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# **IVETA**

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# CONSTRUCTION WORKERS' VIEWS ON HIGH SCHOOL EDUCATION AS A BARRIER TO SUCCESS IN THEIR FIELD

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## ABSTRACT

This study reviews one of the factors that prior studies have failed to consider as barriers to post-secondary success. The study sample for this project was workers from the construction industry. An absence of research on post-secondary education success, from the perspective of workers was found. A study was undertaken to fill that void, producing 175 nationwide responses to an online survey of construction workers. The survey identified how well these workers believe their high school education prepared them for success in their careers, whether high schools are preparing current students better, or worse, and what secondary education systems need to do differently to improve students' success in this industry. The survey included some open-ended questions. Twelve in-depth interviews were conducted following up on key points. A treasure trove of valuable information was produced. Due to the amount of data collected this article is only able to summarize some of the key outcomes of the survey.

**Key Words:** *Construction Workers, High School Education, Workers' Views on Education, Post-Secondary Education Success*

## Introduction

Life is a continuous teacher and humans are life-long learners. It was an early career where this author would eventually become a bridge and highway construction manager that started him learning that workers are rarely ‘asked’ their opinions. They are generally ‘told’ what to do. During a second career that spanned over a quarter of a century working for unions the author continued experiencing how the people who know the most about the job, the people who do the work every day, are the least likely to have their input sought out. Rooted in these lessons learned became a lens through which the author came to view problems, challenges, and questions: How would the people doing the job answer this question? When the question was raised ‘What are the barriers to post-secondary education successes?’ it seemed that the most logical place to begin was to ask those former students, now workers. As a practical matter, a study could not ‘boil the ocean’ and study all forms of jobs, so the construction industry was selected for this study.

First, what is success? Success is not an abstract concept. In 1931, James Truslow coined the term ‘The American Dream’ to describe a land or country where life is better, richer, and fuller for everyone. A belief that upward mobility is possible for everyone, regardless of the growing inequality in the United States and the challenges individuals face. Dreams that workers could achieve a better life for themselves, and generations of loved ones to come, through the fruits of their efforts, regardless of race, class, gender, or zip code of origin. Today, these dreams have become fantasies or figments of imaginations for most Americans (Wise, 2015). For students leaving high school, embarking on their own path to the American Dream—does that include College or University? Trade school or Community College? Getting a job? —students encounter difficult decisions (Pope & Fermin, 2003).

## Review of Literature

Initial searches for research that focused directly on how workers evaluated or provided feedback on how well workers believed their secondary education helped to prepare them for success in a post-secondary education workforce produced almost no results. What the searches did produce fell broadly into one of three categories: a) What do education professionals/institutions think workers and the workforce need; b) What do businesses think of workers and/or think of workers’ needs; and c) Workers, are subjects to be studied, not to be talked to or to ask questions of. The literature review of what workers think of their secondary education found existing research to be almost nonexistent. There is a considerable amount of material that shows what has been riling up students and workers increasingly over the past few decades, taking to the streets to protest issues of concerns around decreased access to success (Buchanan, Bui, & Petel, 2020). To understand why so many workers are not able to achieve the desired success we need to analyze what barriers to success may exist for those workers.

Before analyzing what workers think about their success or education, we need to first understand some of the historic influences on work and working in the United States. Sexism, racism, and classism create barriers in the workplace, as well as our society. The

intersectionality of what makes us different has been exploited for years, often pitting worker against worker (Cross, 2017). It is through the interest convergence of workers of all races, religions, sexes, or any other barrier being used to keep workers separated, coming together, and working collaboratively, that will raise the living standards for all workers (Hogan, 2019). Intersectionality is a component of a theory, critical race, that identifies the interlocking of systems of power and its impact on marginalized portions of society (Gillborn, 2015). The term intersectionality was first used by professor Kimberlé Crenshaw in 1989 to describe how individual characteristics such as gender, class, and race, overlap one another intertwining their interests (Coaston, 2019). Intersectionality is one of the two frameworks used in this study about workers.

### **The History of Working in the United States**

The search for free or cheap labor is in this nation's roots. In the 1500's England established houses of corrections to "train the children of the poor to be grouped up in labor and work" (Isenberg, 2016, p. 21). Some early English visionaries saw the new world as one big workhouse existing to build the wealth of the English nobles (Isenberg). While many of the first European settlers had been skilled craftsmen or men of leisure back in England, that did not prepare those first settlers for doing the manual labor needed to grow the food required to survive, leaving them little time to produce the means to create goods to ship back to Europe and create wealth. What this new world needed was low wage or no wage workers (Zinn, 2015).

