Expanding On Leadership And Professional Skills for a Girls Build Summer Academy

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Abstract:
The construction industry has historically been male-dominated. Despite efforts by organizations and companies to encourage women to join the industry, there has been little progress in encouraging more women to enter the industry and getting them to stay. The construction management program at California Polytechnic State University in San Luis Obispo is developing and hosting a Girls Build Summer Academy to familiarize and encourage high school girls to explore construction as a career path. One segment of this boot camp includes leadership modules that will give the girls confidence and the skills they need to be successful leaders in construction. Through research, surveys, and interviews the three top categories to teach young girls to be successful in construction were decided. The boot camp will focus on exposure to role models and career paths in construction, education on the importance of mentorship, and show them the importance of effective communication.

Key Words: Women in Construction, Leadership, Communication, Mentorship, High School

Introduction
Science, technology, engineering, and math (STEM) careers have historically been male-dominated. Workers in the construction industry are a part of the STEM field as they use many aspects of science, technology, and math to make multiple parts of the building process work together to complete a project. The number of women in construction has grown over the last 20 years, with women currently making up about 10% of the construction workforce. To put it in perspective, the global workforce is made up of nearly 47% women, yet the gender gap in construction remains so large with it being nearly 90% male (Women in the workforce statistics, 2022).

Companies and industry leaders have noticed how drastic this gender gap is and are realizing there needs to be a change (Lekchir & Kamm. 2020). The largest issue however is the lack of women entering the industry and support to encourage women to join and stay in the industry. Yet the industry needs people and has many jobs to be filled and many women are qualified to fill these positions. However, a leading issue is young girls are rarely given the chance to consider construction as a career choice (Hughes, Nzekwe, & Molyneaux, 2013). With the industry being so heavily male-dominated young girls struggle to see themselves fitting into the industry because they have few role models to
look up to. There is also the tendency not to teach young girls about construction, leading to them having little to no knowledge about what the industry is (Carnemolla & Galea, 2021).

This lack of exposure to young girls can be found to be one of the leading factors why women are not entering the field because they are not given the confidence to enter the industry. Studies have shown that when girls are taught about gender discrimination in a field and a female who overcame it in their industry, the girls have increased confidence to pursue that career. Opportunities to showcase male-dominated fields to high school girls increase girls' self-confidence in tackling those fields and cause an increase in enrollment for STEM fields as well (Genoways, 2014). If girls are exposed to construction they can have a better chance of envisioning themselves in the industry and learning how to be successful leaders as well. California Polytechnic State University has created a one-week Girls Build Summer Academy to expose young girls to the industry. This research paper will be analyzing what should be discussed with the girls in a three-day module to allow them to discover what Construction Management is, as well as showcase to them how to be a successful women leader in construction.

**Literature Review**

A reason for the gender gap being so strong in STEM fields is a lack of exposure to career paths, opportunities, and women role models. Many schools lack STEM education before college as well as not show female role models who work in STEM, leading to young girls not thinking STEM is a viable career choice for them (Hughes, Nzekwe, & Molyneaux, 2013). What a study from Genoways (2014) suggests is early exposure in high schools so girls can see how STEM is an optimal career choice and have the opportunity to explore it before attending college. There needs to be a message early on in girls' education and development that women can be successful in STEM (Genoways, 2014). STEM education intervention has been proven to engage and retain more women in STEM (National Academies of Sciences, 2020).

There is some research to see if exposure to Construction Management will retain more women in the industry (Carnemolla, et al., 2021). However, we can evaluate the extension of research regarding STEM exposure to help us understand how we should have early exposure for specifically young girls to construction and encourage these girls to feel comfortable in the industry to be successful leaders.

As stated above, exposure is significant for girls to encourage them to join a male-dominated industry like construction. When there is a lack of exposure there is a large gap in knowledge about career opportunities. In an Australian study, high school girls were asked if they had considered a career in construction. The majority of the girls in the study responded no they have not considered and don’t see themselves as suitable for the industry. When asked why, their reasonings all centered around the fact that there was a lack of understanding of the constitutional industries’ multiple career paths. (Carnemolla & Galea, 2021.)

