

ACTION RESEARCH



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Student Success Center

Wisconsin's Equity Informed Approach to Expanding Integrated Education & Training Access

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Abstract

Integrated Education & Training (IET) combines occupational skills training with Adult Education programming to expedite education and career advancement for students. These innovative offerings are vital to addressing Wisconsin's equity imperative. A Wisconsin Technical College System Action Research Brief, titled *Understanding Measurable Skill Gains: Identifying Factors Associated with Student Success*, presented analysis of program year 2018-19 data and called on Wisconsin Adult Education partners to prioritize equity in IET. Using a mixed-methods approach to assess changes since the 2018-19 study, this study blends quantitative analysis of longitudinal student-level data and qualitative analysis of written artifacts to present a reflective case of Wisconsin's progress in prioritizing equity in IET. Results demonstrate a narrowing of racial equity gaps in IET participation and suggest four catalysts that may contribute to this change including effective data use, continuous professional development for IET providers, supportive policy, and fiscal levers to scale IET implementation.

Strengthening WTCS Career Pathways through Integrated Education and Training

The Wisconsin Technical College System (WTCS) is a system of 16 public technical colleges administered by the state of Wisconsin. The WTCS offers more than 500 programs, awarding two-year associate degrees, one- and two-year technical diplomas, and short-term technical diplomas and certificates. The WTCS also provides training and technical assistance to Wisconsin's business and industry community, delivers dual credit opportunities in partnership with high schools, and serves as the Workforce Innovation and Opportunity Act (WIOA) Title II program for Adult Education and Family Literacy Act (AEFLA) programming.

Annually, roughly \$6 million in federal AEFLA funds are awarded across a series of providers within Wisconsin. Funds are administered as grant awards, which are made through a competitive process that operates under a four-year cycle. Wisconsin's funded AEFLA providers include each of the 16 technical colleges and a series of Community Based Organizations. These providers offer a diverse set of services that include Adult Education and literacy skill building, English language learning, re-entry services for Justice-Involved populations, workforce preparation services, and Integrated Education and Training (IET).

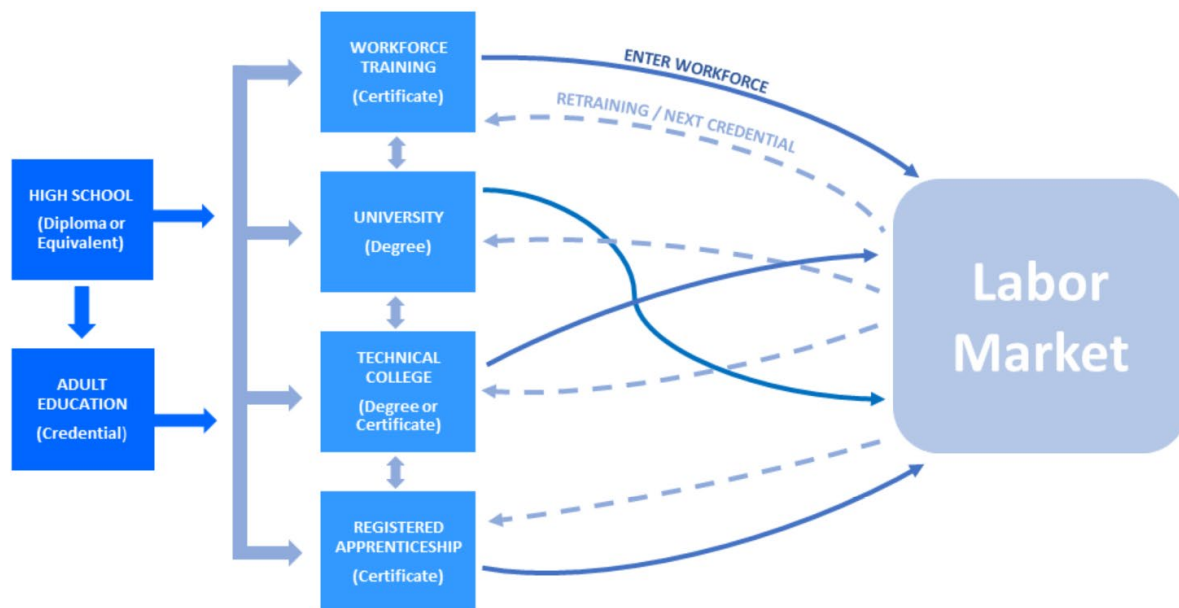
With over 13,000 learners served annually, Wisconsin AEFLA is a national leader demonstrated by strong educational and employment outcomes. As shown in Table 1, the Wisconsin AEFLA program exceeded the national median across the federal WIOA primary indicators of performance in program year 2020-21.

