

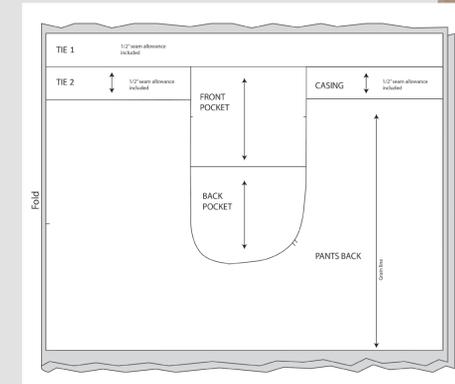
Construction of Zero-Waste Garments

Astrid Vidalon

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The short's fabric is from 100% biodegradable cellulose materials, including 93% recycled fibers (pre-consumption 76% Tencel, 12% linen, 5% cotton) and only 7% of virgin fibers (viscose).



Project description

In ATM280 (Basic Sewing), students sew two zero-waste garments to tackle the textile waste problem in the classroom: an apron and a pair of shorts. These projects aimed to introduce students to sustainable strategies in the apparel industry while they are learning to sew. The class provided an ideal setting for a hands-on, experiential approach to creating solutions to urgent industry problems.

The fashion/textile industry is one of the most polluting in the world, generating tremendous amounts of pre-consumer and post-consumer waste. Waste accumulates in developing nations, perpetuating racial and environmental inequalities through waste colonialism. The apparel industry needs to consider waste in the product's design stage, given that approximately 25% of textiles are discarded in the manufacturing process (Runnel et al., 2017). Furthermore, synthetic fibers from fossil fuels account for 69% of all textiles used (Changing Markets, 2021), taking hundreds of years to biodegrade and generating 35% of global microplastic pollution in the oceans (Boucher & Friot, 2017).

Learning, equity, and accesibility

Equity is a core component of sustainability. The projects incorporate high-impact practices such as project-based and problem-based teaching. These projects bring awareness about waste colonialism while offering solutions to urgent industry problems.

In addition, the garments incorporate a universal design approach.

Project innovation

The projects incorporate new, sustainable approaches to apparel manufacturing while providing solutions to real industry problems. Besides garment construction and application of a variety of sewing techniques, students learned:

- To minimize fabric waste using zero-waste design.
- To use sustainable materials such as organic cotton and biodegradable recycled fabric.
- To decrease the environmental impact of a product's end-of-life stage through biodegradability in all garment components.

Evidence of project effectiveness

The projects got positive student feedback through a survey and a personal reflection.

"I have learned that being a bit more mindful can go a very long way, in terms of protecting and preserving the environment. I have learned a lot in what they do with waste in textile industries and because of that, I would love to think, shop and tackle textile wastes in a much better way".

ATM280 student comment

Students' opinions about zero-waste projects	Mean
The zero-waste project helped me to learn about sustainable design.	4.71
I have become more aware of the different environmental issues regarding apparel production.	4.53
I think the zero-waste design approach hinders the creative design process.	2.23
I think the zero-waste design approach enhances the creative design process.	4.23
The zero-waste project helped me to learn about the concept of zero-waste design.	4.68
I would like to practice zero-waste design when I design in the future.	4.72
I will wear the project I made or give it as a gift to someone that will wear it.	4.82
After this project, I will be more interested in buying clothes that incorporate zero-waste design approach.	4.55
Do you think this project is an effective way to introduce students to sustainable practices in the apparel industry?	4.83
After this project, I am more interested in sustainability in the apparel industry	4.54

Table 1. Results from 26 surveys collected from both projects. Items were adapted from Gam and Banning (2020). Scale: 1=strongly disagree, 5= strongly agree)



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