

A Survey of Student Interest in Construction Management Students' Involvement in Design Village Competition

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Included in this paper are the results of two surveys that were designed to assess student interest in Construction Management students' participation in the annual Design Village Competition hosted by Cal Poly every spring. Sixty-five Architecture and Architectural Engineering, and thirty Construction Management undergraduate students completed these surveys at the College of Architecture and Environmental Design (CAED), Cal Poly San Luis Obispo. The overall student interest level in both groups was majority positive. To delve deeper into potential benefits and obstacles on this subject, along with quantitative data from the surveys, there is also qualitative data from faculty member interviews, one from Architectural Engineering and one from Construction Management. The results from these interviews present some significant logistical barriers to this idea becoming a reality, but also their potential solutions.

Keywords: Undergraduate Education, Collaborative Learning, Architecture, Architectural Engineering, Design Village, Student Competition

Introduction

The hypothesis behind the research done for this project is that undergraduate students in the Architecture, Architectural Engineering, and Construction Management programs at California Polytechnic State University, San Luis Obispo, would be interested in the educational benefits from Construction Management students participating in the Design Village Competition. Currently, the Design Village Competition is a required component of the first-year studio class curriculum for Architecture and Architectural Engineering students. This competition is a collaborative learning experience in which students are truly given the opportunity to experience the Cal Poly motto of "Learn by Doing". In the competition students are required to design, build, transport, and spend the night in a temporary structure in Poly Canyon. In the past this has been done in teams of 4-6 Architecture and Architectural Engineering students over the course of 2 weeks at the start of Cal Poly's spring quarter.

Professors at the University of Hartford describe the architectural design studio as a place where integrative learning is encouraged and practiced (Davis, Petry, and Fuller, 2001). Because of such integration at Cal Poly of the two majors in their first-year, Architecture and Architectural Engineering students form cooperative relationships early on in their education. Through these interdisciplinary relationships, students learn from one another's differing skill sets and perspectives, increasing their breadth of knowledge and versatility as builders. An Architectural Studies and Interior Design Professor at Southern Illinois University claims that allowing these interconnections between building disciplines to occur in the learning process helps with the same relationships that occur later on in professional careers (McDonald, 2006). Similarly professors at the University of Florida wrote in a paper on collaborative design processes that most students are shocked by collaborative work environments after graduation because they spent most of their schooling in separated studies (O'Brien, Soibelman, and Elvin, 2003). Bringing students with a variety of intellectual values together, with the common goal of building, inherently increases the quality of the resultant project by balancing out the design process.

The purpose of conducting the research for this project is to support the claim that students are interested in the educational benefits of an interdisciplinary competition. In the current Cal Poly Construction Management undergraduate curriculum, the first exposure many have with working collaboratively with Architecture and Architectural Engineering majors is the Structures series scheduled in the flowchart as a second year support course. By this point in students' academic careers, relationships as well as biases have been well formed. This is where the key benefit of getting Construction Management students involved in the Design Village Competition, alongside first year Architecture and Architectural Engineering students, comes into play. Aside from other practical benefits such as experience and training working in the CAED Support Shop, project budgeting, and scheduling, the primary educational benefit assessed from this research is building collaborative interdisciplinary relationships. Building these relationships early on in the Cal Poly CAED curriculum should be just a starting block to lasting camaraderie among future professionals.

In addition to supporting this main hypothesis, the additional surveying conducted provided faculty insight into potential issues that might arise in executing this idea. The fundamental issues that came to light were capacity issues at the support shop, project funding, and whether or not the competition would become a required part of the Construction Management curriculum like it is with Architecture and Architectural Engineering. All of these issues have practical solutions that will be elaborated on in the results section.

Method

Two separate surveys were designed to assess students' interest in the benefits of the Construction Management students in the Design Village proposal. One survey was sent to Architecture and Architectural Engineering students who have competed in Design Village. This survey was comprised of questions meant to diagnose common weaknesses in Design Village teams of Architecture and Architectural Engineering students where Construction Management students could help as well as ones to determine their most valued educational takeaways that could also apply to Construction Management students. The second survey was administered to a class of Construction Management students after an informational presentation on what Design Village is. The questions asked in this survey had the same list of benefits given to the Architecture and Architectural Engineering students, but asked what benefits they saw as the most desirable. Both groups were asked what kind of teams they would prefer to work on, given the choice between majority Construction Management, majority Architecture/Architectural Engineering, or major exclusive. The data collected represents responses from 65 Architecture/Architectural Engineering students and 30 Construction Management students. Each survey is 6 questions long.

