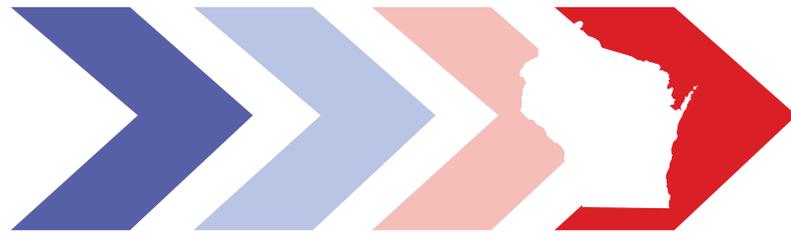


TAACCCT Round II

# *Making the Future: The Wisconsin Strategy*

Grant TC-23775-12-60-A-55



# **ADVANCE WISCONSIN**

## BEST PRACTICES & LESSONS LEARNED

September 2016







## CONTENTS

Executive Summary.....	4-5
Background and Introduction.....	6
Best Practices & Lessons Learned .....	7
Curriculum .....	7
Local Certificates .....	7-9
Short-Term Technical Diplomas and Embedded Certificates .....	9-11
New Technical Diplomas .....	11-13
Applying Lean Industry Principles into Education.....	13
Student Success.....	14
Academic Support .....	14-15
Career Support.....	15
Enhanced Basic Skills Instruction .....	16-17
Internships/On-the-Job Training .....	18
Articulation Agreements .....	19
Employer Engagement .....	20
Credit for Prior Learning (CPL) .....	21
Grant Management .....	22

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# EXECUTIVE SUMMARY

*Making the Future: The Wisconsin Strategy* is a 16 college consortium that was awarded a \$14.9 million Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant by the U.S. Department of Labor in 2012 (DOL TC-23775-12-60-A-55). Led by Northeast Wisconsin Technical College, all 16 colleges in the Wisconsin Technical College System committed to address the skills gap in the state's manufacturing industry while providing training that met the needs of the dislocated or underemployed adult population. The following report reviews the best practices and lessons learned from many of the grant's core elements, as well as aspects of grant management.

## CURRICULUM

A main component of the grant was to increase the attainment of industry-recognized credentials. Consortium colleges engaged with their local workforce partners to identify the credential(s), as well as to review or develop program curriculum needed to close the skills gap. In many college districts, the redesigning of the curriculum also aided in the recruitment of students by making the credential(s) more obtainable for dislocated workers and other non-traditional adult learners. Eight colleges focused on short-term technical diplomas and/or embedded certificates, eight created local certificates, and four developed or enhanced technical diplomas. A focus of these credentials was often on the creation of career pathways; one college modified curriculum to align with Lean and Training Within Industry (TWI) principles. Review and feedback from industry partners has meant continuous curriculum updates and for many, further development of the pathways by continuing to embed certificates or technical diplomas. A large majority of the curriculum will continue to be utilized.

**Led by Northeast Wisconsin Technical College, all 16 colleges in the Wisconsin Technical College System committed to address the skills gap in the state's manufacturing industry...**

## STUDENT SUCCESS

Creating and/or modifying curriculum that met employers' needs was only one component in closing the skills gaps. Recruiting students into the programs was the first half of this effort, but a larger challenge was retaining students to ensure a high completion rate. A number of support mechanisms were implemented or scaled to guide students throughout the programs. Seven colleges provided dedicated academic support, five provided specialized career support, eight delivered enhanced basic skills instruction, and six developed internships or on-the-job training opportunities. Colleges found some of these efforts costly to sustain, such as enhanced basic skills instruction. Support services that lacked quantitative data to support increased student success and retention rates had difficulty competing with other initiatives for funding once the grant ended.

## ARTICULATION AGREEMENTS

*Making the Future* committed to ensuring that credits and credentials could articulate easily to other colleges. While much of the foundational work for articulation agreements was already in place prior to the grant, colleges pursued additional partnerships. A roadblock for many of the colleges was the lack of degrees beyond associate degrees available for several of the grant programs, such as Machine Tool. Colleges instead focused on developing official and unofficial articulation agreements with other Wisconsin Technical College System (WTCS) districts, or articulation agreements that allowed credits to transfer to four-year programs in related fields. Seven colleges plan to continue to pursue additional articulation agreements.

## EMPLOYER ENGAGEMENT

Although WTCS policy has long required colleges to hold program advisory committees comprised of industry partners, the level of engagement by industry partners had varied by college. The TAACCCT grant brought a renewed focus on the manufacturing programs which encouraged employer engagement beyond the program advisory committees.

## *CREDIT FOR PRIOR LEARNING*

Partnering with the Council for Adult and Experiential Learning (CAEL), the consortium developed maps to identify the current credit for prior learning (CPL) processes at their institutions, the key players, and potential gaps. Colleges then used this knowledge to examine their CPL policies and procedures to validate and set the framework for future CPL practices. Various trainings in the form of in-person sessions and webinars were offered and customized to different audiences, from administrators to advisors, to build the understanding of CPL and support for the practice at all levels. The identification of a CPL lead at each of the colleges was critical to ensuring the conversation and momentum continued outside of trainings. The grant provided a foundational understanding, and CPL trainings have led to college and statewide conversations that are continuing beyond the active grant period. Many colleges have reported a cultural shift in the CPL mindset, and the WTCS office has offered additional trainings and included CPL as an outcome-based funding criteria for its annual funding matrix.



## *GRANT MANAGEMENT*

The facilitation of the first large federal grant that engaged all 16 Wisconsin Technical Colleges required a project leadership team that could quickly gain respect and provide direction. Colleges needed to develop programs that met individual district needs, while still following the boundaries and expectations of the pledged grant work. Northeast Wisconsin Technical College selected a leader from industry with strong project management experience who could keep teams motivated, develop personal relationships, hold crucial conversations, and provide transparent and consistent communications. Using Project Management principles, the team quickly developed tools to regularly and consistently communicate project status and next steps. Contractors were also leveraged to give colleges the support needed to create sustainable, scalable practices.