Table 1. WIOA Primary Indicators of Performance (PY 2020-21)

Outcome	WI	Nation	Difference
Measurable Skill Gain Rate	52%	39%	+13%
2 nd Quarter Employment after Exit	46%	35%	+11%
4 th Quarter Employment after Exit	43%	35%	+8%
Median Earnings 2 nd Quarter after Exit	\$ 5,004	\$ 4,739	+6%
Credential Attainment Rate	38%	34%	+4%

A factor contributing to Wisconsin’s Adult Education success may be the WTCS’s history of career pathways. The WTCS structures its work, partnerships, and programs into a career pathways model (see Figure 1), which creates an efficient, customer-centered approach to education and training. Career pathways are designed to meet an individual *where they are* and guide them through the learning and credentialing journey with the resources they need to arrive where they *want* to be. Building, promoting, and sustaining meaningful pathways requires intentional collaboration across all stakeholder partners including the various industry sectors and employers in Wisconsin.

Figure 1. Wisconsin’s Career Pathways Model



A prominent feature of Wisconsin’s career pathway model is the development of embedded credentials. Career pathway embedded credentials purposefully package components of curriculum from a longer degree program into short-term credentials. Each of these short-term credentials align with labor market demands and are also part of the required coursework in the longer degree program. The intention of the model is to allow students to seamlessly build their skills and advance their economic mobility while completing each component of the career pathway.

One example of a WTCS embedded credential model is the progression from a less-than one-year Project Management certificate, to a one-year credential in Business Logistics, followed by an Associate Degree in Business Management. After completing any credential within the career pathway, a student can exit the postsecondary system, enter the labor force to seek a job aligned with the completed credential, and return to earn the next credential, potentially leading to career advancement and higher wages. Over the last several years, Wisconsin AEFLA providers have developed and implemented Adult Education entry points connected to embedded credential models by creating credential aligned IET.

The IET concept was first coined with the passing of WIOA in 2014. The approach exudes what the WTCS already does so well, which is connecting education to employment. There are a series of key characteristics that must exist in an IET offering. An IET model brings together three instructional components that include:

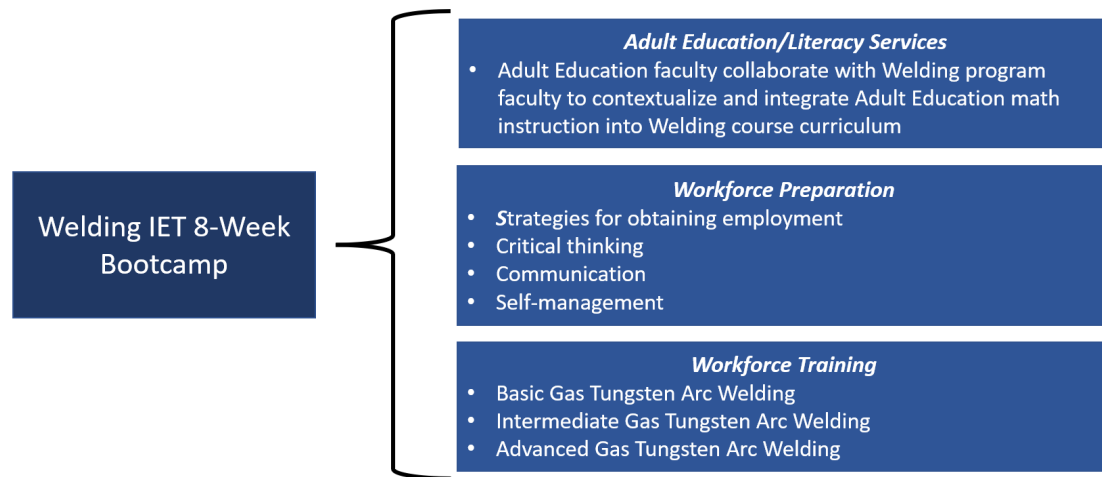
1. Adult Education and/or literacy services;
2. Workforce training for a specific occupation or occupational cluster, such as instruction within WTCS credentials; and
3. Workforce preparation services designed to help participants acquire a combination of academic skills, critical thinking skills, digital literacy skills, self-management, employability skills, and other skills necessary for successful transition into and completion of postsecondary education or training, or employment.

