



Wanted: Construction Instructors

Two critical challenges exist today in the residential construction industry: 1) a shortage of skilled tradespeople; and 2) an increasing median home price. Both challenges can be solved with an increase of building talent supply, training, and retention.

This solution is at the heart of Building Talent Foundation's mission: to advance the education, training, and career progression of young people and people from underrepresented groups as skilled technical workers and business owners in residential construction. In practice, Building Talent Foundation (BTF) recruits people of all ages and from all backgrounds into construction training programs and trades. Upon successful program completion from our Education Partners, we match them with our Employer Partners for hiring consideration into full-time trades positions. During this process, however, we encounter a widespread issue experienced by educational institutions across the country – there is a shortage of construction trades instructors. This shortage limits the number of classes offered, postpones opening of classes previously scheduled, or limits class capacity, thereby creating a bottleneck for prospective students who seek training.

The purpose of this report is threefold: first, to understand the requirements necessary to teach the construction trades in BTF's three focus states, Florida, Texas, and Arizona; second, to understand the perspective of current construction trades instructors; and third, to create a pipeline that will increase the number of instructors around the country. As we review these topics, one fact remains constant – our educational institutions in general, and our instructors specifically, carry heavy responsibilities. The root of various challenges in our country today is the limited availability of quality training and education for women and men from all walks of life. As we present our findings, we intend to describe the challenges of and present solutions to increasing the number of Career and Technical Education (CTE) instructors throughout the nation's educational systems, and specifically, the positive impact the solutions will have on the residential construction industry skilled trades.

The Shortage of Instructors

According to research from Advance CTE, **86 percent of state CTE directors reported a moderate to severe CTE teacher shortage in at least one Career Cluster at the secondary level, and an additional 60 percent reported the same shortage at the postsecondary level.** The shortages are often attributed

to educational institutions and businesses competing for the same experienced professionals, and the recent closure of many CTE teacher preparation programs.¹

Another recognized cause of the instructor shortage is the aging workforce. In a recent study, the 35-year-old nonprofit organization Jobs for the Future (JFF) reported that while the median age of all teachers in public high schools is 41, **the majority of construction-related teachers in their survey were 45 to 64 years old.** They also found that in many states, the teacher shortages are contributing to schools and districts either reducing the range of trades courses or closing down existing programs.²

This shortage creates an opportunity for professional construction tradespeople interested in a career shift toward teaching to fill that void. According to the U.S. Bureau of Labor Statistics, **the growth in Career and Technical Education teachers is projected to be slower than the average for all occupations from 2019 to 2029.** However, the projection also states that there will be demand for an average of 15,100 openings each year in middle, secondary, and postsecondary institutions. Their conclusion is that most openings will be available due to instructors transferring to different jobs or exiting the labor force entirely, including those who are retiring.³

Requirements to Become an Instructor

It is important to understand and define the various types of credentials. The Association for Career and Technical Education (ACTE), a national organization that represents thousands of career and technical education professionals, separates credentialing into four categories: certificates, certifications, licenses, and degrees. Certificates are presented by educational institutions to students completing a brief course of study. Certifications are awarded by businesses, trade associations, or industry, and indicate mastery of or competency in specific knowledge, skills, or processes that can be measured against a set of accepted standards. Licenses are typically approved by government agencies and are legal permission allowing an individual to perform certain regulated tasks or occupations. Degrees are conferred by educational institutions resulting from the completion of a program or courses of study over multiple years. Often, certifications and licenses require ongoing requirements to maintain the credential.⁴

This report highlights requirements for three states: Florida, Texas, and Arizona. The information was obtained from a report published in April 2020 by the Education Commission of the States⁵ titled “50-

¹ Advance CTE, “The State of Career Technical Education, An Analysis of States’ Perkins V Priorities”, October 2020

² JFF, “Breaking Ground, A First Look at American High School Skilled Trades Education”, May 2020

³ U.S. Bureau of Labor Statistics, “Career and Technical Education Teachers: Occupational Outlook Handbook”, accessed March 17, 2021, <https://www.bls.gov/ooh/education-training-and-library/career-and-technical-education-teachers.htm#>

⁴ Association for Career and Technical Education (ACTE), “What is a Credential?”, August 2015

⁵ Education Commission of the States, “What Are the Certification and Licensure Requirements for CTE Teachers? 50-State Comparison: Secondary Career and Technical Education”, April 2020

State Comparison,” followed by conversations with each state’s Department of Education for confirmation and more detailed information.