## BACKGROUND AND INTRODUCTION

In 2012, 16 college districts within the Wisconsin Technical College System (WTCS) embarked on an unprecedented journey of applying, and ultimately being awarded, one grant as a consortium rather than as individual entities. *Making the Future: The Wisconsin Strategy* received a \$14.9 million Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant from the U.S. Department of Labor (DOL TC-23775-12-60-A-55). Led by Northeast Wisconsin Technical College, WTCS colleges committed to reducing the skills gap in advanced manufacturing by working with their community and state partners to develop, improve, and expand adult educational training pathways to careers in advanced manufacturing.

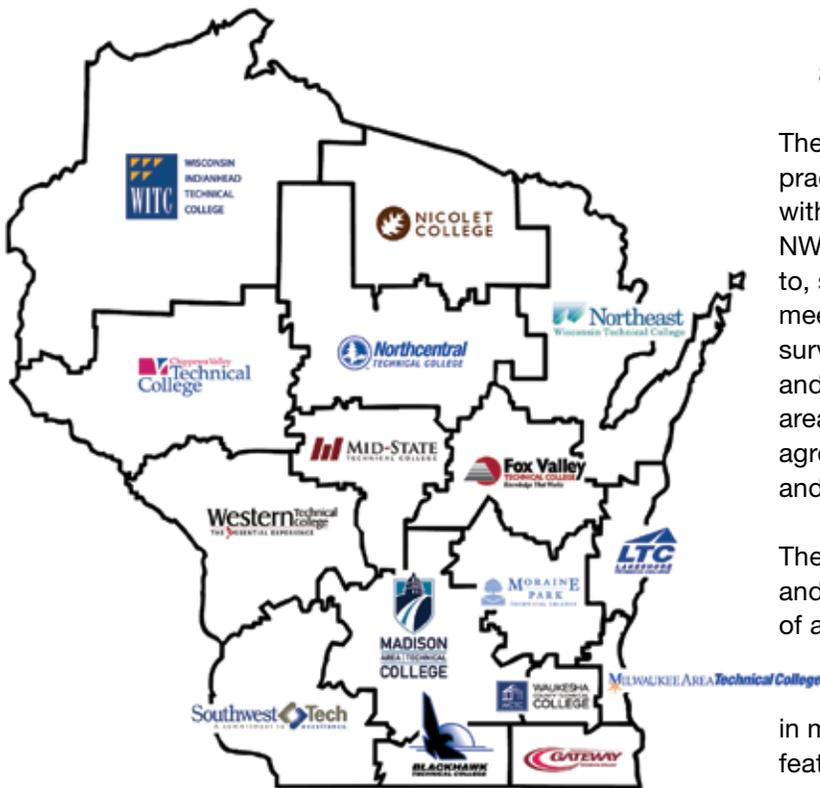
WTCS served as an unofficial member of the consortium. The System Office oversees Wisconsin's 16 technical college districts with a board that establishes statewide policies and standards for educational programs and services provided by the colleges. Although no deliverables were tied to WTCS, the Office aided the colleges in the coordination, development, and implementation of grant deliverables.

To address the shortage of skilled workers in demand by Wisconsin's manufacturers, *Making the Future* set out to:

- 1) increase the attainment of industry-recognized and industry-valued credentials,
- 2) introduce innovative and effective curriculum development and delivery within an industry-informed career cluster, and
- 3) increase and improve employment outcomes.

The process of collecting and documenting best practices and lessons learned from the grant started with a review of information by the consortium lead, NWTC. This information included, but was not limited to, scopes of work, quarterly reports, in-person meetings with colleges, etc. Based upon the review, surveys were developed to identify best practices and lessons learned in the following general topic areas: 1) curriculum, 2) student success, 3) articulation agreements, employer engagement, and sustainability, and 4) credit for prior learning.

The following sections address by topic area the "why" and "how" of the different strategies in the context of a case study example. Each section concludes with a summary of best practices and lessons learned. While consortium colleges had impacts in multiple sections, only a few were selected to be featured as case studies within each topic.



The *Making the Future: The Wisconsin Strategy* consortium included:

- Blackhawk Technical College (BTC)
- Chippewa Valley Technical College (CVTC)
- Fox Valley Technical College (FVTC)
- Gateway Technical College (GTC)
- Lakeshore Technical College (LTC)
- Madison Area Technical College (Madison College)
- Mid-State Technical College (MSTC)
- Milwaukee Area Technical College (MATC)
- Moraine Park Technical College (MPTC)
- Nicolet Area Technical College (NATC)
- Northcentral Technical College (NTC)
- Northeast Wisconsin Technical College (NWTC; Grant Lead)
- Southwest Wisconsin Technical College (SWTC)
- Waukesha County Technical College (WCTC)
- Western Technical College (WTC)
- Wisconsin Indianhead Technical College (WITC)

The consortium focused on increasing the attainment of industry-recognized credentials. Rather than taking a “one size fits all” approach, colleges worked with their local partners to determine/confirm the credential(s) needed to close the skills gaps and meet manufacturing industry employment needs in one of three areas: Machine Tool/Computer Numeric Control (CNC), Welding, and Industrial Maintenance. This localized strategy led to sustainable programmatic changes and ensured participants had the skills needed to secure employment. For example, some colleges focused on entry-level position training because of immediate workforce shortages, whereas other colleges restructured/modified programs to include more short-term credentials, allowing participants to enter and exit training based on life circumstances while still fulfilling industry demand for a pipeline of skilled workers.

### Local Certificates

Like all states, Wisconsin’s economy is driven by its industry sectors/major employers, of which the concentration and needs vary by region. To accommodate region-specific training demands, technical colleges in Wisconsin have the ability to create “local” certificates that do not need to be state approved. Local certificates are typically designed to provide basic skills for entry-level positions within a short time period. This allows college districts to be responsive to industry’s immediate/projected skilled labor shortages.

Because local certificates are approved at the district level, they are typically not eligible for financial aid. However, most can be completed in 10-12 weeks, which makes this an affordable entry option into the manufacturing sector.

