

Research to Support Workforce System Strategic Planning



The Mission of the Texas Workforce Investment Council

Assisting the Governor and the Legislature with strategic planning for and evaluation of the Texas workforce system to promote the development of a well-educated, highly skilled workforce for Texas.

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Texas Workforce Investment Council

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Introduction

The Texas Workforce Investment Council (Council) is charged with developing a strategic plan for the Texas workforce system in Texas Government Code, Chapter 2308. The purpose of the system strategic plan is to reduce duplication, bridge gaps, and focus efforts on opportunities and issues to improve the system and outcomes for participants and employers. Statute directs that the audience of the strategic plan is the state agencies that administer workforce programs and services. In Texas, the state workforce system is composed of eight state agencies, 23 programs, and the local entities that deliver those programs.

In support and development of a workforce system strategic plan for Texas, research reports related to issues identified by agencies in listening sessions during the strategic planning process were identified. The reports referenced current data, policy, and research from experts and practitioners across the nation. Information on these reports, in the form of an annotated bibliography, was presented in June 2022 to the Council.

This report contains executive summaries for 12 research reports, listed in alphabetical order, that were included in the June 2022 annotated bibliography. The summaries provide overviews of research related to:

- Reskilling and upskilling
- Short-term credentials
- Work-based learning
- Apprenticeship
- Pre-apprenticeship
- Industry-based skills competitions
- Credentials of value

Each summary provides various findings and recommendations for improving workforce programs for both individuals and employers. According to the reports, more individuals would participate in programs if training and credentials were more affordable, quick to earn, and convenient to attain. Collaboration between workforce boards, policymakers, educational institutions, and employers remains vital to the relevance of programs and the creation of additional programs to meet the needs of employers.

Attracting the Next Generation of Students

<https://www.themanufacturinginstitute.org/research/mi-attracting-the-next-generation-of-students-role-of-cte/>

Overview

The Manufacturing Institute, a 501(c)(3) affiliate of the National Association of Manufacturers, in partnership with SkillsUSA and the Student Research Foundation, conducted an annual survey to understand the career choices of future workers based on their educational experiences. Students currently enrolled in career technical education (CTE) courses are the ideal candidates for a career in manufacturing. Through this survey, educators and employers can find ways to better align programs and services with the needs of students as they prepare for their future careers.

Purpose

The survey outlined how CTE courses significantly impact a student's choice of postsecondary plans and identified programs that engage student interest in CTE. Even though students might be interested in manufacturing, there are not enough outreach or opportunities for learning through experimentation and on-the-job training currently available or known to the students.

The survey found that one way to provide more outreach is on Manufacturing Day, which is hosted by the Manufacturing Institute and occurs on the first Friday in October. It addresses misperceptions about manufacturing and connects young workers to the industry through local promotional events. The Manufacturing Institute also runs a student engagement program called “Dream It. Do It.” The program is designed to assist in changing the perception of the industry and inspiring up-and-coming workers to pursue manufacturing careers by providing real-world job experience.

Early exposure posed a critical factor in attracting students to a career in manufacturing, and the survey indicated that parents play a significant role in students' choices when enrolling in CTE classes, camps, and even student organizations. By providing opportunities in the field to show the various types of work and career opportunities, students can see the possibilities for their careers and future work. Further outreach to parents can result in inspiration that helps the future workforce select their career pathways.

In addition to outreach to students and parents, providing information to educators is key. More information made available to educators can help them develop programs that offer more CTE credits to future workers. Research showed that 65 percent of CTE teachers consider industry-recognized credentials valuable and believe industry certificates are incredibly valuable after completing a high school diploma. Seventy percent of educators surveyed agreed that they would like more information on CTE options to be made available to students.

Research further indicated that employers would benefit from job applicants who have obtained certifications. For employers, this certifies that potential future workers have the specific skills needed no matter where they earn their credentials.

Industry and Market Analysis

Several findings in the report showed that taking CTE courses is a positive indicator for future employment. While CTE programs have had challenges in the past, the research suggested changes in perception and a need for applied learning through the use of CTE.

- Sixty-three percent of students enrolled in CTE courses feel more empowered and see their interests and experiences as impactful in their chosen career path.
- Eighty-two percent of teachers surveyed expressed that CTE credits ultimately produce better-prepared students for the workforce and ongoing education throughout their careers.
- Sixty-five percent of teachers surveyed considered CTE a very valuable tool for learning and expressed that industry certificates are among the most beneficial credentials once a high school diploma is obtained.

Methodology

This annual survey was conducted by the Manufacturing Institute and its partners from August to December of 2016, which included both students and teachers. The students who participated in the survey were enrolled in a CTE course.

Research Recommendations

Research findings demonstrated that the ultimate goal of outreach strategies is to meet the demand for the next generation of manufacturers by drawing talent from all sectors of the United States. Survey findings showed that understanding the beneficial role of CTE and providing programs with resources and information that improve outreach and engagement activities can result in the following:

- Students can gain experiential learning opportunities sooner in their particular pathway.
- Employers can engage sooner with future workers to share more about the various roles in manufacturing and provide students with site visits and work-based learning.
- Parents of students and teachers can gain enhanced access to local employers to better understand the vast opportunities available through modern manufacturing.

Certifications as Tools for Promoting Economic Mobility

<https://skilledwork.org/wp-content/uploads/2022/03/Certifications-As-Tools-For-Promoting-Economic-Mobility.pdf>

Overview

“Certifications as Tools for Promoting Economic Mobility” is one of three reports that followed up on the initial research report issued in December 2020 on “Understanding Certifications.” The report was created to support policymakers, employers, and other stakeholders in understanding the process and the need for more inter-connected certifications that aid workers in their career goals, including reskilling for a new career pathway.

Purpose

In this report, the characteristics of quality certifications provided a framework to illustrate how this type of credential can support career pathways that improve the economic mobility of the workforce and further expand the talent pool for employers. The report reviewed the dimensions, patterns, and trends in using certifications and data on skills and credentials required at all stages, whether a worker was new to the workforce, mid-career, or looking to change careers. Certifications are one of many tools that workers could use to indicate to employers their ability to perform a specific skill set. Most certifications, but not all, are non-degree credentials, meaning they do not count toward a four-year degree. However, this report highlighted how certifications serve as a valuable tool in the workforce to qualify workers for specific occupations, promote lifelong learning through required renewals, and provide a competitive advantage where the skills are in demand.

