

# Confidence Analysis of Superintendents Trades vs. School

**Paul S. LaVanne**

California Polytechnic State University  
San Luis Obispo, California

Today, knowledgeable and reliable superintendents are in high demand throughout the construction industry. However, it seems to be becoming more and more uncommon for a superintendent to come up through the more traditional route via the trades. It appears that it is becoming more common for superintendents to attend a university and attain a degree relating to construction. This begs the question though, does this new generation have what it takes to match their counterparts that come up through the trades? With this new direction being taken, it makes us wonder if universities are helping set a solid foundation for these superintendents. This paper focuses on several main skills that were believed to be commonplace in the superintendent's everyday work. It aims to do this by gauging their confidence levels and also sets about to determine if these new university superintendents have what it takes to become lasting superintendents.

**Key Words:** Construction, Superintendent, Trade, Carpenter, Foreman, College, School, University

## Introduction

As stated by Gunderson, Barlow, and Hauck the construction superintendent is responsible for the on-time and within budget completion of construction projects (Gunderson 1). In creating these new areas within the built environment, the superintendent plays a key role. The built environment often "refers to the man-made surroundings that provide the setting for human activity, ranging in scale from buildings to parks...the humanitarian-made space in which people live, work, and recreate on a day-to-day basis" (Wikipedia, 2017). As stated by Steven Shapiro in his article "The Most Important Financial Player in a Real Estate Development Project? Examining the Role, Value, and Impact of a Quality Construction Superintendent", he goes as far as to state that superintendents are "Often armed with cast job experience but limited academic credentials, the superintendent will likely face daily challenges of logistics, organizational behavior, resource allocation, and scheduling the could perplex an MBA graduate" (Shapiro, 39). Later on in the same article, Shapiro states, "... the superintendent must be skillful in dealing with owners, brokers, and other interested parties" (Shapiro 40).

In the Building Partners article, it is made reference to how "not all [high school] students are headed for careers in corporate America. A new campaign brings attention to many lucrative careers for future tradesman" (Patton, 72). This group had been working out of Florida focused on encouraging high school students to pursue a future in the trades back in 2005. The group offered the students' construction related career-fairs that incorporated fun, interactive activities. This is a great opportunity for many students who don't want to continue to attend school and want to get out into the real world. However, there are still some that would like to pursue a degree. This program offered these students a chance for them to get interested in the world on construction and possibly want to educate themselves further on the topic. Today, that is even more of a possibility as compared to previous generations. According to the Cappex.com article, "Construction Management Colleges", there are over 100 universities across the U.S. that offer a degree in construction management. In California alone, there are at least 6 universities with degrees specifically called Construction Management. Traditionally, those who attend these universities tended to go towards the management side of the business, but over the last 10 or so years, we have seen an increase in the number of graduates who continue along the site management/superintendent route instead.

These are all areas of interest that I tried to cover in my survey questions to get the best understanding of how confident superintendents are in the abilities. This paper is proposing that superintendents that come up through the trades are more confident in their abilities than those that attend universities. In essence, I hypothesize that the skills learned from working and being in the trades gives those superintendents more confidence than their counterparts that came from a university with a degree.

## **Objective**

The objective of this paper is to identify the ages and primary education (university vs. trades) of superintendents. This will be used to identify if there is a newer trend where superintendents are now deciding to come by the university route rather than through the trades. Additionally, the goal of this project is to identify what makes these superintendents' who went to college different than one that came up through the trades. To do these, the superintendents will be asked to identify where they feel most confident over several different areas.

## **Methodology**

To determine these superintendents' confidence levels, I developed a survey consisting of 14 questions that could be filled out in 5-10 minutes. These questions ranged from confidence using modern technology and computer programs to site management and communication. These questions pertaining to confidence were evaluated on a scale of 1-10 with 1 being not confident and 10 being extremely confident. There were additional question that asked about age, years spent as a superintendent, as well as their primary education. Once the survey was finalized, I reached out to the Human Resources representative at PCL Construction in Los Angeles. She was able to assist me in distributing the survey to approximately 60 superintendents in their Los Angeles, San Diego, Seattle, and Hawaii districts.

The survey ran for 2 weeks and out of the 60 or so superintendents that my survey was sent to, I received 27 responses. Of those that responded, there were 16 whose primary education was Trades Training, 10 had a University Level degree in fields related to construction, engineering, design, or management. There was just one respondent that had gone to university and received a degree in something other than those listed previously. This lone respondent has been left out of calculations for the purposes of this research.

## **Survey Analysis**

The first three questions I asked in my survey were to determine age, time spent being a superintendent, and primary education. This line of questioning was to separate out my two main target groups of those superintendents that attended a university compared to those that came up through some sort of trades program/training. The results were averaged and are shown in Table 1. They showed that both demographic groups both became superintendents within several years of each other. Those that went to university began around 29.5 years old, those that were in the trades were just four years behind them at 33.5 years old.

