A Joint Venture Model for Externally Collaborative Project Based Interdisciplinary Culture (EPIC) in the Built Environment

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One of the main objectives of colleges offering an undergraduate degree in construction management (CM), construction engineering or any similar field is to prepare students for a successful career in a continually changing industry. The increasing complexity of construction projects and the large number of participants and stakeholders involved in the built environment has resulted in interwoven boundaries of the essential skills necessary for success. Consequently, academia had to rethink the course(s) content and adopt novel teaching approaches. No surprise that most CM programs restructured their curricula to develop the competency to "Apply construction management skills as a member of a multi-disciplinary team" in order to both satisfy industry needs and to comply with the American Council on Construction Education (ACCE) accreditation requirements.

This study examines the Interdisciplinary Project-Based (IPB) model initially created as a joint venture between three departments within the College of Architecture, Design and Construction Management and provides lessons learned from five years of continuous model development and restructuring. The collaboration started as a pilot program in 2013 with a total of 12 students from three departments which volunteered to experiment with IPB. The students were originally enrolled in CONM580 - Construction Project Control and ARCH567 - Studio Comprehensive Design; the IPB segment was their term project assignment. Teams of three students, one from each department were formed and were assigned the same (external, real life) project under the supervision of two faculty. In 2014 participation was extended to include students and faculty from College of Engineering and College of Arts and Sciences (Management) combining a total of 5 programs, 6 faculty and 94 students working on five projects. The sudden expansion of the model created many logistic challenges to all parties involved. In the last three years the model was downsized to a manageable dimension (18 students totally) and limited only to CM and architecture students. The study will identify pedagogical issues and strategies encountered during the development of the IPB teaching model, as well as the proper approach needed to design the course, so the material can engage students' prior knowledge and their skills, with the intent to build on this knowledge and to encourage new ways of thinking.

Assessment of the CM students collaborative experience was performed by using narrative feedback. Asking students to express in their own words the experience allowed them to raise issues about the course structure, the level of commitment to the collaboration on the part of both students and faculty, and the extent and timing of deliverables. To increase the student response rate, the "Evaluation of the Collaboration Experience" was part of the project deliverables and was graded. The preliminary results of students' evaluations demonstrate the value of IPB teaching, the context within which the collaboration developed, examples of good practice, challenges and barriers CM students had to overcome, as well as areas of potential improvement. Seven key characteristics were identified and will be used to develop a structure for the joint venture model for future collaborative projects.

The outcome of the study will be a report which describes lessons learned and offers guidance for other Construction Management programs that might be engaged in IPB learning with partners from other colleges or programs. The process of switching from "instruction based education" to "learning based education" as a major paradigm shift towards the constructivist theory in CM education will be investigated. An important part of this research is to quantify the level of success achieved in improving efficiency and effectiveness of CM education through the development of a learning environment and experiences which allow students to discover and build knowledge for themselves as active members of communities of learners that solve real life problems.

Keywords: Interdisciplinary Project-Based (IPB), Joint Venture, Model, Active Learning, Constructivist Theory