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Connecting the Dots: Incorporating Mass Customization into the Classroom Experience

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The introductory course in the Fashion Development and Product Management program, Fashion Apparel Analysis, is a combination of lectures and laboratory exercises designed to introduce sophomore level students to the apparel industry. The lectures cover topics from raw materials to final products, including processes, machinery, technology developments, and quality evaluation. The labs provide an opportunity for students to have hands-on experience creating increasingly difficult products using industry production equipment. It is often difficult to provide a direct relationship to concepts discussed in lecture to the actual creation of products in the laboratory environment.

Experience tells us that practical, hands-on activities that relate to real life opportunities can help build a stronger understanding of concepts that might be elusive, otherwise (Fink, 2013; Meyers, 2014). Our grandparents may have coined the phrase of “learn to do by doing”, but some of the concepts that are integral to the apparel industry are difficult to put into practice due to significant limits on time. As educators we are challenged to increase the opportunities for learning without making major course revisions. Towards that end, one of the projects of the course was refined to provide an opportunity for students to experience the Mass Customization paradigm.

The laboratory section of the apparel analysis course is comprised of five projects that increase in difficulty from the first project to the last, and incorporate the use of different machines, production processes, raw materials, and quality evaluation. The fourth project is the production of a dress, which has generally been more focused on the handling of the raw materials and the quality production of the final garment than on how the product might fit on the body. Since these are introductory level students who have no patternmaking or design experience, concepts related to sizing, fit, and customization have been introduced primarily through lecture with laboratory experiences directed at developing skills in production. The fourth project was re-developed to allow incorporation of more practical experience with the technologies that have developed related to mass customization.

Procedure

A simple shift dress with princess lines was developed using industry CAD software. The dress was graded for multiple sizes and set up for automatic alteration using the processes developed for customization and industry practice. Each of the students was 3D body scanned and their measurements (or those of their fit model) were used to create their individualized fitting patterns. Students provided their own material selections and participated in cutting their individual garments using an automated cutting machine.

Multiple demonstrations were made to show the students how to produce their garments, including seam finishes, zipper installation, pressing, etc. As each student completed their garment they made individual appointments to meet with the course instructor and teaching assistant to evaluate the fit of the garment using a rubric that outlined industry fit standards. This meeting included discussions related to how raw materials, alteration issues, construction methods, etc. might have impacted acceptable fit. In addition, students were asked to make their own fit evaluations (an opportunity for their fit preferences to be considered) and to discuss improvements that might be made.

Learning Outcomes

While the original focus of the project was to incorporate the seams, stitches, materials and processes involved in producing a garment, the incorporation of mass customization technologies allowed the students to experience a product development process that might impact their learning and understanding as they progress through their academic career. Students learned 1) how to produce a dress, 2) the relationship of sizing to fit, 3) how to evaluate fit of a garment, 4) the variables that may have an impact on fit, 5) industry methods used to meet the fit needs of their customers, and 6) problem solving techniques. The customization process was not perfect. There were pattern issues for some of the students due to their unique shapes (compared to standard sizing systems) that were frustrating, but also provided a wonderful opportunity for the students to gain a better understanding of the complicated processes involved in creating successful garments, not just custom garments. The students' individual fabric choices also impacted the overall success of the product. Even though fabric guidelines were provided before the students made selections, many of the students did not have enough experience to know that their choices did not fit within the guidelines. Others just wanted what they wanted. During cutting, handling for production, and final fitting, fabric selection was discussed. The whole class benefited from issues that were discussed.

The instructors will use the information gained during the project to refine the pattern grading and alteration rules to remove some of the problems for the next class to take on this project. We will continue to allow students to make their own fabric choices (with guidance) so that they benefit from the experience gained with both good and bad selections. The project took a great deal of effort to pull off, but was a great learning tool for the students, who all now have first-hand knowledge of customization strategies. The instructors learned as well and will spend more time and effort on improving the process for more involved products.

References

- Fink, L. D. (2013). *Creating significant learning experiences: An integrated approach to designing college courses*. John Wiley & Sons: San Francisco, CA
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