



**Jacob, Kellie K. *Overcoming Barriers in Pipeline Workforce Development Training to Reduce Safety Related Incidents***

**Abstract**

Company ABC, a large utility contractor based out of central Wisconsin, was seeking innovative ways to control barriers that hinder successful workforce development training due to the increased rates of safety related incidents. These barriers were causing delays in construction schedules, re-work, injuries, and even fatalities. This research study investigated the primary causes of barriers in workforce development training and discovered solutions via two focus groups to assist in minimizing the effects of those barriers to ultimately lower the incident rate. An analysis of the focus group results was used to make recommendations to minimize and reduce the researched barriers.

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## Chapter I: Introduction

Company ABC was established in a rural Midwest community in 1959 by a local union hall welder. The company's founder believed that the key to successful business operations was to hire the top talent and to give those employees the best resources, tools, and equipment to succeed. With a strong background in pipeline welding and a resilient entrepreneurial spirit, a highly successful construction company was born.

Company ABC currently has 15 different operating divisions. The main divisions include: pipeline, power, wind, and horizontal directional drilling. During the peak summer construction season, Company ABC has 8,000 employees working in any one of its 35 facilities throughout the United States and Canada. On average there are nearly 6,000 regular full-time employees and 2,000 transient (field) employees that are primarily sourced from local union halls working at any given time.

Company ABC's pipeline division and its workforce development training practices were the primary focus of this research. This division is responsible for maintaining and constructing new and existing pipelines in rural and congested metro areas as well as everything in between. The services Company ABC specializes in are joint pipe installations, conversion projects, cast iron, and steel pipe replacement programs. The operator/owner client of a pipeline (e.g., Citgo or BP) would hire a contractor such as Company ABC to perform pipeline services on their behalf. In order for employees to perform work on the new or existing pipelines, they must first demonstrate competence in workforce development by completing requirements within the federal regulations. One of the federal governing entities of pipelines is the United States Department of Transportation (DOT), a division of the Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA states,

That those persons performing covered tasks on the pipeline have been evaluated and determined to be qualified both to perform covered tasks and to recognize and react to abnormal operating conditions. Training may be an integral step in preparing for evaluation; however, it is not required under the current provisions of this rule.

(PHMSA, n.d., “Training Requirements”, para. 1)

The governing body in this specific scenario, PHMSA, specifies the minimum training and testing requirements for pipeline employees, as many operator/owner clients require above and beyond what the law states. This is especially true for training requirements to work on pipelines. Many owner/operator clients require 100% accountability for training.

While the term workforce development has evolved and is predominantly used as a broad term for job skills training, within Company ABC it is referred to as operator qualification (OQ) training. OQ is a form of workforce development training that is regulated by the federal government to prove that a company has a qualified workforce in the pipeline industry. OQ was first enacted into law in 2001 as an added measure to combat safety related incidents and as reassurance that the individuals performing work were competent and qualified. While in theory this principle sounds effective, the industry quickly learned it was not. One of the primary issues that surfaced was training was not designed to actually train employees, but to test their ability to complete job related tasks. While not the intent of the government, it was open to vague interpretations. So, in the interest of quickly getting employees trained, a quick online refresher, followed by a test, and a simulation of tasks was all that was required. As a result, problems were identified due to lack of consistency in the regulations and industry training standards. Due to the lax training requirements, as well as other barriers to training, it triggered a steady increase in safety related incidents within Company ABC. While it has be recognized that many

employees need more than a refresher course to be trained, nothing formal had been implemented.

The pipeline workforce is primarily comprised of transient employees that move from one contractor to the next. With short employment durations, formal workforce development training is often ignored, or the bare minimum is completed, which could be a contributing factor to safety related incidents. These barriers caused delays in construction schedules, re-work, injuries, and even fatalities. The average pipeline employee has no formal education beyond a high school degree, as many do not even possess that. In addition, employees may have minimal on-the-job (OJT) or union hall training by current or previous contractors. Pipeline work is a lucrative career path with incomes averaging well into the six figure ranges. The earning potential has drawn employees from a variety of backgrounds and generations including: baby boomers, generation X, and millennial. Within Company ABC, 32% of the pipeline workforce are from the baby boomer generation. Internally, this has resulted in a moderately older workforce that is struggling not only with physical ailments due to aging, but also with learning the advancements in technology. Also, a significant portion of transient field workers while skilled in manual labor, are functionally illiterate and have difficulty with reading and writing. In addition, there are also many employees whose primary language is not English.

Other potential barriers include: learner motivation, social upbringing, lack of proper use of personal protection equipment (PPE), and the requirements of union halls, which are not the current focus of Company ABC. However, those barriers could be further explored in future research studies.

## **Statement of the Problem**

There were a number of barriers in workforce development among Company ABC pipeline employees which caused an increase in safety related incidents. As identified in Company ABC's 2017 safety statistics, 37% of safety related incidents were due to the lack of formal and thorough training programs, generational gaps, illiteracy, and language barriers. This has affected the organization and employees with lost revenue and confidence from clients in Company ABC's abilities due to higher injury rates.

## **Purpose of the Study**

The purpose of this study was to confirm identified barriers and to determine how to overcome those challenges that are prevented employees from effectively learning through current workforce development training. This research study concentrated on the barriers that were identified to have a direct correlation to safety related incidents. The objectives included:

- Conducting a focus group to obtain pipeline employee input on how to overcome specific barriers to workforce development training.
- Collecting and analyzing the focus group data to determine the best solutions to overcome identified barriers.
- Developing solutions for the identified barriers to aid the growth of employees and reduce the amount of safety related incidents.

The objectives for this research study were designed to assist pipeline employees in growing professionally so they could safely and effectively perform their jobs.

## **Assumptions of the Study**

The assumptions of this research study included:

1. The participants were willing to be interviewed for the purpose of this research.

2. The participants provided truthful feedback.
3. The participants understood there are barriers to training.

### **Definition of Terms**

Terms specific to the pipeline industry and included in this research study are defined below.

**Abnormal operating condition (AOC).** A scenario identified by the operator of a pipeline that deviates from normal operating conditions and has the potential to create an unsafe working condition.

**Collective bargaining agreement.** A contract between any employer and a union hall that dictates employment specifics such as: hours, wages, and working conditions.

**Contractor.** A company that is hired to perform work on behalf of another company.

**Covered task (CT).** Any job-related function that falls under federal regulation 49 CFR Part 192, which affects the integrity and operation of a pipeline.

**Credentials.** A recognition of successful completion of either OQ evaluator training or standard OQ training completed through an accredited third-party OQ consortium.

**Evaluator.** An authorized individual of a third-party OQ consortium that is qualified to train on their behalf. Also identified as a trainer.

**Federal code CFR 192 subpart N.** The subpart describes the minimum requirements for operator qualification of individuals performing covered tasks on a pipeline facility (PHMSA, n.d., “192.801 Scope”, para. 1).

**Module.** The smallest stand-alone instructional unit in a developed training program.

**Operator/owner client.** The company that owns the pipeline a contractor is working for.

**Operator qualifications (OQ).** Workforce development training and testing dictated by the federal government for the pipeline industry.

**OQ training.** Workforce development training specifically created for pipeline workers.

**OQ qualified.** The term used to identify an individual that has completed training, testing, and performance evaluations for a specific pipeline covered task. Also known as qualified to work.

**Performance evaluation.** The act of physically watching an individual either by means of simulation or on-the-job performance, a series of steps related to a specific covered task for OQ training.

**Third-party consortium.** A company designated by the owner of a pipeline as their required training partner.

**Workforce development.** Training provided by an employer or third-party to better the development of its employee's job skills.

### **Limitations of the Study**

The limitations of this research study included:

1. The participant's focus group data may not be an accurate representation of the entire pipeline workforce population.
2. The participants who can read and write will only be included in this study.
3. The participants may be biased based on the barriers presented.

### **Methodology**

The methodology used for this research was an analysis of literature specifically related to workforce development training and the construction industry. Results from the literature

review combined with two focus groups of employees within Company ABC have generated the results.

## **Chapter II: Literature Review**

The number of barriers in workforce development training among Company ABC pipeline employees were causing an increase in safety related incidents. As identified in Company ABC's 2017 safety statistics, 37% of safety related incidents were due to the lack of formal and thorough training programs, generational gaps, illiteracy, and language barriers. This literature review provides a summary of four key barriers that are seen in pipeline workforce development training. The chapter reviews four different options for formal training in the workforce. Next, there is an overview of illiteracy, as well as language barriers, and its effect on training. This chapter concludes with generational gaps and how age and technological aptitude affect learning.

### **Formal Training**

According to Salas, Tannenbaum, Kraiger, and Smith-Jentsch (2012), the purpose of training and development activities is to allow organizations to adapt, compete, excel, innovate, produce, be safe, improve service, and reach goals. In order to do this, organizations need to place a higher emphasis on the development of knowledge by creating an environment that focuses on learning organizations (Martin & Hrivnak, 2009). Not all industries throughout the United States have formal training programs. An organization's ability to obtain and or fund formal training resources is one reason for this. "Organizations in the United States alone spend billions on training each year" (Salas et al., 2012). Formal training is used to fill the knowledge gaps, and for employees to learn new skills to have a greater contribution to the workforce. Within the organizations that have developed curriculums, there are several different variations of formal workforce development trainings. There are numerous types of training that can be

utilized with a variety of techniques. They include apprenticeships, in-house training, on-the-job training (OJT), and union hall training.

