The University of Texas at Austin
College of Education

Learn By Doing: Strategies to Support Work-Based Learning Pathways in Post-Secondary Education

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Executive Summary

Nationally, 43.1 million adults have college experience but no credential, a 2.2% increase from 2023 (National Student Clearing House, 2025). These low completion rates, combined with the accelerating pace of technological advancement, have intensified concerns over a widening skills gap, prompting calls to redesign postsecondary education through lifelong learning models that integrate strong education-employer partnerships (Acemoglu, 2022; Autor, 2013; Carnevale et al., 2010). Work-based learning pathways (WBL) have emerged as one strategic approach that can directly address the "skills-gap" shortages by collaboration with education and the labor market needs (Boud & Solomon, 2006; Baker et al., 2017). Despite its promise, research on the outcomes of WBL is fragmented due to varied definitions, theories of change, and state-identified outcomes.

This project, supported by Grantmakers for Education (PSA network) and SREE, examined 126 rigorously evaluated WBL programs to identify what works, where gaps remain, and what strategies hold the most potential for scale. The analysis focused on three predetermined outcome measures (increased education/training, employment, and earnings) and four quality levers: braided funding models, industry partnerships, systems alignment, and soft skills integration. Key findings include:

- **Industry partnerships as the most reliable driver:** Close collaboration with local industry partners showed the strongest evidence of producing gains in all three outcomes.
- **Braided funding as a scalability lever:** Though underutilized, braided funding models were consistently deployed in programs serving targeted or vulnerable populations, suggesting their potential to reduce barriers and promote access.
- **Uneven outcome strength:** Increased education/training was the least likely to show strong evidence, with far more programs demonstrating measurable gains in employment and earnings when that was the measure of outcome.
- **Soft skills as a multiplier:** While soft skills development did not appear to attract students into WBL programs, it strongly contributed to employment and wage growth once learners were engaged. These skills are highly transferable and consistently valued by employers across sectors.
- **Population targeting:** 95 of the 126 initiatives explicitly identified target populations (i.e. parents, young adults, women, or formerly incarcerated individuals), underscoring that tailored approaches are more likely a strategy than one-size-fits-all strategies.
- **Lack of rural evaluation:** All programs reviewed were urban-based, underscoring a significant gap in understanding WBL's impact in rural communities.

Of the 126 initiatives reviewed, only five programs achieved all three outcome measures (highlighted in the promising initiative section). Together, these findings emphasize that WBL is not a one-size-fits-all solution but a complex, adaptable education approach. Funders, policymakers, and institutional leaders have an opportunity to expand what works by scaling high-quality models, closing gaps in rural and underserved contexts, and embedding the practices most strongly tied to employment and earnings outcomes.

Background of Analysis

The Inventory of Work-Based Learning (WBL) Pathways currently includes 126 well-supported initiatives across the United States, each backed by strong evidence of effectiveness. Data was drawn from the Pathways to Work Evidence Clearing House and refined to focus on WBL initiatives within postsecondary education pathways. The emphasis was placed on programs with clear, measurable outcomes tied to education, employment, and earnings. Although not exhaustive, the inventory is designed to be representative, with evidence of saturation achieved (Guest et al., 2006). A broader mapping of workforce development programs covering over 20,000 short-term training providers nationwide can be found through The Project on Workforce at the Harvard Kennedy School. The inventory developed for this project specifically narrows its scope to programs with rigorous evaluation. The inventory captures 16 core data elements**,** providing a structured view of how evidence-based WBL programs are designed and evaluated:

- WBL initiative name
- Short Description
- Location
- Outcome Measurement
    - Increase enrollment in education/training
    - Increase employment
    - Increase Earnings
- Population specific
- Setting of Intervention (single, multi-site, urban, rural)
- Sector Specific
- High Quality Indicators
    - Braided funding formula
    - Systems alignment
    - Industry Partnership
    - Soft Skills Integration
- Year of evaluation (publication year)

Of the 126 programs reviewed, 55% were evaluated and tested at multiple sites, while 45% were single-site tested initiatives, all located in urban areas, underscoring the lack of rural evaluations. A majority (60%) targeted specific populations such as low-income individuals, parents, or formerly incarcerated. Nearly 20% were sector-specific, with healthcare most common, followed by manufacturing and IT.

Most programs addressed barriers directly: 93% provided financial incentives, and 90% built industry partnerships. However, only 45% integrated soft skills training. This study found strong evidence of impact for both employment and earnings-related outcomes (27% for each), and 10% of programs produced strong education-related outcomes.

What "Works" in WBL

I developed a typology from the **Inventory of Work-Based Learning Pathways** to identify key quality indicators across programs to help determine "what works". The WBL Typology categorizes the 126 WBL programs across two domains: Outcomes (increased education, employment, earnings) and Intervention Strategies (braided funding model, industry partnership, systems alignment, soft skills integration). Overall, initiatives were evenly distributed with outcomes of increased employment and earnings; however, increased education/training showed less strong evidence. With the simple typology, four key observations seem apparent:

1. **Industry Partnerships are the Strongest Lever**
   Industry partnerships consistently demonstrate the strongest influence across outcomes, with the highest counts tied to increased earnings (24), employment (20), and education/training (15). This suggests that close collaboration with industry remains the most reliable driver of positive outcomes.
2. **Soft Skills Integration Strongly Tied to Employment & Earnings**
   Although fewer initiatives (9) connected soft skills integration to increased education/training, their role expands when measured by employment (13) and earnings (20) were the measurement of outcomes. This suggests that while soft skills may not attract learners into programs, they play a crucial role in employability and wage growth once participants are engaged.
3. **Braided Funding Models are Underutilized but Targeted**
   Braided funding models appear in only a handful of initiatives (6 in education/training, 14 in employment, and 11 in earnings), but all are population-specific. This pattern suggests that braided funding is a targeted strategy, often deployed to address equity gaps, though it has yet to be broadly scaled or mainstreamed across programs.
4. **Population-Specific Focus is Central**
   Of the 126 initiatives reviewed, 95 explicitly identified target populations. These groups were not monolithic; rather, they encompassed a wide range of communities, including parents, cash assistance recipients (as a proxy for low-income households), young adults aged 18–24, individuals with prior incarceration, women, and GED recipients. The consistent emphasis on tailoring interventions to underserved, regional, or sector-specific groups highlights that targeted strategies are more effective than one-size-fits-all approaches in producing meaningful outcomes.

While other insights can be drawn, this typology also highlights opportunities for strengthening existing programs and designing new ones. For new programs, the strongest models appear to be those that already combine multiple levers, especially industry partnerships and soft skills integration, while maintaining a population-specific focus. For existing initiatives, there is potential to scale impact by adopting strategies proven more effective in other contexts, such as deepening local industry partnerships or integrating soft skills to bolster employment and earnings outcomes. Finally, while this typology categorizes programs by their outcome focus, a geographic mapping of these initiatives would provide additional insight into their reach and potential for replication across regions.