These three components must be integrated and offered both concurrently and contextually. Concurrently, meaning the three IET components happen in tandem with one another. And contextually, meaning the three IET components are shaped for a specific occupation or occupational cluster. Through Wisconsin IET, Adult Education and postsecondary occupational program faculty leverage their expertise to co-plan integrated lessons and co-deliver these lessons. This purposeful collaboration results in IET offerings that both meet a workforce need and connect learners to industry recognized credentials.

There are many benefits to an IET model. First, IET connects students directly to a career pathway and saves them valuable time. Rather than enrolling in an Adult Education program that builds skills prior to postsecondary enrollment, learners can enroll in contextualized learning on an IET career pathway towards credentials. Second, IET accelerates economic mobility. Learners can build their skills through IET and obtain credentials with earnings value. Research has also suggested that participation in IET and contextualized learning is positively associated with stronger student outcomes (e.g., Konruff, 2020; Shore, et al., 2004) as well as enhanced student beliefs that they will be successful in the classroom (Wang, et al., 2017). Finally, by creating another onramp to industry recognized credentials, IET provides employers with another source of skilled labor to meet their workforce needs.

Within Wisconsin, an IET offering is often connected to the first credential in a career pathway embedded credential model. Reference Figure 2 for a visual of an IET connected to a WTCS welding pathway. Packaged as an accelerated 8-week bootcamp, learners are awarded a less-than one-year technical diploma in Gas Tungsten Arc Welding. Additionally, learners are on the pathway to a one-year technical diploma in Welding. Adult Education and Welding program faculty work together to plan and team teach contextualized and integrated critical math instruction that is foundational to the success in the Welding program curriculum. This equity-based approach to providing integrated, just-in-time foundational learning for Welding course success is a key differentiator from non-IET models.

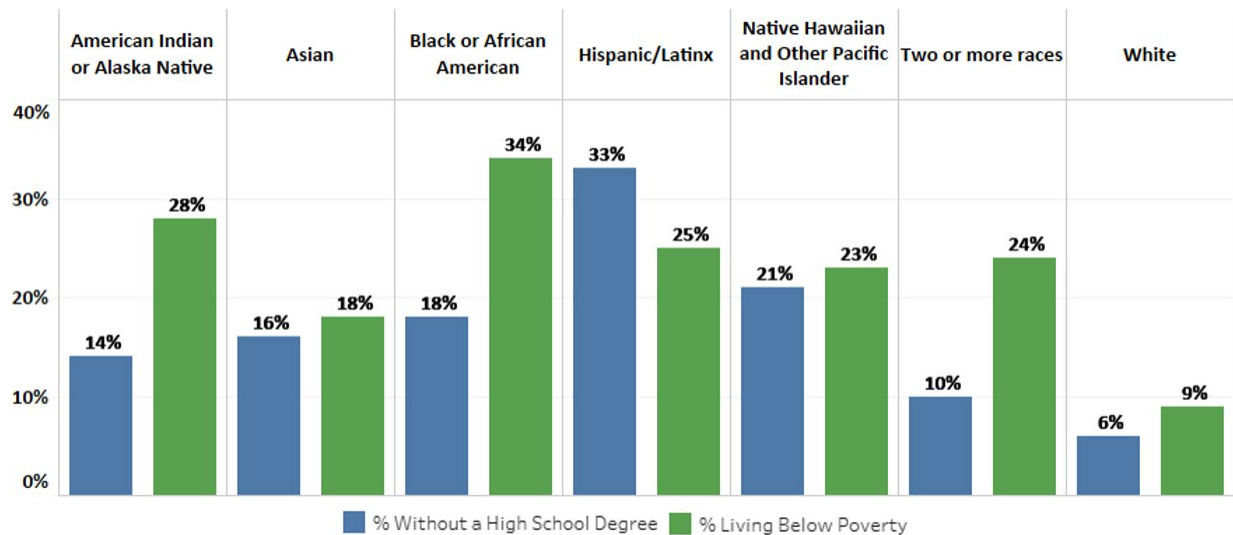
Figure 2. Wisconsin IET Connected in a Career Pathways Model



