

Returning to Learn by Doing

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The objective of my senior project was to help return the Cal Poly SLO Construction Management Department to their hands-on labs after the COVID-19 Pandemic forced all learning to go virtual. To return to hands-on labs, I needed to create a set of protocols that faculty and staff could use before, during, and after the labs to prevent the spread of COVID-19. These protocols needed to be simple enough that professors could use them every day and effective enough to make students feel safe to continue attending in person labs. If these protocols were to be accepted, they would need to follow University and County guidelines. By communicating with staff and students, I was able to create an adaptable set of protocols that would best fit the department's needs.

Keywords: COVID-19, Hands-on, Compliance, Safe, Return

Introduction

While I was working in my internship over the summer, the company had to follow a set of protocols everyday to follow county guidelines or else the jobsite faced being shut down. I then had the idea that I could transfer these guides to the hands-on labs in the SST which are basically a mini jobsite. The transfer of these guidelines would hopefully allow the SST labs to resume in person and give students the same opportunity to learn that I received while taking these labs. These labs are different than any other labs at Cal Poly meaning the implementation or different protocols would be necessary. I wanted to create a set of protocols that were efficient and quick because these labs are time consuming and students rarely finish their scopes early. Another goal for these protocols was for them to be a little stricter than University guidelines, so if there was a change in how the University was handling COVID-19, there would be no hiccups in the Construction Management Department. I knew I could achieve this by basing my protocols off of Santa Clara County guidelines, which at that time were much more serious than San Luis Obispo County.

Two of my favorite labs as a construction management major were the CM 214 Residential and CM 313 Commercial Labs. These labs allowed students to go outside and build with their hands whether it was a tiny home or commercial office. The labs connected physical objects to the word's students had been learning in previous classes. By being able to physically touch and use these materials or tools, students can solidify the application and use of the things they are learning about. For example, before I took the residential lab, I struggled naming every part of framing a wall, now I can see every step in my mind and picture what is needed to successfully frame a wall. These in person labs sharpen students and helps set them apart from students at competing universities. I believe that these labs are a large part of why Cal Poly's Construction Management Department is so highly sought after by industry leaders and that it is important to keep these labs on campus.



