

# Refining the Construction Communication Cal Poly Technical Elective Course

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Communication is one of the most necessary parts in what makes a project successful in the construction industry. Normally, successful communication skills are developed through experience over time in this industry. When looking into the Construction Management (CM) program at California Polytechnic State University of San Luis Obispo (Cal Poly), a lack of direct focus on multiple key communication skills is present. Furthermore, a new CM communication technical elective should be taught to focus and reinforce the communication skills needed for careers of future students post graduation. By crafting and distributing a well-thought out survey, new knowledge from the perspectives of current and recent graduate Cal Poly construction management students are gained. As a continuation from a past senior who developed this course, it is my goal to be able to provide valuable information to better refine and tailor this proposed class to the CM students at Cal Poly. This class will better enhance the vision and needs from former and current students of the most valuable communication skills they wish to obtain in order to set them up for the most success in their careers after graduation in the CM industry.

**Key Words:** Construction Communication, Team Communication, Leadership, Construction Curriculum, Soft Skills

## Introduction

As one of the most important skills in the construction industry, communication skills should be focused and taught as a course in the CM curriculum for Cal Poly. The amount of success out on the jobsite, in the office, and dealing with clients and subcontractors deals heavily on the quality and skill one possesses in communication. For employees to gain these critical communication skills, it takes a lot of time, experience, and personality. In order to fast track communication skills and gain valuable tips and advice, education involving these skills can ultimately help individuals gain and refine their communication skills for their career post school. This paper aims to focus on how key aspects of communication should be taught to CM college students at Cal Poly, what these communication

aspects entail and what should be included in the refinement process through a collection of data from a student distributed survey.

This is a continuation research paper from Alex Trujillo's senior project titled: Construction Communication - A New Technical Elective Course at Cal Poly. Alex Trujillo developed a detailed lesson plan for a construction management technical elective course to be taught at Cal Poly. This course consists of five modules to be taught: knowing your audience, dispute resolution, negotiation skills, advocacy for project needs, and team communication. By using a survey, important perspectives and responses from current and recently graduated CM students are gathered to better refine, add, and modify this class to better encompass the students' needs and focus for developing their communication skills. The refinement of Alex Trujillo's proposed class may alter certain modules by adding or changing certain skills that students are more inclined to learn and obtain from. This paper aims to strengthen Alex Trujillo's argument in why certain modules should be taught through an in-depth literature review which highlights the reasoning why the certain skills should be taught to better help future graduates in the construction industry.

## **Literature Review**

In the construction industry, there are many skills one needs to possess to be successful. At first from extensive research, three skills in the construction industry stand out. These three skills are soft skills, team communication, and leadership and management skills. Although many skills are required to be a successful manager in the construction industry, the following paragraphs illustrate the importance of these three aspects of communication which should be taught to individuals through the education system, and more importantly in the college curriculum.

### *Soft Skills*

Soft skills are understood to be a set of core or common skills that involves critical thinking, problem solving, public speaking skills, and so on. These skills are important in the construction industry because according to some employers, projects are more likely to fail due to the lack of soft skills among project staff rather than lack of technical competency (Alpern, 1997). The possession of soft skills in project staff is becoming crucial in today's construction industry. Currently, there is a gap between the skills and capabilities of graduates and the requirements and demands of the work environment (Andrew and Higson, 2008). Assumptions can be made that this gap can be contributed from the lack of development of such soft skills throughout the education system in graduates. Though it may be hard to outline a curriculum that effectively defines soft skills which may be a reason why these skills are often unfocused in education, Mahasneh and Walid define these soft skills in a manner that can promote soft skills to be taught more efficiently in class (2015). Mahasneh and Walid define soft skills to include but not limited to skills involving: communication, critical thinking and problem solving, collaboration, conflict resolution, workplace professionalism, workplace productivity, stress-management (adaptability and change management), social intelligence, self-management, planning and organizing, workplace ethics, workplace diversity, and so on (2015). The variety of soft skills makes it challenging to focus effectively in the school curriculum. However,

implementing just some of these skills can largely decrease the gap and can make college graduates more effective and successful in the construction industry.

