

Integrating Sustainable Education into Construction Education

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The demand for sustainable development in construction has become increasingly popular over the years. New data is constantly emerging about the sources and effects to the built environment and society from construction related activities and the most cost effective manner in which to address them. While many construction education programs have a successful history with construction fundamentals, they have not yet fully integrated sustainable education. While redesigning the department curriculum to an entirely project-based-learning, the opportunity has arisen to increase the efficacy of the department's sustainable education. In order to coordinate this planning with current department efforts, it was necessary to first determine how other programs have successfully implemented sustainable development education within their curriculum; including specific student learning objectives to be met, best pedagogical approach, and best department change management approaches.

For this initial portion of the research, a review of literature and case studies from across the world and various disciplines was performed. The literature detailed implementation methods, challenges, successes, and student learning objectives and except for the original information from the World Commission on Environment and Development, have all been published within the last 8 years, making them the most applicable to current pedagogical methods. This review streamlines the current planning process as the department can learn from others and minimize errors. The literature shows that there have been several approaches to sustainable development integration in a department, but the most successful has been a combination of vertical and horizontal; meaning a first-year, independent, introductory course as well as every subsequent course including aspects of sustainable development. According to case studies within the classroom, project-based learning is the best approach to expose students to the complexities of sustainable development projects and decision making. To achieve this, research has determined specific learning outcomes from students, including the objectives outlined by the United Nations such as crisis and risk management and identifying stakeholder interest. Many of these learning outcomes align with the new American Council for Construction Education standard learning outcomes, providing deeper understanding for sustainable construction and addressing communication and higher level thinking. Lastly, the most fruitful implementations first developed a comprehensive plan that also dealt with change management for the faculty and staff. This plan included workshops, references, resources, support, and working from the already existing knowledge of the faculty and staff.

Keywords: Sustainable Education, Construction Education, Project-Based Learning, Integrated Learning