The Florida Department of Education issues certificates to teach many CTE subjects and defers requirements for certification to teach construction trades in grades six through 12 to the individual school districts.

Florida offers statewide standards for teaching certificates in many subjects pertaining to grades six through 12, however, the lack of statewide standards for construction instructors creates issues as requirements differ from district to district. If an instructor is interested in transferring from one district to another, it is unclear whether or not there is reciprocity between districts and if the instructor would have to restart the verification and licensure process. Given these potential issues, it would be beneficial for Florida to adopt statewide standards for construction instructors.

To teach construction trades in grades six through 12 in Texas, an instructor must obtain a “Trade and Industrial Education” Certificate, one of the nine CTE certificates issued by the Texas Education Agency. The applicant must pass the Texas Examinations of Educator Standards (TExES) Pedagogy and Professional Responsibilities (PPR) for Trade and Industrial Education 6–12 Test Code 270 and an approved Educator Preparation Program (EPP). As a part of the EPP, the applicant’s work experience will be verified. The requirements for work experiences vary, depending on the level of education the applicant possesses. And, either current licensure by a state or nationally recognized accrediting agency in any approved occupations for the classes the applicant will be teaching; or a passing score from the National Occupational Competency Testing Institute (NOCTI) is required.

In Arizona, an instructor must obtain a Career and Technical Education (CTE) Industrial and Emerging Technologies K-12 Certificate. The state offers multiple options to obtain the Industrial and Emerging Technologies Certificate depending on the applicants’ prior education levels. For each option, an applicant must complete certain requirements before the certificate is issued, and complete other requirements within three years from date of certificate issuance.

Arizona provides six options for certification depending on whether the applicant has a bachelor’s degree in an Industrial and Emerging Technologies area; has a bachelor’s degree and an Industrial and Emerging Technologies education teacher preparation program; has a valid non-CTE Arizona teaching certificate or an Arizona CTE teaching certificate in another content area; has an out-of-state certificate; has a degree, certifications, or completed courses in Standard Specialized CTE Industrial and Emerging Technologies; or is a business and industry professional. For each option there are varying levels of Clock Hours of verified work experience required, and some paths require additional hours of courses in professional knowledge in CTE.

In all three states, the Departments of Education defer requirements for college-level instruction to the individual colleges. It would be beneficial for colleges nationwide to adopt consistent and reciprocal standards.

Popular Credentials: NCCER & HBI

While we found no specific credential required by our focus states, our research discovered two popular certifications issued by the Home Builders Institute (HBI), and the National Center for Construction Education and Research (NCCER) whose curricula are taught in schools across the country. These organizations offer their respective credentials to students desiring nationally accepted standardized construction certifications.

HBI

Home Builders Institute (HBI) is a national organization focused on education for the building industry, specifically residential construction. HBI's certifications are recognized by 140,000 National Association of Home Builders (NAHB) member companies. Their credential, the Pre-Apprenticeship Certificate Training (PACT), is based on HBI's National Construction Skill Standards. HBI licenses their PACT curriculum to educational institutions and provides training for the institutions' instructors. To teach HBI's curriculum and for students to be eligible for the PACT credential, the instructors must be certified by HBI. For certification, instructors must complete self-paced online modules ahead of a one-day, in-person training session, including an assessment, all conducted by an HBI team member who travels to the educational institution (or offers a regional location such as at a local Home Builders Association office). The recommended experience for an instructor is five years of construction experience on a job site, or in management, or teaching experience.

NCCER

The National Center for Construction Education and Research (NCCER) is focused on building a safe, productive, and sustainable workforce of craft professionals, and addresses the needs of the commercial, industrial, and residential construction industries. Their mission is to be universally recognized by industry and government as the training, assessment, certification, and career development standard for construction and maintenance craft professionals (their curriculum is available for purchase through Pearson). In order for a student to receive an NCCER credential, they must attend a course taught by a certified NCCER instructor in an organization accredited by NCCER. As part of the accreditation process for the organization, a member of the accredited organization is trained to certify instructors. The instructor training is a 24-hour in-person or online video conferencing course. Instructor applicants must have at least four years of experience at a journey or technician level in the specific craft in which they wish to certify, or a minimum of three years' experience as a certified teacher in a vocational/technical construction or maintenance-related training program in that specific craft. To maintain their certification, instructors must submit at least one student's completed module every three years.

