

Integration of PlanGrid into Cal Poly's Construction Management Curriculum: Learn by Doing

Dane Clemensen

California Polytechnic State University – San Luis Obispo
San Luis Obispo, CA

PlanGrid is a mobile construction management, document control software that gives builders real-time access to blueprints, punch lists, daily reports, submittals, RFIs and more. It is used throughout the industry by many different construction companies. The purpose of this project is to give Cal Poly construction management students early exposure to PlanGrid in an introduction lab in the jobsite construction class, CM 413. Before the lab was taught, a brief survey was sent out to construction companies asking their thoughts on how much exposure CM students should receive in PlanGrid. After receiving the survey results, the PlanGrid introduction lab was taught. Students were first walked through the program and then given assignments on both their laptops and mobile phones. The overall goals and takeaways from this lab are to help students become more well-rounded and better prepared to enter the industry as assets to construction companies, and potentially increasing the school's use of PlanGrid in the construction curriculum.

Key Words: PlanGrid, Construction Software, Document Control, Introduction Lab, Construction Management Curriculum

Introduction

This project came to fruition upon discovering that many construction companies in the industry use PlanGrid as their primary software for plans and document control. Cal Poly, on the other hand, only teaches its Construction Management students Procore, a similar software that many other construction companies use in the industry. To help better prepare students for internships and full-time jobs that they will receive from construction companies, this senior project was proposed as an idea to start getting PlanGrid integrated into the construction management curriculum at Cal Poly. The overall goal was to get students continued exposure in Procore, and begin giving them exposure to PlanGrid as well, starting with Dr. Tom Kommer's jobsite construction class (CM 413). Since Cal Poly's motto is "Learn by Doing," the introduction lab was planned with that taken into consideration, rather than just giving a lecture and a demonstration.

The Project

Once the project was approved, a survey was sent out to 25 construction companies in the industry as well as Dr. Jeong Woo, the Department Head of the Construction Management Department at Cal Poly. This brief survey asked these companies which software they use at their company (PlanGrid, Procore, both, or other) to get an idea of what companies are currently using. The survey also asked these companies if they felt that it is important for construction management students at Cal Poly to learn both PlanGrid and Procore in the curriculum. Companies were then able to fill in the level of exposure they felt was necessary for students to receive in each software (introduction, some exposure, moderate knowledge, proficiency, or advanced knowledge). The survey received 22 responses, with the majority of companies feeling that both Procore and PlanGrid should be taught to

construction management students at Cal Poly, receiving instruction and exposure that would result in students achieving moderate knowledge of both Procore and PlanGrid. Of the 22 responses, 13 companies reportedly use PlanGrid, 10 use Procore, and 2 use other software for their construction management and document control.

After the survey was sent to the companies, the planning for the introduction lab began. Jeremy Wallin, an employee of PlanGrid who is involved in their education program, was contacted to receive an extended trial of the software to plan the demonstration lab for the CM 413 jobsite construction class. The students in the class would each receive a three-week trial upon signing up for PlanGrid. Once the trial of PlanGrid was received, time was spent learning about the software (both on the laptop computer and the mobile app) through watching videos and tutorials. The introduction lab was planned to be conducted in one class period to the class, starting with a walk-through demonstration, and then giving the class assignments based on what they not only learned in the walk-through demonstration, but also what they have learned in Dr. Kommer's jobsite class throughout the quarter.

In the walk-through demonstration of PlanGrid, students were shown the layout of PlanGrid first and where to find everything, including their projects, sheets/plans, tasks, RFIs (request for information), field reports (daily reports, daily safety inspections, job hazard analysis, time sheets), documents (billings, change orders, punch lists, schedules, specifications, subcontracts, submittals, etc.), photos, team members, and settings. They were also shown how any changes made to the project will show a real-time update on their mobile device whether it be a revision to the sheets, an RFI (request for information), or even a daily report being submitted, among others.

For the assignment portion of the lab, students were tasked with uploading subcontracts, submittals, and change orders to PlanGrid based on their prior submissions to Procore. They were then asked to each create an RFI (Request for Information) as well as a JHA (Job Hazard Analysis), also both based off previous assignments in Procore. To give them exposure on the mobile applications, they then each took their phones down to the Simpson Strong Tie building lab and each filled out a daily safety inspection and uploaded a photo of Simpson Strong Tie to PlanGrid. Upon completion of these assignments, students were asked to fill out a daily report answering some questions to give feedback on the lab. The questions asked were the following: "What did you learn in PlanGrid today? Have you used PlanGrid before? What did you think of PlanGrid compared to Procore? Do you think it would be beneficial for construction management students at Cal Poly to learn PlanGrid, Procore, or both? Which courses do you feel PlanGrid should be taught in? Any feedback for the lab or ways it can be improved?" Students were given participation credit for being present and completing all aspects of the lab for the day.