**Apprenticeships.** Apprenticeships provide a quality education while gaining relative field experience specific to an individual's profession. Apprenticeships are used in a variety of businesses but are more commonly found in maintenance and construction industries. Apprenticeship training combines OJT work experience with formal classroom instruction (Woods, 2011). Muehlemann and Wolter (2014) describe apprenticeship programs as combining education in school and in the workplace. "While a portion of apprenticeship models are predominantly school-based and only feature short work placement, other models requires apprentices to spend up to 80% of their time with the training firm" (Muehlemann & Wolter, 2014, p. 1). Woods (2011) believes that the construction industry requires a broad-based set of skills used by craft works that cannot be acquired from full-time schooling alone. Generally speaking, to be accepted into an apprentice program, an entrance exam is needed, and a contract for employment requirements which include: 8,000 OJT hours and 144 classroom hours to graduate (Woods, 2011).

Apprenticeship programs by industry can differ greatly depending on the type of work an individual is performing. Individuals can be taught a generalized or a more specific skill set depending on who is sponsoring the apprenticeship program. Skill formation is the process of combining two distinct components of training and refers to them as general vs specific training (Woods, 2011). As an example, if a local college does not specialize in any one specific industry, the education provided will be taught in general construction training. If it is a pipeline company that has partnered with a local college, the skills taught will be more specific to the pipeline industry.

Muehleemann and Wolter (2014) have found the apprenticeship programs that require the provision of general skills, increase the labor market of graduated apprentices. Due to this, “governments regulating apprenticeship training schemes typically emphasis larger shares of general skills in training curricula” (Muehleemann & Wolter, 2014, p. 9). However, Woods (2011) determined that good employers may reduce the breadth of apprenticeship training by designing programs that focus more on firm-specific tasks that are less transferable. The more firm-specific tasks learned, the greater of an asset an individual is to that organization (Woods, 2011). Investing time and money into employees to teach them the organizations specific skills criteria ensures that their specific processes are being followed. This, in theory, will help drive down safety related incidents as well as construction re-work.

**In-house training.** Unlike apprenticeships, in-house training programs are not accredited through local organizations or schools. They are typically programs created internally by subject matter experts (SME) that are taught in a classroom, OJT, or a combination of both for the benefit of the employee and organization (Crumpton, 2011). “The need is never greater to invest in training programs and activities that provide additional organizational agility and flexibility” (Crumpton, 2011, p. 167). It also ensures that the material used for training meets the specific criteria required to meet any industry or government requirements and regulations for training.

In-house education and training differ from other types of education focusing on adults (Fragoulis, 2008). The specific characteristics of in-house education and training, are to improve not only each trainee’s knowledge, but also to benefit the whole company strengthening employees’ ability to act as members of a team. It was interesting to discover that not all in-house training programs are created with the same objectives. Crumpton (2011) describes in-

house training programs as a necessity to fit the strategic needs of an organization, and to develop the human capital in order to gain a competitive advantage within the market. The focus drifted from a team approach to gaining a competitive advantage in the market.

To consider if an in-house training program is the right approach for the organization, a training needs assessment should be conducted. Crumpton (2011) recommends the following steps to ensure validity in that decision.

- To determine “if” training is needed – Training needs can be a result of poor performance, competition, a decline in business or morale issues.
- To determine the cause of poor performance – Poor performance can have many causes in business, including professionals feeling that they have fallen behind the learning curve.
- To determine content and scope of training – The type of training is important to achieve expected results. You want to do what is best for the situation logistically, workshop, self-study, OJT, etc. in order to achieve maximum learning. Also, you want to determine when, who and to what degree training is needed.
- To determine desired training outcomes – This identifies what knowledge, skills, and behaviors are targeted for competitive advantage.
- To provide a basis or measurement – A needs assessment will establish a baseline in which to measure results or changes.
- To gain management support – This creates the leadership commitment needed to be successful. (Crumpton, 2011, p. 170).

After completion of the training needs assessment, failure to implement a quality training program can still result in failure. A company may achieve quality only when its employees

show problem-solving skills, comprehend the productive and technical processes, communicate effectively and work as a team (Fragoulis, 2008).

**OJT.** While the options are endless for the diverse forms of in-house training that can be conducted, typically only larger companies or organizations can afford to totally provide the needed training in-house (Crumpton, 2011). OJT consists of shadowing and mentoring activities, and serves as reinforcement and practice of the concepts and/or procedures covered during theoretical sessions (Alamo & Ross, 2017). The amount of time, money, and resources needed to create an effective in-house program can limit organizations from pursuing this option. A cheaper alternative could be created, but then there is a potential sacrifice for quality of training that could hypothetically trigger a safety related incident. However, according to Furgoulis (2011), no specific training method is better than others. Before the organization chooses the appropriate training method, there are several items to take into consideration (Furgoulis, 2011):

- The nature of the training material;
- The number of trainees;
- The trainees' background and skills'
- The type and quantity of equipment available;
- The training duration;
- The trainer's skills; and
- The results that should be achieved (p. 6).

Often due to financial restrictions, a modified version of an in-house training program is created. OJT gives a more hands on approach to learning, which some individuals have a greater success with in terms of knowledge retention. OJT requires that an employee with a high-level

of knowledge and experience train an individual on the job. Becker (1993) has emphasized that OJT actually contains elements of both general and firm-specific training. This can make the training more valuable to trainees because the more generalized training can be transferable to other organizations. Woods (2011) also agreed that students are more motivated to learn when they can begin to connect formal classroom instruction with their OJT.

**Union hall training.** Union halls can be defined as trade unions that employers coordinate to produce and maintain a pool of highly skilled and flexible workers who are available to the signatory contractors who happen to win work in a competitive bidding process (Waddoups, 2014). In other words, they are independent organizations that provide a pool of available labor workers to employers that typically have collective bargaining agreements in place. A collective bargaining agreement is a contract between any employer and a union hall that dictates employment specifics such as: hours, wages, and working conditions. Although job training plays an important role in building the human capital stock across the industry structure, it is particularly important in construction, which faces unique challenges in producing and maintaining a skilled workforce (Waddoups, 2014).

Theoretical arguments and empirical research have arrived at contradictory conclusions about the union training effect, which suggests that additional research may prove useful in clarifying training requirements (Waddoups, 2014). The impact of trade union coverage on the incidence of job-related training in the United States, with emphasis on addressing disparities in training experience among construction workers in union and nonunion settings and comparing training experience in construction with that in the labor market more generally are describing the union training effects (Waddoups, 2014). Union halls are most often used in the construction and maintenance industries, and there are often contract requirements to use union hall workers

in order to obtain work. These skilled workers will perform specialized work for many different trades within those industries.

Firms (operators/owner clients) require workers with high levels of general skills that can most efficiently be produced through training, a large component of which occurs on the job (Waddoups, 2014). “Construction is considered to be a risky endeavor because of the high frequency of work-related fatalities and serious injuries” (Demirkesen & Arditi, 2015, p. 1160). This is the primary reason training is often provided by union halls. Demirkesen and Arditi (2015) stated that,

Effective safety trainings may lower accident rates, but there are several challenges associated with safety training that need to be overcome by construction companies. The extent to which workers’ learning experiences are affected in safety training sessions and the extent to which workers learn safe practices in training sessions is among these challenges. (p. 1160)

The barrier that is most difficult to overcome with union hall training is that the skills being taught are not relevant to the employer that the employee will be working for due to generalization of the training. “In essence, trade unions and employers coordinate to produce and maintain a pool of highly skilled and flexible workers who are available to the signatory contractors who happen to win work in a competitive bidding process” (Waddoups, 2014). This causes re-training, costing more money to the operator/owner client. It also creates a domino effect of poor workforce development initiatives to cut “overhead” costs. Given the current production technology, organization of production, and skill requirements in the construction industry, standard human capital theory predicts that construction firms will be particularly reluctant to train workers compared to firms in other industries (Waddoups, 2014).

## **Illiteracy and Language Barriers**

Low literacy levels in adult learners pose an education and public health challenge (Miller, McCardle, & Hernandez, 2010). In order to appropriately train an individual, one must possess the ability to read, write, and speak in the language the material is presented in.

Illiteracy and language barriers are a struggle for millions of Americans today, and has created barriers in the effectiveness of training individuals for their current jobs or advancements in their skillsets. Approximately 36% of America's adult population cannot perform daily activities that require basic reading, writing, and numerical skills (Wong, 2012). These are considered critical skills that are an essential function to any workforce.

More than 40 million adults in the United States possess only the most basic and concrete literacy skills (Miller et al., 2010). The statistics become even more startling when looking at the percentage of workers whose native language is Spanish. Data from the 2003 National Assessment for Adult Literacy (NAAL) show that approximately 11 million Americans are considered to be non-literate in English, performing below the category of below basic (Miller et al., 2010). "As context, this estimate includes approximately 4 million individuals who speak neither English nor Spanish, the two languages used in the personal interview and assesment, but this leaves an estimate of 7 million individuals who are speakers of neither English or Spanish and unable to complete even the easiest assessment questions" (Miller et al., 2010).

"The literacy challenges are even greater when one looks solely at the subset of adults in the NAAL sample from 2003 who spoke only Spanish before beginning school; 61% of these individuals scored at the below basic level for literacy" (Miller et al., 2010). According to research conducted by the Bureau of Labor Statistics (BLS) (2015) in 2014, 27.3% of all construction workers were either Hispanic or Latino. "Limited literacy significantly limits

education outcomes and opportunities for low-literate adults, as it does for the large number of adult literacy students who are learning English as second language” (Miller et al., 2010, p. 101).

**Safety outcomes.** The leading concern that stems from illiteracy rates and language barriers in workforce development is the increased risk of safety related incidents. Wong (2011) stated that occupation health literacy is the degree to which workers have the capacity to obtain, communicate, process, and understand occupational health and safety information and services to make appropriate health decisions in the workplace.