High-Quality WBL Toolkit

Through collaboration with the funders of this project, the prioritized outcomes were determined to be the following: increased education/training, increased employment, and increased wages**.** This WBL Toolkit is designed to provide funders with a foundational pathway of *potential data elements* for each quality indicator, also highlighting the measurability of the data elements. Further definition, supporting research, and explanation of each quality indicator can be found starting on page 14.

 **= Easy to Measure**  **= Possible, but Requires Effort**  **= Challenging to Measure**

Braided Funding Formula

Potential Indicator	Indicator Type	Indicator Feasibility
% of budget covered by each funding streams	Operational	
Stability of Funding across fiscal years	Operational	
Employer dollar matched per public dollar invested	Operational	
Wage Subsidies Included	Operational	
# of Students Receiving Subsidies	Student	
Net Cost of attendance for student	Student	
Reduction in student loan reliance or out of pocket expense	Student	

Industry Partnerships

Potential Indicator	Indicator Type	Indicator Feasibility
Employer Co-Teaching Partnership (hours of course instruction shared)	Operational	
Frequency of employer-institution feedback look	Operational	
# of Elements from the I-Best model being implemented	Operational	
% of program adopting co-teaching model	Operational	
Student-reported satisfaction (survey, interviews, focus groups)	Student	
# (%) of students with exposure to industry partnerships	Student	

Systems Alignment		
Potential Indicator	**Indicator Type**	**Indicator Feasibility**
# (%) of classes offered in evening, weekend, asynchronous	Operational	
# of industry-specific schedule accommodations (healthcare, farmwork)	Operational	
Formal agreements (MOU) between institutions, industry partners	Operational	
Frequency of cross-sector meetings/engagement	Operational	
Wrap around services included for learner from education or industry partnership(transportation, childcare, technology)	Operational	
% of students receiving Credit for prior learning (CPL)	Student	
Average number of credits awarded for CPL	Student	
Student persistence rates for those utilizing flexible scheduling	Student	

Soft Skills Integration		
Potential Indicator	**Indicator Type**	**Indicator Feasibility**
Accessible Career Counselors	Operational	
# of Networking Sessions offered	Operational	
Structured mentorship program	Operational	
Frequency of mentorship visits	Operational	
# (%) of Professional Development opportunities (mock interviews, resume writing, presentation skills)	Student	
Student Reflection assessments (i.e. Clifton Strengths assessment)	Student	

Introduction

Work-Based Learning (WBL) has emerged as one promising alternative to address the "skills gap" talent shortages. By creating more flexible learning pathways, supporting lifelong skill development, and improving, WBL offers a strategic, targeted approach to enhancing the transition from education to employment (Baker et al., 2017; Preble, 2022). WBL integrates academic study with hands-on, labor market–aligned work experience, embodying a "learn by doing" philosophy (Perkins Collaborative Resource Network, 2017). Yet, despite its growing adoption, research on WBL outcomes remains fragmented and uneven.

This study seeks to fill that gap by identifying high-quality indicators of effective WBL pathways. First, I provide an overview of the barriers students face in traditional postsecondary education pathways, particularly the steep costs that disproportionately burden socioeconomically disadvantaged learners. Establishing this context underscores why policymakers, industry partners, and philanthropies are increasingly exploring WBL as a viable alternative education model in postsecondary education. Next, I examine the range of WBL formats alongside federal and state policy, highlighting how political context shapes what counts as successful 'outcomes' and drives fragmentation in outcomes across the nation. Next, I present the high-quality intervention strategies identified through the typology analysis and supported by existing research. For each strategy, I provide a definition, a review of supporting literature, and potential measurements that can be used to evaluate impact.

Finally, I present promising case studies that demonstrate strong alignment between educational providers and employers, offering insights into how WBL can be scaled to expand opportunity and economic mobility. From the typology analysis, I highlighted the 5 case study where the predetermined outcome metrics (education, employment, and earnings) were all met according to evaluation criteria. These 5 programs were the only of the 126 that met all three desired outcome measurements. Together, these findings illustrate not only the potential of WBL but also the intentional scaling strategies to ensure sustainable pathways for the WBL.

Literature Review

Barriers in Traditional Postsecondary Education

In this section, I present research on a key barrier facing students in traditional postsecondary pathways: the cost of attendance. First, I highlight the steep rise in tuition that has produced significant "sticker shock" for many learners. Next, I examine the student debt crisis, which has fueled growing societal skepticism about the value of traditional postsecondary education. Finally, I review findings showing how these financial burdens disproportionately affect socioeconomically disadvantaged students. These insights lay the groundwork for understanding why alternative pathways, such as WBL, are increasingly being explored by policymakers, philanthropies, industry partners, and postsecondary education administrators.

Rising Tuition Cost: Tuition prices have surged nearly 2.3 times since the 1970s (Scott-Clayton & Schudde, 2020). According to the U.S. Department of Education (2023), the cost of attending college in 2020-2021 is an average of $26,027. This reflects a notable increase from just a decade ago, when the average cost of attendance was $20,234 (NCES, 2023). In 1970, the average tuition was $9,625 (President's Fiscal Year 2014 Budget, 2013). Multiple factors have contributed to the rising sticker price of postsecondary education, including diminished state appropriations (Chakrabarti et al., n.d.), the deregulation of tuition authority (Flores & Shepherd, 2014), and the impact of economic recessions (Bettinger et al., 2019). Further, the complexity of the "sticker price" of college diverges significantly from the net price faced by most families (Dynarski & Scott-Clayton, 2013). This financial burden is particularly acute for low-income students, who are more likely to depend on federal loans and less likely to complete a degree (Evans & Boatman, 2019).

Student Debt Burden: As of 2023, 85% of students entering postsecondary education depend on some form of federal funding (NCES, 2023). With the national student debt crisis surpassing 1.3 billion dollars, a crucial policy concern is addressing funding disparities in postsecondary education beyond simply increasing loan availability (Bostick et al., 2022; Denning & Jones, 2021; Zhan & Xiang, 2018). The federal government has tackled postsecondary education funding beyond increased loan availability by including tax credits, the establishment of the Pell Grant, and a student loan forgiveness program (Baum et al., 2013; Dynarski & Scott-Clayton, 2013).

Research indicates that federal policies expanding access to loans and tax credits have predominantly benefited middle-class families (Zhan & Xiang, 2018). In 2023, students borrow an average of $7,200 annually (NCES, 2023), disproportionately affecting low-income students who heavily rely on loans for their postsecondary education (Evans & Boatman, 2019). While the Pell Grant was initially established to alleviate the financial burden of postsecondary education for low-income students, the average amount it covers for the overall cost of attendance has not kept pace with escalating tuition expenses (Baum et al., 2013; Scott-Clayton & Schudde, 2020). Initially covering an average of 67% of the cost of attendance, it presently only covers around 27%, with an average award of $4,491 (Scott-Clayton & Schudde, 2020; NCES, 2023). Further, regarding degree attainment, Nguyen's research demonstrates that increased loan availability does not significantly influence degree completion (Nguyen et al., 2019), although it does result in higher borrowing amounts.