Lessons Learned

Starting with the survey that was sent out to companies, the first thing learned was that the survey should have probably been sent out to more than just 25 construction companies to get a larger sample size to better compare the amount of companies that use PlanGrid compared to Procore. More results would give more accurate information about the population's use of software and thoughts on what should be taught in the construction management curriculum at Cal Poly. From the introduction lab some lessons learned were that students needed "Admin" access (as opposed to "Collaborator" or "Power Collaborator" access) to the project to upload to the documents tab, which was necessary for some of the assignments the students were tasked with doing. It was also important that students signed up using their Cal Poly emails, since those were the emails the invitations to collaborate on the

project were sent to. Another potential issue that came about for some students was when they tried to copy and paste, the text size in PlanGrid was too small to read, so manual entry was preferred. From the student feedback responses on their daily reports, of the 19 students enrolled in the class (17 students present on the day of the lab), 5 students responded that they have used PlanGrid before, all in internships. From the students that had used PlanGrid prior to the introduction lab in their internships, they primarily used it for punch lists. All the students in the class felt the lab was beneficial to them. The majority of the class found PlanGrid to be very user friendly and felt they should learn both PlanGrid and Procore. Courses they feel PlanGrid would be beneficial to be taught in are CM 413 (jobsite construction), CM 313 (commercial construction), CM 280 (building information modeling), and CM 421 (emerging trends – advanced building information modeling). It can be beneficial in all these courses. The most important lesson learned for this project was that this introduction lab was only taught on an education trial of PlanGrid and not a full educational license. While it is unknown how much was limited to the lab, time and experience was a factor. The introduction lab was conducted on a sample project that may or may not exist. It would have been beneficial to the class to have uploaded plans to PlanGrid of a project they could have seen in person, such as the Simpson Strong Tie building, or a current project being built, the new Vista Grande building on Cal Poly's campus. If Cal Poly chooses to continue using PlanGrid, it would be beneficial to get the full educational licensing as well as get professors trained on how to use PlanGrid.

Conclusion

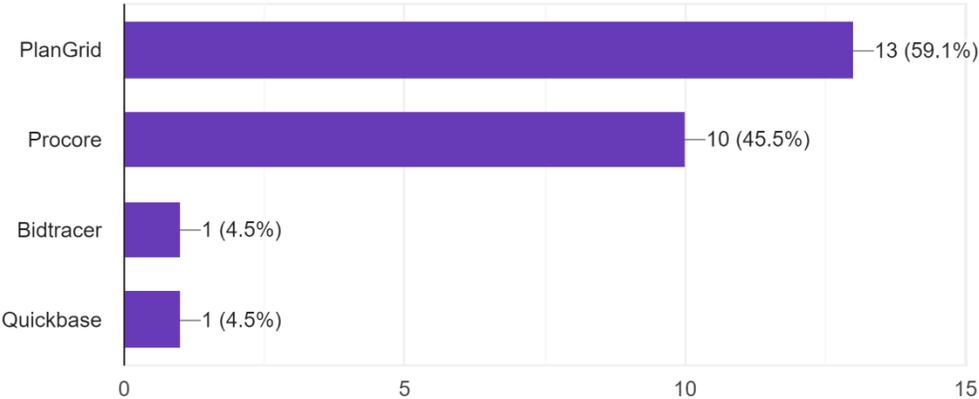
Since PlanGrid is such a staple of the construction industry, Cal Poly should continue to integrate PlanGrid into the construction management curriculum at Cal Poly by building off this project and introduction lab. Construction management students looking for internships and full-time positions with construction companies will be more well-rounded having knowledge in both Procore and PlanGrid which will make them better assets to those companies. This will work in Cal Poly's favor as well because it will attract more students to the construction management program and more construction companies will want to hire students from Cal Poly.

Senior Project Deliverables

From the survey:

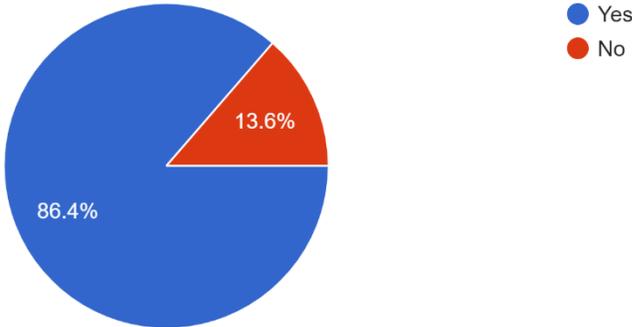
Does your company use PlanGrid, Procore, both, or other? Mark all that apply. (If other, please specify.)

