Value of Exposing High School Students to Skilled Trades

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The construction industry is facing dramatic challenges, specifically labor shortage. Due to a lack of skilled craftspeople working in the field, projects result in delays and increased project costs. Throughout the United States, construction companies are looking to find skilled workers to meet the projects workforce. In order to expose people to the construction industry, a presentation and survey was conducted amongst high school students. The concept consists of majority of high school students not being informed about the career opportunities in the construction industry. Consequently, by exposing students to the construction industry would benefit the industry itself and recent high school graduates. This research allowed us to build an understanding of the knowledge of potential apprentices. This paper presents data analysis and suggests how this information may be used in order to create a reliable workforce for the industry’s demand.

Keywords: Skilled Trade, Central California, Carpenters Local Union, Labor Shortage, Career Paths

Introduction

Every construction company is being impacted by a certain issue, which is the current labor shortage. They do not have enough tradespeople or skilled laborers available to work on construction projects. About 86 percent of construction firms are having trouble filling available positions (Riccardi, 2016). A 1982 Construction Industry Cost Effectiveness identified the need of 250,000 trained/craftsmen per year, where only 50,000/year were entering the workforce (Weirauch, 2003). The reasons for the lack of trained workers is known through generalizations on the construction industry as a whole. Since the baby boom generation is reaching retirement, it is projected that there will be a lack of workers to fill in these jobs (Costanzo, 2018). In addition, “The Great Recession of 2008 forced many contractors working in skilled trades out of business” (Costanzo, 2018) and potentially cause them to leave the field. Many point the Great Recession as one of the causes of labor shortage.

Due to the lack of skilled craftspeople, the construction industry faces many issues. The labor shortage causes many firms to inflate their schedules and increase direct costs (Sedam, 2016). Without skilled workers, an increase of project costs, schedule delays and safety impacts lead to labor shortage (Weirauch, 2013). If under qualified workers are being used in job sites rather than qualified workers it raises concern for worker safety (Kenealy, 2014). You need the right people on the job that have gone through training. Negative effects from the shortage of skilled workers affects everyone in the construction project. The need of younger people is needed in the construction industry.
Although the construction industry is facing a labor shortage, the problem is how to get people to join the industry, especially recent high school graduates. High school students are not being exposed to the construction industry primarily because there are no electives regarding this in their school. High school students focus more on general requirements rather than electives because this is what they need in order to go to a junior college or four-year university. This is the reason why electives are being removed from high schools as well as limited funding at the state level. “About 46% of public spending on elementary and high schools is derived from local government budgets” (Chen, 2018). "The size of the local tax base is one reason for the large disparity on spending” (Chen, 2018). In order to provide students with greater elective opportunities, each school community should have local financial support. It’s also been stated that shop classes in Los Angeles Unified School District has already eliminated 90% and the rest will be gone by the end of 2013 (Brown, 2012) because it is a burden. This means that Los Angeles Unified School District has already eliminated all shop classes. These high students might express an interest in the industry if local unions were to talk to them. The solution to this will be to implement electives regarding any type of trade into the school system.

A Focus on Carpenters

Even though every construction trade is in need of skilled workers it is difficult to find the causes, effects, and solutions to each trade. For this research-based paper, the skilled trade of carpenters will be examined in more detail. Carpenters play an important role in the construction industry. Their expertise and talents cover a multitude of different areas such as: installing metal frames, millwright, cabinetmaker and millwork, flooring and much more. From this, it is reasonable to conclude that there will be major consequences for construction firms that fail to obtain sufficient amounts of qualified carpenters. Even though the authors mentioned every trade from Appendix A and B, we wanted to see if there was more of an interest in carpentry. This will allow us to give students information of a Carpenters Local Union near them.

Thomas Downey High School in Modesto, CA

This study will analyze the interest of skilled trade career paths among students attending Thomas Downey High School in Modesto, California. Specifically, this study is aimed for students taking elective courses involving construction, such as Construction Tech 2, Construction Tech 4, and Electrical Tech 2. Construction/Woodworking Technology 1-2 is an introductory course to the construction industry that allows students to learn the proper use of hand tools and equipment. In these courses the students have the opportunity of getting hands on experience and building a mobile home. High school junior and seniors play more of a bigger part of building the mobile home since they have more experience. The mobile home ends up being donated so people can live on it, so it has to go through inspections before moving on. Appendix D shows what students do in these courses which consist of: framing, electrical outlets, and roofing. This course also involves instructional training in areas such as plans, work layout, and ordering material. Construction/Woodworking technology 3-4 is a sequential advanced course. The intention is to expose students to the demand of skilled work in the construction industry and the benefits.

