# Work in Progress: Introducing negotiating skills in capstone course

**Katie Loughmiller, Kansas State University**

Katie Loughmiller is an Assistant Professor of Architectural Engineering and Construction Science at Kansas State University holding the Martin K. Eby Distinguished Professorship. Her research areas include construction scheduling and operations, and retention and recruitment of women and minorities into the building industry. Her teaching focus is construction operations and scheduling

# Work in Progress: Introducing negotiating
# skills in capstone course

## Introduction

Employers of 21st century engineering and technical students are looking for individuals who in addition to their technical skills, also possess soft skills. Those soft skills include at a minimum communication, teamwork, and interpersonal skills. Several studies have recommended revisions to existing engineering and technical curriculums to incorporate soft skills [1-3]. In addition to industry professionals indicating a desire for increased soft skills in graduates, students also see the need for additional exposure while in school [4]. Because there is no formal definition of soft skills, it is necessary to determine for each discipline what the skills needed for a successful employee are [5]. By allowing each discipline to determine what the necessary soft skills are, the academic programs have the opportunity to tailor the exposure for their students to the specific types of skills needed in their future career.

At a Midwestern University the topic of soft skills was brought to the attention of the architectural engineering and construction management (AE/CM) program by their advisory council. During the annual meetings with the advisory council, a discussion developed regarding the lack of soft skills in recent graduates and how that could be addressed within the current curriculum. Among the soft skills that were mentioned were oral communication, written communication, dealing with people, flexibility and negotiating. In an attempt to address the concerns brought by the Advisory Council the senior capstone course, where contract negotiations are taught, was tagged to address incorporating negotiating skills into the course content.

The existing research related to teaching negotiating skills is limited to primarily business and law programs. Although those fields do not directly relate back to engineering and technical programs, there is a significant amount of research available that could be tailored to this field. One traditional method for teaching negotiation is in the form of case studies. By presenting students with real world examples of negotiations and allowing them to discuss and evaluate the outcomes, negotiation skills can be learned [6]. Observational learning is one method that has been evaluated for use in the academic environment [7]. In this model students are shown live or recorded simulations that are examples of different negotiating styles and given the opportunity to discuss their observations. In order to develop a negotiating module for the senior capstone class elements of both of these methods were incorporated.

## Methodology

Within the current framework of the capstone course, there is a contract negotiating module that consists of two lectures and a team assignment. The focus of this content is specifically on negotiating the terms of a design or construction contract. Students are exposed to a variety of different contract types and the class discussion focuses on what the goals for each party in the contract are and how to approach negotiating the terms. After the two lecture periods of discussion, each team must submit their proposed contract as a course assignment. The instructor then reviews the contract and provides counter arguments to the contract elements as a way of simulating the negotiation of the contract. This interaction continues via the course learning management software until both parties can come to an agreement on the contract terms.

The current course format does not accommodate negotiations to happen in a live, in-person format or provide a forum for students to practice their negotiating skills in a less formal situation prior to the assignment. In order to address this gap in the curriculum, a negotiation module was developed to supplement the existing contract negotiation lectures. The module was broken down into three components, a pre-assessment survey, a negotiating activity, and a post-assessment survey.

*Pre-Assessment Survey*
After reviewing the existing, publicly available assessment tools related directly to negotiation skills, the Tero International [8] Negotiations Self-Assessment Inventory (NSAI) was selected as the pre-assessment survey. The questions from the NSAI were entered into the Qualtrics survey software. The format of the NSAI is based on identifying an individual's tendency to use the five negotiation styles identified in the assessment. Those negotiation styles are avoidance, aggression, accommodation, compromise and collaboration. Within the NSAI materials the following descriptions for each negotiating style were provided [8].

