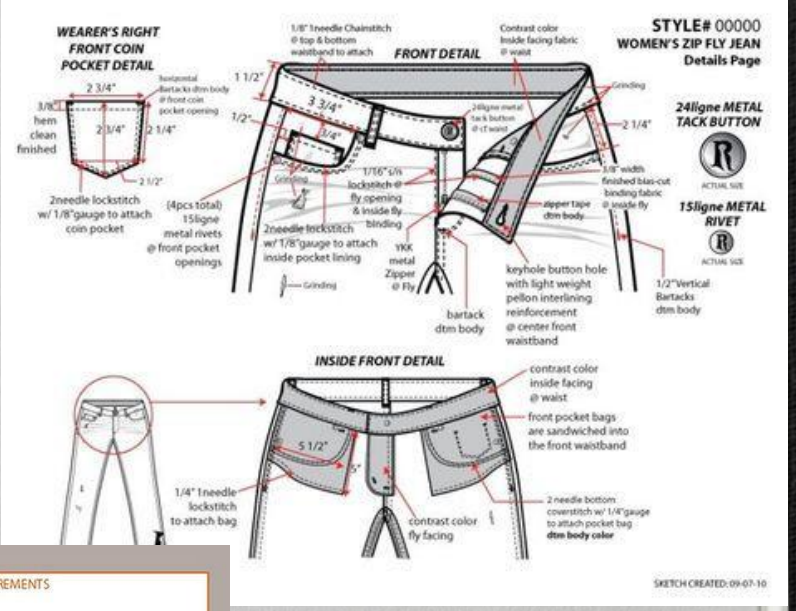
https://www.textileblog.com/how-to-make-a-garment-specification-sheet/

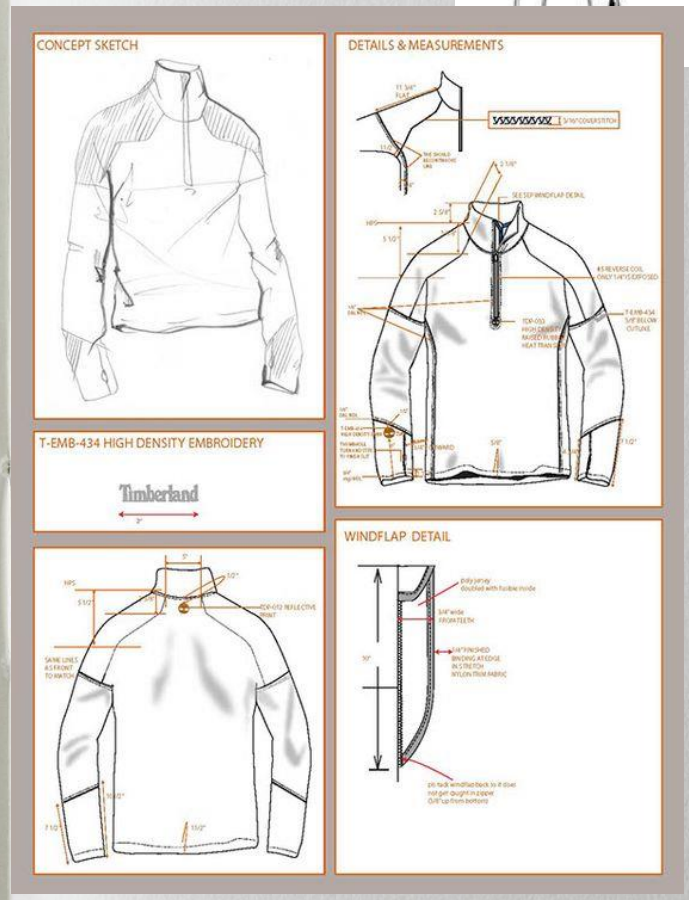
Design style sheet/specification sheet			
Style no	Designer-Tina Fong	Customer/buyer	CMT/factory
Season: S/S Yr	Pattern maker	Department	Sample size
Commitment no	Machinist	Delivery	Created
		Color	Modified
		Units	Approved
			To grade
Fabric details		**Garment description**	
Fabric swatch	Description		
	Design	**General notes/trims**	**Notes cont'd**
	Type	Fusing info	
	Order no	Binding details	
	Composition	Zip	
	Quality	Seams	
	Weight	Seams	
	Width	Hems	
	Open/tubular	Wash	
	Sub sampling	Label position	
	Check repeat	Buttons (type, size, quantity)	
	Bulk del. due	Thread	
	Sample fabric	Swing ticket	
	Design	Wash	
		Rating	
Front design (or front and back)		**Pattern maker notes** (Specific measurements - lengths, widths etc.)	
		Cutter notes (Specific cutting instructions)	
		Machinist notes (Specific sewing instructions)	
		Back design (or specific details)	

onthecuttingfloor.com

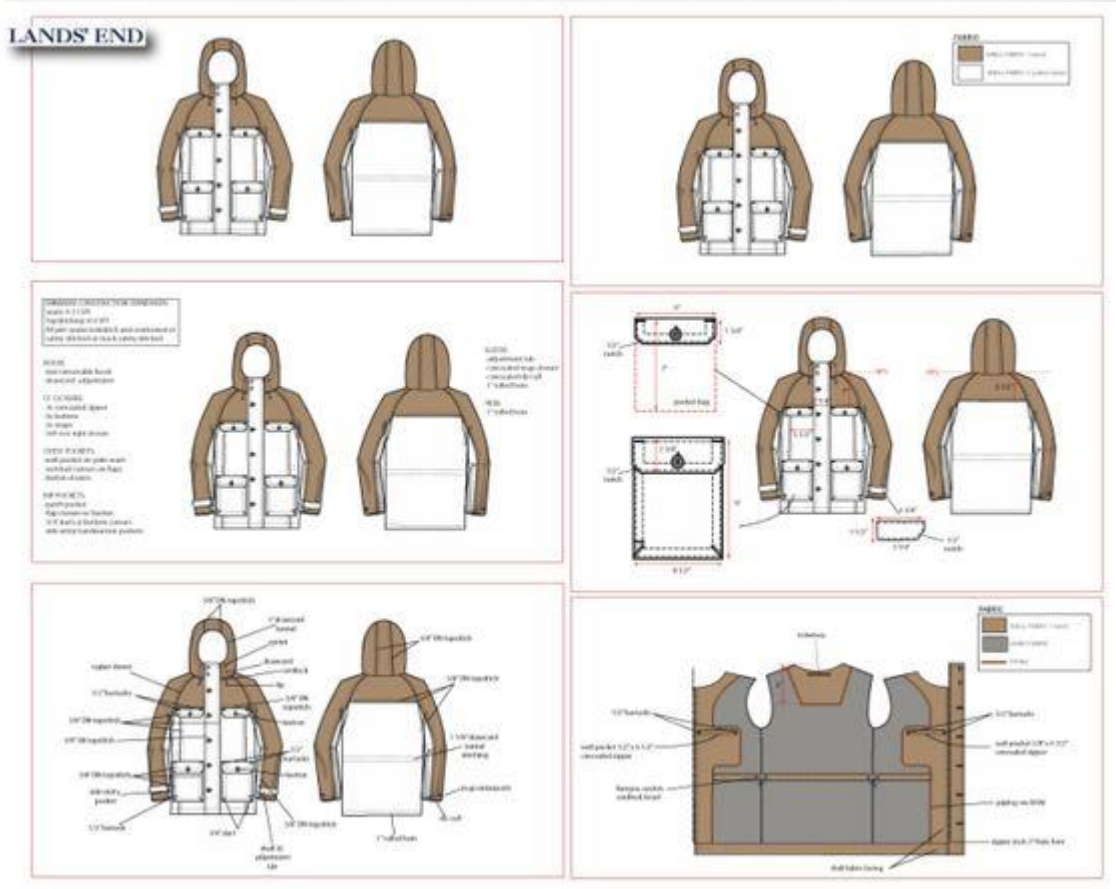








Learning to use CAD (Computer-Aided Design)

