

Sustainability and Entrepreneurship in a Digital Area: The Integration of Sustainable Cotton and Situational-based Learning into the Undergraduate Education

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Keywords: Sustainable Cotton, Entrepreneurship, Digital, Situation-based Learning

Introduction: The worldwide volume of the cotton market is projected to reach about \$50 billion by 2027 (Textile Exchange, 2020). In the textile and apparel industry, there has been a longstanding initiative to adopt sustainable practices. Notably, apparel retailers have been involved in promoting sustainable cotton production to increase economic value and reduce environmental impact. In the retail sector, fashion companies (e.g., Levi Strauss & Co and Nike) have taken up the challenge and committed to procuring sustainable cotton, including regenerative and organic cotton (Santamaria, 2017). Despite the efforts to improve the environmental and economic impacts of cotton through sustainable practices, there is a growing concern within the retail industry regarding the transition of sustainable cotton products into entrepreneurial opportunities in the digital marketplace. Indeed, many fashion brands struggle to effectively communicate the features of sustainable cotton to consumers in a digital media environment (Textile Exchange, 2020). Given that college students are digital and social media natives, they need to acquire the skills to communicate about cotton sustainability through social media platforms. Furthermore, maintaining an entrepreneurial mindset is becoming important for college students in the rapidly changing market (Zhang et al., 2014). In the context of sustainable cotton, this mindset can enable individuals to identify innovative ways to market and promote sustainable cotton products, as well as to identify and address challenges and difficulties in the supply chain of sustainable cotton products. Therefore, it is imperative for students in the textile and apparel discipline to explore practical approaches for transitioning sustainable cotton products into start-up opportunities in the digital marketplace, building on the knowledge they acquire through investigating the cotton industry and sustainable consumers.

Theoretical Background: There has been a lack of consistent science-based knowledge about sustainable cotton online. Previous scholars mentioned that it creates difficulties for college students to gain a comprehensive understanding of the environmental, economic, and social impacts of the sustainable cotton industry (Han, 2019). Additionally, there is a shortage of teaching resources that bridge the gap between business perspectives and public demand for sustainable cotton products in the digital environment. As such, it is crucial for students to learn

how sustainable cotton products can successfully compete in the digital marketplace. To address this knowledge gap, this project aimed to enhance students' understanding of sustainable cotton production and extend their knowledge of entrepreneurial opportunities in the digital marketplace through Situation-Based Learning (SBL). SBL is based on Experiential Learning Theory, which suggests that learning is optimized when knowledge is acquired and fully understood within its context and reflects real-life decision-making (Lave & Wenger, 1991). Experiential learning activities can help bridge the gap between theoretical knowledge and practical experience by providing students with real-world applications of sustainable cotton knowledge. The objective of this project was to offer students the chance to investigate and comprehend sustainable cotton from both business and consumer perspectives, with a particular emphasis on the digital environment. Students had the opportunity to achieve the following goals: (1) acquire science-based knowledge on sustainable cotton through the utilization of learning modules; (2) devise social media marketing strategies; and (3) create start-up proposals based on in-depth knowledge about sustainable cotton production and current market competition.

Method: The sustainable cotton-enhanced learning project was incorporated into two classes (Digital Marketing for Fashion and Retail Entrepreneurship) in the Spring and Fall semesters, of 2022. In total, 96 students participated two semesters. “Sustainable cotton and digital marketing” and “resources for market analysis” modules were designed and used in both classes. Situation-based learning modules (i.e., sustainable cotton resources, in-class discussion, industry panel discussion, case study) were developed and implied to the semester-long projects developing social media marketing (Digital Marketing) and start-up business (Retail Entrepreneurship) proposals. To access learning effectiveness, interview, and survey questionnaires were developed to ask students' knowledge about sustainable cotton, and digital marketing for sustainable cotton before and after participating in the learning opportunities. Students participated in the interview (at the end of the semester; $N = 16$) and learning evaluation (pre-and post-class surveys at Five-Likert scales; $N_{\text{pre-test}} = 65$; $N_{\text{post-test}} = 52$) to access the sustainable cotton-enhanced project.

Results: For the Digital Marketing class, students identified problems of fashion brands and addressed them in their digital marketing efforts for collaboration with sustainable cotton (Youn et al., . For the Retail Entrepreneurship class, students participated in four main teaching modules and developed new business ideas based on sustainable cotton materials and products. As result, eight groups out of twenty groups were selected as winners—i.e., five winner groups in Digital Marketing and three winner groups in Retail Entrepreneurship were selected. Finally, the interview results indicated that students gained in-depth knowledge about sustainable cotton manufacturing processes and marketing strategies for cotton products. Interview results show that students understood the critical challenges of today's fashion industry (i.e., price, transparency, and manufacturing issues) through class activities (i.e., industry panel discussions,

and in-class activities). Survey results show that students' knowledge about sustainable cotton was improved significantly after taking Digital Marketing ($M_{pre}=2.97$, $M_{post}=4.59$, $p < .001$) and Retail Entrepreneurship courses ($M_{pre}=3.16$, $M_{post}=4.26$, $p < .001$). Also, we found that students' knowledge about digital marketing for sustainable cotton was improved significantly in the Digital Marketing ($M_{pre}=2.84$, $M_{post}=4.24$, $p < .001$) and Retail Entrepreneurship classes ($M_{pre}=2.84$, $M_{post}=3.97$, $p < .001$). Students in both classes addressed the situation-based experiential learning opportunities that were very effective and beneficial ($M_{Digital\ Marketing}=4.51$, $M_{Retail\ Entrepreneurship}=4.49$).

Conclusions: The integration of situation-based learning within the curriculum effectively facilitated students' development of scientific knowledge pertaining to sustainable cotton, and their ability to address current issues in cotton material development. Additionally, the incorporation of this instructional approach allowed students to identify circumstances in which fashion brands must engage in sustainable practices, and to devise effective digital or social media campaigns for promoting these efforts. Students also acquired knowledge of current digital marketing practices utilized by fashion start-ups and their competitors. Finally, through the project, students were able to generate proposals aimed at enhancing the positive social impact of fashion brands, using entrepreneurial and social media marketing strategies that maximize communication effectiveness.

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