- Avoidance: Negotiators who are eager to avoid confrontation ignore problems, their own needs, the needs of the other part and the relational dynamics present.
- Aggression: Aggressive negotiators focus exclusively on their own objectives. They are eager to win, even at the expense of others. They attend only to short-term outcomes.
- Accommodation: Negotiators who focus too heavily on the relational dynamics avoid attending to their own needs and interests.
- Compromise: This common approach to negotiations searches for middle ground in resolving differences rather than pursing potential solutions that often are found in common interests.
- Collaboration: Collaborative negotiators stand up for their own interests, needs and values while honoring the interests, needs and values of others. They are results-oriented and are sensitive to the relational dynamics present.

The assessment survey asks the participant to answer on a Likert scale of 0-5 (never, rarely, sometimes, occasionally, frequently, always) their tendency to agree with the 25 statements provided. A copy of the NASI questions is provided in Appendix A. Based on the Likert score of each statement, a self-assessment score is developed that indicates which of the five negotiation styles the participant is most likely to use in a negotiation experience. An aggregate self-assessment score of 5-10 indicated a slight reliance on the behavior, an 11-19 indicated a moderate reliance, and a 20-25 indicated a strong reliance.

The NSAI survey was to be distributed to the students enrolled in the capstone class one week prior to the scheduled date of the negotiations activity. The survey was distributed via Qualtrics and participation was voluntary.

*Negotiation Activity*
The activity developed to create a simulated negotiating experience was designed by the authors and will be referred to as Puzzle Challenge for the duration of this paper. The Puzzle Challenge involved each capstone group of 3-4 students completing a 50 piece children's puzzle. Prior to the start of the activity, the instructor collected the number of puzzles required for the Puzzle Challenge and combined all of the pieces into one consolidated group. The puzzle boxes were

then filled with 50 random pieces from the consolidated puzzle pieces. At the beginning of the class period in which the Puzzle Challenge was to be conducted, the students were divided up into their groups and given a puzzle box. The students were given instructions to complete the puzzle on the outside of their box and that the pieces they were given did not match their puzzle. The students were encouraged to negotiate with the other teams to complete their group's puzzle. A few basic ground rules were provided. Students were instructed that their puzzle pieces must remain on their table unless they were in the process of negotiating. No pieces could be purposefully hidden from view. Students could not take pieces from another team unless a negotiation had been completed. After the instructions and rules were provided to the students, the class was given 30 minutes to complete the task. At the completion of the 30 minutes, the groups were given 10 minutes to discuss as a class what they experienced during the activity.

*Post-Assessment Survey*
The NSAI survey did not have a post-assessment survey, so a series of questions related to the pre-assessment survey and the Puzzle Challenge were developed. The questions included in the post-assessment survey included the following:

1. During the puzzle activity did you find yourself using any of the following behaviors?
2. During the puzzle activity did you observe any of your group members using any of the following behaviors?
3. Rank the effectiveness of each of the following behaviors your group used during the puzzle activity.

For questions 1 and 2 the 0-5 Likert scale from the pre-assessment survey was used. For question 3 the responses were scored on a 1-5 Likert scale (not effective at all, slightly effective, moderately effective, very effective, and extremely effective). The post-assessment survey was created using the Qualtrics software and distributed in the same manner as the pre-assessment survey at the completion of the negotiation activity.