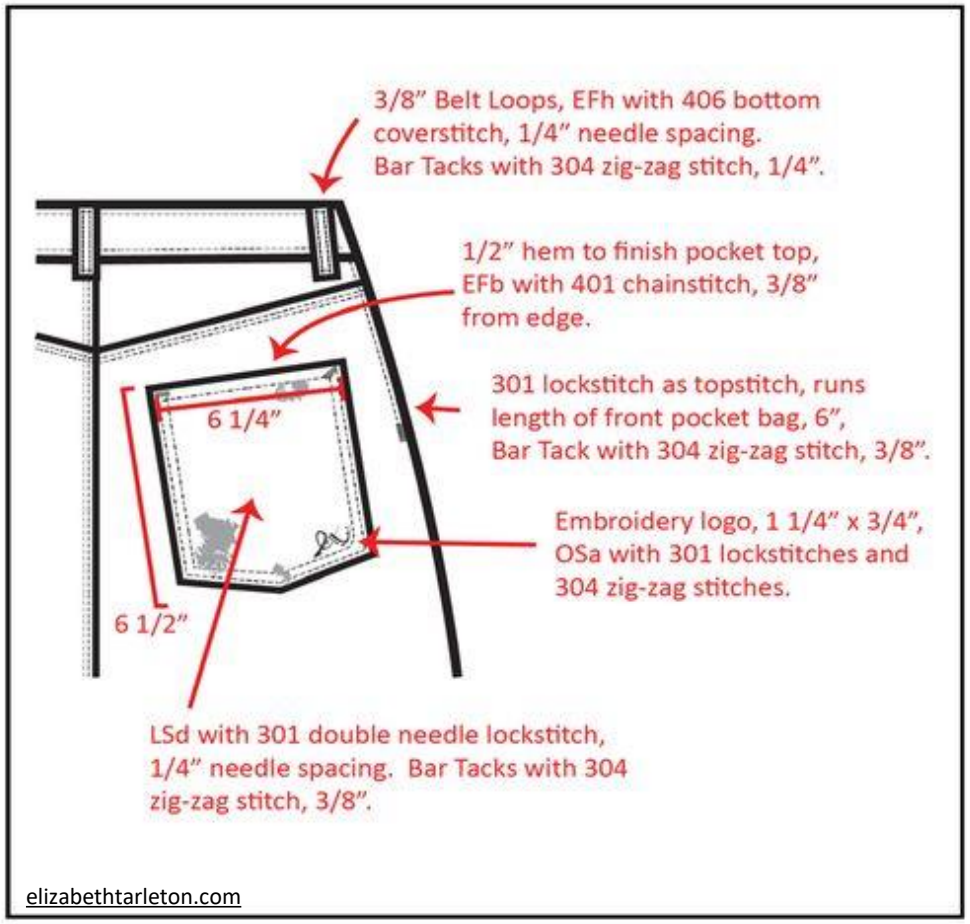


Understanding and utilizing technological resources is essential in product design. Designers responsibly and sustainably convert materials into products through various tools, processes, and materials. In this unit, students are expected to explore and both traditional and modern, utilize both innovative materials and methods.

I will engage with different design specializations and demonstrate technical skills by working with a diverse range of tools, materials, and processes.

Construction Detail Page		Miss Tarleton	
Description	Vintage Skinny High Rise Ankle Jeans	**Size Range**	00-18
Style Number	ETD55285	**Sample Size**	4
Season	Spring/Summer	**Vendor**	Express Manufacturing
Fit Stage	Initial	**Vendor Location**	Indonesia
Fit Style	High Rise Slim	**Vendor Style #**	EXD400394

Stitches Per Inch (SPI): 8-10 for joining, 8-10 for topstitching



elizabethtarleton.com

KEY SKILL: EVALUATION

Creating designed solutions involves speculative, critical, and creative thinking, alongside problem-solving, numeracy, literacy, and technical skills.

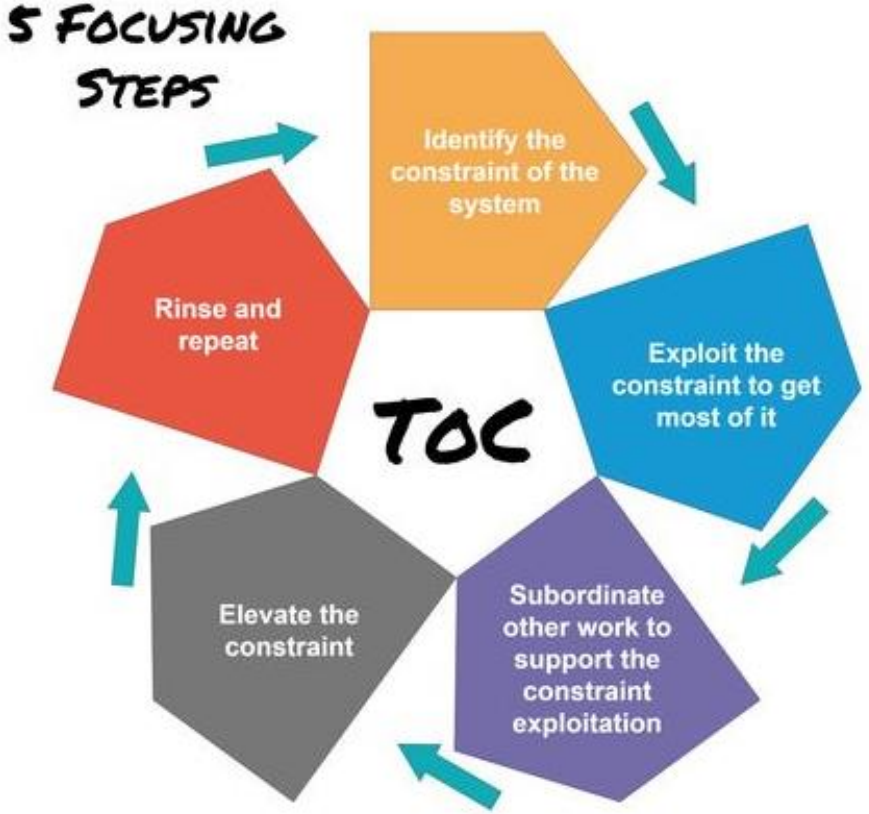
Students are encouraged to engage in problem-based design methods, where they experiment, test, evaluate, critique, and refine product solutions.

Through the evaluation phase, students can consider what constraints there may be and the implications of these to work towards finding a solution through their design.
The 'Theory of Constraints' is a tool we can use to make improvements through 5 step approach.

Some possible limitations for fashion design would be:
- fabric availability, cost, production capabilities, or seasonality, that will influence the design process.

THEORY OF CONSTRAINTS (TOC)

The Theory of constraints is management philosophy says the throughput of any system is limited by at least one constraint slowing it down. The TOC focuses on eliminating or improving the bottlenecks to improve the system. These improvements to the constraint are called elevation improvements, as they elevate, and increase the capacity of the bottleneck. Bottlenecks are usually revealed by piling up work in front of them. TOC says that in comparison to an obvious solution like increasing resource volume, there can be an alternative, cheaper one, exploiting the bottleneck. The bottleneck has to be used to the fullest.

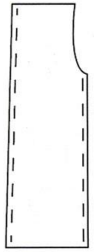


PRODUCTION STORYBOARD

Reversible Pants

Throughout all production steps, the risks were monitored and carefully controlled. I completed quality checked all the way through the production.

1 I first prewashed my fabric so there was no danger of it shrinking later, then I pinned and cut out all my piece for the pants from both fabrics.



2 I then pinned and sewed the outer and inner leg seams of each leg.

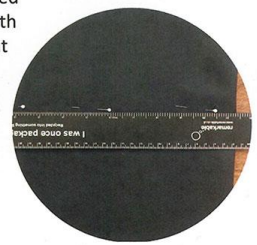
3 I sewed the crotch seam right sides together, joining the two legs

4 I turned the garment inside out and ironed down the seams

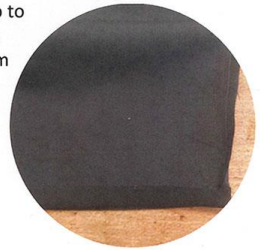
5 I pinned and sewed the waistband to the top side of the pants.

6 I hemmed the bottom of the pants.

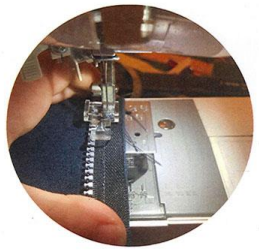
7 I measured and cut both pant legs at a point below the knee



8 I ironed 1.5cm of the fabric up to create a little hem



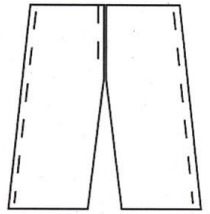
8 I pinned and sewed the zip into the opening I made, making sure to match up the leg seams



10 I sewed the zipper into the other side, right side together

11 This is what the opening looked like. It can be zipped off to create shorted pants, culottes style. I created this on both legs. I made sure to create a overlaying flap to cover the zipper and make it invisible.

