

Exploration of Students' Design Process with Browzwear V-Stitcher, 3D CAD program

Keyword: Browzwear, V-Stitcher, design, process, CAD

Introduction: Patternmaking and garment construction are an integral part of a fashion design student's university education. Digital competencies have also become integral for success gaining employment after graduation. In fact, Wang and Ha-Brookshire (2018) found that the design stage is one of the seven supply chain functions that requires the most digital expertise of its employees. More specifically, Romeo and Lee (2013) found that the industry viewed the use of 3D tools for garment design to be growing in importance for creative designers. Therefore, faculty are keenly aware of the necessity to introduce students to and educate them in digital technologies used by the industry. This study will discuss methods for teaching Browzwear's V-Stitcher, a 3D virtual prototyping tool, to apparel design students. Since there is no study regarding teaching V-Stitcher in fashion design program, this study will provide valuable insights to instructor who wish to teach this program in their curriculum.

Literature Review: 1) Teaching 3D Visualization Software: There has been much research on the use of 3D body scanners for sizing information and for creating avatars from the scans. Less, though, has been written about teaching undergraduate apparel design students how to use 3D visualization software. Dunne (2012) outlined a project creating pants using 3D simulation technology. Within, she acknowledge that 3D programs have the advantage of giving students immediate feedback to pattern changes. Baytar (2017) echoed the advantage of immediate feedback to students using 3D simulations and also noted that problem-solving skills were bolstered. Further, Baytar noted that students' imaginations can be engaged and improved through experimentation with virtual prototyping.

2) Why Browzwear VStitcher?: V-Stitcher program allows designers stitch pattern pieces, place the stitched patterns around 3D avatar, and run simulation to create 3D virtual prototypes. Such a 3D CAD program is useful to designers as it helps them visualize how a garment would look in reality without creating its sample (Baytar, 2017). V-Stitcher is a relatively new 3D CAD program compared to others, such as Lectra Modaris 3D and Optitex O/DEV 3D. One of benefits of V-Stitcher is its user-friendly interface. They also offer a kit of fabrics whose properties were measured, so users can easily apply adequate fabrics to their garments. Several big apparel corporations, such as VF, Nike, Adidas, and Walmart, are currently using this program in their design process.

Procedure: Browzwear V-Stitcher was incorporated in the curriculum of a senior level studio class, Creative and Technical Apparel Design, in a Southeastern University from August to December 2017. Before the class was offered, the instructor received intensive trainings of the program and developed several activities to enhance students' learning with the program. A total of ten students enrolled in the studio class. The program was taught during the first seven class times with several in-class activities. Then students designed two garments and utilized the program in their design process. During the semester, the instructor supervised and observed students' design process. The instructor wrote a journal after the class to better preserve information that she learned about students' design process during the class. After analyzing the journals and students' outcomes, two themes regarding V-Stitcher were emerged.

Results and Discussion: 1) Design process utilizing V-Stitcher: During the process of ideation, students drew twenty sketches and discussed them with the instructor. Then they chose the two designs and employed draping/patternmaking techniques to create patterns of the designs. The patterns were digitized, saved as files with dxf format, and imported to V-Stitcher Program. Students corrected the shape of patterns, stitched the patterns, and dressed the garments to a 3D

avatar. The dimension of the 3D avatar was set as the same measurement of students' target user. Then the fit of the garments was checked with tension and pressure map of the program and adequate modifications were made. Once the final patterns were completed, the instructor printed out the patterns and students executed the patterns to develop the final sample. The final garments were presented and evaluated at the end of the semester (see figure 1). **2) Benefits and challenges of V-Stitcher observed during the class:** The definite benefit of the program was that students could check the silhouette and fit of the garments without making an actual sample. In addition, it was possible to visualize the fine details in the garment through adding seams and top stitches to the garments. Students also could have the images in their tech-pack and save time for drawing flats with Adobe CC. Despite the several benefits of the program, there were polarized students' feedback about the program. The ten students showed diverse technology readiness and it impacted their learning experience with the program. Some students who are familiar with other technological programs, such as Adobe CC, learned the program relatively quickly. When they have technical issues with V-Stitcher, such as freezing due to the limited memory, they tried to fix the issue with positive attitude. On the other hand, there were students who showed frustrations with learning V-Stitcher. Students who are less familiar with working with technological setting showed a sharp learning curve while others showed moderate. This finding indicates that more exposure to technological setting facilitates students' learning of V-Stitcher. **Conclusion:** All ten students successfully applied V-Stitcher in their projects and appreciated the opportunity to learn the program. They admitted that learning V-Stitcher was challenging at times but was beneficial to their career in apparel design. To better teach V-Stitcher in apparel design curriculum, future research/workshops regarding how to teach technology to a group of students who have diverse technology readiness/aptitude will be needed.



Figure 1a: a student's garment visualized in V-Stitcher



Figure 1b: a student's garment presented at a fashion show

References

- Baytar, F. (2017). Apparel CAD patternmaking with 3D simulations: Impact of recurrent use of virtual prototypes on students' skill development. *International Journal of Fashion Design, Technology and Education*, 1-9.
- Dunne, L. (2012). *3D simulation and the apparel design curriculum* [online article]. Retrieved from <https://cultivatingchange.wp.d.umn.edu/3D-simulation-and-the-apparel-design-curriculum/>
- Romeo, L. D., & Lee, Y.-A. (2013). Creative and technical design skills: Are college apparel curriculums meeting industry needs?. *International Journal of Fashion Design, Technology and Education*, 6(3), 132-140.
- Wang, B., & Ha-Brookshire, J. E. (2018). Exploration of digital competency requirements within the fashion supply chain with an anticipation of industry 4.0. *International Journal of Fashion Design, Technology and Education*, 1-10.