

Upskilling with Talent Pipeline Management[®] (TPM)

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U.S. CHAMBER OF COMMERCE FOUNDATION

TPM TALENT PIPELINE
MANAGEMENT

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Introduction

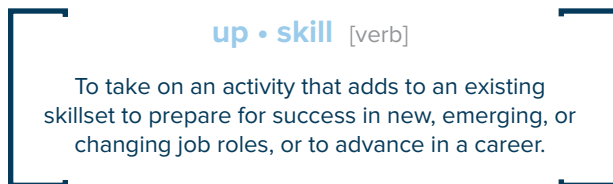
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In a dynamic labor market, companies large and small recognize the need to invest in their own people, leading to much buzz around upskilling. Upskilling strategies are no longer the exception, but a necessity.

The U.S. Chamber Foundation has defined upskilling as:



Employers must foster a new relationship with workers where maintaining and growing their skills is an imperative for business success.

In 2014, the Chamber Foundation launched Talent Pipeline Management® (TPM) with a white paper describing how supply chain management principles—commonly used by businesses to run their day-to-day operations—could be applied to talent. TPM® flips the workforce system by focusing on building the capacity of the business community to better manage career pathways so that students and workers—what we refer to as learners—will have better employment opportunities. Through TPM, employers organize into employer collaboratives, a group that comes together around a shared pain point. These collaboratives proactively organize and manage their talent provider partners to orchestrate performance-based talent supply chain solutions that streamline career pathways.

We have seen the TPM process work for industries including manufacturing, healthcare, construction, utilities, and information technology. More than 250 TPM practitioners have graduated from the TPM Academy®, a customized TPM train-the-trainer model, and as a result of their first-hand TPM implementation and feedback, resources for this network continue to expand and improve.

As we set about creating the original TPM Academy curriculum, upskilling and external hiring practices were both included but given the early demand of TPM practitioners, we prioritized external hiring. Some practitioners, however, were eager to focus on upskilling and we—and the network—have benefited learning from their experiences to document and refine the TPM approach for upskilling.

For those companies that acknowledge the need for and want to work towards solutions for their current talent—in an effort to fill higher-level jobs, improve employee retention rates, or decrease the time required for an employee to reach full productivity—upskilling strategies are critical but there is not a one-size-fits-all solution. Like with any business strategy, leaders must first accurately diagnose the problem before jumping to conclusions or solutions. The TPM approach promotes just that via a structured process that results in evidence-based decision making.

In 2019, the Chamber Foundation convened a review committee of tried-and-true TPM practitioners, industry experts, and upskill specialists to update and expand the [TPM Academy curriculum](#) with a keen eye to upskilling strategies. Committee members, particularly those TPM practitioners who had implemented upskilling solutions via TPM, identified key considerations and processes for employer collaboratives focused on upskill efforts.

The result, released in October 2019, is an enhanced guidebook for implementing end-to-end talent supply chains. Perhaps the most intriguing outcome was the realization that any company experiencing talent challenges ultimately must incorporate both external and internal hiring strategies. This resource is available to the public so that any organization interested has access to these practices.

The goal of this report and the revised curriculum is to amplify the understanding and adoption of TPM to support upskilling efforts, as well as help those who have successfully implemented TPM for external hires to now bridge their efforts into upskilling.

What you will find in this report.

With the input of TPM practitioners and real-life case studies, this resource examines how those interested in TPM can tap into the authentically employer led, data-driven approach to systematically improve their internal talent pipelines.

- The first contribution by TPM Academy graduate and practitioner Joe Quick makes the business case for companies to consider upskilling, examining TPM strategy by strategy.
- The second piece by early TPM adopter Peter Beard provides a concrete example of how Upskill Houston has supported employer collaboratives focused on construction, automotive/heavy equipment, and healthcare upskill activities.
- We then turn our attention to case studies collected from our colleagues in Vermont and Phoenix, Arizona, on their respective upskill efforts in construction and healthcare.
- In addition, we partnered with the respected Upskill America team to get their insight and most popular resources to make upskilling practices more tangible, as well as best practices from the field that complement the TPM approach and additional sources of information.

As those in the TPM network know, the TPM Academy curriculum and associated resources never stop evolving. We will continue to learn from our practitioners and their experiences in the field to capture improvements, opportunities for refinement, and proliferation of best practices.

Upskilling & Reskilling to Remain Competitive

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In today's labor market, long-term talent strategies are often over-shadowed by the critical short-term needs of today and tomorrow. While immediate hiring needs are often the most pressing issues for HR departments, strategies like TPM can help businesses solve these common pain points—such as unfilled job openings, exorbitant training and onboarding costs, and attrition—and talent gaps collaboratively. TPM provides businesses the tools and structure for a future-forward approach to long-term, sustainable hiring practices that avoid an ongoing, singular focus on triaging immediate needs.

TPM employer collaboratives ([Strategy 1, Organize Employer Collaboratives](#)) give industry an opportunity to communicate with a coordinated, regional industry voice to send clear impactful signals to education and training partners about competency and credential requirements ([Strategy 3, Communicate Competency and Credential Requirements](#)), both for new and current workers.

Upskilling and Reskilling for Today's Economy

A full TPM approach relies not only on improving external pipelines—adequately preparing talent that has yet to walk through the door—but also on long-term strategies for backfilling, upskilling, career pathway development, and succession planning. Companies that make upskilling and reskilling a priority will remain competitive as industry adapts to changes in technology, and as competition for talent continues to increase in today's tight labor market. While businesses should recognize the value of both new employee perspectives and those that are already within their ranks, a company's growth mindset should also be equally reflected in its professional development (or personal growth) practices.

Organizations like the Chamber Foundation and the Aspen Institute are working with business leaders to expand opportunities for workers and help our communities and our economy thrive through intentional incumbent workforce upskilling. And for good reason. Investment in upskilling and reskilling produces skilled, successful employees, increases employee attraction and retention, and can save money otherwise focused on recruitment efforts. Through TPM's focus on building talent supply chains and measuring

employer ROI ([Strategy 5, Build Talent Supply Chains](#)), employer collaboratives are improving key pain point metrics like the number of qualified candidates for critical positions, time to full productivity (of new or existing staff), and cost of hire.

A Talent Attraction and Retention Tool

From a talent attraction perspective, many job seekers consider professional development opportunities a major selling point when deciding where to work. A [Robert Half and Enactus survey](#) of Generation Z workers (born 1990 to 1999) indicated that 91% of respondents saw professional development support as a key factor in their decisions when selecting an employer. Coupling professional development with clear career pathways can produce a loyal, skilled, and motivated team. It can also improve retention. A workforce that feels well prepared for their jobs and experiences company investment in their professional futures is a committed workforce.

The Bottom Line

Upskilling an incumbent workforce costs money, but it is often less expensive than the aggressive recruitment strategies required for occupations with skills that are in high demand. And unfilled jobs cost both productivity and money. Results from a 2016–2017 [Career Builder survey](#) reported that nearly 60% of U.S. employers had job openings remaining vacant for at least 12 weeks. In this study, HR managers reported incurring average annual costs of more than \$800,000 caused by vacant job openings.