Industry and Market Analysis

Certifications have been shown to provide a map of systemic connections and gaps that can be analyzed to understand barriers and opportunities in career pathways that support increased credential attainment and career mobility. The authors studied several certification bodies and found many gaps in some career pathways. For example, a certified pharmacy technician certification can be obtained with a high school diploma, board-recognized training, and a certification assessment. On the other end of the educational continuum, a pharmacist requires a doctoral degree and passing the necessary licensure exam. While the need for degrees and more experience can be justified at the top of the continuum, not having interim postsecondary opportunities could deter workers who need a viable career path that is not necessarily a four-year degree.

Research showed that workers are more likely to complete degrees with short-term embedded credentials such as certifications in the program of study; therefore, certifications could be utilized to improve postsecondary completion and career progression while reducing the time it

takes for an individual to begin earning a livable wage. The report stated that embedded certifications might exist in programs of study at the university level but were not as prevalent through community colleges, an essential partner in workforce development.

The report's authors stated that identifying quality, industry-recognized certifications is not a simple process and could involve many stakeholders but implied it was worth the investment. The report indicated that the value of certifications relied heavily on employer needs and the certification's capacity to evaluate a worker's abilities. The education and training requirements for many certifications can vary depending on the career pathway for an occupation and what skills are assessed. Additionally, the report found that some certification bodies provide navigational tools for individuals to evaluate the potential value of a certification, including the cost to take the course, prerequisites needed, and available exam options. For example, the report shared that the American Healthcare Information Management Association had a career map that outlined how its certifications are utilized in the healthcare industry at varying levels.

Methodology

The Corporation for a Skilled Workforce, George Washington Institute of Public Policy, and Workcred conducted a two-year study of industry and occupational certifications. Research from 2019–2021 on 16 certifications across cybersecurity, healthcare, information technology, and manufacturing occupations informed five reports and provided separate overviews for each certification. The Lumina Foundation provided the funding for the project.

Research Recommendations

This research showed that academic preparation and access to particular career pathways, including certifications, could help fill current gaps in workforce credentials and employment. More research is needed to assess certification processes and attainment; however, the authors stated that systematic changes must be addressed immediately to advance the current credentialing process, including the following:

- Improve data collection with a centralized data source and clear metrics for reporting the outcomes of certifications for learners, workers, and employers.
- Collaborate with employers and certification bodies to implement policies and procedures that integrate certifications into career pathways and programs of study.
- Encourage education and workforce systems to work to reform the use of certifications, including changes in credit, transfer, quality assurance, and accountability policies.

Systematic integration of certifications into educational career pathways could facilitate greater career mobility for workers while providing employers with skilled workers. Improved data collection and further research on certification outcomes and their impact on the mobility of workers with varying skill levels and across different economic sectors could assist in building a more interconnected credentialing system.

Improving Youth Data Quality: Challenges and Opportunities

<https://careertech.org/resource/improving-youth-apprenticeship-data-quality>

Overview

The Partnership to Advance Youth Apprenticeship (PAYA) participated in a workgroup led by Advance CTE to share common data issues and growth opportunities in the youth apprenticeship field. The workgroup created a research paper titled “Improving Youth Data Quality: Challenges and Opportunities” that summarized discussions, including identifying and addressing the needs of youth apprenticeship data quality.

Purpose

Youth apprenticeship is a newer strategy that aims to bridge education and the workforce by pairing high-school-aged youth with employers who align learning in the classroom and actual job experience. Early research is limited but showed promise for the future workforce. According to the Brookings Institution, a nonprofit public policy organization, work-based learning experiences in high school, such as internships or apprenticeships, contribute to better wages, benefits, hours, and job satisfaction up to ten years after obtainment.

According to the report, many states have already established processes for collecting youth apprenticeship data simply for state and federal accountability. Since 2019, 12 states have counted work-based learning participation in high school report cards. Furthermore, 27 states have counted work-based learning as at least one career technical education (CTE) credit through the Strengthening Career and Technical Education for the 21st Century Act.

Industry and Market Analysis

Research showed that customer relationship management platforms and existing data platforms could successfully be used as infrastructure to collect and store relevant data and manage relationships with employers and learners. The PAYA workgroup found that creating a data plan and getting the infrastructure to collect data is imperative for stakeholders and local leaders to develop and scale programs effectively.

According to the report, the first challenge is determining what to measure for useful and valuable data. Definitions must be consistent enough to compare programs but still provide the tractability for different models of youth apprenticeships across industries. The study also found that data collection can assist various stakeholders, including learners, their families, employers, and instructors. This information could help improve programs and support employer partners and the future workforce through awareness.

Determining the roles and responsibilities of who is collecting the data is also essential according to the PAYA group. They suggested that employer partners create a data-sharing

agreement that outlines the processes for data-sharing and lays out how the data will be used. From there, state and local leaders can establish systems and scalable methods.

Accessing data can be an obstacle employers face due partly to federal and state student privacy laws. But with the help of intermediary organizations and state leaders working together, this data can be made readily available to youth apprenticeship partners.

Research by the PAYA group suggested that one approach to consider is a scaffold approach. In this method, teachers can support students while they develop new skills. This approach provides a foundation for easy-to-collect indicators and builds over the years to give intermediaries a path forward for a data collection strategy.

Methodology

PAYA convened a workgroup facilitated by Advance CTE in 2020. The workgroup included state apprenticeship agencies and local intermediaries at various levels of implementation.

Research Recommendations

Research suggested that states and partners should analyze youth apprenticeship data and adopt policies that identify on-the-job training needs. States can also assist by facilitating statewide credit toward postsecondary credentials. As youth apprenticeship expands and gains momentum, states can provide training and professional development for schools, employers, and intermediary staff to understand best practices for collecting and maintaining data.

