OHIO TECHNICAL SKILLS INNOVATION NETWORK CONSORTIUM

TRADE ADJUSTMENT ASSISTANCE COMMUNITY COLLEGE CAREER TRAINING GRANT

Interim Evaluation Report

July 14, 2017

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Executive Summary

The Ohio Technical Skills Innovation Network (OTN) consortium is comprised of eleven community colleges in Ohio that have partnered to address workforce challenges in advanced manufacturing. The consortium received $15 million in 2014 to make targeted investments to innovate in the design and delivery of manufacturing education, promote collaboration among member colleges and other partners for the purposes of scaling successful models, leverage state and partner investments, and work more closely with industry partners. This report summarizes interim grant activities. A final report will be prepared in September 2018.

Adult postsecondary students are targeted for participation in the grant, including adults transitioning to new careers, trade-affected and dislocated workers, and veterans. Through Fall 2016, the consortium had served 1,102 participants in its grant-affected programs. The project seeks to enroll 1801 participants by the end of the performance period. The goal of this report is to capture activities, interim outcomes, and evolutions in the project since the grant application was written.

The clear majority of participants were white (86%) and male (87%). A majority was employed (63%) at the time of grant enrollment. The average age was 30 years old.

Grant Enrollment by College	Participants	Percent of Total
Cincinnati	38	3
Columbus	17	2
Cuyahoga	55	5
Eastern Gateway	11	1
Lakeland	161	15
Lorain	105	10
Owens	144	13
Rhodes	244	22
Sinclair	63	6
Stark	110	10
Zane	154	14
Total	1,102	100

There have been 308 program completers; many participants are still enrolled in programs. Program completions will increase as individuals gain time.

Of the individuals who completed programs (308), 30 people that were unemployed prior to program enrollment had gained new employment. Note that nearly 200 of the 308 were already

employed at the time of enrollment, and many prior-unemployed completers have not sought employment because they are continuing their educations pursing additional credentials. And, of the individuals who were employed at enrollment (630), 210 have experienced earnings increase since OTN enrollment. Employment is a lagged outcome given its reliance on the passage of time. Thus, a fuller view of employment outcomes will become available in the final report.

While a preliminary, unmatched pool of comparison individuals has been constructed, statistical work has not been executed in this report to establish comparability between participant and comparison groups. Thus, comparative results will not be reported until the final report.

Other key impacts of OTN include:

- Improved capacity throughout the state to serve students and meet the workforce needs of businesses. This grant has provided a large investment in new large-item equipment such as CNC machines, welding booths, mills, lathes, and robotic machines for use in educating students. Additionally, the grant has enabled the renovation of space, expansion of staff, and adoption of new automation technologies that modernize and improve the instructional capabilities of manufacturing programs.
- Improvement of program content and instructional models. The grant has invigorated many programs by enabling colleges to update curriculum content in partnership with local industry; and to re-think instructional models making them more accessible for students. Colleges have adopted strategies for competency-based education, stackable credentials and integrated industry certifications, online programming, accelerated instruction, and learn-and-earn, among other improvements.
- Deepened partnerships with organizations in the state and throughout the country that may provide new opportunities for colleges, students, and businesses. Through Fall 2016, new connections or projects have emerged with JobsOhio, Ohio Department of Higher Education, several Manufacturing USA institutes, Ohio Manufacturers' Association, Ohio Manufacturing Institute, and others. These relationships continue to evolve spawning new projects. The establishment of relationships that precipitate projects is a dynamic that will be followed for the duration of the evaluation through 2018.

Final Report

The final report will include additional data collected over the full duration of program performance period; it will also include a comparison analysis. Future qualitative inquiries will

focus on the emergence of new state and national partnerships, employer engagement, and project sustainability.

Project Overview

The Ohio Technical Skills Innovation Network (OTN) consortium is comprised of eleven community colleges in Ohio that have partnered to address workforce challenges in advanced manufacturing. The consortium received $15 million in 2014 to make targeted investments to innovate in the design and delivery of manufacturing education, promote collaboration among member colleges and other partners for the purposes of scaling successful models, leverage state and partner investments, and work more closely with industry partners.

A detailed description of the project is included in Appendix A on page 67. Adult postsecondary students are targeted for participation in the grant, including adults transitioning to new careers, trade-affected and dislocated workers, and veterans. The OTN colleges are working to improve programs and pathways in Welding, CNC/Machining, Industrial Maintenance, Digital Fabrication/Industrial Automation; and Occupational Safety. Three strategies guide the activities of the project:

- Strategy 1: Create mechanisms for statewide collaboration among consortium partners and economic and workforce development allies that help advance Ohio's innovation economy.
- Strategy 2: Transform instructional design and delivery systems for customization to individual student needs and rapid response to labor market demand.
- Strategy 3: Expand best practices that redesign student intake, success, and placement.

A non-exhaustive list of key metrics includes program enrollments, program completions, credentials earned, individuals continuing in further education, job attainments among unemployed individuals, and earnings increases among employed individuals.

Evaluation Research Design and Methodologies

There are two parts to the evaluation: (1) an implementation evaluation that captures qualitative details of project implementation and the extent to which the colleges implemented according to the original blueprint of the project; and (2) an impact evaluation that captures the impacts of grant activities on credit attainment, program completion, job attainment, and participant earnings. A comparison group approach is used, although not reported in this report. A full description of the project can be found in the Project Description section beginning on page 65.

Implementation Analysis Design

The implementation evaluation has two goals: (1) to assess fidelity to the intent, and (2) to identify factors affecting outcomes. Addressing the first goal involves investigating how colleges are implementing grant activities and the extent to which activities align with the project's logic models. Inquiries have been conducted via surveys, interviews, and site visits. Variations from the logic model are captured; reasons and rationales for variations are determined through structured inquiries. Inquiries seek to capture enabling or hindering factors affecting participant and consortium-level outcomes along with resulting changes in the project.

Implementation Analysis Research Questions

Broadly, the Implementation Evaluation poses the following questions:

- What is being implemented, and how is it theorized to drive impacts?
- Has implementation occurred on time and as intended?
- Is there fidelity to the intent? When variation exists, is it effective and consistent with project outcomes?

Impact Evaluation Design

The OTN project has a goal to enroll 1,801 students over the course of the grant. The primary impact question posed in OTN's original proposal to DOL is: "What is the impact of the OTN project on participants and other adult learners, particularly with regard to completion and employment rates?" An assessment of the impacts of pathway design strategies on student enrollment, credit attainment, postsecondary retention, postsecondary completion, job attainment, job retention, and earnings is also included. However, given the high degree of variation among colleges in how they implement programs with unique design elements, the evaluation operates at the program level.

The impact study uses a comparison group design. Participants consist of OTN students defined by enrollment in a grant affected program or core course. Comparison group individuals are enrolled in OTN institutions' subject area (major) or program that coincides with the grant affected program areas and/or are enrolled in grant affected courses without being registered as a TAACCCT participant.

Outcomes/Impact Analysis Research Questions

The impact evaluation questions align with the DOL reporting requirements for the annual performance report. For each question listed, grant participants in the grant-affected programs are compared to comparison group participants:

1. How many unique participants/comparisons have been served?

2. How many individuals have completed a grant/comparison program of study?
    a. Of those, how many are incumbent workers?
3. How many individuals are still retained in their program of study (or other grant-funded program)?
4. How many individuals are retained in other education programs?
5. How many credit hours have been completed?
    a. How many students have completed credit hours?
6. How many credentials have been earned by participants/ comparisons?
    a. How many students have earned certificates (<1 year)?
    b. How many students have earned certificates (>1 year)?
    c. How many students have earned degrees?
7. How many students are pursuing further education after program of study completion?
8. How many participants/comparisons are employed after program of study completion?
9. How many participants/ comparisons are retained in employment for three quarters after program of study completion?
10. What are the earnings of participants/ comparisons relative to before enrollment?
    a. How many of those employed at enrollment received a wage increase post-enrollment?
11. What is the time-to-completion of participants / comparisons?

Outcomes Analysis

The evaluation questions drive the following analyses. For each research question, an outcome is defined that will be used to answer that question. The definitions given are from the point of view of the grant-affected programs (the "treatment group"). Corresponding definitions will be used for the comparison programs (the "comparison group") and are not repeated here for brevity. For the outcomes that correspond to one of the 9 DOL-required outcomes, that DOL outcome number is noted.

1. Participants = individuals who officially declare for a targeted program of study or enroll in a defined core course in a targeted program of study (DOL#1)
2. Completion rate = number of students who complete / participants (DOL#2)
    a. Incumbent completion rate = number of students who complete / participants (numerator and denominator restricted to incumbents)
3. Retention rate = number of students who are retained in their program of study (or other grant program) / participants (DOL#3)
4. Other retention rate = number of students who are retained in another program of study (non-grant) / (participants – completers)
5. Credit hour completion amount = number of credit hours earned per student
    a. Credit hour completion rate = number of students who complete a credit hour / participants (DOL#4)
6. Credential amount = number of credentials earned per student
    a. Short-term credential rate = number of students who earn a credential (<1y) / participants
    b. Long-term credential rate = number of students who earn a credential (>1y) / participants
    c. Degree rate = number of students who earn a degree / participants (DOL#5 = 'a' or 'b' or 'c')
7. Further education rate = number of students entering further education program after completion / completers (DOL#6)

8. Employment rate = number of students employed / completers (numerator and denominator restricted to non-incumbents) (DOL#7)
9. Retain employment rate = number of students retained in employment for 2nd and 3rd quarters after completion / completers (numerator and denominator restricted to non-incumbents) (DOL#8)
10. Earnings increase amount = quarterly earnings increase for each quarter after program enrollment – average quarterly earnings in to the quarter of program entry
    a. Earnings increase rate = number of students who received quarterly earnings increase after enrollment relative to the quarter of program entry / participants (numerator and denominator restricted to incumbents) (DOL#9)

The outcomes are measured continuously as the data becomes available.

Non-Experimental Design

Although not included in this report, the impact study will use propensity scores to derive a matched comparison group who are as similar as possible to the participants. The study draws upon two data sources: 1) TAACCCT participant and program information compiled by the OTN college personnel; and 2) Higher Education Information (HEI) student records and UI Wage records maintained in the Ohio Longitudinal Data Archive (OLDA) at the Ohio State University. The evaluation team matches TAACCCT participants to the state's Higher Education Information (HEI) student records and to the UI Wage records to measure student outcomes.

For the interim report, the evaluation team drew the comparison group from the HEI student enrollment records, matching on college; enrollment timing; and program, major, or course. The resulting comparison group therefore consists of students who were enrolled at an OTN college during the grant period, in a program or major which corresponded with grant affected programs, subjects, or courses. These students were not registered TAACCCT participants. For the final report, the team will use propensity matching to account for these criteria as well as additional background characteristics of the students.

Interim Implementation Evaluation Report

This section of the report details observations about program implementation through the fall semester of 2016. Findings are reported in five sections:

(1) Implementation inquiries through Fall 2016,
(2) Emerging themes,
(3) Grant strategies implementation, fidelity to model, and factors affecting outcomes,
(4) Student pipeline analysis
(5) Implementation evaluation limitations and topics of future inquiry.

Implementation Inquiries through Fall 2016

The implementation evaluation conducts inquiries once per semester beginning in Fall 2015, which have included three rounds of interviews with Project Coordinators and grant staff at each college, conversations with consortium leadership, 6 of 9 on-site visits, and a survey completed by grant coordinators.