Backfilling a less senior, entry-level role vacated by an upskilled and promoted internal candidate is often easier than filling roles that require specialized skills and experience with an external candidate. Companies that look internally to fill their pipeline for critical positions are likely to have workers in those roles reach full productivity faster and more efficiently. TPM's strategy that focuses on analyzing talent flows ([Strategy 4, Analyze Talent Flows](#)), can help businesses discover where their most successful talent is coming from, including analyzing internal talent flows that highlight the training and education experiences which have led incumbent talent to be successful in their jobs.

Furthermore, workers who are already a part of a company's culture and understand its operations have a perspective that—combined with newly hired talent with a fresh perspective—can accelerate productivity and promote effective knowledge transfer.

Through the U.S. Chamber Foundation's TPM web tools, employer collaboratives can measure these key metrics as they work with preferred education and training providers to expand and improve the talent pipeline that possesses the competencies and credentials ([Strategy 3, Communicate Competency and Credential Requirements](#)) required to meet business demand ([Strategy 2, Engage in Demand Planning](#)).

Additionally, companies can take steps internally to provide a variety of opportunities for upskilling through micro-learning, virtual access to training, tuition assistance, and partnerships with key training organizations and education institutions. Often, both federal and state funding support is available to qualified workers and businesses to supplement business investment in efforts to upskill an incumbent workforce.

As the economy changes, business cultures that support life-long learning to upskill and reskill the workforce will be those that remain competitive and relevant. This challenge is best met through long-term, coordinated pipeline development strategies that put business in the driver's seat. TPM provides businesses a structured process for collective talent solutions that improve both internal and external talent pipelines.

Building Houston's Talent Pipeline

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UpSkill Houston, an initiative of the Greater Houston Partnership, focuses on building the Houston region's talent pipeline for good jobs that require education and skills beyond a high school diploma and less than a four-year college degree.

Upskilling existing workers is critical in three of our industries—construction, automotive/heavy equipment, and healthcare. Each industry approaches upskilling from very different perspectives in terms of the TPM strategies.

Our construction efforts focus on strengthening the talent pipeline by growing craft professionals from helpers to journeymen. Our automotive/heavy equipment efforts focus on recruiting entry-level technicians that diagnose and service vehicles and equipment and then developing them into line mechanics and master technicians. Our healthcare efforts focus on developing the pipeline for medical assistants who can be upskilled into higher level roles like nurses.

The issue of upskilling generally manifests itself in Strategy 3, Communicate Competency and Credential Requirements, and Strategy 4, Analyze Talent Flows, and requires facilitating a conversation with collaborative members to understand the talent needs of the employers. The work done in Strategies 3 and 4 also impacts efforts within Strategy 5, Build Talent Supply Chains—particularly for how an employer collaborative might market their career opportunities.

Construction Exhibits Organic and Ongoing Upskilling

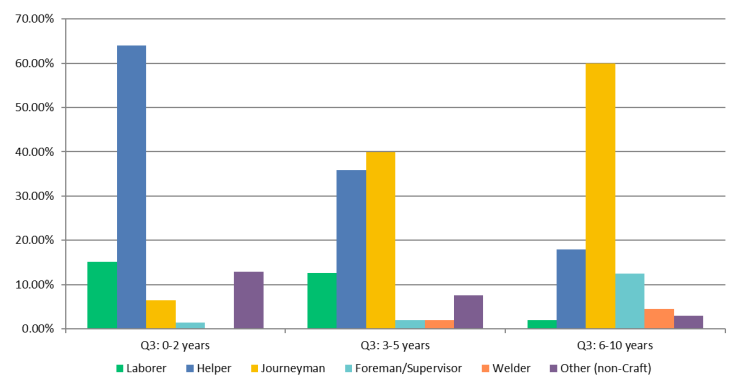
An individual generally enters the commercial or industrial construction industry either as a laborer or an entry-level helper (within a specialty craft). From that role, an individual chooses a craft and develops his or her skills—progressing through various skill levels to become a lead journeyman and into other roles managing construction projects. Jacobs, the international technical professional services firm, has developed a [visual flyer](#) to help individuals understand the career progression.

It should be noted that the underlying model for construction's career progression makes it challenging to project demand for craft professionals because the internal pipeline is always in the process of upskilling. We have

observed anecdotally that as workers progress in their careers, they help in the backfilling of their positions with individuals that can be successful in construction.

As part of the collaborative's work, our industrial construction employers surveyed their workers to understand how talent flows into the industry and within the industry (Strategy 4). Seventy-five percent of the workers entered the industry because of an individual relationship they had with someone already in the industry (i.e., family or friend).

What is your current craft classification?



Employees were categorized by job type and number of years worked in the industry. For example, for those who have worked in the industry 0-2 years, 65% of respondents were helpers, 15% were laborers, and 12% were other, or non-craft.

In looking at the time in industry and craft level, the progression suggests there is ongoing upskilling with workers in the zero to two years being primarily helper or laborer level, workers in the three to five years being split between helper level and journeyman level, and workers in six to ten years being primarily journeyman level.

Our industrial construction sector has worked collaboratively to develop a series of competency maps to create the skills and career progressions from an entry-level helper to a top-level journeyman (see chart on next page). This work ensures that there is a shared understanding of the competency and skill levels under Strategy 3 by construction firms and the petrochemical companies contracting with the firms to build plants and refineries. Since not all construction firms approach career progression

