

The Transformation of a Construction Contracts Administration Class

Mr. John David Cioara, Arizona State University

John Cioara is an Arizona State University (ASU) Master's student of the Construction Management program and Research Assistant at Performance Based Studies Research Group. He earned a Bachelors of Science in Biomedical Engineering at ASU in May 2013. During his undergraduate years, he worked part time for 2 years as an undergraduate teaching assistant and grader for the Construction Contracts Administration class at ASU. He helped edit and publish 5 revisions of the class textbook. He became so interested in the class material he decided to pursue an M.S. in Construction. John also interned this past summer at SUNDT Construction as a project engineer assistant. He was in charge of the RFIs, supervised the painting and mill work, pedestrian safety, and the close out of the projects. John's future plans are to pursue a doctoral degree in construction management, increase his work experience in the construction field, and then teach someday.

Prof. Dean Takeo Kashiwagi, Arizona State University

A renowned expert, educator, and researcher in best value procurement and risk/project management for more than two decades; he's a respected adviser and mentor within the association, the public sector, and academic circles. Creator of the best value Performance Information Procurement System (PIPS); tested over 1,600+ times over 20 years totaling \$5.7 Billion with a 98% satisfactory rating by the users (both in government and private sectors). His concept is contrary to the traditional price-driven procurement model. It reduces the transactions of every participant and forces a "win-win" relationship. His program educates and assists partners in becoming a more efficient organization through measurement, accountability and transparency.

His latest achievements include: the International Facility Management Association (IFMA) Distinguished Educator award (2009), IFMA Fellow in 2013, 2012 Dutch Sourcing Award (for best overall procurement effort and operational excellence), and 2011 Silver Award from NASPO (implementation of best value PIPS at the State of Idaho). He also received a Fulbright Scholar award to share state-of-the-art best value research and practices with the people of Botswana, Africa. Dean's groundbreaking procurement model became a graduate program that was practiced at ASU and instrumental in the investment of \$100 million in the institution for outsourcing food services. A powerful force in the Greater Phoenix Metropolitan area and Arizona State University, as well as national and international, he has championed programs to advance the engineering profession, and continues to prepare the next generation of professionals. He also received the 2013 Top 5% Teaching Award at Ira A. Fulton Schools of Engineering, ASU.

Sylvia Romero, Arizona State University

Sylvia is a Program Manager, who is responsible for developing and coordinating 460 industry educational programs (national and international) and \$9 Million research grants since 2002. She joined ASU in 2000 and was the lead researcher for the Alpha Program which tracks the performance of a Manufacturer's contractors (16 year study). She co-created the development of a graduate program that utilizes the best value principles. Served as Education Chair for the International Facility Management Association Greater Phoenix Chapter (2005-2010); the last 4 years as industry liaison. She is a graduate of W.P. Carey School of Business, ASU. Sylvia also serves as a mentor for the Construction Administration class.

Prof. Kenneth Timothy Sullivan, Arizona State University

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Johnny Cioara, Sylvia Romero, Dean Kashiwagi, Kenneth Sullivan, Arizona State University

Abstract

As students are transitioning from academia to the professional world the responsibilities of educators is to ensure they receive the best possible experience that can be readily applicable. Transforming the traditional lecture style class to project driven class has proven to be successful learning experience for a senior level construction contracts class has proven to increase the student's learning ability. Utilizing real project problems in relation to construction contracts topics gave the students an opportunity to solve today's issues and truly understanding the legal implications when a project goes bad. Student grades and instructor evaluations increased significantly. In a survey the industry participants agreed with the new teaching structure and found that the students were better prepared for their new careers. Due to the success of the class transformation, there has been indication of utilizing the industry projects to create a template for others to use in their classes. More research is being conducted to create a structure for other academic institutions to use this methodology.

Introduction

The Construction Contracts Administration (CCA) class is a capstone class in construction management programs approved by the American Council of Construction Education (ACCE) accreditation. Construction contracts are the mechanism whereby construction contractors, owners who buy construction services, and suppliers of materials interface. The lack of understanding a construction contract can be detrimental in the field, so this class is geared to prepare the young emerging professional.

