

# Cross-Disciplinary Collaboration in Architecture Studios

## Problem Statement

The increasing utilization of 3D modeling and BIM technology to design buildings has increased the use of integrated project delivery as a means of taking a project from concept to construction. The design and building process is becoming increasingly complex and includes several players at multiple stages of the project. The project architect and/or project manager is just one player on a design team that includes people from several disciplines. A “typical” project team might consist of an architect, interior designer, civil engineer, mechanical engineer, structural engineer, electrical engineer, general contractor, and various other consultants. Academic design studios do utilize collaboration and teamwork in both undergraduate and graduate levels, but the collaboration is mostly among students within the architectural discipline. This illustrates a disconnect between what students are learning in their studios, and what they will experience when working professionally. It seems there would be a substantial benefit to students, in all of the construction disciplines, to have the opportunity to participate in cross-disciplinary studios. Even when working on schematic design, architecture students would benefit from being exposed to input from the other disciplines. Now that cross-disciplinary project teams are becoming typical practice in the industry, universities with architectural programs should address it in their curriculum.

## Definitions

### Cross-Disciplinary

- Involving two or more academic disciplines
- Knowledge that explains aspects of one discipline in terms of another.

### Curriculum

- Set of courses, and their content, offered at a school or university

### Studio

- The workspace where students do usually visually-centered work in an open environment. This time and space is beyond that of instructional time and faculty guidance is not available. It allows for students to engage each other, help each other, and inspire each other while working.
- A type of class that takes the above mentioned workshop space, and recreates its core component of an open working environment. It differentiates itself based on a topic of instruction, isolated space, instructor led/included, and an added focus of directed criticism

### Integrated Project Delivery

- A collaborative alliance of people, systems, business structures and practices into a process that harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication, and construction

## Research Question

In what year/level of architectural education is it appropriate to expose students to cross-disciplinary design studios?

### Objective/Goal

To determine what course level a cross-disciplinary studio should be implemented

### Assumptions

- That a cross-disciplinary studio is going to be implemented in the curriculum
- The course level for architecture studios would correspond with the course level for the other disciplines involved in the studio

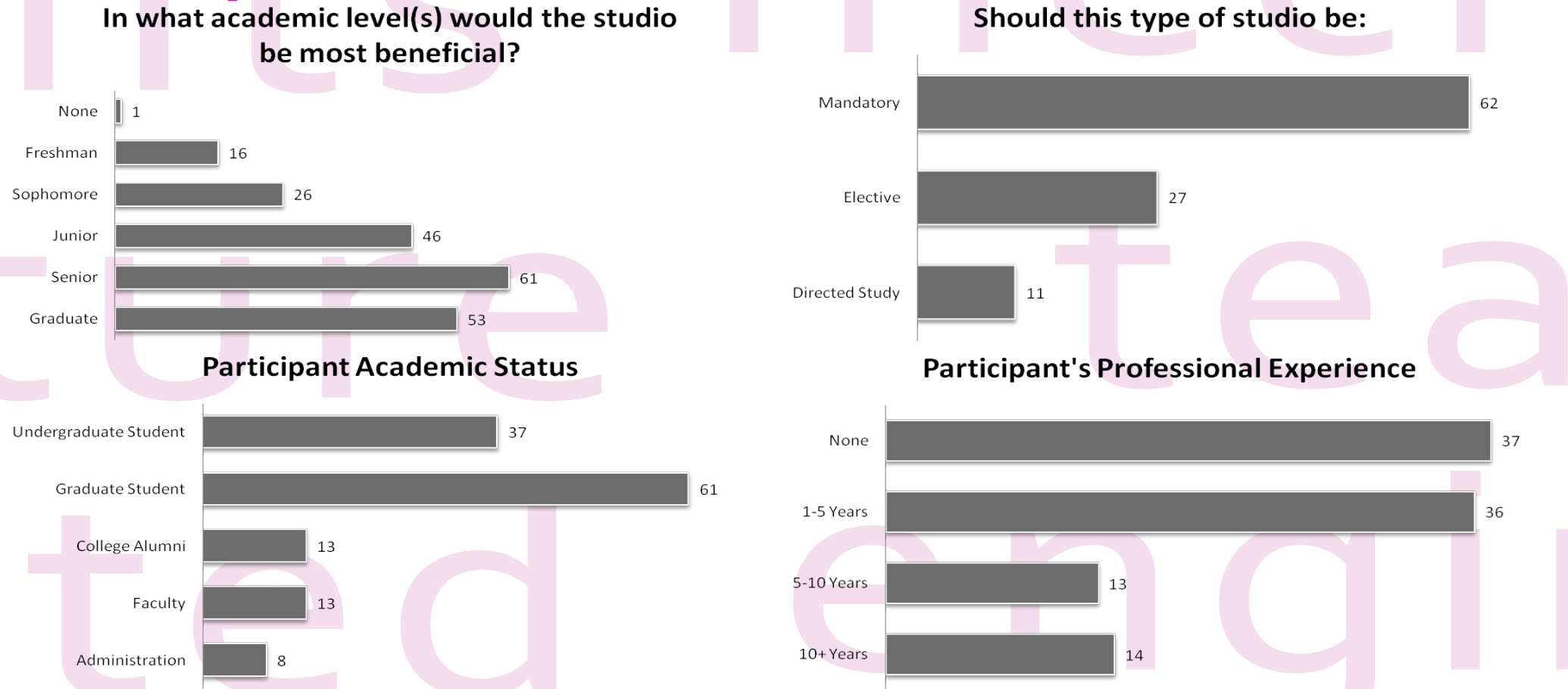
## Research Methods

This research is mostly a mix between Qualitative Research and Case Study Research; however tactics can also be used from Correlational Research and Interpretive-Historical Research. The method is qualitative because the first-hand encounters of the respondents and the use of multiple tactics. Case Study Research is used due to the data collection and analysis of existing cross-disciplinary studios in the context of architectural education.