12 For the other side of the pants I modified the pattern so the pants stopped at the knee.

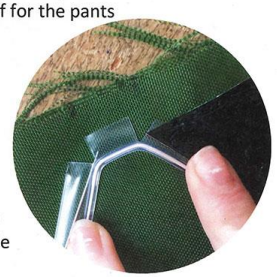


13 I sewed the pants right sides together along the outer leg and the crotch. I didn't sew the inner leg seam, as to make sure it can be flipped right sides out when joined to the other side of the pants

14 I overlocked the seams to stop any fraying and sewed on a

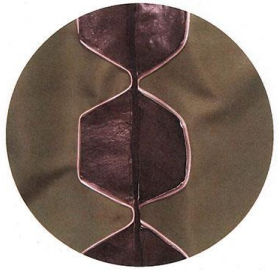
14 I made plastic hexagons by ironing 5 layers of plastic bags today

15 I cut out the hexagons using a paper template, then cut some in half for the pants



16 I left a seam allowance along the side so I could sew in the zipper.

17 I sewed in the el wire and the plastic half hexagons into the side of the pants.

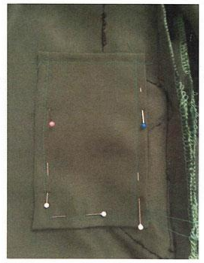


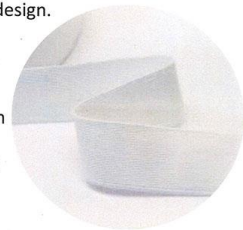
18 I pinned and sewed in a black zipper, making sure to stick to the seam allowance.

19 I tried to sew in the green mesh slit but it was too hard to sew neatly and created difficulties when opening and closing the zip. I decided to take this component out of my design.

20 I made a pocket in the seam of the pants for the battery pack.

21 I hand sewed the pocket into the seam so it was seamless form the outside.





22 I hemmed the bottom of the shorts and inserted elastic.

control:
re to sew within the
wance and overlock
s when I could

Ivy Hinkley, Product Design and Technology – Textiles, Criteria 6

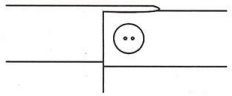
Source: Victorian Curriculum and Assessment Authority (VCAA)

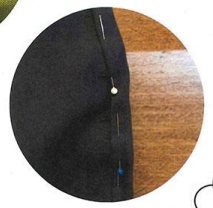
23 I sewed two small button holes in the top of the waistband for the drawstring ties

24 I sewed the two pants together along the waistband, right sides together. I then had to sew the inner leg and crotch seam of the riding pants by pulling it through the workwear pant leg. I turned the pants inside out and carefully topstitched

25 I sewed two lines of stitching around the waistband, to create a casing for the drawstring ties.

26 I created a button and button hole closure. I sewed two button holes and then a button to create a pleat in the waistband.





28 I sewed a casing and inserted elastic into the hems of the riding pants.

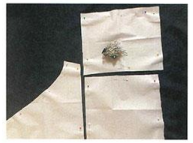
27 I hemmed the bottom edge of the workwear side.

Quality control: I double folded all of my hem to enforce quality and crate a neat finish

PRODUCTION STORYBOARD

Reversible Jacket

1 I first cut out all my pattern pieces for the working wear jacket. I had to create different pattern pieces for all of the zip-off sleeve components



2 I sewed the back pieces first, right sides together.

3 I sewed the sleeve pieces to the back and front pieces, right sides together. Then I sewed the sleeves together along the top seam.

4 I sewed the two separate sleeve parts into tubes by sewing their top and bottom seams together.

5 I sewed the underarm seam right sides together, connecting the jacket all

6 I sewed the collar piece onto the jacket.

Production plan modification

Are there any aspects to my production process and production plan that needs to be amended?

Plan for overalls

Date and/or school week	WK1 July 13-18	WK2 July 19-25	WK3 July 26-1	WK4 Aug 2-8	WK5 Aug 9-15	WK6 Aug 16-22	WK7 Aug 23-29	WK8 Aug/sep 30-5	WK9 Sep 6-12	WK10 due 13th sep
Brief description of step - overalls										
1 Cut out all pattern pieces										
2 Prepare legs of overalls, including darts										
3 Construct both front and back pockets and sew onto legs										
4 Attach front and backs of legs together, and sew zipper in										
5 Pin and stitch waistband onto the pant waist										
6 Press and stitch bib fronts together										
7 Attach bib pocket onto front bib										
8 Attach bib to waist of overalls										
9 Construct straps and bib back										
10 Attach back bib to waist band										
11 Finish straps of the overalls										
12 Hem pant legs										

Plan for bag

Changes

Date and/or school week	Wk1 July 13-18	WK2 July 19-25	WK3 July 26-1	WK4 Aug 2-8	WK5 Aug 9-15	WK6 Aug 16-22	WK7 Aug 23-29	WK8 Aug/sep 30-5	WK9 Sep 6-12	WK10 due 13th sep
Brief description of step - bag										
1 Cut out all pattern pieces										
2 Print image onto fabric										
3 Press and stitch sides of the bag										
4 Connect front to back of the bag by the sides										
5 Stitch hooks and loops to bag										
6 Connect straps and buckles to the bag.										
7 Embroider the front of the bag										

- Production for the bag did not start until week 10 due to COVID-19 and delays in the plan
- Printing onto fabric did not start until week week 13, which was at the end rather than the start
- Decided not to do any embroidery due to time constraints and preferring the look of printed text.
- Overall garments was not completed by the original date given

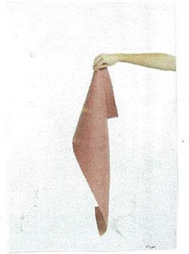
End-user Allowance:	'Due to the lockdowns, the need for the garment has changed from the 13th of september to the 8th of october 2021' 'Completely understand the delays and am fine with how the production ended up.'

Pattern modifications

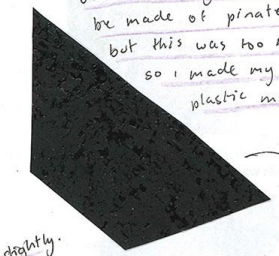
Plan:	Changes:
	❖ To allow for a good fit and comfort, we decided to extend the sides of the legs by 2.5cm on each side (total change of 4cm)
	❖ Due to the leg change, we also had to extend the waist by a total of 6cm. This was extended in the middle, and both sides ended. This alteration allowed for the waistband and upper edge of the pants to line up correctly.
	❖ As the End-user is slightly taller than the pattern, I also had to extend the legs by 14 cm (allowing for the hem too). This alteration was completed at the bottom of the pant legs, around the angle.

End-user allowance:	'I have agreed to all the alterations made to the pattern, as it will allow for the final garment to be more comfortable and wearable.'

MODIFICATIONS



I had to change the materials of the hexagons. I wanted them to be made of pinatex (vegan leather) but this was too hard to source, so I made my own recycled plastic material.



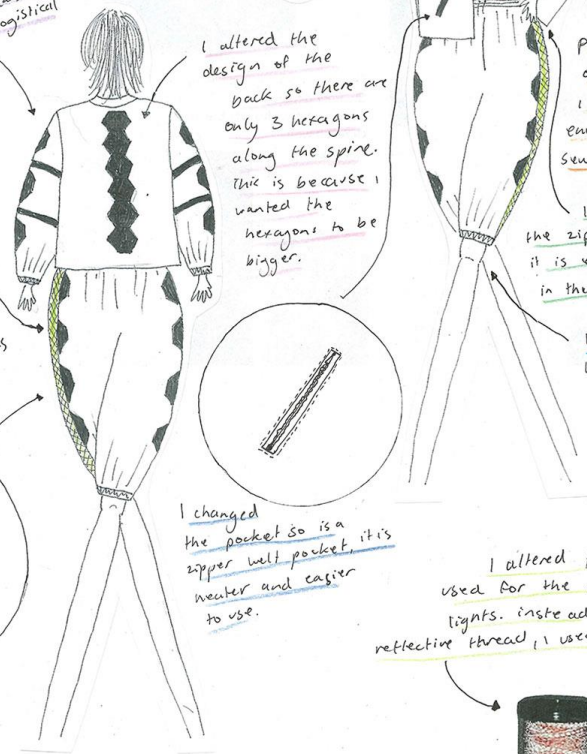
The collar of the jacket is bigger, so it can protect the rider in windy conditions.

I changed this idea and design feature because the reflective fabric was too hard to source

The design of the sleeves had to change slightly. only the top hexagon has El wire on it. This is due to logistical reasons.

I altered the design of the back so there are only 3 hexagons along the spine. This is because I wanted the hexagons to be bigger.

I removed this pocket from the design because I didn't have enough time to sew it in.

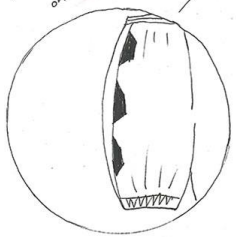


I had to remove the green mesh component from the design. It was too hard to close the zip properly when I tried to insert it.

I added El wire to the zip in the centre, so it is easy to use the zip in the dark.