22 responses



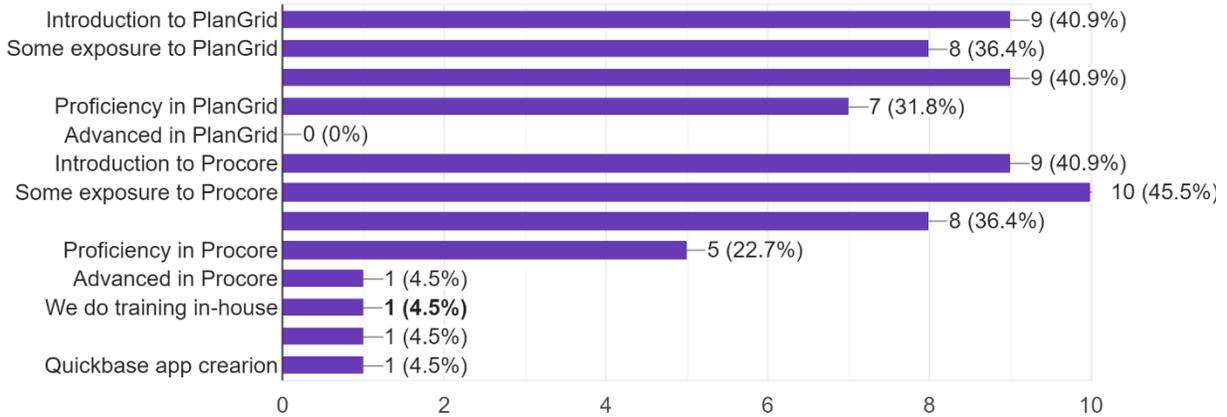
Does your company feel it is important for construction management students at Cal Poly to learn both PlanGrid and Procore in the curriculum?