This lack of awareness and feeling that they won’t belong in the industry is partly contributed to the fact that girls are rarely exposed to female role models. The lack of female role models is linked to both the lack of construction exposure and more significantly the gender gap in the industry. According to Dixon-Fyle, Dolan, Hunt, & Prince (2022), women make up only 14% of executive positions across the world. However, women only make up 1.4% of executive roles in the construction industry (Schultz, 2021). This research is showing the gender gap of women entering and working in the industry, but there is also significant research that has been done to see why women leave the industry. Research has shown that role models won't only encourage women to join the
industry, but it is also important for women to have role models/mentors while they are working in the industry to encourage them to stay and grow (Buck et al, 2008).

According to Lekchiri & Kamm (2020), women claim that they are more successful in the industry when they have role models to look up to. Women's support via receiving mentoring from other successful females helps with successfully navigating career growth.

Research has been conducted that focuses on how women can break the glass ceiling and feel not only more comfortable in the construction industry but also more successful. One major response women had when asked how they support women's careers in the construction industry was centered around mentorship (Lekchiri & Kamm, 2020) The research shows how mentorships are successful for a variety of reasons. When senior mentors take on new junior-level employees to a mentor they are able to help them develop career goals. The mentees are also able to gain professional experience from these mentors that they use to help navigate the career challenges they will face.

The research that speaks highly of mentorship) states that when employees are mentored they tend to advance faster, navigate challenges better, and be more productive. This is why women should take on mentoring and companies should set up and support mentoring matches to aid in women's success in their careers (Lekchiri & Kamm, 2020). In this male-dominated field mentoring gives women more confidence, better networking, career growth, and many more benefits. If more and more women partake in mentorship programs the research shows that women will gain participation in executive roles, leading to more women's success and overall greater company success in the construction industry (Turner-Moffatt 2019.)

Effective communication in construction is vital for success according to Fernando, Amaratunga, and Haigh (2014); the efficiency and effectiveness of the construction process strongly rely on the quality of communication that goes among the team members and other key stakeholders.

Effective communication plays a large role in the manager's ability to lead and motivate their team members. The way oral conversation is presented has a direct effect on how people retain information. It is important for speakers to speak clearly, and concisely, and maintain eye contact when the conversation is face to face. In order to be an active listener, the receiver of information should make sure they also maintain eye contact, listen objectively, and ask questions when the speaker has finished (American Institute of Contractors, 2018). According to the American Institute of Contractors 2018, these methods of effective communication help ensure that all workers are understanding roles, tasks, and expectations for the job.

**Research Methodology**

This qualitative research was conducted through an anonymous online survey and semi-structured interviews. The survey was sent out electronically to members of Cal Poly’s Construction Management Advisory Council. The survey included 10 questions asking the respondent to identify important topics to discuss with high school-aged girls looking at a career in construction. The survey also asked the respondent to identify their demographics so that it would help us see the difference in the way men and women working in the industry responded. The survey questions can be seen in Appendix A.

Interviews were also held with women who have been working in the construction industry with experience ranging from 2-15 years. The questions were aimed at getting their responses about what they believe to be key factors for success on the job site and for their career paths. There were also
questions pertaining to how they think young girls can be encouraged to be successful when exploring career paths in construction.

Interview and survey results

Members working in the industry were informed about the summer academy that the Construction Management department of the California Polytechnic State University was to be hosting. The members were asked what they would teach young women looking to join the industry. The survey received 22 responses with 9 identifying as females and 13 identifying as males. Although a majority of the responses were male, the researcher chose to more heavily consider the female responses so that we can use women's experiences in the construction industry to help us relate to what the high school girls will need to hear because they may be more likely to share similar experiences due to gender discrimination. All interviews conducted were with working women professionals. From this survey and interviews conducted, three major topics appeared: (1) effective communication, (2) career opportunities, and (3) mentorship.

Effective Communication

Responses from the surveys showed that all members in the industry highly value effective communication with 81% of the survey results listing effective communication as super important, and 31.8% of all survey results believed it to be the most important topic to teach. The following are survey responses from both men and women working in the industry when asked to explain why they thought effective communication was significant.

“Being a good communicator can get you through 90% of your problems. People respect and respond to leaders and people in positions of influence when they can effectively communicate”

“Effective communication - if you can't listen, explain, follow up & follow through, you won't make it in construction.”

