

# *Making the Future: The Wisconsin Strategy*

## **Final Evaluation Report Executive Summary**

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## Executive Summary

### The Wisconsin Strategy

Wisconsin's *Making the Future* TAACCCT 2 consortium grant brought together 16 technical colleges along with employers and workforce development groups to develop, improve, and expand stacked and latticed pathway programs – often called career pathways – in advanced manufacturing. The focus on stacked and latticed pathways was not new to Wisconsin, but instead emerged from the Regional Industry Skills Education initiative that began in the state in 2007 as part of the Joyce Foundation's multi-state Shifting Gears initiative.

Developing a series of interconnected stacked and latticed pathway credentials was an expectation of the TAACCCT Round 2 grants, as specified in the U.S. Department of Labor Employment and Training Administration's Solicitation for Grant Applications. As such, consortium colleges created new manufacturing pathways and modified existing pathways to enable participants to earn short-term credentials (less than one year) that stack toward one-year and two-year technical diplomas, and in some instances, Associate's degrees. Wisconsin's approach to stacked and latticed pathways consists of embedding short-term certificates or credentials within longer-term "parent" programs.

The goal of the *Making the Future* consortium was to increase the attainment of industry-recognized and industry-valued certifications, certificates, diplomas, and other credentials that better prepare program participants for high-skill, high-wage employment or re-employment in manufacturing careers. Wisconsin's technical colleges aimed to serve more than 2,657 unique participants during the three-year period of the grant. In fact, preliminary performance numbers indicate the consortium widely surpassed its goal, serving 3,795 unique participants or 143% of the goal.

### Evaluation Design

The **implementation study** was designed to provide formative feedback on program implementation at each technical college during the first two years of the initiative. Additionally, the implementation evaluation documented and assessed key elements of program implementation, ranging from efforts to develop and establish manufacturing stacked and latticed pathway programs (e.g., curriculum and short-term credentials) to sustaining and institutionalizing key grant-supported strategies (e.g., student assessment and supports) upon conclusion of the TAACCCT grant.

As the initiative started, the evaluation team led a consortium-wide meeting with key representatives from participating colleges to design a master logic model that provided colleges with a roadmap outlining the key areas of evaluation focus. Using the logic model as a guide, the evaluation team also developed an outcomes and indicators tool to assess progress over time and better understand and document the contextual factors that influenced implementation.

Over the course of three years, the evaluation team conducted 30 in-depth site visits, including at least one visit to each of the 15 colleges that were developing programs under the auspices of the consortium grant. Additionally, the team conducted a second round of site visits to eight of the colleges in year 2, and a final set of visits to seven of the colleges in years 3 and 4 that included focus groups with participants. The evaluation team also conducted more than 200 phone interviews with internal and external stakeholders during the grant period. In year 2, interviews were conducted with the seven colleges that did not receive site visits. Similarly, in years 3 and 4, interviews were conducted with eight colleges that did not receive site visits. In year 3, phone interviews were also conducted with program deans at all 15 of the colleges.

The implementation study addresses the key implementation research questions identified in the U.S. Department of Labor’s Solicitation for Grant Applications. These questions revolved around four implementation areas: 1) curriculum; 2) support services; 3) assessments; and 4) partners. The evaluation team contextualized these implementation research questions to reflect Wisconsin’s *Making the Future* initiative as follows:

1. *How were colleges’ manufacturing programs – curriculum, instruction, credentials – modified to support short-term, stacked and latticed education and career training?*
2. *What types of support services were offered to enhance student success?*
3. *What assessment tools were used to improve access to manufacturing programs?*
4. *What new contributions did employer and workforce partners make to support college-manufacturing programs?*

The **impact study** utilized a rigorous quasi-experimental matched comparison group analysis to examine the impact of participation in stacked and latticed pathways on education and employment outcomes, including credit accumulation, credential attainment, employment after program exit, and earnings increases after program entry.

