

Should Teamwork-Based Content be Taught in the Cal Poly Construction Management Curriculum?

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At California Polytechnic State University, San Luis Obispo (Cal Poly), in the Construction Management (CM) curriculum, there is a lack of teamwork-based content. This content includes negotiation, conflict resolution, and fundamental skills for working collaboratively with others such as social-emotional intelligence, empathy, and communication. The nature of the Cal Poly CM Program is to teach students about the aspects of the construction process, however what is missed is teaching how to work effectively in teams. They fail to teach this because of the strict curriculum of focusing on learning objectives rather than teaching individuals how to be effective construction managers. The purpose of this paper is to determine if teamwork-based content should be taught in the CM curriculum. The research was conducted by utilizing a five question survey sent out to all current CM students. This survey will gauge the need for teamwork-based content based on the students' opinions. Of the 52 who responded, more than 75% of them are in agreement that teamwork-based content needs to be taught within the CM curriculum. The Cal Poly CM department needs to seriously consider this type of content in their program.

Keywords: Collaboration, Construction, Construction Management, Teams, Teamwork

Introduction

Teamwork is a fundamental skill in the construction industry, and consequently it should be a focus of development within the Cal Poly Construction Management curriculum. As it stands, the Construction Management program includes plenty of team-based assignments, however there is no emphasis on teaching teamwork-based skills. Students are forced to learn on their own. To some this may come naturally, but for others it may not come so easily. Regardless, teaching students effective team working skills should be included within the curriculum.

Working on a project consists of the individual's team within their own organization, as well as teams from other organizations. So not only does the individual have to learn how to navigate the relationships of their colleagues, but also those of other teams. There are intraorganizational and interorganizational teamwork and coordination. The effective construction professional must learn how to work with these different types of relationships between organizations. They also must learn how different personalities play a part within teams. There is much more to working in a team than students may realize.

Cal Poly offers the course PSY 350 Teamwork, with the description stated as: "This course begins by unpacking the fundamental skills it takes for individuals to work collaboratively with others, like social-emotional intelligence, empathy, and communication. Then, we discuss how our social identities, like gender and culture, can shape the way we interact and work with others. We address how diversity can enhance teamwork outcomes, like creativity and problem-solving, and how organizations can leverage diversity to solve large-scale problems. Finally, we will practice advanced

teamwork skills, like negotiation and conflict resolution. As a result of taking PSY 350, you will be able to work more effectively with others both in and out of the classroom.” The content of this course gives a good indication of what the CM curriculum is lacking. To emphasize, it is the content of this course that should be included in the CM curriculum, not necessarily the course itself. For the rest of this paper, the term ‘teamwork based content’ will refer to this content description.

Literature Review

Teamwork is much more complicated and intricate than it may seem. It’s easy to ignore this and say that everyone on the team should simply do their job, but performance and productivity are often diminished by conflict. Personalities and dispositions will clash against each other. Interpersonal conflicts will inevitably come up for a multitude of reasons. These conflicts can affect the project performance, productivity, morale, motivation, and ultimately reduce profit.

Communication has one of the biggest impacts on coordination efforts and is typically the reason for success or failure of a team (Hewage, Gannoruwa, & Ruwanpura, 2011). The significance of communication can be seen in the following: clarity of instruction and information exchange; communication problems among tradespersons and supervisors; little to no periodic meetings; language differences among workers. Effective communication is necessary to avoid complications no matter what position one finds themselves in. The one giving instructions must be clear on what they mean and not leave room for interpretation. There is also the issue of communication patterns. For example, if a female worker says her work was not good enough simply because she likes to deliver better work, male workers might interpret that she is not competent. Even if she is a better worker than her male coworkers, the misinterpretation of her speech might result in the male workers disregarding her work (Beigpourian & Ohland, 2019).