PATHWAYS: Industry Based, High School CTE, Community College, Military, Community Based, Other Industry		
HELPER		
OJT: 6 Months - 1 Year	OJT: 1 Year - 2 Years	OJT: Until ready for Independent Work confirmed by Site Supervisor
SAFETY	ABILITY TO READ A TAPE MEASURE	QUALITY/CRAFTSMANSHIP
HOUSEKEEPING	INTRO TO FIELD CALCULATIONS	FIELD CALCULATIONS
TOOL DISTINCTION	KNOWLEDGE OF TUBE SIZES AND BENDING FORMULAS	PROPERLY BEND AND INSTALL TUBING, SUPPORTS AS A FITTER
HAZARD AWARENESS	INTRO TO ELECTRICAL SYSTEMS FOR INSTRUMENTATION	PERFORM CABLE PULLING METHODS
	IDENTIFY TYPES OF CABLES AND PULLING METHODS	INTERPRET BLUEPRINT, ISO & PID LOOP DRAWINGS
	IDENTIFY FITTINGS AND FASTENERS	IDENTIFY INSTRUMENT/ ELECTRICAL METERS AND PROPER USES
	PROPER USE OF HAND, POWER, AND MEASURING TOOLS	
	IDENTIFY LUBRICANTS, SEALANTS AND CLEANERS	
CRAFT PROFESSIONAL - INSTRUMENT TECH		
ENTRY LEVEL	MID LEVEL	TOP LEVEL
IDENTIFY HAZARDOUS LOCATIONS	PLAN AND LAYOUT TUBING ROUTES AND SUPPORTS	QUALITY/CRAFTSMANSHIP
READ BLUEPRINT AND ISO DRAWINGS	TERMINATE CABLES USING CABLE SCHEDULE AND WIRING DIAGRAM	KNOWLEDGE OF PROGRAMMABLE LOGIC CONTROLLERS (PLC'S)
PRINCIPLES FOR SOLDERING FOR INSTRUMENTATION	KNOWLEDGE OF DIGITAL AND ANALOG INPUTS AND PUTPUTS	KNOWLEDGE OF DISTRIBUTED CONTROL SYSTEMS (DCS)
IDENTIFY AND READ A CABLE SCHEDULE	TERMINATE CONTROLLERS	TROUBLESHOOT CONTROL AND LOOP POWERED INSTRUMENT SYSTEMS
INTRO TO CALIBRATING PARAMETERS FOR INSTRUMENTS	USE OF VOLTAGE AND AMPERAGE TESTING EQUIPMENT	MATERIAL TAKE OFF FOR FUTURE TASKS
INTRO TO HART COMMUNICATOR	USE AND CALIBRATE WITH A HART COMMUNICATOR	PLAN AND LAYOUT FIELD INSTRUMENT, TRANSMITTERS AND SUPPORTS
24VDC AND 4-20MA TERMINATIONS	UNDERSTAND AND INTERPRET SITE, FIELD AND SPECIFICATION DRAWINGS	COMMISSIONING PROCEDURES
INTRO TO DISTRIBUTED CONTROL SYSTEMS (DCS)	KNOWLEDGE OF CONTROL VALVES, ACTUATORS AND POSITIONERS	TROUBLESHOOT DIGITAL AND ANALOG CONTROL CIRCUITS
KNOWLEDGE OF RECORDERS AND INDICATORS	KNOWLEDGE OF FILTERS, REGULATORS AND DRYERS	PROCESS CONTROL THEORY
FIELD/PANEL MOUNT AND SUPPORT FIELD INDICATORS AND TRANSMITTERS	TUNING LOOPS	PLAN AND LAYOUT FOR LOWER LEVEL TECHS AND FITTERS
KNOWLEDGE OF RELAYS AND TIMERS	PERFORM LOOP CHECKS	USE OF ALL ELECTRICAL AND INSTRUMENTATION TESTING EQUIPMENT
KNOWLEDGE OF VARIOUS SWITCHES AND PHOTOELECTRIC DEVICES	READ LOOP DRAWINGS	TERMINATE DCS CABINET WIRES FROM FIELD INSTRUMENTS
		ABLE TO BENCH TEST/CALIBRATE INSTRUMENTATION EQUIPMENT

Disclaimer: The Competency Map above is intended as a guide to confirm skill sets and to support career progression. This is not a training model. It does not cover every task a craftsman would perform at a specific level, and should not be used as a training plan. The Competency Map shows overall knowledge and/or proficiency necessary to perform at a designated level. All helpers and journeyman are expected to practice high-quality craftsmanship. All experienced craft professionals are expected to guide and mentor lessor experienced helpers. All are expected to work with safety as the most important principle. All are expected to display high performance work behaviors: attendance, punctuality, teamwork, safety, and quality.

in the same way, establishing the progressions required bringing training managers and front-line supervisors together from various companies to develop the shared understanding.

The competency maps identify key skills and activities that an individual should be able to perform at that level. The collaborative is also developing the approaches or assessments that can be used to verify the ability of an individual to perform those activities or skills. This “performance verification” is an essential feature of this work and is in development. Similar to the competency maps, this will require the collaborative to come together and agree on the performance standards.

Automotive/Heavy Equipment Technicians and Mechanics Continue Skill Progression

The technicians and mechanics for the automotive/heavy equipment industry and mechanics share some similarities with craft workers in construction. The industry's preference is that an entry-level mechanic enters the industry from a high school CTE program accredited by the ASE Education Foundation, the nonprofit organization that evaluates and accredits entry-level automotive technology education programs against standards developed by the automotive service industry. This provides an individual with the essential occupational and foundational skills to be a service technician. Technicians are expected to continue their skill progression—with the support of a mentor—to become a professional technician and a master technician. In addition to the general upskilling, there is the constant upskilling associated with specific manufacturers like Ford, Toyota, BMW, among others. Collision and repair technicians have a similar upskilling progression with general skills and competencies as well as specific manufacturers, makes, and models.

Communication is Critical

For both construction and automotive/heavy equipment, it has been important to develop a shared understanding of the upskilling progression because it influences how industry will need to communicate with the talent pipeline in order to manage expectations about career progression and development and to improve retention. Three to six years of on-the-job upskilling progression is the equivalent of a college degree with similar career benefits.

Our healthcare employers approach upskilling differently because it is focused more on growth and retention. The foundational skills for being a medical assistant in healthcare are related to the mindsets and capabilities to engage with and care for patients and to be a part of a strong, caring culture. These transferable attributes are critical for the initial and long-term success of medical assistants. Our healthcare employers provide educational benefits and career pathways to support medical assistants to upskill themselves into different roles because successful medical assistants have the transferable skills that will allow them to be successful in other roles such as clinic coordinators and nurses.

Looking Forward

Finally, as UpSkill Houston considers its role in supporting economic inclusion and mobility, it is also working on how to identify pathways that help individuals upskill or reskill themselves into good jobs that build on existing foundational skills and add new occupational skills. For example, how can a good worker in a fast food establishment who can take a customer's order, ensure it gets fulfilled, and deliver the order to the customer with great service find a pathway and experience a new career trajectory by obtaining the credentials to become a pharmacy technician who fundamentally performs the same tasks?

In a recent Wall Street Journal article, Matt Sigleman, CEO of Burning Glass Technologies, related a similar idea, “We need a Waze for your career. You could look at jobs that are adjacent to your skillset or role, and with fairly light training, you can make a jump into a better job.”

We know that the future of work is going to require continuous learning and reskilling as employers embed more digital and technological elements into their industries and occupations. Upskilling existing workers is an essential investment as employers and industries seek to create a more sustainable workforce.

CASE STUDY AVAILABLE AT
ForwardonTalent.org

Upskilling Case Study: Vermont Construction Collaborative

AUTHOR

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TPM Upskill Review Committee

The construction industry in Vermont, like most of the U.S., is experiencing a massively aging workforce and there was minimal talent in the pipeline. Attempts to train younger people in the field was met with limited success, producing lots of unwanted turnover, which was exacerbated by challenging winter weather conditions.

In the spring of 2017, to address concerns about the inadequate talent pipeline, the Vermont Business Roundtable created a collaborative of 18 construction companies using the TPM approach. At the group's second meeting, an exercise helped clarify the collaborative's workforce development priorities. As participants paired up, each described their most valued employees as the site supervisor.