Poor occupational health literacy leads to work-related injuries (Rauscher & Myers, 2008). However, there is debate within the industry as to what exactly is the leading cause of work-related injuries. “Language barriers, cultural differences, lack of safety training, economic disadvantage, lack of construction experience, and relegation to the most dangerous jobs within construction have all been suggested as reasons behind the rates” (Roelofs, Sprague-Martinez, Brunette & Azaroff, 2011).

A study was conducted on Hispanic construction worker perspectives and what factors impact worksite safety and increase risk. Roelofs et al., (2011) found that,

These workers generally have limited-English language ability and lower education levels than other construction workers. They almost are more likely to hold the more hazardous jobs within the construction industry. Despite a declining trend in work-related deaths overall, among Hispanic workers such fatalities continued to rise until the crash of the construction industry in 2009. (p. 1)

Interestingly the researchers went into the study assuming language barriers and cultural differences were the primary reasons behind the disparate rates (higher injury rates or death), as other researchers have concluded. This study determined difficult work environments

characterized by supervisor pressure, competition for jobs, and intimidation with regard to raising safety concerns as their key issues (Roelofs et al., 2011). Additionally, it was determined that hispanic workers needed supplementary language and literacy appropriate training to be more effective within the workforce (Roelofs et al., 2011). This would require the investment of money into workforce training programs, either in the form of in-house or technical college training courses.

Conclusions drawn from the Roelofs focus group determined that supervisors and union stewards were ultimately responsible for the safety and training of employees, regardless of literacy ability. It was also determined that to ensure the respect of all workers, supervisors should be required to undergo leadership training to improve their management skills and increase their level of respect for other workers (Roelofs et al., 2011). “The theme of the need for more respect for workers arose repeatedly among participants” of the focus group (Roelofs et al., 2011).

Wong (2011) also recommended that occupational health literacy be incorporated into strategic planning and quality improvement of every organization. Wong (2011) also goes on to suggest that organizations may seek external partners to expand capacity. This would include partnering with local technical colleges and union halls to ensure high quality training is being conducted. A limitation of this study was the focus group data was only collected from one particular company. The results could vary greatly if more than one organization participated in the study.

**Solutions.** With such a wide variation of solutions available to overcome illiteracy and language barriers, training emerged as one of the top recommended resources. Roelofs et al. (2011) focus group results discovered that morning safety discussions and tool box talks

incorporated with training, was a useful strategy for combating barriers. By providing training daily to employees, it shows that companies are dedicated to investing into their workforce.

Roelofs et al., (2011) found that,

At the Latino Health and Safety Summit in April 2010 United States Secretary of Labor Linda Solis suggested that worker training was a central strategy to reduce Latino risk and announced that OSHA would begin enforcing in earnest the OSHA policy that worker training must be provided in a way that is understandable to workers, i.e., in their language. (p. 1)

This could be done either through the use of translation services or investment of the workforce through training courses to help employees learn reading and writing skills in the English language.

Another solution that is often overlooked is changing the way employers view illiteracy and language barriers in the workforce. The construction industry can be very dangerous, and ultimately employers have the responsibility to keep their employees safe. “The proposed solution is not to focus on the worker but rather on the employer” (Wong, 2011). “While Spanish language training for workers is necessary, it may not translate into improved conditions. Indeed, the key may be better enforcement of workplace standards and targeted training of those with the power over these conditions; construction employers” (Roelofs et al., 2011).

### **Generational Gaps**

According to Business Dictionary (2018), a generational gap is defined as differences of opinion, tastes, beliefs, and other social and cultural norms that exist between older and younger age groups. “Beyond age-related and career dynamics studies, generational differences could

also affect how a worker reacts to different job characteristics” (Truxillo, Cadiz, Rineer, Zaniboni, & Fraccaroli, 2012, p. 3). Artley and Macon (2009) found that conflicts in the workplace can “reduce profitability, present hiring challenges, increase turnover rates, and increase moral among all generations of employees in the organization” (p. 92). Simons (2009) concurs, stating that “a lack of understanding for each generation, and what influenced their value system, may cause culture confusion and can negatively impact your company’s collaborative efforts” (p. 16). To ensure workforce development trainings are effective with each employee, generational concerns should be taken into consideration and training directions altered based on the relevant information.

**Age of the workforce.** For the first time in history, there are four very distinct generations working side-by-side. Each generation, traditionalists, baby boomers, generation X, and generation Y, have been heavily influenced by the events of their time (Kapoor & Solomon, 2011). This has created a unique identity for each generation, one in which interprets and gains knowledge in a slightly different way.

Kapoor and Solomon (2011) stated that generational differences impact every aspect of the workplace. In order to fully understand the impact of the generational gaps of a workforce, the characteristics of each generation needed to be explained. Traditionalists, also known as matures, or the silent generation, were generally born between 1925 and 1945 (Kapoor & Solomon, 2011). “Most of this generation endured poverty and traumatic world events, living through the Great Depression and World War II.” (Kapoor & Solomon, 2011, p. 2). According to Dahlroth (2008), although traditionalists for the most part have not embraced new technology, those who have are among the fastest-growing group of internet users. This is beneficial to

workforce development training for those who have embraced the technological advances, since most trainings are being conducted using the internet.

Baby boomers were born between the years 1946 and 1964. They tend to be idealistic and are willing to sacrifice personally and professionally in order to achieve success (Glass, 2007). However, additional research by Hernaus and Poloski Vokic (2014) has shown that “baby-boomers may prefer higher discretion rights, like to handle an identifiable piece of work which consists of various and significant tasks, and appreciate a good working atmosphere. For instance, baby-boomers, as the most experienced cohort of employees, should occupy jobs comprised of autonomous tasks that initiate the work of others” (Hernaus et al., 2014). Kapoor and Solomon (2011) suggest that,

They have seen and experienced much more than their younger coworkers and are more likely to recognize the importance of safety. However, their knowledge and experience also can lead them to believe they don't need training or presume that they already know the proper way of doing things. (p. 2)

Generation X is considered to be individuals born between the years of 1965 and 1980. According to Geise (2011), generation X tend to be more cynical and distrustful of authority, which can lead to resistance in training. However, they are very knowledgeable in their respective fields, and place a high emphasis on work-life balances to accommodate to family and friends (Geise, 2011). Kapoor and Solomon agree that “gen Xers tend to be self-reliant, independent and are somewhat skeptical of authority” (Kapoor & Solomon, 2011, p. 309). “Some of the reasons identified by Artley and Macon (2009) are from seeing their parents laid off, rising personal debt, challenges to the honesty of national leaders, and the threat of AIDS to personal relationships” (Kapoor & Solomon, 2011, p. 309). Giese (2009) found that “gen Xs

also are more independent and informal than boomers, and prefer flexible schedules. They consider themselves proficient with technology and enjoy online instruction; and consequently, are the largest segment of online learners. They expect results and pride themselves on professional development courses that are relevant to their specific needs” (Geise, 2011).

Generation Y, otherwise known as millennials, were born between the years of 1981 and 1999. Kapoor and Solomon (2011) expressed that millennials embrace technology because they were brought up around it, and as a result, are very comfortable with change. “Millenials are more affluent, more technologically savvy, better educated and more ethnically diverse than any previous generation” (Spiro, 2006, p.17). “They communicate via social networking websites and text messaging expecting instant feedback and acknowledgment, and are sometimes thought to have poor communication and problem-solving skills” (Kapoor & Solomon, 2011, p. 310). Poor communication and problem-solving skills can be attributed to lack of physical interaction within the workforce since the preference is for online communication.

Spiro (2006) also found that millennials want to see immediate results on projects and that they are looking for opportunities to propel their careers forward at a fast pace. Additional characteristics Spiro (2006) found include:

- Desire for mentor-like managers, who are highly engaged in their professional development;
- Ability to multiask, whereby they “seek out creative challenges and view colleagues as vast resources from whom to gain knowledge”; however, they need challenging projects in order to prevent boredom and attrition;
- Need for “small goals with tight deadlines so that they can build ownership of tasks” and;

- Balance and flexibility, especially with respect to a work-life balance (p. 17).

While millennials have adapted to technology, the real threat is the comprehension of the training and ability to effectively communicate the learned material, to prevent safety related incidents from occurring.

Geise (2011) states that one of the most significant barriers that safety educator's face today is teaching different generations of workers. "Companies must make workplace adjustments in order to create a productive environment for all employees, regardless of their generation" (Kapoor & Solomon, 2011, p. 1). This means altering the focus of workforce development programs geared towards one specific avenue for training to include a variety of different techniques and learning styles. According to Geise (2011),

Each of these generations has different values and perspectives on work and safety. It is imperative that we understand these perspectives in order to effectively connect with the workers in these age groups. In addition, each of the generations receives and processes information differently. We need to understand this so we can format training so it leads to the best retention. (p. 1)

**Technological aptitude.** Technological aptitude can be described as having the ability to comprehend and adapt to advances in technology. People of various cultures and generations process and retain information in different ways, making effective communication a challenge (Giese, 2011). While generation X and generation Y have been surrounded with technology since very young ages, the traditionalists and baby boomers have not. This has created barriers in the way training is conducted today. Trainers need to find new and creative ways to train and connect with individuals from different demographics regarding safety (Giese, 2011). With the

surge for a technology driven era, it is easy to forget that utilizing technology is not the best approach for every person or generation.

“One of the most significant barriers that safety educators face today is teaching different generations of workers” (Geise, 2011). Given the fact that there are large differences between the generations, it is apparent that a “one size fits all” workforce development training program will not work for everyone (Geise, 2011). Haeberle, Herzberg, and Hobbs (2009) “recognizes that despite no one specific method for successfully managing multigenerational workforce, managers should acknowledge generational differences and try to adapt in order to meet the needs of all generations” (p. 315). While Wagner (2007) recommends intertwining generations so each can build of the other’s strengths and weaknesses, since each generation brings a different set of skills to the table. This also aligns with the suggestion of mixing training programs to include a variation of hands on, visual aid, online testing, and open discussions to ensure that aspects of learning preferences from each generation are included. “Training multigenerational workers does not have to be an obstacle if you apply the right techniques. In fact, using the strengths of each generation to meet the needs of the others can foster more powerful and meaningful training sessions” (Geise, 2011, p. 3).