“Communication - Business writing, know your trades, know the terminology, know the priorities for each, know how they relate to other trades on the project.”

“Effective communication - start with written communication (easiest to study & practice) & active listening (clarifying questions, labeling/repeating, etc)”

These responses all emphasize the need to understand the basics of effective communication, both written and oral, in order to succeed in the industry.

In an interview, a woman answered that productive communication is what she believes is the most important thing to teach young girls. She stated that there will always be many different personalities and you have to work together to have productive communication regardless of your differences and different ways of preferred communication. She stated that communication starts in the job site trailer and if you don’t have effective communication among your team then the job won't go well. She even recommends that the camp participants do what she does in her company. They take the Enneagram test. This personality test will show you which of the 9 personalities you fit best. This test lays out how you are likely to act under stress, how you work with others, and how you communicate under different circumstances (The Enneagram Personality Test, 2022). The interviewee said this has proven to be helpful because you have a deeper understanding of your team and can work around them and with them especially when it gets stressful, which is where communication tends to be weak. She said this has proven to be beneficial for her team's success because they have a deeper
understanding of how to work and communicate with each other when the job is under a lot of pressure, which is often when communication can get lost.

In other interviews with several women, they touched on the importance of effective communication. One woman mentioned how men in the industry will make it hard for you to be heard. Therefore, you must be loud, confident, and professional with what you have to say. She stated that you need to be prepared for push back but if you speak professionally, with calmness and directness, then you will be respected and heard.

**Career Opportunities**

Responses to the surveys showed that 62.5% of women respondents believed career opportunities to be super important. This is slightly higher than the 57.1% that believed it to be super important when we take the male responses into account. Below are some quotes from both the female and male respondents to the survey.

““The main barriers to entering the industry are lack of understanding of the opportunities and what construction entails”

“A lot missed about our industry and attracting talent to it is awareness around the career opportunities out there in construction.”

“Knowing what is out there is the first step to deciding if you want to pursue [construction]”

“Career opportunities - not just construction-specific jobs but owner representatives, suppliers, vendors, etc.”

“I think career opportunities are one of the most important things because our industry is already divided enough and we should have equality, so presenting higher-up positions and how to get there are key.”

What these respondents all have in common is that understanding career opportunities is key to success. Because there are so many career routes in construction it is easy to not know of a job that one could be successful in. With the proper education of career opportunities, individuals have the chance to grow and take on higher-up positions in career routes they will enjoy and thrive in.

In an interview with a woman who had been working in the industry for 13 years, when asked what she would teach young girls in a workshop she responded with career options. Her belief was that young girls and even young professional women aren’t made fully aware of what their options are. She stated that there are many career routes women can take in this industry that they will be very successful in, they just need to be made aware of what those options are.

**Mentorship**

Responses to the surveys showed that 50% of the women respondents identified mentorship to be super important and 38% believed it to be important. When asked to elaborate on the importance of mentorship, some of the women stated:

“Mentorship can help introduce women to the industry and teach them effective forms of communication in construction.”
“I think having the appropriate mentor/role model to look up to will be key in thinking a young girl can fill those same shoes.”

“Mentorship - is how you learn/problem solve and get input- Sponsorship is how you get the next opportunity”

This survey response aligns with what was said in the semi-structured interviews. The following are interviews with women who agreed that mentorship held an important role in encouraging women to be in the industry and help lead to their success.

The first interview was conducted with a woman who was working in her second year in the industry as a project engineer. The question asked what the respondee would do if given the opportunity to teach one thing to young women looking to start a career in the construction industry. She answered by saying to find a fellow woman mentor. She looks up to one of her project directors who has been working in the industry for fifteen years. The interviewee stated that having her as a mentor helps her see that she too can be successful in the male-dominated industry and stand up for herself when faced with gender discrimination. She also mentioned how a woman mentor gives people someone to help guide them with succeeding in their field because they have someone to connect to on a higher level who has an understanding of what they may be enduring. She stated how it gives the newer worker a closer connection to someone that will make it easier to go to someone when seeking professional advice for advancement.