With an average age in the industry of 54 (even older for supervisors), collaborative members knew that bringing new talent into the business was a major concern. But what also became clear was the threat of a looming shortage of site supervisors, who are essential for overseeing entire projects. In 2017, a needs assessment among 12 general contractors across the state showed almost half of the 51 new site superintendents to be hired in the next two years would be replacing those retiring or leaving.

But the skills and knowledge of site supervisors take years to develop and without high-quality project oversight, construction companies can't take on new business. Thus, with many supervisors approaching retirement, growth in Vermont's construction industry would be limited.

False Start in Filling Leadership Pipeline

Collaborative members explored new ways to get the leadership training the industry needed. They looked at different programs, but each came up short in some way, either failing to deal with critical subjects like contracts and documents, or focusing entirely on important, but secondary, topics like "giving constructive feedback."

In the end, there was broad agreement that using the existing curriculum from the National Center for Construction Education & Research (NCCER) would be the most efficient way to train Vermont's future construction industry leaders. NCCER has created a standardized training and credentialing program that is widely used in the construction industry. NCCER's program for site supervisors required 90 hours of training in 8 modules to make up a credential called Project Supervision.

Vermont Technical College, which has a construction management program, offered to deliver the site supervisor training program. In the fall of 2018, the school opened enrollment for a course that was 14 full-day Thursday sessions for site supervisors on the school's campus in the northwest part of the state. This meant some full-time employees would travel more than four hours to class weekly and miss a full day of work.

Despite the critical need for training, only eight people registered for the course. Construction companies couldn't afford to lose their most valuable employees for one day a week, and potential students also saw the program's structure as challenging to commit to. Although the critical upskilling need existed, the format didn't work for employees. The course was canceled, but the need for project supervision training remained a top concern for employers.

Crew Leader Training

Accelerating the development of potential site supervisors remained a priority. But, upon deeper consideration, the collaborative realized that in order to promote people into higher-level positions, the industry also had to backfill entry-level leadership roles with people capable of advancing to higher levels. New crew leaders needed to be developed to cover for current ones who would be advancing into site supervisor roles.

In early 2019, a member of the collaborative, an HVAC contractor, Vermont Heating and Ventilating (VHV) stepped forward to offer the NCCER crew leader training for industry members outside of its own staff through the collaborative. VHV delivered crew leader training to 26 people from 8 different organizations statewide using classroom and videoconferencing technology.

This 26-hour course enabled graduates to become fully credentialed as crew leaders, completing 4 modules of training, which involved performance and written/online assessments. Contractors could then provide coverage for site supervisors who were upskilling and credentialed in the more demanding 90-hour program. The VHV classes ran from 4:00 – 6:00 p.m. twice a week, and students could also participate online, streaming and recording the program. They were required to physically attend classes when module assessments were taken. Completing the Crew Leadership program allowed companies to promote employees from skilled craft roles to crew leaders; and to create a new wave of site supervisors from the crew leaders.

Site Supervisor Training Reconfigured

In the meantime, the HVAC company also took a proactive role in designing a more practical and flexible course for site supervisors. They divided the 90-hour program into three 30-hour segments (2-4-2 modules) that could be offered in 6-week sessions at different times of the year, particularly when the construction business was slower. The first program to begin training a new generation of site supervisors started in spring 2019.

The Vermont Talent Pipeline Management construction collaborative has two major initiatives. One is focused on training and integrating new talent into the industry. More than 100 young people and 60+ adult students are expected to complete NCCER's Construction Core Essentials program in June 2019. This is the first industry recognized course completed by candidates for building and trades jobs, with transferable skills for a variety of specialty trades.

The collaborative's other initiative focuses on upskilling incumbent employees. Twenty-six workers participated in the first NCCER Crew Leadership training, and 25 have begun NCCER Project Supervision training along with 17 others who participated in additional leadership programs.

The state's construction companies are developing common job descriptions and career ladders to demonstrate advancement opportunities within the industry. This is the narrative of reintroducing today's workforce to a strong industry.

Collaborative organizer Mary Anne Sheahan at the Vermont Business Roundtable remains optimistic that Vermont's educators will still play an important role in this training.

She explained:

I expect the upskilling leadership training will grow and Vermont Technical College will play a major role. Right now, the employer community plans to cross-train and certify experts from each organization, providing a master trainer for a kind of training cooperative, with expertise in certain subjects. But I'm not sure that's practical with the talent shortage far from over. Vermont Tech could serve as a cooperative training provider. Maybe they're an addition or a host for the employer collaborative training, using certified instruction from industry.

CASE STUDY AVAILABLE AT
ForwardonTalent.org

Upskilling Case Study: Specialty Nurses in Phoenix, AZ

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TPM Upskill Review Committee

Two years ago, nine hospitals in the Phoenix area established a workforce collaborative, organized by the Greater Phoenix Chamber Foundation using the TPM approach, to address ongoing critical skill shortages. Traditional labor market data indicated that the lack of medical assistants was a major pain point for the hospitals. But, in practice, employer driven data from collaborative members revealed their greatest need was developing and retaining nurses trained in six specialty practice areas—oncology, telemetry, emergency room, operating room, ICU, and home health care. Existing employer engagement strategies were not hitting these challenges directly and employers were eager to solve this skills gap and improve alignment of training to employment.

Historically, hospitals in the region have looked for new nurses with a year or two of general nursing experience who they would train to work in specialty areas using curriculum the hospitals had designed internally. Except for one Operating Room program in a local community college, there were no local external resources that enabled nurses to develop specialty skills.

The nursing workforce in Arizona, as in most states, is aging quickly and many experienced nurses are retiring. Thus, there are no longer enough trained specialty nurses to meet the growing need for their expertise. The collaborative, which is made up of clinical recruiters and HR professionals, recognizes the problem is compounded by the ongoing challenges of turnover among nurses at all levels of experience.

As a result, hospitals must hire expensive traveling nurses and pay extensive overtime in what is a very costly support model. The health care system in the region needs a more efficient way to upskill candidates from entry level to specialty nursing roles.

Overcoming Communication Gaps

The 10 community colleges in Maricopa County, which covers the Greater Phoenix region, are organized under one district. But all 10 schools are independently accredited and operated, which means they do their own curriculum development with little standardization from school to school.

In addition, these schools historically have focused on granting only two-year degrees, developing close relationships with four-year colleges for students who want to continue their education. When initially approached about providing programs to train specialty nurses, community college leaders didn't see it as fitting within their mission. Jennifer Mellor, chief innovation officer for the Greater Phoenix Chamber, explained:

They weren't looking at specialty nurses as their area of focus because hospitals are all looking to hire nurses with four-year degrees. And community colleges provide nurses with two-year associate degrees. But what the collaborative wanted was an individual with a four-year bachelor's degree in nursing and one year of work experience who could be upskilled with this specialty certificate. While the four-year BSN degree is the responsibility of universities, the upskilling certificate falls within the mission of the community colleges.