### *Team Communication*

Team communication in construction plays a vital role in the successfulness between the person, project, and team. However, team communication is not something that is easy to master. Being able to communicate effectively within a team promotes new ideas, shared values gained through trust, respect, and open honest communication (Spatz, 2000). These are just some of the key aspects of a foundation built for great relationships among people everywhere and are crucial conditions for effective teamwork and employee satisfaction (Spatz, 2000). Team communication is a great topic to cover through a module in a technical elective class at Cal Poly because of the large role it plays in the construction industry. Commonly, a hierarchical structure is played in construction through a team that is led by a manager who reports to a higher-level manager who then reports to an even higher-level manager (Spatz, 2000). Now, the industry is seeing teamwork through shared leadership due to five crucial elements for teams. These five elements for team building and what makes the most effective team through communication is: 1) Complementary skills such as knowledge and experience 2) Commitment to the project or task at hand 3) Common purpose and goals 4) Common approach or strategy and 5) Mutual accountability which is aimed from the shared leadership at hand (Spatz, 2000). In the construction industry, there are a lot of gray areas when looking at certain individuals' job descriptions and more often than not, overlap with others. Team communication is critical to being able to understand, delegate, and master these gray areas of everyone's job description. Being efficient and successful in team communication can enable a team to tackle project tasks without hesitation, even if it is not completely specifically stated in one's project description. This is necessary to successfully complete the project or task at hand and to align with the five elements that are essential in what makes a successful team.

### *Leadership and Management Skills*

To effectively communicate as a manager in the construction industry, leadership skills are necessary to possess. Being an adequate manager relies heavily on one's leadership skills to manage, delegate, and lead individuals and tasks at hand. Unfortunately, as managers are in high demand in the construction industry, many lack this skill to lead in which causes mistrust, disorganization, inability to manage and lead basic tasks and people effectively. Based on research conducted by Oshinubi, a common problem that affects a group's performance came from the project manager's leadership style itself through the multiple skills from management practices a manager possesses (Zakaria, 2015). Zakaria states that interpersonal skills are needed in order to reflect the project manager's ability to bring workers involved in a project and concluded that project manager leading characteristics involve seven critical leadership skills that can be acquired through never-ending training and learning (2015). This reinforces the need for these leaderships to be taught and strengthened through a communication class taught in the Cal Poly Construction Management program.

Soft skills, team communication, and leadership and management skills are just some of a few skills that are key in communicating in the construction industry. Importantly, a direct focus on leadership and management skills are not completely focused in Alex Trujillo’s communication technical elective course for Cal Poly’s CM curriculum through his breakdown of modules and lesson plans.

## Methodology

To collect data from current and recently graduated CM students at Cal Poly, a survey was created. The intent of this survey aimed to gather information from these students on what types of communication they wish to obtain from a communication course if offered by the CM curriculum. The goal is to be able to gather new perspectives and knowledge from combined data from the responses of current and graduated students. These survey responses will better refine and modify the already proposed communication class.

The table below shows the carefully crafted questions that were asked to the Cal Poly CM students. A total of eight questions were asked through a google survey which featured a variety of questions ranging from rankings, multiple choice, and short answers. The first three questions asked in the survey determined the types of students which were asked either their year in college, number of internships, and whether they have taken English 310; a class that is required from the Cal Poly CM department that teaches business and corporate communication to a variety of majors. The other questions used multiple choice, rankings, and short answers to get a variety of responses as seen below such as in Figures 4 and 5. The survey a variety of questions in order to understand the type of survey participant and their perspectives. This survey gathers useful information that then can be analyzed from the professor and CM department when designing and refining this Cal Poly construction communication technical elective course.

