

Sustainable Fashion Design: How to Keep Skirts Swishier as The Environment Gets Fishier

Caroline Chwalisz, Southern Illinois University, USA
Seung-Hee Lee, Southern Illinois University, USA

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Background and purpose of the study. There is currently a movement advocating for fashion companies to prioritize sustainability, ethics, and waste reduction (Fan & Cheng, 2023). Despite being a small part of the global economy, the fashion industry is one of the biggest polluters, emphasizing the need for individuals and businesses to become more resourceful, sustainable, and deliberate in their fashion choices. As the trend for sustainable fashion continues to grow, the industry must determine how to align with these values. While many studies have focused on aspects such as sustainability education (Murzyn-Kupisz & Hołuj, 2021), supply chain concerns (Fung et al., 2019), or consumer attitudes towards sustainability (Puspita & Chae, 2021), few have explored the specifics of designing sustainable and textile-efficient garments, as well as the optimal pattern making technologies or techniques to achieve these goal. Therefore, the purpose of this study was twofold: to investigate the understanding of textile-efficient pattern development for creating sustainable fashion designs, and to identify effective techniques for designing sustainable and textile-efficient fashion products.

Method. This study compared three methods of sustainable fashion design, specifically for skirts: zero-waste, geometric, and traditional A-line skirt. Zero-waste, minimizes fabric waste; geometric uses shapes like circles and squares to construct garments; and traditional involves flat pattern-making on paper. Textile and paper usage were tracked in a spreadsheet, and digital copies of patterns were made in Adobe Illustrator. Skirts were made from cotton muslin fabric and measured on a small dress form, with standardized waistbands. Miniature mannequins, the ratio of the mini dress form to a full-size woman is about a third, were used to create three skirts 10-inches in length, one for each method.

Results: Results from the comparison experiment varied. The rectangle skirt had the least amount of fabric waste (2%) since the sides needed to be squared off (the rectangle was cut with the grain of the fabric, which resulted in a slight parallelogram). If it weren't for the squaring of the rectangle, the waste percentage would have been zero. All that was done to make this skirt was to choose a circumference amount and gather the fabric at the waist. The circle skirt had 23% fabric and paper waste. The flared A-line skirt had a slightly different amount of fabric and paper waste, 20% and 35%, respectively. To arrive at these numbers, the amount wasted (for both fabric and paper) was divided by the total amount used. The reason why there was more paper waste for the flared A-line skirt was that the master pattern needed to be altered so that width would be added to the hem. The flared A-line skirt, though designed through traditional methods, can be considered sustainable in the way that the patterns are placed on the fabric. Placing patterns so they are nearly touching, depending on the fabric, can decrease the amount of fabric wasted. For example, shiny fabrics and fabrics with a nap, such as velvet, will not be able to be

placed in a way that minimizes waste, otherwise the garment will look odd. The findings represent that the rectangle skirt resulted in the least amount of waste, with the circle skirt in second place and the flared A-line skirt in third, when the percentages of paper and fabric waste were averaged. Thus, the rectangle skirt proved to be the most resource-efficient compared to the standard flared A-line skirt. To further reduce or eliminate paper waste, computer software programs such as Adobe Illustrator can be used to develop patterns, which may also save time spent drafting patterns manually on paper.

Discussion & Implications: The fashion industry's progress in technology and sustainability makes it easier to create zero-waste, geometric, and whole-cut garments. The most resource-efficient skirt-making method is the zero-waste rectangle skirt, followed by the geometric circle skirt and the standard flared A-line skirt. Regardless of the method used, proper waste disposal is crucial.

References

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