Standardizing Specialty Nurses' Curriculum

It wouldn't be practical to work with each community college independently. So, the collaborative worked with the head of workforce development for the Maricopa district, who helped them focus on the community colleges most involved with health care, specifically nursing.

Mellor explained:

We had to persuade the schools that if they wanted to be part of this talent solution, they had to work together on a standardized curriculum. While the district had a hard time convincing the schools to change, the collaborative of employers had much more influence.

Mellor's point is a key distinction from the traditional supply-demand equation in that employers are not just playing an advisory role in this context. They are driving their provider partners to more accurately respond to their needs. Once community colleges realized training specialty nurses fell within their mission, the next step was to look at the curriculum to make sure schools had the resources needed to design and refine curriculum, as well as the right facilities and partnerships to deliver it.

For example, an Operating Room certificate program already exists, and the collaborative is reviewing the curriculum to make sure it's in line with the hospitals' needs and expectations. The goal was to see how this curriculum could be enhanced and to use it as a starting point for launching other specialty nurse training through the community college system.

Simulation Facilities: Securing Additional Resources

The leadership of the collaborative and their employer-driven data paid off. Recently, the state legislature approved a \$5.8 million budget request to develop a new clinical simulation facility at one community college for the new nursing programs. The funding request was included in the governor's budget because employers had demonstrated support for the bill and demand data from the collaborative showed a clear need for expanded facilities. These simulation facilities are essential to provide the necessary hands-on clinical experience to upskill nurses for more specialized jobs, resulting in shared value for the students, the community college, and the employers.

Once the curriculum and facilities are developed, the plan is to create an apprenticeship model. Using this approach, nurses in specialty training would go through the community college program, while working three days a week in their home unit and one day a week in their new specialty unit to get hands on experience.

Mellor concluded:

Employers need to keep looking at how they're upskilling talent today and ask if there are better ways to do it. We're clearly just in Phase One of this upskilling program. Our health care collaborative looked at who should be doing the training for specialty nurses, and employers realized education providers are better suited to deliver this. But we had to overcome the communication disconnect between the hospitals and the schools to make it happen.

CASE STUDY AVAILABLE AT
ForwardonTalent.org

Top 4 Lessons Learned

AUTHORS

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There are several types of upskilling practices and approaches identified in the TPM cases from Houston, Vermont, and Phoenix.

In Houston, the construction collaborative develops craftsmen from helpers to journeymen over years whereas in Vermont, the focus is on developing the next generation of leaders, such as crew leadership and site supervisor roles. In Phoenix, the focus is on homing in on skills needed to qualify nurses to work in specialty areas.

What is clear is that there is no one-size-fits-all solution for organizations interested in upskilling their existing employees. The stories of TPM practitioners that appear in this publication provide lessons learned that can help future TPM implementers avoid common mistakes or arrive at an effective solution more efficiently. While these lessons speak specifically to the TPM framework, these are relevant learnings that can be used with any workforce development approach used to upskill employees.

1. There are different ways to approach upskilling solutions.

Employer collaboratives will put to use numerous solutions to address upskilling needs within their companies. Some will partner with one or several education or training providers, to serve their needs, such as in Vermont and Phoenix. Others may train internally and allow other collaborative members to include their employees in training, increasing the resources that can be leveraged collectively as opposed to each employer having their own training program. It could be that efforts are focused more on technical skills or employability skills.

The key is to use the data provided by employers to determine which approach makes the most sense, and be willing to make changes if something is not working as well as originally thought.

2. Be careful of assumptions.

In TPM the employers lead the process, and their data, once interpreted and re-validated by the employers, should determine next steps. It is important to let the data drive important decisions.

For example, when the healthcare collaborative came together in Phoenix, the starting place and most urgent pain point was thought to be entry-level medical assistants. But it turned out developing specialty nurses was the biggest problem employers faced.

In Houston, data revealed that upskilled employees tended to recruit replacements into their helper roles and those roles were not left vacant. This limited the attention needed on backfilling positions, freeing up resources that could otherwise be dedicated to the employers' bigger pain points.

3. If educational institutions are involved, build in time to get them onboarded and aligned with employers' needs.

One of the most critical outcomes of the TPM approach is enabling employers to gather data that makes their collective talent needs explicit. This allows for clearer communication with education and training provider partners to encourage responsiveness. However, traditional education is not always able to move at the speed of business. Thus, to be successful it's essential to build in time not only to share information collected by employers but also to make sure training partners understand the data, and its implications.

For example, the Vermont Technical College had a construction management program but wanted to offer crew leadership training at a time that would prohibit existing workers from being on active job sites. This conflicted with the needs of the employers who wanted their employees to take advantage of the training but also needed to keep open projects going. As a result, few employees signed up for the training.

Helping the institution understand the implications of their decision of when to offer the program was very important to their relationship. In Phoenix, on the other hand, it took six months of conversations with local community colleges to convince them that training specialty nurses was part of their mission. Once they understood the important role they could play, the colleges were on board and have now benefited from heightened employer engagement in making the pitch for new training facilities funded by the state.

4. Evaluate the business costs of not upskilling effectively.

The TPM approach focuses on a positive return on investment for employer partners. This has been shown to produce shared value for all partners involved, including most importantly students and workers. Data, particularly information about the costs of not investing in upskilling, can be very powerful to make the case for this type of an investment. In Phoenix, for instance, hospitals incurred exorbitant costs when hiring traveling nurses to cover the demand for specialty nurses. This costly support model was unsustainable. In Vermont, construction companies were not able to grow or take on projects without more site supervisors. Demonstrating the business case for upskilling investments is an essential step in building and sustaining buy in from key stakeholders.

DATA TELL THE STORY.

What is common throughout all of these lessons is that the data are essential for success. Whether they realize it or not, employers have access to the information most crucial to solving their own talent challenges. When aggregated it can make a very powerful case to partners—in education and training, government, or other roles—of what is needed to create effective talent pipelines. By leveraging the TPM approach, employers can use this data in a more meaningful way to create upskilling strategies that work.

Tools to Help Advance the Upskilling Movement

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On January 21, 2020, [UpSkill America](#) will celebrate the fifth anniversary of its founding. Over these five years, we've worked with businesses to create, expand, or improve their education and training practices to help workers—particularly front line and entry level workers—gain the education and skills they need to advance in their career. We are pleased to see the growth in the number of employers that are investing in programs such as apprenticeships, certification, incumbent worker training, all the way up to employer-paid college degree programs. Businesses are making these investments because they know that if they are going to succeed in these rapidly changing times, they need a skilled and educated workforce.

We're also pleased to see the upskilling movement continues to gain momentum. In 2018, more than \$600 million in innovative new upskilling programs were announced in a wide range of sectors and by businesses big and small that are helping workers get the skills they need to advance and help companies create the skilled workforces they need. These programs include tuition programs from Fortune 500 companies that employ hundreds of thousands of US-based workers and small businesses that help their employees get certifications to fulfill new business needs.