Europe was still comfortable with its nobility class structure that heavily influenced the new world: a social class structure. At the bottom were men and women of the criminal and poor classes. The roguish highwaymen, Irish rebels, known whores, mean vagrants, and others who had committed crimes against property in England, were all shipped off, ridding England of the dregs of its society while providing inexpensive workers (indentured servants) to the colonies (Isenberg, 2015). These were workers who society really did not care much about (Zinn).

In 1618 the Virginia Company's charter was amended to give those who brought over an indentured servant an additional 50 acres of land to the 100 acres each settler received. This created an incentive to bring more indentured servants (free labor) while growing the owner classes' wealth derived from the abuse of others (Isenberg, 2016). Importing indentured servants from debtors' prisons in Europe worked for a while but in time those bonded servants worked off their debts, becoming free. An economy running on the backs of bonded servants was not a long-term equitable solution for the owner class. The importation of black slaves solved that problem while building out the class structure even further. From the time of the settling of the Nation onward the reliance on free or inexpensive labor such as bond servants, slaves and convict labor, workers were organizing themselves into guilds and unions to lift themselves from the free labor market (Murol & Chitty, 2018). "While you may be poor-white-trash or even a white indentured servant, but you were better off than the Black worker" (Zinn, 2015).

Later when women fought for the right to vote, business groups openly lobbied against giving them that right, because then they would want to be paid the same as men. Business owners also believed giving women the right to vote would empower them to support legislation restricting or banning the use of child labor (Muroid & Chitty, 2018).

In 1992, public education in the United States started changing in two significant ways. First, charter schools, which now operate in 43 states and the District of Columbia, were created as publicly funded but privately-operated businesses. Every dollar that goes to funding these privately run, generally for-profit, charter schools is taken from public schools (Lafer, 2018). Secondly, in the first quarter of 2019, the United States student loan debt reached \$1.4 trillion dollars. That is more than double what it was (\$0.65 trillion dollars) in 2009. Student loan debt, which now exceeds the 2007 sub-prime debacle amount, is now second only to mortgages debt for United States residents and the age of students taking out loans is going up, resulting in a shorter loan repayment window, higher payments and less retirement saving or opportunity for other spending (Sabi-El-Rayess et al., 2019).

The United States workforce is more stratified and fractured now more than ever (AAUW, 2021). The extreme disproportionate increases in college costs for example has resulted in United States homeowners owning less of their homes today than they did in the 1980's (Johnston, 2005). Early in 1980's for every dollar of home value, there was 70% of equity. Thirty-five years later, home equity has fallen dramatically, while mortgage debt just keeps growing. In most cases, for every dollar of equity couples have in their homes, they have nearly two dollars in debt. This too adds stress to workers, families, and the workforce playing a role in students post-secondary education plans (Johnston, 2005).

The intersectionality that wage workers share, that struggle to make ends meet, is universal. At the center of this struggle lies the question, are students being given the tools needed to be successful? If the tools are provided the barriers can disappear (Isenberg, 2016).

### **Research Methodology**

The research subjects for this study were construction workers in the United States. Workers who have been out of high school for approximately 20 years for example who would have both their experience to draw upon as well as years of experience of seeing the skills new workers entering the workforce possess. The survey was qualitative research that focused on workers out of high school long enough to have tested the skills they brought into the workforce, to have witness and/or experience the changing demands on the workforce as well as having generated insights on what skills future workers will need to be successful. The survey questions asked can be found in Appendix A.

The survey was available nationally. Respondents answered questions regarding whether they believed that workers are being prepared to be successful in the workforce and whether these workers' view of success changed based on the lengths of time the participants have been out of high school.

While the primary focus was workers who have been out of high school for about 20 years data was also collected from workers in other generations as well. Responses were tracked on workers' thoughts on education, skills, and preparations for the workforce to see if they have changed over time. Additional data was collected from participants, including social benchmarks such as gender and race. Lastly, this research asked about the work skills future workers will need for them to be successful in the workforce of the future.

## Research Questions

This study set out to answer the following questions:

- Have workers received the education and skills needed to be successful in today's workforce?
- Are high school students being provided the education and skills needed to be successful in the workforce?
- How are those skills changing, and what skills are new workers going to need to be successful?

