



Lindsey Payne

Lindsey Payne is a Ph.D. candidate in Ecological Sciences and Engineering, and currently a co-instructor for a course focused upon engineering and environmental sustainability, and the lead instructor for her own experiential learning course in which interdisciplinary teams of students collaboratively identify stormwater management problems, co-design solutions, maintain budgets, and evaluate impacts with community partners. Lindsey's research sits at the intersection of sustainability, teaching and learning, and engagement. Her focus is in transdisciplinary decision-making models in engineering community-based sustainable design projects. Lindsey is the recipient of multiple teaching awards, and was recently inducted into Purdue University's Teaching Academy as an Associate Fellow.



PhD Defense Announcement

Transdisciplinary Approaches for Innovation in Engineering Education & Sustainable Community-Based Design

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As human and natural systems are increasingly integrated, sustainability solutions will need to integrate biophysical and sociocultural dimensions in order to ensure the well-being of present and future generations. Future leaders in sustainability must be able to think critically, integrate multiple perspectives, and communicate effectively across knowledge boundaries. These sustainability problem solvers will need to participate in engaged, collaborative transdisciplinary partnerships that produce knowledge that is use-inspired and embedded in real-world context. Transdisciplinary knowledge production requires in-depth participation of users and the integration of knowledge from both practice and research. There is, however, a lack of understanding as to how transdisciplinary knowledge is defined and generated across academic fields of study. Research is needed to provide definitional clarity for transdisciplinary knowledge and offer production models to support the development of key sustainability competencies in future leaders. This research project determined how transdisciplinary knowledge is understood and generated across academic fields of study and among practitioners. These findings led to the development of a transdisciplinary knowledge production model-focused intervention in an environmental and ecological engineering service-learning community-based design course. After the intervention, students demonstrated an increased in awareness, understanding, and ability to apply non-technical dimensions in design solutions, as well as increased competencies in sustainability. This study further advanced our understanding of appropriate learning environments for teaching professional engineering and sustainability competencies, and provided a curriculum specifically designed to create future leaders in the transition to sustainability.