Understanding the Perspectives of Instructors

To understand instructors' perspectives, we conducted interviews with 21 instructors and administrators of active and ongoing construction trades programs. Of the total, approximately one third were either in a purely administrative role, or a dual administrator/instructor role, with the remaining two-thirds as full-time instructors. The instructors were in six metropolitan areas (Phoenix, Austin, Dallas, Houston, Orlando, and Miami) in three states, with representation from high school, dual-enrollment, and college-level programs.

Experience in the Construction Trades

Collectively, the 21 interviewees represent over 400 years of on-the-job construction experience. These are people who know their trades and love what they do. Some had only a few years of experience before deciding to become an instructor or administrator; the majority had over 10 years; and many had 20 or more years.

“It’s easier to hire someone who has skills and teach them to be an instructor, than to hire someone who has educational experience and teach them how to be a carpenter. The transition from skills to teaching is a lot easier than teaching to skills.”

College-level carpentry instructor and program manager in Florida
with 16 years of experience in the trades and 6 years of experience

Their careers represent a full range of employment opportunities – from working in small privately held or large publicly traded corporations to municipal services in the public sector. The majority of the instructors worked in their families' businesses or owned their own company, while others are Veterans who learned construction trades in the military. All these talented individuals bring real-world examples into the classroom to enhance their teaching and to pass on their knowledge to the next generation.

Formal Experience in Education

Many of the instructors we interviewed had ten or more years' experience in the education field. The majority had less than six years of experience in a formal classroom setting, with a third having three years or less. Regardless of the amount of time in education, there was a consistent theme expressed by most: at some point in their careers, they realized a large part of their role in the trades was teaching and felt they could expand that role by becoming an instructor in the classroom.

Traditionally, to teach in secondary or postsecondary institutions, instructors require four-year degrees and often additional accreditation issued by the states. With the growing demand for skilled construction tradespeople to teach trades in classroom settings, this was an obstructive requirement. States have opened pipelines for trades professionals to enter the classroom and are now removing requirements for multi-year degrees or specialized teaching certifications. These pipelines create opportunities for industry professionals to pass on their real-world experience in a formal classroom setting to students of all ages who are interested in learning new skills. Each of the instructors we interviewed took advantage of one of these pipelines in their respective states, and in doing so, have collectively brought knowledge of the trades to thousands of students from all walks of life.

Additionally, most of the instructors explained that their institutions are creating or had recently created courses and programs focused on the trades. All reported that their respective institutions are acting on plans in the near term to increase their offerings in order to meet the significant demand for educated tradespeople in today's active construction industry. While this creates more venues for students interested in exploring new career options, it also creates a challenge: finding new instructors.

Motivation to Become an Instructor

As institutions search for new instructors to lead new classes, it is important to understand what motivates someone to make such a drastic career change. Understanding why current instructors made the change from working in the trades to teaching the trades will help the industry identify new sources of instructors, and what incentivizing factors can be included in messaging to entice a prospective audience.

One instructor provided a good reason for the challenge in finding professionals to make the transition: Even though construction is rough and tough, most people in the trades do not even consider teaching because "classrooms can be intimidating!"

Our interviewees provided many reasons for their career change decisions. A few had always harbored a desire to teach. Initially they ignored those desires and went to work on the job. Through their work in the trades, they ultimately found their way into the classroom. Many more confessed that teaching was never their intent until an unexpected opportunity presented itself at the right moment in their lives. Most identified two significant points that led to their decisions: first, during their professional career they witnessed a real need for quality instructors in the trades; and second, there exists a sense of duty to pass down their knowledge to the next generation.

The need for quality instructors is indeed real. Administrators who were interviewed shared that when posting for open positions, they receive either little to no applicants or a large volume of responses with only a few truly qualified candidates.

And the sense of duty is real. There is something to be said about the unbroken chain of knowledge that began generations ago, and the need to guard the integrity of that chain. For those who care about quality work and superb craftsmanship the thought of being the link where the connection from the past to the future breaks is unthinkable. All human knowledge is passed down in a sense, but in a hands-on dynamic industry where it is impossible to learn from a static book, the responsibility to keep the chain intact is on the shoulders of those who benefitted from the experience of their teachers from past generations.

“I started my career as an apprentice as the youngest person on a job and now I'm the oldest person on the job. We got the benefit of an education from the older people passing it down and now that you're older I think you're supposed to pass it down to the next generation, because that's the only way we'll be able to keep it going.”