Methodology

The objectives of this research are as follows:
- Expose students to another optional career path.
- Consider what trade majority of students are interested in.
- Give suggestions to local unions to help expose students to the industry.
Much of the data collected from the surveys is qualitative in nature and serves to give a better understanding if whether exposing students to the construction industry would increase their likelihood in joining a Carpenters local union or other skilled trade. The qualitative study was done through a pre and post survey. The primary survey was given to the students taking a Construction tech/Electrical tech course at Thomas Downey High School prior to the presentation. In the pre-survey, the authors asked for general information on the student, which included: gender, grade level, their understanding of the construction industry, whether they had an interest in pursuing a career path in the construction industry. The authors wanted more detailed information on what career path each student was thinking of pursuing, so students were given options such as, Military, Working full time after graduation, Junior College, Four year University, or other/not decided. The purpose of Appendix A was to see if there was any interest prior to Appendix B.

Appendix B was given after Appendix A was answered by all students. Through Appendix B, the authors presented on what “skilled trade” consisted of and the viable career paths students could take. Appendix B also consisted of the authors personal experiences as Carpenter Apprentice Interns. Moreover, students were presented with information about local unions, specifically the United Brotherhood of Carpenters and Joiners of America. Appendix B also involved information on the Pre-Apprenticeship and its completion requirement prior to joining the United Brotherhood of Carpenters and Joiners of America. Furthermore, students were informed about the Carpenters Training Center, where apprentices learn about safety, usage of tools, and hazards. Students were educated on certifications they could obtain through the Carpenters Training Center, such as OSHA and equipment use. Additionally, students learned about the disadvantages of the industry, such as the dependence of the economy and recession periods that could cause a shortage of workers demanded. The authors also illustrated the benefits which included: hands-on experience, health insurance, pensions, and gaining skills while making money. Likewise, students learned about the emersion of technology in the industry, specifically the Ekso Vest. Lastly, the authors provided contact information on the nearest training center to Thomas Downey High School in Modesto, California which resulted in Carpenters Training Committee for Northern California- District Office 3 in Pleasanton California.

Appendix C was given following Appendix B. The authors once again asked their understanding about the trades in construction and whether the student was now more inclined in pursuing a career in the construction industry after the presentation. The students were also asked whether the presentation was productive in helping them learn and understand more about the industry. Lastly the students were asked whether they thought social media could help students learn or become more exposed about the opportunities in the skilled trade career path and if more industry members got involved directly with their high school whether more students would have a greater interest in the construction industry. The purpose of the second survey was to see if whether exposing students to the benefits of the construction industry had any effect in their choice of pursuing a career path in this industry.

Results

The data collected was a consensus of the students enrolled in Construction Tech/Electrical tech courses at Thomas Downey High School in Modesto, California. Both surveys conducted by the authors were given to those students who attended the presentation. Both surveys were also kept anonymous.

Pre-Survey Results
The data received from the students of Thomas Downey High School helped illustrate the interest of skilled trades as future career paths. The first survey illustrated the majority of students in the courses were Seniors, 34 of 92, approximately 37%. Of the 92 respondents, there were 8 females (8.7%), 78 males (84.7%) and 6 who preferred not to specify (6.5%).

Figure 1 pictured below, illustrates the the percentages of each career path based off the pre-survey results. 40.22% of students enrolled in construction tech courses are looking to attend a Junior College, following a 29.35% students are looking to work full time upon graduation.