Socioeconomic Disparities: Traditional (18-24 years old) low-income students' access to, enrollment in, and graduation from postsecondary education is much lower than the national average (Cahalan & Perna, 2015; Gurantz & Odle, 2020, NCES, 2023). The national average for obtaining a postsecondary education degree within six years stood at an average rate of 62% in the 2020-2021 academic year (NCES, 2023). Students receiving the Pell Grant, a standard proxy to measure socioeconomic status, in the 2023 academic year enrolled in a university and graduated from a university at 32.5% and 49%, respectively (NCES, 2023). Students from upper-middle-class families (earning at or above $108,650) demonstrated a higher enrollment rate than lower-income families (earning below $34,160 per year), with enrollment rates of 81% vs. 45% respectively (Cahalan & Perna, 2015).

An even more substantial disparity emerged when examining the graduation rates of these two identified socio-economic groups. The graduation rate for students achieving a degree by 24 stood at 77% for upper-middle-class families versus 13% for lower-income families (Cahalan & Perna, 2015). This is an eight times greater chance for students of traditional age attending postsecondary education from the highest-income families to receive a degree when compared to the lowest-income families. The COVID-19 pandemic further exacerbated these inequities, as lower-income students faced greater barriers to enrollment, persistence, and completion due to financial strain, digital divides, and heightened family responsibilities.

This is especially noteworthy since researcher Goldsmith (2010) demonstrates that students from lower-income and marginalized communities use obtaining a postsecondary education as the primary mechanism to exit disadvantaged economic status. Further supported by research done by the Roosevelt Institution (2007), which found that postsecondary cost directly correlates to the enrollment of minority students. However, the low enrollment and even lower graduation rates cast doubt on education's efficacy as a vehicle for social mobility. Targeted policies focusing on low-income students, identified as a more vulnerable population relying heavily on loans with lower success rates at universities, can carry significant implications.

Why WBL

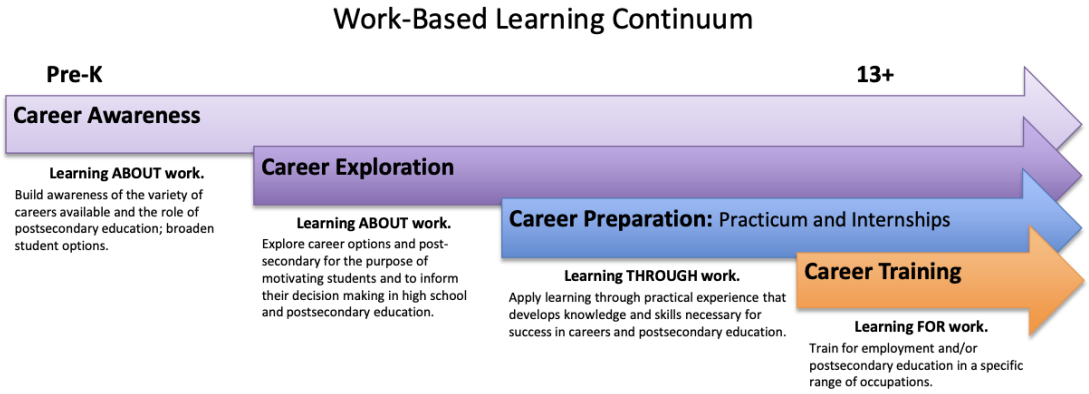
In this section, I first present definitions of WBL emphasizing its role as an approach that integrates academic study with hands-on, labor market-aligned work experience and reflects a "learn by doing" philosophy. Next, I review the range of approaches to WBL and explain how they can be situated along a spectrum that spans short-term career exploration opportunities to long-term, structured pathways tied to industry-recognized credentials and degrees. I then classify WBL within the postsecondary education system, including internships, apprenticeships, cooperative education, and sector-based partnerships, highlighting their diverse structures and purposes.

> **WBL Definition:** WBL is an education pathway that integrates real-world applications into the learning process, enabling students to apply academic knowledge in practical settings while gaining valuable professional experience (Perkins Collaborative Resource Network, 2017). The Perkins Collaborative defines WBL as "the alignment of classroom and workplace learning; application of academic, technical, and employability skills in a work setting; and support from classroom or workplace mentors" (2017). This model is commonly referred to as "hands-on learning" or "learning by doing."

WBL Approach: Importantly, WBL is not a single, uniform approach. It may serve as one component of a broader education program, as the Association for Career and Technical Education (ACTE) identifies it as one of the twelve elements of high-quality CTE programs (Imperatore & Hyslop, 2018), or it may constitute the entire education pathway, such as in apprenticeship programs. The Southern Regional Education Board conceptualizes WBL as a continuum that becomes more intensive as learners progress through school (Southern Regional Education Board, 2020b). As illustrated in Figure 1, this continuum consists of four stages: career awareness, career exploration, career preparation, and career training (Ross et al., 2020; Southern Regional Education Board, 2020b; Linked Learning, 2012; Cahill, 2016). Within this framework, students engage in a variety of experiences, including internships, apprenticeships, and cooperative education that deepen over time. Such experiences not only

strengthen career pathways but also improve educational outcomes and better prepare learners for the demands of the job market (Preble, 2022; Harnish & Wilke-Schnaufer, 1998).

Figure 1 WBL Continuum



Source: *WBL in linked learning: Definitions, outcomes, and quality criteria*, by Linked Learning, 2012, p. 2. (https://connectednational.org/wp-content/uploads/2018/11/wbl-definitions-outcomes-criteria_pg_120512_v2.pdf)

WBL Postsecondary Education:

The WBL pathways model can be implemented as early as middle school, up to and through post-secondary education completion and workforce employment. The focus of this research is on the post-secondary education system. In the post-secondary education system, WBL is common among community colleges and technical colleges. Both credit and noncredit WBL programs exist, with noncredit options becoming increasingly common in community colleges (Van Noy et al., 2009) and stackable credentials. WBL is an emerging approach in post-secondary education to bridge the gap between academic knowledge and industry needs (Feldmann, 2016; Ismail et al., 2023). Building on definitions advanced by WIOA and Jobs for the Future, the literature identifies 4 forms of WBL situated within the "career training" stage of the continuum (see Figure 1) that is focused on the post-secondary education system:

Internships: Internships provide learners with short-term, sector-based work experiences that may be paid or unpaid. Unlike apprenticeships, which require longer commitments, internships are often completed within a limited period, such as over a summer term. Internships provide students with the opportunity to develop essential skills, including interpersonal communication, teamwork, and professionalism, while also enhancing their confidence and self-efficacy (Ismail, 2018). For employers, internships provide access to low-cost labor and reduced recruitment costs (Ismail, 2018). In medical education, internships allow students to apply theoretical knowledge in practical healthcare settings (Bhandari et al., 2022). For adult learners, they also function as an entry point into professional networks, while offering employers a pathway to evaluate and develop emerging talent (Cahill, 2016; WIOA, 2020; Gallagher et al., 2019). Overall, internships serve as a powerful medium for personal and professional growth, providing students with valuable exposure to their intended career fields.

Co-Ops: Co-Ops are temporary work experience opportunities structured within academic settings. Unlike internships, Co-ops typically require full or part-time employment. It is more common to be paid and gain academic credit. This approach is typically used in

education programs that require a certain number of hours to be certified or licensed (Cahill, 2016; Gallagher, 2019).