College-level career education adjunct and full-time business owner in Texas
with over 50 years of experience in the trades

In addition to understanding the reasons tradespeople chose to become instructors, it is important to understand why they choose to remain in the educational field. Two themes quickly emerged during our interviews: enjoyment and a sense of fulfillment.

Many instructors enjoy teaching as they themselves are improved by the act – that by teaching they are continuously learning something new, and continuously improving upon the knowledge they already possessed. But the ultimate enjoyment comes from the experiences of their students. When the lightbulb literally goes on as the student fully understands the concept and implementation, both the instructor and student enjoy the “eureka moment” together.

Seeing the accomplishments of their students provides a sense of fulfillment. As they help students progress through the coursework and graduation, they proudly place them in work environments where they find sustainable careers. As the students progress in the workplace with their newly acquired skills, they can then become better providers for their families, which also gives *them* a sense of fulfillment. The instructor not only trains a few people in the “next generation” but provides a virtuous cycle to families and communities of multiple generations.

These underlying themes provide insights into the kind of person the industry should search for during the hiring process, and the type of motivating messaging to use. But it is important to understand what challenges await them once they become instructors.

Challenges of Being an Instructor

The instructors we interviewed face many challenges. These challenges are widespread, and some are unique to the situation. One overwhelming challenge is due to the COVID-19 pandemic. While many in-person programs continue with mask and social distancing mandates in place, other classes are held virtually. Both present difficulties for the instructor in what needs to be very hands-on teaching and learning environment in close proximity to one another.

As many institutions are in the startup phase of their construction trades programs, new instructors find themselves navigating through difficult situations instructors faced in pre-pandemic times. Throughout the interviews, two primary challenges were frequently mentioned.

First, **these instructors entered the teaching role as a professional in the construction trades and did not have a formal educational background.** While a formal educational background is not required to teach the trades in their states, they are still required to perform all the administrative duties expected of an instructor in their respective institutions and positions, whether it be secondary or postsecondary. Many expressed frustrations with the bureaucracy of the educational system at the local and district levels. Plus, their unfamiliarity with the vocabulary, paperwork, and reporting requirements associated with their new position made it difficult for them to adjust to their new role.

Second, and perhaps more importantly, is **the lack of materials and space.** Obviously, a classroom for construction trades requires more space than a normal classroom. A facility large enough for a proper construction shop is not available in all schools. Many institutions ask their instructors to “make do” with the available spaces. To provide appropriate hands-on experiences, more equipment and materials are required than in a traditional class setting. And the necessary equipment and materials come at a high cost which can easily overwhelm programs with tight budgets. Essentials such as nails, wiring, plywood, or rebar can be scarce. And even if the space is available, and the budget is available to support the program, the logistical process of materials acquisition can be daunting for seasoned and new instructors alike.

In overcoming the challenges instructors face, identification of much needed areas of support is imperative. The overwhelming responses from our interviewees described two: support from local schools and districts; and, from the construction industry as a whole.

Support from Schools and Districts

The primary area of needed support identified by the instructors is assistance with the bureaucratic and administrative tasks required of them. In some cases, it is as simple as more training for new instructors. Some institutions even provide a seasoned educator to serve as a mentor to guide the new instructors through the various systems and requirements.

Frequently within districts, trade instructors are required to participate in training or testing procedures that apply to instructors of traditional courses but are not relevant to their own. While reporting metrics

and administrative tasks are necessary, creating appropriate alternatives to accommodate the trades professional is advisable in attracting and keeping these instructors.

Another means of support requested by the instructors is to allow them to participate in the creation of the curriculum they are required to teach. They have a wealth of knowledge and experience to share and understand what is required on the job and in the classroom.

Improved promotion and marketing of the trades programs is imperative and a simple solution to implement. In recent decades, schools and districts have cancelled shop classes in high schools and downplayed the viability of careers in the trades. By promoting with more positive and enthusiastic messaging, schools and districts will begin to influence young students earlier, allowing them opportunities to create and hone trades skills even before they graduate. This increases the workforce and gives students marketable skills early in life, increasing their opportunity for more sustainable wages at a younger age.

Another important area of support is to ensure classes have the necessary space and appropriate equipment and supplies. Whether this is accomplished by increased budgets and easier acquisition procedures, schools and districts must understand these classes simply require more resources than traditional classes – nails are needed to teach carpentry, pipes are needed to teach plumbing, and framing requires space large enough to raise a frame.

There must also be more support of instructors' individual development through training and continuing education opportunities.