An evaluation tool to build a case for continued employer engagement is conducting a return-on-investment analysis to help quantify taxpayer and employer investment. For example, the research report shared that in South Carolina, Apprenticeship Carolina, which coordinates youth apprenticeship opportunities throughout the state, found that for every dollar employers contributed to support apprenticeship opportunities, employees saw a wage gain of \$1.26 over five years and \$2.15 over seven years.

Another critical use of data that can assist state leaders and employers is to reinforce messaging and continue to recruit new employers and future workers. Research suggested that creating targeted messages for various audiences on what they need to know about youth apprenticeship helps recruit future workers into youth apprenticeship programs. Data also indicated that states could further assist in identifying potential participants of these programs and their impact on the workforce.

Make It Count: Lessons for Upskilling in Times of Uncertainty

<https://files.eric.ed.gov/fulltext/ED610247.pdf>

Overview

The American Institute for Research conducted a survey and published the findings in October 2020 in a research paper titled “Make It Count: Lessons for Upskilling in Times of Uncertainty.”

Since the pandemic began, workers have found themselves looking for new employment opportunities and additional training to make themselves more marketable to employers. According to the study, the most significant unmet demand for workers in the workforce are for those with "middle-skills," meaning those with some postsecondary training but not a four-year degree.

This executive summary includes analyzing and comparing two training pathways to middle-skills, including credit-bearing and non-credit-bearing credentials. The study demonstrated the significant differences in earnings between the two types of credentials.

Purpose

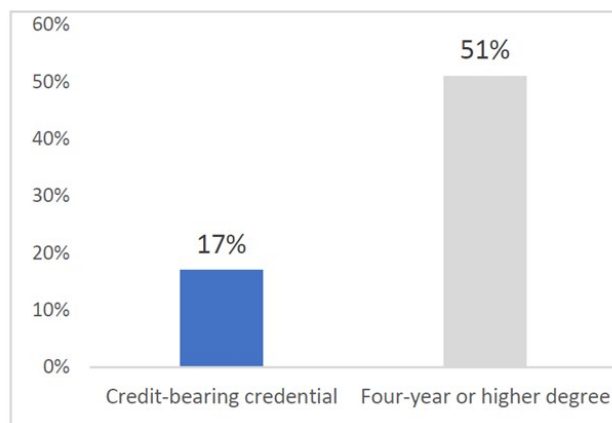
This research study compared middle-skills training options and the outcomes of choosing each pathway. Workers can select credit-bearing or non-credit-bearing career pathways, but which is the best route?

Middle-skills credit-bearing credentialing typically refers to associate degree programs, and non-credit-bearing is more in line with certificate and licensure programs. The main difference is that most non-credit-bearing programs are not made to build toward an associate's or bachelor's degree.

There is an appeal to earning non-credit-bearing credentials because they can take less time to acquire, are usually less expensive, and are often provided through an employer. But this research demonstrated that there is still a real need for more credit-bearing credentials at both two- and four-year institutions because of their portability between institutions and employers.

Credit and non-credit-bearing credentials also showed significant differences in earnings. By age 30, the wages of credit-bearing workers far exceeded those of non-credit-bearing workers.

Percentage Change in Earnings Related to Credential Attainment Compared With Non-Credit-Bearing Attainment



Note. The sample excludes individuals who attain a 4-year degree within 6 years of graduating high school or attaining a General Educational Development certificate.

The exhibit on the previous page, provided in the research study on page five, illustrates the difference in pay relative to individuals who earned a non-credit-bearing credential to those who earned either a credit-bearing credential or a four-year degree (or higher).

Industry and Market Analysis

The research paper showed that credit-bearing credentials often produce higher earnings of approximately \$5,500 yearly than non-credit-bearing credentials. These findings indicated that individuals with credentials from both credit-bearing and non-credit-bearing programs are employable, but credit-bearing workers earn roughly 17 percent more annually.

Time and earnings are not the only factors workers consider when it comes to middle-skills training. The research showed that workers who have children are less likely to complete programs. Additionally, a worker's location can substantially impact training access and completion. Research showed that credit-bearing program completions tend to occur more on the coasts, while non-credit-bearing programs see more completions inland.

Methodology

The data utilized in this research study came from the National Longitudinal Survey of Youth 1997. It followed workers aged 18 to 30 from 1997 through 2016. The National Longitudinal Survey for Youth focused on workers who had not completed a four-year degree within the first six years after high school.

Research Recommendations

Based on these findings, credit-bearing training improves overall earnings considerably more than non-credit-bearing training. These findings suggested that policymakers and educational institutions should discuss and strategize to make credit-bearing credentials easily accessible to all workers and to align non-credit-bearing to credit-bearing programs to facilitate a potential increase in credential completion over time.

Students need the information to understand options in choosing the right career pathway to reach their career objectives. Educational institutions and employers can enhance outreach and messaging to the workforce on various credential opportunities across institutions, industries, employers, and states. Furthermore, research expressed that workforce boards and industry associations can look for opportunities to collaborate to assist individuals in accessing relevant training and education.

Research also suggested that employers and workforce boards can collaborate by sharing data and continuous evidence to enrich understanding and provide training programs. These findings show that the workforce will have more long-term success with ongoing data collection to evaluate current programs and provide support services that improve credential completion for these programs.

Principles for a High-Quality Pre-Apprenticeship

<https://www.clasp.org/publications/report/brief/principles-high-quality-pre-apprenticeship-model-advance-equity/>

Overview

The Center for Law and Social Policy (CLASP), a nonprofit working to advance policy and assist low-income families in enhancing their lives, produced a report in April 2020 on the "Principles for a High-Quality Pre-Apprenticeship." This report focused on advancing equity through the use of pre-apprenticeships in the workforce and outlined various ways to make them more widely available.

Purpose

In the United States, apprenticeships, which provide paid job training and classroom education, have been made more broadly available in the trades industries. However, in recent years, there has been an increased interest in creating and sustaining apprenticeships in other non-traditional industries, such as healthcare, cybersecurity, and others. The report outlined how these jobs have been shown to provide economic security and sustainability for the workforce and their families.