### CASE STUDIES



As part of a new manufacturing pathway, Madison College repackaged existing courses into five new local certificates. The first certificate in the pathway, Manufacturing Essentials, exposed students to different manufacturing programs in 12 weeks. Upon completion of the certificate, students were able to begin a career in an entry-level manufacturing position, or continue their education in a 16-week, program-specific local certificate, such as Machine Operator Technician, Fabricator/Welder, CNC Start-up Technician, or CNC Operations. Manufacturing Essentials course credits were also able to be applied to programs at the School of Applied Science, Engineering, and Technology, providing a pathway for students to enter other traditional college programming.

The local certificates, especially Manufacturing Essentials, served as a recruiting tool for entry into the main programs by attracting students that otherwise thought college was out of reach. The presence of a certificate that ran in parallel, rather than competitively, with the full program also reduced faculty resistance and built buy-in over time as faculty saw the presence did not detract from the main program(s).

The success of the Manufacturing Essentials certificate has ensured its sustainability, but it will be slightly modified to be embedded in the first year of programs such as Industrial Maintenance, Welding, and Metal Fabrication; this activity is occurring outside of the grant. The other four certificates have unfortunately been discontinued, but a few, such as CNC Operations, will eventually be built into the CNC program.

## Making the Future’s Manufacturing Training Areas



**Machine Tool/Computer Numeric Control (CNC)**

PHOTO COURTESY OF SXC.HU – DAMO4701



**Welding**

PHOTO COURTESY OF SXC.HU – JAZ1111



**Industrial Maintenance**

PHOTO COURTESY OF FLICKER – XCBIKER



MSTC's Stainless Steel Welding Certificate provided the first local postsecondary training option for the stainless steel fabrication industry in the Marshfield, Wisconsin region. The initial phase of this program provided a platform for building a relationship with industry that led to the donations of scrap metal. The donations kept supply costs down and provided a mechanism to rapidly modify the program to align with standard industry competencies. The program originally included a flexible scheduling system in which students started once a month. Students were also free to sign up for labs without a regular attendance requirement; however, MSTC quickly found that without a more formalized structure and peer support, students fell behind due to work and other life events. Beginning in January 2015, the program was redesigned into a cohort-based system that had students entering and navigating through the program together, while continuing to provide an open-lab environment. This restructuring of the program into a cohort model increased student retention from 25% to 80%, with a 100% retention rate for the first three cohorts utilizing the new approach. The local certificate was also reformatted into an embedded technical diploma.

Because of the local demand, MSTC also worked with students and their employers to prevent "jobbing out" by creating a path to program completion. Additionally, employers sent trainers to work individually with students on techniques used in industry during the lab environment.



### MILWAUKEE AREA *Technical College*

Working closely with its seven-county economic development organization (Milwaukee 7), MATC repackaged existing courses into three, ten-week local certificates in the areas of Engine Lathe, Milling, and Welding to meet the high demand for entry-level skilled workers. While the local certificates were stackable, they were not originally embedded into the parent programs. MATC has since modified the programs so upon successful completion of the course(s) students automatically earn credit on their transcript that can be applied to the technical diplomas.

To improve program success, MATC required all local certificate students to take the Adult Basic Education (ABE) Math course in conjunction with the program. MATC also offered training to pre-selected cohorts that were sponsored by local organizations, such as the Hispanic Chamber of Commerce (HCCW). These cohorts were found to be among the most successful because of the four weeks of ABE training prior to starting the technical courses.





## Best Practices

- » Involve industry in the development and ongoing modification of local certificates to maintain training relevance and connection with employment.
- » Pilot a new credential through parallel local certificates so faculty can see the benefits after a few semesters.
- » Cohort students in programs to improve retention and success rates.

## Lessons Learned

- » Open lab schedules are appealing to students but can negatively impact retention rates unless students are held accountable with lab hour requirements.
- » Local certificate programs do not qualify for financial aid due to short-term format.
- » Advisory committees with dominant representation from a single sector limits buy-in and the ability of the program to meet larger industry needs.



The Gold Collar Certificate, a local credential started with a Wisconsin Covenant Foundation grant, was offered at SWTC in response to local employers needing individuals with basic manufacturing skills for entry-level positions. Students were provided an introduction to the basics of manufacturing through the inclusion of the National Alliance of Manufacturing's Manufacturing Skills Standard Certificates (MSSC), allowing students to earn certificates in the areas of safety, quality, manufacturing processes and production, and maintenance. Lean manufacturing techniques and soft skills were also embedded into the training. The Gold Collar Certification leveraged other grants and involved area employers who provided feedback in curriculum development and modifications through participation in advisory committees. Due to the success of the program and the relationships built, local employers provided preferred hiring to certificate completers. A challenge noted by SWTC was that while there was extreme buy-in from employers in certain cities, other areas of the district were less involved, which led to recruitment deficiencies.

## Short-Term Technical Diplomas and Embedded Certificates

Many colleges elected to enhance and/or develop career pathways that included short-term technical diplomas and/or embedded certificates to provide flexible training options appealing to individuals of varying skills levels and experience. By design, this aligned services to place high-skilled individuals more quickly into short-term training that corresponds to immediate employer need. In addition, many of these short-term technical diplomas were embedded into two-year degrees, allowing students to ladder in and out of programs based on employment and earn credit for prior learning.

This approach was initially challenged as faculty were fearful students would "job out" rather than complete the full program. However, since implementation, faculty have become the biggest advocates of the changes due to the increased number of participants attracted by the short-term training or who need to obtain advanced skills.

**CASE STUDIES**



The two-year Machine Tooling Technics Technical Diploma at CVTC was modified to incorporate national industry recognized credentials from the National Institute for Metalworking Skills (NIMS), an organization focused on providing metalworking industry standards and accrediting training programs that meet quality requirements. Three credentials (Measurement, Materials, Safety; CNC Mill Operator; and CNC Lathe Operator Credential) were embedded into the two-year program as certificates which allowed students to earn NIMS credentials as part of the program coursework at no additional cost. Two additional credentials, CNC Mill Programming and Setup and CNC Lathe Programming and Setup, are available to students by exam, but are not embedded directly into the program. CVTC was accredited to offer five NIMS credentials beginning in December 2014. Participants are not required to take any of the NIMS exams, however very few opt out.