I changed the design of the hexagons. therefore only 3 hexagons on the pant legs

I modified the length of the pants so they are more flattering on the model.



I changed the pocket so is a zipper welt pocket, it's neater and easier to use.

I altered the materials used for the reflective / led lights. instead of reflective thread, I used elwire

The wire is much better as it plugs into a battery pack and can flash as well as light up.

PURPOSE, FUNCTION, CONTEXT SUSTAINIBLILITY USER CENTRED DESIGN MATERIALS LEGAL RESPONSIBLILITIES
VISUAL TEXTILE AESTHETIC TECHNOLOGIES ECONOMIC INNOVATION AND CREATIVITY

~ MODIFICATIONS ~

- Less chains were added around the chest area along the bodices neckline as intended within the original sketches. These modifications were notated within the designs working drawings with specific measurements between each eyelet and sequential chain placement. The lengths of the chains were decided in the final fitting which would determine the overall length of the garment. The chains joining the bodice and middle panel were shortened as the middle sections curve fell very low. To stop any provocative showing of inappropriate skin, the chains were shortened to reduce this risk.

- Hook and eye closures were added into the design towards the end of the production process as the zip did not fully extend to the full length of both the bodice and middle panel which meant that there was extra fabric and bulk that stood out and detached from the beauty and diverted the viewers' attention. These were a last-minute addition that drastically improves the end presentation of the garment as it makes it looked polished and complete. These had to be hand sewn in after the discovery of the zips issue.

- One of the major modifications throughout the design and production process was the gradual development of how the panels would be attached to another. In the original design option, the garment was one full piece with the addition of chains in the cut-outs. However, within finalising the chosen option, the decision to fully detach the panels and solely rely on the chains to hold the panels together was made as it would not only make the product easier for the designer to make but also satisfied the end-user more as it was more dramatics and alluded to a more seductive appearance.

- Instead of top-stitching along the seams, the decision to under-stitch the edges was made as it allowed for the insertion of the copper wire which is an additional modification added throughout the production process as it allowed the garment to hold more structure when being presented and modelled. The under-stitching also aided in finishing the edges and held the lining up in the case of it being oversized and droopy due to satins lightweight characteristics.

~ POSSIBLE IMPROVEMENTS ~

The finished garment could be improved in respect to the intended function and purpose of serving as a wearable runway garment by having more consults and fitting with the end-user during the production process to factor in accessibility and wearability. The accessibility was attempted by adding in the open-ended zips, however, the middle sections zip was not long enough to cover the full length of the panel. This required the addition of hook-and-eye closures which were hand sewn in. The closures are functional, but not durable or visually appealing as they were hand sewn in last minute in attempt to 'finish' the garment. This aspect for evaluation, in terms of improvement for future recreations include a more in-depth understanding and practice of hand-stitching (especially with hook-and-eye closures). It will come naturally with practice and knowledge of the techniques; however, it probably wasn't the best decision to rush a new process that has not been practiced before to meet the deadlines of the product.

The wire is crucial to giving the product shape around the edges as the panels were cut and constructed to have bends and curves along the edges that wouldn't have naturally fell without the addition of wire/boning. The improvement for this area lies within the selection of structure material. Using copper wire seemed innovative during the design and production process, but the practicality and bendability of the material made it difficult to hold shape for prolonged periods of time.
If this garment was to be attempted again, the materials and the way they interact physically would need to be considered and researched more in depth. With current circumstances of COVID-19 and constant lockdowns, it was difficult to do this to the required extent within the given predicaments.

The things that would need to be research more would be the testing involving the satin lining as the material is not only hard to work with as it creases easily and when combined with other materials such as the eyelets, creates a very messy and ugly finish. Maybe a material with a higher natural fibre content or possibly just a higher quality satin would suffice and potentially fix the problem to some extent. Another potential improvement for the construction materials and notions is within the choice of structure. As previously discussed, the copper wire has created a few different problem areas with less positive aspects. Possibly opting for a more reliable boning material may be a consideration for improvement for future recreations.

Given more time, I could have practiced the process of hand stitching and inserting open ended zips (which I have never attempted nor have the knowledge to complete to a high quality). In a perfect world, it would be optimal to have no disruptions and loss of class time over the period of the year to ensure that there was sufficient time to complete all the tasks without feeling the immense pressure time puts upon students. It is unfortunate that I have been stuck in this position as during the designing phase of the product design process, I had to opt for an easier design with the unpredictability of COVID-19 and the ongoing lockdowns.

The cost can always be reduced within the fashion industry. In this particular scenario, the estimated fabric requirements could have been more accurate as I purchased 3 meters of both the lining and the materials where in actuality, I only needed roughly half of the length as once the pattern has been cut, there was a lot of excess material that could have been reduced using a more accurate estimation. This would not only reduce the waste but will also increase sustainability aspects and decrease the cost to produce the garment. There are many improvements that could be made about this garment surrounding the environmental and laundering processes as it is very difficult to maintain the product as the lining creases very easily and the chains and metal work prevents the product from being conventionally laundered by the average person. The overall materials used could have been considered to be more sustainable by containing a higher natural fibre content especially within the textiles as all textile material used was 100% polyester which is not environmentally conscious. There are numerous safety considerations within the production process for this garment, both within the manufacturing process and the use of the product as well. There were a few new techniques used during the production that have not been practiced or researched before such as twin stitching, inserting lining, inserting hook-and-eye closures, inserting eyelets and the use of chains and wires within the garment.

If there were less time restrictions with the production timeframe, there would be a lot more time allocated towards practicing new practices as listed above. The only opportunity I was given, and time was allocated towards demonstrating these practices was during the testing aspect of materials and processes presented previously within this folio.
If the garment was to be reconstructed and reinvented, the width of the bottom panel would be constructed to have more of a leniency which will allow the end-user to walk more freely. Another possible solution for this problem would be to remove the bottom panel and leave the garment with the bodice and skirt. The skirts bottom chains could be extended to obtain a draping effect. The chains would decrease the tripping and restrictive movement the bottom panel proposed whilst also staying true to the intended aesthetics and vibe of the garment.

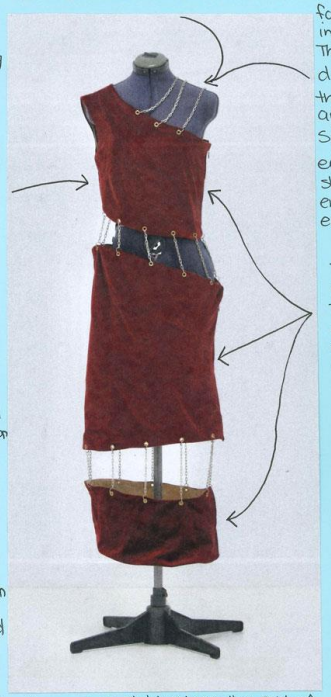
Jake Sapstead, Product Design and Technology –Textiles, Criteria 9
Source: Victorian Curriculum and Assessment Authority (VCAA)

Jake Sapstead, Product Design and Technology -Textiles, Criteria 9
Source: Victorian Curriculum and Assessment Authority (VCAA)

~ PRODUCT EVALUATION~

* All of the annotations were documented with the end-user and designer in collaboration to make accurate technical and personal judgements and evaluations of the final garment.

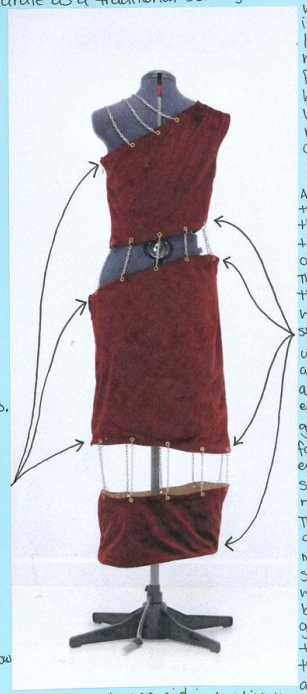
The chains were carried up to the top of the garment as the shoulder and collarbone of the end-user will be exposed. The decision to add chains around this area draws attention to the exposed skin and hence emphasize and showcase the end-users natural bone structure for which the dress was intended to highlight: the natural body.



It is apparent at viewing the final product that the construction consists of several panels joined and twin-stitched over to base as the dress' manufacturing. With this in mind, during the drafting process, I added an extra seam allowance to every panel edge to ensure that once joined, the panels will still form the original patterend pieces. Specifically, the bodice was difficult to add allowance to as I had to take into consideration the curves and darts and how they effect the pattern pieces and ultimately the finished construction. Unfortunately, with my limited knowledge of the bodice production process, the bodice runs small to intended size. Luckily the end-user is still able to fit into the garment, however, under the arm is tighter than the rest of the bodice and the other arm area runs larger with slack. This moreso comes down to the end-user wearing a garment designed for a female with breasts, whereas the end-user does not have these body parts. The bodice still fits, however, there are a few alterations and modifications that are apparent and would be applied if this garment was commissioned for a paying client.