Unfortunately, barriers that may prevent the future workforce from pursuing a particular career path can also cause complications for workers who might benefit from apprenticeships. The report provided suggestions on addressing barriers to obtaining apprenticeships by creating pre-apprenticeships.

A pre-apprenticeship is a program that workers can participate in before an apprenticeship. The United States Department of Labor defines pre-apprenticeship as "a program or set of strategies designed to prepare individuals to enter and succeed in a Registered Apprenticeship program and that has a documented partnership with at least one, if not more, Registered Apprenticeship program(s)."

The research illustrated that pre-apprenticeships help workers discover pathways to sustainable careers and assist low-income workers escape poverty. A framework of accessibility and equity will need to be clearly defined through critical components such as program goals, compensation, regional planning, pathways to postsecondary education, integrating apprenticeship practices, and program design. The report suggested that this will help pre-apprenticeship programs improve their success rate.

Industry and Market Analysis

According to data collected in the report, in 2017, only 7.3 percent of the workforce participating in pre-apprenticeships were women. Yet wages for women are shown to remain much lower than for men. Research suggested this is partly due to occupational differences. For example, the top occupation for females was childcare development specialists, with a median

wage of only \$9.75 an hour. On the other hand, males' top occupation was an electrician with an average salary of \$23.46 an hour.

Furthermore, the report stated that workers who face the most significant barriers include people of color, youth, immigrants, women, and people with disabilities. The research showed that the most considerable disparity in apprentices is attributed to race.

For example, even while incarcerated, African Americans are more likely than other races to participate in apprenticeships and work toward career goals they can put in place upon their release. Despite this, research showed that only 25 percent completed their apprenticeships.

Methodology

This research report was created through CLASP, culminating with various participants providing expert advice through individual interviews. The report was sponsored and made possible by JPMorgan Chase.

Research Recommendations

One strategy suggested to increase equity is by addressing various barriers, including but not limited to political, structural, geographical, and financial. Research showed that this strategy includes increased access to family-sustaining career paths for youth, low-wage workers, and others who face barriers in obtaining employment.

To improve retention rates for apprentices, support such as childcare and transportation can be crucial strategies that help individuals complete apprenticeship programs. Research suggested that employers and sponsors can also work toward removing unnecessary eligibility requirements and integrating better apprenticeship practices. Examples include employment and career growth opportunities, fair wages, and portable credentials.

These programs can prepare pre-apprentices with the education, training, and proficiency to enter Registered Apprenticeships. The report indicated that this should include transferrable skills, credentials awareness, and information on management and leadership role pathways.

Shifting the Skills Conversation

https://cte.careertech.org/sites/default/files/files/resources/EmployerResearchReport_100621_small.pdf

Overview

Advance CTE conducted national surveys in 2017 and 2021 that demonstrated the value added to the career and employment outcomes of those individuals receiving career technical education (CTE) credits and to their families. Advance CTE produced a report in October 2021 titled "Shifting the Skills Conversation," outlining how CTE credits can provide introductory and technical skills that prepare future workers for careers and continuous learning.

Purpose

Data in the report showed that employers can support future workers' participation in CTE by assisting in breaking silos, removing barriers, and supporting more incentivized participation in high-quality CTE programs throughout the country.

In the past, best hiring practices have valued degrees more than CTE program credentials, but research has shown a change in recent years. Respondents indicated that employers value flexibility and adaptability, a focus on lifelong learning, and competencies in both soft- and job-specific skills in potential employees and workers. More importantly, the most valuable result of CTE programs to employers is the expansion of the skilled worker pipeline by providing job-ready candidates with the needed skills to participate in the workforce successfully.

The survey findings suggested that for CTE programs to succeed, policymakers and employers must work together to make these credentials more accessible.

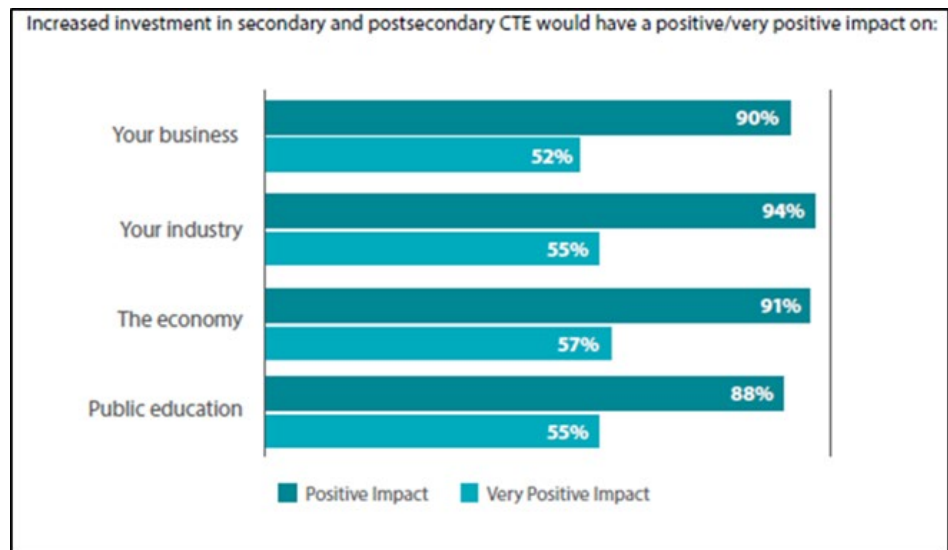
Industry and Market Analysis

The survey findings suggested that employers in industries that depend upon skilled workers to fill high-demand occupations are aware of CTE, with approximately 79 percent stating they are aware of the various programs available. Of those employers aware of CTE programs, 96 percent were shown to have a favorable view. The surveyed employers who knew of CTE indicated that they were more likely to provide more opportunities for growth to workers. Additionally, approximately 77 percent of these employers reported hiring an employee partly due to the applicant having CTE experience. Employers also reported their struggles with a limited talent pool to meet skills needs and a lack of racial, ethnic, and socioeconomic diversity within their industry.