Pilot Study Results
The first capstone course that the negotiating modules was implemented into was for the Fall of 2019. The fall capstone course is the off semester and typically has lower enrollment numbers. Of the 26 students enrolled in the capstone course, 19 elected to participate in the pre and post-assessment surveys.
The results of the pre-assessment survey indicated that 81% of students showed a moderate or strong reliance in collaboration and compromise. For the other categories, the results indicated that 66% had a moderate or strong reliance in accommodation, 63% respectively in aggression and 44% respectively in avoidance, see Figure 1.
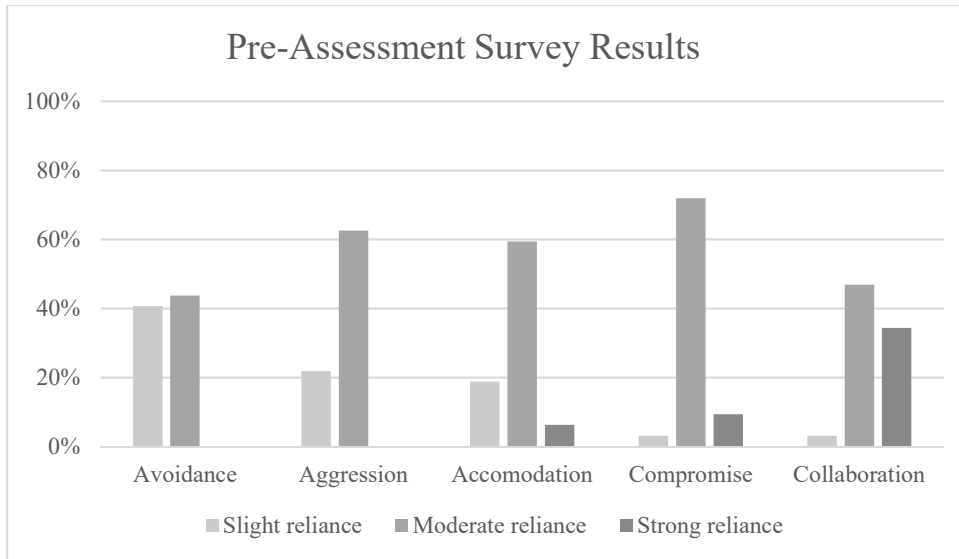
Figure 1: Results of the Pre-Assessment Survey.

The observation of the Puzzle Challenge provided some valuable information on the students' ability to successfully negotiate. Throughout the challenge the students consistently used the compromise method for negotiating. Most negotiations consisted of two students discussing which pieces that each had that the other needed and determining if the trade was a good compromise. Another common negotiating style implemented was that of aggression. This appeared to come about from the students' frustration with the activity and not specifically with an interaction with another student or group. Towards the end of the time provided, the entire class came to a stand-still. Each group was in need of 2-3 pieces, but were not able to find a single group which they could negotiate with. At this point, several students suggested to the entire class that they work together as one larger group to complete the challenge. At this point the class took on the negotiating style of collaboration to allow for all groups to complete the challenge collectively.

The results of the post-assessment survey indicated that the students, both when evaluating themselves and the team reported a strong reliance on collaboration and compromise. Question 1, which asked about the individual's experience of negotiating during the activity, the students reported 47% always used collaboration during the activity and 32% frequently used the same negotiating style. For compromise the results were 37% always and 42% compromise. These results and the data for all five negotiating styles can be seen in Figure 2.
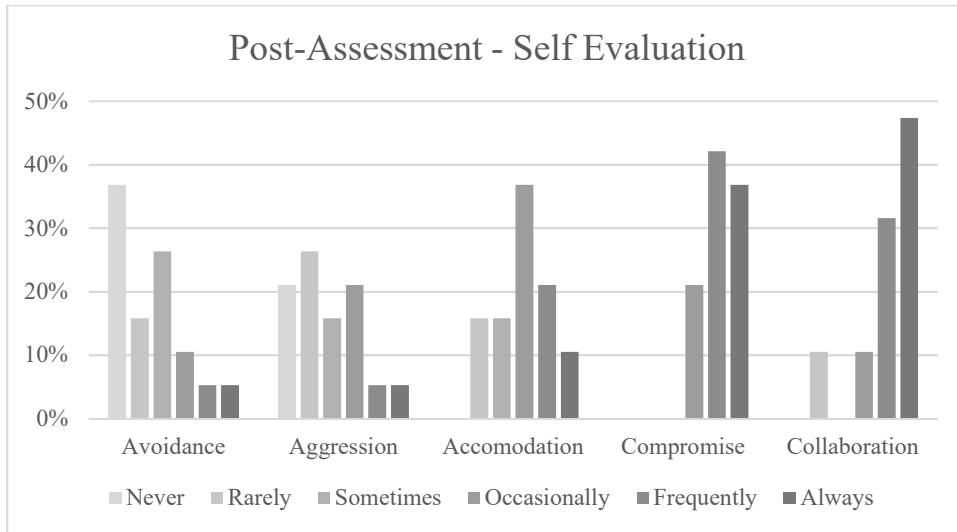
**Post-Assessment - Self Evaluation**