![Figure 1: Student’s Plan upon Graduation](image)

The first survey also asked for the student’s understanding about the trades in construction, which illustrated 43 of the 92, 46.74%, respondents answered with fair, 41 of 92 (44.57%) answered with moderate, and 8 of the 92 (8.70%) responded with good. The survey also found that 65 of 92 students (70.65%) knew of someone who has a profession in the trades. 31 of the 92 students, (33.70%), planned on pursuing a career in the construction industry, leaving 64.13% of respondents answering no, and 2.17% as undecided. Students were then asked what trades were of interest and to check all that applied. Electricians was the greatest of interest at 46.74% and Carpenters following at 42.39%, represented by Figure 2 pictured below.
The following questions on the pre-survey illustrated the student’s interest of getting hands on experience, with 75 of 92 respondents, 81.52% answering yes. Lastly students were asked whether they would like more information, where 46 of 92 respondents, 50.0% responded with yes.

**Post-Survey Results**

Appendix C was conducted by the authors following Appendix B. Once again students were asked about their understanding about the trades in construction, 23 of the 92 respondents answered with fair (25.00%), 39 of 92 with Moderate (42.39%), and 30 of 92 with Good (32.61%). 85 of 92 students found this presentation helpful in learning more about the construction trade industry, (92.39%), as illustrated below in Figure 3.
Similarly, 86 of 92 students, thought if more industry members and local trades got directly involved with their high school, then students would have a greater interest in pursuing a career in the construction industry. The results also indicated that 76 of 92 students found that social media could help influence students and learn more about opportunities in the skilled trade career path, as further analyzed under the subhead of Future Research.

Students were then asked whether after the presentation, they would be more inclined to pursue a career in the construction industry, with 59 of 92 respondents answering yes, (64.13%). Lastly students were asked if they would like more information or wished to be contacted by a local union, with 25 of 92 (27.17%) responding yes.

**Survey Analysis**

The information presented illustrated an increase in the likelihood of pursuing a career in the construction industry from 31 in the Pre-Survey to 59 respondents in the Post-Survey answering yes as illustrated in (Figure 4).
The authors noted a decrease in the students want for more information and wishing to be contacted by a local union as stated in Question 9 in both the Pre-Survey and Post-Survey. This may be caused by many reasons, however three explanations could be students felt comfortable enough with the information presented through the presentation, students were not interested in joining a local union or being contacted, or students did not wish to be contacted because they were not of age, hence lower class level.

The information from Appendix A, question four and Appendix C, question three illustrated the students understanding of the trades in construction prior and after Appendix B was presented.
The authors noted a decrease in the fair and moderate understanding. However, Appendix C results concluded an increase of Good Understanding from 8 of 92 to 30 of 92. We can conclude that Appendix B helped the students understanding about the trades in construction.

**Conclusion**

The aim of this study was to find out if high schools students were interested in the construction industry. According to the data collected through the surveys, there was an approximate increase of 30.43% of respondents willing to pursue a career in the construction industry. In order to resolve shortage of skilled workers, the industry should target students at a younger age and implement programs related to construction into schools. This will allow the students to become more aware of the construction industry since they are not being informed about the career opportunities. It is also important to note that majority of high school students were interested in working upon graduation, hence if local unions partnered with high schools, students might express a greater interest. In addition, the data may be skewed since we targeted students who already have exposure to construction and have prior knowledge of the industry rather than the general population.

**Future Research**

The authors asked students whether industry members/local trades involvement could help influence their decision. Majority of the students (93.48%) agreed with this statement. The authors also asked in the post-survey whether social media could help students learn about the opportunities in the skilled trade career path, again the majority of students agreed to this statement. A majority of the student population enrolled in the Construction and Electrical
Tech courses at Thomas Downey High School in Modesto, California believe through this exposure students can learn more about the trade industry. (Table 1) illustrates the percentage of students that have social media accounts.

Table 1

*Percentage of teenage and young adult internet users that use Social Media*

<table>
<thead>
<tr>
<th>Social Media</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snapchat</td>
<td>79%</td>
</tr>
<tr>
<td>Facebook</td>
<td>76%</td>
</tr>
<tr>
<td>Instagram</td>
<td>73%</td>
</tr>
<tr>
<td>Twitter</td>
<td>40%</td>
</tr>
<tr>
<td>LinkedIn</td>
<td>9%</td>
</tr>
</tbody>
</table>

It might be in the interest of the Local Unions and the Construction Management Department of the College of Architecture and Environmental Design of California Polytechnic State University San Luis Obispo to look into advocating the construction industry through social media to the youth.
Appendix A
Skilled Trade Survey