To expand the talent pool and create a robust workforce, all employers must actively participate and support education and workforce partnerships to be prepared to meet the ever-changing industry needs. Almost all employers surveyed agreed that they would continue to participate or are interested in participating in CTE programs. Additionally, more than 70

percent of employers were willing or interested in providing work-based learning via all-virtual or hybrid formats.

Public funding for CTE programs was also strongly preferred, with 92 percent of employers favoring this initiative. Survey findings showed that additional funding could help expand high school CTE programs and incentivize employer engagement programs. As shown in



the figure, which can be found on page ten of the research report, investing in secondary and postsecondary CTE positively affects the workforce as a whole.

Methodology

Advance CTE conducted a national survey in November 2020 with 315 employers. Those surveyed represented employers in leadership and hiring roles of high-demand industries. The survey was administered online to collect data from various regions of the country.

Research Recommendations

Workforce boards, employers, and stakeholders can help improve CTE employer participation, CTE programs, and CTE outcomes. Consistent messaging to employers on the benefits of CTE programs is crucial. Research showed an essential need to raise awareness of the availability and value of postsecondary CTE programs.

Employers have shown a desire to invest in CTE programs, and 86 percent of employers surveyed found CTE beneficial to their bottom line. These opportunities not only provide prospects for reskilling and upskilling, but they can also provide avenues for lifelong learning.

The American Upskilling Study: Empowering Workers for the Jobs of Tomorrow

<https://www.gallup.com/analytics/354374/the-american-upskilling-study.aspx>

Overview

In June 2021, Gallup, a research and management consulting company, conducted a survey and reported their findings in a report titled “The American Upskilling Study: Empowering Workers for the Jobs of Tomorrow.” Upskill programs include training and education that teaches workers new skills or enhances existing skills in the workforce. Upskilling presents more opportunities for both employers and workers.

Purpose

Upskilling can be advantageous for securing a better job in the workforce. Through Gallup's upskilling survey, there were 11 keys to employee satisfaction. Many had to do with pay, benefits, and job security. Others mentioned career advancement opportunities, satisfaction with day-to-day work, and a sense of purpose in everyday work.

Gallup data also showed that almost two-thirds of the workforce surveyed believe upskilling provided by employers is essential in determining whether employees choose to stay with their current job or look for new opportunities. One of the most compelling findings showed that 48 percent of workers in the country would switch jobs for an upskilling opportunity. In addition, the research showed that even higher earners state that upskilling opportunities are vital to staying in their occupations and choosing their career paths.

Industry and Market Analysis

Gallup's data showed that 57 percent of workers desire to update their skills. There is even greater interest in upskilling (72 percent) for workers in more skill-focused occupations such as computer and mathematical fields. Furthermore, research indicated that workers who lost their jobs or worked fewer hours due to the pandemic are even more likely to participate in upskilling programs.

Over half of the workers surveyed stated that they had participated in an upskilling program in the past 12 months. Data collected by Gallup showed that those with higher economic status have more access to upskilling opportunities. Unfortunately, this can create programs for “skilling the skilled” instead of helping those who need the training to advance their skills and employment potential along a career pathway.

Examples of those who could benefit from upskilling include displaced workers looking to move into a new career path or employers looking to incentivize employees. Gallup surveyed more than 15,000 Americans in the labor force, and 57 percent agreed they would be interested in an upskilling program. Research data from this report showed benefits for both employers and

employees, including an additional average income of \$8,000 a year, better retention rates, and more opportunities for promotions.

Moreover, Gallup data showed that workers need employers to pay for skills training. The most popular option is opportunities where they can receive an education while also being compensated while attending. Research showed that interest in these programs is more prevalent in less skill-intensive jobs. Data also suggested that workers would like training during regular business hours.

Upskilling has shown positive outcomes in the workforce and helps workers in various ways, including how much a worker earns, the potential for career advancement, and better socioeconomic status. Gallup reported that most upskilling program participants said they had enhanced these areas of their lives. The report also stated that 71 percent of workers who completed upskilling recently agreed that it positively impacted job satisfaction.

Methodology

This study was conducted via Gallup on a self-administered online survey from June 8–17, 2021. The survey sample included individuals aged 18–65 currently in the workforce. The total respondents surveyed included 15,066 adults throughout the country. Amazon helped fund the research and is investing millions of dollars into upskilling for various careers in the industry.

Research Recommendations

The COVID-19 pandemic affected many people and disrupted the day-to-day work of many in ways no one could have predicted. It left many workers without jobs and other workers looking for new positions in more robust industries with opportunities for professional growth. The latest data from Gallup demonstrated that many employees are searching for better jobs that can ultimately provide growth and resiliency in their career pathways.

Employers are finding numerous job vacancies to fill as employees leave their current jobs. Many employers have already started incorporating upskilling to benefit employees, primarily because they have many positions to fill. In the past, when workers wanted or needed to obtain training or new skills, it was up to them to cover the costs. Since the pandemic, many workers do not have the extra funds to put towards upskilling costs. But that does not mean they do not have the desire to obtain these skills and upskill throughout their careers. Upskilling for workers means more success and sustainability in the future.

Research suggested that employers who provide upskilling can significantly benefit by initiating or expanding upskilling programs to all workers and providing lower-income employees with advancement opportunities to assist with gaps in skills. Employers can also attract new hires and ensure they have the necessary skills.

The Relative Returns to Credit- and Non-Credit-Bearing Credentials

<https://www.air.org/sites/default/files/Credit-and-Non-Credit-Prog-Completion-Study-October-2020rev2.pdf>

Overview

In the research report titled "The Relative Returns to Credit- and Non-Credit-Bearing Credentials," the authors' considered prior research that indicated that workers would not have enough training to be employable in a robust U.S. labor market. This concern was especially significant for those in middle-skill occupations that require some postsecondary education but not a full four-year degree.

Purpose

Due to rapid technology changes in recent years and the growing number of well-paid middle-skill jobs, the current demand for workforce training indicates a need to focus investments in areas that will yield the highest return. The authors analyzed longitudinal data to consider the labor market returns to credit-bearing middle-skill postsecondary training that is more transferable and portable compared to the returns to shorter and more targeted non-credit-bearing programs. Policymakers and stakeholders can use this information to meet the demands of the current workforce and prepare workers for various career pathways.