Results

Figures 1-6 display the results of the Architecture/Architectural Engineering student survey.

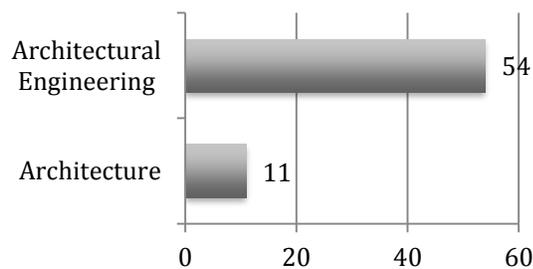


Figure 1. Major

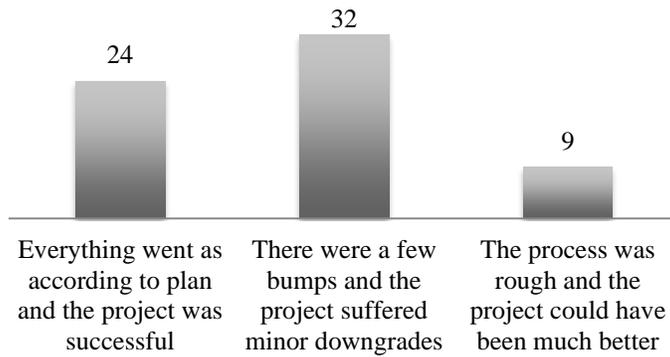


Figure 2. Design Village Experience

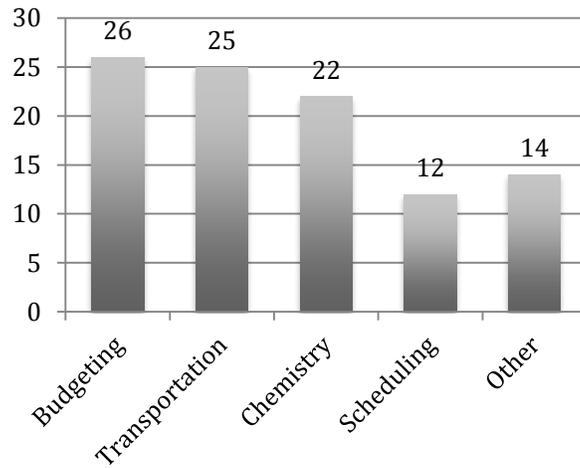


Figure 3. Areas Team Suffered Most

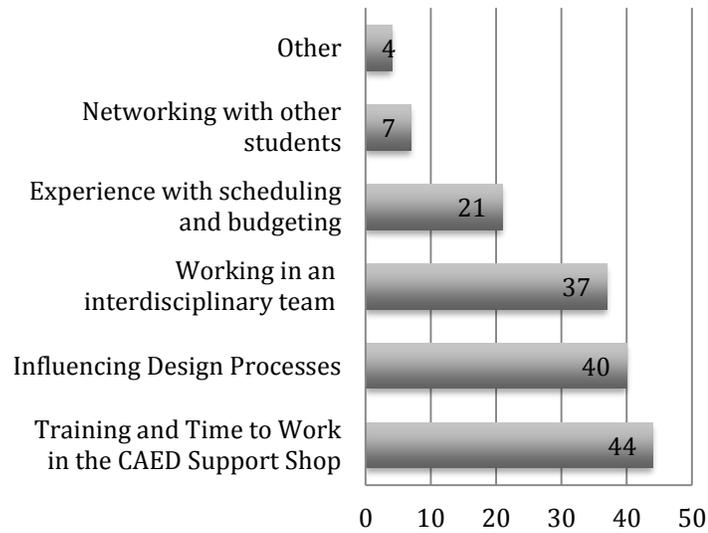


Figure 4. Most Valued Takeaways