*With a specific research sub-question:*

- Have changes to the workforce affected minorities and women similarly?

## Research Design

This research used intersectionality and interest convergence as a framework to explore workers' views on how their secondary education prepared them for success, or not. Additionally, this research used an exploratory qualitative multiphase research design method which is a process for collecting and analyzing quantitative data from multiple phases of a study at a point during the research process into a single outcome (Creswell & Creswell, 2018). The reason this study used multiphase research methods is that a single exploratory method alone would not sufficiently have captured the details or trends in evaluating how well workers feel their secondary education prepared them for success in the workplace. The two phases used in combination allowed for a more complete analysis (Creswell & Creswell).

## Sampling

The survey was distributed using a method known as 'Snowballing', a process of forwarding the survey to contacts in diverse fields and locations asking them to distribute the survey link to workers meeting the criterion in their networks. This provided a distribution that was blind to the researcher, eliminating the ability to influence the outcomes by controlling who had access to the survey tool. However, it also prevented the researcher from being able to actively engage in driving up responses from specific groups, such as minorities or women.

The survey was in the field for a 30-day period that included Covid-19 related interruptions as well as the Christmas and New Year's holidays. The number of responses, 175, to the survey supports that the snowballing methodology was successful.

Survey responses were excepted from all generations of workers. The survey data was sorted using the following common generational brackets:

- Gen Z, iGen, or Centennials = Born 1996 – TBD
- Millennials or Gen Y = Born 1977 – 1995
- Generation X = Born 1965 – 1976
- Baby Boomers = Born 1946 – 1964
- Traditionalists or Silent Generation = Born 1945 and before

Respondents were not required to answer every question. The lack of responses to some questions would impact some of the survey outcomes. The sample size of some demographics of workers to some questions would not provide enough data for every cross tabulation to produce relevant outcomes.

### **Data Collection**

The study also focused on the skills needed by future workers to be successful when entering this industry. It is in this section that the opinion of the workers who have been in the workforce for two decades is critical since they may well remain in the workforce for another decade or two. This demographic of workers responding has both 'been there' long enough to know what needs to be done, they will also 'be there' long enough to want to ensure that the new hires have what it takes to be successful.

### **Results and Discussion**

Since the survey did not require each respondent to answer all the questions, some questions received more responses than others. For that purpose, the actual number of responses would vary from question to question. Making the survey more broadly available allowed the study to determine if there are any correlation in how respondents perceived their secondary education prepared them for the workforce from within the target area of Missouri vs. outside the target area. This measure was difficult to achieve because the author could not control for the smaller number of responses from some states.

## Survey Analysis

The principal charge of the survey was in three parts:

- Determine how well workers in the construction field felt their high school experience prepared them for success in the field of construction;
- determine if new entrants to the construction field, more recent high school graduates, are better or worse prepared for success; and
- determine what, and if, high schools can better prepare students going into the construction field better to be successful.

Then a foundation was established by first asking the study question one. That being how well the survey takers believed their high school experience helped them.

The unfiltered response was overwhelmingly unfavorable. The majority, 78.2%, of the survey responses to this question felt that their high school experience prepared them 'moderately well,' 'slightly well,' or 'not well at all.' There was an option for the survey takers to add comments to further explain their responses. Nearly half, or 70%, of the workers who answered this question did provide additional comments. As a measure of interest or importance, this was the most responded to question of any in the survey.

### *Responses to effectiveness of their high school education, by state.*

Only three states had responses in the double digits. Of them, most responses from both Illinois, 80%, and Missouri, 82%, felt that their high school prepared themselves for success only "Moderately Well," "Slightly Well," or "Not Well at All." That is in contrast with the results from Wisconsin, which was only 50% for the same responses. Additional survey response demographics can be found in Appendix B. Future research should put an emphasis on acquiring larger data sets from more comparable states to better compare outcomes between an even larger number of states.

### *Responses to effectiveness of their high school education, by race comparing white male responses to all other responses.*

The non-white male responses combined was a smaller sample than desired, but some comparisons could be drawn when looking at all the non-white male responses and comparing them to the responses of white males. The white male responses (139) vs an aggregate of non-white male responses (22) found white male responding 81% that high school prepared them 'moderately well', 'slightly well' and 'not well at all' versus a 66% by the non-white male responses in the same category to the same question. It is not clear why non-white-male workers have a more favorable view of their high school experience.