Another woman who had worked four years in the industry answered in regards to mentorship too. Her answer included that it is inspiring to have a woman mentor to look up to. She stated that she feels there are struggles, like having a family, that women have to deal with more than their male peers, even though they have families of their own. However, seeing women juggle a healthy work-life balance and still be successful helps her quell her fears of wondering if she’ll have to choose work or family life over another.

Analysis of Surveys and Interviews

The following will be an analysis using the understanding gained from the research and from the survey and interviews to analyze how teaching high school girls that attend a summer build camp will gain success by being taught about career opportunities, mentorship, and effective communication.

Effective Communication

Effective communication was one of the most touched-on topics that came up in the interviews and in the survey. This is probably because the construction industry is nothing without communication. From owners to subcontractors, to colleagues, members of the construction industry are constantly communicating with each other.

For the Girls Build Summer Academy, the information from both the research (American Institution of contractors, 2018) and the survey/interviews lay out some important communication skills that girls should be taught in a classroom setting to be successful with communication styles. Some of these skills include effective listening (American Institution of contractors, 2018), how to effectively speak and keep the listeners’ attention in face-to-face conversations (American Institution of contractors, 2018), and our interviewee focused on having an understanding of your audience. The responses showed the importance of communication in both verbal and written styles.
When working in the construction industry one will be using written communication every day from emails to contractors, and other important documents. Since written communication is a vital part of the work that gets done there should be a workshop presented in the Summer Academy that will give them experience and practice writing using construction terminology in a professional style. This can be teaching them how to write professional emails.

Since meetings are also a key part of the construction industry the workshop should also touch on oral communication and active listening techniques. This practice will give the camp attendees an understanding of how to speak professionally, clearly, and be respected. In the camp, they can have the opportunity to give a presentation so they can work on their skills, or host a simulated meeting to gain an understanding of how to host and attend professional meetings.

Awareness of Career Opportunities

As stated one of the main themes that were seen in the research that examined the reasoning for the lack of women in the STEM field was lack of exposure. The research from Genoway (2014) and Hughes, Nzekwe, & Molyneaux (2013) shows when girls are introduced to STEM in early education and meet women STEM role models their confidence in joining STEM and their interest in the fields grow. While there is a lack of research that focuses on primarily construction, it can be assumed the same would apply because construction is a male-dominated STEM field. This was also a topic that showed up a lot in the interviews and survey results with women stating that having role models to look up to helps them guide their career path. This is why having educational summer workshops to introduce young girls to construction is vital. It gives girls the chance to be exposed to the construction industry.

Carnemolla & Galea (2021) show that many girls were unaware of career potential in construction. From the research gathered for this paper, it can be assumed that with limited knowledge of what the construction industry is many girls are going to think they are not meant for the industry. Genoways (2014) supported that this lack of exposure is due to a lack of education, lack of school-related activities related to construction careers, and a lack of female role models to look up to who are working in the industry.

Carnemolla and Galea, (2021) research highlighted that the lack of role models is a large reason why girls are not interested in career opportunities in construction and therefore are not aware of what they can do. Their research brought awareness that girls often saw construction as a heavily labor-intensive career. While some avenues of construction careers are labor-intensive, that is not all of the opportunities. However due to a lack of exposure and the lack of career opportunities in education that young girls don’t consider a career in construction.

Through this summer workshop, introducing these young girls to women who are currently working in the industry will give them the chance to see themselves as someone that can take on a construction career. Which could allow them to open up and discuss what the construction industry is.

The workshop academy aims to educate girls on what their opportunities are in construction. It should focus beyond just labor and working for a general contractor. This program should instead list all the avenues of construction careers that are available. This should include education on all the possible career routes that are within construction.

Mentorship
Through both the research and the collected data via surveys and interviews from women in the industry, mentorship is something that would be showcased to young girls looking to join the industry. There is research that showcases how mentorship is important for girls in a classroom setting such as that from (Hughes, Nzekwe & Molyneaux, 2013).

Using the gathered research and responses from surveys and interviews it can be concluded that women should seek support to aid them in having successful careers in a male-dominated field. By having support from other women they will have someone who relates to their struggles and who will help them advance in their careers. In a workshop setting, teaching this to young girls will help them understand the importance of mentorship. Additionally, they may be able to develop a mentorship relationship.

