Chapter 14

Bridging Marketing and STEM Education: Cross-Functional Teamwork for New Product Development

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ABSTRACT

As digitally-driven marketing initiatives expand, it becomes increasingly imperative to integrate science, technology, engineering, and math (STEM) functions into marketing education to improve business processes. New product development (NPD) relies heavily on successfully incorporating both STEM and marketing perspectives. This research contributes to the interdisciplinary pedagogy literature by examining a cross-disciplinary project that combines students from an undergraduate-level marketing strategy course and an electrical engineering course. In the process of undertaking this project, students also learned how to interact with and engage a community of external business stakeholders to accomplish their project goals. The NPD project is described in detail, and an evaluation of perceived student skill improvement is reported. Qualitative and quantitative data revealed that students reported improving their NPD, professional, and peer feedback skills as a result of this cross-disciplinary project.
Solving complex problems increasingly requires collaborative, digitally-driven initiatives. As such, it becomes imperative to integrate a community of interdisciplinary stakeholders through community-engaged learning to help generate solutions. Integrating science, technology, engineering, and math (STEM) and the functional expertise of business practitioners can help develop innovative solutions to complex business problems. Often these solutions are in the form of new technological innovations. For instance, product development relies heavily on successfully incorporating both STEM and business perspectives. Preparing a new product to be launched into the marketplace (or making changes to existing products) requires not only a deep understanding of the community of users and its relevant stakeholders, but also technical knowledge of how to design and develop products efficiently and effectively. A growing number of business schools are responding to this demand with courses designed to incorporate STEM and business functions. For example, marketing analytics courses and programs are designed to integrate more mathematics and technology-related curricula. In practice, functional diversity plays a large role in organizational success throughout the innovation process (Cooper & Sommer, 2016; Pateli & Lioukas, 2019).

Similarly, the engagement of community stakeholders is imperative for helping students generate viable business solutions. Community-engaged learning creates valuable opportunities for students to participate in projects that are situated within a community and context for study (Clark & Stewart, 2012). Furthermore, community-engaged learning also generates deeper learning and strengthens the structure of democracy (Davis, Kliewer, & Nicolaides, 2017). Yet, less is known about how to create community engagement through technology development and whether its impact in a business course may strengthen learning outcomes. Due to the integrated nature of technology development, it becomes imperative to expose undergraduate students to cross-functional, community-engaged projects that engage a variety of functional experts, enhance their curiosity, and improve their skill set (Frias & Popovich, 2019). In a traditional classroom, much of the expertise is limited to one domain and is from one the instructor’s perspective. In a classroom where community stakeholders participate and provide feedback along with peer feedback, the shift in power and norms may provide unique, practice-focused learning opportunities for students (Cadwallader, Atwong, & Lebard, 2013; Davis et al., 2017). This form of learning also provides opportunities for students to improve interpersonal skills while working within a community of university and non-university constituents (Hatala et al., 2018).

This research contributes to the interdisciplinary pedagogy literature by describing how to engage students in a technology development course project and providing one method for assessing the student learning outcomes. Specifically, this project brought together an undergraduate-level marketing strategy course, an electrical engineering course, and community members (e.g., business practitioners, technical experts, and civic leaders) to aid in the development of new technology related to the performing arts. The purpose of developing these new technologies was two-fold. The first goal was to increase awareness of the performing arts center and its future in the community by partnering with the university to develop relevant new technologies. The second, related goal was to increase the diversity and inclusion of community members who typically attend performances. This project integrated business practitioners from the local community to aid in the development of new technological innovations and to provide specific knowledge about performing arts in the community. At the request of community stakeholders, who were intent on bridging community efforts to garner more interest in the arts, students were charged with forming teams, developing technological ideas to aid the performing arts community, and