Only 3.4% of the survey responses identified as being Latinx/Hispanic; 100% of the Latinx/Hispanic responses felt that new workers coming into the construction industry have "A Great



Deal or More Skills,” “Some Additional Skills,” or “The Same Skills” that they had when they entered the workforce. A sharp contrast to the 54% of the non-Latinx/Hispanic who answered this question the same way.

***Response to: Effectiveness of Their High School Education, by Gender.***

Here, we also have a small sample. Female construction workers rate their high school experience “Extremely Well,” “Very Well,” or “Moderately Well” 72% of the time versus their male co-workers 54% of the time.

**Table 1.** Responses to: Effectiveness of Their High School Education, by the Length of Time in Their Career.

Length of Time in Their Current Career	Extremely Well	Very Well	Moderately Well	Slightly Well	Not Well at All
0 – 2 Years	1 (2%)	6 (14%)	15 (34%)	11 (25%)	11 (25%)
3 – 5 Years	2 (6%)	6 (18%)	13 (39%)	5 (15%)	7 (21%)
6 – 8 Years	1 (12.5%)	1 (12.5%)	1 (12.5%)	4 (50%)	1 (12.5%)
9 – 10 Years	-	-	3 (43%)	2 (29%)	2 (29%)
10 – 15 Years	1 (8%)	1 (8%)	1 (8%)	5 (39%)	5 (39%)
15 – 20 Years	2 (14%)	4 (29%)	4 (29%)	1 (7%)	3 (21%)
More than 20 Years	4 (9%)	6 (14%)	14 (33%)	6 (14%)	13 (30%)
<b>Total Responses 162</b>	<b>11 (7%)</b>	<b>24 (15%)</b>	<b>51 (32%)</b>	<b>34 (21%)</b>	<b>42 (26%)</b>

Workers with 15 to 20 years’ experience in the construction field have a more positive perspective of their high school education than the other demographics of workers. These workers responded to the midpoint to lower survey scale, “Moderately Well,” “Slightly Well,”

and “Not Well at All,” 57% of the time. That was more favorable than the 84% of the zero-to-two-year demographic or the 75% for the three to five years as well as the six to eight year or the 100% of the nine to 10 year and the 77% of the more than 20-year groups. The other research questions do not explain the difference in results between the demographic. Yet overall, 79% responded that high school prepared them moderately well, slightly well, or not well, making it clear that current workers do not believe high school prepared them for success.

***Responses to: Effectiveness of Their High School Education, Based on High School Completion.***

While 78% of the survey takers who answered the question of their high school completion status, responded that their high school experience prepared them “Moderately Well,” “Slightly Well,” or “Not Well at All,” of those who completed their high school with a GED was most interesting. Ninety-eight percent of those who completed high school with a GED said their high school experience prepared them “Moderately Well,” “Slightly Well,” or “Not Well at All.” There were a small number of responses, seven in total, who did not complete high school. It was determined that it was too small of a sample to draw reliable conclusions.

**Table 2.** Responses to: Effectiveness of their high school education, by generation

<b>Generation</b>	<b>Extremely Well</b>	<b>Very Well</b>	<b>Moderately Well</b>	<b>Slightly Well</b>	<b>Not Well at All</b>
Gen Z, iGen, or Centennials Born 1996 – present	-	6 (24%)	6 (24%)	6 (24%)	7 (28%)
Millennials or Gen Y 1977 – 1995	5 (6%)	9 (11%)	24 (30%)	19 (24%)	22 (28%)
Generation X 1965- 1976	1 (3%)	5 (16%)	12 (38%)	5 (16%)	9 (28%)
Baby Boomers 1946 – 1964	4 (17%)	3 (13%)	9 (39%)	3 (13%)	4 (17%)
Traditionalists or Silent Generation Born 1945 or before	-	-	-	-	-
<b>Total responses 159</b>	<b>10 (6%)</b>	<b>23 (15%)</b>	<b>51 (32%)</b>	<b>33 (21%)</b>	<b>42 (26%)</b>

More Millennials, or Gen Y, workers answered this question than any other generation, with 79 of 159 or 50% of the survey responses to this question where ages were also provided. That was followed by Generation X with 32 of 159, 20%, of the responses. Both the Millennial and Generation X rated their high school experience as preparing them “Extremely Well” or “Very Well” 17% and 19%, respectively, for the careers in construction, contrasts with Gen Z and Baby Boomer generations, 24 % and 30%, respectively, responses to the same question.