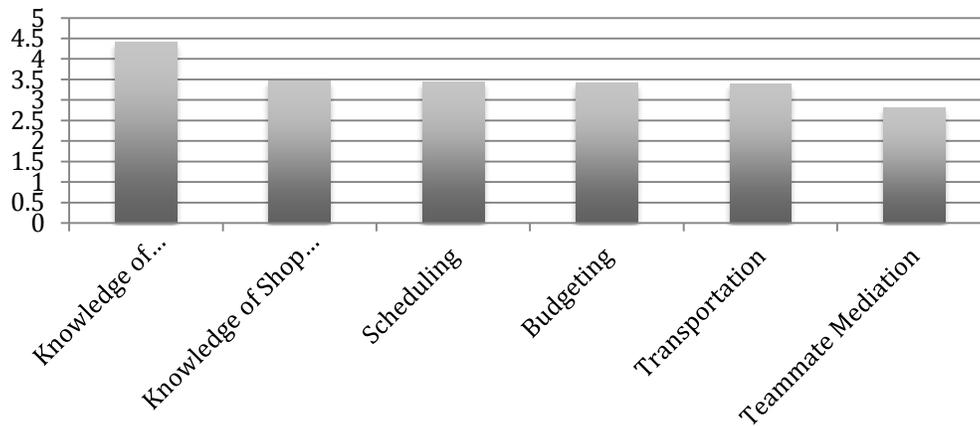


Figure 5. Most Valued Attributes Construction Management Students

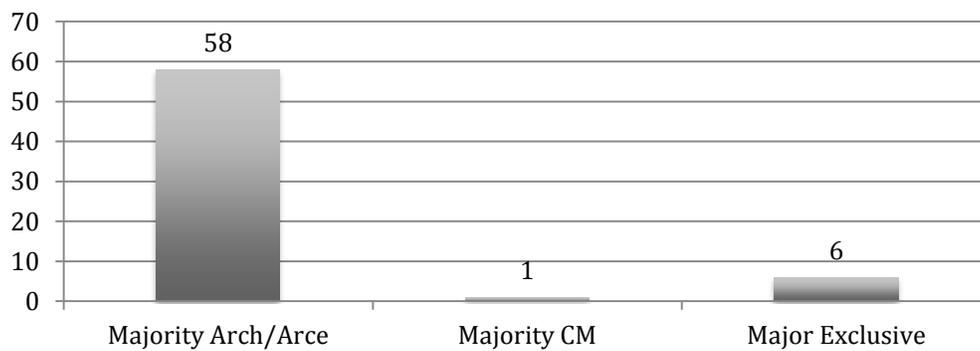


Figure 6. Team Structure Preference

Figures 7-11 display the results from the Construction Management student survey.

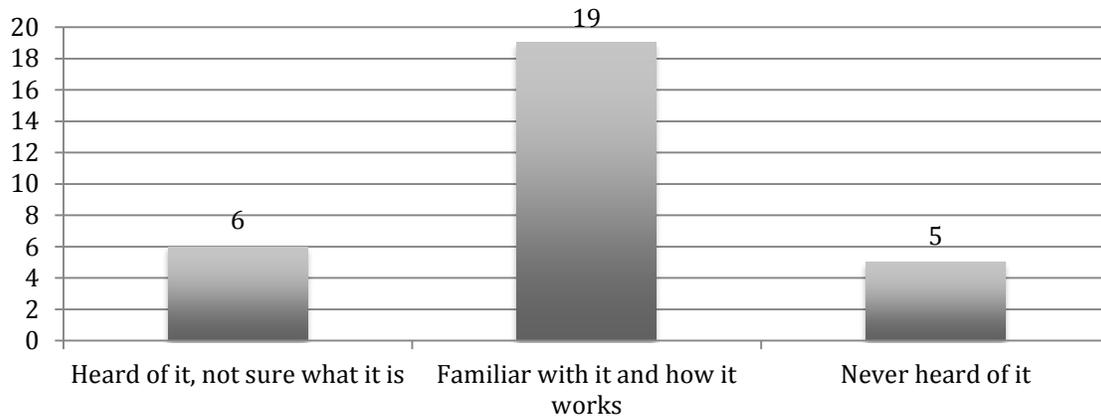


Figure 7. Familiarity with Design Village (before presentation)