Fall 2015	- Interviews with Project Coordinators and grant staff at each college: Planning Stage Reflections
Spring 2016	- Interviews with Project Coordinators and grant staff at each college: Inventory of New Activities; New and Improved Capacity in the State
Fall 2016	- Interviews with Project Coordinators and grant staff at each college: State Collaboration - Site visits with 6 OTN colleges.

Emerging Themes in the Implementation Evaluation

Several themes have emerged, which are detailed below.

Theme 1: Early stage efforts and challenges have impacted outcomes through Fall 2016.

In the fall semester of 2015, Project Coordinators at each college were interviewed and asked to reflect on the start-up phase of the OTN project. Highlights of their responses are included below.

The first year of the grant (October 2014 – October 2015) was dedicated primarily to project start-up. Tasks included hiring project staff, purchasing equipment, developing curricula, and establishing plans for engaging students and businesses. This section describes how the OTN colleges prepared to implement the strategies of the grant.

Each college's Project Coordinator was interviewed by phone in Fall 2015 and was asked to reflect on the first year of the grant. Interviews were recorded, transcribed, and data was

organized and sorted. The bulleted items below follow the order of the interview protocol, and offer a summary of comments made in the interviews.

The Connection between the Consortium's Vision and Local Implementation.

Project Coordinators were asked to reflect on the connection between the overall objectives for the project as presented in the grant proposal and their local college priorities.

- The colleges clearly articulated that the most prominent vision of the project was to respond to industry needs in their communities. The need to update technology, facilities, and curricula to meet the demands of advanced manufacturing companies was cited most frequently as the mechanism for fulfilling this vision.

- The schools spoke about the need to develop programs that can increase the volume of students they serve and allow more people to gain the skills required for advanced manufacturing jobs in their communities.

- Just over half of Project Coordinators stated they were not involved in the planning of the project or development of grant plans. While Project Coordinators were familiar with the primary objectives of the grant, they mostly described themselves as implementers rather than project visionaries.

- The Project Coordinators were all broadly familiar with the student intake, success and placement strategy (#3) of the grant. At the time of the interviews, five of the schools had hired a Career Navigator to guide students through programs helping to drive the completion and employment outcomes of the grant.

- Project Coordinators expressed varying degrees of familiarity with several objectives and deliverables, such as veterans programming, leveraging the PLA with a Purpose Initiative, and partnering with workforce agencies. We interpret this to mean that within the overall objective of the grant, colleges are focused on addressing their local priorities and these items were not highly prioritized locally.

- There was limited familiarity with the grant's goal to drive collaboration and cohesiveness across colleges, although when asked to provide examples of how colleges were working together in the project nearly all Project Coordinators cited affinity groups and consortium meetings as examples of collaboration. The most prominent view of how the consortium will improve collaboration among colleges is that it will promote basic information sharing and peer learning.

- Local implementation was aligned with the grant's vision as articulated in strategies 2 and 3. Local participation in strategy 1, which is focused on consortium connectivity, will be monitored closely as the grant matures.

- At the consortium level, efforts to use the Ohio Workforce Case Management System as a participant tracking database were slowed due to concerns about data privacy and sharing. However, the project has established a data collection system among the colleges with rules and processes for participant management, reporting, and third-party evaluation.

Major Grant Activities and Expenditures

The colleges reviewed budget modifications and expenditures with the interviewers.

- All colleges submitted budget modification requests to OTN's lead college (LCCC) to reflect changes in project vision or updated estimates of costs (as of October 2015).

- The lengthy USDOL approval process for equipment purchasing, and difficulty finding full- time faculty candidates were commonly cited reasons for project delays. A few colleges were still waiting for approvals before being able to make equipment purchases at the time of interviews. Four colleges cited difficulty hiring full-time faculty to teach the updated curriculum as a reason for delays in budget expenditures.

On-the-Ground Programming

In the Spring of 2016, Project Coordinators were asked to describe activities or plans for the use of grant funds. Targeted questions inquiring about prominent elements in the logic models were asked. There is consensus among the colleges about the importance of aligning manufacturing programs with employer demands using a sector strategy approach; specific goals and activities within each college are more diverse. There is also variation among colleges on which grant activities will be implemented or not. Additionally, a survey-based inventory of college participation in grant activities is included in Appendix B on page 71.

- Colleges are pursuing a menu of options for strengthening pathways: Every college in the consortium is integrating industry credentials into pathways in some way, through NIMS, AWS, etc. Other colleges have decided not to implement the NCRC citing that employers do not recognize it and that the certificate does not provide as much value as industry credentials. Similarly, every college is either creating new or updating existing curricula to better meet the manufacturing needs of their communities. LCCC and Tri-C are beginning a collaboration to develop a safety program. The intent is to develop an Associates Degree program and explore partnership with an OSHA Education Center to allow students to earn

OSHA credentials. Five schools already provide OSHA 10 and/or OSHA 30. These lower level OSHA certificates are not recognized as TAACCCT-eligible credentials however, these schools felt that the safety training they provided was sufficient, so do not envision updating safety programming. The colleges are split in terms of updating facilities or equipment. Some have leveraged the grant to provide newer or additional equipment or to upgrade their physical facilities to meet the needs of new programming. However, one college did not purchase equipment and other colleges did not make facilities upgrades using this grant and either were able to leverage other resources to make improvements or felt that their facilities and equipment were adequate as they are. Finally, the schools are also split in their adoption or advancement of articulation and transfer agreements under the grant. Most colleges plan to create or expand these agreements in year two. Two do not have plans to implement or alter their articulation and transfer agreements under this grant at all, either because they already had some in place or because it is not a priority for them.

- Colleges are investing in new technologies: When asked about investments in new technologies, colleges most commonly discussed the purchase of new technical equipment (discussed above) or the incorporation of online coursework. Eight colleges are offering new online or hybrid classes. In many cases, the flexible hours of online and hybrid courses are intended to enable working students to complete programs based on their own schedules. Updated manufacturing equipment is the bulk of new technical equipment purchased. For example:

    - Lakeland and Cincinnati State have purchased virtual welders to enable hybrid classroom instruction.
    - Zane State purchased a welding robot to keep up with advancements in manufacturing technology.
    - Stark State is expanding its machine shop, which also will include two large 3-D printers funded through a separate grant. The school is working to secure National Institute of Metalworking Skills credentials to launch with the expanded shop.
    - Rhodes State is purchasing equipment for a new food manufacturing program.

- Colleges are integrating strategies for contextualized remediation and stackable credentials: At the time of the Spring 2016 interviews, four the colleges indicated they were implementing new contextualized remediation programs. Tri-C is utilizing the Boost Program that the college developed for reading and math and plans to integrate it with the grant affected

programming in 2016. Both LCCC and Cincinnati State are using the ALEKS assessment to get a baseline for students' math ability and are embedding contextualized math skills into their welding program. The ALEKS system also provides facilitated remediation. And, Cincinnati State was working with ABLE on contextualized remedial programming. Stark State was working with external partners, including MAGNET, in Medina County to inform boot camp-type programs for remediation. The rest of the colleges already had some existing remediation and contextualization programs in place. These schools plan to leverage existing services, like e-tutoring, campus tutoring, or boot camps, for the grant affected programs. All of the colleges have strategies for stackable credentials for their grant- affected programming.

- Earn and Learn Opportunities: The colleges were split in their offerings of earn and learn or paid internship opportunities. More than half of the colleges indicated they were partnering with external partners and businesses, like MAGNET, Swagelok, Honda and Whirlpool to provide paid internships or apprenticeships under the grant. Only three of the colleges indicated they are not planning to facilitate opportunities for some kind of paid internship or paid learning experience. Rhodes State is integrating an apprenticeship pathway. One college indicated the accelerated nature of some of the welding certificate programs does not provide the time to build in internships. This topic will be investigated more deeply in future evaluation activities.

- Competency Based Curricula: Four of the colleges are formally moving towards integrating competency-based curricula under this grant. Sinclair is expanding on a Round 2 TAACCCT grant strategy that turned three of their degree programs into competency-based curricula. For this grant, they plan to turn manufacturing hybrid courses into unit-based courses where students can accelerate past parts of the course based on good scores in pre-assessments. Rhodes State is also incorporating competency-based welding programs that were part of a Round 2 grant. Tri-C is actively serving on committees to determine how to bring the competency based curricula model into its programs. This will be a year two or three strategy for the college. Eastern Gateway, Lakeland and Cincinnati State based their programs on manufacturing competencies but do not have a formalized model. Cincinnati State specifically leveraged the SENSE program from AWS to do so. Owens Community College and Zane State College each had developed a modified CBE for welding curriculum prior to the start of this grant.

- Veterans Programming: Veterans are targeted participants for this grant. While few of the colleges are implementing new programming to serve veterans, most of the schools are

tapping into existing veterans programming at their institution. Columbus State, Tri-C, and Stark State have made it a focus of their programming for the grant and are working within their communities to seek out veterans interested in advanced manufacturing pathways in an effort to get them enrolled in programming. Tri-C is allowing the use of GI benefits and subsidizing veterans with workforce scholarships for enrollment in the programming. None indicated they are leveraging specific initiatives like Boots to Business or Get Skills to Work, which were named in the grant. Subsequently, we learned that Get Skills to Work was a Manufacturing Institute program that was sunsetted.

- Enhance Partnerships with Workforce Agencies: All of the colleges are partnering with a local Workforce Development Board. Rhodes State is partnering with Link Lima, a collaboration between the economic development industry, education, and mental health and social services. The collaboration works with individuals who are receiving financial assistance through the Department of Job and Family Services to bring them back into the workforce. Most of the colleges are collaborating with the Workforce Development Boards for recruitment of participants. A few are also collaborating to bring in industry experts and advisory committees to inform curriculum change. Evidence that workforce agencies are collaborating in employer engagement, participant assessment, supportive service provision, or resource provision (OJT, ITA) is not available at this time. This will be a focus of future inquiry.

- PLA with a Purpose: In early-stage interviews with Project Coordinators, recognition of the PLA with a Purpose initiative was low, but lead college LCCC has taken a leadership role to improve PLA usage. Thru Spring 2016, four of the colleges in the consortium had indicated they will undertake some sort of PLA process improvement in this project. Eastern Gateway took on the PLA with a Purpose initiative campus wide. LCCC, Rhodes State, Cincinnati State, and Sinclair are participating in committees at the state level to provide guidance on standardization of PLA.

  As the project has matured, lead college LCCC has taken a leadership role in promoting PLA improvements in the consortium. In November of 2015, working in collaboration with the Ohio Department of Higher Education, CAEL was invited to provide a PLA strategy session for the colleges. Following that session, LCCC has been working with ODHE to benchmark PLA usage in the consortium and develop strategies for increasing PLA credit attainment. A PLA portfolio rubric was developed in Spring of 2016 to help college identify and pursue PLA opportunities for students. In Fall of 2016 OTN partnered with Ohio Department of Higher Education to select a consultant to work with colleges on improved PLA approaches.

- Employer Partners: In Spring 2016, every college reported collaborating with partner employers in some way to connect grant participants to employment opportunities upon completion of the programs. Most commonly, the schools were leveraging employer boards for advice on industry needs. Several of the schools had relationships with large employers in their region and were working with these employers to establish internships or other earn- and-learn opportunities. Colleges also partner with employers in their region to determine job needs and to plug students into hiring pipelines. Future evaluation activities will investigate the processes used at each college to engage businesses and connection of these activities to OTN programs.

- Entrepreneurship: Entrepreneurship is not a large focus of the grant. Tri-C, Rhodes State, and Owens are envisioning integrating entrepreneurship training in the second year of the grant. It is unclear how they will execute in this area at this point in the project. This will be followed- up on in future inquiries. Several colleges have "maker spaces" and had begun to discuss ways to leverage these.

