On-Demand *Swatcher* Coat

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Contextual review and significance

Many apparel design programs in the United States incorporate digital textile printing methods into their curriculum because they allow design students to practice computer-aided design applications and offer flexibility in making visual statements (Ricoh, 2019; Arthur, 2017). However, the majority of the programs use a limited range of fabric types with limited equipment because different ink types (e.g., acid, disperse, reactive, and pigment dyes) are only compatible with certain fabrics (e.g., cellulous, protein-based, and synthetic fibers) and require different pre- and post-treatments (e.g., steam or heat) (Notermans, 2019). Apparel design curriculum may not expose students to the wide range of fabric choices for digital textile printing (Thompson, 2016). Thus, the purpose of the design, *Swatcher* coat, is to raise awareness of the wide range of textile types that are compatible with digital printing available using a three-dimensional form and a sustainable apparel design framework (McDonough & Braungart, 2002).

The initial inspiration for the design concept came from the recent COVID-19 pandemic because converting a computer-application lab to an online course forces students to use print-on-demand platforms (e.g., Contrado) for their final projects. Platforms like Contrado function as one-stop production facilities that specialize in making custom products on demand and do not hold stock or produce products beyond need. This design serves as an educational tool that promotes the application of on-demand digital printing technology (e.g., Contrado, Spoonflower, Honest Fabric) and sustainable design processes. It can also help design students to recognize the wide range of different fabric types that can be printed on (e.g., lace, velvet, neoprene, matte Lycra, leather) and the use of a traditional method of quilting.

Aesthetic properties and visual impact, process, and technique

A total of 210 fabric swatches from two types of Contrado swatch packs (classic and natural) were used. The classic swatch pack includes a wide range of man-made fabrics, such as polyesters, velvet, and contemporary neoprene, while the natural selection features fabrics such as organic cotton, half-panama, linen, and silk (Contrado, 2020). The swatch pack allows designers to see and feel the custom cloth and print before purchasing. Fabric names and reference numbers are printed on each sample. Using on-demand manufacturing is important for

digital textile printing, since the fabric must be treated to maximize fixation and color yield and be set for different types of dyes.

Specifically, the design and construction process for the *Swatcher* coat included (a) sourcing two packs of classic and natural packs that has 3"x3" swatches, (b) creating garment pattern pieces through a minimum-waste pattern-making method, (c) calculating the dimensions of the garment patterns for the 3"x3" swatches, (d) upcycling non-bleached cotton fiber batting from old pillows, (e) quilting 210 fabric swatches with three layers of fabrics (swatch, batting, and lining), and (f) upcycling cotton denim and quilting with horizontal stitches. The quilting technique was adopted for this design because each swatch piece can be expanded with the inserted batting so the surface of the swatch can stretch slightly to show the fabric's properties. The silhouette of the coat has a kimono style with a high and low hem, and the garment pattern becomes a Y shape when it is flat. It has minimal seams on both shoulders and sides, and this simple silhouette was chosen because the wide surface allows swatches to be visible without any unnecessary folds or wrinkles.

Figure 1. Individual Contrado swatches

Cohesion, contribution, and originality
The design of the *Swatcher* coat is particularly beneficial to apparel design students because the garment contains a wide range of swatches with slightly stretched-out surfaces, and each piece can be effectively compared with the others because they have the same graphics. It also shows ways of using a traditional quilting method and promotes a sustainable apparel design process. This is an aesthetically pleasing garment that could be an educational tool and serve as an example of integrating traditional textile quilting techniques and following current design trends of digital textile printing. As illustrated above, on-demand digital printing platforms can be integrated into apparel design curriculum and expose students and faculty to various fabric types that they can choose from for their design portfolios.

FRONT

SIDE

BACK

DETAIL