Apprenticeships: Apprenticeships combine theoretical knowledge with practical work experience, providing a foundation for occupational competence (Macleod, 2006). They typically involve classroom studies and on-the-job training under supervision, with apprentices receiving wages and benefits (Trask, 2008). They are usually full-time jobs with pay. This is the most widely recognized form of WBL. Apprenticeships are the longest form of WBL pathway that can take up to six years, but as little of time as a year (Cahill, 2016). Under WIOA, two types of apprenticeship programs are funded: Registered Apprenticeship Programs (RAPs) and Industry Recognized Apprenticeship Programs (IRAPs) (Discover Apprenticeship, 2020a). Outcomes of RAPS and IRAPS show high completion rates (94%) and high earning potential (average $70,000 annually) (Discover Apprenticeship, 2020a).

On-the-Job Training: Funding from WIOA allows some On-the-job training, which is work-based learning, without the classroom. Under WIOA, reimbursement of new employees' wages can be compensated up to 90% (WIOA, 2020). It is most common for On-the-job training to be population-targeted specifically for dislocated workers (Cahill, 2016).

WBL Policy Landscape

Participating in WBL pathways can present significant challenges. Institutions often struggle with logistical barriers and the need to ensure accessibility. At the same time, embedding work into the curriculum introduces pedagogical complexities, requiring educators to adopt new approaches to teaching and learning (Boud, 2001; Nottingham, P., 2016). These challenges are not isolated to individual programs but are shaped and, in many cases, amplified by the broader policy environment. For this reason, the following section examines the federal and state policy landscape of WBL. By mapping both federal and state contexts, the review provides insight into how different levels of governance shape the application of WBL and articulate desired outcomes for these pathways.

Federal: By embedding WBL into national workforce legislation, the federal government signals that aligning education with labor market needs is a growing area of interest. These programs fund the infrastructure, employer partnerships, and student supports necessary to scale high-quality WBL pathways, ensuring that learners gain access to in-demand skills and career opportunities. Federal investments, including the Workforce Innovation and Opportunity Act (WIOA) (U.S. Congress, 2014), Trade Adjustment Assistance Community College and Career Training (TAACCCT) program (U.S. Department of Labor, 2018), and the reauthorization of Perkins V (U.S. Congress, 2018), demonstrate bipartisan recognition of WBL's role in education development.

State Definition: States vary widely in how they define "quality" WBL, often tailoring definitions to regional priorities, sector demands, and local workforce needs. Each state studied has defined WBL slightly differently, emphasizing different aspects of the learning strategy. For example, Alabama's WIOA-WBL program operates as a federally funded workforce initiative targeting WIOA-eligible youth, prioritizing paid, structured occupational training with employer wage reimbursements and pathways to On-the-Job Training (Alabama Works, 2025). In contrast, California's Work Experience Education (WEE) is a state-authorized, curriculum-integrated program managed by local educational agencies, emphasizing non-cognitive skill development,

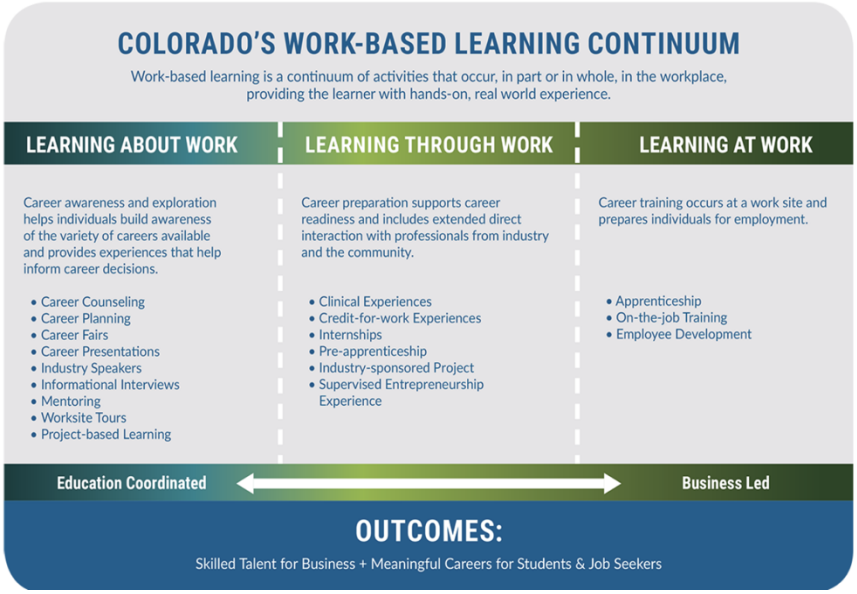
financial literacy, and career readiness without direct employer subsidies (California Work Experience Education, 2025). Iowa emphasizes adaptability and flexibility in changing work environments, Tennessee prioritizes mastery of industry-specific technical and safety skills, and South Dakota focuses on aligning daily work tasks with the culture and responsibilities of the chosen field. These distinctions illustrate that while the overarching goals of WBL are shared nationally, the operational definitions and benchmarks for quality are highly state-specific (Table 1, for example).

Table 1: State Definitions

State	Quality Indicator	State Standards
Iowa	*Students will adapt to various roles and responsibilities and work flexibly in climates of ambiguity and changing priorities*	Iowa Academic Standards
Tennessee	*Students will demonstrate industry specific technical and safety skills*	Tennessee WBL Employability Skills
South Dakota	*Students will perform daily work tasks consistent with the responsibilities and work culture of the chosen internship field*	Capstone Experience Standards by experience Type
Alabama	WIOA-eligible youth, prioritizing paid, structured occupational training with employer wage reimbursements and pathways to On-the-Job Training	Alabama Works,
California	state-authorized, curriculum-integrated program managed by local educational agencies, emphasizing non-cognitive skill development, financial literacy, and career readiness without direct employer subsidies	California Work Experience Education

Continuum: Colorado approaches WBL through a Continuum, a theory of change model that frames WBL as a developmental sequence with three progressive phases: *Learning About Work*, which builds career awareness through counseling, mentorship, and industry tours; *Learning Through Work*, which prepares students via internships, clinical experiences, and school-based enterprises in partnership with industry; and *Learning at Work*, which transitions participants into advanced training and employment through apprenticeships, on-the-job training, and direct employment opportunities (Colorado Workforce Development Council, 2025, Figure 2). The model positions WBL as a shared responsibility, beginning in education-led contexts and gradually shifting toward business-led engagement as learners progress.

Figure 2: Colorado's Work-Based Learning



States vary widely in how they define "quality" WBL, often tailoring definitions to regional priorities, sector demands, and local workforce needs. While Alabama's model is employment-driven and financially incentivizes business participation, California's approach is education-centered, and Colorado's emphasizes a continuum that integrates career awareness, preparation, and placement across the learner's trajectory. Recognizing this variation in frameworks, outcomes, and funding streams underscores the complexity of WBL policy, outcomes, and practice across states.