Wisconsin AEFLA’s Equity Informed Approach to IET

Wisconsin AEFLA has established an equity informed approach to scaling IET that seeks to address Wisconsin’s equity imperative. Within Wisconsin, there are racialized disparities in high school credential attainment rates and poverty rates; reference Figure 3 (U.S. Census Bureau, 2020b; U.S. Census Bureau, 2020c). Across the state, over 265,000 adults are without a high school credential (U.S. Census Bureau, 2020b) and over 126,000 adults do not speak English well or at all (U.S. Census Bureau, 2020a). The Wisconsin Adult Education program provides direct services in these areas across a diverse student body. For example, during the 2020-21 program year, 20% of students identified as single parents, over 60% as students of color, and 33% as English language learners. Through workforce aligned IET, the Wisconsin Adult Education program builds bridges to economic mobility for the diverse student body served, which in turn, should assist in addressing some of Wisconsin’s economic inequities.

Figure 3. Wisconsin High School Degree Attainment & Poverty by Race/Ethnicity



Wisconsin AEFLA's equity informed approach to IET brings together four equity drivers¹. These include data and research, continuous professional development, supportive policy, and fiscal levers.

1. **Data & Research:** During the 2018-19 program year, the WTCS Office conducted state-wide [Action Research](#), which explored the associations between participation in IET and educational outcomes (Konruff, 2020). Findings suggest that students in IET had stronger literacy skill building outcomes, which mirrored the existing research literature on contextualized learning models. Additional data analysis suggests that students of color were significantly underrepresented in IET opportunities. More specifically, 64% of AEFLA learners reported in the 2018-19 program year identified as a student of color, yet 49% of the population participating in IET identified as a student of color. These data points suggest underrepresentation by 15 percentage points. Most notable was the underrepresentation of the Hispanic/Latinx student population enrolled in IET. The research findings were written in an Action Research Brief that was presented to Wisconsin AEFLA providers, WIOA partners, and WTCS Office staff to build awareness of the value of IET and the need to address racial disproportionality in participation.
2. **Continuous Professional Development:** The WTCS coordinates ongoing professional development to support Wisconsin's AEFLA providers in expanding IET offerings and ensuring equity in IET participation. State-wide trainings have included strategies for creating IET, recruiting students into IET offerings, and providing holistic student supports to ensure students are successful in IET. The WTCS also curated a repository of resources that are available through the [Innovative Practices](#) webpage. Resources include documented practices to achieve equity in IET participation such as recruitment strategies and removing barriers to access like cost of instruction. In addition, the WTCS has spotlighted providers on the state and national stage who have innovative IET offerings that break down barriers to IET participation.
3. **Policy:** The WTCS developed the [Wisconsin Integrated Education and Training Planning Tool](#) in 2018 to support sustained conversations on IET development with Wisconsin's Adult Education providers. As providers are developing IET offerings supported by AEFLA funds, they are required to complete the planning tool document and share it with the WTCS Office for review. The planning tool prompts providers to reflect upon some of the central components of IET within Wisconsin. This includes documenting recruitment activities, connecting the IET to industry recognized credentials so students can quickly build their skills and enter the workforce, and external partner collaboration to build a comprehensive set of supports for learners enrolled in IET. The submitted planning tools are reviewed in a team-based format among WTCS Office Adult Education and occupational program staff to monitor consistency of the IET offering with the federal IET guidelines and to also ensure that the IET offering aligns with Wisconsin specific priorities. Each of the completed planning tools that meet these expectations are then curated and shared with Wisconsin's providers to support best practice implementation.