Project Staffing

In Spring 2016, Project Coordinators were asked to reflect on the capacity of project staff to deliver on the grant's objectives.

- Finding qualified faculty to teach technical and manufacturing courses has been a challenge for almost every college and several have brought on instructors on a part-time basis just to get someone on board.

- At least four colleges reported delayed hiring of project staff in the first year because of budget approval delays or delays in purchasing equipment or updating curricula that has put the project behind schedule. Data coordinators, administrative support, and instructors are cited as positions that were delayed in hiring.

External Partnerships

In the proposal, there is major emphasis placed on the development or enhancement of partnerships with businesses and other organizations in the community such as workforce agencies. The external partnership topic will be a subject of future inquiry. As a prelude, Project Coordinators were asked to briefly describe the state of external partnerships and activities to enhance them under the grant.

- The development of external partnerships, especially with businesses, has been a primary focus across the consortium during the first year. The form of the partnerships takes different shapes across the institutions:

    - Employers are frequently involved in curriculum development to ensure that courses teach skills with value in the job market. This has taken different shapes across the consortium including emphasis on employability skills, redevelopment of technical curricula, and incorporation of short-term add-on certifications.

    - At least three colleges mentioned the development or enhancement of internship opportunities in partnership with local industry.

    - Two colleges referenced internal partnerships with members of the non-credit or workforce division of the college, who partners with the grant team to leverage existing connections with local workforce agencies and businesses.

    - Colleges are also developing partnerships with companies to recruit incumbent worker participants into grant programming.

- Future inquiry will explore employer partnerships along the entire talent management lifecycle including recruitment and assessment leading to hiring, worker effectiveness, upskilling and advancement, and retention and succession planning.

Consortium Administration

- All colleges expressed satisfaction with consortium leadership. There is a general sentiment that leadership clearly communicates requirements, assignments, and deadlines and provides adequate reminders.

- The consortium has assembled its data collection plan for the purposes of reporting and evaluation. An additional grant deliverable of leveraging the Ohio Workforce Case Management System has been challenging to achieve. This may be a subject worthy of a case study to illustrate the challenges involved in cross-system data sharing.

Consortium Participation and Benefits

- Through Spring 2016, there was a vaguely-articulated sense that the colleges were becoming more collaborative, which created hope that future collaborative projects could occur.

- Half of the colleges stated that opportunities to learn from and collaborate with the other colleges were a benefit of participating in the OTN Consortium.

- Future inquiries will explore specific examples of how colleges are learning from each other, utilizing the resources and connections of the initiative, or have suggestions for how the consortium can help them more effectively in their work.

Theme 2: Colleges are leveraging the grant to build new and improved capacity to deliver manufacturing education and training. Project Coordinators were interviewed in the Spring semester of 2016 and asked to discuss innovative educational models and program structures developed under the grant. Highlights from these interviews are captured below.

Innovative Educational Models

Project Coordinators were asked to describe what is different or innovative about the programs they are implementing under the grant. Across colleges, responses to this question are summarized under three themes: 1) innovative program content; 2) innovative program structure and/or delivery method; and 3) innovative use of technology.

1) Innovative program content includes the following:

— Strengthened pathways: As discussed in the previous section, nearly every college in the consortium is integrating industry credentials into credit-bearing pathways in some way, through NIMS, AWS, etc. Nearly all colleges have mapped career pathways, have adopted stacked and latticed credentials, and have incorporated industry credentials by embedding them and/or aligning with nationally recognized certifications. Some Project Coordinators spoke of their programs as being innovative *because* of their strengthened pathways. At LCCC for example, the Right Skills Now program began as a pilot, and in its second-year manages it by converting more of its content to credit- based programming and lowering entry costs for students. The Right Skills Now program may also be expanded to the college's general technician certificate soon. Also at LCCC, a new program model called TRAIN Ohio was developed. TRAIN Ohio (OH) blends school and work into an earn and learn hybrid activity, where companies and educators integrate activities. A focus on MicroElectrical Mechanical Systems (MEMS), an existing program of study at LCCC designed to operate in concert with its SMART Center for Microsystems, has been used to pilot this earn/learn model. The goal is to expand the model to include other areas. Rhodes State, working with industry partner CIFT (Center for Innovative Food Technology) is developing a food technology pathway for high school students (not TAACCCT participants) that will earn college credit at Rhodes State and link to a food technology certificate. In total, Rhodes has implemented four pathway programs under the grant, all of which embed industry-recognized credentials: food

technology, NIMS tool and die (machining), NIMS industrial maintenance (welding), and 3-D printing

— Tailored program content: Project Managers discussed ways in which curriculum and course content has been tailored to meet the specific needs of both students and employers. At Lakeland, classes have been offered on Saturdays and expanded times during the week to better meet students' needs. In addition, specific changes to curriculum and how classes are bundled have allowed students to apply for financial aid to pursue technical certification rather than a longer-term degree. Cincinnati State has developed a student-centered approach to orientation and onboarding that keeps cohorts together, builds friendships and bonds among the students, and increases both performance and commitment to the program. Tri-C has incorporated "STEAM" programming, which is STEM (science, technology, engineering, and math) plus "A" for arts. Engineering classes, for example, now include art projects that make the content more interactive and fun for students. On the employer side, at Eastern Gateway, the college is working with the Mahoning Valley Manufacturers Coalition (MVMC) to offer specific certifications in welding that can be used in the shale oil and natural gas industries. At the request of employers, Lakeland has made changes to curriculum that give students more time working in labs to build and refine their skills. Stark State has incorporated more soft skills in its training programs – something its employer advisory committee says it values. Tri-C has toured employer facilities and incorporated new training techniques that meet employers' specific needs.

2) Innovative program structure and/or delivery method includes:

— Online and hybrid models: Many colleges are offering new online or hybrid classes. In many cases, the flexible hours of online and hybrid courses are intended to enable working students to complete programs based on their own schedules. Results from the Continuous Improvement Survey show that eight colleges have implemented online/hybrid platforms, and two additional colleges are intending to. In interviews, Sinclair staff spoke of its hybrid delivery for CAM certification as being innovative because it has greatly reduced the number of hours that students need to be on campus. Stark State is moving toward what staff calls a Web 2 Model, meaning that students spend ½ of their time in a traditional classroom or lab and ½ of their time online. Tri-C has also developed three new classes (beginning Fall 2016) that incorporate hybrid and interactive online content. At Columbus State, grant funds have been used to implement innovative online modules that include animation and advanced graphics.

— Accelerated models: Columbus State has implemented what staff describes as an "accelerated response" model, under which students can enroll in multiple 5-week modules to complete coursework at an accelerated pace. Programs include welding for non-welders, CNC operator, and maintenance/operator. Because the programs are housed within the college's Engineering Department, they earn college credit and are affordable to students looking to re-enter the workforce quickly. Cincinnati State has an accelerated welding program that consists of three courses that can be completed in 15 weeks.

— Competency-Based Education models: As of Spring 2016, four of the colleges were formally moving toward integrating competency-based curricula under the grant. For example, at Sinclair, students working toward any certificate in the industrial maintenance program (all non-credit programs) can accelerate through parts of their coursework based on demonstration of competency via pre-assessment. On the credit side, a competency-based model is integrated into the first level of a CAM certification, as well. Sinclair offers "rolling registration" to allow students to enroll in courses at multiple points during the semester and year. At Zane State, the college has a goal for its industrial maintenance and welding programs of converting, at a minimum, one course to competency-based by Fall 2016.

3) Innovative use of technology includes:

— Equipment and supply purchases: The grant has been very effective in helping college update and upgrade their equipment; a common use of grant funds has been toward the purchase of updated manufacturing equipment or supplies. The grant funding is often bundled with other sources of funding including state-funded RAPIDS grant or college general funds. Several colleges, for example, have purchased virtual welders and are integrating this technology into their training processes including Lakeland, Cincinnati State, Columbus State, Eastern Gateway, and Tri-C. Virtual welders are computer-based training systems that allow students to practice welding techniques in a simulated environment. Stark State has upgraded its machine shop by leveraging money under a separate grant to purchase two industrial-grade 3-D printers. Tri-C also used money under a separate grant to purchase a robotic welder. Cincinnati State has used grant funds to build a new welding lab on its main campus. LCCC purchased several new pieces of equipment for its Non-Destructive Testing welding program, and has leveraged money under a separate grant to purchase a mill for its Right Skills Now program.

How Innovative Educational Models are Helping Students

In Spring of 2016, Project Coordinators were also asked to describe how their college's innovative educational model(s) help students. Largely, responses centered on how models help students gain skills and certifications more quickly. Of equal importance was how models meet employers' needs and benefit local communities.

Several respondents spoke of how, under the grant, their college's advanced manufacturing programs were providing students with the skills and training needed to fill jobs in their communities that are in high demand. Cincinnati State, for example, has tailored several of its welding programs to meet employers' specific needs. The first is MIG welding certification, and other programs are being planned based on employer feedback. These programs are designed to meet the needs of the community, and to convey to students marketable skills upon which they can continue to build and grow. Eastern Gateway developed an associate degree in welding – one of the few of its kind in the region. The program gives students both the technical skills they need and soft skills that employers in the region say they want employees to have. Zane State staff spoke of how employers are "lining up" to tell them how desperately they need skilled workers in the field of industrial maintenance. In response, staff from Zane State is working to change young people's opinions about careers in manufacturing. When staff visits high schools, they talk about the diversity of the job, how no two days are the same, and how much skill and knowledge is required to perform well.

Other respondents spoke of how their models are meeting students where they are. Stark State's Web 2 Model is designed to fit students' busy schedules by providing more coursework online. Integrating technology into their model not only gives students a better home/work life balance, it also gives them skills derived from working in a state-of-the-art machine shop – skills that employers want to see. Tri-C has incorporated an "A" for Arts into its traditional STEM programming which, they call STEAM, in order to engage students in project-based learning that delivers marketable welding skills that will stand out to potential employers. At Sinclair, competency-based models are allowing students to work through programs at their own pace and giving them credit for their previous experience and acquired knowledge. The flexibility of these programs means that even students who are working full time can enroll in the college.

Finally, respondents spoke of how curricula have been modified to accelerate training and help students complete their certification or their degree more quickly. Columbus State and Cincinnati State both offer accelerated models like this. At Lakeland, for-credit classes have been bundled together (eg., welding fundamentals with fabrication with safety) to give students a quick one-year path to certification. These changes to curricula have had the added benefit

of allowing students to apply for financial aid in order to pursue technical training and certification. In the past, only students pursing a degree could apply for financial aid.

Student Pipeline Analysis

The performance requirements of the grant include metrics for enrollments, completions, postsecondary transfers, and employment, job retention, and earnings gains. New Growth asked Program Coordinators to provide background on the resources colleges are organizing to achieve these grant outcomes. This inquiry was intended to capture how colleges are tapping into existing programs and services to support the grant as well as what new services are being put into place. The interview occurred in Fall 2015.

Recruitment: The responsibility for recruitment is handled differently from college to college. Career coaches, project coordinators, or academic advisors are the most common sources of recruitment. Most of the schools are looking to their partnerships with workforce agencies to help with recruitment efforts. The schools are also utilizing the current recruitment offerings that exist within their college. At this time, it appears that grant participation is on track to meet the objectives, so recruitment processes are not targeted for deeper inquiry at this time.

Screening: One college described the advising process to be an informal screen where counselors can work with students to provide guidance based on student interests and aptitudes. This is a theme we expect we will hear at other colleges as we pursue this topic further. Tri-C is using WorkKeys to screen grant participants. This topic will be investigated more deeply in the context of employer engagement and efforts to align programs with employer needs.

