2nd Annual Girls Build Summer Academy: Logistics and Scheduling

Matteo Cuccaro
California Polytechnic State University: San Luis Obispo
San Luis Obispo, CA

This paper discusses the logistics and scheduling involved for Cal Poly construction management department’s second annual Girls Build Summer Academy. The week-long academy was hosted to introduce construction related activities to 19 high school-aged girls so they could learn more about the careers available within the architecture, engineering, and construction industry, while learning skills to build individual and team projects. To achieve this goal, a full schedule was developed for each day of the camp, allowing for a variety of activities, including listening to guest speakers, completing building projects, and training to safely use tools. There were many challenges that affected the schedule. Twice as many girls participated in the camp than in the previous year along with increased industry participation and volunteers – without schedule adjustments made from the previous year to accommodate the increased number of girls. As a result, finishing everything throughout each day and over the week proved challenging. This paper highlights the necessary scheduling aspects and logistics and provides recommendations for future academy setup and schedule to accommodate up to 20 participants.

Keywords: Women in Construction, Scheduling, Logistics, Career Technical Education, Summer Camp

Introduction

The 2023 Girls Build Summer Academy (GBSA, also academy, camp) was hosted from July 17 to 21 in the Simpson Strong Tie Building (SST) at Cal Poly in San Luis Obispo, California. The camp was hosted by a construction management faculty member and three student volunteers, with the support of 35 different companies, organizations, and industry associations. Industry support included financial sponsorship, donation of tools, materials, and safety equipment, providing breakfast and lunch, and speaking or volunteering at the camp to teach and inspire the academy participants. The camp was developed in 2022 to introduce more women into the construction industry. It has allowed younger women to open their eyes to the different career paths the industry offers, if they so choose.

The camp included 19 girls, over double the number of participants from the inaugural year, with four construction management representatives (one faculty and three students). Sixteen of the camp participants were girls who had never attended the camp before (Apprentice I group), and three of the girls had attended the camp previously (Apprentice II group). One student volunteer led the
Apprentice I’s, another student volunteer led the Apprentice II’s, and a third student volunteer bounced between the two apprentice groups, providing support where needed. Additionally, industry members volunteered on different days throughout the week, sharing their career journey and expertise. Other volunteers from different companies also attended throughout different days of the week to assist in anything that was needed. The paper will highlight some of the biggest aspects of the camp, as well as the schedule that was created. The schedule consisted of five days, each day emphasizing different aspects of construction and building on top of previous days’ knowledge. Each day presented a new challenge to the group with some days lasting longer than others.

**Methods and Plan Overview**

The schedule of the camp was developed by the faculty member leading the camp, who the author met with the week prior to the start of camp. During that meeting, the different topics and projects that would be covered within the camp, as well as the time periods that were set for each activity were discussed. All work took place in a large, open-aired shop, the Simpson Strong-Tie Building (SST) at Cal Poly’s campus.

During the camp, some activities remained consistent throughout each of the five days, including eating times, clean-up/wrap-up times, and setup. Every other activity was different, the first day was an introduction to the industry, the second day was framing, the third day was electrical, the fourth day was drywall, and the fifth/final day was the equipment rodeo. Going into the camp, it was obvious some topics and projects would take much longer than smaller ones. Considering the time that was blocked out for each activity, it was imperative to keep to the schedule otherwise the service projects, as well as the individual projects, would not be completed in time. There were four individual projects planned: (1) a wooden shelf with a light, (2) a cooper pipe centerpiece, (3) a desktop concrete planter with a picture holder, and (4) a copper rose. For the service projects, Apprentice I’s were in charge of building tiered planters and Apprentice II’s were in charge of constructing five wooden planters with a light pole. Figure 1 shows the schedule that was developed at the start of the camp. As mentioned earlier, some topics lasted longer than others, but the schedule was still somewhat accurate to what the group agreed on earlier before camp started.
Daily Activities

Each day, academy participants were provided a daily agenda. The agenda listed each day’s activities and the breakdown of the guests, daily sponsors, daily learning objectives, and the different projects that were to be worked on that day by the Apprentice I and Apprentice II groups. This allowed the campers, as well as guests, to have more of an understanding of how the day was headed. It also allowed campers to have visual examples of how their own personal and service projects should look when they are completed, as well as directions for each project. Figure 2 shows the agenda for Day 1.
Each day presented many exciting topics to introduce to the girls. Not only that, but each day was quite different than the other, except for the service projects, which were worked on throughout the entire duration of the camp, and breakfast/lunch. Below are short summaries of the scheduled activities and projects we had planned throughout the week.