**Conclusion**

The purpose of this study was to have an understanding of how to gain more women's interest in the construction industry and how to encourage them to stay. The gender gap is slowly declining, however, with nearly 90% of the industry workers being male, there is still a long way to go. There has been a lot of research done to see how women can be encouraged to work in the industry but not much action has been taken. The California Polytechnic State University Girls Build Summer Academy will present a great opportunity to apply this research that showcases important aspects that are believed to help create successful women leaders in a male-dominated industry.

Mentorship, both teaching and applying it, will help give those looking at joining the construction industry both a role model and a mentor to discuss career advancements.

Teaching career opportunities allow for a deeper understanding of what the construction industry is. It opens up to the girls what they can do, how they can advance, and where they can use their specific skill sets to succeed.

Effective communication was one of the most brought up topics in both the surveys and the research. Having worship in both written and oral communication gives the camp participants the opportunity to learn how to be effective leaders in their industry. It gives them a glance into how they need to communicate in the industry so that they can be understood, respected, and successful.

The research, survey, and interview responses all stated that effective communication, career opportunity awareness, and mentorship are three of the most significant factors in being successful in the construction industry. Research showed how early exposure is necessary to encourage more young girls to join the industry. This summer academy will bring both exposure and learning objectives that gives girls confidence and the tools to be successful in exploring a career in the construction industry.

There were some limitations to the research. All the women interviewed for this research attended the Groundbreaking Women in Construction annual conference, which may result in some bias in their responses. The survey result also had limited respondents making the sample size insufficient. There is also a lack of research that analyzes specifically women's career growth in construction as well as women's reasonings for entering and leaving the industry.
References


Appendix A
Survey sent out to Cal Polys Construction Management Advisory Council

Women In Construction Boot Camp Leadership program

Cal Poly students will be creating a summer Boot Camp for high school aged girls with the intent to teach them basic construction management skills, safety, and to complete a community-based construction project. During this Boot camp there will be an one-hour discussion each day focusing on a different topic. This survey is requesting your input on the leadership and professionalism topics that should be included in discussions with high school girls. The focus of this survey will be to help showcase important leadership aspect to young women looking to join the industry.

This survey will help me identify what you believe to be important topics to bring up to young women who are looking at starting a career in the construction industry.

This survey consists of 10 questions and should not take more than 15 minutes.

1. Please rank how important each of the topics below are for introducing young high-school aged girls to the construction industry.

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<th>Really not Important</th>
<th>not Important</th>
<th>Neutral</th>
<th>Important</th>
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<td>Courage</td>
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<tr>
<td>Empowerment</td>
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<tr>
<td>Authenticity</td>
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   | Effective
   Communication  | ○                    | ○             | ○       | ○         | ○               |
   | Strength          | ○                    | ○             | ○       | ○         | ○               |
   | Handling Conflict | ○                    | ○             | ○       | ○         | ○               |
   | Mentorship        | ○                    | ○             | ○       | ○         | ○               |
   | Career Opportunities | ○              | ○             | ○       | ○         | ○               |
2. Of the topics above, please list the topics in order of importance. Place the topic you think is most important at top, with the topic you feel as least important at the bottom.

- Courage
- Empowerment
- Authenticity
- Effective Communication
- Strength
- Communication in the industry
- Handling conflict
- Mentorship
- Career Opportunities

3. Please elaborate on your top three ranked activities and why you ranked them as most important.

4. What subtopics would you like to include within those top three choices?
   For example, if you selected mentorship, what subtopics are important for mentorship? Networking, developing a check-in schedule, etc.

5. Is there anything not on the list above that should be offered?
6. What type of conversations do you think are most significant for young girls/women looking to enter the industry?


7. Do you have any advice you would like to give for someone creating a women in construction boot camp?


8. If you had a high school daughter what advice would you give her if she was considering a career in construction?


9. How many years have you been working in the construction industry?


10. What gender identity do you most identify with?

   ○ Woman
   ○ Man
   ○ Non-binary
   ○ Transgender
   ○ Transgender Man
   ○ Transgender Woman
   ○ Prefer not to say
   ○ Other