In 2010, one of the authors was given the task of teaching a CCA class. He immediately identified the following challenges:

1. The course was being treated as a singular senior level construction contracts module, not integrated with any of the other coursework or utilizing lessons learned from other classes.
2. The course did not have polished lecture presentations.
3. The majority of the students were not going to be construction lawyers, but construction company owners and construction project managers. They were interested in graduating, and not learning the importance of construction contracts.
4. It was difficult to engage the students in understanding the construction contract as a mechanism to enhance a project.

5. CCA senior level class was not motivating the students to fully utilize the associate faculty as industry legal experts.
6. Senior students were not able to articulate construction contract issues and their solutions with the traditional lecture approach of the class.

The class structure was not stimulating the students in an actionable way or preparing them for the construction industry as project managers, contractor representatives, and owners. The students needed a thirty thousand foot view of construction contracts, and needed to understand how the construction contract administration concepts integrate with the other construction management skills. The students also needed a mechanism to improve the use of construction contracts.

Proposal

A redesign to the course was implemented. The new objective of the course was to provide the students a new learning structure that is more effective than the traditional learning structure of lecturing and exams. The professor proposed to integrate the CCA class with all the other construction management skills that were being taught to the students, as well as incorporating real life experiences by having the industry participate in the class and serve as mentors and experts. Another proposal of this effort was to change the student-faculty associate relationship from a teacher lecturing students, to future project managers utilize the legal expertise to resolve contractual issues.

Lastly, the new method had to be clear to identify how the future construction project managers can improve their environment by optimizing the contract. This paper will discuss the vision, class structure changes, different roles in the class, results, problems, and lessons learned.

Methodology

The Industry Structure was the key critical element and driving force in transforming the CCA class. It has four quadrants as shown in Figure 1. The two major quadrants are the value based and price based sectors; value based focuses on performance and expertise, while the other focuses on low price, management, direction, and control⁶. In the same way, the existing contract management course is working with a price based mentality where the contractor is reactionary, but through industry exposure and expertise of the lawyers, the class can move to a value based environment where the students/future construction professionals minimizes problems. The students become proactive instead of reactive and become the change driver of the environment they are working in. This transition is visualized in the Construction Contracts Administration Structure quadrants (Figure 2).

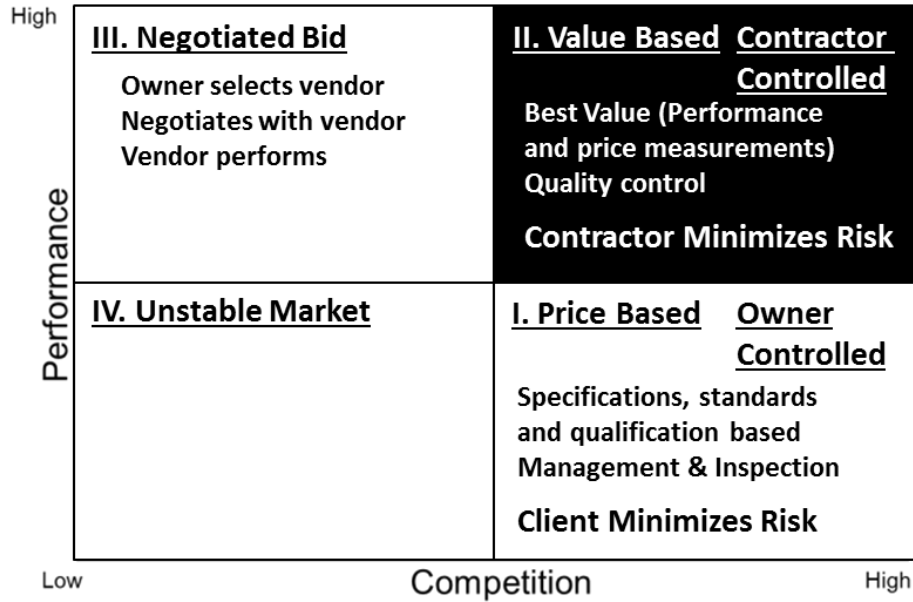


Figure 1: The Industry Structure⁶.