As of May 2016, 266 NIMS credentials have been awarded to over 200 students passing one or more of the exams. The number of individuals taking the exams decreases as students progress in the program. The first certificate, Measurement, Materials, and Safety, has the largest number of testers (123) with the highest rate of passing (99%). CNC Mill Operator has a pass rate of 86% and CNC Lathe Operator has a pass rate of 98%.

Alignment of CVTC's curriculum with NIMS has benefited the program and its completers by creating buy-in with faculty and employers. This strategy allowed faculty to base their curriculum upon national standards and use common assessments. Although employers were not initially familiar with NIMS, they have since recognized the value of the credentials and are using the presence of a NIMS certificate on a resume as a way to determine the quality of a candidate's skills, rather than their own fabrication tests – saving time, money, and effort. The inclusion of the three credentials has also created a new pathway within the program with three opportunities to exit and re-enter.



WISCONSIN  
INDIANHEAD  
TECHNICAL  
COLLEGE

WITC embedded short-term credentials to create new exit points to employment within its Welding and Machine Tooling Technics

programs. With this change, students can earn up to five embedded short-term technical diplomas as part of the one-year Welding Technical Diploma, and two embedded short-term technical diplomas within the two-year Machine Tooling Technics Technical Diploma.

Embedded credentials created for Welding include: 1) Shielded Metal Arc Welding (SMAW), 2) Gas Metal Arc Welding (GMAW), 3) Flux Cored Arc Welding (FCAW), 4) Gas Tungsten Arc Welding (GTAW), and 5) Welding/Maintenance and Fabrication.

The two embedded credentials developed for the Machine Tooling Technics are 1) Entry-Level Machining, earned upon successful completion of the first two semesters of the program; and 2) Multi Axis CNC Milling, earned after the completion of the third semester. Machine Tooling Technic students also have the flexibility to earn an embedded Entry-Level Machining Technical Diploma over the course of two years through a part-time evening option (offered two nights a week and four Saturdays a semester).



## Best Practices

- Establish short-term training courses that allow individuals to quickly acquire entry-level skills for employment.
- Group courses into certificates that can be stacked into a degree or diploma to provide a clear pathway with on- and off-ramps to career advancement.
- Align credentials with national standards to increase portability for students.
- Develop a document that visually shows the flow of the pathway to increase program interest and recruit students.

## Lessons Learned

- Course numbers need to be updated to reflect the multiple classes taken during the pursuit of several short-term credentials that lead to the one-year technical diploma.
- Faculty and students in evening sessions need support to ensure high retention rates.
- Short-term technical diplomas may not qualify for financial aid, creating potential economic barriers.
- The creation of shorter term credentials encourages industry partners to send employees to gain more skills at specific, focused trainings.
- Process maps are needed to coordinate and align systems so students receive diplomas, financial aid, textbooks, schedules, etc.

## New Technical Diplomas

Creating new technical diplomas was an important element in addressing local industry needs and enhancing several colleges' career pathways. Technical diplomas were created to address employer-identified training gaps and to expand existing programs. The new technical diplomas also provided natural breaks in the training so students can return to work quickly with an option to continue and/or return at a later point when additional skills are needed to advance and/or retain existing employment.

## CASE STUDIES



BTC expanded an existing one-year Industrial Mechanic program into a two-year Industrial Maintenance Technician Technical Diploma to reflect the emerging industry-identified demand for a “jack of all trades” skilled workforce. To create this versatile worker, BTC designed a program that students could start in any semester because courses were not sequenced and each semester led to an embedded diploma. This flexibility provided both students new to the industry and incumbent workers the options to earn as many or as few credentials as needed without having to commit to the full two years.

BTC continues to address the issue of low program enrollment due in part to a large number of students being incumbent workers who are only taking courses as schedules permit. In addition, the state-required program name is not reflective of industry terminology, which has led to confusion among potential candidates. To overcome this issue, instructors have been visiting employers and other job recruitment facilities to “brand the name.”



GTC initially created a Tool and Die track within its Industrial Mechanical Technician Associate Degree based upon results from an employer survey it conducted in its tri-county service area; however, the college later discovered that its larger district employers aligned tool and die more closely with Computer Numerical Control (CNC) and very few, mostly small businesses, wanted students with tool and die specialization. As a result, GTC developed a one-year Tool and Die Technical Diploma that aligned with its CNC program by redesigning the original curriculum to include more CNC components, a two-credit basic math course, and one-credit advanced math course.

Despite the college's effort, program enrollment continues to be low due to a lack in demand because employers are reluctant to hire inexperienced workers. GTC is also exploring options with its advisory members to rename the program to Tool Room Machinist or Tool Maker to better align with industry terminology. A new CNC boot camp was created and is helping to bring students into the Tool and Die program.



The Machine Tool and Welding programs at LTC were modified with the purpose of creating career pathways. This effort involved the creation of new

credentials, including two new technical diplomas, and curriculum modification for pathway alignment. LTC leveraged funds from multiple grants and private donations to expand training facilities, modify curriculum, and revise program delivery models to improve quality and consistency.

Within the Welding program, a new Introduction to Welding Certificate was embedded into the one-year Welding-Industrial Technical Diploma. The certificate, while new, is comprised of modified courses from the existing credential. Additionally, a new one-year Fabrication Technician Technical Diploma and a new two-year CNC Technician Technical Diploma, which includes the embedding of the one-year Machine Tool Operation Technical Diploma, were developed. All program changes included strong input by the program advisory committees and were met positively by students and faculty. LTC has recently revised the program, outside the scope of the grant, to further develop the pathway by embedding the one-year Welding-Industrial Technical Diploma into the now two-year Fabrication Technician Technical Diploma.

## Western Technical College

THE ESSENTIAL EXPERIENCE

Western designed a new two-year Manufacturing Systems Maintenance Technician (MSMT) Technical Diploma as a career pathway that allows students to enter through any one of three distinct programs: Basic Machining, Basic Industrial Power, or Basic Welding. Students can earn up to two embedded technical diplomas within each pathway, allowing them to enter and exit the program at various points. Two of the pathways, Basic Welding and Basic Machining, included one-term technical diplomas named according to the pathway, but shared a new two-term Industrial Mechanical Maintenance Technician Technical Diploma. The third pathway, Basic Industrial Power included a one-term Basic Industrial Power Technical Diploma and two-term Electronic Systems Installation and Maintenance Technical Diploma.