Mutual trust is also a key point in teams, and goes hand in hand with communication. For example, if a tradesperson suggests an idea in approaching an issue, though the supervisor has no knowledge of the respective area, they must trust the tradesperson’s judgement. If the supervisor does not know the work ethic of the tradesperson, then their level of trust will be determined by the outcome. It’s necessary to take the initial step to building trust. According to Webber (2002), mutual trust can be defined as a shared view that team members “will recognize and protect the rights and interests of all the team members engaged in their joint endeavor.” If trust cannot be built, then disputes, malicious behavior, missed deadlines and poor quality work can occur. Level of trust can also be measured by the amount and complexity of tasks given to a subordinate by the supervisor. In some cases, the supervisor simply needs more time to get to know and understand the individual. In other cases trust declines if the supervisor and workers are of a different race or gender.

Microaggressions are common in everyday life and they are unknowingly brought into the workplace. Merriam-Webster dictionary defines it as “a comment or action that subtly and often unconsciously or unintentionally expresses a prejudiced attitude toward a member of a marginalized group.” The perpetrator is blind to the microaggression, but the person on the receiving end is not. The victim will likely pass it off as a joke, but over time these microaggressions build up, and will cause a level of dislike and distrust of the other person. The perpetrator will notice a change of behavior and have no understanding of why. In turn, the perpetrator now becomes the victim and their level of dislike and distrust of the other increases. As a result, the coordination efforts between the two of them eventually fail. At any point during this time period, either one of them could have stepped up, communicated their feelings, and resolved this conflict.

A project containing multiple parties working together, each with their own set of objectives, will result in conflict. It is up to the individuals to be able to come to a resolution when these conflicts arise. According to Senaratne and Udawatta (2013), there are 13 sources of conflict on a construction management team:

1. Communication
2. Entrance of new members to the teams
3. Goal or priority definition
4. Managerial and administrative procedures
5. Personality and interpersonal relations
6. Project brief (project overview)
7. Resource allocation
8. Scheduling
9. Scope changes
10. Specification
11. Team settings and contractual arrangements
12. Technical opinion
13. Utilities (service providers) and planners

Through identification and control of these sources, proactive approaches can be used to manage any conflicts that could come up. By anticipating the conflict, it can be positively managed. These are the types of issues that should be brought up in teaching students about construction management. There are many aspects of teamwork that are not thought about when working with others. The performance and productivity of teams can be affected by many outward stimuli and should be managed as needed.

Methodology

See Appendix A for the survey.

We decided to conduct quantitative research because we simply wanted to see the number of students who agree with the statement that teamwork-based content should be included in the CM program. There was no need for qualitative data for this type of research. A survey was created that consists of five questions, with the last one being optional. The survey was sent out to all CM students on two occasions, October 26, 2020 and November 9, 2020. It was also sent to personal connections of the surveyor within the CM program over the same period of time.

An introduction is given for the purpose of the survey and to define teamwork-based content. It is as follows:

Teamwork is a fundamental skill in the construction industry. As it stands, the Construction Management curriculum includes plenty of team-based assignments, however there is no emphasis on teaching teamwork-based skills. This survey aims to compile student experiences for the purpose of gauging the need for teamwork-based content within the Construction Management curriculum.

Cal Poly offers the course PSY 350 Teamwork, with the description stated as: “This course begins by unpacking the fundamental skills it takes for individuals to work collaboratively with others, like social-emotional intelligence, empathy, and communication. Then, we discuss how our social identities, like gender and culture, can shape the way we interact and work with others. We address how diversity can enhance teamwork outcomes, like creativity and problem-solving, and how organizations can leverage diversity to solve large-scale problems. Finally, we will practice advanced teamwork skills, like negotiation and conflict resolution. As a result of taking PSY 350, you will be

able to work more effectively with others both in and out of the classroom.” The content of this course gives a good indication of what the CM curriculum is lacking. For the purpose of this survey, the term ‘teamwork based content’ will refer to this description. It is not the class itself that is being referenced, but the content of it.