Earlier the survey respondents assess their high school educations, with respect to how well it prepared them for success in their careers in the construction industry. This created a benchmark to compare other questions to, establishing a point of reference when answering the question of “Do you feel that the workers entering the workforce today have the same skill(s) needed to be successful as you and your generation did when you entered the workforce?”

The unfiltered response was overwhelming that the current workers believe new entrants to the workforce have less of the skills needed to be successful than when they had entered the workforce. This was the second most popular question commented upon. Two of the additional comments included in the responses were “A lot of newer people coming into my workforce stand around to be told what to do instead of asking or know from the previous day,” and “They are lacking discipline, Focus, Problem-solving skills, lack communication skills, lack understanding, discretion, and discernment.”

***Responses to: Does the new workforce have the same skills you had, by gender.***

Females responded that the new entrants to the workforce possess “A Great Deal or More Skills,” “Some Additional Skills,” or “Have the Same Skills,” 83% of the time to males responding the same way only 49% of the time. This was a small sample size. Yet, six of the seven female construction workers taking the survey, responded consistently and that fact should not be overlooked. This question with these demographics would benefit from a larger study to see if this outcome is replicated with a larger sample.

**Table 3.** Responses to: Does the new workforce have the same skills you had, by the length of time in their career.

Length of Time in the Current Career	A Great Deal More Skills	Some Additional Skills	Have the Same Skills I Had	Fewer Skills	Substantially Fewer Skills
0 – 2 years	3 (7%)	8 (19%)	19 (44%)	11 (26%)	2 (5%)
3 – 5 years	4 (13%)	5 (16%)	6 (19%)	13 (42%)	3 (10%)
6 – 8 years		1 (17%)		4 (67%)	1 (17%)
9 – 10 years		1 (25%)	1 (25%)	1 (25%)	1 (25%)
11 – 15 years	2 (22%)	1 (11%)	1 (11%)	2 (22%)	3 (33%)
16 – 20 years	2 (18%)	1 (9%)	1 (9%)	5 (46%)	2 (18%)
More than 20years	2 (5%)	8 (21%)	7 (18%)	12 (31%)	10 (26%)
<b>Total Responses 143</b>	<b>13 (9%)</b>	<b>25 (18%)</b>	<b>35 (25%)</b>	<b>48 (34%)</b>	<b>22 (15%)</b>

In Table 3 we find the overwhelming majority (89%), of the workers with 0 – 2 years' experience in their current careers responded that they feel new entrants to the workforce have "Some Additional Skills," "The Same Skills," or "Fewer Skills." With 43 (or 30%), of the responses, they also constitute most of the total responses to this question. Contrast that to the 11 – 15 year and the 16 – 20-year groups who responded, 44% and 64%, respectively. Workers with 6 – 8 years' experience responded 84% of the time that they felt new workers possess "Fewer Skills" or "Substantially Fewer Skills."

***Responses to: Does the new workforce have the same skills you had, based on high school completion.***

Other than those who did not graduate from high school, who responded 80% of the time that new workers have "Substantially Fewer skills," the demographics are consistent with the aggregate results on this question. The majority, 57%, of the workers responding to this question feel that new workers entering the construction trade possess the "Same Skills" or "Fewer Skills" as when the respondents started their career.

**Table 4.** Responses to: Does the new workforce have the same skills you had, by generations.

Generation	A Great Deal More Skills	Some Additional Skills	Have the Same Skills I Had	Fewer Skills	Substantially Fewer Skills
Gen Z, iGen, or Centennials Born 1996 – Present	1 (4%)	6 (24%)	10 (40%)	6 (24%)	2 (8%)
Millennials or Gen Y 1977 – 1995	7 (11%)	9 (13%)	19 (28%)	22 (33%)	10 (15%)
Generation X 1965- 1976	1 (4%)	5 (17%)	4 (14%)	14 (48%)	5 (17%)
Baby Boomers 1946 – 1964	2 (11%)	4 (21%)	3 (16%)	5 (26%)	5 (26%)
Traditionalists or Silent Generation Born 1945 or Before	-	-	-	-	-
<b>Total Responses 140</b>	<b>11 (8%)</b>	<b>24 (17%)</b>	<b>36 (26%)</b>	<b>47 (34%)</b>	<b>22 (16%)</b>

Millennials, or Gen Y, workers answered this question in a higher number than any other generation with 67 responses. The responses from Gen Z, Gen X, and Baby Boomers were consistent at 25, 29, and 19, respectively. In Table 4 we see the younger workers, Gen Z, responding 32% of the time that new workers entering the workforce have “Fewer Skills” or “Substantially Fewer Skills” than when they did. That are differences in responses from Gen Y, Gen X, and the Baby Boomer generations who responded 48%, 65%, and 52%, respectively. Half of all the workers who answered this question feel that new workers are entering the trade with “Fewer Skill” or “Substantially Fewer Skills” than they did.