Each pathway also included an institute available as a contracted service for employers or other organizations, such as correctional systems or workforce development agencies, to provide underprepared students with basic skills training. Although the institutes are not on the pathway, students completing an institute can directly enroll into the program upon completion.

A unique aspect of the MSMT program is the offering of the pathways during various parts of the day to accommodate employed students working various shifts. The institutes, for example, are offered in the late afternoon and early evening hours, the Basic Welding pathway is offered as part-time in the morning, and the MSMT for all pathways is offered in the afternoon into the evening hours.

## Best Practices

- » Embed new or enhanced technical diplomas into a program to provide a clear path to advancing skills needed by employers.
- » Use input from a broad cross-section of local and regional industry leaders to ensure the program being developed is reflective of the broader workforce demands, providing graduates more employment options.
- » Design technical diplomas with multiple entry points and short-term credentials so students of all skill levels have the flexibility to take courses/earn credentials to secure a job and/or advance in their career.
- » Identify a respected staff/faculty member to lead the project to increase faculty buy-in.

## Lessons Learned

- » Offering embedded short-term credentials within a one- or two-year program increases the likelihood of students “jobbing/stopping out.”
- » System required program names that are not aligned with current industry terminology may hinder/impact enrollments.
- » Limited employer feedback leads to the creation of programs that only serve an industry niche.
- » New program enrollment increases over time through employer engagement, outreach, and word of mouth.



FVTC created a web-repository ([www.wisc-online.com/GammaPlus](http://www.wisc-online.com/GammaPlus)) of 125 electronic flashcard sets for colleges to use in the areas of manufacturing, mathematics, and soft skills. The flashcard sets are drill-and-skill “cards” that allow users to practice concepts already learned. Designed as mobile applications, the flashcard sets can be used by anyone, anywhere, and on any type of electronic device (smartphones, tablets, laptops, or desktop computers).

## Applying Lean Industry Principles into Education



Lean principles are used by industry to produce products in the most efficient, consistent, and cost effective manner. NWTC applied these principles to its Machine Tool/CNC program in an effort to increase program capacity by streamlining processes and hands-on exercises. Training Within Industry (TWI) methods were used to create a high velocity learning flow in which students were put into smaller cohorts to master competencies. Through these improvements, NWTC increased the number of students that could be served from 134 to 262. The college also found that instructors were able to move more quickly through the materials because the hands-on lab exercises were broken down into smaller segments. This allowed students to practice and master a technique before moving on to the next, versus having an instructor go through the entire sequence and then having students complete the exercise. The efficiencies gained through the process created more time for students to practice and advance their skills, leading to higher quality graduates.

## Best Practices

- » Standardize course projects/activities to reduce supply costs and ensure each student receives the same education.
- » Use shadow board bench tool organization to increase hands-on learning by reducing time used searching for tools.
- » Train all faculty in Training-Within-Industry (TWI) for best application.

## Lessons Learned

- » When implementing changes and improvements, some faculty may be resistant.

Recruitment and redesign of curriculum were not the only objectives colleges had to achieve to help close the skills gaps in manufacturing. The waitlists and limited class size of many manufacturing programs made it critical to focus on retention, completion, and placement rates to meet industry demand. Colleges innovated a series of support mechanisms to help ensure student success, such as career and/or academic coaches, bridge programs to help with basic skills prior to program entry, internships, and employment soft-skills.

### Academic Support

Academic supports have traditionally been offered in a generic “one size fits all” model, e.g., open labs, tutoring, and advising. Some colleges chose to modify this model by hiring a dedicated content expert to provide either targeted academic assistance or advising to improve student success.

#### CASE STUDIES



**WAUKESHA**  
COUNTY TECHNICAL  
**COLLEGE**

An academic coach position with a background in Science, Technology, Engineering, and Math (STEM) disciplines was expanded to support the grant-funded sections of the Machine Tool Operation and Metal Fabrication/Welding programs. The goal was to provide support in key first- and second-semester courses to increase retention and persistence rates. Initially, the academic coach focused on select classes; however, this was expanded to a broader focus throughout the two programs. The academic coach was introduced in every grant-funded course at the beginning of the semester and sat in high-need or large courses as requested and/or assisted faculty in labs. Students had the option to voluntarily utilize the academic coach’s services during regular open office hours/lab hours, or schedule an appointment at the request of faculty.

Often, multiple students requested assistance right before or after a class. A strategy used by the academic coach was to ask waiting students to write the problem on the board, then the coach circulated among students working through it. After completion, students then transcribed the problem into a notebook, which reinforced the concepts. Additionally, informational websites, such as Wisc-Online.com or specific YouTube videos, were recommended to students for review.

The academic coach also guided students through large assignments, like the blueprint reading project that required students to “reverse engineer” an existing product. Many students found the idea of the project daunting and approached the academic coach for guidance. The academic coach helped the students break the project down into phases, coordinated meetings between the students and other faculty to formulate ideas, and provided feedback when requested. Each student who reported to the academic coach had an increase of at least one grade level.

The coach found that students initially needed to be guided through the material to build confidence; however, by the end of the semester, students were often supporting each other, allowing the academic coach to move to a role of a moderator. Nearing the end of the grant, over 40 students were assisted a semester.



**MADISON**  
AREA TECHNICAL  
**COLLEGE**

Many of the program students served in the grant-funded local certificates at Madison College were first generation or older adults that never attended college; thus, a key component to their success in the manufacturing programs was offering intrusive academic support, a higher level of support than typically offered. The transition specialist recruited candidates, met with referrals, conducted interviews with potential students, assisted with program applications, and supported other new student orientation tasks. Once in the program, bi-weekly grant check-ins were held with faculty and the TAA project coordinator that included discussions surrounding student issues. For example, if a student appeared to be missing class or falling behind, the team would discuss who would be best to follow up with that student. A graduation ceremony was held at certificate completion to provide students and their families with the college experience and recognize their success. Madison College reported that 81% of students within the local certificates were retained due to these efforts.

**Best Practices**

- Ensure that academic support staff are visible and available to students through activities, such as speaking to classes at the beginning of the semester, posting office hours, and participating in classes when needed.
- Regularly schedule meetings with faculty to help identify at-risk students and provide an opportunity to develop a plan of action to re-engage the student.