The evaluation team obtained administrative data from each of the technical colleges in the consortium for the period June 2012 through June 2016, identified specific data elements and created a master data dictionary to use consortium-wide. Additionally, the evaluation team established data sharing agreements with each college, as well as with the Wisconsin Technical College System (WTCS). The data sharing agreement with WTCS provided the evaluation team with access to Unemployment Insurance (UI) records and workforce program data from the Wisconsin Department of Workforce Development. Given reporting lags for UI data, UI records were received for only a portion of the grant period (i.e., through the April-June 2015 quarter) and, thus, labor market outcomes can be examined for only a subset of the overall grant participants. All data were de-identified to protect student privacy.

The evaluation team used propensity score matching (PSM) to generate a comparison group that is similar to the treatment group along a set of background characteristics that could affect the likelihood of receiving treatment. To conduct PSM for the impact study, data from both participants and a comparison pool were requested from colleges. The comparison pool data consisted of students in manufacturing programs at the consortium technical colleges that were not supported by the TAACCCT grant. Participants were students enrolled in a grant-funded stacked and latticed manufacturing pathway during the grant period.

PSM is an increasingly common and popular approach to account for factors that may influence the receipt of treatment, and thus confound analysis of impact. By generating a comparison group that resembles the treatment group on all variables thought to affect likelihood of receiving treatment, researchers can infer that the subsequent observed impact of the treatment is the result of the treatment and not the result of different characteristics in the two groups. The PSM approach enabled the evaluation to meet a moderate rating of rigor for non-experimental research studies as defined by the Clearinghouse for Labor Evaluation and Research (CLEAR).

The impact study focuses on four key outcomes: credential attainment, credit accumulation, employment, and earnings. The specific research questions for each outcome are listed below:

1. *Do grant participants in stacked and latticed pathways earn credentials at a higher rate than students in a matched comparison group?*
2. *Do grant participants in stacked and latticed pathways earn more credits than students in a matched comparison group?*
3. *Do non-incumbent worker grant participants in stacked and latticed pathways get employed at a higher rate than non-incumbent workers in a matched comparison group?*
4. *Do incumbent worker grant participants in stacked and latticed pathways receive earnings increases at a higher rate than incumbent workers in a matched comparison group?*

### Implementation Findings

The implementation of stacked and latticed manufacturing pathways was the most common strategy implemented across the *Making the Future* consortium. Eleven colleges focused on a program of study in welding, 10 colleges focused on machine tool/CNC, and two colleges focused on industrial maintenance. Several colleges developed or modified programs of study in more than one manufacturing field. All new or enhanced programs of study were based on employer demand in each community.

Overall, the implementation evaluation documented the following four findings:

- **Wisconsin technical colleges modified their program curricula, and in some cases created new curricula to implement stacked and latticed career pathways in advanced manufacturing.** The most common curricula modifications consisted of bundling existing courses, credits, and competencies into smaller packages of credentials, such as short-term local certificates, embedded technical diplomas, or pathway certificates. These shorter-term credentials were designed for students to attain skills and credits along an occupational pathway more quickly, and required less time in the classroom and lab for students than existing one-year and two-year programs of study.
- **Wisconsin technical colleges implemented enhanced academic and non-academic support services to assist students in enrolling and completing manufacturing programs of study, and to help participants make connections with employers.** Efforts in both of these areas were in addition to the standard supports offered all students through the longstanding college advising, counseling, and tutoring services, and involved new and dedicated grant-funded staff. Two-thirds of the colleges implemented enhanced academic instruction by using basic skills instructors to offer separate support classes and/or workshops for program participants. A typical example was found in blueprint reading, where the subject instructor was complemented by additional academic support targeted at making sure students had sufficient math competencies to understand and master the course content. Five colleges provided enhanced non-academic support services. These non-academic support services typically served students by providing additional supports focused on issues like career planning and job search, as well as addressed personal and family issues that might affect college attendance and success.
- **Wisconsin technical colleges addressed assessment tools to improve access to manufacturing programs by building on existing WTCS policy to award credit for prior learning (CPL).** During the initiative, colleges received direct assistance from the Council for Adult and Experiential Learning (CAEL) to: 1) assess their existing procedures and