Table 1. Distributed Student and Recent Cal Poly Graduate Survey Questions

#	Question
1	What year are you?
2	Have you taken English 310?
3	How many internships have you had?
4	If you had an internship, what were the most valuable construction communication skills you learned?
5	What communication skills do you think are most important and/or hope to obtain at Cal Poly? Choose all that apply. Knowing your audience Dispute resolution Negotiation skills Advocacy for project needs Team communication

	Business writing skills Writing RFIs and subcontracts Leadership skills Delegation Other: _____
6	What other communication areas do you feel need more emphasis in the CM curriculum?
7	How confident are you in your ability to be successful in the following categories? (1 being most confident to 5 being least confident) Knowing your audience (talking to a foreman vs. project executive) Dispute resolution Negotiation skills Advocacy for project needs Team communication
8	What outside sources have you used to further improve your communication skills? (ted talks, books, Cal Poly classes, types of technology etc.)

### Results/Analysis

This survey successfully received a total of 48 Cal Poly students and recent graduate responses. The large amount of responses through this survey is beneficial in understanding the student perspectives to be able to refine and modify this new technical elective communication course. Out of the eight questions that were asked in the survey, the first three questions were used to better understand the types of students taking the survey in which a pie graph was used to understand the quantity of types of students. The other five questions used rankings and short answers to get a more indepth perspective and to understand trends between all responses.

#### Question 1

What year are you?  
48 responses

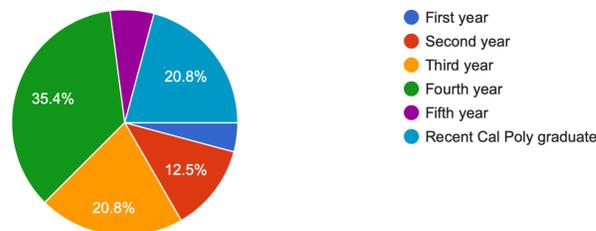


Figure 1. Student Survey Participant Age

The first question in this student survey asked the year of the CM survey participants at Cal Poly. This ranged from year 1 to year 5 and whether you were a recent Cal Poly graduate. Being a recent Cal poly graduate is important in this survey because these types of responses weigh more than current

students as they provide valuable insight in regards to their communication skills as a post graduate in the industry. They are beneficial to refining this communication course at Cal Poly as they understand the types of communication it takes to be successful in the industry and what needs to be focused more heavily in the Cal Poly CM curriculum. In Figure 1, the results show that a majority of the responses were of year 4 CM students (35.4%) with year 3 CM students and recent CM Cal Poly graduates in a tie for the second most (20.8%).

### Question 2

Have you taken English 310?  
48 responses

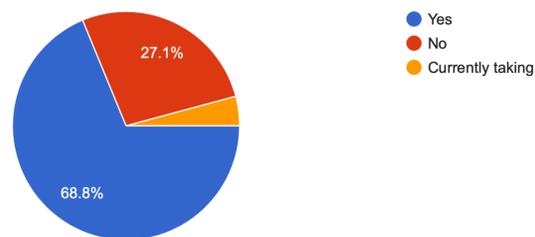


Figure 2. Students who have taken English 310

In Figure 2, almost 70% of the students have taken English 310. English 310 at Cal Poly is an upper division English class required in the Cal Poly CM curriculum. This class is taught by the English department and focuses on business and corporation writing in respect to communication in the business industry. Students with a variety of majors take this class and are exposed to typical business communication perspectives.

Due to the high percentage of survey participants who have taken English 310, it can be assumed that the responses collected in this survey are not redundant to what has already been taught in English 310. The participant responses thus can be useful in understanding the perspectives and needs of students regarding their communication skills post taking English 310.

### Question 3

How many internships have you had?  
48 responses

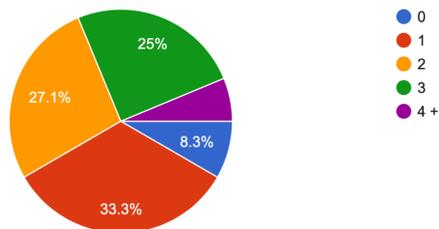


Figure 3. Cal Poly CM Student Internships

Figure 3 shows that most individuals who have taken this survey have at least 1 internship. Being a student who has an internship to reference can help inspire and reflect on their responses in the survey as they know what is needed in the real world through the construction industry. The survey participants' involvement in internships show that the responses gathered in the following questions are more credible as their perspectives include responses to real world experiences in what communication skills they lack, need to develop more effectively, or wish they could learn more in-depth in a course at Cal Poly.