**Lessons Learned**

- Academic support services may not be as readily known to adjunct faculty on site at different hours.
- It is important for academic support staff to attend classes periodically to build relationships and credibility with students.
- Communicate the purpose of the academic support role with other student support services, admission counselors, and career services to avoid confusion and duplication of efforts.

**Career Support**

All consortium colleges offer career services, such as general resume preparation, job-searching tools, and interviewing techniques. As part of the employer relationship building component of the grant, several colleges opted to offer comprehensive services that included industry-specific career exploration tools while connecting students to jobs.

**CASE STUDIES**



Nicolet hired a Manufacturing Sector Liaison to provide program-specific academic, non-academic, and job placement assistance for students, as well as employer outreach. This new position was filled by an individual with manufacturing and student support experience, which proved to be an effective combination of skills. Students were able to get both academic and career-related questions answered by a single person. District employers also reported seeing better job applications and program students/graduates being more prepared for interviews.



**WISCONSIN  
INDIANHEAD  
TECHNICAL  
COLLEGE**

A Career Advisement Specialist (CAS) position was established at WITC to improve relationships with area employers, workforce investment

boards, workforce resource agencies, and veterans. While the Northwest Wisconsin Workforce Investment Board and WITC had a collaborative history, the same could not be said with the Western Wisconsin Workforce Development Board in the southern half of WITC's geographically-large, rural district. The CAS was able to bridge the divide through outreach, which has led to a more collaborative working relationship; workforce agencies now actively seek out opportunities to work together on client placements, grants, and shared resources.

With no formal outreach to veterans prior to the grant, WITC utilized the CAS position to support this population. The CAS met with local veteran boards and individual veterans, and hosted recruitment events with campus student services staff specific to veterans to share the opportunities available. These efforts paid off: 62% of veterans attending a recruitment event enrolled in a WITC program. Additionally, there has been a shift in the collaboration between WITC and veterans groups. The CAS is no longer doing the sole outreach to these groups; instead, the groups are comfortable reaching out to the CAS and WITC to discuss needs and opportunities.

**Best Practices**

- Use program-specific career support positions to serve as a conduit between students and employers, improving the quantity and quality of candidates and placement rates of graduates.

**Lessons Learned**

- Clearly distinguish the difference between other student support positions and the program-specific career support position to reduce questions, appearance of duplication, and confusion of the role on campus.
- The focus of the position should be in student support not data tracking and grant reporting, which could be deferred to an institutional research department.

## Enhanced Basic Skills Instruction

Under Wisconsin's Regional Industry Skills Enhancement (RISE) initiative, colleges focused on increasing the number of adults earning post-secondary credentials related to high-demand occupations by building career pathways and bridge programs based on the State of Washington's I-BEST model. In its pure form, the I-BEST model uses a team teaching approach to contextualize program curriculum with basic skills. Several colleges elected to implement team teaching, while others created specific Adult Basic Education courses in areas such as math to prepare students who scored low on basic skills assessments. Both of these approaches allowed students who did not meet minimum program requirements to remediate and enter a manufacturing program career pathway.



## CASE STUDIES

### Western Technical College THE ESSENTIAL EXPERIENCE

A 12-hour Fast Track for Math course was offered at Western to allow participants to review and practice basic math concepts that are utilized heavily in manufacturing courses, such as Applied Math, prior to starting their program. The course introduced basic concepts directly related to industry standards. This approach increased students' confidence and comfort level with math, leading to improved retention rates among students entering the manufacturing program. The Fast Track for Math course was not mandatory but became popular with manufacturing students, and, eventually, other program students began enrolling in the course. This offering will continue to be sustained beyond the life of the grant and is in the process of being scaled to regional learning centers, other campuses, and outreach centers.

### Chippewa Valley Technical College

With math courses being a pillar of student success within the Machine Tool program, CVTC paired a program instructor and math instructor to contextualize and team teach the program's Math 10 and Math 20 courses. Machine processes were first incorporated into the math curriculum to improve the mastery of the math concepts and how they apply to Machine Tool concepts. While the math instructor leads the course, a Machine Tool faculty member is present in the classroom to assist with contextualized examples. CVTC has found that the presence of the program instructor reinforces to students the importance of math concepts.

The contextualization of math has increased participant engagement, which is a notable success as more students are completing voluntary assignments and extra credit. The pass rates of both courses have gone up with these changes – Math 10 increased from 67% to 89%, while Math 20 increased from 72% to 80% – resulting in 15% more students being retained in the program. Overall, fall-to-fall retention increased from 38.4% in 2012 to 48.6% in 2014. Due to this success, the contextualization of math into program courses is being scaled to other Trades programs, with some also adding the team teaching component.



BTC restructured its Industrial Mechanic (IM) program into a two-year technical diploma and addressed the basic math concerns (e.g., need for math concepts to be introduced earlier, rigor) by replacing College Math with two Shop Math courses.

Students are required to take Shop Math I within their first semester. Shop Math 2 can be taken at any later time. Taught by a general education math instructor, the courses can be waived for students that score high on the Compass/Accuplacer exam.

BTC also implemented team teaching in its afternoon and evening sections of IM by having the basic skills math instructor attend the course. BTC learned quickly that the success of team teaching is dependent on the relationship between the instructors. One afternoon/evening instructor, more accepting of the team teaching concept, met daily with the basic math instructor to coordinate math into the program material, incorporated the students' math scores as 10% of the grade, and engaged with the basic math instructor during the lecture to relay the importance of the topic to the students. The relationship was much different with the day instructor. In that case the program and basic math instructors did not meet to review material and rarely was the program instructor in the classroom while the basic math instructor taught. TABE results showed a stark difference between the math competencies of the students in the day compared to the afternoon/evening courses. Even with the success shown in the afternoon/evening courses, the team teaching model will not be sustained due to budgetary constraints.



#### Best Practices

- Contextualize the course curriculum to include basic skills in areas where students typically struggle and have both program and basic skills instructors in each class.