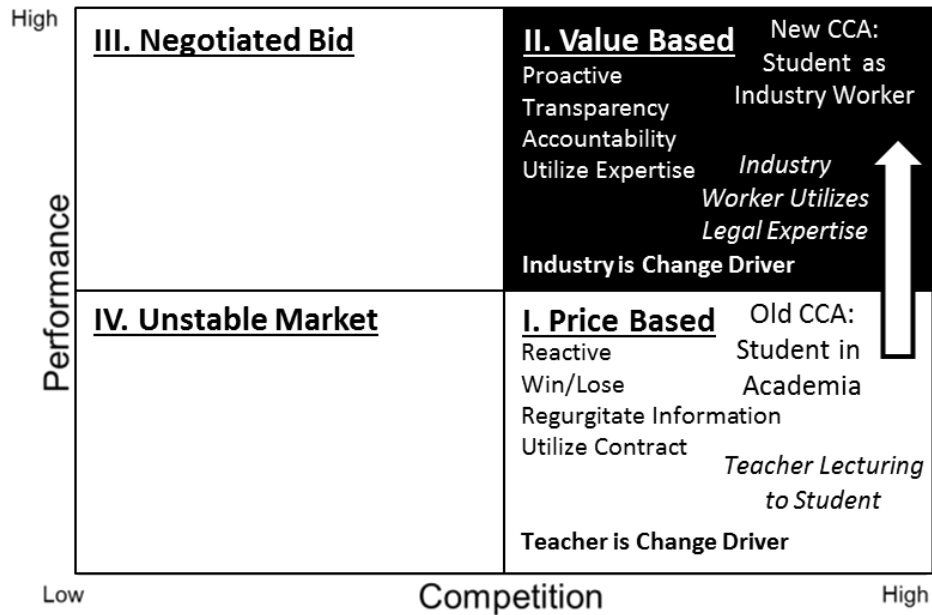


Figure 2: The CCA Class Implemented into the Industry Structure

The transformation of the CCA class is from a purely academic lecture to a transitional class into the industry (visualized in Figure 3). Students learn to utilize their construction knowledge and apply it to the current industry. Industry participants are brought in as experts and mentors to provide realistic contract problems that relate to the class topics. The students become industry workers and subject matter experts where they research an area, come up with solutions, consult the legal experts, and come back to teach their findings to the rest of the class. This method of having the students become the change driver would help prepare them for the industry.

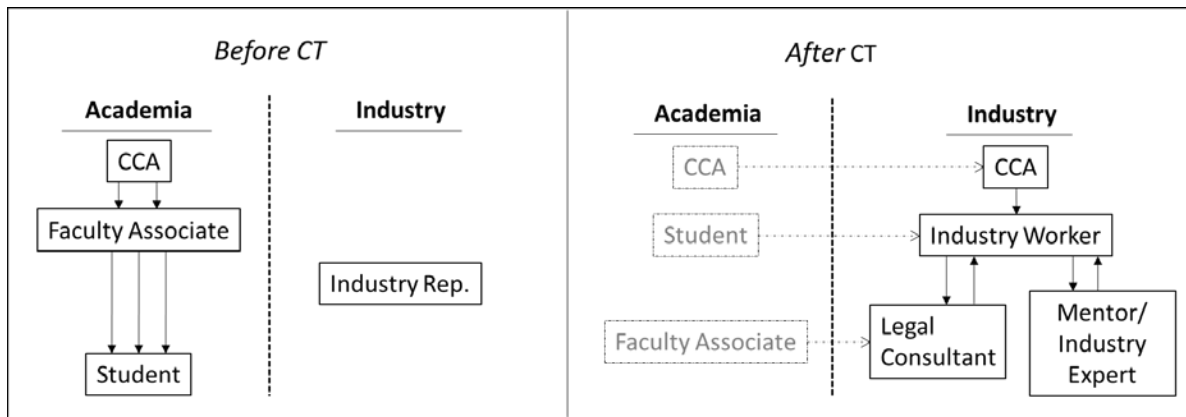


Figure 3: A visualization of the Class Transformation (CT)

Industry Structure

The previous CCA class only addressed the price based use of contracts; know the law and be able to utilize the contract to remedy a situation. This teaching method only focuses on being reactive and can create a win/lose situation. The class aims to improve this style of learning. Contracts should be simpler, easier to understand, and shorter. The only way to do that is to move to the value based environment which uses transparency and utilization of expertise. The new class format will show how to improve the way contracts are used by introducing the best value or optimal way to utilize contracts. The task was to transition from price based into value based contract management. As demonstrated in Figure 2, students will learn to create transparency, stop trying to control others, and identify and utilize expertise. The industry volunteers that participated in the class also accepted the value based environment approach because of its impact through short contracts and sole interaction with sub/specialized contractors who have expertise. This shows that the students can benefit professionally if they understand and apply this new method.