### Question 4

Above in Table 1, question 4 uses a short answer format to gather responses. Question 4 asked the question “If you had an internship, what were the most valuable construction communication skills you learned?”. This generated a variety of responses that were influenced from past internship experience in what gave students the chance to expand on what they found most impactful that they learned or want to learn in regards to their communication skills. While this question had many different responses or none at all, a majority of the responses had many similarities which fit certain themes that can be summarized. 14 of the responses stressed the importance of being able to communicate with a variety of people such as with the client and/or owner, subcontractors, upper management, laborers, and others were received. Asking questions was another big aspect that 6 students said that helped them really understand various aspects in the internship and contributed to their confidence in their ability to communicate on the job. Lastly, the main theme discussed from students was communication through phone calls, following up through these calls or emails, and understanding certain word choice that is used in emails and developing concise and specific Request for Informations (RFIs).

### Question 5

What communication skills do you think are most important and/or hope to obtain at Cal Poly?

Choose all that apply.

48 responses

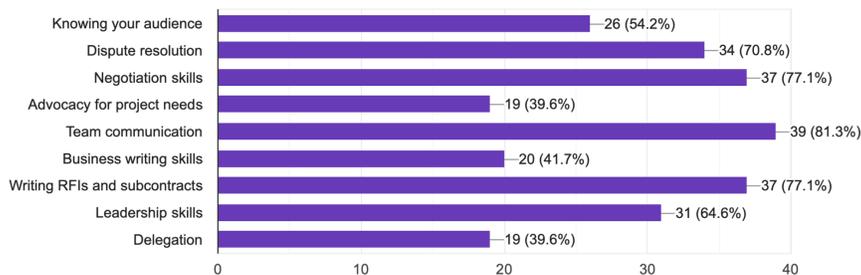


Figure 4. Student’s Selection of Most Important Communication Skills

Figure 4 shows what types of communication skills the survey participants feel are most important to them or what they wish to obtain at Cal Poly. Students were given a list that showed 9 skills and an option to add if a skill wasn’t listed. From these 9 skills, 5 of them were skills that had modules

focused on them in the new technical elective communication course devised from Alex Trujillo’s senior project. The other 4 skills listed were other areas of key construction communication skills that were lacking in focus. Students had the ability to select with no limit the shown skills or add a skill if they did not see it listed. As a result, the skills selected the most by student participants were Team Communication (81.3%), Negotiation Skills (77.1%), Writing RFIs and subcontracts (77.1%), Dispute Resolution (70.8%), and Leadership Skills (64.6%). Interestingly, writing RFIs and subcontracts and leadership skills are not focused significantly in the new communication course but are skills that CM students and recently graduated students at Cal Poly think are important in question 4. Notably, Advocacy for project needs (39.6%), Delegation (39.6%), and Business writing skills (41.7%) were the skills least chosen where only advocacy for project needs is focused in the new communication course as its own module.

### Question 6

Question 6 asks students “What other communication areas do you feel need more emphasis in the CM curriculum?”. This question aims to give survey participants a chance to explain, expand on, or give other valuable insight to either the listed or other types of communication skills that they think are necessary in the construction management industry. While some students were unsure and gave no answers or reiterated skills as shown in question 5 and before, other students expanded on certain skills that have been broadly talked about. These skills included being able to effectively and confidently converse on the phone through means such as practice, what information should be disclosed and not disclosed to different parties in construction, management techniques, dispute resolution, and negotiation skills. These responses help reinforce what should be stressed in certain modules and give more information on what should be included in modules to meet the Cal Poly CM student needs.

