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## Interdisciplinary Curriculum Development: How Research-led Pedagogy Enhances Design Students' Holistic Learning Experience

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Keywords: Sustainability, design education, interdisciplinary, research-led pedagogy

In 2016, design researcher Muratovski warned that due to the combined challenges of climate change and social unrest, "Our society demands a new generation of designers who can design not only products and communications but systems for living" (p.19). In response to this call to action, this study explores an interdisciplinary approach to product development through a research-led design pedagogy that engages students in fashion design, humanities, and environmental impact to foster a multidisciplinary approach to sustainability.

As part of this project, the researchers in this study developed a summer course for design students entitled Sustainable Design for Healthy Communities (SDHC). The SDHC project responded to the challenge that Muratovski (2016) identified by engaging students in applying critical thinking to explore sustainability and its relationship to healthy communities. The purpose of adopting a human-centered approach was to see if the student involved could transcend conventional design approaches (which tend to be focused solely on the design process and aesthetics) and instead utilize user-experience design practices by adopting ethnographic methods.

The SDHC project trained design students on methods to collect participant information, build an outreach campaign, and learn sustainable development methodologies. Regarding its sustainable education and public outreach agenda, the project aimed to raise awareness regarding the negative externalities generated from apparel development and consumption while encouraging equal attention to personal habits and participation in sustainable lifestyle changes. With its emphasis on user-centered design, the summer course offered an alternative to traditional forms of studio-based design. The students received guided mentorship from guest speakers who introduced them to research, sustainable methodologies, and human-centered approaches as part of their training. Through these experiences, the students trained in using ethnographic methods to generate personas and user journeys based on their community research. Through a blend of community mapping, color theory, and field observations, the students developed a series of arts-based workshops for local community centers to engage the broader public in sustainable development.

To complete the SDHC project, design students explored various modes of critical making, public engagement, and sustainability by conceptualizing more effective design processes through community engagement. For three weeks, the students studied community populations

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and collected data regarding their needs and understandings related to health, well-being, and sustainability. The findings from this data informed the development of design personas and generated user journeys. This learning project tested the hypothesis that participation in design research, ethnography, and other research-based methodologies to supplement creating sustainable clothing encourages students to consider political, social, and interpretive sustainability expectations, regardless of background or discipline. As a result of their efforts, design students generated a series of products, a website, a public service campaign, and workshops. These outputs highlighted sustainable development methodologies using natural fibers, natural dyes, mending, and up-cycling embedded in a capsule collection intended for exhibition with the public as part of their outreach campaign to raise awareness on the importance of recycling.

Using a mixed-method approach, the faculty researchers involved in developing this study tracked student outcomes. In addition to conducting a pre-survey, we collected data from students about their experience of class exercises and discussions, workshops, and guest lectures. In the pre-survey, students indicated that most were unaware of the fashion industry's environmental and social impact. A post-survey asked students to consider these realities when designing new products while exploring the depth and breadth of environmental and social issues that stem from the apparel and textile industry. We found that student's understanding of their roles as designers and applying research regarding lifecycle and human behavior aspects have increased.

In addition, survey analysis indicated that some individuals desire to incorporate sustainable products and approaches to their lifestyles. As part of this project, students engaged in cross-disciplinary training in research methods to develop alternative pathways to communicate the importance of sustainable development. Design researcher Meredith Davis (2018) predicted that "while designers of the 20th century primarily focused on object-driven outcomes (e.g., those that improved products and environments), designers of the 21st century will be focused on knowledge- and service-driven outcomes." As an example of this shift, this project explored how interdisciplinary collaborations at the university level can a) support general awareness regarding waste and environmental impacts of the apparel and textile industry and b) encourage thoughtful and in-depth approaches to human-centered research methods as a tool for improving student outcomes related to design education.

Faerm (2023) notes, "Design education in the U.S. is responding to the dramatically changing design industries by evolving curricula. Traditionally, these curricula have emphasized vocational skills, but they are now being replaced with those that prioritize the development of student's conceptual thinking, interdisciplinarity, and innovative design processes." This article presents this student project as a unique cooperative learning experience to address sustainability. In 2007, Manzini proposed a definition of sustainability whereby the consumer is actively involved as a co-producer of their health and well-being based on their choices

regarding products and systems to adopt as part of their lifestyle. From this perspective, designed products can be used to aid the consumer in achieving their potential by helping them see themselves as engaged in solutions for sustainable living.

The emerging attention to health and well-being within sustainability suggests moving beyond traditional studio-based design education to address these concerns holistically. This study seeks to analyze the broader research implications of this project in research-led pedagogy and interdisciplinary curriculum development. Thus, these findings present new opportunities for educational contexts beyond fashion and may enhance student preparedness for future professions when implemented in various topics.

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