Results

1. What is your gender?

Male	33
Female	19
Non-binary	0
Prefer not to say	0



Figure 1. Gender Results

2. What year of school are you in?

First year	8
Second year	5
Third year	8
Fourth year	24
Fifth year (Or older)	7



Figure 2. Year Results

3. How would you describe your experiences of working in teams on group projects? i.e. Did you learn anything about working in a team?

Several of the indicative responses are:

“Most of the time, it is frustrating and it tests your patience. It can lessen your workload but it may also increase your workload as you need to doublecheck their work at times. It forces you to trust others and practice communication skills.”

“I have learned that different personalities will create a different experience every time. What is most important is communication and ensuring everyone is on the same page.”

“Not really, you learn what I would consider to be ‘street rules’ for group projects in college. Essentially, assume the other people will not do their work or will do it at a level where it needs to be redone. Typically one person will take the lead, and effective participation will be around 75%. This does not prepare you for the industry as work and school are treated [entirely] different [through] the eyes of young adults”

4. Please mark your level of agreement with each of the following statements.

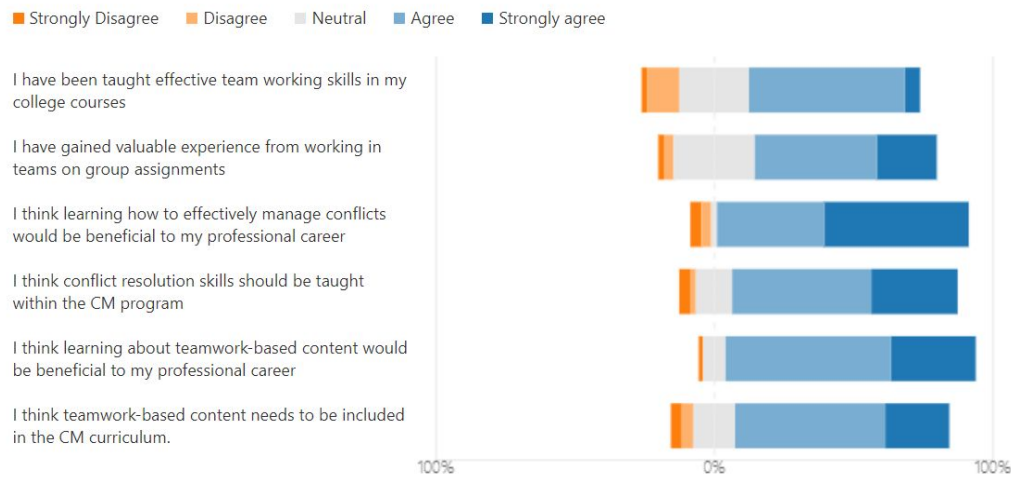


Figure 3. Likert Scale Statement Results

5. Do you have any additional comments?

Two of the responses are:

“I'm not sure what teamwork-based content would be added into the curriculum that is not already present.”

“I have always been told that in college, it doesn't really matter about what you major in because companies don't care how much you learned in college, they care about your ability to apply what you know. College is supposed to teach you to think and to problem solve. Honestly, I have been disappointed by the CM department and their effort to teach me to do exactly that. The CM department is quite strict on their curriculum, it's passed from one professor to another and a lot of what we do in class is just going through the motions to check off learning objectives. I can't think of a single situation in a CM course in which i had to really problem solve or where my ability to apply knowledge was challenged. I would love to see more group projects, group interaction, and conflict resolution. I mean, conflict resolution is what a career in CM is all about so why not make it the focus of our education.”

Analysis

Over half of the responses were from fourth year students or older. The significance of this is that they have spent more time at Cal Poly and thus have more experience of CM classes. From the second question, about two-thirds of the respondents are male and one-third are female. Respondents gave similar answers for question three. Most students would say they gained some kind of valuable experience from working on teams in group assignments.