Figure 2: Results of Post-Assessment Question 1.

When looking at the results of Question 2, where students were asked to report on the observations they made of their fellow group members, the results are much more evenly distributed (Figure 3). For collaboration the results of always and frequently were 37% and 32% respectively. For compromise the results for those same categories were 16% and 42%.
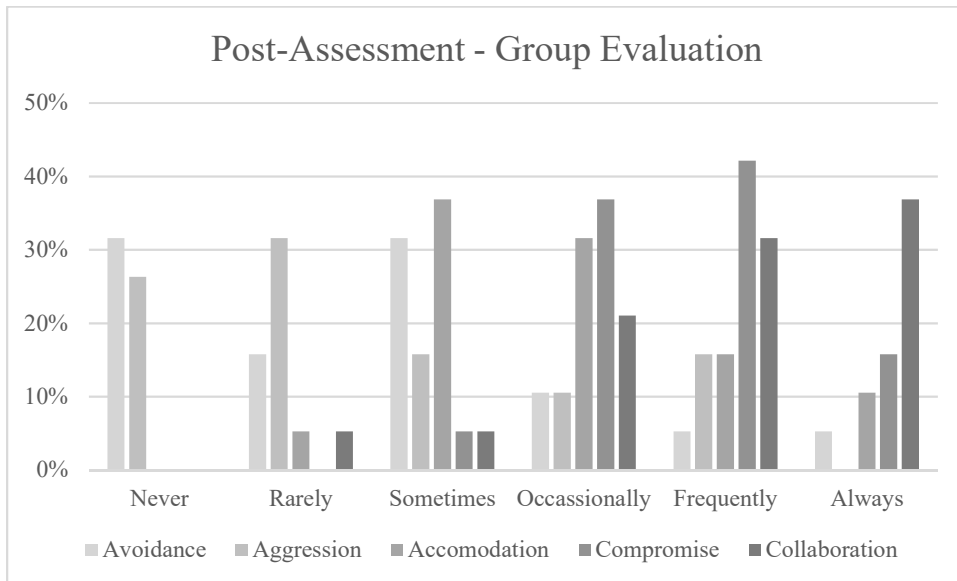
**Post-Assessment - Group Evaluation**

Figure 3: Results of Post Assessment Question 2.

Pilot Study Analysis

Based on the results of the pre-assessment survey, the post-assessment survey, and the observation several initial conclusions can be drawn. When comparing the students' pre-assessment survey results to their response to Question 1 of the post-assessment survey, it is apparent that students reported using negotiated strategies in the activity that they did not show a strong reliance on in the pre-assessment survey (Figure 4). On the pre-assessment survey only 6% of students indicated a strong reliance on accommodation and in the post-assessment survey