Student support services: The career coach role is viewed as the primary intervention in this grant focused on improving retention and completion. Most of the colleges have brought on or plan to bring on a career coach under the grant. The career coach is responsible for advising students and helping them move through their programs and connect them to work. Career coaches check in with and monitor students as they progress through programs, look to identify threats to retention and connect students to support services within the college – tutoring services, for example. All of the colleges plan to leverage existing student services in their colleges. There was no indication that colleges would add new student services aside from career coaching.

Transition to work: There is much activity intended to promote employment among participants. All colleges indicate they are working with employer partners to enhance curricula that will deliver high-demand skills as well as to connect employers to students that may have the skills

needed for their organization. Internships were frequently noted as popular with employer partners, and believed to lead to jobs for students upon graduation. Three colleges stated that there is a willingness among businesses to hire interns, and in many cases, to pay. Many schools are working towards strengthening their 'earn and learn' opportunities in the hope that it will translate to jobs for their students. Rhodes State College has had success in expanding apprenticeships in their region and they are providing assistance to other Ohio TechNet colleges interested in launching or expanding apprenticeship programs. This topic will be investigated further to learn more about employee engagement processes and innovative programs that help people connect to or advance in work.

Job retention: Job retention for three quarters (two quarters after the quarter of completion) is one of the TAACCCT outcomes. There are no job retention services being implemented by colleges through this grant, nor are they offered at any of the colleges in the standard array of services available to students.

Internal Collaboration

Also in Spring 2016, Project Coordinators were asked to describe any collaboration occurring within their college in support of their OTN program(s) and to describe how internal college resources or programs/initiatives are being leveraged to address OTN program needs.

- Leveraging money from other grants. Several colleges have leveraged money from separate grants in support of OTN programs. For example, Zane State received a state RAPIDS grant that is being used to build a new facility for its industrial maintenance program. Lakeland has received RAPIDS funding and is applying for EDA funds to support an expansion of welding equipment and facilities. LCCC has used separate funds to purchase a new mill and other industrial maintenance equipment for use in its Right Skills Now program. Stark State leveraged money under a different grant to purchase 3-D printers for its machining lab. And Tri-C has purchased a robotic welder and is also building a new Fab Lab with funds that are separate from the OTN grant. Rhodes State, Cincinnati State, Owens, Stark, Tri-C, and Sinclair have participated in previous rounds of TAACCCT. As consortium lead, LCCC works closely with several of the Manufacturing USA initiatives with the goal of aligning funded workforce projects with the Ohio TechNet projects.

- Cross-departmental collaboration. Colleges have also crossed departmental lines in order to successfully implement their OTN programs. At Columbus State, for example, grant programs are housed within the college's engineering department, which has

necessitated cross-departmental cooperation and a "knocking down" of institutional barriers in order to implement. Rhodes State has created a steering committee that spans across IT and other departments. This committee helps guide implementation of the college's competency-based education models. Sinclair has worked closely with the college's registration department to successfully implement rolling registrations, and with its research and reporting department to create student performance reports under the grant. Several colleges use their career centers or navigators/student success coaches to recruit and counsel students and align internal resources. Cincinnati State employs a model called the Pathway to Employment Center, which is a coordinating entity and one-stop resource for students. The Center provides outreach, recruiting, career assessment and advising, tutoring, and employment-related services. Zane State is developing a case management system that will allow staff to track and advise students across departments.

— Partnerships with local workforce development entities. Colleges are also working to expand or enhance employer partnerships in support of OTN programs. At Eastern Gateway, the MVMC is a partner under the grant and works closely with grant staff on everything from curriculum development to job placement. Stark State has worked to better align its grant program and apprenticeship opportunities with local Veterans services. Owens is working to increase the number of employer partners and local workforce members supporting its grant programs.

Consortium Benefits – External Collaboration

In Spring 2016, Project Coordinators were asked whether their college was collaborating with other colleges in the consortium to support OTN programs, and if so, how. Responses to this question were somewhat limited, however, this topic will be re-addressed at a later stage in the grant's performance period to see if a fuller picture emerges as the grant matures. Several respondents mentioned their participation on one or more affinity groups. Others stressed that when they have needed information or guidance, they have gotten it from other consortium members, and have made themselves available to do the same. Zane State and Cincinnati State have hosted tours of their respective welding labs. Other, more specific examples of collaboration include the following:

— LCCC and Tri-C collaborated to develop a non-destructive testing curriculum and a safety program.

- Zane State hosted a veteran's event with its Small Business Development Center and has collaborated with Rhodes State to put on a similar event there.
- LCCC has provided teacher training related to Fab Labs and digital manufacturing to OTN partners.
- Consortium in-person meetings are hosted at partner institutions to showcase the work underway and provide assistance in launching similar programs at other consortium schools.
- LCCC has worked extensively with external partners including Ohio Department of Higher Education, Ohio Manufacturer's Association, and several National Network of Manufacturing Innovation centers to bring external expertise and opportunities into the consortium. More on these efforts later.

Consortium Benefits – Opportunities

Project Coordinators were asked: *Are there opportunities within OTN – meetings, professional development, etc. – you have been able to take part in because of your involvement with the consortium?* To this question, respondents spoke largely of their participation in consortium-level weekly conference calls, which many say are helpful for disseminating information and answering questions. Others spoke of staff involvement in state-level initiatives that might not have taken place otherwise. A few colleges also reached out to, and even brought back, speakers from various consortium meetings to give staff additional training and information.

At Stark State, two opportunities have come their way because of OTN. First, the college is partner to Akron City Schools under a Make It in America Challenge Grant. Under the grant, Stark State trains economically disadvantaged high school students through the first two levels of NIMS certification. Thanks to OTN, Stark State has embedded NIMS certification into its coursework – something it had not done before the grant. Second, Stark State has a long-term partnership with Ariel Corporation in Mt. Vernon, Ohio to train precision CNC machinists. The company recently purchased another facility close to Stark State in North Canton, Ohio. Because of equipment purchases the college made under OTN, it is able to partner with Ariel again to train an additional 110 employees.

Consortium Benefits – Affinity Groups

Project Coordinators and other staff participate in different affinity groups under the OTN grant. Among them, navigator/student success coach, welding, and CNC operator were top mentions:

- Navigator/Success coach (8 colleges)
- Welding (7 colleges)
- CNC Operator/Automation/Manufacturing (5 colleges)
- Data (3 colleges)
- Accounting (2 colleges)
- Research assistant (1 college)
- Employer-related topics/Employer scorecard (1 college)
- Project manager (1 college)

Project Coordinators were asked what is being accomplished in the affinity groups, whether the groups have met expectations, and how they might be improved. Overall, respondents said that affinity groups provide an avenue for sharing information, brainstorming ideas, and asking for help. Staff members from across colleges have shared their experiences and expertise. Affinity groups are also viewed as a useful networking tool – introducing staff to one another and letting everyone know who the "players" in respective fields are.

Despite being informational, however, several respondents felt that the affinity groups lack focus. There are not clear goals, and as one respondent explained, "it is difficult to move forward with any specific ideas discussed in these groups. There has not been much execution." Some said the calls are not scheduled regularly enough to keep momentum going. Others felt that information shared on calls can be both too broad – i.e., high level information that never develops into specific ideas or strategies – and too specific – i.e., applies only to one college in one situation/environment.

To improve the affinity groups, respondents offered the following suggestions:

- More face-to-face meetings. Affinity groups and conference calls are not driving the kind of collaboration that is a goal of the OTN grant. Partners need more opportunities to meet in person in order to develop relationships and understand what each college is trying to accomplish.
- Clearly defined focus and goals. Affinity groups have moved beyond the initial startup of the grant; beyond equipment purchases, hiring staff, etc. It is now time to re-focus and establish for each group a specific agenda, with targeted goals and steps for meeting those goals.

— More discussion of best practices. Several Project Managers spoke of how implementing new processes at the individual college level involves a lot of trial and error. Affinity groups could be used to share best practices and success stories. One respondent suggested pairing new project managers with more experienced managers in order to leverage experience and avoid having to "recreate the wheel," especially with processes and issues that are common to tech grants.

Statewide Collaboration

In Spring of 2016, Project Coordinators were asked several questions about the value of being part of a statewide consortium and how the consortium could help support or advance the work of individual OTN programs. This is a topic of much emphasis in OTN grant, and the evaluation will incorporate multiple inquiries to capture its evolution as the grant matures. In Spring 2016, the following was reflected by the colleges.

Supporting local and regional initiatives

Project Coordinators were asked whether there were opportunities for the consortium to leverage or support local and regional initiatives around individual colleges.

— Sinclair mentioned needing help executing a specific strategy. The college is partnering with LCCC and a regional manufacturing association to develop a web portal and a more cohesive advanced manufacturing recruitment/marketing effort. There are opportunities within this initiative for the consortium to lend a hand, especially since an improved marketing effort could benefit colleges across the state, not just in one region.

— Rhodes State has found it challenging to implement its competency-based education models because doing so has required making changes to curriculum structure, student financial aid, and defining the role of the instructor. There are opportunities here for the consortium to provide technical assistance, training, and/or sharing of best practices so that other schools might benefit from learning how to implement competency-based education.

— Owens would like to have help making connections to local employers and small businesses in order to establish internship programs.

Employer engagement practices

Project Coordinators were asked whether the consortium has been helpful in deepening employer engagement practices locally, regionally, or statewide. Overall, respondents said yes, and offered several examples of how.

- Several respondents spoke of past or upcoming meetings with employer groups, where the specific focus of the meeting was to discuss how the college could tailor its course offerings/certification programs to meet employers' needs for skilled workers. Respondents also described their college's active employer recruitment processes. Across colleges, new employer partners are coming on board to provide earn and learn opportunities to students, and/or to guarantee students an interview once they have completed their coursework.

- At Lakeland, some employer partners have been connected to the Manufacturers Career Council for the State of Ohio, which is a unique connection made possible through the consortium. Lakeland has also linked its employer partners to a manufacturing association in Northeast Ohio called the Alliance for Working Together (AWT) Foundation.

- Columbus State spoke about how being a part of the consortium has allowed for connections to be made to other grants – LIFT (Lightweight Innovations for Tomorrow) and RAPIDS (Regionally Aligned Priorities in Delivering Skills), specifically.

- CIFT, Center for Innovative Food Technology, partnered with Rhodes State under the grant. Together they are developing a food technology pathway for high school students that will earn college credit at Rhodes State (and eventually expand to other colleges) and link to Rhodes' food technology certificate.

<u>New policies or practices</u>

Project Coordinators were asked whether their college has adopted new policies or practices as a result of something learned through the consortium. Responses to this question tended to focus on changes made in order to implement OTN programs under the grant. Below is a list of specific mentions.

- Changes to the college's Completion agenda to align with OTN

- Changes to policies and procedures to implement online, hybrid, and competency-based education models

- Adopting NIMS or other new certifications as part of standard curriculum

- Embedding soft skills into technical training
- Implementing WorkKeys assessments
- Implementing PLA

Best Practices

Project Coordinators were asked: *How could the consortium promote best practices among its members? Is the consortium providing or leveraging professional development opportunities for colleges, sharing of knowledge and practices, and technical assistance for colleges?*

Most respondents agreed that the consortium itself, and the individual partners within the consortium, are good at sharing information. The consortium provides an avenue through which connections can be made, discussions can be had, and ideas can be shared. People also agreed that speakers, seminars, conferences, and events hosted by the consortium have been beneficial. However, whether these things alone constitute a "sharing of best practices" was a matter of some debate.