The decision to only add 3 chains came down to the spacing of the eyelets. Adding them too close together makes the area appear cluttered and unconesive with the 10cm spacings of the sequential eyelets. The top eyelets are spaced out to best suit the end-users shoulders and head width as the chains had to be black enough to fit the end-users head through, but not tight enough that it soon becomes a safety issue for the garment.

To make the garment wearable and increase accessability, zips were installed to the left-hand-side of all of the 3 main sections. These zips are open ended which allows the consumer to be able to fully undo the garment on all areas so the end-user can literally 'step into' the garment with the only exception being the chains at the top around the shoulders for which the end-user will need to slip their head through the shoulder area and the left chain. The process of sewing open-ended zips between the lining and velvet was a new procedure for me which served as a learning curve. The zips required to be hand-sewn in and thus the stitches are unique and less accurate as a traditional sewing machine. The ends of the zips were difficult to sew into the garment as layering all the materials made it very hard to push the needle through by hand. The ends are also very fiddly and thus requires immense concentration and patience.



A new addition/modification to the design of this garment was the incorporation of a casing to hold the copper wire on all edges of the panels. This was not originally in the design as the edges were supposed to be top-stitched, instead, they were understitched which worked as the casing. The wire acts as a barrier for the eyelets and chains as if the garment became to heavy for the fabric to hold the eyelets in place, the wire stops the eyelets from ripping through the edge. The wire feature also allows for the edges to be manipulated to an organic shape. When the garment was being constructed, the bottom 3 edges of the garment were cut specifically to hold a unique curve, this means that the wire acts like a shaping tool that can aid in holding the fabric to the right position. The negative to this practice is that it is very hard to evenly bend the wire to create a smooth and symmetric shape for the edges. This is possibly

Overall, the garment has fullfilled all of the constraints and considerations set out at the start of the designing process including all budgets, time, aesthetics, function ect. To satisfy the legal responsibilities as a designer, the care label will be sewn into the garment and aftercare advice will be given to the end-user before the garment is sold or distributed. As the garment has a unique and original pattern, all intellectual property belongs to me as the designer. Although there was a basic pattern that was used to create the original design, the pattern used was a fairly stock-standard block for an asymmetrical shoulder dress. This garment was designed as a one-off product for a specific end-user to be used in a runway presentation. Alternatively, when the product is not being worn and used, the

A secondary evaluation for the additional feature of the wire is that the wire acted as more of additional structure for the edges. This ideology was thought to hold the garment away from the end-user's body to allow for more movement. The theory behind this concept is very sound and is practical. Unfortunately, as the wire is constructed to be able to hold shape, when the wire reaches a straight end, it is very difficult to have a smooth and rounded finish. This error of construction is apparent at the ends of the zippers. The right side of the garment is a continous loop, so there is no problem, however, the zip side does not allow for this advantage as the zips are designed to fully open the garment. The arrows are directed to the specific

EVALUATING YOUR WORK

WHAT?

WHAT IS IT? Explain your work.
Example: This is a drawing I made of a... This is a series of photos I took of... This an experiment using... This is a section of a piece of work by... Here I have used... On this page I have tried....
This is a collection of....

WHY?

WHY DID YOU MAKE IT? How does it help?
Example: ...to get ideas about... to show what I have learned about... to explore the idea of... to examine the shape/form/texture/colour/pattern of... to analyse the style of... to try out the technique of... to practice... to develop my skills...

HOW?

HOW DID YOU MAKE IT? Explain the process.
Example: I drew it using... I painted it with...I constructed it from...I built it up by collaging...I photographed/drew it from life...I worked from a photograph...I experimented with... I photocopied... I cut up and rearranged...

QUALITY?

HOW GOOD IS IT? What works/what doesn't?
Example: I am pleased with...one good thing is...the best part of this piece is...I'm not happy with...one part I could improve is...the least successful part is. I wish I could... If I had chance I would... I could improve this by...

LEARNING?

WHAT DID YOU LEARN? What's next?
Example: I improved my skills in...I got better working in the style of...I have a better understanding of... I feel more confident about...Next I will try...To follow this up I will...To move my ideas on I could... Next I should... To make progress I must...

USE THE HEADINGS TO EXPLAIN EACH PIECE OF WORK YOU HAVE COMPLETED IN YOUR SKETCHBOOK

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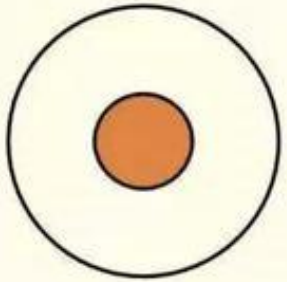
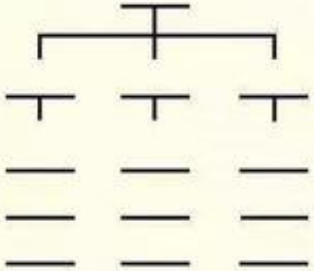
PROJECT MANAGEMENT TOOLS TO EVALUATE RELATIONSHIPS BETWEEN DESIGN IDEAS & EXECUTIONAL PLANNING :

CIRCLE MAP



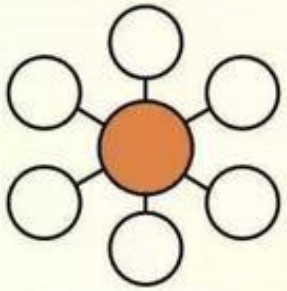
FOR BRAINSTORMING

TREE MAP



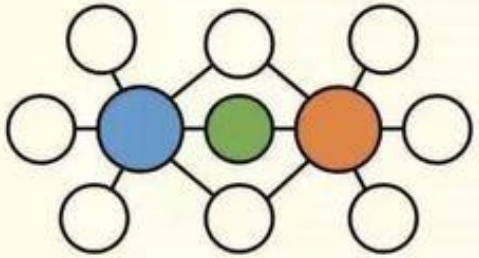
FOR CLASSIFYING AND GROUPING

BUBBLE MAP



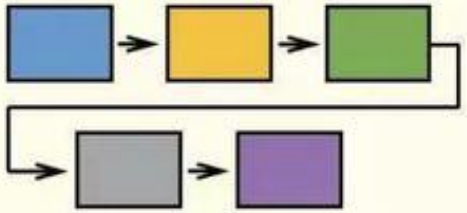
FOR DESCRIBING USING ADJECTIVES

DOUBLE BUBBLE MAP



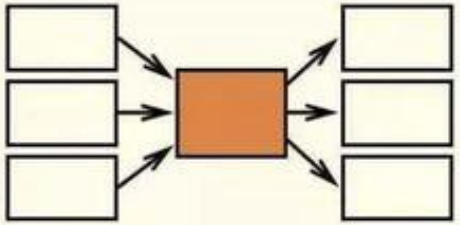
FOR COMPARING AND CONTRASTING

FLOW MAP



FOR SEQUENCING AND ORDERING

MULTI-FLOW MAP



FOR CAUSES AND EFFECTS

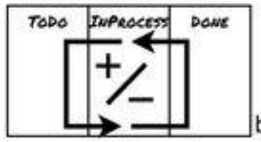
KANBAN PRACTICES

VISUALIZE

Visualizing your work provides transparency, identifying the bottlenecks. Create cards for the items you work on. Think of the workflow - statuses that work items go through to make implicit policies explicit, which enable learning how the work works.

LIMIT WORK IN PROGRESS

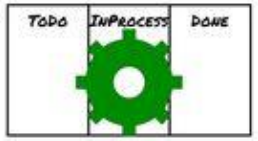
Stop starting, start finishing. Limit the number of items being worked on simultaneously to prevent multitasking and improve efficiency. The smaller number of items will be done faster. Creating tension in the workflow helps to identify issues - improvement opportunities.



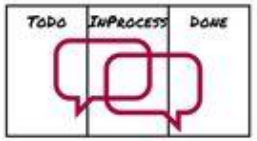
MANAGE WORKFLOW

The work needs to be managed to solve arising issues in your workflow providing opportunities for improvements. Solving issues based on metrics and bottlenecks in the workflow enables continuous improvement with the aim to reach an ideal continuous flow.

MAKE PROCESS POLICIES EXPLICIT



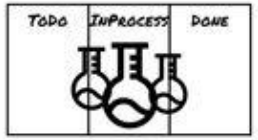
Policies are not meant to replace work instructions but to empower individuals for self-organization by discussing the process. They should be sparse, simple, well-defined, visible, consistently applied, and easily changeable.