***Response to question: What skills do you believe the current new members of the workforce are lacking?***

Following up on the question ‘Do you feel that the workers entering the workforce today have the same skill(s) needed to be successful as you and your generation did when you entered the workforce?’ the follow-up question asked: ‘What skills do you believe the current new members of the workforce are lacking to be successful? There were 131 responses to this follow-up question with 57 responding that “More Industrial Arts Skills” are needed, 23 felt that “More People Skills” are needed as well, and 23 felt “More Technical Skills” are needed.

***Responses to question: Will workers in the future have the skills needed to be successful in this trade?***

Of the 175 responses to the survey 143, 82%, answered this question. Of those responses, 49 said no they would not, 48 responded that yes, they would, while 46 did not know. Two-thirds of the workers who responded to this question do not believe or are not confident that future high school graduates will possess the skills needed to be successful in the field of construction.

Finally, we asked what skills future workers will need more of. Their opinions are reflective of their experiences as both workers, and in many cases, they are trainers of the newer workers. This question looks forward, at how well high schools are preparing students for entering the future workforce. The majority, 59, responded that more industrial arts skills or training are needed. Just over half that, 30 responses, felt that additional people skills are needed. Only 6 responded that more screen skills are needed for future workers to be successful in this industry.

### **Conclusion and Recommendations**

Most of the workers surveyed did not think their high school prepared them for success in this career. The overwhelming majority felt that current new entrants to the workforce are even less prepared to be successful than when they entered the workforce. Clearly, 50% of all the workers responding to the question felt that new workers are entering the trade today with “Fewer Skill” or “Substantially Fewer Skills” than they did. Furthermore, two-thirds of the workers who responded to the question are not confident that future high school graduates will have the skills needed to be successful in the field of construction. This does not bode well for the future of this industry.

The study found that high schools should do more to promote careers, like these in construction, that do not require a college education. It is felt that educational systems do not provide a similar amount of support for industrial arts-based careers as college/university education receives. Whether by intent or by accident, it is felt that high schools are steering all students to college as a default.

Findings included that high schools need to incorporate more problem-solving skills into course curricula, so students develop the confidence and problem-solving skills needed to be successful, in any field. Learning to work in multi-generational workforces, as opposed to just being in class with people their age, would also strongly benefit students' abilities to acclimate into any workforce.

It was also found that current new workers entering the construction workforce today struggle as problem-solvers, self-starting and are afraid to make mistakes, losing the opportunity to learn from them. Criticisms aside, it was felt that new workers do not know what they are capable of accomplishing. Students entering the field need to be more self-reliant and able to solve their own problems and take responsibility for their work and their actions. High schools are positioned to help students become more self-reliant before they embark upon their careers, regardless of what that career might be.

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## APPENDIX A

### **Survey questions:**

Q1 – You are invited to participate in a research study being conducted by Douglas J. Swanson. The purpose of this research is to answer the question, ‘how well do construction workers believe a high school education prepared student for success in the workforce’ and will take about 10 minutes.

*Participation in the study is voluntary. You may withdraw from of the study at any time without penalty. Participants are encouraged to answer all of the questions but are under no obligation and may not answer individual questions.*

*Taking the survey constitutes your consent and acknowledges your opportunity to ask questions.*

Q2 - What is your current age?

Q3 - What is your gender?

Q4 - What is your race?

Q5 - What ethnicity do you identify as?

Q6 - What year did you last attend high school?

Q7 - Did you complete high school?

Q8 - What is your current career?

Q9 - How long have you been in your current career?

Q10 - In what state did you attend high school? (If you went to high school in more than 1 state, choose the state where you spent the majority of those years).

Q11 - How well do you feel your high school education prepared you to be successful in your career?

Q12 - When you were in high school, do you feel you were being prepared to go:

For the next several questions, we will use the terms like ‘Industrial Arts’, ‘Technical Skills’ and ‘People Skills’. For these questions, use the following definitions:

### **An Industrial Arts educational could include:**

- Fabrication of objects in wood, metal, plastics or composites;
- Use of a variety of hand, power, or machine tools;
- Electrical or electronics systems installation or repairs;
- Small engine repair; and
- Automobile maintenance and repair.