Also, based on the respondents ages (Shown in Figure 1), it becomes clear that there has been an influx of new superintendents that are now coming up via the university route rather than what would be deemed the more traditional trades route. However, that is not to say that the trades aren't creating superintendents as well. We see that 80% (8/10) of those that attended university and just 31% (5/16) of those that came up through the trades are within the bracket of 0-5 years of experience as a superintendent. If this trend is to continue, there is a chance that more superintendents coming from university programs will continue to take the superintendent route and there will still be a steady stream of superintendents that are brought up from trades programs.

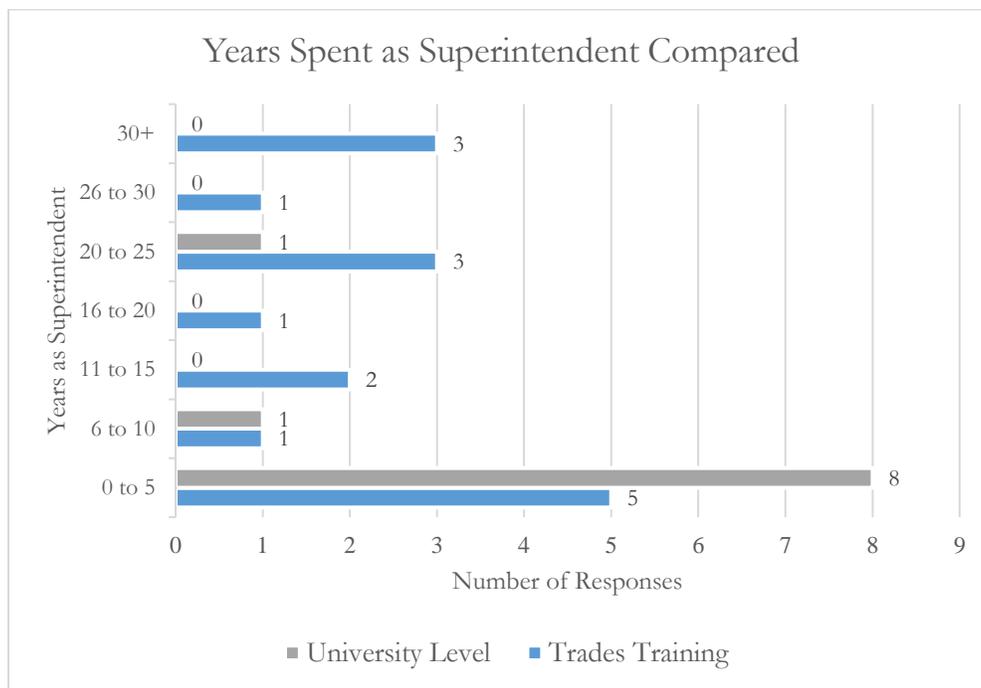
Table 1

*Participant Demographics*

<b>Primary Education</b>	<b>Average Age</b>	<b>Average Years as Superintendent</b>
University Level (Construction, Engineering, Design, or Management Major)	32	2.5
Trades Training (Apprenticeship/Journeyman, Union, Business Management, etc.)	47	13.5

Figure 1

*Numeric Breakdown of Years as Superintendent*



The next six questions I asked were to gauge the superintendents' confidence level in using modern computer programing. The reason for this is that I believed that those who attended university would be more confident in their abilities rather than those that came from the trades due to previous exposure with these programs. The programs I focused on were Microsoft Excel, BlueBeam, Revit, NavisWorks, P6 (or similar scheduling software), and PlanSwift (or similar estimating software). I chose to focus on the programs due to how commonly they are used within many construction companies. The results of this section are listed in Table 2. The number in each section represents the average confidence level of both demographic groups.

Across the board, it is apparent that those superintendents who came from a university are often more confident in their abilities to use the computer programs when compared to their counterparts that came up from the trades. However, this doesn't remain true for all categories. We see that the superintendents who came from the trades are slightly more confident in their abilities to use Revit. But, neither of these groups were confident with Revit and this was the lowest scored question in the entire survey.

There was also a lack of confidence in several other categories. We see low confidence scores in all categories for those that came up from the trades with their highest confidence rating coming in the Excel category at 5.96. From both groups though, we see low confidence in both NavisWorks and PlanSwift. These low scores are likely due to lack of use and not being taught how to navigate the programs properly.

Table 2

*Participant Average Confidence Level: Computer Technology*

<b>Primary Education</b>	<b>Excel</b>	<b>Bluebeam</b>	<b>Revit</b>	<b>NavisWorks</b>	<b>P6</b>	<b>PlanSwift</b>
University Level (Construction, Engineering, Design, or Management Major)	8.20	7.80	2.50	4.20	7.60	3.80
Trades Training (Apprenticeship/Journeyman, Union, Business Management, etc.)	5.96	5.19	2.63	2.38	4.06	1.75

Next, I asked a question that I felt could give both university and trades trained superintendents a chance to show their confidence in using modern surveying equipment. The pieces of equipment that I focused my question around were GPS, data collectors, and a total station. I felt that these tools would be ones that both of these groups would be able to show off what they were taught during the time coming up to becoming superintendent.