Trainers in today’s world need to understand how to carefully balance the unique training needs of their employees. As these needs will greatly change from different organizations and industries. Incorporating teaching strategies that are not only applicable to the correct generation, but industry should be a priority. A difference in opinion and approach comes from research conducted by Lawler (2011) that notes that “designing work on the basis of what fits a particular age group is likely to be a poor approach, as what might appeal to one Gen Y may not resonate with another” (Hernaus et al., 2014, p. 631). While there is no dispute that replications

of generalized attitudes, morales, and values can be related inter-generationally, it cannot be the only deciding factor on how to conduct trainings. Lawler (2011) further goes on to explain that “generational patterns do exist, and they should shape human resource management (HRM) policies and work design practices, but they cannot fully explain work behaviors within organizations” (Hernaus et al., 2014, p. 631).

### **Conclusion**

In conclusion, this literature review shows sufficient evidence of a multitude of barriers that the pipeline workforce faces in order to reduce the amount of safety related incidents. While there is many approaches to overcome the specified barriers, it is important to remember that a “one size” workforce development program does not fit all. Taking into consideration the many options available such as: apprenticeship programs, OJT, or union hall trainings, that need to be given considerable thought in which will work best for a specific organization. Additional barriers include illiteracy, language and generational gaps. It is incredibly important to continue to pursue and overcome these barriers to improve the lives of our workforce’s.

### **Chapter III: Methodology**

The number of barriers in workforce development training among Company ABC pipeline employees was causing an increase in safety related incidents. As identified in Company ABC's 2017 safety statistics, 37% of safety related incidents were due to lack of formal and thorough training programs, generational gaps, illiteracy, or language barriers. Since Company ABC had chosen to use a wide variety of methods to train employees and more often than not the least expensive solution to meeting federal requirements had been used. Company leadership determined that in order to reduce the amount of safety related incidents, a more direct and streamlined approach to workforce development was needed.

This chapter includes the methodology used to obtain identified barriers to overcome obstacles that were preventing employees from effectively learning through current workforce development training. This research study concentrated on the barriers that have a direct correlation to safety related incidents. In addition, this chapter discussed subject selection, instrumentation, data collection procedures, and data analysis. Limitations to this study have also been reported.

#### **Subject Selection**

A sample population of 50 participants throughout the Midwest were asked to voluntarily participate in a focus group study. The participants selected were project managers and field employees working for Company ABC's pipeline division. Project managers and field employees were chosen because they are the workforce obtaining OQ training and had the most in-depth knowledge on recommendations and solutions to overcome the mentioned barriers.

## **Instrumentation**

The focus group questions were designed to address the barriers in workforce development training at Company ABC and to identify ways to lower the safety incident rate. There were six primary questions, with an additional 12 sub-set questions (Appendix A). The first question took a generalized approach about OQ before moving into specific training barrier questions. The questions were designed to allow the employees to be open and honest about their recommendations and encouraged them to provide meaningful solutions to address the barriers.

## **Data Collection Procedures**

Data was collected via a focus group at Company ABC's corporate office. It coincided with safety training days to minimize lost field production time. To reduce costs to the study, 50 individuals were chosen based on their current location to the corporate office. Of the 50 project managers and field employees that were asked to voluntarily participate in the focus group, 21 agreed to participate.

After all signed releases were received, and they were assured of the confidentiality of their responses, the focus group was scheduled. There were two sessions conducted on September 21, 2018. The room was setup in a circular shape with 12 chairs and each participant was assigned a number to protect their identity.

## **Data Analysis**

The facilitator documented each individual's response by using a voice recorder during the focus group and then immediately transcribed the data at the conclusion of the session. Themes from the focus group were compared to the literature review data to see if employee's solutions aligned with the conclusions drawn from the literature review. The analysis of the data

offered recommendations to be considered for workforce development training to reduce the amount of safety related incidents at Company ABC.

### **Limitations**

The limitations of this research study include:

1. The participant's focus group data may not be an accurate representation of the entire pipeline workforce population.
2. The participants who can read and write will only be included in this study.
3. The participants may be biased based on the barriers presented.

### **Summary**

Chapter 3 identified the subject selection process, instrumentation, data analysis, and limitations of the focus group conducted. The concentration was on the analysis of the data and the recommendations that could be made towards lowering the amount of safety related incidents at Company ABC. Chapter 4 continues with an in-depth look at the results of the focus group.

## Chapter IV: Results

The number of barriers in workforce development training among Company ABC pipeline employees was causing an increase in safety related incidents. As identified in Company ABC's 2017 safety statistics, 37% of safety related incidents were due to lack of formal and thorough training programs, generational gaps, illiteracy, or language barriers. Company ABC had chosen to use a wide variety of methods to train employees and more often than not, the least expensive solution to meeting federal requirements had been used. Company leadership determined that in order to reduce the amount of safety related incidents, a more direct and streamlined approach to workforce development was needed.

This study was completed to address the number of barriers in workforce development training among Company ABC pipeline employees due to an increase in safety related incidents. The purpose of this research was to use the identified barriers to overcome challenges that are preventing employees from effectively learning through current workforce development training.

In an effort to overcome those barriers and discover solutions to minimize or eliminate the identified obstacles, employees who were project managers and field personnel were asked to participate in a one-hour focus group. The employees who participated in the focus groups were genuinely pleased that Company ABC was looking for positive ways to make the industry a safer place to work. This chapter focused on the two focus groups results, as well the demographics. Great detail was also given to the research questions and findings gathered from the study (Appendix B).

### Focus Group Recruitment

Company ABC held its annual safety day training September 20<sup>th</sup>, 2018 at their corporate office. There were two focus groups scheduled for the following day, September 21<sup>st</sup>, 2018 to

coincide with safety day training, as to obtain the highest participation rates. A recruitment request was sent via company email to 50 project managers and field employees describing the purpose of the study and inviting them to share their knowledge. These two groups were targeted because they had the most in-depth knowledge on the identified barriers.

After the initial email request sent on August 13<sup>th</sup>, 2018, seven employees agreed to participate in the focus group. A follow-up email with an identical request was sent again on August 28<sup>th</sup>, 2018. That email resulted in an additional 13 employees agreeing to participate. A final reminder was made on September 10<sup>th</sup>, 2018 with one additional employee agreeing to participate. This brought the total number of participants to 21. The groups were the divided into two focus groups of 10 and 11 participants.

### **Demographics**

Participants were asked to voluntarily provide demographic information prior to the focus groups beginning, as well as the option to not respond. Both focus groups were conducted at Company ABC's corporate office in a private conference room. Focus group 1 was held at 12:00 pm with a total number of 10 participants and focus group 2 was held at 3:00 pm with a total number of 11 participants. The majority of the focus groups participants were male as depicted in Table 1.

Table 1

#### *Focus Group Participant Gender*

	Male	Female
Focus Group 1	8	2
Focus Group 2	10	1
Total	18	3

The participants of both focus groups represented a wide variation of age ranges as shown in Table 2. Within focus group 1, one participant was in the 18-29, four participants were in the 30-39, three were in the 50-59, and two were in the 60 + age groups. In focus group 2, one participant was in the 18-29, two in the 30-39, four in the 40-49, and four in 60 + age groups.

Table 2

*Focus Group Participant Age*

	18-29	30-39	40-49	50-59	60+
Focus Group 1	1	4	0	3	2
Focus Group 2	1	2	4	0	4
Total	2	6	4	3	6

Participants in the focus groups also had a variation in ethnicity as presented in Table 3. Focus group 1 had three participants identifying as African American, four as Hispanic, and three as Caucasian. In focus group 2, two identified as African American, one as Hispanic, one as Native American, one considered other, and six as Caucasian.

Table 3

*Focus Group Participant Ethnicity*

	African American	Caucasian	Hispanic	Native American	Other
Focus Group 1	3	3	4	0	0
Focus Group 2	2	6	1	1	1
Total	5	9	5	1	1

With the varying gender, ages, and ethnicity of the participants, the focus groups had a wide variety of backgrounds and experiences within the industry, as well as varying perspectives on the study's topics.

### **Research Question Analysis**

The focus group questions were created to foster an environment that gave the participants opportunities to discuss solutions for training barriers specifically related to this study. The questions were broken into four primary categories: general, formal training programs, generational gaps, and illiteracy and language barriers. Each of the 16 focus group questions are summarized below with figures depicting common themes amongst the participants combined from focus groups 1 and 2.

**Research question 1: In respect to workforce development training, specifically Operator Qualification (OQ), what do you think we are doing well as an organization to train our employees?** This question was designed to gather data on the positive effects of the training provided. The main theme resulting from this question was Company ABC is doing a great job at promoting a strong backing for health, safety, and environmental (HSE) initiatives, as well as quality PPE. The second theme was the participants felt the company provided excellent opportunities for hands on training. Several participants were extremely happy with the newer equipment being provided for not only training, but field use as well. Additional responses noted being very pleased with the mentorship provided within the organization and the contribution that it makes for growing personnel. Table 4 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 33% of the focus group participants.