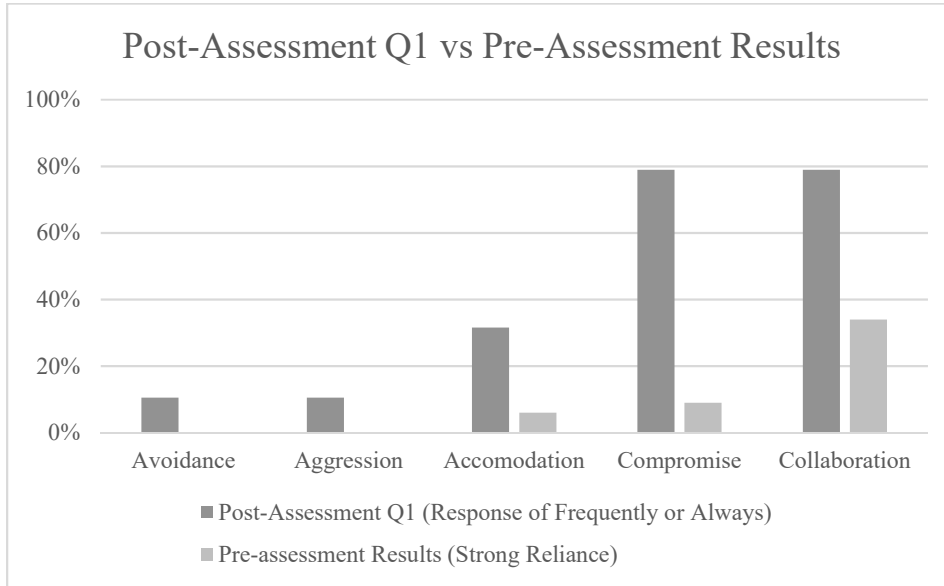32% responded that they had either frequently or always used accommodation as a negotiating method.



Figure 4: Comparison of Post-Assessment Question1 and Pre-Assessment Results

Question 2 of the post-assessment survey asked students to evaluate their team's ability to negotiate. The responses to this question in comparison to the pre-assessment results, reflect a similar result as the previous question (Figure 5).  On the pre-assessment survey only 9% of students indicated a strong reliance on compromise and in the post-assessment survey 58% responded that they had either frequently or always used compromise as a negotiating method.
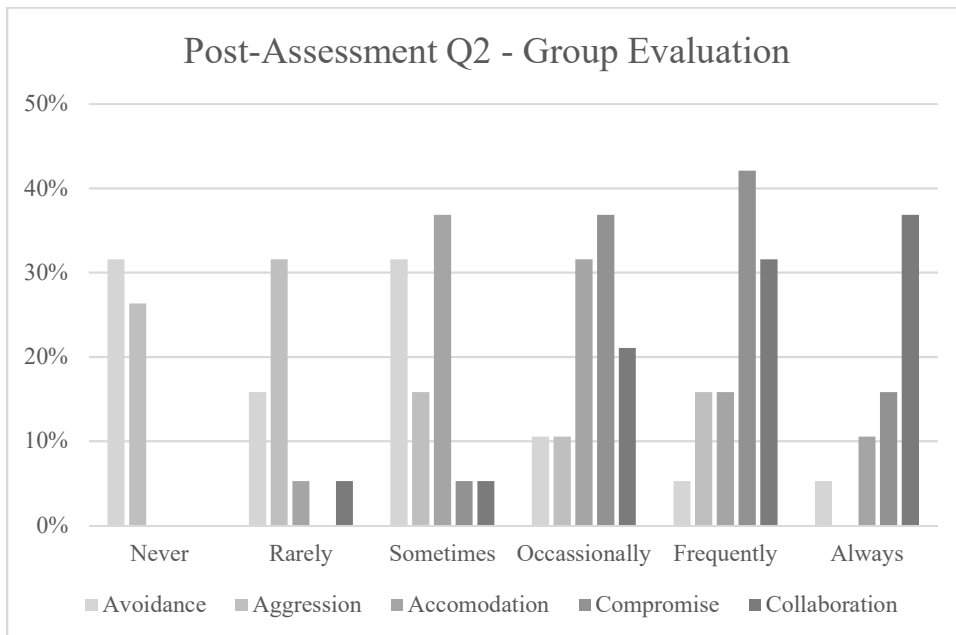


Figure 5: Comparison of Post-Assessment Question 2 and Pre-Assessment Results

Conclusion/Future Work

It is necessary to collect additional data over several semesters to determine if there are any trends developing. The current schedule for this research includes the implementation of the negotiation module in the Spring 2020 and Fall 2020 semesters. One adjustment to this study that could provide a more beneficial data set to analyze would be the comparison of individual survey results in lieu of the aggregate response that was analyzed in the pilot group. This could then be developed into a longitudinal study with follow-up surveys to the participants at intervals after graduation.