In earlier stages of the project, several respondents felt that conference calls were not the most effective way to share best practices. Rather, they felt that more meetings ought to be face-to-face, and that there needs to be more opportunity for people to establish and build upon relationships within the consortium. Only then will consortium partners be able to understand what each college is actually doing under the grant, and what each wants to achieve. One respondent suggested that because all of the OTN colleges are in Ohio (and relatively close to one another), that opportunities for building relationships are limited. Even when there are in-person meetings, attendants leave and go home once the meeting is over. If colleges were spread farther apart or in different states, conferences would have to be overnight. There would be opportunities to talk, go out to dinner, etc. and from there, relationships could be established. Project management responds that quarterly in-person meetings are scheduled to accomplish this along with informal dinners scheduled around the formal meetings.

Another issue raised by one respondent was that each college is so caught up in local implementation that it is challenging to find time to share their experiences or invest in collaborative problem solving with other colleges. The consortium leadership team has focused heavily on helping colleges share their successes with their peers while investigating professional development opportunities as challenges arise.

Suggestions for Future Improvements

Finally, Project Coordinators were asked how the consortium could support their work in the future, through professional development, sharing of best practices, connections to other projects in the state, or some form of collaborative activity. Below is a list of suggestions.

- More face-to-face collaboration. Face-to-face collaboration is beneficial not only because it helps build relationships, it also allows for the kind of conversation one college would need to have with another to determine if a best practice, or promising practice, would actually work at their school. Conversations allow people to ask the right questions: Is this practice the right fit for us? Can we adopt it? What changes would we need to implement to make it work?

- Roundtable discussions. One suggestion was to establish an Advisory Council, comprising key grant staff, that convenes to discuss best practices, lessons learned, do's and don'ts, etc.

- Separate opportunities for Project Coordinators to collaborate. One respondent asked that there be a separate phone call or meeting arranged just for Project Coordinators. On conference calls, there may be so many people on the call that it becomes difficult to connect to other people who really understand the Project Coordinator position and the challenges the position holds. Professional development opportunities for project managers would also be highly valued.

- Recruitment assistance. A few respondents reported having trouble with recruitment strategies and attracting enough students to their grant programs. Assistance from the consortium would be highly valued. Recruitment has been discussed in several consortium calls and meetings, especially the topic of effective recruitment practices.

- Statewide marketing effort. As mentioned previously, Sinclair has requested help from the consortium to execute a a more cohesive advanced manufacturing recruitment/marketing effort.

- Employer engagement panels. One respondent suggested that the consortium host what it called an employer engagement panel, whereby employers could talk to students about the technical skills they are seeking, and the soft skills and qualities that make a potential employee stand out.

- Active dashboard. One respondent requested that the consortium develop not only a report card, but an active dashboard as the grant continues into its third year. This dashboard would provide real-time data about each of the college's programs and

progress and provide all members of the consortium with an idea of where they stand in relation to other colleges. This issue was addressed as the project matured.

Theme 3: OTN is driving state collaboration: A review of consortium leadership's vision for leveraging the project to promote a statewide agenda. New Growth interviewed consortium leadership in the Fall semester of 2016, and has captured progress in a memo, highlighted below.

Against the backdrop of a changing manufacturing economy, a core focus of the OTN project is to drive collaboration among workforce development organizations and partners in the state. OTN project leadership has characterized the state as "project rich and connection poor" citing a large set of projects and initiatives with overlapping objectives and activities that fail to leverage or support one another. The first strategy of OTN is devoted to improving connections among projects.

Strategy 1: Create mechanisms for statewide collaboration among consortium partners and economic and workforce development allies that help advance Ohio's innovation economy.

Review of Deliverables

The table below lists the elements included in the grant proposal and provides a description of activities occurring under the grant.

Grant element	Summary of Activities (thru Year 2 of grant)
Create an organizational structure that supports collaboration, including: a. President's Council b. Project Leadership Team c. Work Teams d. A multi-partner coalition called the Ohio Manufacturing Workforce Alliance	• A President's Council has been created that meets annually. Meetings typically coincide with President's meetings held by the Ohio Association of Community Colleges. • Project leadership team is operational and includes functions for overall management, reporting, accounting, data management, and communications. • "Affinity groups" have been formed for Data Managers, Project Managers, Navigators, one for each program

	area, and Accountants. • OTN supports the Ohio Manufacturers Career Council, which is emerging as a collaborative initiative of the LIFT project.
A communication infrastructure including an OTN website and a continuous improvement system.	• OTN website is launched; additionally, OTN distributes a weekly email newsletter to partners. • A continuous improvement system has been established driven by progress against outcomes and spending goals established for each college. • OTN has purchased a subscription to EduFactor, an online resource of videos and marketing materials to help recruit younger people into manufacturing. • A part-time graphic designer has been hired to develop OTN print and online materials.
Adapt a common data management system in partnership with workforce partners.	• Evaluators have built a data system governed by data sharing agreements that assembles participant demographics, academic outcomes, and employment data, and similar comparison group data. The system is used for evaluation and grant performance management/ reporting. • Lorain County Community College has established a data sharing agreement with the Ohio Department of Job and Family Services (ODJFS) that would enable OTN data to be entered into ODJFS's Ohio Workforce Case Management System and joined with any pre-existing data in the OWCMS

	system pertaining to participants.
Facilitate professional development for OTN partners including sharing of knowledge and best practices, and provision of technical assistance that includes: a. "M" List readiness preparation b. PLA assistance c. National Network of Manufacturing Innovation (NNMI) partnership development d. Toolkits for employer engagement, and contextualized/accelerated curricula	• Nine of eleven OTN colleges have achieved The Manufacturing Institute's M list. • OTN has engaged the Ohio Department of Higher Education's (ODHE) PLA with a Purpose initiative. OTN provided funds to ODHE to undertake a facilitate process resulting in a PLA toolkit for colleges to help guide the award of PLA credit and provide professional development to colleges supporting implementation of the toolkit. • OTN has engaged LIFT, America Makes, and NextFlex, which are Manufacturing USA/NNMI organizations. LIFT is providing funding to launch the OMCC and supporting a pilot expansion of a manufacturing readiness curriculum. • Toolkits for employer engagement and contextualized/ accelerated curricula have not been developed. • OTN is funding technical assistance to schools seeking to develop apprenticeships in partnership with businesses
Leverage and align with existing state efforts including: a. USO Talent Development Network b. State LMI systems and Ohio Means Jobs c. Completion By Design initiative d. PLA with a Purpose initiative e. Ohio Means Internships	Other key connections through Fall 2016 include: • OTN is deepening its relationship with the Ohio Manufacturer's Association, which has identified workforce development as a key focus. • The ODJFS received a $2M grant from USDOL to develop apprenticeships.

f. InnovateED g. Workforce Data Quality Initiative h. Ohio SuperComputer Center i. Office of Workforce Transformation	OTN is helping managers of this project access a network of businesses and schools to develop apprenticeships. OTN is aligning technical assistance to support this initiative. • Colleges have documented engagement with over 300 employers throughout the state. • The NNMI NextFlex is developing/piloting TRAIN OH, an Earn and Learn project, in partnership with Lorain County Community College. • The Governor's Office of Workforce Transformation is inviting OTN to participate in conversations related to apprenticeships and manufacturing work readiness. • With OTN funding support, Tri-C is developing a Safety certification that will be sharable to OTN colleges.

Emerging Strengths and Opportunities

OTN has built an infrastructure for collaborative projects where nothing existed previously. The initiative has established a consortium leadership, management, communication, budget management, and reporting infrastructure.

State agencies view OTN as an accessible implementation arm for state initiatives. Several state agencies are leveraging OTN to implement statewide initiatives. ODHE has leveraged OTN funding to develop and spread a PLA toolkit that helps guide schools in the development of PLA policies. ODJFS is partnering with OTN to support implementation of a $2M apprenticeship initiative. JobsOhio is partnering with OTN to support the Ohio Manufacturing Careers Council.

An agenda for OTN beyond the grant period is emerging. Currently, OTN leadership is grappling with the future of the OTN consortium. Given that the colleges are accomplishing collaborative development and sharing of resources, there is a belief that the consortium would benefit from

continue collaboration after the grant ends. Specific projects are still emerging, but there is a belief that collaboration with OMA, NNMI's, and state agencies will result in future opportunities – the NextFlex-supported TRAIN OH project and LIFT-supported Manufacturing Readiness expansion are cited as examples of emerging projects. This topic will be queried as the grant matures.

OTN is viewed as an opportunity to strengthen partnerships between businesses and educational institutions. The Ohio Manufacturers' Association has identified workforce development as a key issue among its members. OTN has assisted in planning and implementing regional employer listening sessions organized by OMA. Additionally, Ohio's economic development agency JobsOhio is working with OTN to launch the Ohio Manufacturing Careers Council, which is developing an Education and Skills Committee that is led by OTN staff.

OTN has helped colleges develop common programming in certain topics. Nearly all OTN colleges have achieved The Manufacturing Institute's M List. The M-List recognizes high schools, community colleges, technical schools, and universities that are teaching manufacturing students to industry standards. Specifically, these schools offer students the opportunity to earn NAM-Endorsed Manufacturing Skills Certifications as a standard part of their manufacturing education programs. In addition to this, OTN is leveraging the LIFT initiative to spread a Manufacturing Readiness curriculum to several colleges. Also, OTN partnered with ODHE and provided funding to help develop a PLA toolkit, which helps colleges establish PLA processes and guidelines. Finally, OTN is providing funding to Tri-C to develop the curriculum for a Safety Certificate and associate's degree that will be sharable throughout the network; and OTN is providing funding to Rhodes State to provide technical assistance to colleges seeking to develop apprenticeship programs.

OTN has been successful in helping colleges connect to national initiatives. The National Network of Manufacturing Innovation institutes, which have recently been re-branded as Manufacturing USA, bring together industry, academia, and government partners to nurture manufacturing innovation and accelerate commercialization. OTN has connected with three of the institutes – Lightweight Innovations for Tomorrow (LIFT), America Makes, and NextFlex. LIFT has been working to establish a Manufacturing Readiness curriculum at community colleges in Ohio and views OTN as an accessible network for spreading its model. Additionally, LIFT is providing funding to OTN to support the Ohio Manufacturer's Careers Council. An initiative at LCCC called Speed-to-Market Accelerator led to a connection with NextFlex to develop earn-and-learn opportunities in partnership with companies. And, America Makes has been inviting OTN leadership to attend planning sessions as it develops its forthcoming workforce development

agenda. Additionally, ODJFS has looked to OTN to help implement a $2M federal grant to develop apprenticeships in the state.

Developing a data infrastructure has been challenging. Three challenges have hindered the effort to build a collaborative data system that is responsive to evaluation and project management needs: (1) state administrative data systems are very lagged. Specifically, the state's Higher Education Information system, which holds student records, and Unemployment Insurance Quarterly Earnings Records, which contains employment and earnings data, are lagged approximately three quarters. While these lags are necessary for administrative processing and cleaning of data, they make real-time project management challenging. (2) The development of data sharing agreements to assign legal responsibility for the proper protection and uses of data is lengthy and time consuming. Agreements govern sharing data among 14 organizations. The development of agreements was especially challenging because few OTN colleges have a legal counsel to draft or review data sharing agreements, and the state's Attorney General's office became involved in approving the agreement; few colleges have policies governing data sharing; and policies governing the use of Institutional Review Boards are inconsistent across colleges (e.g. most did not have an IRB, one required a full blown IRB application process, and one provided on-the-spot exemptions following a verbal explanation of the project). (3) The lead college assumed project management of the data plan and data sharing agreements with support from third-party evaluators. Lead college staff had limited experience managing large-scale data plans or data sharing agreements, and a learning curve slowed progress.