In question four, for each statement, at least 60% of the responses were in agreement. For the third statement, "I think learning how to effectively manage conflicts would be beneficial to my professional career," 51.9% of respondents were in strong agreement, and 38.5% were in agreement, for a total of 90.4% who at least agree with the statement. However, in the next statement, "I think conflict resolution skills should be taught within the CM program," only 80.8% of respondents were in agreement, dropping 9.2% from the previous statement. I was surprised because the statements relate to each other in that they are both about conflict resolution, so it seems a few students believe it would be beneficial to learn about it, but don't believe it has a place in the CM program. More importantly though, at least 80.8% believe it does have a place in the program.

Similarly, for the fifth statement, "I think learning about teamwork-based content would be beneficial to my professional career," 30.8% were in strong agreement, and 59.6% were in agreement for a total of 90.4% who at least agree with the statement. For the next statement, "I think teamwork-based content needs to be included in the CM curriculum," the total percentage of students who are at least in agreement drops to 76.9%. It is though a significant number of students who believe adding teamwork-based content to the CM curriculum is needed.

One of the responses to question five states, "I'm not sure what teamwork-based content would be added into the curriculum that is not already present." Since the introduction contains what is meant by the term teamwork-based content and the purpose for the survey, it's likely that this student, and possibly more, went straight to the questions instead of reading the introduction. Not understanding the purpose of the survey could influence the answers that they give.

Another response states, "I have always been told that in college, it doesn't really matter about what you major in because companies don't care how much you learned in college, they care about your ability to apply what you know. College is supposed to teach you to think and to problem solve. Honestly, I have been disappointed by the CM department and their effort to teach me to do exactly that. The CM department is quite strict on their curriculum, it's passed from one professor to another and a lot of what we do in class is just going through the motions to check off learning objectives. I can't think of a single situation in a CM course in which I had to really problem solve or where my ability to apply knowledge was challenged. I would love to see more group projects, group interaction, and conflict resolution. I mean, conflict resolution is what a career in CM is all about so why not make it the focus of our education."

Conclusion

I put in the fifth question in case there were any students who wanted to give a response that was not asked for in the previous questions, and there was one that stood out to me, which is given above. In my experience, I also feel like a lot of the time my CM classes are just going through the motions to check off learning objectives. As the student states, "...conflict resolution is what a career in CM is all about so why not make it the focus of our education." It is inevitable that while working in

construction we will face many conflicts between ourselves and other parties, as well as having to mediate a conflict between two parties. During my internships on the jobsite, I have seen conflicts between different parties and being able to manage them is a necessary skill. The majority of the respondents, as well as myself, believe that teamwork-based content needs to be included in the CM curriculum. But if not teamwork-based content, then at the very least conflict resolution needs to be taught.

With this research there is room for expansion for future projects. Since the term teamwork-based content uses the course description of PSY 350 Teamwork, someone could take that class and edit it to conform to the CM experience. That is, it would be specifically for CM students to take, either as a technical elective or as a mandatory class. Another option would be to include PSY 350 Teamwork as a mandatory class for CM students. However, the course schedule for construction management does not have the capacity to add another class, so a possible project would be to research which class is worth replacing. A third option would be to create a learning module to go over conflict resolution for a class such as CM 413 Jobsite Construction.

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Appendix A

1. What is your gender?

- Male
- Female
- Non-binary
- Prefer not to say

2. What year of school are you in?

- First year
- Second year
- Third year
- Fourth year
- Fifth year (Or older)

3. How would you describe your experiences of working in teams on group projects? I.e. Did you learn anything about working in a team?

4. Please mark your level of agreement with each of the following statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have been taught effective team working skills in my college courses					
I have gained valuable experience from working in teams on group assignments					
I think learning how to effectively manage conflicts would be beneficial to my professional career					
I think conflict resolution skills should be taught within the CM program					
I think learning about teamwork-based content would be beneficial to my professional career					
I think teamwork-based content needs to be included in the CM curriculum					

5. Do you have any additional comments?