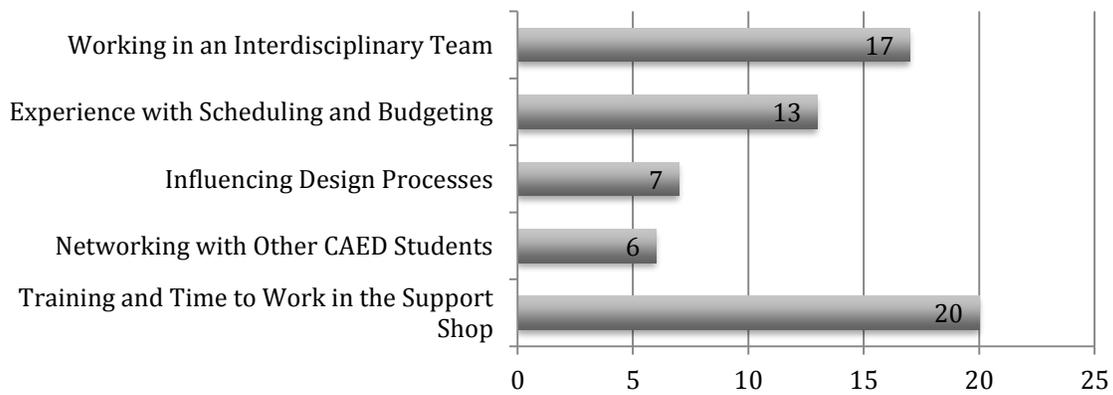


Figure 8. Most Valued Benefits From Design Village

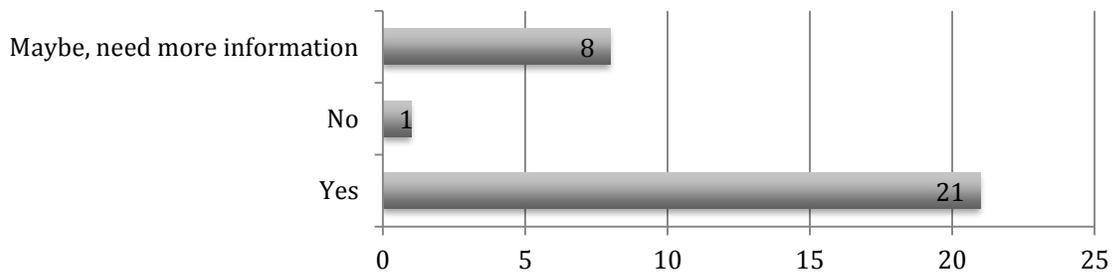


Figure 9. Willingness to Compete in Design Village

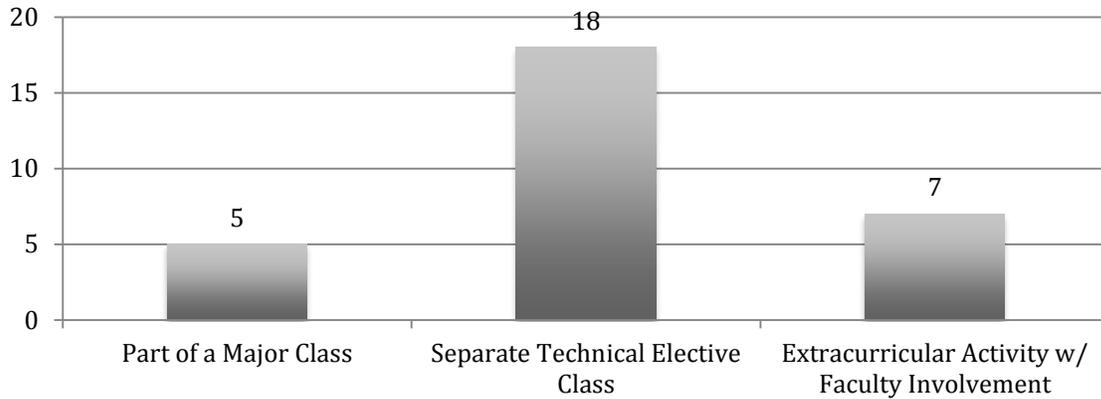


Figure 10. Preferred Method of Integration

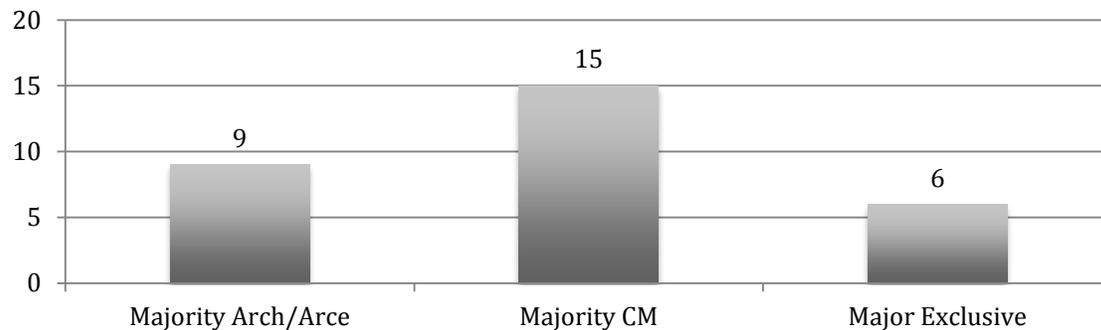


Figure 11. Preferred Team Structure

Discussion

Starting with analysis of the Architecture and Architectural Engineering students' survey responses, these results indicate a need for skills that could potentially be added by Construction Management student teammates. When asked how they felt about the overall success of the project, the majority of respondents indicated their end product was less than perfect, if not far below expectations. In addition to this presence of general weakness, students also ranked budgeting and transportation as the top two areas of weakness among their teams. These two areas of knowledge are ones that Construction Management students specialize in throughout their education. Under Figure 4, working in the CAED Support Shop, influencing design processes, and collaborating in interdisciplinary teams are ranked almost equally as most valued takeaways for students who have completed Design Village.

Questions asked in the Architecture/Architectural Engineering student survey were similar to those asked in the Construction Management student survey. This was purposefully done to allow direct comparison of the results. When asked what attributes of Design Village sounded the most appealing, working in the CAED Support Shop and collaborating in an interdisciplinary team were the top two choices. This ranking correlates with the Arch/Arce response to what their most valued takeaways from the competition were. Aside from deducing that Cal Poly students enjoy working hand-on with building tools and materials, it is significant that working in an interdisciplinary team is valuable from their perspective. The popularity of this response, along with the majority of Construction Management students willing to participate, provides evidence that this interdisciplinary style project would be well-received by the CAED student population. There is a discrepancy in the preferred team structure answers of the Construction Management and Architecture/Architectural

Engineering students. It appears both groups would prefer to work in teams mostly of their respective colleagues. The reason behind this response pattern could be found with further research into interdisciplinary attitudes toward each other.