Table 4

*Research Question 1*

	Hands on Training	HSE/PPE	Mentoring
Focus Group 1	29%	29%	0%
Focus Group 2	0%	29%	15%
Total	29%	57%	15%

**Research question 2: What part of OQ training do you feel could be improved?** This question designed to gather data on what could be done to make improvements with OQ training. The highest number of responses were recorded for revamping of the training requirements. Several participants noted that the training requirements were outdated and the laws needed to be re-vamped to meet current industry needs. Similar suggestions were to campaign for change of the laws at the state and federal levels. Additional suggestions for improving training was to re-word test questions. Test questions can often use terms that are not used in the field and can make it more challenging for employees to successfully pass tests. Also, misleading questions, as well as more than one correct answer, were cited as in need of major improvement. Other notable themes included the need for better simulation equipment and the ability to transfer training records from one client to another (portability). Table 5 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 43% of the focus group participants.

Table 5

*Research Question 2*

	Wording of Question	Better Equipment	New Training Requirements	Portability	Testing Structure
Focus Group 1	11%	11%	33%	0%	0%
Focus Group 2	0%	11%	11%	11%	11%
Total	11%	22%	44%	11%	11%

**Research question 3: Do you feel the training provided gives employees sufficient knowledge to work safely? If not, what could be changed?** This question was designed to gather data on whether employees felt that the amount of safety training provided within the OQ training was sufficient in helping to avoid safety incidents. There were two main themes that developed from this research question. Yes, the training does give enough knowledge and no, it does not. The participants were almost evenly split on whether or not the training provides enough knowledge to work safely. Some participants felt it already provided enough safety training, while other participants felt there was no such thing as too much. Other comments included that there are generalized safety concepts in the training, but it does not go far enough to aide in the prevention of accidents. Table 6 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 24% of the focus group participants.

Table 6

*Research Question 3*

	More Safety	No Change Needed	Undecided
Focus Group 1	20%	40%	0%
Focus Group 2	20%	0%	20%
Total	40%	40%	20%

**Research question 4: Has the OQ training you have taken, benefited your work performance and enhanced your job skills?** This question was designed to gather data on whether the OQ training had any bearing on skills improvement. There was an overwhelming response that the OQ training is beneficial to the work being performed. Participants almost all mutually agreed that the hands-on training received is what gave them the skillset to perform their jobs effectively. Only two participants disagreed due to the lack of understanding with technology. Table 7 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 33% of the focus group participants.

Table 7

*Research Question 4*

	Hands on Training	Too Much Technology
Focus Group 1	43%	0%
Focus Group 2	29%	29%
Total	72%	29%

**Research question 5: What types of formal training programs could Company ABC implement to prevent safety related incidents?** This question was designed to gather data on suggestions for formal training programs that could be implemented to help avoid safety

incidents. The participants came up with two primary suggestions for formal training programs. Simulation was the number one response to prevent accidents. Simulation gives employees the opportunity to practice the task hands on without working on live lines. The other primary suggestion was to develop, either by working with local technical colleges or by creating an in-house school to train focusing on the needs of the industry. Table 8 summarizes the number of responses for the prevalent themes from both focus groups. This question generated responses from 24% of the focus group participants.

Table 8

*Research Question 5*

	Simulations	Technical College
Focus Group 1	20%	20%
Focus Group 2	40%	20%
Total	60%	40%

**Research question 6: How could an in-house training program reduce safety incidents?** This question was designed to gather data on if an in-house training program was implemented, would it be able to help lower safety incidents. With 100% of the participants responses agreeing to some variation of an in-house training program would reduce safety related incidents. Participants felt by combining different aspects of training programs to make one specific to our organization and industry would be a great resource for not only OQ training, but safety as well. Table 9 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 33% of the focus group participants.

Table 9

*Research Question 6*

	Company Specific Training	Classroom Education	OJT & Simulation
Focus Group 1	29%	14%	29%
Focus Group 2	29%	0%	0%
Total	58%	14%	29%

**Research question 7: How could union hall training be used to reduce safety**

**incidents?** This question was designed to gather data on if union hall training programs could help lower safety incidents. Almost all of the participants who responded to this question felt that if union halls completed their training prior to working on pipeline jobsites, it would greatly reduce safety issues and would also create better quality work. Participants mentioned that as part of union hall agreements, training money is provided to cover these specific costs, but often times it is not done or it's not specific enough to the industry to do much good. Also having a zero-tolerance policy for safety violations was suggested for unions to incorporate. Table 10 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 29% of the focus group participants.

Table 10

*Research Question 7*

	Company Specific Training	Developing In-House Program	Adding Safety Training
Focus Group 1	17%	17%	0%
Focus Group 2	33%	17%	17%
Total	50%	34%	17%

**Research question 8: How could an OJT program be used to reduce safety**

**incidents?** This question was designed to gather data on if OJT programs would be useful in reducing safety incidents. The main theme that developed from this question was having an experienced mentor combined with hands on training would be a great way for training to reduce incidents. Participants felt that by actually performing the work and teaching ways to avoid hazards would be a more reliable method than classroom training. Table 11 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 29% of the focus group participants.

Table 11

*Research Question 8*

	Hands on Training	Mentoring
Focus Group 1	50%	17%
Focus Group 2	0%	33%
Total	50%	50%

**Research question 9: How could an apprenticeship program be used to reduce safety incidents?** This question was designed to gather data on if an apprenticeship program

was implemented, could it reduce safety incidents. The main theme that developed from this question was that it likely would because employees would be more knowledgeable about their trades as apprenticeships connect real skills to the work. Several participants noted that many times employees dispatched from union halls have never even seen a pipeline. That greatly increases the chance of a safety issue. On a side-note, all of the participants noted that they felt even if an apprenticeship program did reduce safety concerns, the unions and employers likely wouldn't choose it as a viable option due to the cost. Table 12 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 24% of the focus group participants.

Table 12

*Research Question 9*

	Greater Knowledge	Real-World Skills
Focus Group 1	40%	20%
Focus Group 2	40%	0%
Total	80%	20%

**Research question 10: If one of the previously mentioned formal training programs was the direction that Company ABC moved towards, is one option more favorable than the other? If so, why?** This question was designed to gather data on which program the participants felt was the best training option for Company ABC based off the discussed options. The main theme that developed was union halls and in-house training with an emphasis in OJT tied for the best options. However, union halls were only suggested due to the prospective financial gains. In-house with an emphasis in OJT was recommended because it can be catered to industry specifics (union halls do not) and provides real world experience. Table 13 illustrates

the number of responses among prevalent themes from both focus groups. This question generated responses from 33% of the focus group participants.

Table 13

*Research Question 10*

	Union Hall Training	In-House Training	Undecided
Focus Group 1	29%	14%	14%
Focus Group 2	14%	29%	0%
Total	43%	43%	14%

**Research question 11: How could the barrier of limited time restraints for training be resolved?** This question was designed to gather data on suggestions for overcoming the short timeframe that employees have to complete trainings. Participants sighted needing a greater commitment from management to allot additional time. Another participant stated that rushing employees through the process increased the risk for safety issues. An additional reoccurring them was proper planning of upcoming jobs by management. That would not only control the limited time restraints, but also cost. Table 14 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 29% of the focus group participants.

Table 14

*Research Question 11*

	Increase Costs	Proper Planning
Focus Group 1	17%	17%
Focus Group 2	17%	50%
Total	34%	67%

**Research question 12: How can the barrier of minimal resources, such as subject matter experts or trainers be resolved?** This question was designed to gather data on suggestions for ways to retain and or develop resources internally. The participants had a wide range of suggestions for obtaining qualified individuals. The main themes generated were training from within by providing leadership courses, and investing more money into the core employees where the SME's are lacking especially in critical need areas. Another suggestion was to make the union halls responsible for the trainers, since training money is allotted for those purposes. Table 15 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 29% of the focus group participants.

Table 15

*Research Question 12*

	Leadership Training	Invest Money	Union Responsibility	Undecided
Focus Group 1	33%	17%	0%	0%
Focus Group 2	17%	0%	17%	17%
Total	50%	17%	17%	17%

**Research question 13: Company ABC recognizes that we have employees from a variety of ethnic backgrounds and that employee's first language may not be English. What services could Company ABC provide to overcome illiteracy and language barriers in the English language?** This question was designed to gather data on suggestions for services that could be provided to overcome identified barriers. The main themes that emerged from this question was to hire translators and or bilingual employees for all jobsites. This still posed safety concerns over employees not being able to read safety signs or heed warnings if needed.

The primary theme after some additional discussion resulted in all participants agreeing that English courses needed to be offered either in-house or through a local technical college. Other suggestions included offering incentives, such as additional pay on employee's own time. Table 16 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 48% of the focus group participants.

Table 16

*Research Question 13*

	Training Courses	Translators	Incentives
Focus Group 1	20%	20%	10%
Focus Group 2	20%	20%	10%
Total	40%	40%	20%

**Research question 14: If continuing education opportunities were provided, what would keep employees motivated and enrolled in these programs?** This question was designed to gather data on suggestions that would keep employees motivated and enrolled in personal development courses. The main theme that emerged from this question was to give employees additional incentives upon completion of the continuing education opportunities, such as job promotions. The sub theme that developed from promotions was to offer additional monetary compensation for completing the educational opportunities. Only one participant felt there was not any incentives that could be offered if employees did not want to become involved with educational programs. The need for skilled individuals is so high that if an employee is being asked to do something they do not want to do, they will find another job. Table 17 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 38% of the focus group participants.

Table 17

*Research Question 14*

	Promotions	Compensation	Undecided
Focus Group 1	25%	13%	13%
Focus Group 2	25%	25%	0%
Total	50%	38%	13%

**Research question 15: There is a wide variation in the age of our workforce.**

**Employees range from 18 – 80+. These age ranges, otherwise known as generational gaps, are causing barriers to training, especially with employees using technology. How can Company ABC make it easier to adjust to online testing and the use of other electronic devices?** This question was designed to gather data on suggestions for overcoming barriers that hinder employees from adjusting to the use of technology. The main theme that developed was a fair amount of resistance to technology from the participants. This included opting for paper tests and bringing IT personnel to jobsites. Other comments suggested that we need to go back to basics and avoid technology altogether so we can focus on what's important, work. Additional suggestions from the participants was to offer technology courses, blended online/paper options, and demonstration of technology before use. Table 18 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 48% of the focus group participants.