Implementation Evaluation Limitations and Topics of Future Inquiry

The findings presented in this interim implementation evaluation report are based on interviews and surveys of college staff and document reviews. While all interviews were conducted in good faith and information that was obviously inconsistent was cross referenced to documentation or with consortium leadership, interviews and surveys are nonetheless given by individuals with differing opinions and depths of knowledge.

In the remaining time in the implementation evaluation, New Growth will conduct more site visits with each of the consortium colleges. The site visits will include staff interviews, student focus groups, and tours of grant-affected facilities. In addition to these site visits, New Growth will conduct one final interview with college staff and administrators on innovations arising from the OTN and sustainability of the programs. The final inquiry will include a focus on employer partnerships. The findings from these interviews will be included in the final evaluation. An inquiry

with external collaborators including leaders at JobsOhio, ODHE, and NNMI partners will be conducted, as well.

Interim Impact Evaluation Report

Overview

This report provides perspective on progress through Fall 2016 on the Ohio TechNet TAACCCT grant outcomes and is a preliminary step in constructing the final report due to DOL at the conclusion of the grant period (2018 Q4). In the final report we will use propensity matching to ensure the TAACCCT participants are appropriately matched to the comparison group, and statistical testing to determine the impact of the grant on its participants.

Summary of Outcomes

Through Fall of 2016, there were 1102 participants distributed as follows. The vast majority of participants were white (86%) and male (87%). A majority was employed (63%) at the time of grant enrollment. The average age was 30 years old.

Overall	TAACCCT (N)	TAACCCT (%)
Cincinnati	38	3
Columbus	17	2
Cuyahoga	55	5
Eastern Gateway	11	1
Lakeland	161	15
Lorain	105	10
Owens	144	13
Rhodes	244	22
Sinclair	63	6
Stark	110	10
Zane	154	14
Total	1,102	100

There have been 308 program completers, although many participants are still enrolled in programs. It is expected that program completions will increase as individuals gain more time.

Of the individuals who completed programs (308), 30 people that were unemployed prior to program enrollment had gained new employment. Note that nearly 200 of the 308 were already employed at the time of enrollment, and many prior-unemployed completers do not seek employment because they continue on in their education pursing additional credentials. And, of the individuals who were employed at enrollment (630), 210 had experienced earnings increase since OTN enrollment. Employment is a lagged outcome given its reliance on the

passage of time. Thus, a fuller view of employment outcomes will become available in the final report.

A preliminary, unmatched pool of comparison individuals has been constructed, but statistical work has not been executed in this report to establish comparability between participant and comparison groups. Thus, comparative results will not be reported until the final report.

Data Sources

Data is collected by program personnel to identify and track the progress of TAACCCT-funded students at Ohio TechNet colleges. As of September 30, 2016 there were 1,102 total TAACCCT participants. Collected participant data includes their demographic characteristics at enrollment, grant-affected course or program participation and completion. In addition, the colleges provide program worksheets which outline the details of grant-funded course and programs, including their administrative codes for classification purposes.

The TAACCCT participant data collected by the colleges is supplemented by state administrative records extracted from the Ohio Longitudinal Data Archive (OLDA). The evaluation team matches TAACCCT participants to the state's Higher Education Information (HEI) student records and to the UI Wage records to measure academic and employment outcomes.

This approach minimizes the data collection burden on OTN personnel and participants. It also provides complete and accurate records for all of Ohio's public college students and individuals employed in the state of Ohio. There are, however, three limitations that affect the results reported here:

1) Matching TAACCCT participant records to the OLDA relies on the provision of common identifiers to link the students across data sets, and to match program and course participation to the HEI data. When an ID is missing for a student, we are unable to measure outcomes for that individual. Likewise, if program or course codes are not completely and accurately recorded in the program worksheets, we do not have the necessary linkage to the HEI data;

2) The HEI records in the OLDA are updated at the end of each calendar year. UI Wage data are updated quarterly, with a 6 to 9 month lag. Because the administrative records are not current, there are no matches for the most recently enrolled (or completed) students; and

3) The HEI system does not track non-credit activity, thus TAACCCT-funded non-credit programs are not captured in this analysis.

Data Funnel

Table 1 outlines the accounting of TAACCCT participants from the total sample to the final analytic sample. Participants are not included in the analytic sample if: a) they are non-credit participants, b) they enrolled after the 2015-2016 school year, or c) they did not have matching identification information.

Table 1: TAACCCT Participants and Comparison Group, Overall

Participants	N	Comparison Group	N	Total	N
Total Participants	1,102				
Non-Credit Participants	111				
For-Credit Participants Enrolled After 2015/16 SY	353				
Participants Missing Matching ID	153				
Analytic Sample	485	Analytic Sample	3,082	Analytic Sample	3,567

We drew the comparison group sample from the HEI student enrollment records using the following criteria which results in 3,082 comparison students:

1) They must have been enrolled in an OTN college during the grant period (i.e. Autumn 2014 or later);

2) During the grant period, they must have been enrolled in a program or major which corresponds with the program and subject codes noted in the program worksheets, or in a core course noted in the program worksheets.

3) They must have an ID that would enable a match to UI Wage data.

In the final report we will use propensity matching to account for these criteria as well as additional background characteristics of the students. Of note, this strategy yields zero Comparison Group students from Rhodes. The evaluation team will consider appropriate alternatives to fill the gap.

Detailed Outcomes

To measure academic awards consistently between TAACCCT participants and the comparison group, we did not restrict the count of awards earned to grant affected programs. There are, in fact, a substantial number of TAACCCT-funded students who are participants by virtue of their

participation in grant funded courses who are not enrolled in grant-funded programs. Counting all degrees and certificates allows us to measure the outcomes of these students.

Student age, race, and gender are recorded in the HEI student entrance data upon first entry to college. For students who initially entered college prior to 1999, the HEI system is missing these records. To maximize the available data we used the Participant Intake Form data to populate these variables for TAACCCT participants and HEI data to populate these variables for the comparison group. The comparison group is therefore systematically missing demographic data for older students.

HEI categorizes certificates as "less than one year" or "one year or more but less than two years". This is in contrast to the APR in which certificates earned are categorized as "one year or less" or more than one year". Note, small cell sizes limit our ability to report three categories of degrees and certificates earned by institution. Even when we aggregate all degrees/certificates earned, only two colleges – Zane State and Lakeland – have reportable results, so we do not include these metrics in the institution tables for the interim report.

We converted the academic terms to fiscal quarters and then counted the number of individuals whose UI Wage records indicated greater than zero earnings during the quarter after the quarter in which the most recent degree or certificate was earned. Note the UI Wage records do not capture out-of-state employment. Employment outcomes are missing if 1) no degree/certificate has been earned, or 2) if the degree/certificate was earned too recently to have available UI Wage data.

We operationalized earnings increases as follows: among students with non-zero earnings during their term of earliest recorded enrollment (during the grant period), we counted an increase if any subsequent quarter had quarterly earnings greater than their earnings in the earliest quarter. Using this approach 10 percent of TAACCCT participants who were recorded as incumbent workers did not have earnings in their earliest enrollment term. This may be due to imprecise conversion from academic terms to fiscal quarters that results in a mismatch with the UI Wage records, or some of these cases may be Ohioans who work out of state.

Employment outcomes are shown for completers, rather than all exiters (which includes students who have dropped out). This was done because of the year of non-enrollment used to qualify a student as having dropped out; not enough time has passed yet to determine with confidence which students have dropped out.

Consortium Summary

Table 2 presents the number of participants per college, the number of participants who are present in the HEI database, and the number of comparison individuals.

Table 2: Number of Participants, Overall

Overall	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Cincinnati	38	3	0	0	236	8
Columbus	17	2	<10	<10	64	2
Cuyahoga	55	5	<10	<10	120	4
Eastern Gateway	11	1	<10	<10	53	2
Lakeland	161	15	82	17	56	2
Lorain	105	10	23	5	1,259	41
Owens	144	13	22	5	342	11
Rhodes	244	22	100	21	0	0
Sinclair	63	6	10	2	289	9
Stark	110	10	97	20	614	20
Zane	154	14	137	28	49	2
Total	1,102	100	485	100	3,082	100

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 3: Student Characteristics, Overall

Overall	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	1,102	100	485	100	3,082	100
Age	1073	30 (mean)	485	28 (mean)	2,569	29 (mean)
Male	938	86	400	83	2,254	88
White	896	87	414	89	1,926	79
Black	118	11	44	10	282	12
Hispanic	37	4	11	3	134	6
Other	32	3	<10	<10	48	2
More than one race	25	2	<10	<10	44	2
Veteran	55	5	N/A	N/A	N/A	N/A
Disabled	30	3	N/A	N/A	N/A	N/A
Pell Eligible	267	24	N/A	N/A	N/A	N/A
TAA Eligible	49	4	N/A	N/A	N/A	N/A
Incumbent Worker	630	63	271	56	2,202	71

Full Time Enrollment	395	46	N/A	N/A	N/A	N/A
Part Time Enrollment	458	54	N/A	N/A	N/A	N/A

The majority of TAACCCT participants and comparison group students are male and white, and nearly two-thirds of participants are incumbent workers (self-reported on the participant intake forms). Slightly more participants are enrolled as part time students than full time.

Student Outcomes: The following tables detail the outcomes for participants (labeled "TAACCCT"), participants who are present in the HEI database (labeled "TAACCCT (HEI)"), and comparison individuals (labeled "Comparison") for several outcomes: completions (Table 4), degrees and certificates earned (Table 5), credit hours completed (Table 6), and employment outcomes (Table 7). No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

Table 4: Program Completers (out of 1,102 individuals)

	TAACCCT (N)	TAACCCT (%)
Cincinnati	<10	<10
Columbus	0	0
Cuyahoga	25	45
Eastern Gateway	0	0
Lakeland	98	61
Lorain	30	29
Owens	11	8
Rhodes	117	48
Sinclair	12	19
Stark	<10	<10
Zane	<10	<10
Total	308	28

Program completion outcomes reported in Table 4 indicate 28 percent of all TAACCCT participants had completed at least one grant affected program as of Fall 2016. Rhodes and Lakeland have the greatest number and proportion of program completers. Table 4 reports an unduplicated count of the number of program completers as indicated in participant data reported by the Ohio TechNet colleges. By definition, there are no grant affected program completions to report for the comparison group.

Outcomes reported in Tables 5 and 6 are calculated using HEI student data. This interim report uses definitions that vary somewhat from the APR report definitions for the same metrics. The number of degrees and certificates reported is, at this point, not limited to grant funded degrees and certificates.

In addition, the HEI student data categorizes certificates as less than one year versus one year or more, whereas the APR definition categorizes one-year certificates with less than one year certificates. For both the number of degrees and certificates earned, and the number of credit hours earned, we report the average in order to normalize potential variation in college entry timing between participants and the comparison group, as well as variation in program duration and number of course attempts.

We also add an unduplicated summary of the number of students earning any degree or certificate for additional perspective.

Table 5: Degrees and Certificates Earned

	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	485	100	3,082	100
Number of Degrees and Certificates Earned (average per person)	117	1.7 (mean)	537	1.6 (mean)
Number of GA Degrees and Certificates Earned	In progress	In progress	In progress	In progress
Students Earning Certificates (<1 yr)	77	16	263	9
Students Earning Certificates (>=1 yr, <2yrs)	11	2	155	5
Students Earning Degrees	42	9	260	8
Students Earning Any Degree or Certificate	117	24	537	17

Table 5 shows that, overall, about a quarter of TAACCCT participants earned any degree or certificate, with the majority of those students earning less than one year certificates. On average, participants earn more than one degree or certificate.