capacity for CPL assessments (referred to as process mapping); 2) identify needed modifications in existing policy and practices; and 3) establish capacity within a college to update and refine institutional CPL policy and procedures. In addition, CAEL provided training to college staff via conferences, workshops, and webinars to advance institutional knowledge on CPL process and issues. The types of issues and areas addressed included faculty pay for CPL evaluation, student cost for assessments, marketing CPL opportunities, and data collection. After the first two years of the initiative, the evaluation team noted in the interim report that credit for prior learning was at a nascent stage of implementation in most colleges. These efforts accelerated in the third and fourth years, and progress on credit for prior learning is considered by the consortium to be positive. Most colleges embraced the overall concept of CPL and the need to ensure that CPL policies and procedures existed to assess and award credits for prior work experience. And a handful of colleges moved to the point within their manufacturing programs of developing and applying assessments for key program areas such as welding, machine tool, and industrial maintenance.

- **Wisconsin technical colleges followed their tradition of engaging employers through advisory committees to establish stacked and latticed manufacturing pathways; a number of colleges also engaged employers in new and innovative ways.** Almost half of the colleges expanded their engagement with employers. This expanded employer engagement included actions to incorporate industry skill standards and competencies into manufacturing program curriculum, and to create more work-based learning experiences and employment opportunities for students participating in TAACCCT-supported manufacturing programs.

### Participant Impact

Across the statewide consortium, almost all colleges (n=13) offered at least one stacked and latticed pathway program and 3,178 students in these colleges, representing 84% of grant participants across the consortium, enrolled in a stacked and latticed pathway in welding, machine tool, and/or industrial maintenance. This group of 3,178 students represents the treatment group for the impact study.

The vast majority of grant participants in stacked and latticed manufacturing pathways are male, white, and non-Hispanic, with an average age of 27. Approximately two-thirds of the treatment group had received at least a high school diploma – but no higher degree – prior to entering the sample, and about one-third received a Pell Grant during their first term in the sample. On average, participants entered the sample with five academic credits – earned at the current college or at a different institution – and attempted 11 academic credits during their first term in the sample. Over the course of the grant, 25% of the treatment group enrolled in adult basic education, and 31% enrolled in developmental education. The majority of participants enrolled in a welding program of study (62%) and a little more than one-third (36%) enrolled in a machine tool/CNC program of study. Less than 10% enrolled in an industrial maintenance program of study.

Table 1 provides a summary of the overall impact of stacked and latticed pathways on participant outcomes. The impact study of Wisconsin's stacked and latticed pathways documents four key findings:

1. **48% of participants earned postsecondary credentials, while only 30% of the matched comparison group earned a postsecondary credential.** Stacked and latticed manufacturing pathways helped participants earn more postsecondary credentials and earn them more quickly in three manufacturing areas: welding, machine tool/CNC, and industrial maintenance.

2. **Participants in stacked and latticed pathways earned three more credits, on average, during the grant period than the matched comparison group (25.3 vs. 22.3).**
3. **33% of non-incumbent worker participants were employed one quarter after program exit, compared with 29% of the matched comparison group.** Although this finding was not statistically significant, exploratory analysis indicates that stacked and latticed pathway participants in machine tool/CNC programs have higher employment rates than comparison group members in machine tool/CNC programs.
4. **Stacked and latticed pathway participants and matched comparison group members had similar earnings increase rates, and a large proportion of each group (~75%) received an earnings increase.**

