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Strategies to Update the Clothing and Textile Course Curriculum with Emerging Technologies

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Shank (2015) reports that new knowledge doubles every ten years, nearly a 100% increase in speed since World War II. This increase in knowledge also means a constant cycle of technology upgrades which is challenging for apparel academicians to keep up with, when preparing their future workforce. Today, apparel course curriculums not only need to disseminate conceptual knowledge but also impart practical skill-based knowledge about technology. The synthesis of technology with course content and teaching style is an important topic that should be discussed by apparel professors. Niess (2005) reports that many new professors struggle to incorporate technology because they lack experiences and knowledge of such integration in pedagogy. However, students are more productive in the classroom when the digital technologies are integrated into teaching (Giurgiulescu, et al., 2015). It is important to not only review the individual merit of technology, course content, and pedagogy (TCP) but also look at the way TCP complement each other. Margerum-Leys & Marx (2002) argue that student performance is increased when TCP are viewed holistically.

Previous research has explored the application of *individual* technologies related to the field of apparel, 3D scanning, 3D printing, and merchandising, however, there is little research on how these technologies compliment pedagogy. The strategies used to educate technically savvy millennial have not been well explored in the clothing and textile discipline (C&T). This research fills the gap in the literature by exploring the integration of TCP in C&T academic disciplines. The objective of the study was to examine (a) challenges faced in integrating TCP, and (b) strategies to integrate TCP. After IRB approval, qualitative interviews were conducted with ten C&T academicians who had incorporated technology into their course curriculum. The research participants' teaching experience ranged from department heads and associate professors to assistant professors and instructors. Respondents represented seven universities across the United States. Two researchers extracted themes in three rounds of analysis.

The first major **challenge** that emerged from the interviews was the "complexity of fitting the technology in the course curriculum." According to five interviewees, there is no clear blueprint for such integration, while at the same time the technology is constantly evolving and "pushing the boundaries of the disciplines." The second challenge is the "shift in generations," while newer generations of students are exposed to computers as early as three-years-old, the academicians were exposed to computers much later in their life. While the majority of research participants agreed that, "the students are tech savvy," they also recognized that the students are "highly impatient with technology, as they never struggled in using the technology when it was in the inception phase."

Five **strategies** emerged in the data analysis process. First, all of the academicians were sensitive about putting too much emphasis on the technology- "if we put our focus on the technology but forget about the foundation, we will land into trouble." Rather, they strategize on making the students aware of the possibilities of using technology as "tools for executing their ideas." One of the participants said it was essential for students to work with emerging technologies so that students have the exposure and "confidence to problem solve to democratize the belief in creating". The second strategy was to have a balanced "distribution of technology throughout the course curriculum starting from pattern making in the first level to laser cutters and 3D scanning in the second level to 3D printing and finally doing a project using all the technologies with the aim of an intelligent interface." Third, to overcome the challenge in the shift of generations, interviewees echoed the need for professors to update their skill set and technological knowledge so that students have role models who are "technophiles rather than technophobes" The fourth strategy for integration of TCP was to use a flipped classroom model where students learn the skills by hands-on methods. Students learn technology at different rates and a flipped classroom model allows professors to help student learn "without causing the ones who understand quickly to have to wait forever while helping the ones who don't catch on as fast." The fifth strategy was a call for C&T departments to "be more marketable and more visible" to attract multidisciplinary based projects, which can help in integration of TCP. Four participants emphasized the need for long-term interdisciplinary projects to "move over the language and cultural barrier" in the first few meetings and then work collaboratively towards the common goal.

The strategies, which emerged in the research, could give ideas to the academicians to revamp the curriculum based on the changing needs of industry, and nature of their students and professors. The question arises: what can current professors do to ease the learning curve and meet the expectations of fluid technology incorporation in the classroom. Should professors teach technology in a step-by-step method, or is it better to give the students freedom to explore the technology by themselves? A future quantitative research on the strategies, which emerged in this research, can help in synthesizing an updated course curriculum for the C&T discipline.

References

Giurgiulescu M., Pânişoară G., Pânişoară I. O., Sandu C. M. (2015). Ways to develop a positive attitude of students – digital natives – to reduce disaster risks. *AES Bioflux, 7*(2), 230-239.

Margerum-Leys, J., & Marx, R.W. (2002). Teacher knowledge of educational technology: A case study of student/mentor teacher pairs. *Journal of Educational Computing Research, 26*(4), 427-462.

Niess, M.L. (2005). Preparing teachers to teach science and mathematics with technology: Developing a technology pedagogical content knowledge. *Teaching and Teacher Education, 21,* 509-523.

Shank, P. (2015). Science of Learning 101: Are we doing the right things? Association for Talent Development. Retrieved from https://www.td.org/Publications/Blogs/Science-of-Learning-Blog/2015/06/Science-of-Learning-101-Are-We-Doing-the-Right-Things.