**Day 1: Concrete and Tools**

The first day consisted of introductions and icebreakers since it was everyone’s first time meeting one another. From there, the girls were given their tool bags, hard hats, and gloves, followed by safety training, introducing participants to the table saw, chop saw, and drills which lasted until lunch. After the lunch sponsor discussions, individual projects were introduced for the two different apprentice groups. After two hours of working on individual projects, we then worked on the service projects. The Apprentice I group was in charge of these vertical tiered planters (Figure 3) while the apprentice II group oversaw five wooden planters that worked as foundation for a pole and string lights (Figure 4).
Figure 3: Apprentice I planters

Figure 4: Apprentice II’s planters
Day 2: Carpentry

The second day’s topic was carpentry, and started with an hour-long career discussion with introductions to the carpenter’s union representatives who were volunteering for the day. It then led to another tool/safety training which discussed the circular saw and different nailing techniques. The apprentices had two different carpentry tasks. The apprentice I tasks consisted of framing walls, learning to use a biscuit joiner, and a pocket holeer. The apprentice II task oversaw the ceiling joists, since they had done the wall framing before at the previous year’s camp. Lunch was served after this, which then led us to a presentation about drones. A campus tour was scheduled but was eliminated due to time constraints. Instead, the rest of the day was spent working on individual and service projects. The individual project that day was building a wooden shelf, that contained aspects such as a lightbulb and a metal hook to hang items on, that would be made later in the week. Figure 5 shows the girls in the process of making their wooden shelf.

Day 3: Electrical Systems

The topic for day three was electrical systems, and started with breakfast and a career discussion with union electricians and industry representatives who work for electrical subcontractors as project managers. This was followed with more tool training and safety discussion. Again, there were two different stations for the apprentice groups. Apprentice I’s bent conduit wired four outlets/ one switch in each wall, and soldered copper pipe. Apprentice II’s ran overhead wire to six pendant lights with one switch wire pendant light. All this work took us to lunch and more career talks. After that, we went on an hour-long jobsite tour to an on-campus construction project where the girls got to look at an active jobsite. We then headed back to the SST building and finished out the day working on service projects, no individual projects.

Day 4: Sustainability and Drywall

The topics for day four were sustainability and drywall, which started off with breakfast and career discussions, followed by tool training and safety discussions. Afterwards we moved onto our team building stations, where both apprentice groups worked together on the four different drywall stations. The first station was a cutting station using the drywall saw, utility blade, and Dremel. The next station was installing drywall on the ceilings. The next two stations were both installing drywall on the walls, but one utilized the Simpson Quick Drive system and the other used a cordless drill. This then took us to lunch, followed by the individual project of the day, a sheet metal hook, for the wood shelf built on day 2.

Day 5: Sitework

The final day’s topic was sitework. We all met at the Cal Poly Rodeo Grounds and had breakfast/career discussion out there before moving onto our sitework stations. There were four different stations, consisting of a soil testing lab, mini excavator operating, skid steer operating, and learning to use the surveying equipment. After that, we traveled to another jobsite tour called Technology Park. After the tour, we headed back to the SST building and had lunch. After lunch, the rest of the day was spent finishing the service projects since this was the last day of camp. The parents were brought into the SST to admire what their children had built and learned about all week.
Results and Discussion

The camp was successful, but there were quite a few issues with the timing of the schedule. The most consistent problem the volunteers and campers ran into as a group was running out of time. There were multiple days where an activity would have to be cut short because a demonstration or project’s duration went longer than scheduled. For example, most of the campers really enjoyed the drywall and electrical day. They wanted to continue to learn more and install electrical work as well as play around with the drywall and see the incorporation of drywall within the frame. This led to the service and individual projects having less time to be completed, which was a big issue since they were going to be donated to a non-profit in Arroyo Grande. Both Apprentice I’s and Apprentice II’s completed their service projects at the end on Friday, going until around 5:30PM.

Sponsors were one of the biggest reasons this camp was able to work; without them, none of this could have happened. Therefore, it was necessary to receive feedback from them, to see what they enjoyed about the camp and what needed to be changed. A survey was conducted the following week and around half of the companies who sponsored the camp sent a response back. It was a quick survey but had a few critical questions for a better understanding of what worked and what didn’t work well this summer. The biggest suggestion for improvement was for the sponsored volunteers to get more involved. The following quote is an example of that: “Somehow getting the girls more interaction with the volunteers would be good. There wasn't a clear purpose for the day from a volunteer standpoint (which was completely fine as we came up with a presentation), but I'm wondering if the girls were unaware of what they were going to get too. I think there was an intent to have a talk/discussion with the volunteers that didn't quite happen. Possibly having the girls send in questions
prioritized, creating a more organized panel - would lead to more interaction with the girls in the academy.” Another survey response stated: “It would be great to give the volunteers tasks while the students work on their trade. Whether it's organizing the classroom, picking up food, or sweeping. Anything that takes some of the workload off [faculty member].” These responses make it easy to identify what should be changed for future camps.

![Figure 7: Camper being instructed on how to use a mini excavator.](image)

**Lessons Learned**

This camp provided several lessons for the volunteers, campers, parents, and more to learn. Overall, the camp turned out to be very successful. Apprentice I’s and Apprentice II’s completed their service projects and individual projects on time and got to showcase them on the last day of camp. The community of San Luis Obispo embraced the camp and many people have already inquired about next year’s camp. There are, however, a few lessons to consider making next year’s camp run smoother and with less stress involved.