Intervention Strategies

Through collaboration with the funders of this project, the prioritized outcomes determined to be the following: increased education/training, increased employment, and increased wages**.** These outcomes serve as the core quality indicators for assessing WBL program impact for the typology analysis. This framework is meant to provide both state-specific customization and cross-state comparability, offering funders a foundational pathway for scaling high-quality WBL while respecting local/state priorities. Achieving consistent high-quality outcomes across these four key levers:

- **Braided Funding Model:** which sustains programs through multiple coordinated revenue streams;
- **Industry Partnership:** which ensures active industry participation and relevance;
- **Systems Alignment:** which integrates education, workforce, and community partners; and
- **Soft Skills Integration:** which prepares students with essential interpersonal and professional competencies.

The following section details each quality indicator, outlining its definitions, what the research demonstrates, and potential measurements of data elements.

Braided Funding Model

Definition: A braided funding model blends federal, state, philanthropic, employer, and institutional resources to create a sustainable approach for financing WBL. By aligning multiple funding streams, braided funding addresses student barriers such as rising tuition costs, sticker shock, loan dependency, and socioeconomic divides while simultaneously reducing reliance on student debt, stabilizing WBL budgets. Unlike standalone pilots, braided funding enhances the scalability and durability of interventions. Within this model, subsidized employment, paid internships, and employer sponsorships serve as powerful but underutilized components (Dutta-Gupta, 2016).

Supporting Research: Research shows that incentivizing participation in WBL through a paid internship or a wage reduces financial strain and improves workforce readiness (Cahill, 2016; Showalter & Spiker 2016; Jain & Vazquez, 2021; Holzer & Lerman, 2014; Green, 2005). According to Jain & Vazquez, receiving a wage "will help them [young adults] break out of the cycle of low-wage jobs and attain the experience, education, and relationships necessary for stable and well-paying employment" (p. 20). When learners are paid, they have more investment into their work, which drives persistence and completion rates (Holzer & Lerman, 2024; Jain & Vazquez, 2021). Paid opportunities should also be competitive with local job wages. These programs can be especially effective for long-term unemployed individuals and may increase participant well-being.

Evidence from a 40-year evaluation of rigorous intervention strategies shows that subsidized employment produces positive labor market outcomes, including increased employment, reduced public benefit reliance, lower crime rates, and decreased long-term poverty (Dutta-Gupta, 2016). Research further indicates that during recessions, paid work opportunities help stabilize the economy. While additional study is needed to isolate the effects of subsidized employment, the evidence strongly supports its role in achieving desired employment outcomes. More detail is available in Lessons Learned from 40 Years of Subsidized Employment Programs, produced by the Georgetown Law Center on Poverty and Inequality. Embedding these strategies within a braided funding framework ensures they function not as standalone pilots, but as scalable, sustainable interventions aligned with both educational and labor market needs.

Data Elements:

Funding Alignment

- Number of funding streams (federal, state, philanthropic, employer, institutional)
- Percentage of program budget covered by multiple funding vs. single-source funding
- Stability of funding across multiple fiscal years

Student Financial

- Number/percentage of participants receiving subsidized wages, stipends, or tuition support
- Net cost of attendance for students
- Reduction in student reliance on loans or out-of-pocket costs

Employer Metrics

- Employer sponsorships or wage subsidies generated
- Employer contributions leveraged (dollars matched per public dollar invested)

Industry Partnerships

Definition: An industry partnership in WBL is a formal collaboration between employers and educational providers designed to align training with current and emerging labor market needs. These partnerships ensure that curricula, credentials, and experiential opportunities reflect the skills and competencies required in the workplace. Industry partners may contribute through activities such as providing paid internships or apprenticeships, co-developing curricula, offering mentorship, sponsoring equipment or facilities, or committing to hire program graduates. At their core, industry partnerships embed employer expertise and investment into WBL pathways, strengthening the connection between education and employment while enhancing relevance, scalability, and student employability.

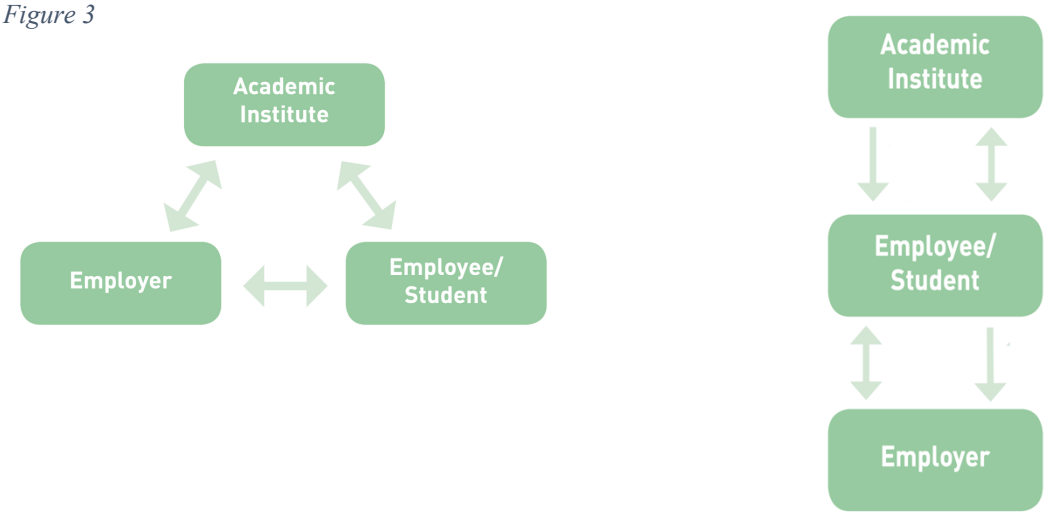
Supporting Research: Analysis from the typology and backed by research demonstrates that employer engagement is crucial for successful WBL implementation (Couch, 2018). High-quality WBL programs depend on structured partnerships where employer expectations, student learning objectives, and institutional curricula are closely aligned. Without such alignment, programs risk delivering fragmented or mismatched experiences that fail to meet labor market needs, especially for fields that have rapid advancement (IT or manufacturing). Employers play a pivotal role in both teaching and evaluating students, (Murtazin et al., 2020). However research demonstrates employers are often less involved than is desired (Hanney, 2005).One model that exemplifies strong employer institution alignment is contextualized education within career pathways known as the Integrated Basic Education and Skills Training (I-BEST) model (Couch, 2018).

I-BEST Model: Pioneered in Washington state, this model is one of the most well-known applications of the co-teaching model. While research on the scalability of this model is mixed, one element with proven statistical significance is the dual-teaching approach—where an industry professional and an academic instructor each teach 50% of the course and are present in the classroom 100% of the time. In the I-BEST model, co-teaching pairs a basic skills instructor (focused on adult education, literacy, ESL, or developmental education) with a career and technical education (CTE) instructor (focused on occupational or technical content) in the same classroom. Both instructors are present and actively teaching together for at least 50% of instructional time. Evaluations of Washington's I-BEST program have found it more effective than traditional alternatives in improving academic and vocational outcomes (Couch, 2018). This structure ensures strong industry alignment and fosters ongoing collaboration between employers and educational institutions. This is especially true for sectors that have fast-moving advancements such as; manufacturing, IT, or computing.