Check each statement that best fits your opinion

1. What grade are you in?
   □ Freshman   □ Sophomore   □ Junior   □ Senior

2. What is your gender?
   □ Female       □ Male       □ Prefer not to specify

3. What are you planning to do after high school?
   □ Working after graduation   □ Attending junior college
   □ Attending four-year university   □ Military
   □ Other- please specify:

4. How much do you know about the trades in construction?
   □ Fair understanding
   □ Moderate understanding
   □ Good understanding

5. Do you know of someone who has a profession in the trades?
   □ yes
   □ no

6. Are you planning to pursue a career in the construction industry?
   □ yes
   □ no

7. What trades are you interested in? Please check all that apply.
   □ Carpenters
   □ Iron Workers
   □ Plumbers
   □ Electricians
   * Other, please specify:

8. Do you have an interest of getting hands on experience?
   □ yes
   □ no

9. Would you like more information?
   □ yes
   □ no
Skilled Trade Careers

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Skilled Trade?

Jobs which require specific training and hands on experience

Skilled Trades fall into the following categories:

- Construction and Maintenance
- Transportation
- Manufacturing
- Service

CAL POLY
SAN LUIS OBISPO
Different Career Paths

Experience as an Apprentice

Summer 2017
CAL POLY
http://www.osidenews.com/

Summer 2016
http://www.pmaine.com/projects/view/2709

http://dilpowerandindustrial.com
https://static.wixstatic.com
How do I know if skilled trades are for me?

Do you enjoy...

- Working with your hands and putting things together?
- Being physically active?
- Working with new technologies?
- Understanding how things work?

Pre-Apprenticeship

6 week intensive training course

- Combines both classroom and shop training
- Classes are held 4 days a week, 9 hr days

PAT is FREE and you receive a stipend for participating

- ($60 at the end of each week you complete)
- All tools and materials are provided
Carpenters Training Center

Get Training on:

- Safety & Hazards
  - OSHA Certified
- Usage of Tools
  - Certified on Equipment such as: lifts, scaffolding

Carpenters Training Center Video

Click to add text
Disadvantages

- Depends on the economy
- Savings
- Shortage of workers demanded

Benefits

- Hands-on
- Gain skills while making $$$
  - Median usual weekly earnings of $1,041 in 2017
- Demand due to labor shortage
- Health Insurance
- Pension
Training Center Near You

Carpenters Training Committee for Northern California - District Office 3
2350 Santa Rita Rd
Pleasanton, CA 94566 US
Phone: (925) 462-9644
Fax: (925) 462-5293

Email: mlieser@ctcnc.org

http://www.ctcnc.org/
Appendix C
Post Survey

1. What grade are you in?
   ☐ Freshman    ☐ Sophomore  ☐ Junior    ☐ Senior

2. What is your gender?
   ☐ Female       ☐ Male       ☐ Prefer not to specify

3. How much do you know about the trades in construction after the presentation?
   ☐ Fair understanding
   ☐ Moderate understanding
   ☐ Good understanding

4. Do you have an interest in this career path?
   ☐ yes
   ☐ no

5. Do you think this presentation helped you learn more about the construction trade industry?
   ☐ yes
   ☐ no

6. Do you think if more industry members/local trades got involved with high schools, students would have a greater interest in the construction industry?
   ☐ yes
   ☐ no

7. Do you think social media could help students learn about the opportunities in the skilled trade career path?
   ☐ yes
   ☐ no

8. After this presentation, would you be more likely to pursue a career in the construction industry?
   ☐ yes
   ☐ no

   *If answered yes to the above question: What was it from the presentation that attracted you?
     ☐ Salary
     ☐ Innovation of technology
     ☐ Hands-on experience

9. Would you like more information, and wish to be contacted by a local union?
   ☐ yes
   ☐ no

   *if answered yes, please provide email and which trade
These are few images of the current projects students at Thomas Downey are currently involved with which include: a three bed-1 bath mobile home, dog houses, benches, storage containers, scaffold set-ups, amongst other projects that include wood work.
References


U.S. Teens: Most Popular Social Media Apps 2017. Statista