**Analysis of existing cross-disciplinary studios-** I reviewed existing examples of cross-disciplinary studios in architectural curriculum. The course level in which other programs implemented cross-disciplinary studios and the reasons they deemed it appropriate should give some insight to where these studios would fit at other universities.

**Survey-** I formulated questions and then distributed a survey to students, faculty, alumni and administration. They were distributed via email and social networking, and I also physically distributed them at the university. This should helped me reach a larger audience than interviews alone, since most university students were away for the summer.

## Survey Results



## Existing Case Studies

**The Bath Model-** School of Architecture and Civil Engineering at Bath University

The Centre for Advanced Studies in Architecture (CASA) supports collaborative research crossing the boundaries between architectural history and theory, contemporary design and urbanism, archaeology and conservation, and emerging digital technologies. The Bath Model is an urban planning study that involved a collaborative effort from faculty and graduate students across several disciplines.

“Department of Architecture & Civil EngineeringCentre for Advanced Studies in Architecture.” ACE-University of Bath. N.p., n.d. Web. 24 June 2012. <<http://www.bath.ac.uk/ace/bath-model/>>.

**Atelier Geelong Studio and Urbanheart Design Research Forum-** Deakin School of Architecture and Building

The project builds on collaborative research between the school and a Deakin University teaching and learning support service (Deakin Learning Services) that, in 2004, identified the need for additional resources to assist in group teaching. The STALG-funded project is evaluating two design programmes at Deakin - the third-year Atelier Geelong studio and the fourth-year Urbanheart Design Research Forum - and it is hoped that the findings will inform an andragogical framework that at present does not exist for design teaching.

Bouchlaghem, D. (2006). Architectural Engineering and Design Management: Teaching and Learning Building Design and Construction (Vol. 2). London: Earthscan.

**The Global Studio-** Northumbria University, Napier University, and TU Delft

The Global Studio was a cross-disciplinary and cross-institution studio among three universities in 2007. It had a 14 week semester duration and teams were comprised of students from various academic levels. The course was offered as an elective in the Master’s program for the engineers; however, the designers in the group were third year undergraduate students and the drafters for the project were second year undergraduate students.

Bohemia, E.; Harman, K.; Lauche, K.. The Global Studio: Linking Research, Teaching and Learning. Amsterdam, NLD: IOS Press, 2009. p 2.<http://site.ebrary.com/lib/lawrencetu/Doc?id=10363639&ppg=14>Copyright © 2009. IOS Press. All rights reserved.

## Analysis

### Academic Standing

Survey results indicate that the majority of participants believe that a cross-disciplinary studio would be most beneficial during Senior standing of undergraduate students. This result is closely followed by the options of Graduate standing and then Junior standing students. This coincides with research collected from the existing case studies, where students involved in the cross-disciplinary studio where Graduate students and Undergraduate upperclassmen. It is also worth noting that the many of responses that chose the “freshman” and “sophomore” options had indicated that they believe cross-disciplinary studios should be exposed to students of all academic levels.

### Professional Experience

Most participants had little or no professional experience. However, the majority of the participants that had professional experience in architecture indicated that a cross-disciplinary studio should be “mandatory” in the curriculum, if implemented. It is noteworthy that almost every instance where the “elective” option was chosen, the participant was a student with no professional experience.

### Value

Of the students, faculty, alumni, and administration surveyed, only 1% of respondents selected the “none” option for the appropriate academic level. Based on this, it is reasonable to believe that 99% of participants surveyed do believe that a cross-disciplinary studio would be beneficial for architecture students. It is clear that participants see the value that such a studio would offer.

## Conclusion

Based on the survey and case study research, a cross-disciplinary architecture studio would be appropriate during senior standing in the undergraduate curriculum. Many first year students transfer to different majors and universities, so a cross-disciplinary studio at this level would probably not be a good investment. Also, students with Freshman and Sophomore standing may not have developed the skills necessary to successfully carry out the project with the added responsibility of working with other disciplines. Students with Senior standing would be more prepared for this type of studio and would get the benefit of working with other disciplines in an academic setting without necessarily having to advance to graduate school. This would benefit students who join the professional environment immediately after their completing their undergraduate degree. Students also expressed the potential value of a cross-disciplinary studio in the graduate level, so a separate studio could be implemented in the graduate program.

## Limitations

- Responses from the surveys are subjective and open to interpretation
- My audience is limited because most responses I get will be from students and faculty at Lawrence Tech, which may not translate as a “typical” university.
- The respondents to the interviews will be limited since the research was conducted during the summer semester
- My own experience as an architecture student may limit my objectivity