Student Transformation

The original CCA class did not connect to the other courses in the CM program. The new class needed to teach students to utilize the tools they have been given thus far in their academic curriculum, such as scheduling, cost estimating, project management, and client coordination. The goal is to change the students' role from a traditional reactionary model who listens to lectures and takes notes, to a subject matter expert. This new style of teaching has the students take the curriculum, research it, interface with the industry, utilize legal expertise, problem solve the material and then teach the results to their peers. The new student transition increased participation of other students and in their understanding of the topics being learned.

Class Format

The new class format reflected the students' transformation where the student becomes more important in the class as seen in Figure 3. It also allowed the students to become proactive in the curriculum since they were leading the lectures and group discussions (Table 1). The traditional class format had the faculty being more important, conduct the lectures, and the only subject expert. In the traditional format the lectures were nearly 3 hrs long where the students became disengaged, restless and nonparticipants. This was a transition for all parties, but as time went on the new format became more acceptable.

Time Class Format	
6:00 PM	Quiz & Turn in Assignments
6:15 PM	Industry Presentation/Facts of Case/Rules
6:45 PM	Analysis/Group Exercises (get into assigned groups)
7:45 PM	Solution given by one group; other groups turn in assignment
8:45 PM	Class released

Table 1: Detailed Class Schedule

Industry Exposure

The main objective was to have the CCA class become a transitional class into the industry. Having industry participate in the class will accomplish this objective. Construction programs must coordinate efforts with the industry they serve, both within the academic environment and the industry². A university can sustain and improve the quality of their educational program by collaborating with the industry and involving the industry in the class curriculum⁹. Providing such a relationship between public research organizations and the industry provides an important role in driving innovation processes⁸.

The CCA utilizes the industry for an extensive project that the students are given. Students are paired with an industry volunteer who involves the students in a current or recent event that occurred in their projects. That event is analyzed with the industry participant and formed into a case study that represents one of the major topics discussed in class. The students are given the opportunity to apply their knowledge and skillset gained throughout their education in a real situation.

The opportunity to be mentored and collaborate with the current industry professionals on case-studies takes the students' experience a step further than the traditional method used which had one to two guest lecturers by industry. The industry representatives' involvement was critical to the success of the class since they elevated the students' experience to what is taking place in today's world. The industry representatives' responsibilities were to provide a problem, guidance, expert experience, and grade the student's work. This included reviewing the student presentation, white paper, and any supplement material. The industry representative also came

in to the class the day their student group was presenting and would lead the discussion after the presentation reinforcing the material presented. Both the industry representative and students used the value based approach in teaching the contract topics. The industry participation validates the importance to take a proactive approach to avoid any contract issues. The value based concepts can be further verified and defined by Azhar et al.'s¹ category of “best industry practice”.

Faculty & Staff Roles

In the mindset of escaping the traditional class and entering the new paradigm, the faculty and supporting staff also needed to focus exclusively on their expertise. The faculty would be the driver, the visionary of the class, and allow the (lawyers) instructors to serve as legal experts. To support the new approach the faculty integrated a program manager, who was heavily involved with the industry for assistance. In transforming the CCA class even the role of a traditional grader was reinvented to become more of a coordinator of the class.

Full Professor

This faculty brought 20 years of best value research. He also received the Engineering department's “Top 5% Teaching Award” in fall 2013. His average instructor rating is of 4.7 out of 5, making him one of the highest rated professors at the engineering college. His role as the faculty associate mentor and director of the class would be to keep the new CCA class on track to the new changes. He redesigned the class format as seen in the value based sector in Figure 2 as well as implemented a student mentor. His responsibilities include teaching 20% of the class covering Ethics, transparency, proactive approach, and best value in contracts and construction. He would also meet with student groups and mentor them during the project stage.

Faculty Associates become Legal Consultants

The two faculty associates are certified bar lawyers that specialize in construction litigation. The new role was to provide legal expertise to the problem/topic at hand. Their teaching would become more practical with real life construction problems.

When presenting the class information, one lawyer covers the contractual and payment aspects of the class. This lawyer has expertise in how to manage contracts and projects in the price-based environment, he explains how to handle and avoid situations that cause legal repercussions. He creates homework pertaining to contractual samples, often referencing those documents in class. He also reviews student power points and conducts the final review. He brings the additional legal expertise to assist with class topics such as insurance, bonding, and indemnities.

