Experiencing the difference between a virtual and in-person fit session

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This instructional activity compared the fitting differences between personal avatar fit simulation and traditional muslin fittings to explore fitting accuracy and examine outcomes which can be useful for scholars, researchers, and to guide future directions of computer fitting simulations. Through adoption of technology, both small and large retailers could increase sizing accuracy and increase consumers trust thereby increasing profits. Research suggests that consumers express readiness to use avatars to try on clothing when the body size of the avatar appears to be close to their own size (Lin, Johnson, & Kang, 2018; Lin & Mammel, 2011). The use of personal avatars will appeal to consumers who want to promote healthy activity, clothing selection, and as an entertainment activity. E-commerce retail businesses can adopt virtual fitting rooms for virtual try-on as part of a business strategy to improve consumer satisfaction in terms of fit (Cho, Park, Boeing, & Hingston, 2010; Sul & Kang, 2010). Indeed, apparel fit is the most important attribute for consumers in determining overall satisfaction with apparel purchases (Otieno, Pisut, & Connell, 2007).

Experts agree that fitting issues are the top reason that customers return items purchased on-line (Bain, 2016; Mapel, 2015). The clothing retailer Amazon announced the use of body scanning to reduce major returns due to fitting issues after acquiring the start-up company Body Labs in 2017 (Yusuf, 2018). The objectives of body scanning and of avatar creation are to improve garment fit, increase consumer satisfaction, and increase the use of virtual fitting simulation before clothing is manufactured. In traditional garment making, a muslin sample is used to examine fitting on a standard dress form by an experienced dressmaker. Body scans can generate a size model for a personal avatar. The purpose of this project was four-fold. First, students were taught and executed 2D and 3D integrated pattern designs and 3D simulations. Students also learned to create an avatar using an iPad with Structure lens. Then students used a virtual fitting simulation activity to evaluate fitting issues on their personal avatar. Finally, images of traditional muslin fitting tests were used to compare fitting differences and evaluated by professionals.

Body scanning using iPad with Structure lens was adopted due to its affordable price, ease of purchase and operation. The program MeshLab was used to view, edit, and measure a personal avatar. Participants were all body-scanned using the iPad with a Structure lens. Following the scanning process, subjects responded to a 20-item questionnaire about the process and resulting avatar. Overall, participants expressed satisfaction with their avatar and body shape. Students were then asked to select two outfits to simulate on a personal avatar. This

involved the students learning to create and edit 2D or 3D pattern designs, insert a textile design and perform clothing simulation on avatars using Optitex. Once the designs were completed, students took screenshots of front, side, and back views which were then placed into a PowerPoint presentation to record the results of the virtual fit session. Description of fitting simulation from shoulders, chest, waist and hip were expected to go along with these clipped graphics.

Using fit simulation technology and personal avatars, fifteen subjects conducted a virtual fit session with standard size patterns which were altered for a personal fit. This fit simulation helped students visualize how they will look when they wear the actual garment. Students reported the virtual fit simulation resembled their bodies and was an accurate experience which they would appreciate being able to apply for future online purchasing. Students also reported that the procedure was clear to understand, accurate and results were displayed quickly. Basic alteration skills were also taught in order to improve the fit simulation on the personal avatar. Instructors selected and prepared two garment styles in muslin for students to try on and compare the fit to their personal avatar. Muslin fitting tests were limited by sizing as the two styles were only made up in a single size. A total of 15 female and male college students volunteered to participate in this exercise and were the correct size for the muslins. Most of these participants indicated satisfaction with the muslin fit tests. However, there remained differences in the fitting results between the personal avatar and actual fit session due to fabric appearance and draping.

Overall, students were satisfied in the evaluation of virtual clothing on personal avatars during this fitting simulation. On the other hand, some students indicated that the body scan avatar was not clean, having a lot of lumps on the areas of thighs and arms. This occurred mostly because the arms and legs were too close to the body and therefore prevented the normal fall of the fabric on the body scan avatar. Student also commented on the difference between the speed of fitting a standard size avatar with one click and conducting a fitting simulation on a personal avatar which can be time consuming due to body shape variations.

Students should be trained to master the current software to be prepared for the modern 3D body scanning and product development job market. The use of digital personal avatars provides a new form of digital mirroring for consumers to take body measurements and to conduct try-on for clothing selection. Apparel manufacturers can reduce their risk of producing too many items that do not interest consumers or have fitting issues (Daanen & Hong, 2008; Istook & Hwang, 2011) as well as reduce returns due to poor fit. This body-scan project can apply to any age group and enable businesses to be on the cutting edge by responding to consumers in this new virtual world. Due to the overwhelmingly positive response from the students, future plans are to integrate additional garment styles and increase student participation.

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