#### Lessons Learned

- Team teaching is most effective when there is a shared team vision with strong leadership to reinforce the collaborative working relationship.
- The high cost of team teaching makes the efforts difficult to sustain within limited college budgets; however, tracking data on the improved successes of students will make the activity more likely to continue.

## Internships/On-the-Job Training

Several colleges built or restructured program internship opportunities to develop post-pathway structures to encourage continuing education and on-the-job training that strategically align with employers and industry. These colleges coordinated with employers to create structured internships that provide students opportunities to exercise technical and soft skills, and potentially lead to post-program employment.

### CASE STUDIES



CVTC utilized the grant and a program advisory committee to create an optional three-credit, 192-hour internship course for Machine Tool students. As part of the course, students first secured their internship, and then a faculty member was assigned to assist and guide through the process. The course used a document that aligns on-the-job learning with program instruction by outlining what tasks should be accomplished and employer expectations. In addition to the hands-on learning experience for students, internships have enhanced relationships between the college and local industry as employers have taken an active role in managing student learning and working closely with faculty to design the best experience possible.



Prior to the grant, employers would speak to BTC Industrial Mechanic (IM) classes about internship opportunities and work directly with interested students without involvement of the college. During the development of BTC's new two-year Industrial

Maintenance Technician Technical Diploma, an official internship course, Human Relations in the Industrial Setting, was developed. This new course was designed to put structure around the industry experience as well as teach and reinforce workplace soft skills. The course also allowed BTC to gather data and survey employers to collect feedback on both the student and the program. Students not electing to enroll in the course were required to do a project.



MPTC designed its five-course welding boot camp to include strong employer engagement by building in a required paid internship component. This was to ensure that completers had the employability skills that industry was demanding of entry-level workers. As part of this program, MPTC secured agreements with area employers to offer a 72-hour internship that included a wage of \$12/hour. Only employers who agreed to the internship process and conditions were included in the program as placement options. Prior to being admitted into the boot camp, applicants were required to secure an internship from one of the select group of employers. The Project Manager facilitated the process of employers interviewing and selecting candidates. This requirement resulted in a 91% completion rate and an overall job placement rate of 86% within three months of boot camp completion.

### Best Practices

- Establish internship processes/procedures that outline learning objectives and participant expectations (i.e., college, learner, and employer) to ensure students are provided a comprehensive, on-the-job learning experience that aligns with the program.
- Recognize employers for their dedication and commitment to offering internships.

### Lessons Learned

- During periods of high demand, employers are less committed to internships or on-the-job training opportunities and more focused on recruiting full-time employees.
- Development of an internship program requires long-term commitment from employers.

## ARTICULATION AGREEMENTS

With transferability and articulation being a core element of the TAACCCT grant, *Making the Future* committed to ensuring that credit and credentials transfer easily across the state between industries, colleges, and four-year program offerings that can foster continuing education. The consortium colleges historically have had a number of transfer options for students and continue to develop pathways as appropriate. Much of the foundational work for articulation agreements, although a component of the grant, had been in place prior to the award.

As part of the grant, colleges continued to pursue additional articulation agreements. An exciting partnership was formed between three colleges in central Wisconsin, allowing students to complete the first year of welding courses at their home college, and then transfer to NTC to complete the second year of the Welding Fabrication and Robotics Associate Degree.

A state-wide consortium articulation agreement was created with Bellevue University in Nebraska. Students with an associate degree or 60 credit hours can transfer to Bellevue University to fulfill most, if not all, general education requirements. In addition to Bellevue University, colleges have or are pursuing articulation agreements with four-year institutions such as University of Wisconsin - Stout, University of Wisconsin - Platteville, Michigan Technological University, and Milwaukee School of Engineering.



A challenge for many colleges was the lack of the degrees beyond associate degrees for areas such as Machine Tool. Other barriers faced included unique credentials such as local certificates that are unaccredited and technical diplomas that are not considered transferable by many four-year institutions. Though no official articulation agreements were offered at one college, outside of the general Bellevue University articulation agreement, the possibility of being awarded credit for previous courses was an option through credit for prior learning.

Articulation agreements will continue to be a topic among the consortium colleges. Seven colleges cited plans to continue pursuing additional articulation agreements, with many working collaboratively with each other and local organizations.



## EMPLOYER ENGAGEMENT

In many college districts, the outreach program to industry partners was revitalized and/or strengthened as a direct result of the grant. *Making the Future* encouraged consortium colleges to work with their local industry to develop standardized credentials that are widely recognized by employers and other educational institutions. Even though advisory committees have been a WTCS requirement for all technical college degree programs, industry participation/engagement varied by district. This grant allowed colleges to focus on these relationships and increase collaboration. As a result, some employers gave preferred hiring to program graduates while others hosted open houses, gave tours, and participated in career fairs to help students gain a keen understanding of workplace expectations and culture. “Reverse referrals” was another common theme, with employers encouraging their employees to attend program training. These renewed relationships with employers have provided a wide array of benefits to the colleges, including financial, equipment, and/or material donations.

### CASE STUDIES



NTC held a meeting with area employers and the workforce development board to develop a training strategy that aligned with local industry. A deficiency in both the college’s curriculum and equipment was quickly realized. Employers assisted in identifying and procuring equipment that not only would prepare students to operate equipment in industry, but also complemented equipment purchased by the grant. NTC’s Technical & Trades department also leveraged capital funds to remodel labs on the main campus to accommodate the new equipment.

Additionally, the Central WI Metal Manufacturers Association (CWMMA) was formed to focus on solving region-wide employment pipeline concerns. The needs identified during the first grant meeting helped the infant organization collaborate and quickly grow. NTC leveraged this alliance to discuss the long-term strategy of needing fully-trained workers that complete the college’s full program. Through these efforts, employers mutually agreed to let students finish their training if hired while still in school. Additionally, this alliance identified the need for a state/regional training accreditation, similar to the National Institute for Metalworking Skills (NIMS), but specific to the needs of Central Wisconsin. CWMMA’s membership is working together to develop this accreditation, which will be shared statewide so others can use/adapt.



The sustainability of the Stainless Steel Welding program at MSTC can be attributed largely to the involvement of area employers. MSTC engaged area employers early in the design and development of the program. From the start, students were encouraged to think about employment. Students received binders that included sections for each of the four courses as well as a section on career planning. Employers also sent trainers to the open lab sections to work with students, demonstrate techniques, and gauge students for future employment opportunities.