Table 18

*Research Question 15*

	On-site IT	Technology Courses	Scale back on Technology	Blended Options
Focus Group 1	10%	30%	20%	0%
Focus Group 2	10%	0%	10%	20%
Total	20%	30%	30%	20%

**Research question 16: Since 32% of Company ABC’s workforce is over the age of 50, what are some solutions that can be incorporated into training to ensure safety?** This question was designed to gather suggestions for ways to help the moderately to older part of our workforce work safer. The main themes generated from this question was to have mentors paired with older and younger workers. Additional themes were utilizing visual aids and implementing a fitness workout program. Participants also liked the idea of sharing “war stories” for a lesson learned, but also acknowledged that other suggestions made would be more suitable. Table 19 illustrates the number of responses among prevalent themes from both focus groups. This question generated responses from 38% of the focus group participants.

Table 19

*Research Question 16*

	Mentors	Fit Tests	Visual Aids	Lessons Learned
Focus Group 1	25%	0%	13%	13%
Focus Group 2	13%	25%	0%	13%
Total	38%	25%	13%	25%

## Conclusion

The focus group participants came up with several different solutions for the implementation of a formal training program, illiteracy, language barriers, and the issue of generational gaps, in an effort to help lower safety incident rates. While only a very small population of the pipeline workforce was studied, the results aligned with research conducted in the literature review.

The main theme generated for a solution to a formal training program was to implement an in-house training program, with a focus on OJT. The participants felt that was the best direction for employees to learn the actual skills needed to be employed with Company ABC, while instilling strong safety values.

The main theme generated to overcome illiteracy and language barriers at Company ABC, was to hire translators for jobsites and to partner with local technical colleges for reading and English courses. This would help to lower the safety incident rate by assisting employees in reading, speaking, and writing in the English language so they can understand directions from other crew members and can heed safety warnings when needed.

The final main theme of overcoming generational gaps within the workforce was to utilize mentorship of individuals from different generations. This will make employees feel valued by sharing their knowledge, skillsets, and valuable work experiences. This will not only help employees feel appreciated, but also help avoid potential repeats of mistakes or hazards while working.

## **Chapter V: Discussion, Conclusion and Recommendation**

The number of barriers in workforce development training among Company ABC pipeline employees was causing an increase in safety related incidents. As identified in Company ABC's 2017 safety statistics, 37% of safety related incidents were due to lack of formal and thorough training programs, generational gaps, illiteracy, or language barriers. The purpose of this research was to use the identified barriers to overcome challenges that are preventing employees from effectively learning through current workforce development training.

Company ABC had chosen to use a wide variety of methods to train employees and more often than not, the least expensive solution to meeting federal requirements had been used. Company leadership determined that in order to reduce the amount of safety related incidents, a more direct and streamlined approach to workforce development was needed.

### **Discussion**

The purpose of this research was to help Company ABC find innovative ways to control barriers that have hindered successful workforce development training. This research investigated the primary causes of specific barriers within Company ABC which included: implementation of a thorough training program, reducing the effects of generational gaps, and combating illiteracy and language barriers. It looked for ways to discover solutions to assist in minimizing or eliminating the effects of those barriers to ultimately lower the safety incident rate.

The ultimate question to answer from this research was "how do we specifically address the barriers in workforce development training at Company ABC and determine solutions that could lower the safety incident rate?" To answer this question, a focus group was determined to be the most effective way to obtain input for the barriers. The focus group questions were

specifically designed to develop solutions for those barriers. Questions 1 through 4 looked to gather general knowledge on OQ training within the organization to build off for future questions. Questions 5 through 11 specifically addressed different options for formal training programs. Questions 12 through 14 pertained to illiteracy and language barriers, and questions 15 through 16 focused on the generational gaps within the workforce.

The objective of the focus group was to work with a sample population of project managers and field employees working for Company ABC's pipeline division. Of the 50 participants who were asked to voluntarily participate via an email, 21 accepted the invitation. Two separate focus groups were conducted on September 21<sup>st</sup>, 2018 at Company ABC's corporate office, consisting of 10 and 11 participants in each group. Those employees were specifically chosen because they were the workforce obtaining the training, and had the most in-depth knowledge on recommendations and solutions to overcome the above mentioned barriers.

## **Conclusions**

Even though this research study was conducted on a small population of the pipeline workforce, the participant's responses mirrored several of the findings from the literature review. This validated the findings and warrants additional follow-through from Company ABC to minimize and or remove barriers to effective training to improve the safety incident rate.

**Formal training programs.** The discussion of formal training programs and the variation of options available within the industry, both from the focus group and literature review, provided an abundance of solutions. The participants were very supportive of a formal program to stream line training, while making working conditions safer. The literature review echoed the need for a thorough training program to educate and mitigate hazards within the industry. With many options available, research and the focus groups indicated that

implementing an in-house program with an emphasis on OJT would be the most effective option for learning company specific training and reducing safety incidents. Table 20 indicates the results drawn from the literature review in relation to the results from the focus groups.

Table 20

*Formal Training Programs in Literature Review & Focus Group Responses*

Literature Review Findings	Focus Group Responses
Training programs promote safety	Training helps lower the incident rate
Improves services to clients	Better quality work
Higher emphasis on development of knowledge	Creates more knowledgeable individuals
Employees learn new skills	Hands on training develops new skills
Apprenticeships provide quality skills	Apprenticeships connect real skills to work
In-house focuses on company specifics	In-house tailors to address specific needs
OJT reinforces key concepts with mentors	OJT gains experience while being supervised
Union halls are not company specific in training	Union halls don't have industry training

One of the primary advantages of using an in-house training program with OJT is that the training would be specific to the needs of the organization. It also would guarantee that each employee was trained to the organization's specifications, no matter if the employee was from a union hall or hired on directly. It would also help mitigate specific safety concerns applicable to Company ABC.

**Illiteracy and language barriers.** The literature review and focus group results for illiteracy and language barriers identified many similar themes. While effective communication is one of the biggest barriers to safety within Company ABC, several solutions were identified for not only increasing communication, but educational advancements. The largest reoccurring

theme of financial incentives based off the focus group results could not be replicated via the research that was conducted for this study. Table 21 identifies additional conclusions drawn from both the literature review and focus groups.

Table 21

*Illiteracy & Language Barriers in Literature Review & Focus Group Responses*

Literature Review	Focus Group Responses
Low literacy poses public health challenges	Not being fluent in English is a safety risk
Poor health literacy leads to accidents	Not understanding English increases accidents
Training courses to improve skills	Pay for technical college
Provide translation services	Hire bi-lingual employees
Investment of employees	Offer in-house courses for reading & writing

With several different options to choose from, the research and focus group data leaned towards hiring translation services and partnering with local technical colleges to be the most effective solution to help minimize safety concerns. The advantages to this approach would be ensuring effective communication amongst employees and investing into the professional development of the workforce with reading and writing courses.

**Generational gaps.** Several reoccurring themes were discovered between the research and focus group results. All data clearly identified issues associated with generational gaps in the workforce. The most prevalent theme for minimizing concerns in the workforce as identified by both methods of research was to utilize subject matter experts as mentors. An additional conclusion drawn was to use blended learning via classroom and hands on training. This allows employees from different generations to learn from the best approach that works for them. Table 22 identifies additional conclusions drawn from both the literature review and focus groups.

Table 22

*Generational Gaps in Literature Review & Focus Group Responses*

Literature Review	Focus Group Responses
Lack of understanding in each generation	Listen and utilize advice from other workers
Utilize the skills in the workforce	Use mentors to share knowledge
Significant barrier teaching different generations	Blended course options for how people learn
Utilizing technology is not always the best approach	Back to basics with people who want to help

Utilizing the current workforce as mentors offers many advantages. It will not only help the older and more experienced employees feel valued, but it will pass their knowledge on to improve employee skillsets. This not only would help train employees, but it would give another set of eyes to minimize safety issues.

### **Recommendations**

The results of the focus group indicated a need at Company ABC to address multiple barriers within the pipeline division. The recommendations based off the research and the results from the focus group are to develop permanent solutions for the barriers to aid in the growth of employees, while reducing the amount of safety related incidents.

The following are the recommended changes to help lower the safety incident rate and reduce the number of barriers that has caused delays in construction schedules, re-work, injuries, and even fatalities at Company ABC:

- A team of subject matter experts within Company ABC organized by the Human Resources department, should develop an in-house curriculum that meets all federal requirements for workforce development and safety initiatives. The in-house

program needs to focus on pipeline specific tasks with a combination of classroom and on the job training.

- To combat illiteracy and language barriers, translation service companies should be hired to work at every jobsite that employs non-English speakers. Additionally, a partnership with local technical college's needs to be established to provide the opportunity for employees to engage in reading and writing courses for professional development.
- To aide in the matter of generational gaps amongst the workforce, a mentorship program should be established. This program should allow experienced workers to share their knowledge and skills on working safely with the less experienced employees.

**In-house implementation.** Human resources will need to solicit 10 to 15 internal team members consisting of project managers, field employees, and the general manager of the pipeline division, to begin brain storming for the in-house training program curriculum. Outside consultants will need to be vetted and hired to assist with meeting the federal requirements. Outside consultants are needed to ensure that the new curriculum allows Company ABC to meet all requirements set forth by the law.

Another component to the in-house program will be the safety requirements. The HSE team will need to be consulted to address the specific safety concerns within the pipeline division and incorporate the recommendations into the new program. This is a key component to the success of the program and needs to have a large amount of focus for a successful implementation.

