Learning in a Multidisciplinary Collaboration: A Case Study of Digital Textile Co-design for Apparel and Interior Designers

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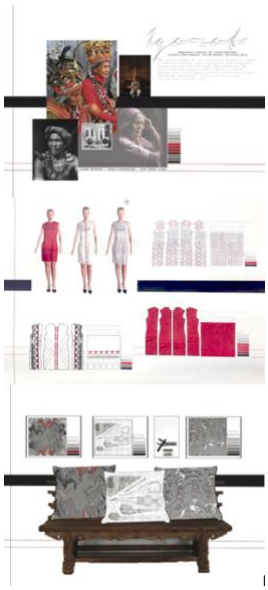
As a wide range of emerging technologies becomes more relevant in recent years, designers today are faced with learning more untraditional knowledge and skillsets (Sun & Zhao, 2018), and the challenge of complex problem solving is often more effective through multi- and/or interdisciplinary collaborations (Klein, Faratin, Sayama & Bar-Yam, 2003). In a collaborative design environment, the transfer of information or ideas is essential to the development of design process and outcome (Austin, Steele, MacMillan, Kirby & Spence, 2001). However, modern day apparel design students often have limited experience and training in working with designer of another field and thus lack the skills in communicating ideas/solutions and comprehending idea feedback. In the realm of textile design, apparel and interior designers often share similar technical skills (e.g. computer-aided design or CAD, pattern development) but both have unique trainings and strengths in various product developments (e.g. garment design, interior upholstery). Although co-design is becoming more prevalent and critical in modern day design, current literature and US curriculum is limited in the understanding of digital based co-design approaches and digital textile design learning and visualization. *This qualitative case study investigates the collaborative design thinking for apparel design student with interior design collaborators in textile design focused product development. The goal is also to examine the apparel design student's cognition in applying engineered print to apparel and interior products using the virtual 3D simulation tool, Optitex 3D.*

Qualitative methods were applied in this research design. Data were collected from a collaborative design project between an apparel and an interior design studio class in a southeastern US institution. Total 18 apparel design student participants were recruited with IRB approval. Data was collected through mind maps and semi-structured questions. All participants have formal training in applying principles of design and basic skills in repeat textile design using 2D CAD programs, average 6 month. Apparel and interior design students formed groups of 3-4 (1 apparel design, 2-3 interior design) based on random selection. The collaboration followed three main phases: 1) the foundation of engineered print and basic workflow in using avatar and Optitex for textile simulation were introduced to both design students in class, 2) students brainstormed in group setting to select a collection theme and develop engineered print options for both sheath dresses and decorative pillows, 3) students visualize and simulate the dress prints in Adobe design programs and/or Optitex 3D and finalize ideas for formal presentations (Figure 1). Data was theme coded to identify major findings.



In the co-design setting, apparel design student participants reflected in areas of Design Ideation (DI), Design Decision (DD), and Design Execution (DE). Most participants noted that DI involves inspiration, concept development, and collaborating to adjust to all collaborators. DD involves collaboration, adaptation, aesthetics selection, concept development, and target market research. DE involves organization, time management, collaboration, communication, challenges, and precision. Comparing to designing alone, participants reflected that creativity is absent in team work, especially when it comes to DD and DI. However, the co-design setting helps in eliminating strain on DD and DI due to the need to compromise and move forward in the design process. The most frequently encountered challenges in co-designing were achieving agreement in aesthetics, communicating ideas, and setting timeline for completion. Aside from the challenges, half of the apparel design student participants found that the co-designing experience was mentally stimulating, exciting, and their counterparts were helpful in the project completion. Further, **in engineered print visualization** using virtual 3D simulation, apparel design student participants found the 3D CAD tool (Optitex) exciting and helpful in "bringing ideas to life". The tool allowed students to see how various designs lay on a body form or avatar and select the designs that are most complimentary to the body. Half of the participants also noted that their interior design counterparts were instrumental in providing feedback on print position, selection and how to coordinate prints for both dress and pillow products.

The study results suggest that apparel design students experience both challenges and benefits in co-designing with interior design students. Results also reflect the effectiveness of digital 3D visualization tools in achieve a rewarding co-design experience in engineered print design. However, this case study was limited in the setting of the apparel and interior design studio courses. Student participants from both sides were given limited time to build rapport and team culture in adaptation. They were also previously taught to design basic textile using different CAD techniques. These may have contributed to participants' challenges in designating design tasks, managing workload, and executing final design ideas. In future, more explorations should focus on the soft skills of design and team communication in multidisciplinary settings and when using various CAD tools.

Reference

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