22 responses

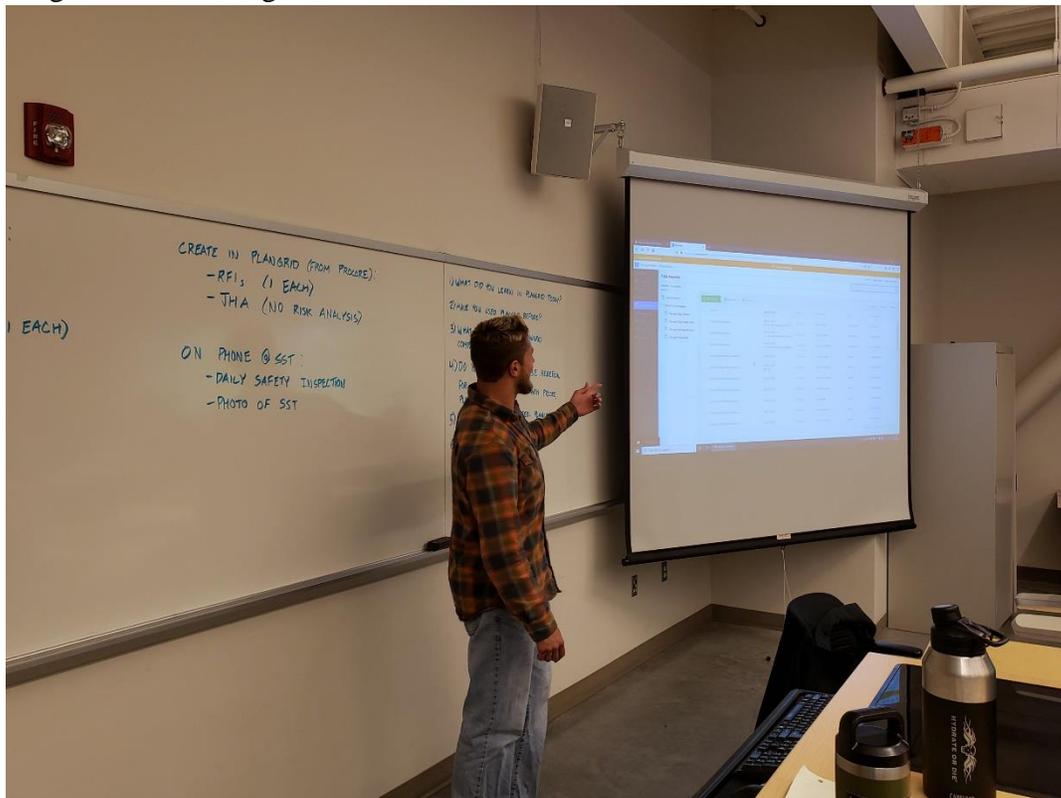


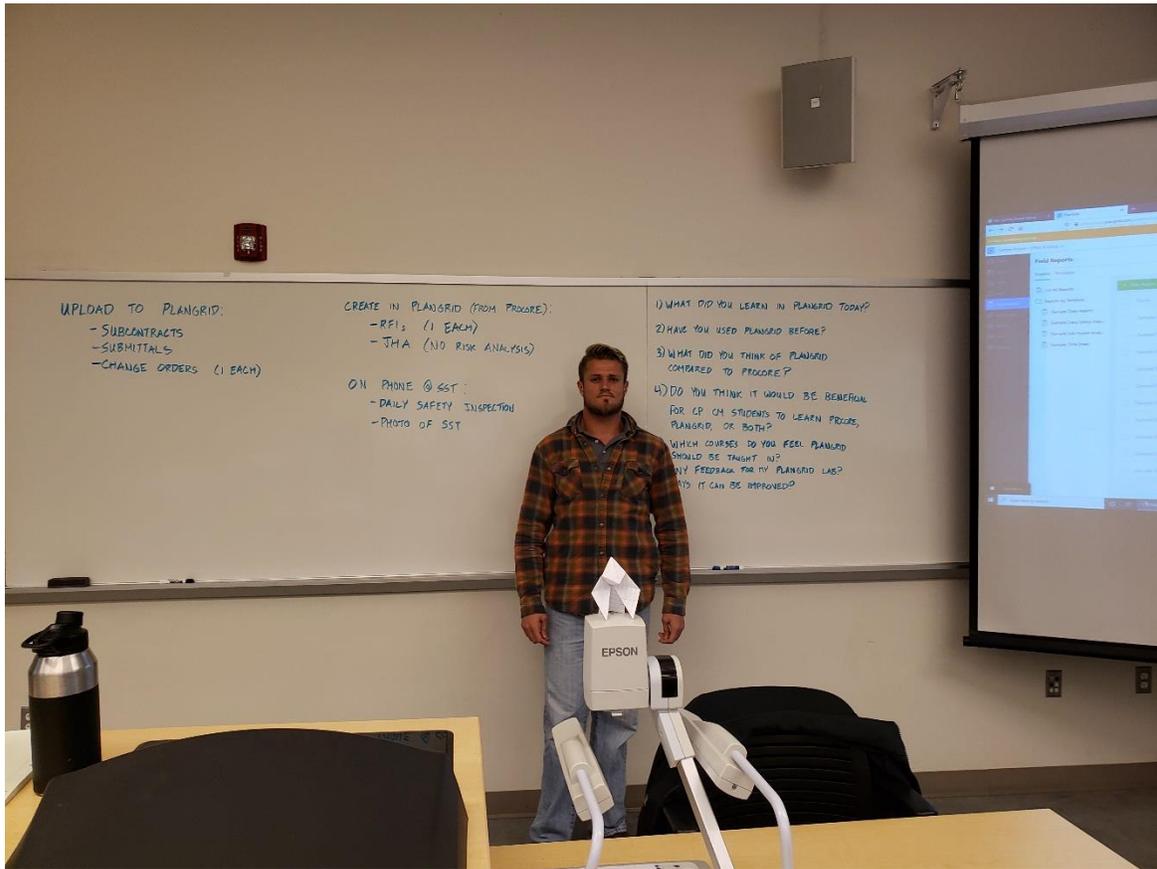
To what level of exposure does your company feel is necessary for Cal Poly construction management students to receive in these constructi... in the school's curriculum? (Mark all that apply)

22 responses



Images from teaching the PlanGrid Introduction Lab:





UPLOAD TO PLANGRID:

- SUBCONTRACTS
- SUBMITTALS
- CHANGE ORDERS (1 EACH)

CREATE IN PLANGRID (FROM PROCORE):

- RFIs (1 EACH)
- JHA (NO RISK ANALYSIS)

ON PHONE @ SST:

- DAILY SAFETY INSPECTION
- PHOTO OF SST

- 1) WHAT DID YOU LEARN IN PLANGRID TODAY?
- 2) HAVE YOU USED PLANGRID BEFORE?
- 3) WHAT DID YOU THINK OF PLANGRID COMPARED TO PROCORE?
- 4) DO YOU THINK IT WOULD BE BENEFICIAL FOR CP CM STUDENTS TO LEARN PROCORE, PLANGRID, OR BOTH?
- 5) WHICH COURSES DO YOU FEEL PLANGRID SHOULD BE TAUGHT IN?
- 6) ANY FEEDBACK FOR MY PLANGRID LAB? WAYS IT CAN BE IMPROVED?