The other lawyer covers the project management side of the course, such as negotiation and dispute resolution. His expertise is used to describe the value based environment; how to be

transparent, address issues up front, and attempt to solve problems without using the contract. He pushes discussion in class to further expand upon topics and conditions that students do not initially understand.

Both lawyers have different perspectives due to the different experiences and approaches which often lead to engaging discussions in the class. It also creates the bridge between the price based and value based environments, explaining how to shift from one to the other. On the project management side, there is the intent to handle situations proactively; conducting preplanning to minimize disputes and identify risks. The legal side covers how to utilize legal expertise before and during disputes; where the contract can help, and where it can hurt. It creates a view of being able to tackle problems from multiple points of view to accomplish different goals.

Industry Coordinator

A program manager working with the faculty had been brought in because of her involvement with the industry and because she knew the vision the faculty had for utilization of industry's expertise and the best value approach. For the class, she was tasked with inviting the industry and organizing its involvement with the students, making sure that the industry representative understood the objective and would be able to commit the necessary time for the students. This experience also had to benefit the industry as well. This allowed the industry to prepare students about to enter in to the role of the construction professional. The program manager would pair up the industry representatives with the students assuring that each group would be in good communication and would encourage progress throughout the project. Having had prior knowledge with many industry professionals as leaders of the proactive or best value approach, she began recruiting. Her responsibilities were also providing grading instructions to the industry representative, important deadlines, and communicator/liaison with all parties involved (faculty, lawyers, students, industry).

Another major task that fell on the program manager was to hire a student grader that had the ability to transform into a role that managed and maintained the class. She would serve as their supervisor.

Class Administrator

The school provided a grader position for 10 hours every week, but as the class changed so did this role. The class now needed more than the role of grader would provide; it needed administrative skills throughout the course. The class administrator would become the most critical role as the catalyst of transforming the class. This student hired would handle the technical implementations for the class. The new role needed the following skill sets and characteristics:

- | | |
|--|--|
| 1. Engineering or Construction major preferred, but not required | 7. Accountable |
| 2. Fast Learner | 8. Flexible |
| 3. Analytical | 9. Works well with Others |
| 4. Self-starter | 10. Professional Verbal and Written Communication Skills |
| 5. Time-management | 11. Must work 15hrs a week |
| 6. Problem Solver | 12. Attend the CCA Class |

Any major was considered for the position, but because the class is a senior-level class, the program manager preferred incoming Juniors because of their maturity level and experience in academia. In the history of the class there have been two major successful hires that impacted the class significantly. One of the students was a senior majoring in business, and the other a junior from the engineering school. Neither student had previous knowledge of construction, but both had the same skill sets and qualities that the program manager required. She found no difference between the two in their ability to run the class. The importance was sustaining that student to work for a year or two to avoid change over in employment.

As the new class administrator, he/she needed to learn everything about the class in a short amount of time. With the growth of the class administrator, the quality of the syllabus, instructor presentations, homework, announcements, and grading significantly improved. In the past the CCA class didn't even have a grader so when the new grader/class administrator was hired grading turn around decreased by a week. Grades were posted 1-2 days after the student turned in quizzes or assignments.

The faculty and program manager found 15hrs a week to be sufficient for the tasks that the new grader was given. The following tasks accounted for the necessary 15hr week schedule.

1. Attend class
2. Manage class website/grades
3. Grade student homework/activities
4. Prepare & update class materials (format quizzes, homework and tests) and verify with instructors
5. Rotate questions throughout semesters, offer alternates to any unclear questions
6. Update syllabus (a task to prepare for the following semester)
7. Track missed questions (results given to the faculty to focus on areas of improvement in teaching methods)
8. Coordinate communication between industry representatives and students.
9. Answer emails
10. Organize & format faculty material into the class textbook

Textbook

The original CCA classes did not have a designated textbook. At one time the lawyers were given textbooks, but the material was outdated and didn't correspond to today's issues; they stopped using them immediately. The faculty and lawyers collaborated on the topics that would be taught in the class which was the foundation of the textbook. Each was responsible to write about the necessary topics and relate the information to the homework and quizzes given. The objective of the textbook was to introduce the 13 contract topics to prepare the students for the quiz given at each class. The students had to read the material ahead of time and know the important elements. Also included in the textbook were the AIA A201 contract, the state prompt pay/lien statutes, samples of contracts, and even a chapter written by a surety expert on bonding, insurance and indemnification. The textbook has been improved every semester since first introducing it.