The final step will be to create the training, testing, and the on the job curriculum outline to be disseminated to the pipeline team. This material will need to be reviewed and revised as needed based on the feedback provided. Following the revisions, the Information Technology department will need to upload a demo into the in-house software Company ABC uses for training and testing. The internal marketing department will also need to be consulted for the development of training videos to enhance the training material. A small test pilot will be launched prior to a mass role out company wide. After a successful test pilot, it can then be used for new hires and current employees based on a three-year rotating cycle.

**Illiteracy and language barrier solutions.** For the implementation of translation service companies, Company ABC will first need to identify how many jobsites will need translation services. This can be done by sending an email to all pipeline project managers and requesting a response with the need at each jobsite they manage. Once the actual number of translation services has been determined, quotes can then be obtained and the service can be hired.

While translation services alone cannot fix illiteracy and language barriers, offering employees paid reading and writing courses at local technical colleges have a strong potential to minimize those barriers. This will help employees to grow through professional development while eventually removing the need for the translation services. This will ultimately be the safest way for employees to work when they can read and write in English.

**Generational gap solutions.** A team of seasoned employees who have more than 20 years of service will need to be assembled to assist with creating an internal mentorship program. This will be a separate learning opportunity from the in-house program that focuses on knowledge testing and on the job training. This team will create a checklist of their knowledge and skills on working safely and utilizing industry standards on job specific duties.

A schedule will also need to be established and approved by management. A small pilot mentorship program should be rolled out at the corporate office and if successful, a phased roll-out through the remainder of the organization.

### **Recommendations for Future Research**

Looking back upon the study, one of the things that could have been done differently was to have a larger participant pool. With the number of employees in the immediate area, there were a limited number of available participants. With a larger participant pool, more solutions could have been determined to aide in the reduction of barriers.

An additional change would have been to ask additional focus group questions on illiteracy and language barriers. Further questions could have provided more in-depth research on the cause of those barriers, which would have been helpful to this study in understanding the origin of the barriers.

Additional items that should be studied with direct relevance to this research would be on the use of personal protection equipment and employee disabilities as they relate to barriers in training. This additional research could further improve the results of this study, and ultimately make the pipeline workforce a safer industry.

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### Appendix A: Focus Group Questions

- In respect to workforce development training, specifically Operator Qualification (OQ), what do you think we are doing well as an organization to train our employees?
  - What part of OQ training do you feel could be improved?
  - Do you feel the training provided gives employees sufficient knowledge to work safely? If not, what could be changed?
  - Has the OQ training you have taken, benefited your work performance and enhanced your job skills?
- What types of formal training programs could Company ABC implement to prevent safety related incidents?
  - How could an in-house training program reduce safety incidents?
  - How could union hall training be used to reduce safety incidents?
  - How could an OJT program be used to reduce safety incidents?
  - How could an apprenticeship program be used to reduce safety incidents?
- If one of the previously mentioned formal training programs was the direction that Company ABC moved towards, is one option more favorable than the other? If so, why?
- How could the barrier of limited time constraints for training be resolved?
  - Or minimal resources, such as subject matter experts or trainers?
- Company ABC recognizes that we have employees from a variety of ethnic backgrounds and that the employee's first language may not be English. What services could Company ABC provide to overcome language barriers in the English language?
  - If continuing education opportunities were provided, what would keep employees motivated and enrolled in these programs?

- What other types of programs could be offered?
- There is a wide variation in the age of our workforce. Employees range from 18 – 80 +. These age ranges, otherwise known as generational gaps, are causing barriers to training, especially with employees using technology, how can Company ABC make it easier to adjust to online testing and the use of other electronic devices?
  - Since 32% of Company ABC's workforce is over the age of 50, what are some solutions that can be incorporated into training to ensure safety?

## **Appendix B: Raw Focus Group Data**

### **1. In respect to workforce development training, specifically Operator Qualification (OQ), what do you think we are doing well as an organization to train our employees?**

#### **Focus Group 1 Responses:**

- Hands on training and a good group of people with knowledge on the subject to ask questions and get help whenever needed.
- Making a long term investment in the safety and health of our employees to obtain and to retain employment, in an ever more complex and demanding working environment.
- I agree, making investments in the employees is a huge key to success.
- Company ABC is doing a better job of letting younger generations get seat time in the machines and hands on training, as well as other field related tasks.

#### **Focus Group 2 Responses:**

- We recently switched to a new training consortium, EWN. The new training in that program covers both the OQ and safety. That is a good base for new employees, in the field they are mentored by an experienced employee, making it much easier when additional trainings are needed.
- We are taking them through the proper training and doing it the right way. Better quality of work. No pencil whipping and we are using proper PPE.
- We are good at providing the right tools to the employees. So many other companies I have worked for before are too cheap to provide proper gear.

## 2. What part of OQ training do you feel could be improved?

### Focus Group 1 Responses:

- I feel the training I received equipped me to do the job correctly. The way some of the OQ questions are worded leaves the door open for multiple answers depending on real world scenarios. OQ companies need to look into the wording of the questions.
- We definitely need better hands on equipment.
- We have generation gaps and we need reasonable and understandable training and testing that works for everyone. Not just the younger groups.
- All of it. The whole law needs to be re-written. Too many people doing the same thing different ways. It is very hard to keep up with all the requirements.
- I agree, OQ in general could use some revamping.

### Focus Group 2 Responses:

- It would be more beneficial to have training geared towards the specific client, but if that was done, then OQ would have to be done separately for every client. Big dollars for that.
- I don't know if it would have to be done different for every client, but have more portability within the industry. Training should be able to move from one client to the next.
- We need to do a better job with simulations. Even if we are simulating training, we need to have legitimate equipment. Or even better, actual simulation machines.
- The tests need to be more field relevant and get rid of the questions that don't pertain to the actual installation process.

**3. Do you feel the training provided gives employees sufficient knowledge to work safely? If not, what could be changed?**

**Focus Group 1 Responses:**

- No, not really. It only gives a basic understanding of only some of the hazards in the industry. But I don't think it should either. OQ is OQ training and safety training is safety training. We shouldn't confuse the two.
- I don't agree with that statement. I think we need more safety training included in what we do. We are still having far too many accidents. More could only help.
- Most of the CBT's are too generalized for our industry even though they were "specifically" made for us. It's just an accident waiting to happen.

**Focus Group 2 Responses:**

- I think the training is good enough the way it is in terms of being safe.
- Yes and no. It gives the general introduction of knowledge of specific tasks but it doesn't go very in-depth.

**4. Has the OQ training you have taken, benefited your work performance and enhanced your job skills?**

**Focus Group 1 Responses:**

- Yes, being new to the pipeline industry, once I received enough experience to become an OQ evaluator, I really got an understanding on how to do each task correctly.
- Yes, because employees benefit from my knowledge when they are being trained.
- Yes, it has helped me better understand the field tasks.

**Focus Group 2 Responses:**

- I would say only minimally. And I have been involved with OQ since 2002.
- Yes, it has helped enhance it more.
- Years ago it did. Today with the way OQ is setup, it's too hard for me to get anything out of it. I don't understand the computers.
- Yes, but it could help it a lot more by being more relevant to what we are specifically doing.

**5. What types of formal training programs could Company ABC implement to prevent safety related incidents?**

**Focus Group 1 Responses:**

- Simulators! Let's see if that new hire operator can dig like he says he can. That way we can see first-hand. We shouldn't be waiting until he is out in the field on a live-line to determine if he can dig.
- Working closer with technical colleges to get more hands on training. We are doing what we can as trainers but we could really benefit from a school testing individuals.

**Focus Group 2 Responses:**

- A formal class just focusing on simulations in front-end pipeline work, ground to surface pipe handling, and welding could really help lower safety issues.
- Develop simulation yards throughout the US. We could then have the Quality Control guys or Foreman's provide in-depth hands on training.
- We should have our own school. We have enough people. The curriculum is already laid out for us. It would be easy enough to train the guys.

## 6. How could an in-house training program reduce safety incidents?

### Focus Group 1 Responses:

- It would be great in helping employees, especially green hands, on the hazards associated with pipeline work.
- An in-house training program could take bits and pieces of OJT, simulation, and classroom training to really make a strong case for it to be successful.
- OJT and job shadowing by knowledgeable individuals really helps a person better understand our work and avoid safety issues.
- It could reduce safety problems by education and familiarity with OQ required tasks. Repetitive performance of the same task will eventually become second nature.
- In my opinion, in-house would be better because it would be to our company specifics verses being too generalized.

### Focus Group 2 Responses:

- Having an in-house program allows us to tailor it to our needs and the flexibility to address specific safety issues.
- I agree, it would help us make adjustments where needed. Especially with green hands. That's the only way those guys are going to learn the job without actually being on a live-line and potentially risking problems.

## 7. How could union hall training be used to reduce safety incidents?

### Focus Group 1 Responses:

- Before employees are dispatched they could have the job specific safety and OQ training done.

- Currently the Unions do absolutely nothing for us, but we pay them a lot of money for training. I think they need to internally develop their own programs. I don't know if there is such a thing as too much safety training. Employees can have training done at the Union Halls and then still go through some type of in-house training to look at our specific operating procedures.

**Focus Group 2 Responses:**

- Train hall members on the hazards before dispatching them to a job. If unions have a safety mindset and enforce safety, when the members come to our jobsites they will already be thinking about working safer.
- Have a zero-tolerance policy for safety issues. This will make guys think twice about slacking off during the training and make sure they follow the rules.
- If union halls actually trained the employees on the work they would be performing, safety incidents would be far less. These guys show up and have never ever seen a pipe before. That makes our jobs much tougher and very un-safe.
- We pay them A LOT of money to assist with training. They should have some specialized programs specifically for pipeline they give all employees before they dispatch to jobsites.