I imagined that those that came up from the trades would have likely used the more traditional equipment before and would be confident in their skills translating to some of the more modern devices being used. Likewise for those that came from university, I believed that their confidence would be high in their abilities to understand the technology aspect of it but possibly struggle with the fundamentals of surveying. The results of this question are labeled in Table 3 and are right on line with what I had anticipated. Neither group was overly confident in their abilities to use this equipment but not completely unsure of themselves either.

Table 3

*Participant Average Confidence Level: Modern Survey Equipment*

<b>Primary Education</b>	<b>Modern Surveying Equipment</b>
University Level (Construction, Engineering, Design, or Management Major)	4.70
Trades Training (Apprenticeship/Journeyman, Union, Business Management, etc.)	4.69

The next group of questions related to the superintendents confidence in their ability to understand field means and method, communicate with subcontracts as well as management within the company. I had anticipated that these questions would favor those superintendents who came from the trades due to their previous experience working on site.

The results from this section of question is listed in Table 4. The results I got were not completely in line with what I had expected. While I had expected the trades' superintendents to be more confident, I was expecting there to be a larger gap between the two groups than what the results show. They showed that there was very little difference between the two groups actually. Both university and trades trained superintendents scored themselves very similarly to each other. There was less than a half point difference between the groups over the three questions. The

largest gap in average confidence level came at with their confidence to communicate with subcontractors (0.38 points) and followed closely by their confidence in understanding field means and methods (0.36 points).

Table 4

*Participant Average Confidence Level: Site Management*

<b>Primary Education</b>	<b>Field Means and Methods</b>	<b>Communicating w/ Upper Management</b>	<b>Communicating w/ Subcontractors</b>
University Level (Construction, Engineering, Design, or Management Major)	8.70	8.80	9.00
Trades Training (Apprenticeship/Journeyman, Union, Business Management, etc.)	9.06	9.00	9.38

My final question related to something that I had noticed during my time interning over the last few summers. This was that it didn't always seem that those who had come up through a university program were not always taken seriously by the subcontractors. This final question addressed this issue and was to find out whether or not by the time one becomes a superintendent, if there is still an issue of being taken seriously by subcontractors.

The results of this question are listed in Table 5. Here we can see that in the end, both groups are fairly confident that subcontractors take them seriously. It does become clear though that there are some superintendents within the university group that don't feel quite as confident. When looking at the individual responses, I saw that just 20% (2/10) university superintendents scored themselves as a 10 in confidences as opposed to 56% (9/16) within the trades superintendents.

Table 5

*Participant Average Confidence Level: Taken Seriously by Subcontractors*

<b>Primary Education</b>	<b>Taken Seriously by Subcontractors</b>
University Level (Construction, Engineering, Design, or Management Major)	8.90
Trades Training (Apprenticeship/Journeyman, Union, Business Management, etc.)	9.56

**Conclusion**

Based off of the first three questions we see that there is now a surge in young superintendents who are making their way up after attaining a degree from a university. This new wave of superintendents though does not seem to be pushing out any of the trades' superintendents though with there being a solid distribution of younger and older superintendents that had come from the trades. If this trend is to continue, I would anticipate this distribution remaining the same for the trades and that the university superintendents' distribution would become more even as time goes on.

Additionally, I found that there are certain things that make superintendents who attended a university different than those that worked their way up through the trades. As noted in my first set of questions relating to computer technology, there was quite a difference in confidence level between the groups. This is not cause for due to the

specialized nature of the programs and that often times they (P6, PlanSwift, and Revit) are controlled by one or two people and not directly modified/used by the superintendent. However, it could be worthwhile to have superintendents take a course or two to help them get a better understanding of how the programs work. This would hopefully give them the skills necessary to modify/update them if necessary. Once we get past the first set of confidence related questions, the responses from both groups are very similar. This is a good sign for these groups of superintendents because this likely means that projects are moving forward with little to no issues along the way.

In the end though, I would have to reject my initial hypothesis that the skills learned from working and being in the trades gives those superintendents more confidence than their counterparts that came from a university with a degree. It appears that there is not enough evidence to confirm this hypothesis and in fact, leads to suggest the exact opposite actually.

### **Future Research**

I would have liked to expand on this line of questioning and reach out to a broader network of superintendents. This is due to a very small sample size and the limited number of external resources available. Ideally, there would be at least 40-50 superintendents per group (trades and university). This would give us better results and a better average to compare against one another.

For possible future research topics, I would consider exploring the advances in computer technology and surveying/interviewing superintendents to see how often they actually use those programs. It could also be worth noting their opinion on the usefulness of each if they are impactful in their everyday tasks. Also, depending on these responses it might be worth seeing if they would possibly like to spend time learning more about the software and ways of better navigating them.

Another possible idea would be to see how these groups would rate each other on these same categories. For instances, how would a superintendent from the trades rate a superintendent from a university on their ability to understand field means and methods? This could lead to interesting results that could be far different than what was noted in this paper.

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