¹ The IET equity drivers presented in this study were identified through qualitative analysis of Wisconsin AEFLA written artifacts which were published between program year 2018-19 and 2021-22. Written artifacts included research briefs, professional development meeting materials such as the annual Common Ground Conference agenda, policy documents such as the WIOA State Plan, and AEFLA grant guidelines. Reviewed artifacts were coded for equity discourse including terms such as diversity, serving underserved populations, inclusion, and equity. Coded data were further analyzed to verify connections to IET and then organized into themes. The resulting themes became the presented IET equity drivers.

4. **Fiscal Levers:** After conducting data analysis and research on Wisconsin IET during the 2018-19 program year, the WTCS Office reviewed the findings and connected research to practice. In the most recent Wisconsin AEFLA grant competition, Wisconsin introduced the [Innovation in Integrated Education and Training](#) grant category to expand access to IET. A total of \$150,000 is allocated annually to target IET expansion efforts. Requirements in the grant application include connecting the proposed IET offering to a WTCS credential tied to a high demand job. Additional grant requirements include encouraging student representation in underrepresented communities in IET through intentional recruitment and embedding holistic student support to ensure learner success. View Appendix A for descriptions of funded IET offerings and photos of learners engaging in IET learning.

Supportive of [Wisconsin’s 60 Forward](#) credential attainment rate goal and the [WTCS Commitment to Process](#) towards ending systemic racism, Wisconsin’s equity informed approach to IET, and the dedication of Wisconsin’s AEFLA providers and learners, has led to transformative results. With over 950 learners participating in IET during the 2020-21 program year, Wisconsin AEFLA has narrowed racial equity gaps in IET participation (see Table 2). During the 2020-21 program year, 68% of the Adult Education population identified as a student of color and 66% of IET learners identified as a student of color. Further, the Hispanic/Latinx population is proportionately enrolled in IET. This demonstrates significant progress from the racial inequities in IET participation reported during the 2018-19 program year. View Appendix B for Chi-square results.

Table 2. Racial Equity in IET Participation (Program Year 2018-19 vs Program Year 2020-21)

Program Year 2018-19			
Race/Ethnicity	AEFLA Participation	IET Participation	Difference
White	36%	51%	15%
Students of Color	64%	49%	-15%
Hispanic/Latinx	34%	21%	-13%
Program Year 2020-21			
Race/Ethnicity	AEFLA Participation	IET Participation	Difference
White	32%	34%	2%
Students of Color	68%	66%	-2%
Hispanic/Latinx	37%	38%	1%

Wisconsin’s equity informed IET approach has also generated educational and employment outcomes that exceed Wisconsin’s above average outcomes for all AEFLA participants. As demonstrated in Table 3, nearly two-thirds of IET students experienced a Measurable Skill Gain in program year 2020-21 while roughly one half of non-IET students experienced a Measurable Skill Gain. Further, IET students experienced a 13-percentage point advantage in securing employment second quarter after exiting the AEFLA program compared to their peers not enrolled in IET. The education and employment advantages demonstrated through the IET model are especially important given Wisconsin’s equity imperative to addressing racial disparities in education and employment.

Table 3. AEFLA Education and Employment Outcomes: IET Participation Comparison (PY 2020-21)²

Outcome	Students Enrolled in IET	Students Not Enrolled in IET	Difference
Measurable Skill Gain	63%	51%	+12%
2nd Quarter Employment After Exit	58%	45%	+13%
4th Quarter Employment After Exit	50%	42%	+8%

The Future of IET

Wisconsin has made significant progress in scaling the WIOA IET model, including addressing the existence of racial equity gaps in participation. In addition to the hard work of AEFLA instructors and learners, this progress has been supported by the intentional use of four equity drivers: data and research, continuous professional development, supportive policy, and fiscal levers. To continue the momentum, all Wisconsin WIOA partners further codified their commitment to equity in the WIOA State Plan Modification Program Year 2020-23 through a state strategy titled *Intentionally Address Diversity, Equity, and Inclusion by Meeting the Needs of Diverse Customers*. In addition, the WTCS has increased its investment in the IET approach with a new two-year \$2.25 million [State General Purpose Revenue grant](#) dedicated to IET expansion. Through a sustained focus on equity and IET development, the Wisconsin Adult Education program will continue to contribute to education and employment equity by providing the Wisconsin population with innovative IET pathways to prosperity.

