



Zero Waste Patternmaking in the Classroom: Creative Approaches to Teaching Sustainable Design

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Introduction. The global apparel industry produces abundant waste and pollution during the processes intrinsic to each stage of the product life cycle. Fashion and apparel academic programs provide a unique opportunity to inform and supply fashion undergraduate students with the necessary skills and creative problem solving approaches to reducing the negative environmental impact of current apparel production processes. For undergraduates in fashion, studio patternmaking classes afford the opportunity to extend their critical thinking skills and experiment with specific sustainable design practices. Curriculum revision and updates to learning goals provided the opportunity to embed sustainable design into the full sequence of apparel design courses. The overall program goal is to “integrate sustainability as a design standard by exploring sustainable design solutions through design concepts, material choices, pattern development, assembly practices, and product life cycle.” For the Apparel Design by Draping course, the related learning goal is: “Explore no-waste pattern making alternatives.”

Purpose. Our aim was for apparel design students to consider resource efficiency as a component of sustainable design. The learning goal was written broadly so as to allow instructors (and students) flexibility in the approach. Designers typically think first about changing the product and supply chain and the choice of materials. Through the act of designing and the use of responsible patterns of consumption, textile waste can be avoided and reduced.

The objective was to introduce undergraduate to sustainable approaches to zero-waste garment design. The learning goal has been incorporated into three semesters of Draping and taught by two different professors. The purpose of this paper is to present our individual strategies and outcomes, and share our insights.

Implementation and Outcomes. In Spring 2013 the project was presented to the apparel design students with the professor providing minimal written guidance. Students were asked to design a variation of a ready-to-wear dress they had just designed and constructed. The ready-to-wear dress was designed to meet the aesthetic criteria of a target market for an assigned apparel brand. The subsequent zero waste version was required to fit the same parameters, albeit redesigned to adhere to “no textile waste.” Students designed a variation of the original shift or sheath dress for the given brand, based on the original project’s yardage (length and width). Pattern shapes were developed that fully utilized the entire fabric piece (i.e. no scraps or textile waste).

In order to prompt critical thinking, the professor guided the students with a series of questions, such as: (1) Looking at your original pattern pieces and layout, how could the layout be improved to reduce fabric usage? Are the pieces close enough together?, (2) What

would happen if you folded the fabric differently, or did not cut on the fold?, (3) What would happen if the dress had additional or fewer seams?, (4) How can the open spaces be creatively utilized? These questions helped student brainstorm solutions to the design problem.

Project outcomes varied, reflecting the students' individual design aesthetic and/or direction in solving the design problem. One student interested in handwork and embellishment created a sheath dress with an applique border, using the areas of negative space on her marker. Another student designing a zero-waste shift dress for Talbots removed the dress' side seams and reduced the original yardage. Following project presentations, students were instructed to write personal reflections on their design process. Reflections included defining "zero waste" garments, expressing design challenges, and describing techniques.

With a different professor teaching Draping in the Fall 2013, the zero waste project was presented as a separate project distinct from the ready-to-wear project. The project was based on the same learning objective, yet was conceived to reflect alternate outcomes and pedagogical approach. The professor presented the zero waste project with detailed instructions and guidelines. Based on a new design brief, students had a two-fold assignment: to design a zero waste dress that (1) utilized one or more techniques presented in class, and (2) had commercial marketability based on real world brand analysis. The professor gave a lecture on zero waste patternmaking (ZWPC) techniques. The ZWPC techniques included tessellation, minimal cut, and textile waste reuse. Students were also given an in-class demonstration and activity, providing studio practice prior to beginning the project design process. Presented in this way, students were uninhibited to play with the zero waste concept and inspired a sense of enjoyment that facilitated individual problem solving, as well as design innovation. As a result of the combination of pedagogical devices, students felt confident in selecting one ZWPC technique explored in class to apply to the design problem. This pedagogical approach to the zero waste garment project proved successful in multiple ways. Student approaches to the design problem varied, including a ballgown using minimal cut and a resort dress embellished with textile waste applique. Outcomes reflect the high level of student engagement with this assignment, further evinced by the project evaluation and feedback session following final presentations.

Plans for Continuation. The zero waste project will evolve in future semesters based on expanding the current approach to include real world applications for commercial zero waste designs and/or work with industry partners. Alternatively, students could be mentored with designing for editorial vs. commercial appeal, and submitting work for competition. Regardless of the project framework, documentation of the individual student design process through the course blog or final presentation offers evidence of student engagement with this sustainable approach to apparel design. The zero waste project will provide a challenge every semester for instructors and students alike, as professors vary in approach to the subject and students uniquely respond to the design problem. This project provides an introduction to the sustainable practices that will be key for students working as 21st century apparel industry professionals.