Fig. 1: CM 214 Students Working in the SST on their Tiny Homes

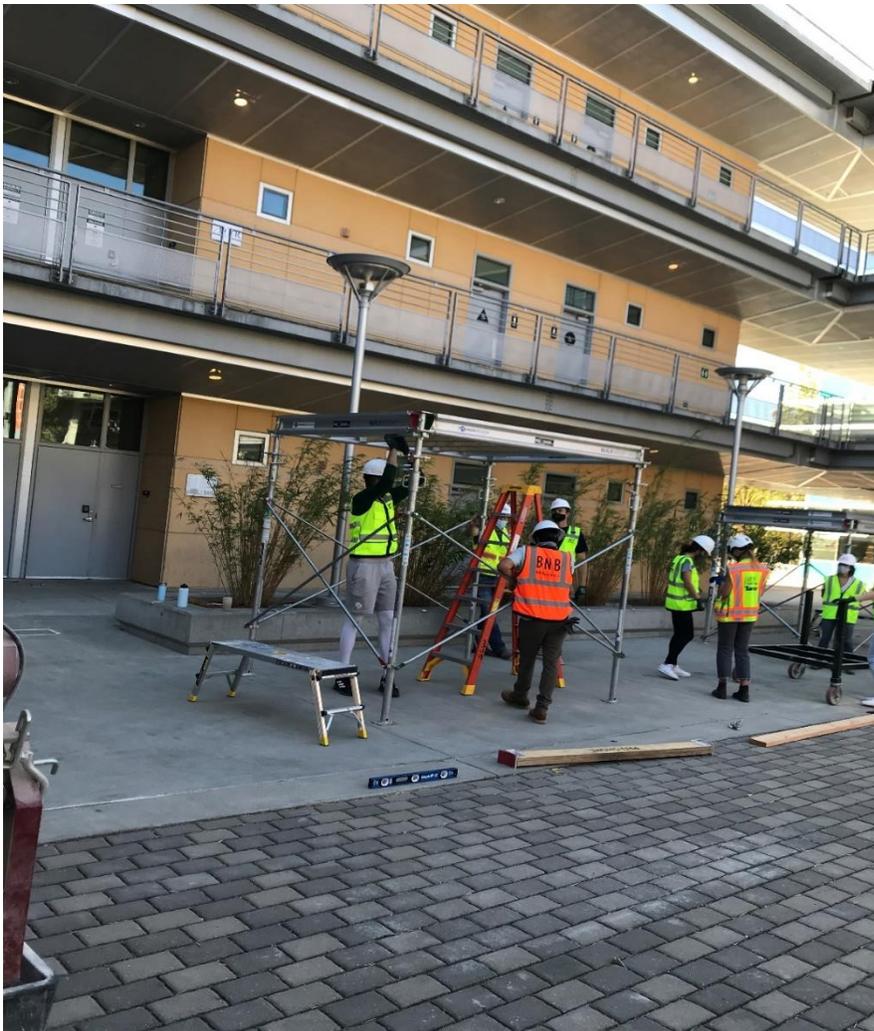


Fig 2: CM 314 Students Working on Constructing Shoring Equipment

In addition to strengthening students' educations and maintaining the elite status of the department, these hands-on labs help build bonds between classmates. Students learn how to

work in teams and accomplish a common goal during these labs. The bonds created in these labs help students get to know others that they did not know so well before. Their relationships will carry on throughout college and into the industry. Building these relationships early helps students transition through college easier and create a community of students that will help one another.

Process

When I first came up with the idea to create a set of protocols for the hands-on labs in the SST, I envisioned implementing the guidelines just before winter quarter 2021. After a few weeks into the quarter I realized I needed to expedite my process and create a set of guidelines that could be used for fall quarter of 2020. I then created a rough draft of protocols and presented it to faculty and staff for review. After reviewing the rough draft with faculty and staff, I created a condensed version of the original. This condensed version allowed professors to create an efficient process before class to meet all the items on the checklist while keeping most of the class time focused on building and learning.

COVID-19 SST GUIDELINES

PRE-CLASS PROCEDURES:

- Check student's campus passes
- Visually verify students have proper PPE

During Class Procedures:

- 2 work groups per day
- Professors discretion on group size. (Based on class size)
- Different Scopes in designated areas
- Social Distancing
- Face Shields required for students working closer than 6' for more than 15 mins
- Sanitary Tool Station
- Unsanitary Tool Station
- Clorox Wipes at stations
- Hand Sanitizer Throughout SST
- No more than 2 students per restroom at one time

Clean Up Procedure:

- All equipment cleaned and returned to sanitary station in SST
- Unused material taken off rack, returned to group #'s pile for the next work session, or cleaned and returned to rack.
- Steps repeated next day with new groups

Fig.3:PDF of COVID-19 Guidelines that was given to Professors

After a few weeks of the hands-on labs resuming, I made a visit to campus while a commercial class was building in the courtyard of the SST. I was ecstatic to find that all the students and professors were following the protocols. I talked with the students, it was evident that everyone was happy with returning to their hands-on labs and, "nothing should be changed". From my

own observations, I noticed that hanging additional signage in the SST and courtyard would be



Fig.4: Sanitizing station

inside the SST.

helpful to remind students of the protocols and to social distance. I thought these signs would be a positive reminder for students to look at, and to help push an unconscious bias to wear their masks and social distance. The main point of these signs was to serve as a visual reminder for students to social distance, sanitize their hands, and wear their mask. This is helpful for professors because they can spend more time teaching rather than policing PPE. One of the most helpful signs I created is Figure 5 shown below. This sign helps direct the flow of traffic in and out of the SST and where students and equipment should be placed. This placement and flow of traffic strategically spaces students out and helps enforce social distancing. After confirming with Jeong, I made some of my own signs while taking others from the internet to be printed at the University Graphics Store. These signs were vinyl with an adhesive backing to meet the University's fire rating standards. The Construction Management Department covered the \$64.50 cost to make the signs, and a week later they were hung up around the SST and courtyard.

