Being Real about Teaching Virtual: Comparing Academic and Industry Views on Technology Integration and Skill Development

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Knowledge and skill in using workplace-relevant technologies has become the expectation across industries, as experience and ability with technology has taken on greater importance in the hiring and promotion decisions of many firms (Noguera & Watson, 2004). Software such as CAD and Illustrator, as well as Excel, have been the standard within the apparel industry (Tyler, Heeley, & Bhamra, 2006) until recently, when 3D/virtual technologies have come to the forefront (Park, Kim, & Sohn, 2011). In particular, virtual garment prototyping (for product development), virtual planning, buying, and allocation (for merchandising), and 3D printing (for customization) are quickly becoming the new normal (DeSilva, Rupasinghe, & Apeagyei, 2019). These technologies have become even more important in light of the need for employees to work from home brought about by the COVID-19 pandemic. Employees are expected to know how to use 3D/virtual technologies to make the concept to consumer process faster and more efficient, and to minimize costs as well as waste (Zhang & Huang, 2014). Given the benefits of 3D/virtual technologies for apparel companies, the ability to use these technologies to complete job-related tasks can ultimately facilitate career advancement and may even improve a new graduate's chances of finding employment.

As the number of new technologies used in the apparel industry continues to grow (Arribas & Alfaro, 2018), greater pressure is placed on university faculty and programs to incorporate opportunities for students to learn them within the curriculum. Students are introduced to 3D/virtual technologies with the idea that exposure will lead to skill development, and ultimately, greater marketability upon graduation (Kwon & Kim, 2002). The types of 3D/virtual technologies that are taught can provide apparel programs with a competitive edge in recruitment and program rankings. In sum, it is difficult for faculty to ignore the need for integrating 3D/virtual technology into the curriculum. Consequently, the question as to which 3D/virtual technologies should be integrated becomes paramount. Concerns as to costs, both in terms of faculty time and effort costs as well as actual dollar requirements, also arise. Finally, a lack of available best practices for teaching 3D/virtual technologies in ways that will engage students (Gu, Zhu, & Guo, 2013) and that are germane to the industry contributes to a relatively complex decision-making process.

To address the growing pressure on faculty to consider integrating 3D/virtual technology into the curriculum, the two-fold purpose of this study was: (1) to examine the benefits and challenges of this decision from the perspective of faculty members who teach in apparel programs and (2) to compare faculty perspectives with those of industry professionals who are in a position

to hire graduates of apparel programs. Objectives were to understand the scope of the topic from apparel program faculty members' viewpoints and to consider what these viewpoints mean in light of views on the topic among industry professionals, particularly in terms of preparation of students for work in the industry. Faculty have specific goals when teaching virtual technology to their students, and these goals may or may not relate directly to those of the hiring manager. Thus, the aim of the present study was to explore how the views of the two groups converge and/or diverge for the purposes of identifying the ideal (e.g., types of technology and level of skill development) versus the real (e.g., what is possible given the academic vs. business context) goals for integrating 3D/virtual technology into the apparel curriculum.

Data were collected with apparel program faculty via an online questionnaire and through virtual interviews with 15 industry professionals who work at apparel and/or retail companies and who were in positions that involved hiring new graduates. The questionnaire was distributed by ITAA to all members and a total of 89 completed surveys were received. Open-ended questions included on the questionnaire focused on the types of 3D/virtual technologies taught in the classroom, the outcomes sought, and the challenges faced by faculty in attempting to integrate them into their courses. The sample of industry professionals was recruited through the professional networks of the researchers. Interview questions focused on the same topics as the faculty questionnaire, but from the business perspective, including types of 3D/virtual technology used by the company, goals for using it, and challenges faced in adopting it.

Faculty responses pointed to the key benefits and challenges of teaching 3D/virtual technology, or any technology, to students in apparel programs. The two most emphasized challenges were gaining access to training and the cost of maintaining up-to-date versions. Faculty indicated having to be self-directed and highly motivated to teach the technologies because they must first learn them before they feel confident about teaching them to students. However, training is often cost prohibitive, and therefore, as one respondent wrote: *The pressure to incorporate the technologies, especially newer ones, into curriculum is strong. However, support for faculty to become proficient in the technologies is not as strong (R3).* Faculty responses also pointed to the need to maintain good relationships with campus IT groups to assist when software and equipment glitches occurred. One interesting point that emerged from the industry interviews was the important role played by team-based learning, which could be a useful approach for faculty facing shortage of lab space and the need for a lot of expensive equipment.

Both groups emphasized the need to focus on developing skills in and through 3D/virtual technology. Faculty highlighted creativity and critical thinking skills as most important, followed by problem-solving and technology literacy. However, interviews with industry professionals highlighted the need for adaptability, self-direction, and flexibility, as all indicated that new hires are provided some level of training on the specific software used by the company, which are often different than those taught in a given apparel program (e.g., Browzwear vs. CLO). Interestingly, the general types of 3D/virtual technologies used by faculty were also those most often cited in the interviews with industry professionals: virtual prototyping and 3D body scanning technology. Although a few faculty indicated that they used virtual merchandising software in their classes, overall, responses pointed to a lack of effective options for merchandising programs as compared

to design and product development. As one respondent pointed out, *I think there is a lack of technologies or any programs that help to teach merchandise students effectively (R7).* This point also emerged in the industry interview findings, as some of the retail-based participants either did not have the financial means or the personnel to keep up with 3D/virtual technologies that would assist in managing the online or brick and mortar store environment.

Findings of the study illustrate that while there are areas of overlap in terms of faculty and industry perspectives, especially the need for students to learn 3D/virtual technologies and the relatively high costs involved in doing so, there are also some key differences, including the kinds of skills that should be fostered by the process. Thus, faculty who teach in apparel programs might consider aligning the objectives of virtual technology-related courses with applied competencies needed by the industry. In addition, it is important for institutions to develop sustainable ways to support faculty, i.e., cost and training, to be prepared to teach students in this regard. Further study can help to better align the goals of industry for hiring new graduates with the resources available to apparel programs to support such technologies.

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