The Class Project

The class project was created to enhance the students' learning experience. It provided a roadmap to practicing the utilization of their skillsets as well as seeking expertise to verify a quality response. It also allows the students to get connected with the industry, finding out where the industry is and getting real life examples of how the class topics are used in the field. The industry professionals are also getting an opportunity to utilize students' innovative and new perspectives on project/case study dilemmas. The industry grades the students on their solutions, presentation, and professionalism (approach) during the course of the project.

The project is approximately 25% of the class grade. Specifically, the students will meet with the industry representative several times outside of the class to cover case study objectives regarding the topic in which the students are becoming subject matter experts in. Since the Fall 2010, the students presented on case studies in the following contract issues:

- Payment Provisions
- Ethics
- Mechanic Lien Law
- Change Orders
- Unforeseen Conditions
- Time & Delay
- Liquidated Damages
- Insurance
- Bonding
- Indemnity
- Registrar of Contractors
- Dispute Resolution
- Best Value

The diversity of problems given by the industry representatives range from settling “unacceptable costs” that stop payment until the matter is settled, to handling completed scope

that did not match drawings, to handling complaints with the Registrar of Contractors, to identifying and minimizing risk on a project. Some of the examples are shown below:

- Payment – Does the company’s contract meet the required information for payment provisions? Is the language equally enforceable on both public and private projects?
- Liens – Contractor’s sub had a third party supplier providing work. The supplier claimed no payment and was ready to file a “Notice and Claim of Lien”. Under a signed Unconditional Waiver of Progress Payment do they have lien rights?
- Unforeseen Conditions – Identify the top risks for the current project. Determine how to mitigate these risks while developing a GMP.
- Insurance – During punch-out, electrical subcontractor leaves junction box open and leaves area. Sprinkler subcontractor comes to fix leak, gets shocked, breaks the pipe causing running water. What kind of insurance acts on each event/result and how?
- Dispute Resolution – A contractor turned over a completed project and was faced with a dispute issue: A section of flooring did not match the surrounding areas due to insufficient quantity of flooring; the subcontractor used material in the waste pile and owner’s attic stock to complete. How should the dispute play out?
- Best Value – Prove or disprove Barbara Bryson’s statement in *The Owner’s Dilemma* “...more money on building projects is lost... by the lack of timely, collaborative decision making than could ever be gained through any clever delivery process or lucky market timing.”

The students’ approach in solving the given case study allowed them to utilize their skillset from previous classes (estimating, project management, etc.), learning to research and becoming subject matter experts. The students would also present their possible solutions to the legal experts to discuss the feasibility of their solution, its impact on the parties (contractor and owner), and the contractual repercussions that follow. The legal experts’ approach with the students is to make sure the solutions were legally correct and ensure the students also had a plan on how to prevent this problem from happening in the first place. The students also needed to cover the topic’s basics such as definitions, important facts/points, and other material relating to quizzes, and future exams. The students’ responsibility was to teach their peers and the project served as an example/case study to reinforce the topic on critical information that the rest of the class body would need to know.

A final meeting with the industry participants is scheduled to present the solution and receive any feedback the representative has, including possible alternatives or the actual result of the case-study and a comparison of their solutions. This would give the students an opportunity to peer into the industry culture and see the mentality of the current construction industry.

On the day of student presentations, the industry participants attend the class period and give the final grade. Students in the audience also provide their feedback (see Table 2). The discussion after each presentation has increased student participation and involvement, reflecting the benefit to this new teaching style. It allows educators to emphasis more on the student’s learning experience.

Results

The following statistics are from a total of 3 years, 7 classes, 363 students, 134 student presentations, and 51 industry volunteers. The results are broken down into student outcomes, industry response and class administrator impact.

Student Outcomes

The implementation of this class structure had the students teaching on average 22% of the class. This calculation was made by taking the full time slotted for the class (2.75 hrs) and multiplying it by the number of lectures for the semester to find the total number of hours in the class (c). The number of presentations for the semester was multiplied by the allotted time given for each group on their presentation (0.5 hrs) to find the number of hours spent on the students’ presentations (p). Finally, p was divided by c to find the percent of class taught by the students.