**Example of Industrial Arts careers would include:**

- Construction industry jobs;
- Mechanics; and
- Tool and die makers.

**Industrial Arts jobs are sometimes referred to as jobs where you are ‘working with your hands.’**

**Technical Skills education could include:**

- Skills utilized in operating computers and tablets run machines,
- Installing programs and up-keeping systems that are necessary to operate equipment, machinery and/or to input data for the equipment and machinery to operate.
- Skills needed in operating programs and applications that are accessible through touchscreens. These jobs do not rely on basic office skills (word-processing, spreadsheets, and PowerPoint) computer skills but some data entry may be used.

**Examples of Technical Skill job include:**

- 3D printer operator;
- Machinist; and
- Machine operator (i.e., lathe, punch press, etc.)

**Technical Skills** jobs are sometimes referred to as jobs that require workers to operate or use ‘screens’ to access equipment and/or programs or spend a lot of ‘screen time’ during their work shift.

**People Skills:** is a broad umbrella term for skills intended to improve a person’s interaction, intercession and personal effectiveness skills when working with other people. People skills jobs often require one to develop teamwork, problem-solving, and emotional intelligence skills.

**Examples of People Skills jobs would include:**

- Customer service
- Sales and
- Jobs in the service sector

**People Skills** job educational programming may have focused on skills like:

- Speech / Oral Communications
- Psychology and
- Human relations

- Q13 - Did the high school that you attended for the longest part of your high school tenure offer an industrial arts program?
- Q14 - Did you enroll in any industrial arts courses?
- Q15 – did the industrial arts courses that you took in high school help you to prepare to be successful when you entered the workforce?
- Q16 - Did the high school that you attended for the longest part of your high school tenure have courses that helped you with computer/screen skills that you utilize in your work today?
- Q17 - If yes, did you enroll in any technical skills courses?
- Q18 - Did the technical skills courses that you took in high school help you to prepare to be successful when you entered the workforce?
- Q19 - Did the high school that you attended for the longest part of your high school tenure have a program that provided you the skills that you need to work well in industries that demanded good ‘people skills?’
- Q20 - Did you enroll in any people skills courses?
- Q21 - Do you think the people skills courses helped to prepare you to be successful when you entered the workforce?
- Q22 - Today, can someone with only a high school education be successful in an entry-level position in your profession?
- Q23 - Does your current career have a training or apprenticeship program?
- Q24 - Is there a fee required to enter the training or apprenticeship program?
- Q25 - Once you entered the training or apprenticeship program was there a cost to continue in the program?
- Q26 - In total, how much did the training cost you?
- Q27 - Is the training/apprenticeship program industry recognized and transferable to other states (or countries)?
- Q28 - If you answered yes, your craft/profession has a training/apprenticeship program, is it able to attract all of the new workers to its training/apprenticeship program that it needs to meet current demand?
- Q29 - As your industry is changing, do you believe your current craft/profession training/apprenticeship program is going to be able to attract enough new members to meet the future demands for workers?
- Q30 - Typically, how long does it take someone to complete the training/apprenticeship program?

- Q31 - Regarding the knowledge it takes to be successful in your trade, do you think your job is more or less complicated or complex than when you started in your current career?
- Q32 - Do you feel that the workers entering the workforce today have the same skill(s) needed to be successful as you and your generation did when you entered the workforce? Please complete the following sentence that best describes your views.
- Q33 - What skills do you believe the current new members of the workforce are lacking in order for them to be successful?
- Q34 - Think about how much the skills needed to be successful in your job have changed or have not changed over the past 5 - 10 years. Taking into consideration the skills you observe in current entry-level workers, do you think workers entering the workforce 5 - 10 years from now will possess the skills needed to be successful in your trade?
- Q35 - What skills do you believe the current entry-level workforce lacks in order for them to be successful in today's workforce?

## APPENDIX B

### Survey Responses Demographics

#### *States where respondents finished high school.*

Responses were received from workers who completed high school in 25 different states and two foreign countries. One response from each of Alaska, Florida, Idaho, Louisiana, Jamaica, Mexico, Michigan, Minnesota, Ohio, Oklahoma, Oregon, Tennessee, Texas, Virginia, Washington, West Virginia, each state representing 0.6% of the responses. There were two responses from both Iowa and Massachusetts for 1.2% of the responses from each state. The following states each had three, or 1.81%, of the responses Indiana, Kansas, New Jersey, New York, and Pennsylvania. The top responses came from Illinois, with 70, or 42.17%, Missouri with 51, or 30.72% and Wisconsin providing 10, or 6.02% of the responses.