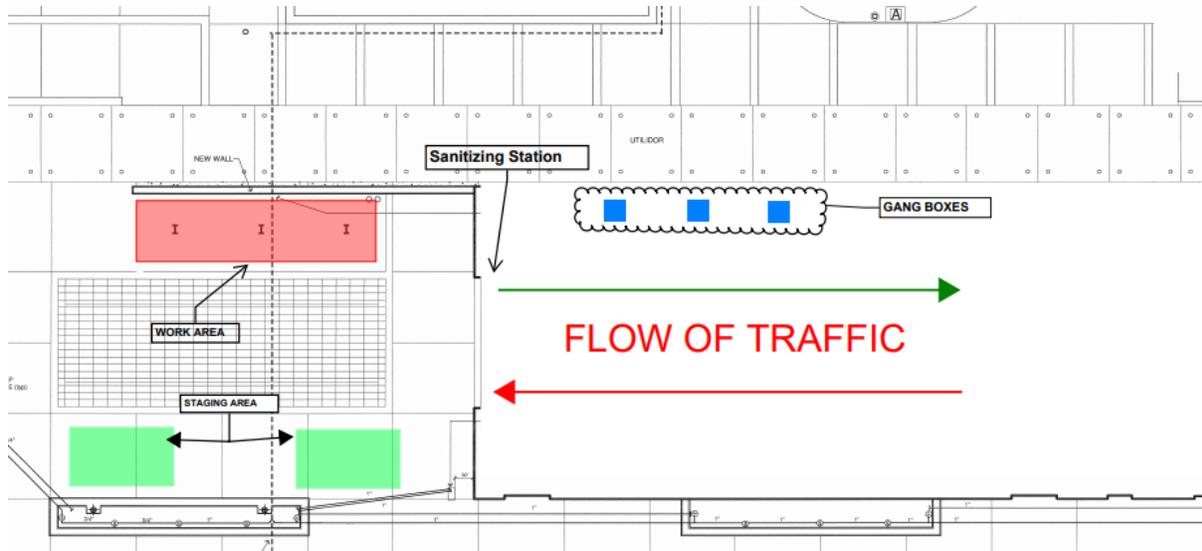


Fig.5 Flow of Traffic and Students Placing.



Fig.6: Notice to remind staff/students of proper PPE

Results

Once all the protocols were implemented and the signage was posted, I conducted a survey of the students that attended the in-person labs. It was important that we learned how the students felt about taking the labs and how COVID-19 was affecting their education. I wanted to know if students felt safe in their learning environment and if they thought the signs were helping remind them of the protocols.