To provide more personal insight into Construction Management students becoming involved in Design Village, an interview was conducted with Architectural Engineering faculty member Ed Saliklis, who has shown great interest in getting students involved in the Experimental Structures Facility in Poly Canyon. While Saliklis overall endorsed the idea as an excellent collaborative learning opportunity, he also offered some potential logistical obstacles to be considered. These potential problems were occupancy impact on the CAED Support Shop and integration with Architecture studio class. In a conversation with Al Hauck, Construction Management Department Head, the issue student concern about project funding also came up.

The occupancy limit of the Support Shop could be resolved by staggering the time periods when different groups of students work. For example, since Architecture/Architectural Engineering students are limited to working on the project after the start of spring quarter classes, Construction Management students could be scheduled to work during the end of winter quarter while Architecture/Architectural Engineering students are still finishing up their previous studio classwork. The second dilemma of integrating the Construction Management students into a project that is hardwired into a major Architecture Class could be approached one of several ways presented in Figure 10 above. The majority of Construction Management students said they would prefer Design Village to be offered as an optional technical elective course, which offers more flexibility for them to adjust their schedules to come to studio class time if needed. The third problem of the project being fully student funded (Architecture/Architectural Engineering students typically pay for all building materials out of pocket) could be addressed simply by students being conscious of what building materials they choose. In the past students have built projects out of solely recycled material that were very inexpensive. Part of the Construction Management students' responsibilities would be to ascertain a team budget at the start of the project and develop a practical estimate fitting to that budget. In the surveys this was the top area Architecture/Architectural Engineering students claimed their teams suffered the most in.

Conclusion

Collected from this study are positive survey responses from an academically diverse sample that show support for getting Construction Management students involved in Design Village. The goal of determining student opinion on the subject was accomplished through analyzing their survey answers. After collecting and evaluating the data, the prospect of getting Construction Management students involved with teams of Architecture and Architectural Engineering students in the Design Village competition has proven to be a viable idea. There is student support and faculty endorsement for it. This research acts as a starting block for future implementation.

References

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