**8. How could an OJT program be used to reduce safety incidents?**

**Focus Group 1 Responses:**

- It gives employees hands on training. I have found that construction workers learn more/better actually performing hands on work.
- It helps workers new or old, identify the hazards and solutions related to the actual work task in many different scenarios.

- Having employees with a lot of experience train the employees that don't through the use of OJT would really help. That's why span of control was created in the regulations but unfortunately that doesn't do enough to train guys.
- Many people learn better by actually doing the work. I don't know many people who can learn everything they need to by just sitting in a classroom.

#### **Focus Group 2 Responses:**

- If OJT was done with an experienced mentor, the individuals being trained would have someone with them while they were performing the tasks. This could potentially stop something wrong from happening.
- If we let new employees go out and work on the project and perform the task all the way up until it actually has to be done, such as fusing or welding, they could gain experience without risking safety to a certain extent.

### **9. How could an apprenticeship program be used to reduce safety incidents?**

#### **Focus Group 1 Responses:**

- At least with an Apprentice Program they would have more knowledge on the training and testing than someone who was completely green. That alone would lower the safety incident rate.
- I personally like the idea of an Apprenticeship Program but it would be extremely hard to make that happen with the union contracts. They want their own money!
- The pay rate would be an issue and the unions have never addressed this. The guys wouldn't accept anything less than regular pay even as an apprentice, so it would be hard to justify the costs with that type of program.

**Focus Group 2 Responses:**

- This would be a great option because it trains new comers to do specific pipeline tasks before being sent out to a job. Many times, guys show up on site and have never even see a pipeline before. That is really where we have safety issues, with guys like them.
- In my eyes, apprenticeship programs connect real skills to real jobs. With classroom and OJT, workers can earn while they learn and enter the workforce without huge debt. It could also open the door to career opportunities for workers by teaching job ready skills based on an employer's needs.

**10. If one of the previously mentioned formal training programs was the direction that Company ABC moved towards, is one option more favorable than the other? If so, why?**

**Focus Group 1 Responses:**

- My vote would be Union Hall training because we already pay for the training. We should be working closer with the halls to make sure they are giving them applicable training and then giving company specific training when they come onsite. Not only would that save us money, but hopefully reduce incidents.
- Union hall training because it gives them the knowledge to work safely and gives them an opportunity to get hands on experience before coming to the real world.
- Creating our own in-house program guarantees everyone is getting quality training, done the correct way, and to our operating procedures. There is nothing else out there that would help us achieve that goal. Union Halls, or local tech colleges are not going to teach to our specific criteria, they are going to give generalized training that works for the entire industry, which makes sense for them. But if we truly want our people trained, and trained right, especially in the name of safety, we need to do it ourselves.

- I would say all the options are favorable as long as they are connecting all the skills to real-world work. I wouldn't have a preference as long as we are doing something.

**Focus Group 2 Responses:**

- I say Union Hall training, with also doing the hands on components.
- Financially the Union Halls would be a better option. However if the organization doesn't have direct involvement with curriculum for the hall training, it may not be specific enough to do us any good. If they use the OJT or apprenticeship it would be more specific but with the additional labor costs of someone always being with the new employee, it would be counter-productive from that standpoint, but safer. So if safety is the number one priority, which we say it is, then some form of in-house training with OJT is best.
- I agree, I also think an in-house program with some type of OJT is the way to go. When they are trained by the hall, if they are trained by the hall, it's always too generic to do us any good.

**11. How could the barrier of limited time restraints for training be resolved?**

**Focus Group 1 Responses:**

- Commitment from management to give us enough time to train.
- You just can't rush people through this process. We have seen it time and time again, and more often than not, it can turn out badly because that is exactly how safety accidents occur. Not taking your time and rushing. I think that is probably a bigger issue than not having the skillset.
- Increase the costs to the customer. Why should we have to worry about that? The biggest detractor I see is you invest all this time and money into training a person and then they

up and leave for another company. But back to the original question, if we are charging the customer for the lost down time, there wouldn't be such a rush to get people trained, thus removing the limited time restraints because it's not on our dollar.

**Focus Group 2 Responses:**

- We should really be putting training time in bid costs. These are the “small” things that are overlooked during the bidding process.
- Give instructors enough notice, that way there is no lag time for them to get training setup. We should also be allotting two days minimum. If the client has a problem with this, then they truly don't care about safety.
- We just need better planning and communication between the employers and the hiring resources.
- Proper planning is essential.

**12. Or minimal resources, such as subject matter experts or trainers?**

**Focus Group 1 Responses:**

- This seems like an easy one, train from within! We have SME's everywhere but don't utilize them to the fullest extent.
- If we had better planning and communication, it would help us promote in recruiting skilled personnel to become trainers and educate them in the tasks we need.
- Invest MONEY.

**Focus Group 2 Responses:**

- That's the million dollar question and I don't have a good answer for that.
- The unions want their hands in everything. Why not make them responsible for this?

- Mandatory training hours that help more people in the company become an SME. Then we wouldn't have a shortage.

**13. Company ABC recognizes that we have employees from a variety of ethnic backgrounds and that the employee's first language may not be English. What services could Company ABC provide to overcome illiteracy and language barriers in the English language?**

**Focus Group 1 Responses:**

- Offering not just to the trainers, but all employees to learn Spanish, and Spanish speakers to learn English.
- They need to provide translators on job-sites.
- We could provide English classes.
- Have bilingual employees on the jobs where there is language barriers. This is important from a safety standpoint as well.
- Set aside an hour every work day. Or give employees incentives to do it outside of work. Not only will it benefit them, but the company as well.

**Focus Group 2 Responses:**

- We could provide translators on jobsites and/or offer classes for instructors to learn different languages.
- Offer incentives to take English courses. It's really the only option we have. We all need to be able to speak/read/write the same language. It is a huge safety risk when we do not.
- Hire translator services to come onsite. They could speak the translation in their native language and English to help them avoid accidents while working.
- Partnering with local technical colleges in an apprenticeship type program for reading and writing would really be useful.

**14. If continuing education opportunities were provided, what would keep employees motivated and enrolled in these programs?**

**Focus Group 1 Responses:**

- I think job security and the potential for promotions will keep them motivated.
- A life-long, family-sustaining career for workers who might otherwise struggle in today's economy. Promoting the want and need to help with reading and writing will show employee's that our company does care about them.
- I would say the only thing to keep them motivated is additional compensation. It may seem unfair from a business perspective, but the dividends will pay greatly when everyone goes home safe at night.
- I unfortunately don't think there are a whole lot to keep them motivated. With a booming job market and such a huge need for skilled workers, if we are going to ask them to do something that they may have a hard time committing to for whatever reason, they will just quit and go to the next contractor.

**Focus Group 2 Responses:**

- It would have to be financial incentives, either promotions or cash.
- Knowing that if they put in the extra effort, there would be some advancement for them, not just "let's put you through this class and see what happens".
- If the company is willing to pay them, they will go, if they don't, they won't go.
- Money is the only thing I can think of that will keep the motivation. The company is eventually going to have to do it in the name of safety. There isn't any way around that.

**15. There is a wide variation in the age of our workforce. Employees range from 18 – 80 +.**

**These age ranges, otherwise known as generational gaps, are causing barriers to training, especially with employees using technology, how can Company ABC make it easier to adjust to online testing and the use of other electronic devices?**

**Focus Group 1 Responses:**

- We need more than one trainer or proctor in the room to help the employee's struggling with the technology. How else are they going to learn it?
- Technology classes would be a great way to teach anyone how to better use technology.
- When are we actually going to have time to work? Everyone's answers are to train, train, train. What about working?
- Well, for the older generation, you need to maybe have a program setup that they know that is available to them to help. If you just tell them they have to do this, they will pushback, resent the process, and maybe even quit.
- What I don't understand about technology is, why does that have to be the answer for everything? I believe we need to go back to the basics for true training needs. We really need people who provide good direction, with patience, who are through, and has the passion to help others.
- No one actually shows you how to take these online tests. They just plop you down in front of a computer and say "here you go". Maybe a demonstration is all that is needed before hand.

### **Focus Group 2 Responses:**

- Why can't we still offer paper tests? Why does it HAVE to be electronic?
- The key is being flexible with training and incorporate methods that appeal to every generation. Blending (online/paper) each groups preferred style of learning will help employers connect better with their workers as each group has their own perspectives on work and safety.
- Everyone receives and processes information differently. We need to understand this so we can format training so it leads to the best retention. A "one size fits all" safety training will not work.
- Bring IT to jobsites. Especially for online training. The trainers have their hands full trying to train instead of being IT professionals too. Leave that to someone else so trainers can focus on their jobs.

### **16. Since 32% of Company ABC's workforce is over the age of 50, what are some solutions that can be incorporated into training to ensure safety?**

#### **Focus Group 1 Responses:**

- Having a trainer who is personable and cares for the employees and wants them to succeed is vital. Respect must be earned first and foremost. Visual aids, like diagrams and hands on training would really help.
- Share "war stories" during training. It is a very effective teaching method. Less experienced workers can hear real stories of what can go wrong on the job and learn from it too.
- Pair older workers with younger workers and have them act as mentors. Why not utilize the resources we already have?

- Educate our people on how to work smarter. Do this by listening and utilizing advice from older more experienced workers.

**Focus Group 2 Responses:**

- Every morning we do a safety tailgate meeting. When that is done, we could take a few minutes to practice breathing exercises and stretches. This could help muscle strains and stress.
- Use them as mentors.
- Have tests that test knowledge, not reading comprehension, and ensure that the instructor is 100% dedicated to their job.
- Fit tests – mentally and physically, to make sure that employees are capable of doing their job.