The expensive materials required for learning how to weld stainless steel, combined with a state-imposed flat rate of supply fees for all WTCS welding programs, would typically have made the program cost prohibitive; however, through this grant, MSTC secured strong industry support that included materials donated on a regular basis using a bin system.

#### Best Practices

- Coordinate with employers to prevent students from “jobbing out” in the short-term so they can complete their full credential.
- Provide a mechanism for employers to donate used materials/scrap.

#### Lessons Learned

- Intentional and consistent outreach to employers in rural areas or those less engaged in the program is needed to explain the skills taught to eliminate duplicative training efforts.

# CREDIT FOR PRIOR LEARNING (CPL)

Credit for Prior Learning is now being supported by more staff and leadership than ever before.

*Making the Future* committed to developing a statewide prior learning assessment tool as part of the strategy to improve consortium colleges' ability to identify and award Credit for Prior Learning/Experience in defined pathways. The consortium began with gathering information to understand the current state of CPL at each of the 16 colleges. The decision was made to bring in the Council for Adult and Experiential Learning (CAEL) to guide the assessment, prepare a report, and provide recommendations. The report was shared with the WTCS office, which volunteered to help support advancing efforts.

Based on the report, the consortium decided to use a learning cycle model to coach colleges through the scope of work:

- CAEL conducted a three-part webinar that resulted in all colleges drafting a process map of their current situation to understand key players and identify gaps and opportunities for improvement. This strategy allowed colleges to create a custom-tailored process that met the needs of their institution and students, rather than a "one size fits all" approach. It also helped colleges formulate policies and procedures.
- WTCS, with grant support and resources, hosted a summit to disseminate information about CPL to college personnel from executive leadership to advisors, with 160 individuals participating. The participants identified commonalities across their institutions, such as the need for a single, dedicated CPL staff member and for system standardization on data tracking, as well as identified intra-campus inconsistencies. Participants decided that communities of practice could be beneficial to identify strategies and build support for the work.
- Administrator training was held to identify the business models used to support CPL, with 30 individuals from 12 colleges participating. Advisor training was scheduled to provide professional development for advisors.

Many colleges are still in the stages of creating or enhancing their policies and procedures; however, the survey has shown that colleges are in the middle of a cultural shift at their institutions. CPL is now being supported by more staff and leadership than ever before. The WTCS office has added CPL as an outcome-based funding criteria, embedded CPL components into job descriptions of two staff, and provided grant funds to colleges to host CPL training events. Additionally, Wisconsin's TAACCCT Rounds III and IV grants have CPL components and are building on *Making the Future* efforts.

## Best Practices

- Develop a CPL workflow diagram to identify the flow of students and processes and generate a common vision and understanding by multiple parties.
- Create CPL buy-in by discussing processes, policies, and procedures with a variety of staff to allow for a shared vision of a business model.
- Send the right staff to training opportunities to gain understanding and move CPL forward in the organization.
- Establish processes, policies, and procedures and ensure that they are well-known by all staff before marketing to students; use the flowcharts to identify key handoff spots as well as points of contact.
- Host a system-wide CPL conversation to provide a forum to share best practices and strategies.
- Involve faculty early in the process, and involve as many people as possible.
- Re-evaluate policies and procedures often and ensure they are being administered consistently across campus.

## Lessons Learned

- Policies and procedures should cover multiple types of CPL: portfolio, standardized testing, challenge exams, military, etc.
- Students may approach academic advisors, registrars, or faculty regarding CPL opportunities; all need to promote and be knowledgeable about the process.
- While centralizing CPL processes is needed, it is more of a cultural shift within the organization.

## GRANT MANAGEMENT

*Making the Future* was the first statewide collaborative grant involving all 16 autonomous WTCS college districts on a single project. Finding the “right” person to direct the endeavor was critical. NWTC learned that the key skills a leader in this type of role needs include: 1) Collaboration; 2) Transparent/Clear Communication and Vision; 3) Emotional Intelligence; 4) Organization; and 5) Self-Motivation. The college intentionally selected a person from industry with project management skills to speak the language and quickly gain respect.

In addition to finding a strong project manager, NWTC had to establish a single system to manage all project aspects. The project manager quickly reached out to other TAACCCT Round I grantees to learn how other projects were being managed. This information, combined with the principles of project management, helped inform the design of NWTC’s system for overseeing and leading the project. Key ingredients in this system included:

- Identifying four key contacts (i.e., Content Expert/Implementer, Institutional Researcher, Finance, Grants) to serve as the project leadership team at each college,
- Establishing an electronic mechanism to share and store information,
- Providing consistent and clear communications that included regularly scheduled calls and in-person meetings,
- Creating tools to track and communicate project progress on the individual and consortium-wide level (i.e., a Participant Summary, an Action Item list, a Budget/Spend-to-Date Spreadsheet, a Project Scorecard, and a Quarterly Narrative Report), and
- Intentionally outreaching to WTCS, vendors, Workforce Development Boards, WI Department of Workforce Development, executive leaders at colleges, and the U.S. Department of Labor Program Officer.

The management mechanism developed through *Making the Future* paved the way for Wisconsin’s TAACCCT Rounds III and IV grants. Both subsequent rounds have taken the documents/structure developed by NWTC and improved upon them. Additionally, the success of this initial round of grant funding has led to increased collaboration among the colleges.



### Best Practices

- Have transparent and consistent communication with all stakeholders, including annual on-campus site visits and regular phone calls to review pledged outcomes and statement of work, identify risks, and, if necessary, develop a recourse plan.
- Provide electronic access to all consortium documents and recorded calls.
- Develop a scorecard that holds partners accountable and allows for mid-course corrections as needed.
- Celebrate the successes, small and large, and keep each college motivated throughout the project.

### Lessons Learned

- Consistent and personalized communication with each consortium college grant team and contractor was important and required structure with established expectations.
- Internal grant-funded project staff should report directly to the project manager and be supported by internal teams of expertise (e.g., finance, marketing, etc.).
- The time commitment of non-grant funded staff supporting the overall project can be extensive.