Table 6: Credit Hours Completed

	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	485	100	3,082	100
Number of Credit Hours Completed (average per term per person)	485	8.6 (mean)	3,082	5.5 (mean)
Number of Grant Affected Course Credit Hours Completed (average per term per person)	369	4.5 (mean)	1,524	3.9 (mean)

Table 6 reports the average number of credit hours completed both for all credit hours earned, and specifically for grant affected credit hours earned. Future reporting will report the raw number of grant affected credit hours completed in addition to the average.

Table 7: Employment Outcomes

Overall	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	803	100	485	100	3,082	100
Non-Incumbent Workers Employed 1 Q after completion	30	59	<10	<10	In Progress	In Progress
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	12	50	<10	<10	In Progress	In Progress
Earnings Increase Post-Enrollment (All)	359	45	296	61	2048	66
EarningsIncrease Post-Enrollment (Incumbent Workers)	210	48	177	65	1,613	73

Cincinnati State Technical and Community College

The participant group for Cincinnati State includes individuals enrolled in a grant affected program or core course for one of the following programs: Accelerated Welding Certificate, Butler Tech Industrial Welding Certificate, Mechanical Engineering Technology-Computer Aided Design (CAD), Mechanical Engineering Technology-Manufacturing CNC Certificate, Manufacturing Machine Operation Level 1 Certificate, Welding Certificate, or Industrial Controls & Instrumentation Certificate.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 8: Cincinnati State Technical and Community College (CSTC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	38	100	0	0	236	100
Age	38	23 (mean)	0	0	96	28 (mean)
Male	31	82	0	0	182	93
White	28	80	0	0	115	65
Black	<10	<10	0	0	48	27
Hispanic	<10	<10	0	0	<10	<10
Other	0	0	0	0	<10	<10
More than one race	<10	<10	0	0	<10	<10
Veteran	0	0	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	10	26	N/A	N/A	N/A	N/A
TAA Eligible	0	0	N/A	N/A	N/A	N/A
Incumbent Worker	29	76	0	0	162	69
Full Time Enrollment	22	58	N/A	N/A	N/A	N/A
Part Time Enrollment	16	42	N/A	N/A	N/A	N/A

The majority of CSTC TAACCCT participants and comparison group students are male and white. Approximately three-quarters of CSTC TAACCCT participants report being incumbent workers. Slightly more participants are enrolled as full time students than part time.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 9: Cincinnati State Technical and Community College (CSTC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	26	100	0	0	236	100
Non-Incumbent Workers Employed 1 Q after completion	0	0	0	0	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	0	0	0	0	N/A	N/A
Earnings Increase Post-Enrollment (All)	0	0	0	0	154	65
EarningsIncrease Post-Enrollment (Incumbent Workers)	0	0	0	0	123	76

There is not yet employment information for CSTC TAACCCT participant group. The comparison group shows a larger percentage of incumbent workers with earnings increases than all employed workers.

Columbus State Community College

The participant group for Columbus State includes individuals enrolled in a grant affected program or core course for the following program: Welding, CNC Operator, Industrial Maintenance, or Career Readiness.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 10: Columbus State Community College (CSCC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	17	100	<10	<10	64	100
Age	17	27 (mean)	<10	<10	56	29 (mean)
Male	16	94	<10	<10	51	91
White	12	80	<10	<10	39	74
Black	<10	<10	<10	<10	<10	<10
Hispanic	<10	<10	<10	<10	<10	<10
Other	<10	<10	<10	<10	<10	<10
More than one race	<10	<10	<10	<10	<10	<10
Veteran	<10	<10	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	<10	<10	N/A	N/A	N/A	N/A
TAA Eligible	0	0	N/A	N/A	N/A	N/A
Incumbent Worker	10	59	<10	<10	45	70
Full Time Enrollment	<10	<10	N/A	N/A	N/A	N/A
Part Time Enrollment	<10	<10	N/A	N/A	N/A	N/A

The majority of CSCC TAACCCT participants and comparison group students are male and white. The majority (59%) of CSCC TAACCCT participants report being incumbent workers. There were not sufficient numbers to distinguish between full and part time enrollment while maintaining 10 cases per cell.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 11: Columbus State Community College (CSCC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	<10	<10	<10	<10	64	100
Non-Incumbent Workers Employed 1 Q after completion	0	0	0	0	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	0	0	0	0	N/A	N/A
Earnings Increase Post-Enrollment (All)	<10	<10	<10	<10	40	63
Earnings Increase Post-Enrollment (Incumbent Workers)	<10	<10	<10	<10	33	73

There is not yet employment information for CSCC TAACCCT participant group. The comparison group shows a larger percentage of incumbent workers with earnings increases than all employed workers.

Cuyahoga Community College

The participant group for Cuyahoga Community College includes individuals enrolled in a grant affected program or core course for one of the following programs: Short Term Certificate in Introductory Welding, Certificate of Proficiency in Industrial Welding, Fast Track Welding Bootcamp, Environmental, Health and Safety Technology Program, or Environmental, Health and Safety Technology Program - Post Degree Certificate.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 12: Cuyahoga Community College (CCC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	55	100	<10	<10	120	100
Age	55	31 (mean)	<10	<10	102	33 (mean)
Male	52	95	<10	<10	54	53
White	24	45	<10	<10	76	78
Black	21	40	<10	<10	20	20
Hispanic	<10	<10	<10	<10	<10	<10
Other	<10	<10	<10	<10	<10	<10
More than one race	<10	<10	<10	<10	0	0
Veteran	<10	<10	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	12	22	N/A	N/A	N/A	N/A
TAA Eligible	<10	<10	N/A	N/A	N/A	N/A
Incumbent Worker	31	58	<10	<10	91	76
Full Time Enrollment	<10	<10	N/A	N/A	N/A	N/A
Part Time Enrollment	14	70	N/A	N/A	N/A	N/A

The majority of CCC TAACCCT participants and comparison group students are male. CCC TAACCCT participants are roughly equivalently divided between white (45%) and black (40%). The majority (58%) of CCC TAACCCT participants report being incumbent workers, and the majority of TAACCCT participants with available enrollment information were enrolled part-time.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 13: Cuyahoga Community College (CCC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	43	100	<10	<10	120	100
Non-Incumbent Workers Employed 1 Q after completion	<10	<10	0	0	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	<10	<10	0	0	N/A	N/A
Earnings Increase Post-Enrollment (All)	17	40	<10	<10	88	73
Earnings Increase Post-Enrollment (Incumbent Workers)	<10	<10	<10	<10	80	88

There is not yet enough employment information for CCC TAACCCT participant group to compare increased earnings across TAACCCT and comparison groups. The comparison group shows a larger percentage of incumbent workers with earnings increases than all employed workers.

Eastern Gateway Community College

The participant group for Eastern Gateway includes individuals enrolled in a grant affected program or core course for one of the following programs: Welding Degree, Welding Certificate, or Advanced Welding Certificate.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 14: Eastern Gateway Community College (EGCC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	11	100	<10	<10	53	100
Age	11	33 (mean)	<10	<10	32	28 (mean)
Male	<10	<10	<10	<10	25	78
White	<10	<10	<10	<10	21	68
Black	<10	<10	<10	<10	<10	<10
Hispanic	<10	<10	<10	<10	<10	<10
Other	0	0	<10	<10	<10	<10
More than one race	0	0	<10	<10	<10	<10
Veteran	0	0	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	<10	<10	N/A	N/A	N/A	N/A
TAA Eligible	0	0	N/A	N/A	N/A	N/A
Incumbent Worker	<10	<10	<10	<10	15	28
Full Time Enrollment	N/A	N/A	N/A	N/A	N/A	N/A
Part Time Enrollment	N/A	N/A	N/A	N/A	N/A	N/A

There were not sufficient numbers to distinguish any characteristics of EGCC TAACCCT participants while maintaining 10 cases per cell. Full and part time enrollment numbers were not reported due to small numbers.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 15: Eastern Gateway Community College (EGCC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	<10	<10	<10	<10	53	100
Non-Incumbent Workers Employed 1 Q after completion	0	0	0	0	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	0	0	0	0	N/A	N/A
Earnings Increase Post-Enrollment (All)	<10	<10	<10	<10	20	38
Earnings Increase Post-Enrollment (Incumbent Workers)	<10	<10	<10	<10	10	67

There is not yet employment information for EGCC TAACCCT participant group. The comparison group shows a larger percentage of incumbent workers with earnings increases than all employed workers.

Lakeland Community College

The participant group for Lakeland includes individuals enrolled in a grant affected program or core course for one of the following programs: Associate of Technical Studies Degree in Industrial Welding (OLD), Associate of Technical Studies Degree in Industrial Welding (Rev 16), Associate of Applied Science Degree in Computer Integrated Manufacturing Technology with a Concentration in Maintenance and Repair (OLD), Associate of Applied Science Degree in Computer Integrated Manufacturing Technology with a Concentration in Maintenance and Repair (Rev 16), GTAW (TIG) Welding Certificate, SMAW (Stick) Welding Certificate, Industrial Welding Certificate (OLD), Industrial Welding Certificate (Rev 16), FCAW and GMAW (MIG/MAG) Welding Certificate, FCAW (Flux core) Welding, GMAW (MIG/MAG) Welding, Oxyfuel Cutting, Carbon Arc Gouging and Plasma Cutting, Oxyfuel Gas Welding and Cutting Certificate, e, , , Pipe Welding Certificate.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 16: Lakeland Community College (LCC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	161	100	82	17	56	100
Age	161	28 (mean)	82	29 (mean)	47	28 (mean)
Male	140	89	72	89	43	91
White	132	84	63	77	33	72
Black	24	15	16	20	11	24
Hispanic	<10	<10	<10	<10	0	0
Other	<10	<10	<10	<10	<10	<10
More than one race	<10	<10	<10	<10	0	0
Veteran	<10	<10	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	27	17	N/A	N/A	N/A	N/A
TAA Eligible	0	0	N/A	N/A	N/A	N/A
Incumbent Worker	110	69	54	66	40	71
Full Time Enrollment	32	20	N/A	N/A	N/A	N/A
Part Time Enrollment	129	80	N/A	N/A	N/A	N/A

The majority of LCC TAACCCT participants and comparison group students are male and white. LCC TAACCCT participants largely report (69%) being incumbent workers. More participants report part-time enrollment (80%) than full-time enrollment.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 17: Lakeland Community College (LCC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	110	100	82	100	56	100
Non-Incumbent Workers Employed 1 Q after completion	<10	<10	<10	<10	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	<10	<10	<10	<10	N/A	N/A
Earnings Increase Post-Enrollment (All)	58	53	53	65	41	73
Earnings Increase Post-Enrollment (Incumbent Workers)	45	63	41	76	33	83

The LCC comparison group displayed higher percentages of earnings increase than TAACCCT participants, across all employed as well as incumbent workers. For both TAACCCT and comparison groups, incumbent workers demonstrated higher rates of increased earnings compared to the total sample of employed individuals.