The first example of that would be modifying the schedule. This year’s camp schedule was so packed to the brim, everything had to be right on schedule. This caused issues throughout the camp. Certain activities in the day would go over the time, causing the campers to be late to start their next activity. Towards the end of the week, this caused many different problems. On Friday, we rushed to finish the service projects. Camp usually ends between 4 and 4:30PM. The Apprentice II’s were not close to finishing service projects, which ended up with two of the student volunteers completing the five planters.
Having some of the activities such as drywall, electrical, and framing demonstrations, and a few individual projects, are what caused the group to fall behind. However, the girls were extremely interested in all those labs, wanting to spend more time on the wall and piecing it all together. Not only that, but they were ecstatic to bring their pieces of work home, specifically the wooden shelves. Many of the campers were excited to show their parents and get the chance to hang them up within their homes. It is a complicated topic to hit on the head. The camp is designed to open their eyes to the world of construction, so taking them away from an activity that they are super intrigued in is difficult. On one hand it is especially important to finish the individual projects and even more important to finish the service projects, but on the other hand it makes it difficult to take them away from something they are so interested in. Next year, I believe there will be many more Apprentice IIs, since many of the apprentice IIs enjoyed this year’s camp. This would make it easier for the group to accomplish their service project. There were five girls, who had to build five separate planters.

Having more girls next year will help take away the added stress of completing the projects for the volunteers.

Another solution would be to add more time for the service projects. In the schedule, the service projects are conducted during the afternoons. Not only that, but so are the individual projects as well, since most girls are more interested in those. Adding an hour, or even half an hour, each day can help provide a means to accomplish these projects without the help of the volunteers and take a lot more stress off everyone’s shoulders. That way, Friday does not feel like it must be rushed.

Another recommendation for next year’s camp would be to get the sponsored volunteers more involved. When talking about results earlier, a sizable number of the people who filled out the survey said they did not feel involved. To combat this, one volunteer suggested that each day the volunteers should show up early and have a meeting before the girls arrive so they know what they are doing for the day, ways they can help the girls or just the camp overall, and that allows everyone to introduce themselves and ask questions. Within that meeting, stress on the little things that matter, even if that means picking up trash or putting tools away. That makes the end of the day so much easier for the camp leaders, as well as the student volunteers who spend their week working at this phenomenal camp.

The Girls Build Summer Academy has only been advertised through word of mouth and has shown a great amount of potential as well as growth. The new outlet in San Luis Obispo, KSBY, did a story on it this year, which brought in a lot more attention. The issue with that is having more people wanting to join. After this year, it was clear that having over 20 campers would have been a real struggle. There are certain ways to get around that and solve the different time constraints on projects. One solution would be to extend the camp from just one week to three. Within those three weeks, we could categorize them as certain aspects of the construction industry. The girls were very honest about what they enjoyed and what they did not. Extending the camp to three weeks and basing it off the three main sections we covered this year, (electrical, carpentry, and sustainability/sitework) would allow the girls to choose what exactly they want to do. Not only that, but still limiting it to 20 campers a week, will triple the number of girls we can have. An entire week based on a single aspect of construction would really make it easier to go in depth with their work and allow the different projects to be spread out throughout the three-week time. Not only that, but this would also provide more exposure for the camp and hopefully turning it into something even more empowering and influential.
Conclusion

The schedule of the camp allowed for the completion of the service project but only some of the individual projects. The service projects were donated to the Turtle and Tortoise Sanctuary of Arroyo Grande. The campers took their shelves, metal hooks, and concrete planters' home to proudly display their work. The campers were amazing to work with, with many of them considering a future career in the construction industry. There are even a few girls who started taking electrical classes after being introduced to it through this camp. The planning and coordination brought together by everyone involved was what allowed the camp to thrive this year, even with double the number of participants.

The project was a great experience to take part in. The camp overall was a rewarding but difficult experience. It turned out to be highly successful for all the different parties involved. We set out to accomplish quite a few goals and completed most of them. Two of the individual projects, such as the copper piping planter and copper rose, were the only goals that were not accomplished. The paper discussed all the elements necessary to accomplish our goals. Making changes on the fly with our daily schedule is what allowed us to accomplish the goals we set forth. Although there did not seem to be enough time in the day, the group made it work. The feedback we received is what will allow us to make changes for next year’s camp. There is so much to be excited about in the future.

The camp was not the easiest, but one of the most rewarding experiences I have had as a volunteer. There are a few things to be improved upon, as well as some big possible new changes to come. The survey allowed us as a group to consider what went well and what didn’t, which will help the camp grow in a more positive direction. That positive direction would be described as a less rushed but packed and carefully thought-out camp. This camp is the start of something amazing. Seeing how the camp positively impacted both campers and volunteers shows where this camp is headed. Our job as volunteers was not to hold these girls’ hands through everything but to help guide them to a place where they would understand. Many of the campers have a very bright future within this industry. It was evident that they carefully thought out many different problems as individuals and as a group. It was a pleasure to be a part of the 2nd Annual Girls Build Summer Academy.