In an attempt to further involve the class in the presentations, the students were asked to grade their peers on their professionalism, preparation, presentation, and overall grade of the project presentation. On average, 45 students were involved in the class each semester. The results are listed below in Table 2:

Criteria	Fall 2013	Spring 2013	Fall 2012	Spring 2012	Fall 2011	Spring 2011	Fall 2010
Professionalism	9.3	9.2	9.2	9.4	9.4	9.5	8.9
Preparation	9.1	9.3	8.9	9.1	9.2	9.5	8.8
Presentation	9	9.1	8.8	8.9	9.0	9.3	8.8
Overall	9.2	9.2	9.0	9.2	9.2	9.4	8.9

Table 2: Student Peer Review of the Class Project

At the end of the semester, the course evaluations were analyzed and the results revealed positive responses from the students. Before the transformation of the class the average class evaluation between the two faculty associates was 4.39 while their average instructor evaluation was 4.59 out of 5. With the new class structure, both ratings dramatically increased to an average class rating of 4.53 and instructor rating of 4.72 out of 5. The 19% increase validated the transformation of the new CCA class and that we were headed in the right direction.

Students also provided written feedback on the class which are listed below:

The practical "real world" approach that the Professors brought to the course is very valuable. I felt as though I was getting valuable information that many other students in other similar classes may have not received.

This course is by far one of the best classes and very beneficial classes in the program. I learned a lot about contracts and the legal issues that can arise is not dealt with on a timely fashion.

Enjoyed learning about how to understand a contract and what to look for in a contract to make sure you are aware as to what you are responsible for and what to do if a problem arises.

I liked working with a professional that provided us with a problem that he had had in his company and solving it ourselves with our lawyer. It made it very interesting and interactive having to visit a lawyer in his office, solve a problem and then present it to the class.

This course was great to be taught by real lawyers that practice construction law. It is amazing the difference of the teaching quality when you have teachers that are in the trenches and know how to teach effectively. Great course one of the best in the programs.

It made it very interesting and interactive having to visit a lawyer in his office, solve a problem and then present it to the class.

Industry Response

The response for the initial call for industry participants was incredible. In the first semester the class received more than 60 willing volunteers from the industry and a waiting list that had to be created due to the lower number of students. After picking the best available, the program manager lined up 45 industry representatives to volunteer their time for the students and the class project. The diversity of those who volunteered to participate included:

- 2 Co-owner/CEOs
- 8 Presidents
- 9 Vice Presidents
- 3 PM/CMs
- 8 Directors/OMs/Senior Level Managers
- 2 Risk Manager/Safety directors

The first semester paired one student with one industry representative. This created a lot of repeats of the class topics, similar case studies, and also time consuming. The faculty quickly decided to create smaller groups of three to pair up with one industry representative. With the

condensing of the groups, the industry was asked to prioritize which topics were most important in their opinion for the students to learn. Those topics were recorded and the class presentation criteria adjusted accordingly. This process ran much smoother and as a result, the class only took on average 13-15 volunteers every semester. As of the fall 2013 semester the class has utilized 54 industry participants with an average 81% return rate for the volunteers. Constantly we receive new requests from industry that want to participate so we utilize a wait list.

The average project grade was above 90% which shows us that the industry is satisfied with the students' solutions, presentations, and over all learning experience (Table 3).

Industry Grade	Fall 2013	Spring 2013	Fall 2012	Spring 2012	Fall 2011	Spring 2011	Fall 2010
Project Ave.	92%	93%	91%	92%	92%	92%	89%

Table 3: Industry Grade of Class Project

One of the questions asked if the industry representative would hire the student on a scale of 1-10: (1 – No, 5 – Maybe, and 10 – Yes).

Getting to know the students really helped the industry understand where the students were coming from and what knowledge they could absorb in a given amount of time. Throughout the semesters the average response was 8.65 out of 10 the industry representative would hire that group of students.

A large part of the best value environment is tracking performance which resulted to conducting a survey of the industry representatives' perspectives. The purpose of the survey was to verify that the changes made are impacting the students in a way that prepares them for the construction industry. The survey was sent to only current industry participants which consisted of sixteen (16) construction professionals with a response rate of 56.25%. Each question had the respondent answer the prompt using a Likert scale of 1-10. The survey was set up in three categories: 1-3 (strongly disagree), 4-6 (agree), and 7-10 (strongly agree). Key quantitative results are shown on Table 4 showing the average response for each question.