3-Way Communication: Crossan (2010) examined the communication dynamics between employers, educational institutions, and student/employees, illustrating both the ideal arrangement vs the reality of the communication. The research demonstrates the ideal relationship, a model of open three-way communication and equal collaboration (Figure 3, image 1); however, the research demonstrates the realistic relationship, which often reflects a hierarchical structure (Figure 3, image 2). The hierarchical model tends to flow between the institution and the student, and between the student and the employer,

but less directly between the institution and the employer. For WBL to meet high-quality indicators, program design must close this gap by fostering genuine three-way collaboration, ensuring that communication is between academic institutions and industry partners.

Figure 3



Source: Crossan, M and McTavish, A and Bayley, V (2010) The reality of employer engagement in work-based learning. Assessment, Teaching & Learning Journal, 10. pp. 33-36. ISSN 1756-8781

Potential Measurements:

Employer Engagement

- Employer co-teaching participation (hours or % of course instruction shared with academic faculty).
- Level of employer contributions (financial, equipment, facilities, sponsorships).
- Percentage of WBL opportunities that are **paid** (internships, apprenticeships, subsidized wages).

Partnership Quality & Communication

- Number of partnerships adopting the co-teaching model (dual instructor, 50% time in the classroom)
- Frequency of employer-institution meeting/feedback loops (evidence of three-way communication)
- Student-reported satisfaction with real-world skills application

Systems Alignment

Definition: Systems alignment refers to the intentional coordination across education, workforce, and industry systems to ensure that WBL pathways are accessible, efficient, and responsive to labor market needs. Misalignment often occurs when institutions, employers, and policy structures operate in silos—resulting in barriers such as conflicting course and work schedules, lack of recognition for prior learning, or weak connections to local industries. Achieving systems alignment means integrating policies, practices, and partnerships so that students experience seamless pathways from education to employment. This can include aligning

credit structures, synchronizing class and work schedules, embedding employer input into curricula, and ensuring that funding and policy frameworks support collaboration rather than competition.

Supporting Research: Research shows that WBL pathways are most effective when they are built through intentional systems alignment with local businesses, community organizations, and educational institutions (Showalter & Spiker, 2016; de Alva & Schneider, 2018; Buckwalter & Togila, 2019; Cahill, 2016; Ross et al., 2020). These partnerships go beyond curriculum alignment to allow stakeholders to jointly design schedules, training methods, and support services that reflect the realities of both work and life. Expanding accessibility requires intentional systems alignment between educational institutions, employers, and community partners.

Credit for Prior Learning: Credit for Prior Learning (CPL) is a well-established practice in postsecondary education that allows students to receive academic credit for knowledge and skills acquired outside traditional classroom settings (Bradfield, 2018; Lipinski et al., 2023). CPL encompasses various mechanisms, including transfer credit, military experience, standardized examinations, professional licensure, and experiential learning portfolios (Bradfield, 2018). Research demonstrates significant benefits for working learners, including reduced time to degree completion, lower costs, higher graduation rates, and increased student confidence (Klein-Collins & Shafenberg, 2023). Adult learners often experience anxiety about documenting their experiential learning, but supportive environments and structured reflection processes facilitate successful outcomes, with students typically receiving 4-24 credits (Müller, 2012). While CPL has been advocated for over 40 years, institutions continue developing sustainable practices (Pla Inside Out, 2016).

Flexible Scheduling: to design flexible course schedules—such as evening, weekend, or asynchronous formats- that align with industry-specific needs. Ratledge (2020) found that some colleges adjusted class schedules to accommodate farmworkers during the harvest season. Similarly, partnerships with childcare providers have been shown to improve student flexibility in meeting family obligations, further enabling participation in WBL pathways (Ross et al., 2020; Buckwalter & Togila, 2019; Showalker & Spiker, 2016; Cahill, 2016). These cross-sector collaborations are essential to removing structural barriers and ensuring equitable access to WBL programs.

Local Industry: Traditional postsecondary education models often conflict with typical work schedules, limiting access to WBL opportunities. For example, in rural areas, where agriculture, education, and healthcare dominate and agriculture alone accounts for 17% of employment in rural–urban regions (Ajilore & Willingham, 2019) cross-sector coordination ensures that training aligns with high-demand, high-wage opportunities. Further, larger companies may contribute supervisors, equipment, and funding for training (Green, 2005), while education providers adjust class times or delivery methods to fit industry needs. By working together, employers and educators can co-create pathways that integrate industry expertise, remove participation barriers, and connect learners directly to sustainable local careers.

Soft Skills Integration

Definition: Soft skills are interpersonal qualities and behaviors that complement technical abilities in the workplace, including communication, problem-solving, teamwork,

leadership, adaptability, conflict resolution, and time management (Padhi, 2014; Rani, 2017). In the context of WBL, these skills are developed through authentic workplace experiences, where learners must navigate team dynamics, interact with supervisors and clients, manage deadlines, and respond to real-world challenges. High-quality WBL programs intentionally embed opportunities for learners to practice and refine these competencies, rather than leaving them to develop incidentally. In WBL pathways, embedding soft skills development from the outset ensures learners leave with a balanced portfolio of technical expertise and interpersonal effectiveness, strengthening both individual career prospects and the broader talent pipeline (Srivastava & Kuri, 2020; Vasanthakumari, 2019).

Supporting Research: Economic research demonstrates that "noncognitive" skills yield significant labor market returns (Autor, 2013; Deming, 2017; Rani, 2017). Specifically, investment in social skills increases earnings potential and employability, with demand for social interaction skills in the U.S. workforce rising by 12% in the early 21st century (Deming, 2017). These skills remain resistant to automation, even as technology reshapes job requirements (Autor, 2015). Moreover, they are strong predictors of full-time employment and wages (Deming, 2017), and social-skill-intensive tasks grew by 24% from 1980 to 2012—outpacing the 11% growth for nonroutine analytical tasks (Autor, 2013; Deming, 2017).

Because soft skills are both highly valued by employers and transferable across industries, their intentional integration into WBL programs serves as a critical indicator of quality. For example, internships that require learners to lead a project team, apprenticeships that involve direct customer service, and industry-mentored projects that demand problem-solving under real constraints all provide measurable opportunities for soft skill development. Employers increasingly recognize that these capabilities are often developed in tandem with technical training, enhance workplace performance, foster career advancement, and increase adaptability in a changing labor market (Johnson & Baby, 2021).

Data Elements:

Career Readiness & Self-Management

- Resume-building workshops
- Mock interviews with employers to practice professional communication and confidence.