With only a limited sample in the pilot course, it is difficult to develop any definitive conclusions. From the data that was collected from this group it does appear that the students' perception of their negotiation style in the pre-assessment survey does not match with the negotiation style observed during the activity and self-reported in the post-assessment survey. Based on the feedback from industry and the prior research conducted on soft skills and negotiations specifically, it appears that the need for an activity of this type is warranted.

Reference List

[1] V. Domal and J. Trevelayn, "An engineer's typical day: lessons learned and implications for engineering education," *Proceedings, 20th Australasian Association for Engineering Education Conference,* pp. 637-643, 2009.

[2] S. M. Katz, "The entry-level engineer: Problems in transition from student to professional," *Journal of Engineering Education*, vol. 82, no. 3, pp. 171-174, 1993.

[3] G. Scott and K. W. Yates, "Using successful graduates to improve the quality of undergraduate engineering programmes," European Journal of Engineering Education, Vol. 27, no. 4, pp. 363-378, 2010.

[4] M. S. Rao, "Enhancing employability in engineering and management students through soft skills," *Industrial and Commercial Training*, vol. 46, no. 1, pp. 42–48, 2014.

[5] Amos O. Olagunju and Jake S. Soenneker, "A Framework for Soft Skills Training in Science and Engineering," *Journal of Systemics, Cybernetics and Informatics*, vol. 11, no. 6, pp. 16–21, 2013.

[6] M. Wheeler, "Learning to Teach Negotiation," *Negotiation Journal*, vol. 31, no. 4, pp. 477–490, 2015.

[7] C. Loes and D. Warren, "Using Observational Learning to Teach Negotiation," *Journal of the Academy of Business Education*, vol. 17, pp. 296–310, 2016.

[8] "Tero Monograph | Negotiation Skills." [Online]. Available: https://www.tero.com/monograph_negotiations.php. [Accessed: 24-Jan-2020].

Negotiations Self-Assessment

Inventory Score yourself on each statement on a scale of 0-5.

0 = never
1 = rarely
2 = sometimes
3 = occasionally
4 = frequently
5 = always

1. If the other party's position seems very important to him or her, I may sacrifice my own position.
2. I address problems and concerns directly without blame or judgment.
3. I try to win by convincing the other party of the logic and benefits of my position.
4. I tell the other person my ideas for and ask for his or hers in return.
5. I try to find a compromise solution.
6. I try to postpone discussions until I have had some time to think.
7. I see achievement as more important than rational issues.
8. I use body language that might be perceived as condescending or arrogant.
9. Confronting someone about a problem is a very uncomfortable for me.
10. I give up some points in exchange for others.
11. I propose a middle ground.
12. I am likely to take a comment back or try to soften it if I realize that it hurts someone's feelings.
13. I think it is all right to ask for what I want or to explain how I feel.
14. I find conflict stressful and will avoid it any way I can.
15. I have been described as impatient, controlling, insensitive or emotionally detached.
16. If asked to do something I don't agree with or don't want to do, I'll do it but deliberately won't do it as well as I could have.
17. I let my body language communicate my feelings rather than telling people directly how I feel.
18. I remain calm and confident when faced with aggression or criticism.
19. I may overextend myself trying to meet everyone's needs.
20. I try to find fair combination of gains and losses for both of us.
21. I look for and acknowledge common ground.
22. I have a hard time being clear about what I want and need for fear of appearing demanding or selfish.
23. I can overlook valuable ideas in favor of action.
24. I may not be open to hear other points of view.
25. I avoid taking positions that would create controversy.