The survey results show that the majority of the volunteers agreed with the transformation of the class and the experiences the students were gaining out of the changes. In questions one (1) and five (5), 100% of the volunteers agreed that the class structure gave the students the opportunity to mature in proactively coordinating plans and solving problems as well as utilizing the methods to accomplish the tasks.

<i>Survey to Industry Participants in the CCA Class</i>	Scale (1-10)
Statement	Average

1. The class structure gives the students the opportunity to gain maturity and confidence in planning, coordinating, communicating, problem solving, and presenting.	8.56
2. The students become subject matter experts by researching and presenting on topics and applicable case studies with the assistance of the industry and legal counselors.	7.78
3. This class structure is a hybrid education/industry course that is used as a stepping stone to working in the industry.	8.78
4. This class teaches students how to be leaders.	7.22
5. Students learn to be proactive, work on a realistic contract problem, report to an industry “boss”, and utilize the contract and legal expertise.	8.67
6. As a volunteer, this class provides me an opportunity to engage more with the students and seek talented individuals for future employment.	8.78

Table 4: Results of a survey sent to the volunteers. It was rated on a scale of 1-10, 1 defined as strongly disagree, 10 defined as strongly agree.

Class Administrator Impact

By the fall of 2013 the class administrator at the time graded 199 students, 397 exams, assisted with 69 presentations, 4 textbook revisions, and prepared material for 55 class periods. The implementation of an expert class administrator drastically improved the quality of the deliverables of the students. Students received results of grades in 1-2 work days for every deliverable and received results to the final exam in under a week. When asked about the turnaround of the grading the students provided a response of 4.9 out of 5 reflecting the validation of the quick return of homework, projects, quizzes, and exams.

Discussion

The results show that the students’ learning experience increased in the class. Having the students become the subject experts in their given topics in the class will allow them to transition from student to young industry professional. They are scheduling meetings with the industry, collaborating on solutions with experts, and becoming more important in the class. They are utilizing the skillsets taught throughout the students’ curriculum. They are treating the class project like a construction manager would treat a construction project and collaborating with industry participants. The students are exercising their communication, articulation, and presentation skills and are grading and being graded by their fellow peers.

The students are approaching the project in a construction management role and the industry is noticing and expressing the desire to hire the students. According to the survey results, the majority of the participants are encouraging the changes of the class and the effect on the students.

The faculty identified the professionalism and deliverables of the students as four times better than when compared to the first semester of the course. He further explained when the accreditation committee reviewed the class structure and the results, they expressed having never seen a structure similar to the CCA and how the class had improved drastically⁵.

Conclusion

Students are more interested in their careers than their classes in college³. Observing the lack of engagement and interest from the students on such a critical part of the construction industry it was time to try a new approach. This senior based class was at a transitional point to make a major impact on the students by using a new method to move forward to a value based industry. The student moved from the academic world to an industry worker. In the transition, the lawyers were no longer teachers, but served as legal consultants. Industry volunteers were also brought in to provide realistic contract problems that related to the class topics. The students were now acting like industry people where they researched the area, came up with solution and came back to teach their findings to the rest of the class. The industry volunteers are responsible to grade the students on the project results. This method of having the students become the change driver in an industry project would help prepare them for the industry.

The result was a more active role from the students, creating expertise and having them run a project that utilized all of the skillsets given to them in their program. The students implement transparency and expertise to transition from a price based to a value based method of managing contracts and projects.

Lessons Learned

One of the initial difficulties discovered was the sheer amount of industry volunteers during the first semester. It created repeat information and unproductive use of time in the class that could have been used clarifying other topics. It also created a risk of conflicting messages across presentations, transferring risk to the faculty associates to clarify the confusion. The sensitivity of the industry's time given also needed to be considered. The industry participant list was reduced to remove any repeat information.

The industry is encouraged to present fresh and applicable case studies for the students to analyze. However, some of the returning participants are sometimes providing the same case-

study. The faculty meets with students to ensure they learn the critical points and the take-away has a new element the students can research.

The transformation of the class proved successful. The major elements of the structure of the class have been laid out and show significant positive results. However, further fine-tuning on the minor elements mentioned above should be considered for future research.

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