**Table 1: Impact Analysis Results**

Outcome	Treatment Group	Comparison Group	ATT	P-value
Credential attainment rate	48%	30%	18%	.000
Average total credit accumulation	25.26	22.25	3.01	.000
Non-incumbent worker employment rate – one quarter after exit	33%	29%	4%	.080
Incumbent worker earnings increase rate at any point after program entry	76%	75%	1%	.721

### Lessons Learned and Implications

The evaluation team documented five key lessons that facilitated implementation, or were hurdles that colleges faced during implementation:

1. **Colleges benefited from a supportive Wisconsin Technical College System Office.** WTCS provided a structure and procedures for creating new, and modifying existing technical college programs along a career pathway framework through communication and convening colleges, through system policy and procedural changes, and by providing resources to incentivize colleges to expand their career pathway efforts.
2. **Effective implementation was also facilitated by the commitment of senior administrators at the colleges – especially presidents.** The TAACCCT emphasis on engaging local employers in the initiative seemed to elevate the grant’s importance to colleges. Presidents and other senior leaders at the college provided support and direction for the implementation of career pathways that included the allocation of professional staff to design and modify curriculum and to seek WTCS approval for embedded credentials. These procedural and administrative tasks were critical to implementation and sustainability, and the colleges’ willingness to work through these details indicated that career pathways were an institutional priority.
3. **Colleges undertook multiple approaches to provide academic and non-academic support services to participants during the grant.** Colleges funded staff and instructors who provided these enhanced supports with grant dollars. Few colleges took intentional steps to find budgetary resources to transition these temporary positions into permanent ones, despite widespread belief among college leaders and grant participants that these enhanced support services were valuable tools for student success.

4. **Only a handful of colleges used data for continuous improvement during the grant period; most colleges were more focused on meeting the unique participant goals established for each college and statewide.** Notably, at the few colleges that did collect and analyze data on enhanced support services, these colleges were able to make some mid-course corrections to better serve their students, and in some cases expand support services to other college programs.
5. **While colleges effectively used and expanded their partnerships with local employers, they did not appreciably expand and enhance their existing relationships with local workforce groups.** Less than 10% of TAACCCT 2 participants were clients of the Workforce Investment and Opportunity Act, Trade Adjustment Assistance, and Veteran's benefits programs during the grant period. The evaluation was unable to discern why more clients of these workforce programs were not enrolling in stacked and latticed pathways. One possibility is that the TAACCCT grant provided direct resources to colleges that were used for the delivery of education and training programs, participant recruitment, and supports. Thus, colleges did not need workforce groups to provide resources to support the development and delivery of TAACCCT manufacturing programs. Another possibility is that clients coming through the Job Centers may not have been interested in the manufacturing programs offered under the grant. Furthermore, most colleges reported that there were not large numbers of TAA and Veteran clients in their communities.

The evaluation also identified three implications for future workforce and education research:

- **Access to public administrative records and the sharing of these records across public agencies needs improvement.** The *Making the Future* evaluation benefited from pre-existing data sharing agreements between the Wisconsin Technical College System and the Department of Workforce Development; however, this agreement did not reflect the needs of the third-party evaluation. Records are shared annually (in October), and the timing for matching college and employment records – combined with the significant lag in Unemployment Insurance reporting by employers in Wisconsin – yielded insufficient data to examine employment outcomes for about one-third of grant participants.
- **Staff responsible for designing and implementing programs and strategies needs an earlier and more robust understanding of the requirements for rigorous evaluation.** Better alignment between program implementation and evaluation can yield better research design and more consistent data collection and reporting processes among all colleges. A clear understanding of evaluation requirements can help staff with responsibility for implementation withstand organizational pressures to deviate from program design and ultimately enhance the types of research questions that can be more robustly analyzed.
- **Upfront program design could benefit from clear definitions of model fidelity with an eye towards evaluability.** The lack of clarity was particularly notable for enhanced support services, resulting in multiple approaches to delivering such services and uneven implementation among the colleges. This flexibility, along with limited data collection, precluded any rigorous impact evaluation of these efforts.