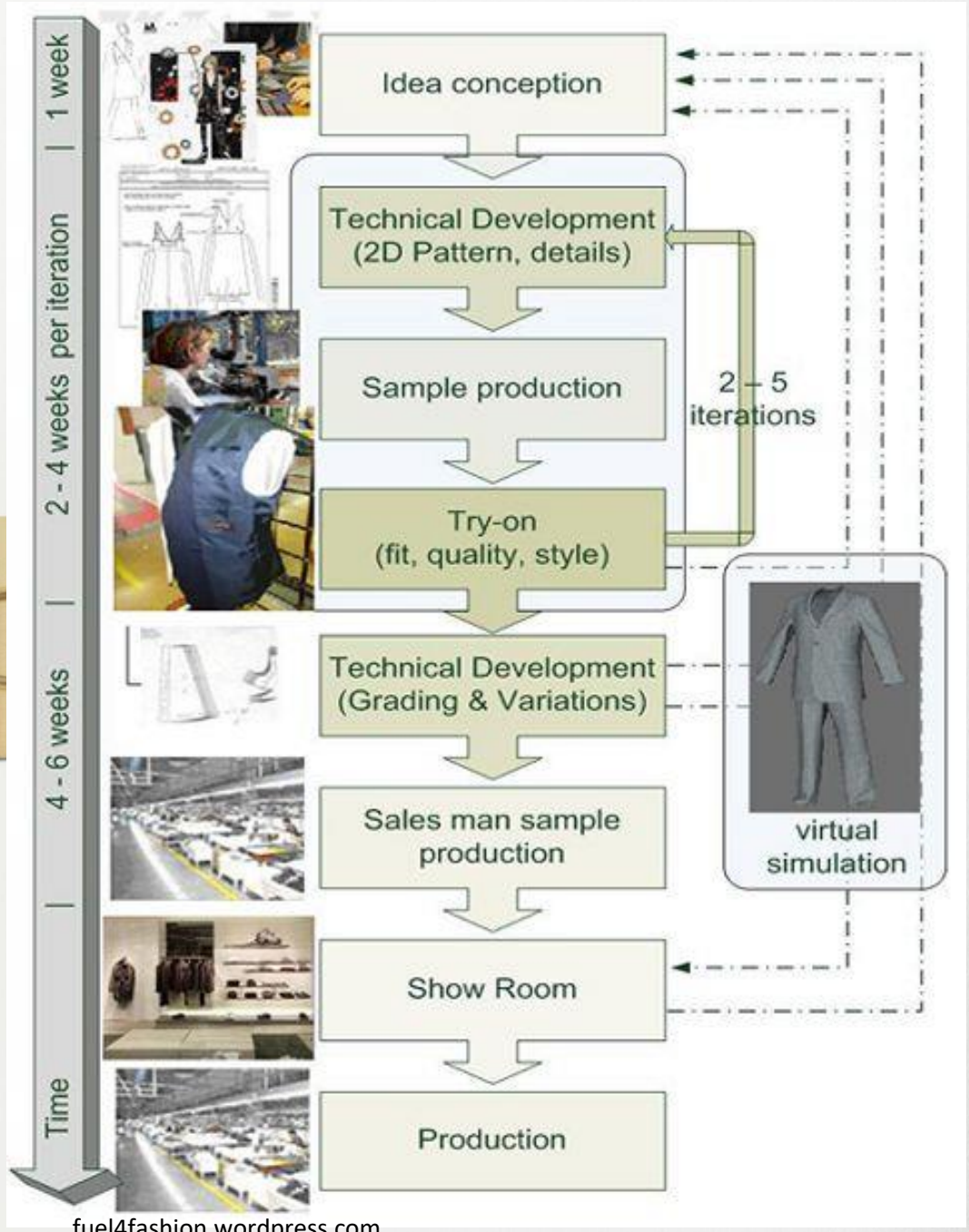
IMPLEMENT FEEDBACK LOOPS

Getting feedback from your process enables further improvement, learning, and evolution through experiments. Kanban systems commonly use the board, metrics, and regular meetings/reviews (cadences) as feedback mechanisms.

IMPROVE COLLABORATIVELY, EVOLVE EXPERIMENTALLY



Kanban embraces continuous improvement and evolutionary changes through collaborative, safe-to-fail experiments based on the Theory of Constraints, Lean feedback, and metrics.



fuel4fashion.wordpress.com

Quality Assurance	System Planning Procedures Check-lists
How will you make sure that the quality control takes place? Who will make the decisions if the design changes?	

Tolerance	Zero Tolerance 2-3 mm Tolerance Adjustability
What areas of the product need to be designed and built with 100% accuracy.	

Standards	British Kite Mark Toy Safety Logo British Standards
Does the product need to comply with national or international standards?	

RESEARCH CONCEPT DESIGN PROTOTYPE PRODUCT

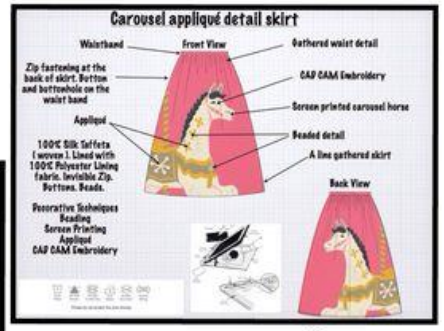
DESIGN SPECIFICATION

Name: **Product name:**

Brief product description:

Now complete your Specification (1 -2 sentences)	Product Sketch
Function:	
Aesthetics:	**Target Market:**
Cost:	**Materials**

THINK - DO

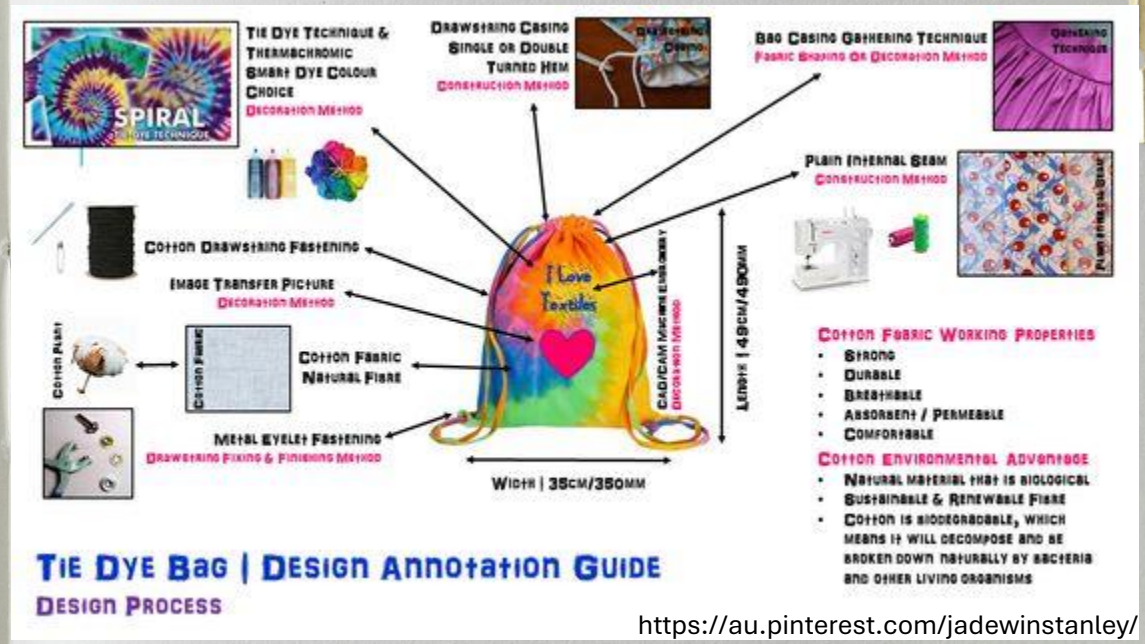


EXAMPLE

DESIGN QUESTION

COMPLETE APPROPRIATE ANNOTATIONS FOR THIS PLEATED SKIRT.

These design annotation guides are effective in communicating important aspects of the product for production purposes. The 'zoomed' in views makes sure that details are captured and annotations state succinctly what is needed.



https://au.pinterest.com/jadewinstanley/

THINK - DO

1. WHAT ARE THE BENEFITS OF USING A COMPUTER SYSTEM WHEN DESIGNING AND MANUFACTURING GARMENTS?

2. CAN YOU NAME SOME EXAMPLES OF HOW YOU COULD USE A COMPUTER?

CAD

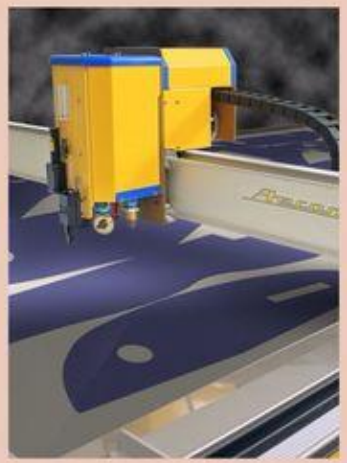
COMPUTER AIDED DESIGN

SPECIALIST COMPUTER SOFT WEAR USED TO DESIGN ALL AREAS OF THE GARMENT.