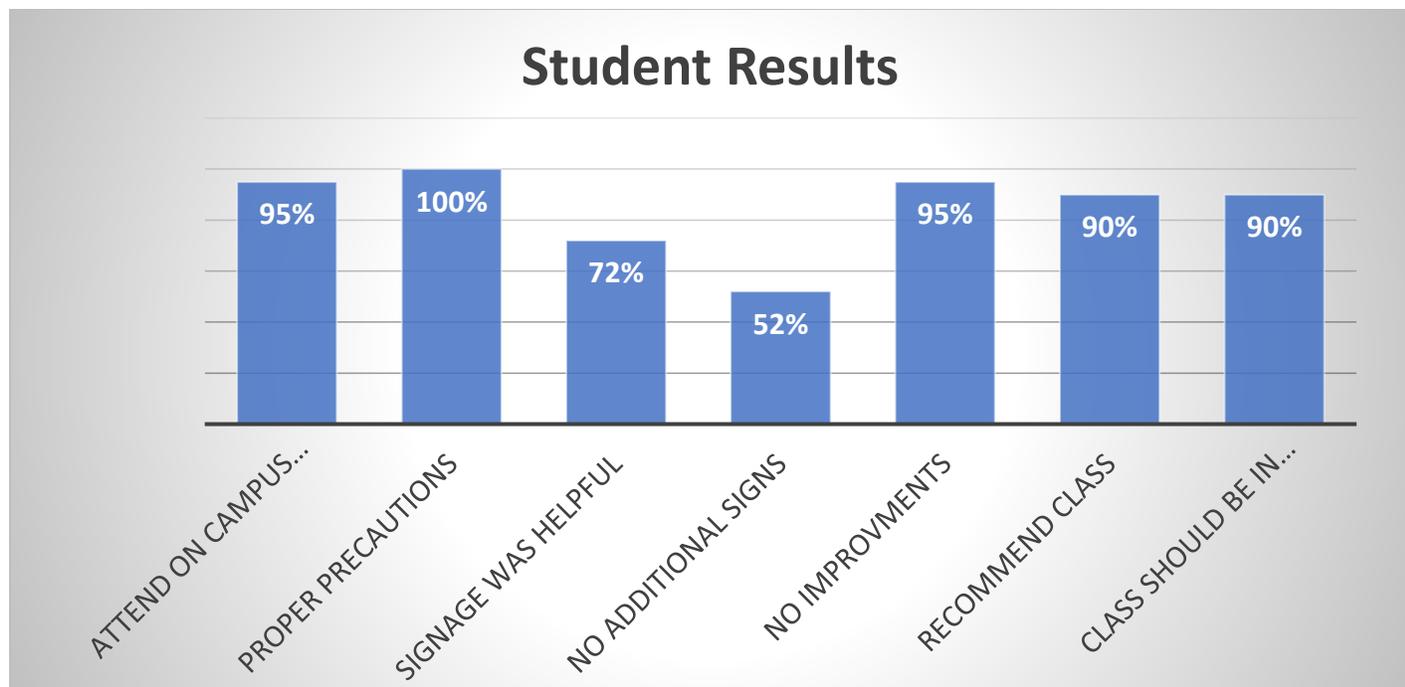


Fig.7: Graph of Students Responses to SST Protocols

Graph Analysis

- Out of all students that replied to the survey, 95% attended their in-person labs.
- 100% of students felt their class was taking proper precautions to prevent the spread of COVID-19
- 72% stated the additional signage was helpful in reminding them
- 52% stated no additional signs need to be posted
- 95% stated they could not think of any improvements
- 90% would recommend taking the class in person to their peers
- 90% stated that they think the class should be offered in person again.

These results are important because the students are the focus of the hands-on labs. These labs are being offered for the students benefit and the goal of the protocols was to ensure that the students felt they could maintain their higher standard of education while feeling safe at the same time. Students need to feel that they are first safe, then they will be comfortable enough to learn. Students that are comfortable are more likely to enjoy their lab and these same students will recommend others to take the class in person.

The protocols were put to the test when one student from the CM 214 class tested positive for COVID-19. Luckily, the construction management department was able to show the Medical Director of Campus Health the protocols they have in place and how the class is being ran. The director and SLO Public Health then deemed that the rest of the class was not at high risk and would not have to quarantine for two weeks to prevent the spread of the virus. Both parties commented on students wearing, “the appropriate masking and physical distancing

prevented this event from becoming an exposure” (Woo). This assessment allowed the SST to re-open the following week for CM 214 classes.

This was a huge win for the protocols that were implemented in the hands-on labs. The protocols went public to health officials and they were deemed to be the proper preventative measures to stop the spread of COVID-19. The goal of the protocols was never to control what students were doing outside of class, but how to mitigate the potential problem of the virus being brought to class. With approval of the Medical Director of Campus Health and Wellbeing and SLO Public Health, I think it is safe to say the protocols have met their goals.

Conclusion

In conclusion, the results from the survey show that protocols implemented in the SST for the hands-on labs had a positive impact with students and the students were very receptive. The students felt that they were safe in their lab classrooms and that the department was taking the proper precautions to keep them safe. An overwhelming majority of students said that they would recommend this class to their peers and that it should be offered again next quarter. These labs help further the knowledge of students. Students that are more knowledgeable benefit the construction industry. These labs help improve students and the construction industry.



Fig 8: Sign Example of PPE for SST

The protocols were successful in their first meeting with COVID-19 as the situation was evaluated, “that no quarantine directive exposure occurred” (Woo). I think these results can give students and staff the confidence to continue to attend and offer hands-on labs. When assessing students learning and development in these labs, if the protocols are followed, the positives heavily outweigh the negatives of attending classes on campus. These hands-on labs are very beneficial to students and should continue to be offered on campus if the University and SLO Public Health deem it to be safe.

References

Poly, Cal. "Construction Management Department." *Construction Management*, 2020, construction.calpoly.edu/

Figure 1: Self Taken-Jeremy Miller

Figure 2: Self Taken-Jeremy Miller

Figure 3: Self Taken-Jeremy Miller

Figure 4: Self Taken-Jeremy Miller

Figure 5: Self Taken-Jeremy Miller

Figure 6: Self Taken-Jeremy Miller

Figure 7: Self Taken-Jeremy Miller

Figure 8: Self Taken-Jeremy Miller

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