There are multiple promising practices that support the success of Wisconsin IET, many of which are included in the IET offerings presented in Appendix A. Below are five strategies for successful IET development and implementation.

✓ **Create Industry Relevant IET**

Each of Wisconsin's IET offerings are industry relevant. Industry relevancy is supported through curriculum that is developed in collaboration with Wisconsin employers. As demonstrated in the IET offerings presented in Appendix A, IET learners can acquire WTCS credentials or industry certifications. Awarded credentials are the result of success in coursework that prepares learners for employment.

✓ **Connect IET to Embedded Credential Models**

Wisconsin IET is often connected to WTCS embedded credential models. These models provide flexibility to learners through their multiple entry and exit points. IET connected to WTCS embedded credentials allow learners to build their skills along a career pathway, acquire various industry recognized credentials, and enter the labor force to seek a job at each credential milestone.

✓ **Build Awareness of IET Offerings**

Wisconsin providers are intentional in uplifting Wisconsin's most vulnerable communities through IET. Providers use multiple approaches to building IET awareness among prospective learners to get them on an IET pathway. Incoming Adult Education learners are provided information about IET offerings during program orientation and through case management to align career interests with educational opportunities. Wisconsin providers also develop recruitment materials that are multilingual based on

² Comparative data for the Median Earnings Second Quarter after Exit and Credential Attainment Rate indicators were not available at the time of publishing this Action Research Brief

languages common to the area and multimodal e.g., radio, paper, social media, website, etc. In addition, Wisconsin's AEFLA providers collaborate with WIOA partners and industry groups to support IET referrals.

✓ **Support Faculty Collaboration**

Wisconsin IET providers within the WTCS develop collaborative relationships across college departments. Adult Education program faculty and occupational postsecondary program faculty work together to co-create lesson plans, develop assessments, integrate curriculum, and deliver instruction. This close partnership leverages the expertise of staff in both departments to create innovative IET pathways for learners.

✓ **Foster External Partner Collaboration**

Providers of Wisconsin IET have close relationships with external partners to strengthen their programming. Funded technical colleges and community-based organizations work together to coordinate IET offerings and build bridges between the two organizations to provide a comprehensive set of services and supports for learners. Wisconsin AEFLA providers also work closely with WIOA partners and industry groups to build awareness of IET offerings. Building awareness of IET offerings across partners supports IET referrals and the culmination of student supports that leverage the expertise of each partner.

Reflection Questions

Other states administering AEFLA funds or individual AEFLA providers that are interested in expanding an equity informed approach to IET may find the following reflection questions of value.

- ❖ To what extent is the adult education program responsive to the unique needs of the community and learners the program intends to serve? Which groups of prospective students are not supported by the program's efforts, and what needs to change?
- ❖ Are data analyzed to identify which student groups are more or less likely to participate in IET? How do you communicate data analysis results to AEFLA providers and/or staff? How are results from data analysis used to inform strategic planning for the AEFLA program? Are partner programs involved in the process? How do you include student voice in your decision-making process?
- ❖ Is ongoing professional development and technical assistance to the field provided to support a continued focus on IET expansion rather than a one-time discussion? Does professional development include targeted recruitment strategies and student supports to promote learner success?
- ❖ To what extent are IET offerings monitored for consistency? Are IET offerings aligned with a career pathways approach resulting in industry recognized credentials?
- ❖ Are fiscal supports prioritized to advance IET expansion? If so, to what extent are equity considerations integrated into funding decisions?