In 2019, the upskilling movement continued to grow. Amazon announced a \$700 million effort to retrain 100,000 of its employees. Walmart expanded their college degree program, added a number of certificate programs, and even created new programs in the health care field. Meanwhile, Disney celebrated the one-year anniversary of their Aspire college degree program with an impressive take-up rate of nearly nine percent and Starbucks celebrated the five-year anniversary of its groundbreaking College Achievement plan.

As I've worked with employers in places like Houston and San Diego, I've often heard employers talk about the importance of intermediaries who bring employers together to discuss their skill needs using tools such as the Talent Pipeline Management® (TPM) curriculum, developed by the U.S. Chamber of Commerce Foundation. The TPM

curriculum has given employers a tested framework and language to use to identify the skills needed in their region, and a process to put an action plan in place, using common goals and language. We're pleased to be a partner of the Chamber Foundation's and are equally please they have added a vitally important upskilling component to the TPM curriculum. If you haven't had a chance to [check out the updated curriculum](#), please do.

We would like to draw your attention to some additional tools we have developed, thanks to a grant from Walmart, to help businesses educate, train, and support front line workers' development to advance their careers. These tools can be used as a supplement to the TPM curriculum to help employers with specific upskilling actions, when upskilling is identified as a priority using the TPM curriculum. The tools build on [UpSkill America's Upskilling Playbook for Employers](#) which was designed to help employers and the intermediaries that serve them, understand the benefits of upskilling, models of upskilling programs now in place, and ways to successfully implement these programs.

The tools include:

- [Key Elements of Successful Tuition Assistance Programs: A New Model for Workforce Development](#)
- [From Tuition Reimbursement to Tuition Disbursement: Key Components and Considerations](#)
- [Soft Skills Upskilling Planning Guide*](#)
- [Building Registered Apprenticeship Programs](#)
- [Strategic Guide to Building a Culture of Learning](#)
- [Accessing the Network of Local Upskilling and Related Resources Available to Support Your Business](#)
- [Tuition Assistance Policy Discussion: Roadmap to a Skilled and Educated Workforce*](#)
- [Cost of Turnover Tool: Make the business case to improve retention through upskilling and stability*](#)

*Asterisks indicates a further explanation on the following pages.

Upskilling Resources

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As organizations consider their potential upskilling strategies, there are a set of resources that can prove useful to identifying a good fit. Whether as part of TPM implementation or not, the following resources can boost your efforts to better meet the needs of your organization and your employees.

Cost of Turnover Tool: UpSkill America

In Strategy 5 of the TPM Academy curriculum, the U.S. Chamber of Commerce Foundation outlines how to calculate employer return on investment when participating in employer collaboratives through a formula, which can be applied to numerous metrics:

$$\text{Baseline Cost} - \text{Updated Cost} / \text{Baseline Cost} \times 100$$

The exercises explain how organizations should use benchmarks for their industries when calculating Baseline Cost, such as cost of hire and cost of turnover.

If an organization wants to calculate their own Cost of Turnover to not only personalize their TPM Academy curriculum experience, but also to make the case for investment in upskilling, the [Cost of Turnover Tool](#), developed by UpSkill America in partnership with the Aspen Institute Workforce Strategies Initiative, is a useful resource.

Key takeaways:

- Industries experience turnover in different ways (i.e., retailers are more likely to rely on hourly workers to quickly fill shifts on a frequent basis, while a manufacturing company may use a staffing agency to hire temporary workers)
- The Cost of Turnover Tool allows employers to pick expenses that are relevant to them to properly calculate Cost of Turnover.
- The Cost of Turnover Tool can help employers reexamine their procedures for hiring, such as exploring where to cut costs effectively and identify opportunities to reinvest in their workers.

Can't Spell Training Without AI: InnerMobility

With the introduction of InnerMobility, an AI-powered internal talent marketplace, Unilever is utilizing artificial intelligence to quickly identify avenues for developing organizational skills amongst its own employees. Introduced just last year, a case study found that 80% of employees, roughly 124,000 people, have completed a “detailed and rich profile”, which has closed Unilever’s organizational knowledge gap across the company. Project or hiring managers post projects they need assistance with, and employees can contact them to help.

By completing the projects, with ranging levels of time dedication, employees gain specific skills relative to the projects. Employee profiles enables InnerMobility to match up open projects to the skills needs of employees.

Key takeaways:

- Employees can take initiative in seeking out career/skills development that they are interested in pursuing.
- This is a modern approach to upskilling; using an online marketplace to see all available options is revolutionizing how a company can build teams and develop employees’ skills.
- While this is currently a good a fit for larger companies with more internal opportunities, the hope is for future engagement with small- and medium-sized companies.

Plan, Assess, and Evaluate Soft Skill Needs: UpSkill America

Specific to soft skills, the Upskilling Planning Guide creates a navigational tool for employers to identify the skills their employees, both current and future, should develop further. Employers should be aware of future business needs to identify what long-term skills will be necessary for continued success. After identifying needs and assessing their workforce, companies can define and design training programs to target soft skills. Training programs can vary from instructor-led training, action-learning projects, job rotations, to coaching/mentoring programs.

The Upskilling Planning Guide, developed by UpSkill America in partnership with the Institute for Corporate Productivity, is a guide for practitioners to follow when developing soft skills and can help you stick to a plan, ensure that you are on your way to achieving your goals throughout the duration of the development, and create buy-in to the program from both employers and employees.

Key takeaways:

- The guide proposes various training methods to allow for wide range of implementation for organizations with various capacities.
- With so many options for teaching hard skills, guidelines for how to develop soft skills create a skills-balanced workforce.

A Guide to Upskilling America's Front Line Workers

A collaboration between Deloitte and the Aspen Institute in 2015 that outlines various aspects of upskilling: what the future of upskilling looks like, how to implement it into a small-, medium-, or large-size business, and what the end goals of upskilling will produce. The guide serves as a step-by-step process explaining the foundations and approaches of an overarching strategy, which is not only complementary to the TPM approach but could easily be used in conjunction with TPM implementation. It explains business incentives of upskilling your employees, understanding and assessing what skills need to be improved upon, and how to implement the methods that Deloitte and the Aspen Institute provide.

Key takeaways:

- This guide is advantageous in that it combines an organization that is dedicated to upskilling with a large and reputable company showing its willingness to upskill the future workforce.
- While Deloitte is a large company, the guide addresses why medium and small companies/organizations need to upskill as well. By including suggested practices for a variety of companies, the guide becomes more inclusive and potentially more influential by reaching a larger audience.

Tuition Assistance Roadmap: Navigating the Path to an Educated and Skilled Workforce

With insight from Pearson and funding from Walmart, the Aspen Institute created this comprehensive guide for tuition

assistance in the workplace. In today's business world, tuition assistance is being utilized by more companies as a way to support both their employees' aspirations to achieve higher levels of education and to upskill their workforce in the process. While some companies have been able to navigate the process of tuition assistance and have an established system with policies and practices in place, there are even more companies that strive to provide this benefit but feel they do not have the correct expertise to execute it. With the help of the Tuition Assistance Policy Discussion tool, this roadmap allows companies of any size to initiate discussions around the topic of tuition assistance and ask the right questions along the way to maximize the implementation of an invaluable workplace benefit.