An increase in financial compensation for instructors is crucial. The low salaries associated with instructors of the construction trades is a barrier to entry for many professionals who can earn much more on the job, or who simply cannot rely on teaching as their primary source of income. Low salaries negatively impact instructors who teach the trades, negatively impacts the drive to increase the number of trades courses, and negatively impacts the workforce itself.

Support from the Construction Industry

Multiple opportunities for support from the construction industry overlap with recommendations for support from the educational system.

Better promotion of the trades, both through the schools and the industry, will alleviate much of the stigma associated with construction jobs. The instructors we interviewed expressed concerns that many people these days, especially young people, are reluctant to consider the trades as a viable career. This is merely an image problem that can be addressed with coordinated messaging and collaborative efforts.

In-kind donations of appropriate equipment and consumable materials to the schools and construction programs will make a difference.

Volunteerism can be impactful. Many industry partners donate a portion of their employees' or trainers' time (and salary) to schools allowing them to teach courses part-time. Others offer incentives to their employees for performing community service either in their free time or during work hours. If unable to commit to part-time instruction, employees of industry partners could offer to participate in lessons or give tutorials in conjunction with instructors. These suggestions increase the number of well-trained instructors available to schools and ensure a higher quality of education in the classroom. The clear benefit to industry is job readiness of new graduates.

To support the next generation of the construction workforce, industry and education must work together in creating solutions to the existing challenges. Educator Externships offer one solution. The department of education in many states coordinate teacher and counselor externship opportunities. The Educator Externship program allows CTE teachers to gain real world construction experience. Teachers spend 40 hours on the job with a host company during the summer and develop a lesson plan or project based on their experience to teach during the coming school year. High school counselors participate in tours of local postsecondary educational facilities and learn about CTE options to share with their students.

Industry-wide standardization of certifications across the country will also solve many of the challenges. While building codes are specific to each region, trades and teaching certifications can be universal. Experienced professionals in one state should be able to practice or teach their area of trade specialty in any other state.

With nationally established standards, promotion of and clearly defined expectations for employment, and industry leaders' participation in classroom settings – from crafting curriculum to recruiting graduates – people of all ages and backgrounds will transition from the classroom to the jobsite with a better understanding of what is required of them. This will then provide a rich source of new recruits for the industry, make student recruitment easier for educational institutions, make the job of preparing students easier for instructors, and overall, everyone involved will be more successful.

Where to Find Additional Instructors

During our interviews, we identified three primary resources for locating additional instructors: retirees, business owners, and trade associations and unions.

The most frequent recommendation was to seek those who are retired or nearing retirement. Construction industry retirees have extra time; want to be regularly involved in the trades they love yet without performing the difficult manual labor; and, most importantly, because of their desire to pass on their knowledge and experience to the next generation. Many interviewees stated that being in trades education either as an instructor or an administrator requires a close relationship with the industry. A portion of that relationship includes open and regular communication between education

and industry partners to alert them of open positions as industry provides the best source of retiree candidates.

Another valuable resource is owners of trades' businesses. They no longer work on the jobsite, have flexible schedules allowing for time in the classroom, and do not need to rely on an instructor's salary as their primary source of income. Classes offered at night and on weekends not only attract students with daytime employment, but also attract instructors who are unavailable during regular business hours.

Trade associations and unions are also a good source for instructor referrals. As a partner, they can post local job openings on their websites, reaching a wide range of members who have a wealth of experience.

BTF recommends that secondary and postsecondary schools use the widely available digital media platforms, especially partner websites, as well as create extensive social media marketing strategies. These resources allow and provide postings on general job boards, education related job boards, and on construction job boards. Postings should be composed in a manner that will attract tradespeople. Social media groups created and facilitated to attract retired trades people will provide an additional broad reach.

And lastly, word of mouth. Many of our interview participants made the career shift into their current positions due to referrals from colleagues who knew of job openings for trades instructors.

Conclusion

Simply put, the construction industry and the educational system have a shared challenge to educate and employ the next generation of the construction workforce. This challenge begins in the classroom – not due to the lack of student enrollment, but the lack of qualified instructors.

Yes, there is a big challenge. Building Talent Foundation is working to better understand it and be an integral part of the solution. We provide support to our Education Partners when they are recruiting for open instructor positions. We solicit referrals from our network of employers and associations. And we welcome school postings on our [JobsToBuild.com](https://www.jobstobuild.com) platform.

This is only the beginning. We intend to expand our research on this issue and find new ways to create a pipeline of qualified instructors. Together we can succeed and create the construction workforce of the 21st century.

About the Author



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