Appendix A: Wisconsin AEFLA IET Spotlight



WTCS Career Pathway:

Pre-Apprenticeship Pathway

Career Pathway Postsecondary Credentials/Industry Certifications:

- Multi-Craft Core Curriculum (MC3) Certificate
- OSHA 10 Certification
- CPR/First Aid Certification

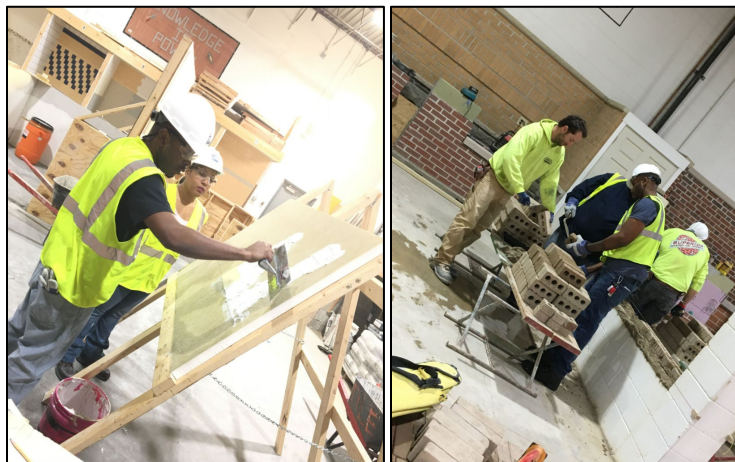
IET Description:

Literacy Services of Wisconsin's Multi-Craft Core Curriculum (MC3) 5.09 HSED IET is designed to help participants choose and succeed in an apprenticeship program that is appropriate for them. Integrating the MC3 120-hour construction curriculum with the 5.09 HSED allows adult learners to apply learned occupational knowledge through projects, alternative assessments, hands-on learning modules, and experiential learning. The IET provides participants a seamless path toward earning an apprenticeship or direct employment in a construction trade.

Literacy Services of Wisconsin recruits students by integrating staff within the Milwaukee community and through partnership with agencies in the highest educational need areas of Milwaukee. Notably, Wisconsin Regional Training Partnership (WRTP) Building Industry Group Skilled Trades Employment Program (BIG STEP) supports student recruitment to the IET offering. Additionally, partnership with Employ Milwaukee, the regional Workforce Development Board, results in providing IET participants with industry connections and case management support for employment.

Labor Market Data:

- SOC 47-0000 Construction and Extraction Occupations
- 1,444 annual openings in the region
- \$37,000 annual entry-level salary in the region





WTCS Career Pathway:
Welding Pathway

Career Pathway Postsecondary Credentials/Industry Certifications:

- Gas Tungsten Arc Welding WTCS Short-Term Technical Diploma
- Welding WTCS One-Year Technical Diploma

IET Description:

Mid-State Technical College's Welding IET is offered as an eight-week bootcamp. The offering is coordinated between college Welding and Adult Education faculty. Welding and Adult Education faculty team-teach the bootcamp to complement and integrate the three IET components concurrently and contextually. Upon completion of the eight-week bootcamp, students are awarded the Gas Tungsten Arc Welding WTCS Short-Term Technical Diploma and can continue the career pathway to the Welding One-Year Technical Diploma. After completion of the IET, Adult Education faculty continue to support students as they enter employment in the college district and/or continue in the Welding career pathway. Faculty provide connections to community support services at the Job Center and assist with obtaining WIOA funding as appropriate to continue student progress in the Welding career pathway.

The IET workforce training content includes occupational skill building in basic, intermediate, and advanced Gas Tungsten Arc Welding. Adult Education and literacy services, including math for welding and college success skills, are integrated into the workforce courses along with workforce preparation.

Mid-State Technical College's Welding IET is modeled after the college's successful Machine Tool IET bootcamp. The college has received regional support of its IET efforts through the Central Wisconsin Manufacturer's Alliance and the North Central Wisconsin Workforce Development Board. Both partners work closely with Mid-State's IET offerings to support placement into the program.