Key takeaways:

- Tuition assistance is a popular modern-day benefit that is attractive to potential employees.
- By providing a guide to the public, the roadmap sets the standards for:
 - Who needs to be involved in preliminary discussions
 - Who benefits from the implementation
 - Intended goals of the initiative
 - Indicators that demonstrate successful completion of educational endeavor

From the Field: Upskill Case Studies

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The U.S. Chamber of Commerce Foundation has greatly benefited from the learnings of companies and organizations implementing and improving their upskilling practices. In addition to the previously summarized resources created by upskill thought leaders and implementers, case studies can support companies exploring upskilling strategies to better understand real-life application and outcomes. The case studies that follow outline various approaches and can be useful to TPM practitioners and their employer partners.

Amazon: Upskilling 2025

In early 2019, Amazon [pledged to invest](#) \$700 million to develop six different upskilling programs for 100,000 of its U.S. employees:

- **Machine Learning University (MLU):** Provides courses to enable employees to improve tech and coding skills.
- **Amazon Technical Academy:** Allows non-technical employees (e.g., Project/Product/Program Management, Human Resources) and fulfillment center employees to gain necessary skills to transition into software engineering careers.
- **Associate2Tech:** Provides fulfillment center employees an opportunity to move into technical roles, regardless of their previous IT experience.
- **Growing Career Choice:** Pre-paid tuition program for fulfillment center associates looking to move into high-demand occupations such as aircraft mechanics, machine tools tech, medical lab tech, and nursing—occupations that aren't necessarily offered at Amazon.
- **Amazon Apprenticeship:** Department of Labor certified program that offers paid intensive classroom training and on the job apprenticeships with Amazon.
- **AWS Training and Certification:** Program that aims to close the cloud skills gap in the industry.

Having disrupted the retail industry, Amazon now looks to assist their employees in obtaining the necessary skills for the next major workforce disrupter—artificial intelligence (AI) and advanced technology, particularly their implementation in the workplace. As evidenced by the six programs Amazon has developed, there is a trend to increase technological competency in a variety of fields. Amazon is actively

preparing its employees to fulfill the jobs of tomorrow, even if those jobs won't exist for months to come, and even if these employees do not plan to remain with Amazon in the long-term.

Amazon is able to launch such a large-scale initiative not only because of their large workforce, but also thanks to their ability to automate many of their daily operations through advanced technology. In short, they are advancing their system, not creating a new one. By moving towards automation of work, employees can more easily engage in these upskilling programs without Amazon skipping a beat in productivity maintenance. As Amazon employees complete these programs, they will be prepared to take on advanced positions that require more AI and technological competency, creating an internal labor supply and demand cycle, but also [equipping employees](#) with the skills to make external moves to similar companies should they choose to.

There is no doubt that Upskilling 2025 is a massive endeavor. However, a company such as Amazon has the capacity and resources to change the landscape of workforce mobility by showing that businesses can, and should, be the trailblazers in closing current and future potential skills gaps. Even the [public-facing marketing](#) that the company has invested in shows employees are enthusiastic about the in-house opportunities. In giving employees the option to upskill, a company can contribute to the economy as a whole by improving the number of skilled workers, while simultaneously attracting high-quality talent or even keeping quality talent in-house.

The bottom line is upskilling should not be an attempt to simply advance individuals up a ladder of management or address current workforce needs but should instead be a long-term investment in people to prepare them to be the problem solvers for tomorrow's workforce.

Wyoming Machine

Large companies in the United States have vast resources and capital to reinvest in their employees, but this doesn't mean that they should be the only players in the effort to upskill the workforce. Medium- and small-sized companies similarly have options when it comes to investing in the skills of their employees, such as partnering with local higher

education institutions or convening industry stakeholders to identify necessary skillsets for the future. Smaller organizations need to be aware of these options in order to maximize their employees' capabilities.

Wyoming Machine, a metal fabrication business based in Stacy, Minnesota, has gained a national reputation for being [an upskill champion](#) that utilizes their local resources.

By convening a consortium of local employers and finding the right higher education partner in Pine Technical and Community College (PTCC), Wyoming Machine was able to offer employees access to the STEM-based courses at PTCC to ensure that they were properly equipped to handle the daily operations of a machinery company. Not everyone at the company had an educational background in STEM and many had never even worked in a STEM company prior to being hired by Wyoming Machine. However, the owners, sisters Lori and Traci Tapani, recognized that if they could hire people willing to learn about manufacturing, no matter what industry they came from, they could find a way to [empower them](#) with the tools necessary to be skilled manufacturing workers.

Continuous conversations with PTCC throughout this partnership allowed Wyoming Machine to develop options for their employees engaged in upskilling, while simultaneously maintaining productivity in day-to-day operations. According to Joe Mulford, President of PTCC, the popularity of classes has led the community college to add in night-time options to meet the [increased number of students](#) as a result of their partnership with Wyoming Machine.

Due to increased interest in upskilling pursuits, the company wants to ensure that this opportunity is available to as many employees and fits as many work schedules as possible, while maintaining high productivity in the workplace. As a result, Wyoming Machine also hosts virtual classes through Interactive Television (ITC) from PTCC to allow employees to earn their degrees around their work hours and without having to commute to PTCC.

By giving their employees opportunities to increase their skillsets—not only advancing them in their current work, but in future jobs or roles—Wyoming Machine's actions benefited all stakeholders:

- Employees found opportunities to work and simultaneously increase their capacity and knowledge.
- The employer, in this case Wyoming Machine, tapped into new workforce members found outside of their industry, created an environment based on learning and empowerment, and can be confident in the capabilities of their workers as they learn from a higher education partner.
- Higher education institutions are able to reach a larger scope of new learners by partnering with local businesses that want to invest in improving the skillsets of their employees.

Collaboration between employers and higher education institutions allows for efficient and effective identification of workforce needs. Seeking the help of educational partners that have the resources and means to enrich the human capital of a company highlights the potential that higher education and business collaborations possess. Wyoming Machine exemplifies that while many companies may not have the capacity of AT&T, Amazon, Google, and other industry giants, identifying what resources your local partners have is a strategy that can function for any size company and can be replicated in communities across the country.

Guild Education

Economic mobility is a powerful asset. While discussions will persist about its attainability, it is with the help of organizations like Guild Education that more people will have access to economic mobility in the future. By offering upskilling opportunities to a growing number of companies through their constantly emerging higher education network, Guild Education seeks to establish education as a benefit for workforce members.