CAM

COMPUTER AIDED MANUFACTURING

THE MAKING OF TEXTILE PRODUCTS WHERE THE MACHINE IS CONTROLLED BY A COMPUTER.



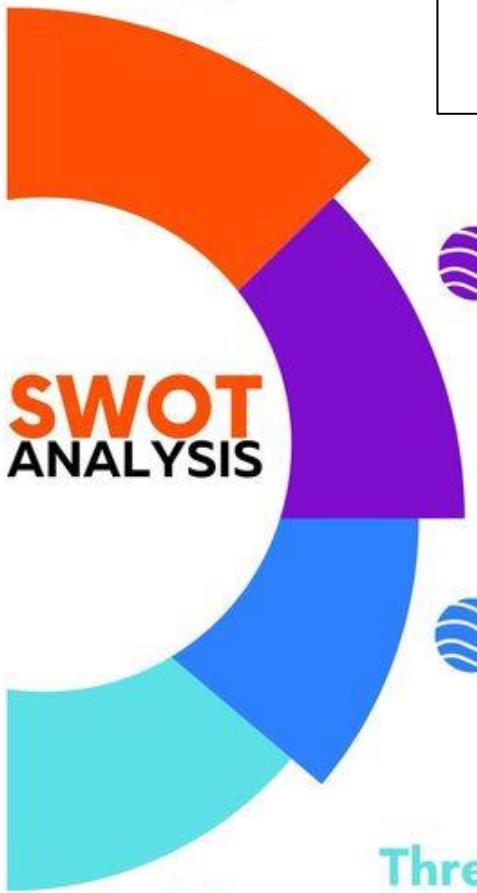
INDUSTRIAL FABRIC PLOTTER/CUTTER

CUTTING PLOTTERS USE KNIVES TO CUT INTO MATERIAL THAT IS LYING ON THE FLAT SURFACE AREA OF THE PLOTTER. THE CUTTING PLOTTER IS CONNECTED TO A COMPUTER, WHICH IS EQUIPPED WITH SPECIALISED CUTTING DESIGN OR DRAWING COMPUTER SOFTWARE PROGRAMS. THE COMPUTER SOFTWARE PROGRAMS ARE RESPONSIBLE FOR SENDING THE NECESSARY CUTTING DIMENSIONS OR DESIGNS IN ORDER TO COMMAND THE CUTTING KNIFE TO PRODUCE THE CORRECT PROJECT CUTTING NEEDS.

PicCollage

Worksheets made using Pic Collage sourced from: https://au.pinterest.com/misscumbo/

I can use tools such as SWOT analysis to evaluate my design decisions and outcome.



Strengths

Weaknesses

Add in notes
Evaluating design prototype here

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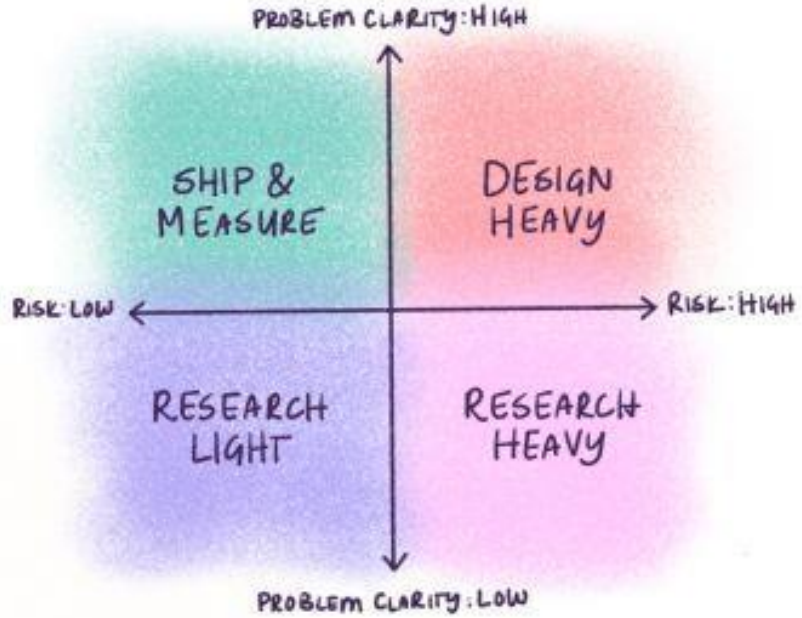
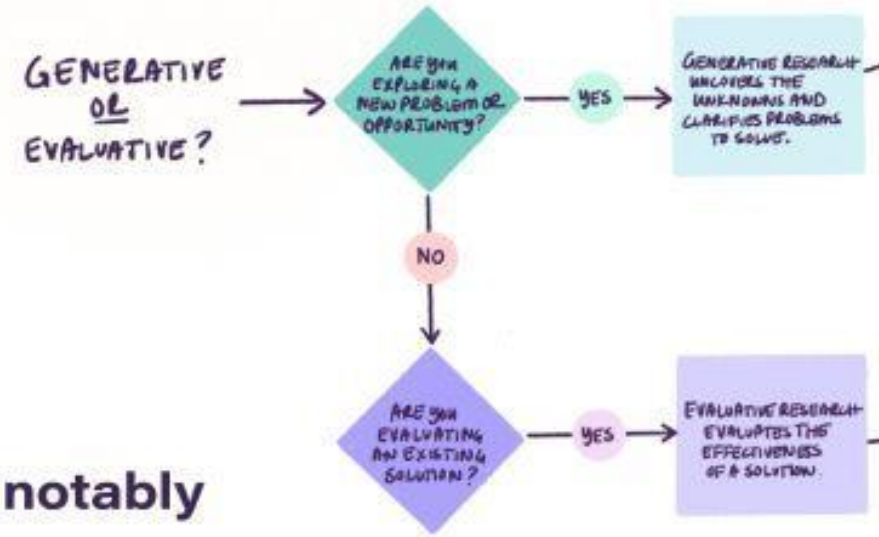
Opportunities