### Question 7

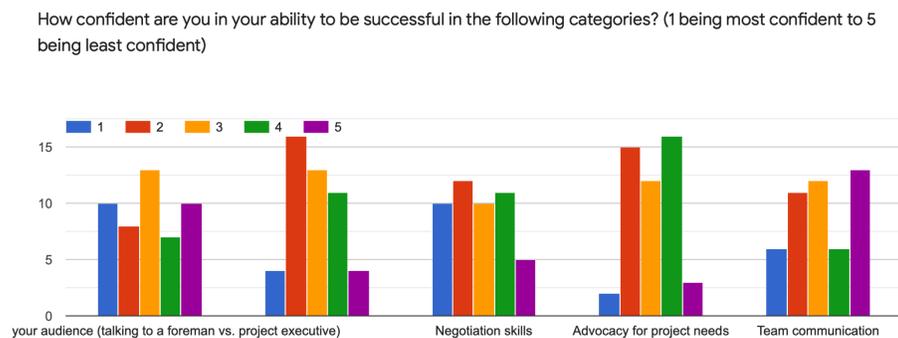


Figure 5. Confidence Rankings of Proposed Modules in the Communication Tech Elective

Students were given the ability to rank Alex Trujillo’s modules in the new communication technical elective course as seen in Figure 4. These 5 modules are in order as shown in Figure 5 from left to

right: Knowing your audience, Dispute Resolution, Negotiation Skills, Advocacy for Project Needs, and Team Communication. The rankings allowed students to be able to rank the following modules due to their level of confidence they feel in their ability to be successful in the following categories. They were able to rank multiple categories as the same number which shows the larger amount of responses in certain categories as seen in Figure 5. The blue bar (1) indicates that the student feels most confident in their ability to be successful in that category whereas the purple bar (5) indicates the student's lack of confidence in their ability in that skill. In Figure 5, it is interesting to note that the first category, knowing your audience has a mean 3 where students feel "somewhat confident" in this skill. The second from left category, Dispute resolution in Figure 5, shows data with a mean between ranking 2 and 3 which is "more confident" and "somewhat confident". Negotiation skills follow this same distribution but are more even along each bar in the graph. Advocacy for project needs is similar to Dispute Resolution but has more students choosing "somewhat unconfident" in their ability with almost 6 students more. Lastly, Team Communication is more skewed to "least confident" as the majority of students chose this category as a skill they are least confident in. This same data reflects the need to improve this skill in question 5.

### *Question 8*

The last question in this survey asks "What outside sources have you used to further improve your communication skills? (ted talks, books, Cal Poly classes, types of technology etc.)". This specific question gave examples which did not entirely help guide the responses as many of the responses received were reiterating the examples, not expanding on them. However, there were several responses received that were beneficial to the class and what should be used to reinforce through outside sources and help strengthen students' communication skills in this new technical elective course at Cal Poly. Many of the students had responses that featured outside sources through media such as podcasts, youtube videos, ted talks, and slack. Other students stressed the importance of books such as themes of self help and specific communication techniques to attain communication skills, personal experience such as through internships, job interviews, discussing with professors and industry professionals, networking, student competitions and clubs. These responses can better help refine the course and improve it with these outside sources and visual aids.

### **Conclusion**

In all, the literature review showed what types of communication skills are most necessary through research of primary and secondary sources. A survey was then used to gain new knowledge through the needs and perspectives of Cal Poly CM students and recent Cal Poly graduates. This survey showed the types of skills students are looking to strengthen and obtain for their careers in the construction industry. Specifically, the conclusions gained from this survey through module refinements and what to include in certain modules can be used for future course refinement. Suggestions regarding module refinements include how the module Advocacy for Project Needs should be least stressed in the course supported through data collected from question 5. Team communication is a module on the other hand that should be most stressed as question 5 and 7 supports this recommendation. From student responses in the survey, it was found that students want

to learn to write RFIs and subcontracts better through word choice and practice, learn key aspects of leadership skills as a manager, management techniques, and ability to effectively converse on the phone. As a suggestion, these skills can be added to the Team Communication module to better encapsulate Cal Poly CM student needs. Outside sources such as podcasts, Ted Talks, Youtube videos, mock interviews, and outside experience should be included to help reinforce and teach skills in each of the five modules. From the already proposed communication technical elective lesson plan, the valuable information and feedback gained from the survey results benefit the particular teacher teaching the class. The teacher can then use this data and choose to modify and refine the aspects of the five modules and existing lesson plan for future Cal Poly CM students.

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