Founded in 2015, Guild Education is a relatively young company, but has shown incredible growth over the past four years due to their partnerships with well-known companies such as Walmart, Chipotle, Disney, Discover, and Taco Bell. Companies of this caliber want to engage with Guild Education due to their dedication to making educational opportunities more readily available to employees. Company founders Rachel Carlson and Brittany

Stich realized that companies want their employees to be prepared for the constantly changing needs in the workplace. In order to meet these needs, Carlson and Stich felt the solution was proper access to education, to either help employees complete a degree at any level or to encourage those with degrees to pursue further education, therefore equipping a workforce with the skills for the challenges of tomorrow. Guild serves as a multi-pronged strategic partner and connector for employers—assisting them in designing a strategic education program and policy that aligns with business goals, connecting them with an academic network designed for working adults, and providing an administrative platform to manage education benefits. But that is not the extent of what they offer.

Employers do not always have the expertise to assist employees that are engaging in educational opportunities. Guild guides employees through their educational endeavors with their Student Coaching and Operations department in order for employees to maximize their learning. Guild’s Student Success Advisors, among many other specialists, are dedicated to [helping employees achieve their goals](#) by providing resources, such as study skills and success strategies, and developing solutions to assist working adults. The company is growing to meet the demand of employers because they understand that while education should be a benefit for a workforce, it also requires support along the way. Companies want to see a return on their investment when their employees engage in educational opportunities, primarily in their acquisition of new knowledge and skills, and with the proper support experts in place, Guild ensures these returns come to fruition.

Through their network of institutions like Purdue University Global and Wilmington University, with degree offerings ranging from business administration to cybersecurity, Guild Education offers employees a wide variety of degree opportunities in order to prepare themselves for the jobs of tomorrow. Employers of any size are able to utilize the services and expertise of Guild Education to empower their employees to pursue education, not only strengthening their own workforce, but setting an example for how businesses can, and should, assist one another in taking the initiative to upskill for the future.

Contributors

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Greater Houston Partnership
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Peter Beard serves as Senior Vice President for Regional Workforce Development at the Greater Houston Partnership whose mission is to make the Houston region the best place to live, work and build a business. He leads the Partnership's UpSkill Houston initiative—a business led effort that engages more than 200 employers, educational institutions, community-based organizations, and the public workforce system working together to address Houston's skills gap. UpSkill Houston's focus is to ensure that the region's businesses have access to workers that have skills and credentials for advanced and technical careers and occupations that require education beyond a high school diploma but less than a four-year college degree.

Prior to joining the Greater Houston Partnership, Peter served in executive roles at United Way Worldwide (Alexandria, VA) and the Fannie Mae Foundation (Washington, D.C.). Prior to Fannie Mae Foundation, he served as the general counsel at Habitat for Humanity International (Americus, GA), and was in private legal practice at Semmes, Bowen & Semmes (Baltimore, MD).

Peter is active in various community and civic causes. He serves on the boards of directors for Gulf Coast Workforce Solutions (Houston, TX), Artspace Projects (Minneapolis, MN), and Houston LISC's Local Advisory Committee (Houston, TX). Prior to the sale of its assets to Ascension Insurance, he served on the board of directors of Paula Financial (PFCO). Peter is also a TPM faculty member and Fellow at the U.S. Chamber of Commerce Foundation and is a senior fellow with the American Leadership Forum in Houston, TX. Peter received his A.B. in economics from Davidson College (NC) and J.D. (magna cum laude) from Syracuse University College of Law (NY).

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A member of the U.S. Chamber of Commerce Foundation's Center for Education and Workforce, Chief is also a graduate student at George Washington University's School for Education and Human Development pursuing a Master's in International Education and a certificate in Assessment, Testing, and Measurement. Chief received his B.A. in both Economics and Spanish from Wofford College.

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Speaker, author and consultant Dr. David DeLong helps organizations improve performance by implementing practical solutions for critical skill shortages and threats of knowledge loss. President of Smart Workforce Strategies, David also has been a research fellow at the MIT AgeLab and an adjunct professor at Babson College teaching "Leading & Managing Organizational Change." He is a former member of the research staff at both Harvard Business School and the Center for Information Systems Research at MIT's Sloan School. David is the author of three widely praised books focused on solutions for a changing workforce and the escalating war for talent. Widely quoted in the New York Times, Fortune Magazine, the Wall Street Journal, and the Financial Times, David has also been interviewed on NPR's "Morning Edition" and "Talk of the Nation." His forthcoming book is "Building Tomorrow's Workforce in Today's Economy."

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Jaime S. Fall is Director of UpSkill America at the Aspen Institute, an employer-led movement to expand opportunity for America's workers and to help our economy and communities thrive by promoting training and advancement practices to help workers progress in their careers and move into better-paying jobs.

Jaime has worked in the field of workforce development for nearly 25 years. Previously, Jaime served as Vice President for Talent Sustainability for the HR Policy Association and its nonprofit foundation. Jaime's government service includes serving as Deputy Secretary, Employment and Workforce Development, for the California Labor and Workforce Development Agency. As a Senate-confirmed leader in the Schwarzenegger Administration, Jaime provided policy and guidance to California's \$11 billion workforce system and the nearly 9,000 employees that made up the entities within the agency. Previously, Jaime spent more than a decade in Washington, DC, working at the U.S. Department of Labor's Employment and Training Administration; the National Association of State Workforce Agencies; Fall Communications, a workforce development-focused marketing and website development company founded by him and his wife; and on Capitol Hill.

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Jaimie M. Francis is senior director of programs and policy at the U.S. Chamber of Commerce Foundation Center for Education and Workforce. Francis develops and oversees CEW's programs for postsecondary education and workforce development. She manages its TPM initiative and its 250+ member National Learning Network of TPM practitioners. Francis is a faculty member for the TPM Academy®, an in-person training to learn the TPM approach to drive employer partnerships with education and training providers based on industry need.

She began her career as an admissions counselor for her undergraduate alma mater, Davidson College, where she received her Bachelor of Arts in sociology. She received her Master of Arts in Higher Education Administration from The George Washington University's Graduate School of Education and Human Development.

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Joe Quick is a consultant out of Dallas, Texas with a background in workforce development, economic development, and government and non-profit association leadership.

As a Senior Consultant at Mahe & Mahe, an Impact Company, Joe provides expertise in demand-driven workforce strategies, sector strategies and career pathways, talent pipeline approaches, unified business solutions design and delivery, interagency and multi-partner collaboration, work-based learning strategies, talent systems design, occupational licensing, and training design and delivery. Joe serves as a TPM Faculty member and TPM Fellow for the U.S. Chamber of Commerce Foundation's TPM approach, and consults with teams in both Michigan and Tampa, Florida to launch and maintain TPM host collaboratives.

Prior to national consulting work, Joe served in leadership roles at the Michigan Works! Association, Michigan Economic Development Corporation, and Michigan Talent Investment Agency, where he led business-focused, demand-driven solutions to talent development and acquisition; training design and delivery for workforce boards and entities; several talent attraction and retention programs and campaigns; and built the Pure Michigan Talent Connect website and system. He is also an instructor of Michigan's Business Solutions Professional Training and Certification Program.



U.S. CHAMBER OF COMMERCE FOUNDATION