Labor Market Data:

- SOC 51-4121 Welders, Cutters, Solderers, and Brazers
- 174 annual openings in the region
- \$41,000 annual entry-level salary in the region





WTCS Career Pathway:

Agribusiness/Dairy Pathway

Career Pathway Postsecondary Credentials/Industry Certifications:

- Agribusiness Dairy Technician WTCS One-Year Technical Diploma
- Agribusiness Science and Technology – Animal Science WTCS Two-Year Associate Degree

IET Description:

Fox Valley Technical College's Dairy Career Advancement IET is targeted to advance the economic mobility of the region's English language learners. Completers of the IET receive postsecondary credits in the Agribusiness Dairy Technician WTCS One-Year Technical Diploma. Workforce training content includes an introduction to agribusiness and dairy/livestock herd management. English language learning instruction is integrated into the workforce courses along with workforce preparation.

The Fox Valley Agribusiness Instructor and an English language learning instructor work together to identify strategies for IET success, using agribusiness vocabulary and processes as a common academic base. Both instructors are instructionally present in the agribusiness IET courses. Additionally, the English language learning instructor meets with IET students outside of the agribusiness courses to reinforce the occupational content of the IET, helping with language, definitions, and clarification when needed.

Fox Valley Technical College Adult Education staff collaborated with the Agribusiness Department Chair who utilized information from the local Agribusiness advisory committee, comprised of area employers, to inform the design of the IET. Additional connections with the local dairy industry led to targeted IET recruitment efforts to upskill current employees in the industry.

Labor Market Data:

- SOC 11-9013 Farmers, Ranchers, and Other Agricultural Managers
- 204 annual openings in the region
- \$50,000 annual entry-level salary in the region



WTCS Career Pathway:
Business Administrative Professional Pathway

Career Pathway Postsecondary Credentials/Industry Certifications:

- Microsoft Office Introduction Local Certificate
- Office Technology WTCS Pathway Certificate
- Office Assistant WTCS One-Year Technical Diploma
- Administrative Professional WTCS Two-Year Associate Degree

IET Description:

Adult Education, HSED 5.09, and English language learning students are eligible to enroll in the IET. Completers of the IET receive the Microsoft Office Introduction Local Certificate and up to five postsecondary credits in the Office Technology WTCS Pathway Certificate. Workforce training content includes occupational skill building in Word, PowerPoint, Excel, Access, and document formatting. Adult Education and literacy services are integrated into the workforce courses along with workforce preparation in the areas of employability skills and digital literacy.

Lakeshore partners with local Job Center partners to co-facilitate employability skills training. Additionally, local employers support the design and ongoing maintenance of the workforce training component of the IET. College faculty and advisors promote the IET offering to incoming students during the college’s Adult Education orientation. Local Job Center partners also promote the offering among their existing and new clients.

Labor Market Data:

- SOC 43-0000 Office and Administrative Support Occupations including 43-9041 Insurance Claims and Policy Processing Clerks
- 162 annual openings in the region
- \$37,000 annual entry-level salary in the region



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Appendix B: Chi-square Test Results

Program Year	Abs (Test Statistic)	P-Value
2018-19	15.42	<.00
2020-21	0.67	0.25

*It is important to note that the COVID-19 pandemic had a significant impact on AEFLA program operations and overall student participation, including participation in IET. While racial equity gaps in IET participation narrowed, overall participation experienced a decline between the 2018-19 and 2020-21 program years.

References

Konruff, Ben. (2020). *Understanding measurable skill gains: Identifying factors associated with student success*. WTCS Action Research Brief.

Shore, M., Shore, J., & Boggs, S. (2004). Allied health applications integrated into developmental mathematics using problem-based learning. *Mathematics and Computer Education*, 38(2), 183–189.

U.S. Census Bureau. (2020a). *Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over B16004, 2015-19 American Community Survey 5-year estimates*. <https://factfinder.census.gov>.

U.S. Census Bureau. (2020b). *Education Attainment S1501, 2015-19 American Community Survey 5-year estimates*. <https://factfinder.census.gov>.

U.S. Census Bureau. (2020c). *Poverty Status in the Past 12 Months of Individuals by Sex by Educational Attainment S1701, 2015-19 American Community Survey 5-year estimates*. <https://factfinder.census.gov>.

Wang, X., Sun, N., & Wickersham, K. (2017). Turning math remediation into "homeroom:" contextualization as a motivational environment for community college students in remedial math. *Review of Higher Education*, 40(3), 427-464.