Industry and Market Analysis

The report findings showed that some credit-bearing credentials equate to similar occupational opportunities as non-credit-bearing credentials. In those cases, the leading difference was improved wages of 17 percent for credit-bearing credentials. Workers with these credentials earned roughly \$5,500 more yearly than those with non-credit-bearing credentials. The authors determined that both educational outcomes help individuals obtain employment and support future career goals. However, in the years following credential completion, those surveyed who received credit-bearing credentials or a two-year degree were more likely to have started a career path than those who received non-credit-bearing credentials. The research also showed that middle-skill workers were more interested in short-term and targeted training opportunities that are not as costly and that are provided by the employer. Nevertheless, this type of training is considered non-credit-bearing and will not build toward an associate or bachelor's degree.

Despite that, the number of workers completing non-credit-bearing programs at for-profit colleges continues to grow by over 500 percent. This compares with less than 200 percent at public institutions during the same time frame from 1990 to 2011. Data suggested that this was primarily due to non-credit-bearing programs being more affordable. The research further implied that workers from low-income homes, who were also of non-white descent, were less

likely to attend a credit-bearing program after high school. Of significance, the earnings data exhibited a significant change for workers over time. While younger workers earned more from non-credit-bearing credentials at first, by age 30, those with credit-bearing credentials earned more. For example, at age 24, the surveyed respondents with credit-bearing credentials earned roughly \$34,619, while those with non-credit-bearing earned approximately \$36,608 (a \$2,000 difference). However, by age 30, the average salaries for credit-bearing credentials were \$43,949 and \$34,619 for non-credit-bearing (a \$9,300 difference).

Methodology

The American Institutes for Research compiled and published the report in October 2020. The authors analyzed 20 years of survey data from the National Longitudinal Survey for Youth 1997 using a fixed-effects regression strategy to estimate the returns on non-credit-bearing programs compared to credit-bearing programs. The report relied on survey data that helped identify changes in occupations and wages after completing credit-bearing programs versus non-credit-bearing programs.

Research Recommendations

The researchers concluded that credit-bearing programs provided more substantial returns on a worker's long-term income than those with non-credit-bearing credentials. Additional research will be needed to determine the best pathways and services for workers looking to receive more education and training to earn higher wages. The authors recommended increased support for credit-bearing programs for all, including those from low-income homes of non-white descent who might not have the same access to educational opportunities. For example, if a barrier to credit-bearing programs involved financial costs, more research would be needed on how all future workers can access these programs that contribute to the workforce.

The report also indicated the need to assess various tools that assist workers in making connections to career pathways and help policymakers, workforce boards, and other stakeholders gather continuous data on the experiences and outcomes of workers in various training programs. The data should include how each type of program assists individuals in meeting educational and career goals that ultimately provide financial security. The researchers concluded that the long-term success of future workers would be impeded without consideration of data, training programs, and support services for non-credit and credit-bearing programs.

Towards a Reskilling Revolution: A Future of Jobs for All

https://www3.weforum.org/docs/WEF_FOW_Reskilling_Revolution.pdf

Overview

The current workforce has changed a lot in recent years. Individuals in the workforce are looking for work that is meaningful to them but that can also provide a livable income. In the research report titled "Towards a Reskilling Revolution: A Future of Jobs for All," the authors shared how utilizing data could assist in finding solutions for disruptions in the workforce and ways to navigate reskilling opportunities for workers.

Purpose

Given much discussion in workforce development about the need for reskilling efforts to help workers navigate labor market disruption and transition from one occupation to another, this report considered how to map job transition pathways using data to identify the most effective opportunities for reskilling workers. The research focused on occupations expected to diminish due to upgrades in technology. The authors utilized a range of employment data from 2016 and the predictions for expected employment change by 2026 from the United States Bureau of Labor Statistics to formulate conclusions. The report outlined how this data-driven approach could help workers, employers, and policymakers identify and prioritize reskilling opportunities.

Industry and Market Analysis

The report presented recent survey results that showed that more than one in four adults reported a mismatch between their skill set and the qualifications needed for their occupation. The changes to the workforce have not only affected workers but also employers. In 2017, Manpower Group's Talent Shortage Survey found that 40 percent of employers had difficulty finding skilled workers. The survey also found that many employers have been providing upskilling opportunities, but not at the pace that would allow for a robust workforce.

Using data analysis, the authors created similarity scores between varying occupations to determine the efficiency with which a worker could make a job transition based upon the comparability of skill requirements between two different occupations. A score of 1 would be considered the perfect reskilling opportunity for workers needing or desiring to transition from one occupation to another. In the example provided in the table, which can be found in the

Starting job	'Job-fit' category	Similarity score	Target job
Office Clerks, General	High	0.92	Municipal Clerks
	Medium	0.87	First-Line Supervisors of Office and Administrative Support Workers
	Low	0.81	Aerospace Engineering and Operations Technicians
Cooks, Fast Food	High	0.93	Dining Room and Cafeteria Attendants and Bartender Helpers
	Medium	0.86	Butchers and Meat Cutters
	Low	0.82	Locksmiths and Safe Repairers
Electrical Engineering Technicians	High	0.91	Electrical and Electronics Repairers, Powerhouse, Substation and Relay
	Medium	0.86	Geothermal Technicians
	Low	0.81	First-Line Supervisors of Agricultural Crop and Horticultural Workers
Computer Programmers	High	0.92	Web Developers
	Medium	0.86	Computer and Information Systems Managers
	Low	0.82	Anthropologists

Source data: Burning Glass Technologies and US Bureau of Labor Statistics.

report on page 5, a computer programmer and a web developer are shown with a score of 0.92, considered an almost perfect fit for investing in a reskilling and job transition initiative. Scores below 0.85 are defined as low similarity or "low job-fit"; therefore, the skillset between an office clerk and an aerospace engineer would not be considered a good fit for reskilling the workers.