Leadership & Initiative

- Opportunities to lead a project team, delegate tasks, or serve as a peer mentor.
- Reflection assignments where students analyze their leadership style and growth (i.e. Clifton Strengths assessment)

Collaboration with Support Systems

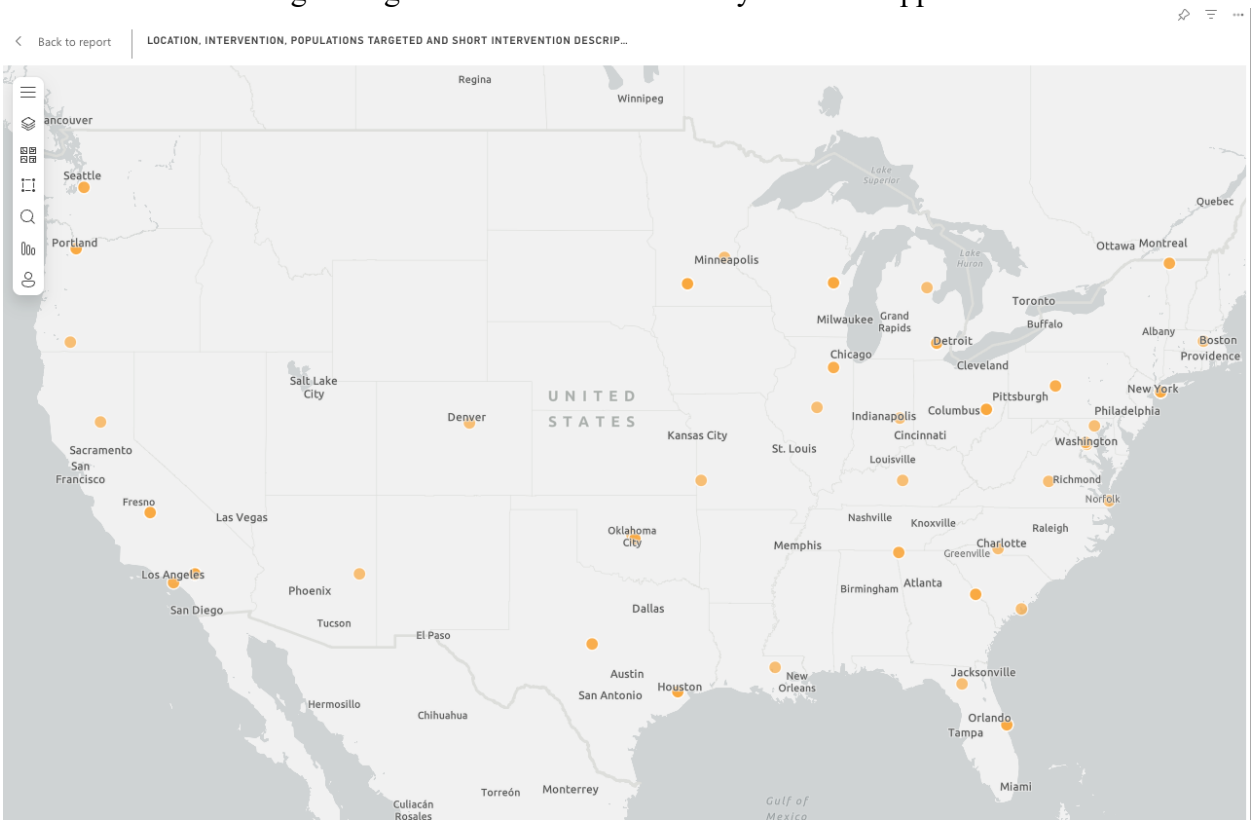
- Joint activities with career counselors to align WBL experiences with career planning.
- Networking events with alumni and employer partners to build professional relationships.
- Students participating in structured mentorship programs where they learn workplace culture from both counselors and industry professionals.

Communication & Professionalism

- Mock presentations to industry professionals simulating client pitches or project updates.
- Written communication tasks like drafting reports, memos, or professional emails.

Promising Initiatives

Out of the 126 initiatives analyzed, just five achieved all three desired outcomes, a rare accomplishment. The following section highlights these programs as models for understanding what high-quality implementation can achieve. A more comprehensive national landscape of WBL (previewed below and linked here) uses WBL initiatives and locations from the WBL inventory in the United States reviewed for typology analysis. The map is meant to serve to help "localize" their existing strategies and deliver contextually relevant support.



Project Quality Employment Through Skills Training (QUEST)

Description: Project QUEST equips low-income individuals for high-demand careers in healthcare, manufacturing and trades, and information technology. With tuition assistance, job prep, and wrap-around support, participants overcome barriers and achieve success. A nine-year study found that graduates moved out of poverty and into the middle class, earning an average of $46,580 by the final year. With one of the highest completion rates in the nation, services offered include wrap-around services that can include rental assistance, scholarships, job interview prep, funds for tuition and books, and more, this workforce program has one of the highest completion rates in the country.

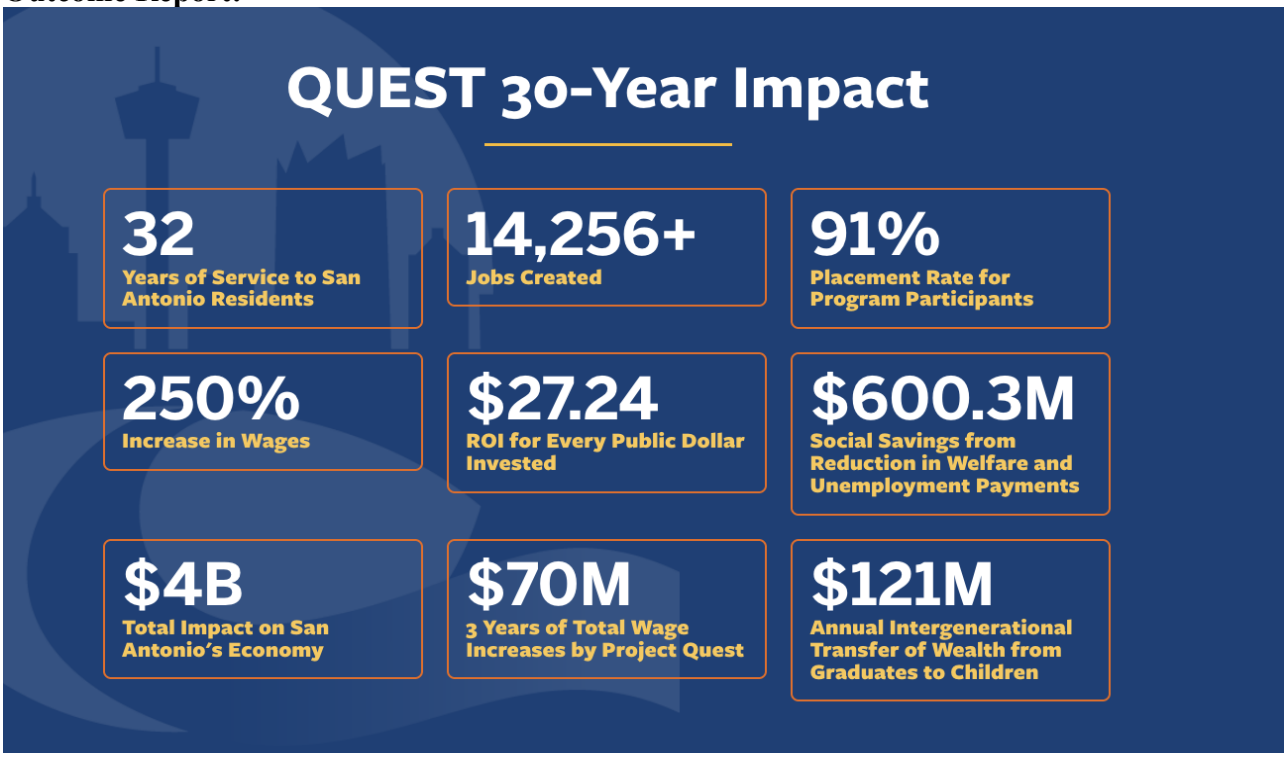
Population Target: High school diploma or GED