Threats

RESEARCH DEPTH & RIGOR

FRAMEWORK CREDIT: JEANETTE FULCELLA

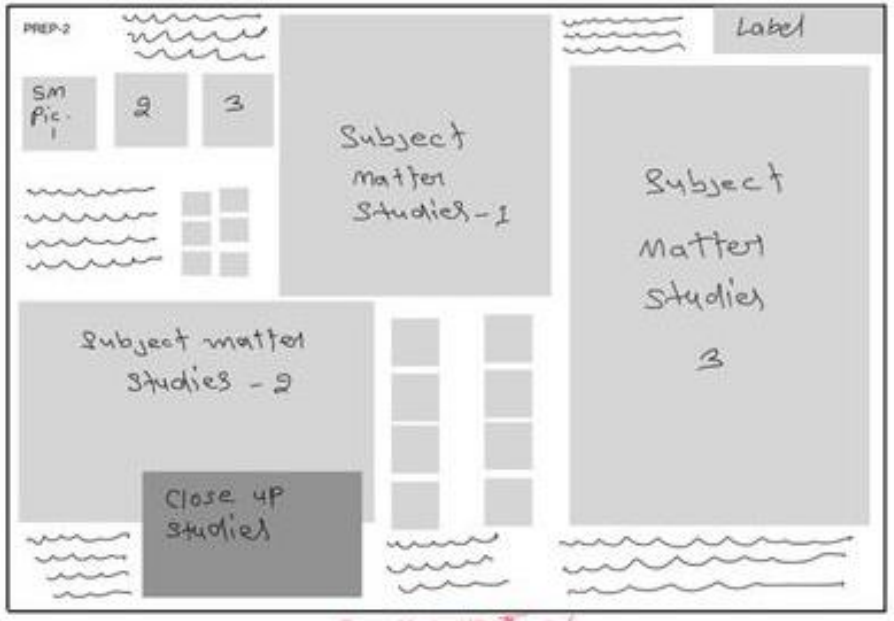




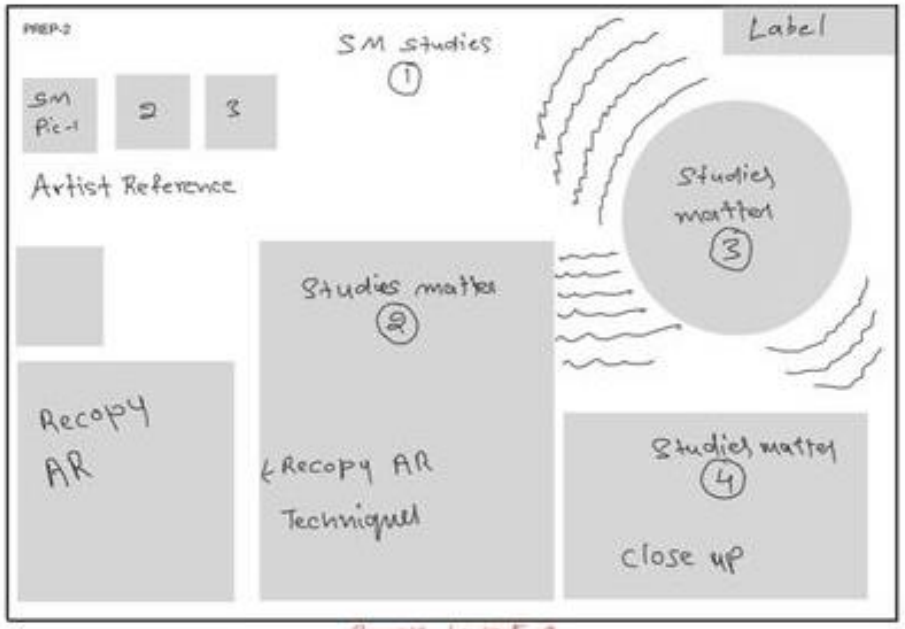
notably

GOAL	METHODS
UNDERSTAND TO EMPATHIZE AND UNDERSTAND USER MENTALITY AND BEHAVIOR.	CUSTOMER FEEDBACK USABILITY HEURISTICS ANALYTICS INTERVIEWS SURVEYS FIELD STUDIES INTERCEPTS FOCUS GROUPS
DEFINE TO IDENTIFY PROBLEMS WORTH SOLVING AND DEFINE A CREATIVE DIRECTION.	COMPETITIVE TESTING USER STORIES USER JOURNEY USER PERSONAS
EXPLORE TO IDEATE AND ITERATE ON POTENTIAL DESIGN SOLUTIONS.	CARD SORTING PAPER PROTOTYPES INTERACTIVE PROTOTYPES PARTICIPATORY DESIGN
TEST TO VALIDATE THAT THE SOLUTION IS USABLE AND SOLVES A PROBLEM.	UNMODERATED AND MODERATED USABILITY TESTING EYE TRACKING SURVEYS ACCESSIBILITY EVALUATION
MONITOR TO MONITOR HOW WELL A SOLUTION IS PERFORMING OVER TIME.	A/B TESTING BENCHMARK TESTING ANALYTICS USABILITY HEURISTICS NPS CUSTOMER FEEDBACK PRODUCT USAGE METRICS SURVEYS

https://au.pinterest.com/yfalk01/



Sample Layout - 1



Sample Layout - 2

Final Design: Design Proposal

Materials used:
- Plain black cotton fabric used for the inner layer for the lining of the hood.
- Grey boiled wool fabric used for the bodice area and the outer layer of the hood.
- Fluorescent yellow netted mesh fabric used for the inner layer of jacket.
- 4 black plastic moulded zippers with double sided zip heads used for zipping inside layer
- Faux plain black leather used for both sleeves and bindings of pockets
- Plain black cuffs for the hem and edge of sleeves
- 2 silver Eyelet pieces used for the draw string
- Plain black draw string used for the hood
- Only plain black thread is used when stitching.

Equipment used:
Pins to keep everything in place when stitching.
Sewing machine to stitch everything in place.
Eyelet tool to punch eyelet inside hole.
Fabric scissors to cut slits for pockets and to cut hole for eyelet.

Manufacturing techniques:
Must be over-locked at all the cuffs at both the sleeves and hem of the jacket.
Closed seam used to stitch all zippers and mesh fabrics together. Closed seam also used to stitch sleeves onto jacket and closed seam also used to stitch the sides of the jacket together. The lining of hood is hand stitched on to the jacket because it does not leave stitch marks on the outer part of the jacket. Binding is also hand stitched so that it does not move around and so that it stays in place.
Lining of hood and outer layer of hood is top stitched with black thread.
Must kept both front and back looking almost symmetrical.

Sizes
Length of jacket: 50cm
Width of jacket: 45cm
Length of sleeve: 45cm
Cuff size: 3cm
Hood length: 31cm
Hood width: 25cm
Length of pocket binding: 10cm
Pocket width: 12cm
Pocket length: 10cm
Draw string length: 70cm
Mesh layer width: 12cm
Mesh layer length: 50cm

Ji Woo Shin

This page shows some ideas of how to present my design brief and prototype. These may include a physical product and an accompanying presentation board.

These are some examples of possible layout ideas that I can consider when planning my own board.

Considering other factors to the production and end-functionality of your product.

How can you incorporate sustainability into your labelling and packaging of product for the consumer?

Learning to use CAD (Computer-Aided Design)

Going through the checklist to see if I have gained the key skills and knowledge from this unit.

Key knowledge

- activities and their purposes within the second diamond of the Double Diamond design approach to generate and design physical product concepts, produce and implement, evaluate and plan and manage
- relationships between the second diamond of the Double Diamond design approach and design thinking strategies to refine physical product concepts and product
- materials, tools and processes used in specific design specialisations and the purpose of experimenting and practising with these technologies
- risk management for safe, accurate and efficient use of materials, tools and processes
- strategies to experiment with the physicality of product concepts through prototyping, including use of digital technologies
- methods to test and communicate physical product concepts, such as data from tests and trials, videos and photos
- relationships between product concepts and final proof of concept, and methods to develop a final proof of concept from a product concept
- methods to evaluate the finished product against the criteria described in the design brief
- traditional and/or new and emerging materials, tools and processes to produce a product
- methods to plan to produce a product, including developing a scheduled production plan
- strategies to reflect on collaborative and teamwork activities when designing.

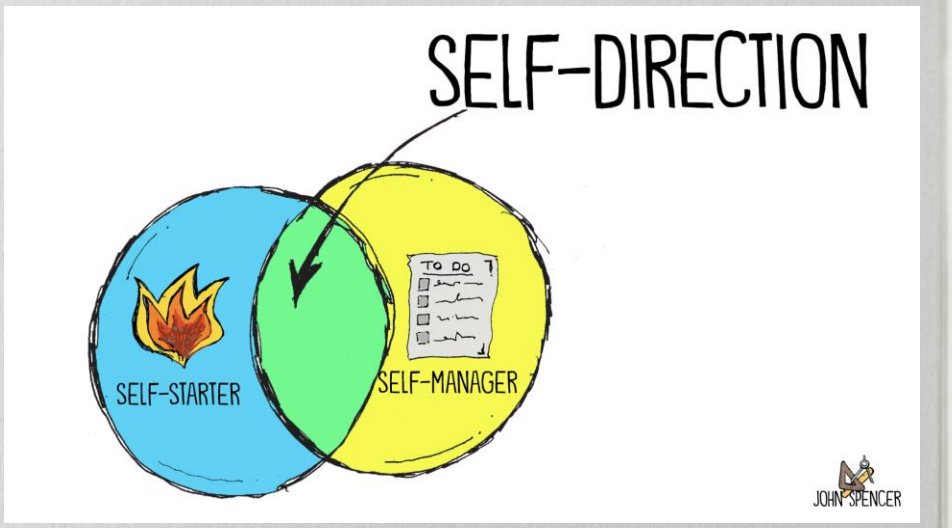
Key skills

- explain activities and their purposes within the second diamond of the Double Diamond design approach
- conduct and evaluate tests and trials using design thinking techniques to propose, critique and justify the chosen product concept
- explain and use a range of materials, tools and processes to experiment with physical product concepts
- experiment with, and document the use of, a range of materials, tools and processes to produce a finished product
- collect and use data to inform and record refinements to develop a final proof of concept and apply a design process
- use criteria to evaluate the production process and determine how well a product addresses the design brief
- reflect on collaboration and teamwork and make suggestions for future improvements when working collaboratively and as a team
- work technologically, collaboratively and as part of a team to manage the activities within the second diamond of the Double Diamond design approach to implement a scheduled production plan to make a finished product safely
- manage risks to use materials, tools and processes safely.

Before I commence Unit 2, I will do a reflection of what areas of knowledge and skills I have improved in and which areas I found challenging that I hope to improve in for next semester.


DESIGN


ACTUALLY, STRUCTURE CAN INSPIRE AND SUPPORT CREATIVITY
JOHN SPENCER


SELF-DIRECTION
SELF-STARTER
TO DO
SELF-MANAGER
JOHN SPENCER

UNIT 2 AHEAD....