Methodology

The research report, created by the World Economic Forum in collaboration with The Boston Consulting Group, was compiled by analyzing "viable job transitions" utilizing datasets from The Occupational Information Network (O*NET), a database that collects occupational information in the United States, and from Burning Glass Technologies (BGT) data on online job postings. The combined data from O*NET and BGT is based on 50 million job postings over two years (2016-2017). Through this methodology, the authors were able to break down occupations by skillset requirements and calculate if a worker possessed the skillset needed for transition to an occupation.

Research Recommendations

Research findings suggested that employers could determine viable reskilling opportunities based on analysis of work activities, skills, knowledge, abilities, and years of experience. The report suggested two approaches to job transitions to minimize the strain on workers and public sector resources: a leadership lens and an individual lens. The leadership lens approach could provide policymakers and stakeholders with a tool that maximizes reskilling for displaced workers while ensuring they have a good quality of life. The individual lens approach could provide displaced workers with employment options based on their skill set and desired outcome for transitioning to a new occupation. The report's authors indicated that their data-driven tool was best utilized for long-term workforce planning.

Understanding Certifications

<https://workcred.org/Documents/Understanding-Certifications-Report-Dec-2020.pdf>

Overview

The Corporation for a Skilled Workforce, Workcred, and the George Washington Institute of Public Policy conducted a two-year study of certifications in various industries and occupations. They produced a report with their findings titled “Understanding Certifications” that summarizes the need for certifications.

Individuals in the workforce are continuously looking to grow and obtain new skills and credentials throughout their careers. Workers at all stages of their careers and across a variety of fields often do not know where to start or the best path to take with many of the credentials available, including degrees, certifications, and licenses, to name a few.

Purpose

Certifications are a tool for the future workforce to indicate to employers their ability to perform certain skills. Some certifications can be obtained as specific credentials, while others are earned by those who hold specialized degrees and need continuous training to keep up with changes in their occupation. Some of these professions include nurse practitioners, engineers, and architects.

Due to the current pandemic and changes in the labor market, a large segment of the workforce may be looking to change industries in search of more opportunities. The report showed that increasing certifications could significantly impact the future workforce.

Data further showed that more than 43 million workers throughout the country hold professional certifications, yet many employers and policymakers do not know the utility or value of certifications.

Industry and Market Analysis

According to the report, many certification bodies can assist workers with the types of certifications available, including stackable certifications and training materials to assist in examination preparation. They can also provide information to workers on associated skills and various job opportunities within their desired industry or others. A prime example of such certification is the Project Management Professional, which can be utilized in many industries and career pathways.

Research further suggested that certification bodies can offer support with online manuals and practice tests. They can form partnerships with educational institutions to provide workers with training content, materials, or equipment needed to complete the training and the resources required for education to assist in their desired career pathway.

The research recommended that certifications be incorporated into educational programs. First, programs of study and certifications need to align and ensure compliance with industry standards. One option is utilizing credit for prior learning policies and practices to award educational credit for already-earned certifications. This enables certification holders to meet prerequisites and eliminates the need to repeat coursework to attain skills they may have already acquired.

According to the report, another strategy includes embedding certifications in credit-bearing educational programs that enable future workers to earn stackable credentials. Institutions must collaborate to build transferrable pathways and credentials between programs and institutions.

Those choosing career pathways that require certifications will need easily accessible information about the requirements, processes, and outcomes associated with various industries to succeed. Research suggested that unions can play a significant role by training workers to obtain certifications. They can also partner with multiple employers to increase certification attainment.

The research further indicated that policymakers and workforce boards must ensure affordable pathways for those who need it most, such as low-income families and minorities. Embedding quality accredited certifications in various education programs will benefit both future workers and employers in a rapidly changing labor market.

Methodology

The research report was developed by seven team members who conducted a two-year study of industry and occupational certifications. Authors included members from Corporation for a Skilled Workforce, Workcred, and the George Washington Institute of Public Policy. The Lumina Foundation provided the funding for this project.

Research Recommendations

The report articulated that more research is needed on certifications to know the best path forward, including considering the role, function, and economic value for employers and workers. The success of certifications in the workforce heavily relies on certification boards, workforce boards, and educational institutions to work together and develop better tools to ensure continued upward mobility and equity for all workers.

Research suggested certification bodies can also improve transparency and data showing workers' certification achievement and employment outcomes. They can contribute to equity by ensuring the integrity of assessment practices and that prerequisite needs and costs for certifications are attainable regardless of economic status.

In the current climate, certifications, as alternatives or additions to postsecondary credentials already obtained, allow workers to demonstrate value to employers.

Unpacking the Work of Work-Based Learning

<https://www.aspeninstitute.org/wp-content/uploads/2021/02/Unpacking-the-Work-of-Work-Based-Learning.pdf>

Overview

In the report titled “Unpacking the Work of Work-Based Learning,” research identified how practitioners in Generation Work communities support work-based learning (WBL) opportunities available to young adult minorities. Generation Work is an initiative to prepare future workers from 18 to 29 with occupation-based training to develop the skills that employers and workers need to succeed in today’s workforce.

Purpose

As an approach that can be used to connect adults, especially young adults from minority populations, WBL can connect learners with employers to gain real-world experience in the workplace. Research indicated that participants in early work experiences view the work-study process as exploratory to better understand their opportunities for advancement and break out of the cycle of working in low-income or entry-level occupations. Well-designed WBL programs require partnerships with employers, trained practitioners, and resources to provide future workers with relevant experience, essential work skills, and relevant credentials. This report outlines Generation Work, which helps minorities build networks, learn job skills in an occupational area, and exhibit their talent to employers through job shadowing, externships and internships, and summer jobs.

Industry and Market Analysis

As a strategy, WBL helps participants understand the essential requirements for the occupation and the education and work experience required for a career progression. Research showed that youth not involved in either work or school increased from 4.8 million to 6–7 million since the pandemic, especially in young minorities. To engage employers in WBL, the research highlighted that practitioners recommend developing their knowledge of labor market demand, understanding the sector and employers' needs, and demonstrating the value of workforce programs.

For example, practitioners reviewed employment opportunities to find “good fit” occupations for young adults. Occupations best suited for young adults were found with employers that support them in their ability to stay employed, learn as they advance in the role, and accommodate scheduling needs.