#### *Survey Responses, by year leaving high school*

The largest survey responses, with 46 responses or 27.71% had zero to two years of experience in their career, followed very closely by 45 responses or 27.11% with more than 20 years in the industry. This was followed by 33 responses or 19.88% for three to five years of experience. It was interesting to see the nearly identical response rates between the least experienced and the most experienced demographic.

This broad spectrum of responses provides a very insightful sampling of the workforce. Having a sampling that is anchored a bit heavier in the zero to two as well as the more than 20-year categories provide insight from both ends of the experience spectrum to the questions related to how well the current workforce leaving high school recently is prepared for success.

#### *Responses, by the Length of Time in Their Current Career.*

Forty-six (27.71%) of the responses left high school 0 - 2 years prior to taking the survey, followed closely by 45 responses (27.11%) having left more than 20 years ago and 33 (19.88%) leaving 3 - 5 years ago. The remaining responses where 6 - 8 (4.82%), 9 - 10 (4.22%), 11 - 15 (7.83%) and 16 - 20 (8.43%) years ago.

#### **BLS Household Data Annual Averages**

Some Bureau of Labor Statistics data were used to provide a comparison of the survey results to the overall industry representation. The data used was: Employed Persons by Detailed Industry, Sex, Race, and Hispanic or Latino Ethnicity.

Industry	2019					
	Total employed [Numbers in thousands]	Women	White	Black or African American	Asian	Hispanic or Latino
<b>Total, 16 years and over</b>	157,538	47.0	77.7	12.3	6.5	17.6
<b>Construction</b>	11,373	10.3	88.1	6.4	1.9	30.4

(U.S. Bureau of Labor Statistics, 2020)

The BLS 2019, Household Data Annual Average reported on White, Black, or African American, Asian, and Hispanic, or Latino race demographics. The BLS notes: “Estimates for the above race groups (White, Black or African American, and Asian) do not sum to totals because data are not shown for all races. Persons whose ethnicity is identified as Hispanic, or Latino may be of any race.”

#### ***Responses, by Race.***

The survey tool used took a much broader look at races in the workforce than the BLS reported. Due to the limitation of not having all the same race’s data reported, a true comparison to the BLS survey data would not be accurate. By doing a side-by-side comparison for all the races surveyed to those reported by the BLS we can still see that the White workers responded to the survey at a much higher rate than they represent in the workforce. One hundred sixty-five respondents answered the question of race.

Responses that could be compared to BLS statistic were white/Caucasian with 152 (92.12%), versus BLS findings of 88.1%, black/African American 4 (2.42%), compared to BLS findings of 6.4% and Asian, 1 (0.61%) with a BLS results of 1.9%. Races noted without BLS comparable American Indian/Alaska Native, 2 (1.21%), Native Hawaiian/other Pacific Islander, 1 (0.61%), two or more races, 2 (1.21%) and other, 3 (1.82%).

#### ***Responses, by Ethnicity.***

Of the 137 responses to this question in the survey, 5.11% of the survey responses identify as Latinx/Hispanic. This is well below the BLS Employed Person by Industry Index 2019 where the BLS determination of upwards of 30% of the construction industry being Hispanic or Latinx.

#### ***Responses, by Gender.***

The BLS determined females constitute 10.3% of the construction industry. The survey was responded to by eight women in the construction field, a mere 4.82% of the overall responses, which totaled 166 for this question. This was less than the BLS determination of women’s presence in the construction industry.

***Responses by Completion of High School.***

The overwhelming majority, 80.72%, graduated high school with another 15.06% earning their GEDs.

***Responses, by High School Completion, by Generation.***

Apart from no responses from the Traditionalist or Silent Generation, the sample response was very satisfactory. The range of responses by Generation runs from the lowest response of 10.24% for the Baby Boomer Generation to 37.35% for the Millennials or Gen Y Generation. In which this author believes provides ample data for comparing data responses across the generations.

***Average Age of Responders.***

One hundred sixty-four of the respondents to the survey provided their age. The model sample for the survey was someone who had been out of high school for 20 years. The average age of the survey responses, 38.77 years, fits ideally with the goals of the research.