



Cutting and Etching Our Way into the Future: Implementing Laser Cutting into an Apparel Design Curriculum

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Introduction

Technologies are constantly changing the way we approach production, surface embellishments and textile design in the apparel industry. Machines are replacing traditional and manual methods, which is making the apparel production process more efficient and more sustainable. Laser cutting is typically used for engraving metals and cutting hard materials to develop prototypes, but in the apparel industry the uses for laser cutting are developing rapidly. Laser cutting can change the appearance of textiles by etching away surfaces, as well as cutting shapes and pattern pieces. Not only is it more efficient than manual methods, laser cutting can add an element of sustainability to the surface design and apparel manufacturing process, eliminating the use of chemicals in techniques such as stone washing of denim or burn out of velvet. The research of laser cutting with textiles has not been fully explored, as there is a lack of published research that involves this subject. The purpose of this presentation is to share a two stage model for integrating laser cutting into apparel design curriculum, in which throughout the process evaluation is fundamental.

Background

Laser cutters have been on the market for a few decades, but have become more affordable as new models and companies started to develop the machines. According to troteclaser.com some of the most common applications their laser machines are used for include engraving awards and trophies, barcodes and serial numbers, data-plates/industrial tags, medical technology, and architectural models. Apparel companies found that the denim washes or distressed “looks” can be obtained faster and highly more sustainable with a laser cutter compared to traditional stone washed or acid washed methods. Levi Strauss stated in the New York Times “a typical pair of blue jeans consumes about 919 gallons of water during its lifecycle” (Kaufman, 2011). “The laser design machine leaves out some of the substances hazardous to the environment which are commonly used in traditional methods” (Ondogan et al., 2005, p. 636). Not only do laser cut methods in the apparel industry make for a more sustainable process, but also intricate designs can be obtained at an extreme speed. When cutting synthetic textiles the edges are melted creating a clean finish with no fraying; which allows for shapes and intricate designs to be cut and integrated into garments. The apparel industry has embraced, so it is imperative for universities to educate our students about the uses and advantages of this CAD technology.

Proposed Best Practices - Stages of Implementation

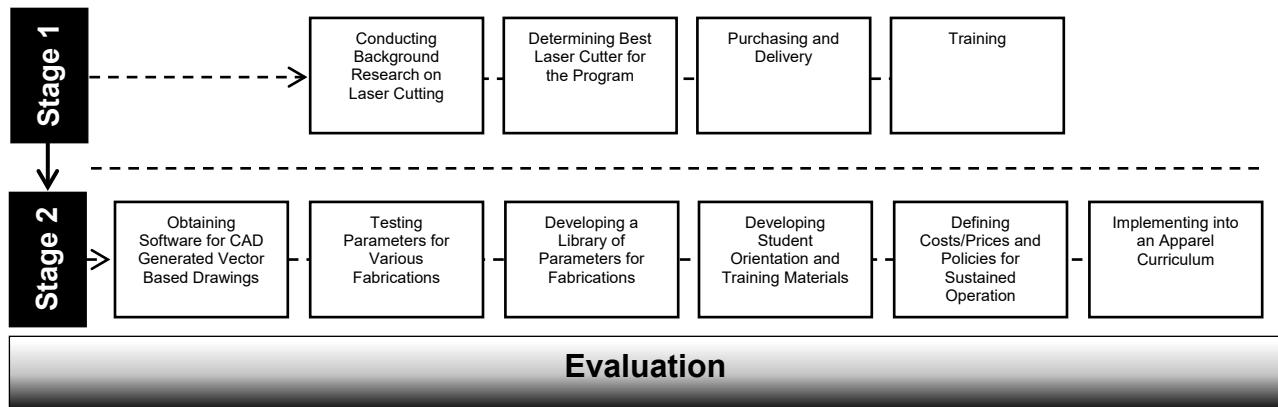


Figure 1. Proposed model for implementing laser cutting technologies into an apparel curriculum.

We are proposing a two stage implementation model grounded in *evaluation* throughout the process (Figure 1.) for integrating laser cutting into an apparel curriculum: (a) *Stage 1* includes conducting background research on laser cutting, determining the best laser cutter for the program, purchasing and delivery, and training, and (b) *Stage 2* involves obtaining software to create CAD generated vector based drawings, testing parameters for various fabrications (power, velocity, and hertz for each material), developing a library of parameters for fabrications (cutting and engraving), developing student orientation and training materials, defining associated costs/prices and policies for sustained operation, and implementing the laser cutter in an apparel curriculum (synthesis with patternmaking, construction and CAD skills and creation of a laser cutting sample book).

Significance

Laser cutting is changing the face of textile cutting and surface design. We believe that students that have laser cutting experience have an avenue of endless design possibilities, differentiated portfolio entries, new job possibilities in the industry – an overall advantage to our students and academic apparel program. Our proposed model will not only include best practices based on four years of experiences, but also student evaluations of their experiences.

References

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