Testing Sight: Urban only

Location: West South Central, Texas

Sector: Healthcare, Manufacturing, and IT

Outcome Report:



Source: https://questsa.org/about/

RecycleForce

Description: Since 2006, RecycleForce has employed nearly 1,200 returning citizens, offering transitional jobs, industry-recognized certifications, and pathways to full-time careers. Participants also receive wrap-around services, including mentoring, tutoring, college credit opportunities, housing and driver's license assistance, substance abuse and mental health counseling, and financial literacy training—helping them build lasting stability and success.

Population Target: Formerly incarcerated individuals

Testing Sight: Urban only

Location: East North Central, Indiana

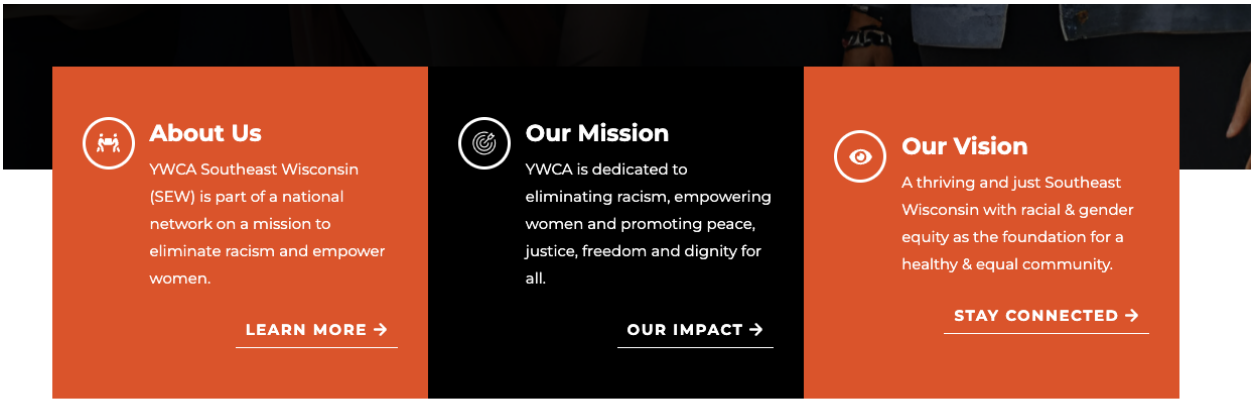
A social enterprise focused on the re-entry of returning citizens from incarceration.

RecycleForce is a 501(c)3 that is committed to reducing crime through employment and job training, while improving the environment through electronics recycling. Since 2006, RecycleForce has safely recycled more than 65 million pounds of electronic waste while providing job training to thousands of returning citizens.

Source: https://recycleforce.org/

Supporting Families Through Work (SFTW)

Description: YWCA Southeast Wisconsin supports families by expanding access to education, employment, and economic opportunity. In collaboration with local partners, they provide High School Equivalency Diploma (HSED) and General Educational Development (GED) programs in Milwaukee and Racine, helping parents and young adults open doors to better jobs and brighter futures. They also organize initiatives such as "Dress for Success," which equips women with the resources, confidence, and professional support they need to thrive in the workplace and provide stability for their families.
Population Target: Unemployed, Parents, Noncustodial parents
Testing Sight: Urban only
Location: East North Central, Wisconsin



Source: https://www.ywcasew.org/

Year Up

Description: Year Up United equips young adults with the tools needed to succeed through Career Pathways, a tuition-free job training program. By combining hands-on experience with skills-first training, Year Up prepares participants to enter the workforce ready to contribute from day one—helping them achieve their career goals while meeting the needs of employers. YouthBuild provides education, training, and wrap-around support to low-income youth disconnected from both high school and the workforce. The program's mission is to reengage young people in education and employment, helping them build the skills, confidence, and opportunities necessary to thrive.
Unique about the Year Up program is the number of industry partnerships by regional demand. A full list can be found here, that includes but not limited to: Amazon, Linked In, Salesforce, Microsoft, Bank of America, etc.

Sector Specific: IT
Population Target: Young adults (aged 16-24)
Testing Sight: Tested in multiple settings, Urban only
Location: New England, Massachusetts, Rhode Island, Middle Atlantic, New York, East North Central, Illinois, South Atlantic, District of Columbia, Georgia, Pacific, California, Washington

Internship Opportunities

Source: https://www.yearup.org/

YouthBuild

Description: In the United States, opportunity youth are defined as young adults ages 16–24 who are out of school and out of work. Within this population, YouthBuild focuses on young people without a high school diploma and with limited financial resources. These individuals, often overlooked by other systems, represent both the greatest need and the greatest untapped potential to drive economic mobility and community transformation. YouthBuild steps in where other networks fall short, opening doors for young people who are too often excluded.

Population Target: Young adults (aged 16-24)
Testing Sight: Tested in multiple settings
Location: New England, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, Middle Atlantic, New Jersey, New York, East North Central, Indiana, Illinois, Michigan, Ohio, Wisconsin, West North Central, Iowa, Minnesota, Missouri, South Atlantic, District of Columbia, Georgia, Maryland, North Carolina, South Carolina, West Virginia, East South Central, Mississippi, Tennessee, West South Central, Louisiana, Oklahoma, Texas, Arizona, Colorado, Pacific, California, Oregon, Washington, Puerto Rico and Island Areas, U.S. Virgin Islands

Conclusion

This review of 126 work-based learning (WBL) initiatives demonstrates both the promise and complexity of designing pathways that meaningfully improve education, employment, and earnings outcomes. While many programs achieved gains in one or two areas, only five stood out as exemplars that met all three desired outcomes simultaneously. Their success underscores the importance of intentional design programs that braid funding sources, cultivate strong industry partnerships, align systems across sectors, and embed soft skills development consistently show the greatest potential for scale and sustainability.

At the same time, the findings highlight gaps that deserve attention. Rural communities remain underrepresented in evaluations, and braided funding models, though highly effective for targeted populations, are not yet widely adopted. Scaling proven strategies will require philanthropy, policy, and institutional leaders to invest not only in program innovation but also in infrastructure that ensures equitable access and long-term viability.

Ultimately, WBL is not a single solution but a set of adaptable approaches that bridge education and work. By learning from high-performing programs and intentionally replicating their practices, stakeholders can strengthen pathways that equip learners with both the technical expertise and the social capital necessary for economic mobility. The challenge ahead is to move from fragmented pilots to systemic integration—ensuring that "learning by doing" becomes a reliable, equitable, and sustainable route to opportunity.

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