Methodology

This report, published in February 2021, was provided by the Aspen Institute Economic Opportunities Program in partnership with the Annie E. Casey Foundations Generation Work Initiative. Collaborators for this report included five cities in the United States: Cleveland, Ohio;

Hartford, Connecticut; Indianapolis, Indiana; Philadelphia, Pennsylvania; and Seattle, Washington. These partners are engaged in a multi-year endeavor to ensure that young adults have the education and skills needed to be employable and that employers invest in career development for young adults, specifically young minorities.

Research Recommendations

The research showed that early exposure to WBL is vital for young adults to succeed in the workforce. Practitioners surveyed shared objectives that will assist in developing WBL programs that support a skilled future workforce. Some of those objectives include:

- Work with employers to identify “best fit” jobs.
- Cultivate substantive work-based learning programs aligned with educational opportunities and credentials that lead to demand occupations.
- Provide case management and include performance metrics.
- Develop occupation-specific skills, including leadership skills and skills that help future workers become better problem-solvers and communicators.
- Provide relevant work experience through skills learned in the classroom.

Practitioners surveyed stated that addressing basic needs such as safe housing and a connection to caring adults is equally crucial for many young adults to succeed. This pre-work was often considered resource-intensive due to the lack of staff availability and time. Research also indicated that the work involved in developing WBL initiatives is largely unknown and unseen by many funders or policymakers who provide funding support.

The report also focused on addressing racial disparity in the workplace. Through WBL, young adults can work through scenarios and better prepare for work environments. The research showed that it is critical for young adults that assist their families with food, housing, and caregiving necessities to earn an income. For example, through employee programs, Goodwill leverages grant funding to pay WBL workers' wages. No tuition costs are associated with Goodwill's WBL programs, and the research suggested that more young adults would participate in these programs if compensation were provided. Finally, WBL initiatives sometimes provide training and incentives to mentors, and these mentors, usually close in age, could provide guidance and skill development opportunities.

The report highlighted how WBL opportunities will be critical for young adults to succeed in the future workforce and that recognition of the time and resources required to develop quality WBL programs will be essential to that success.

What Would It Take to Reskill Entire Industries?

<https://hbr.org/2020/07/what-would-it-take-to-reskill-entire-industries>

Overview

Dual forces—the demand for skilled workers needed to manage rapidly evolving industries and the pandemic-induced pressure to perform through a series of changes—changed lives worldwide, especially for the millions left unemployed. In this environment, employers must continuously adapt to address the growing skills needed in the workforce. In an article from the Harvard Business Review, titled "What Would It Take to Reskill Entire Industries?" the authors discussed some strategies for reskilling and how they can benefit the current and future workforce.

Purpose

For many years, employers have recognized the need for reskilling. In the article, reskilling is defined as learning job-specific technical skills while obtaining core skills such as adaptability and collaboration in the workforce. In 2019, the International Labor Organization Global Commission on the Future of Work stated that today's skills would not match the needs of future occupations, and newly acquired skills could become obsolete. The article suggested that employers, policymakers, and worker's organizations collaborate to provide more opportunities for reskilling workers.

Industry and Market Analysis

Employers have realized the value of reskilling, and many companies have taken steps to reskill their workers. According to the article, Amazon invested \$700 million to reskill 100,000 workers while other companies worldwide made similar investments in their employees.

According to the World Economic Forum and Boston Consulting Group, the financial investment for reskilling was approximately \$24,800 per person in the United States. The article shared that research completed by researcher Josh Bersin, an expert in the human resources field, found "it can cost as much as six times more to hire from the outside than to build within." This calculation could vary between occupations, but it presents a compelling case for employers and policymakers to consider reskilling costs and reskilling of the workforce as an investment.

The article also discussed the time it takes to reskill workers. While the answer could differ depending on the reskilling required, the article suggested that the average time it takes to reskill a worker is approximately 480 hours; therefore, it will take significant time to reskill the workforce successfully.

Methodology

This report, published in July 2020, was co-authored by general manager Ananda Chopra-McGowan for the United Kingdom and Europe for Emeritus, a tech company that partners with

universities worldwide to make professional education accessible and affordable. Srinivas B. Reddy, Chief of Skills and Employability Branch at International Labor Organization Geneva, was also a co-author.

Research Recommendations

As more reskilling initiatives are provided to workers, policymakers and educators can collaborate to design a shared toolkit that provides specific definitions for reskilling and what it means. The article's authors defined three formats for reskilling: formal learning, non-formal learning, and informal learning. Formal learning included workers going back to college or a training institution. Non-formal learning included learning activities provided by a trainer or employer that did not count towards a recognized qualification or certificate. Informal learning included learning from colleagues and supervisors or learning during an individual's free time. The authors stated that choosing the suitable format for each employer or employee will depend on the desired outcome of each. An example faced in the current economic crisis is the speed, accessibility, and clear pathway to employment. The report suggested that short informal learning experiences could be most beneficial for many workers at this time.

The authors expressed three suggestions that policymakers and labor organizations can deploy to make reskilling available to everyone. First, create and empower tripartite sector skills councils. Sector skills councils are nonprofit organizations focused on assisting a single industry sector to define and close its skills gap. The article shared that these organizations usually collaborate with government bodies to provide employers and workers with critical information regarding any new necessary skills within their industries.

The article also stated there needs to be more support for small businesses, including financial and technical resources, to provide reskilling for their employees. Finally, reskilling should be more accessible to individual employees through access to career development support from employer investments and state sponsorship. For example, in Singapore, a selection of reskilling government-funded pathways allow for individuals 25 or older to receive an equivalent of \$370 annually in personal learning accounts for reskilling. The credit does not expire, and individuals can accumulate credits as the government provides them.

In Louisville, Kentucky, several partners, including the mayor's office and Microsoft, launched a "30-Day Upskilling Challenge" that offered free courses in data analytics, software engineering, and digital marketing, among others. They also provided a pathway to employment at local companies. Coordinated efforts among employers, educators, and policymakers can inform, assist, and bring promising practices from these initiatives to scale, ultimately creating a more resilient workforce.

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