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DEVELOPING A SUSTAINABLE CHILDRENSWEAR SIZING SYSTEM: BODY SIZE, SILHOUETTE SHAPE AND CLOTHING KEY DIMENSIONS

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Abstract. Inconsistent children's garment sizing may cause fit issues, leaving youngsters unable to find clothing in the correct size or recognise what size fits their body form. This research attempts to find sustainable solutions to design issues regarding non-fitting children's clothing that involve reducing post-consumer waste. Through this concept, children's clothing can be customised based on the garment type, as well as the child's body features and silhouette. By employing the patternmaking system M. Müller & Sohn technique, patterns were created using Computer-Aided Design to enhance flat patterns of basic silhouettes. Patterns were developed and used to dress virtual mannequins with CLO3D, a three-dimensional virtual sewing and try-on software. CLO3D system realizes virtual fitting, including three-dimensional body modeling and a three-dimensional virtual sewing fitting map. According to the international size charts, the findings of this study demonstrate that different silhouette shapes often do not follow regular market sizes, while children's sizes can be recognised effectively by understanding their body size, age, height, and weight. Therefore, children's clothing can be customised with a specific height range, body size and silhouette shape. Henceforth, when designing and purchasing children's clothes, accurate information could prevent the growth in post-consumer waste arising from the production of children's clothing and be an essential step to achieving sustainability in the apparel industry.

Keywords: *Childrenswear, sizing system, post-consumer waste, body size, silhouette shape, sustainability, apparel industry.*

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1. Introduction

Schofield (2007) confirmed that disconnections between anthropometric measures and children's size charts contributed to discrepancies between the clothes and the children's body size and silhouette shape. Saaludin et al. (2020) investigated visualising the size matching recommender system, which provides a reference for parents who buy children's clothes by recommending the correct size according to particular brands. However, each child's growth pattern varies, and most clothing sizing systems used by clothing brands come from industrialised countries and are not applicable in some developing countries (Yusuff, 2016). Each brand's size reference chart employs different height, weight and waist measurements. Despite studies showing that different genders and age groups have distinct silhouette shapes (Yusuff, 2016), several businesses have ignored these differences while creating children's apparel.

Dove (2020) showed that the dearth of children's pattern makers meant that fitting prototype children's clothing was rated the most important future competence for technical designers. The ability to properly fit a garment has also been a skill shortage frequently exhibited by entry-level designers (Dove, 2020). Inconsistent brand sizing