Lorain County Community College

The participant group for Lorain includes individuals enrolled in a grant affected program or core course for one of the following programs: Mechanical Design, Computer Aided Design - Short Term Certificate, Computer Aided Design Operator - one year Certificate, Associate of Applied Science in Manufacturing Engineering Technology- Mechanical Design, Right Skills Now CNC Machinist Program, Computer Aided Machining Operator, Computer Aided Machining / Manufacturing Processes, Computer Aided Machining, Automation Engineering Technology--Maintenance Technician, Automation Engineering Technology--Maintenance / Repair Major, Automation Engineering Technology--Systems Specialist Major, Mechatronics Technology: Basic Micro-Electromechanical Systems (MEMS) Short-Term Certificate, Mechatronics Technology: Micro-Electromechanical Systems (MEMS) One Year Certificate, Mechatronics Technology: Micro-Electromechanical Systems (MEMS) AAS, Mechatronics Technology: Micro- Electromechanical Systems (MEMS) & Microelectronics TRAIN OH, Industrial Electrical Technician, Industrial Mechanical Technician, General Technician, Industrial Safety Technology, Welding and Visual Inspection, Welding, Basic Welding, Welding Operator, Advanced Welding, Welding Technology, Non-Destructive Testing Technology.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 18: Lorain County Community College (LCCC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	105	100	23	100	1,259	100
Age	76	40 (mean)	23	37 (mean)	1173	28 (mean)
Male	99	94	22	96	994	85
White	95	90	21	91	894	78
Black	<10	<10	<10	<10	95	8
Hispanic	<10	<10	<10	<10	106	9
Other	<10	<10	<10	<10	<10	<10
More than one race	<10	<10	<10	<10	30	3
Veteran	<10	<10	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	30	29	N/A	N/A	N/A	N/A
TAA Eligible	36	34	N/A	N/A	N/A	N/A
Incumbent Worker	21	30	<10	<10	846	67

Full Time Enrollment	73	70	N/A	N/A	N/A	N/A
Part Time Enrollment	32	30	N/A	N/A	N/A	N/A

The majority of LCCC TAACCCT participants and comparison group students are male and white. Less than one-third of LCCC TAACCCT participants report being incumbent workers. Full- time enrollment is most commonly reported.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 19: Lorain County Community College (LCCC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	61	100	23	100	1,259	100
Non-Incumbent Workers Employed 1 Q after completion	0	0	0	0	N/A	N/A
Incumbent Workers Retained in Employment 3 Quarters After Completion	0	0	0	0	N/A	N/A
Earnings Increase Post-Enrollment (All)	19	31	13	57	922	73
Earnings Increase Post-Enrollment (Incumbent Workers)	<10	<10	<10	<10	711	84

There is not yet enough employment information for LCCC TAACCCT participant group to compare increased earnings across TAACCCT and comparison groups. The comparison group shows a larger percentage of incumbent workers with earnings increases than all employed workers.

Owens Community College

The participant group for Owens includes individuals enrolled in a grant affected program or core course for one of the following programs: Welding Major, GTAW Welding Certificate (TIG Welding), GMAW Welding Certificate (MIG Welding), SMAW Welding Certificate (Arc Welding), Pipe Welding Certificate (Arc Welding 2), Plate Welding Certificate, or Tool and Die/Mold Maker Certificate.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 20: Owens Community College (OCC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	144	100	22	100	342	100
Age	144	28 (mean)	22	28 (mean)	264	28 (mean)
Male	131	93	18	86	245	93
White	112	83	12	57	204	79
Black	22	16	<10	<10	35	14
Hispanic	10	9	<10	<10	13	5
Other	<10	<10	<10	<10	<10	<10
More than one race	<10	<10	<10	<10	<10	<10
Veteran	10	7	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	36	25	N/A	N/A	N/A	N/A
TAA Eligible	<10	<10	N/A	N/A	N/A	N/A
Incumbent Worker	102	71	N/A	N/A	225	66
Full Time Enrollment	42	29	N/A	N/A	N/A	N/A
Part Time Enrollment	102	71	N/A	N/A	N/A	N/A

The majority of OCC TAACCCT participants and comparison group students are male and white. Over two-thirds of OCC TAACCCT participants report being incumbent workers. Part-time enrollment is most commonly reported.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments

will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 21: Owens Community College (OCC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	71	100	22	100	342	100
Non-Incumbent Workers Employed 1 Q after completion	<10	<10	<10	<10	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	<10	<10	<10	<10	N/A	N/A
Earnings Increase Post-Enrollment (All)	17	24	16	73	248	73
Earnings Increase Post-Enrollment (Incumbent Workers)	10	23	<10	<10	187	83

There is not yet enough employment information for OCC TAACCCT participant group to compare increased earnings across TAACCCT and comparison groups. The comparison group shows a larger percentage of incumbent workers with earnings increases than all employed workers.

Rhodes State College

The participant group for Rhodes State includes individuals enrolled in a grant affected program or core course for one of the following programs: Food Industrial Maintenance Certificate, WCOMC Basic Manufacturing Pathway, Introductory Mitsubishi PLC Certificate, Mitsubishi PLC Programming Certificate, Welding Boot Camp, WCOMC Basic Manufacturing Pathway, Mitsubishi GOT Human Machine Interface, Mitsubishi GOT 2000/GT Works 4, Fanuc Robot Certification (CERT), (Robotic) Welding Certificate, Tool & Die Certificate, Food Technology Certificate, Food HACCP Certificate, Food GMP Certificate, ServeSafe Certificate.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 22: Rhodes State College (RSC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	244	100	100	100	0	0
Age	244	29 (mean)	100	24 (mean)	0	0
Male	160	66	49	49	0	0
White	210	89	92	93	0	0
Black	24	10	<10	<10	0	0
Hispanic	<10	<10	<10	<10	0	0
Other	<10	<10	<10	<10	0	0
More than one race	<10	<10	<10	<10	0	0
Veteran	13	5	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	56	23	N/A	N/A	N/A	N/A
TAA Eligible	<10	<10	N/A	N/A	N/A	N/A
Incumbent Worker	157	66	78	78	0	0
Full Time Enrollment	33	50	N/A	N/A	N/A	N/A
Part Time Enrollment	33	50	N/A	N/A	N/A	N/A

The majority of RSC TAACCCT participants are male and white. All similar students who would otherwise be considered in an RSC comparison group are TAACCCT participants. Two-thirds of RSC TAACCCT participants report being incumbent workers. Full-time enrollment is reported as occurring at the same rate as part-time enrollment.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 23: Rhodes State College (RSC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	184	100	100	100	0	0
Non-Incumbent Workers Employed 1 Q after completion	12	67	0	0	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	<10	<10	0	0	N/A	N/A
Earnings Increase Post-Enrollment (All)	83	45	57	57	0	0
Earnings Increase Post-Enrollment (Incumbent Workers)	55	47	43	55	0	0

There is not yet a comparison group for RSC TAACCCT participants. TAACCCT participants overall demonstrate a higher percentage of increased earnings, compared to the incumbent workers participating in TAACCCT at RSC.

Sinclair Community College

The participant group for Sinclair includes individuals enrolled in a grant affected program or core course for one of the following programs: Computer Aided Manufacturing Basic Machining Skills, Computer Aided Manufacturing Precision Machining AAS, CNC Technology AAS, Computer Numerical Control Technology, Computer Aided Manufacturing Project STEP II, Computer Aided Manufacturing Precision Certificate, Industrial Electricity Certificate, Industrial Fluid Power Certificate, Maintenance Fundamentals Certificate, Industrial Mechanics Certificate, Industrial Controls and PLCs Certificate.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 24: Sinclair Community College (SCC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	63	100	10	100	289	100
Age	63	35 (mean)	10	28 (mean)	250	29 (mean)
Male	57	90	10	100	242	97
White	48	92	<10	<10	186	88
Black	<10	<10	<10	<10	13	6
Hispanic	<10	<10	<10	<10	<10	<10
Other	<10	<10	<10	<10	<10	<10
More than one race	<10	<10	<10	<10	<10	<10
Veteran	<10	<10	N/A	N/A	N/A	N/A
Disabled	0	0	N/A	N/A	N/A	N/A
Pell Eligible	10	16	N/A	N/A	N/A	N/A
TAA Eligible	<10	<10	N/A	N/A	N/A	N/A
Incumbent Worker	48	76	<10	<10	233	81
Full Time Enrollment	10	32	N/A	N/A	N/A	N/A
Part Time Enrollment	21	68	N/A	N/A	N/A	N/A

The majority of SCC TAACCCT participants and comparison group students are male and white. Approximately two-thirds SCC TAACCCT participants report being incumbent workers. Part-time enrollment is reported as occurring at roughly double the rate of full-time enrollment.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 25: Sinclair Community College (SCC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	47	100	10	100	289	100
Non-Incumbent Workers Employed 1 Q after completion	<10	<10	0	0	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	0	0	0	0	N/A	N/A
Earnings Increase Post-Enrollment (All)	18	38	<10	<10	225	78
Earnings Increase Post-Enrollment (Incumbent Workers)	13	38	<10	<10	194	83

The SCC comparison group displayed equivalent percentages of earnings increase across overall TAACCCT participants and only incumbent workers. The SCC comparison group shows incumbent workers with higher rates of increased earnings compared to the total sample of employed individuals.

Stark State College

The participant group for Stark State includes individuals enrolled in a grant affected program or core course for one of the following programs: NIMS Measurement, Materials and Safety, NIMS Job Planning, Benchwork and Layout, NIMS CNC Operator Milling Level 1, NIMS CNC Operator Turning Level 1Precision Machining and CNC Programming, Applied Industrial Technology CAD/CAM Specialist Certificate, Applied Industrial Technology AAS, or CNC Certificate.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 26: Stark State College (SSC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	110	100	97	100	614	100
Age	110	31 (mean)	97	31 (mean)	406	33 (mean)
Male	106	98	94	97	383	94
White	83	97	86	96	318	85
Black	<10	<10	<10	<10	45	12
Hispanic	<10	<10	<10	<10	<10	<10
Other	<10	<10	<10	<10	<10	<10
More than one race	<10	<10	<10	<10	0	0
Veteran	<10	<10	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	28	25	N/A	N/A	N/A	N/A
TAA Eligible	0	0	N/A	N/A	N/A	N/A
Incumbent Worker	63	76	54	56	516	84
Full Time Enrollment	42	38	N/A	N/A	N/A	N/A
Part Time Enrollment	68	62	N/A	N/A	N/A	N/A

The majority of SSC TAACCCT participants and comparison group students are male and white. Approximately two-thirds of SSC TAACCCT participants report being incumbent workers. Part- time enrollment is reported as occurring at roughly double the rate of full-time enrollment.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments

will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 27: Stark State College (SSC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	101	100	97	100	614	100
Non-Incumbent Workers Employed 1 Q after completion	<10	<10	<10	<10	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	0	0	0	0	N/A	N/A
Earnings Increase Post-Enrollment (All)	61	60	61	63	271	44
Earnings Increase Post-Enrollment (Incumbent Workers)	34	60	34	63	216	42

The SSC comparison group displayed equivalent percentages of earnings increase across overall TAACCCT participants and only incumbent workers. The SSC comparison group shows slightly higher rates of increased earnings for employed workers overall compared to the only incumbent workers.

Zane State College

The participant group for Zane State includes individuals enrolled in a grant affected program or core course for one of the following programs: Industrial Electrical or Mechanical, Welding AAS, Industrial Systems Engineering Technology, Welding Certificate, Industrial Systems Technician Certificate, BW-C Basic Structural Welding, GM-C GMAW Pipe Welding, SW-C SMAW Pipe Welding, GT-C GTAW Pipe Welding, WA-C Welding Automation and Fabrication, Basic SMAW II.

Student Characteristics: The HEI student records do not include indicators of veteran status, disability, Pell eligibility, TAA eligibility, or full/part time enrollment. We present this information for the full population of TAACCCT participants using the student data collected by Ohio TechNet on the participant intake forms. In addition we show the student characteristics for the subset of TAACCCT participants who appear in the HEI data, using the participant intake form information supplemented with HEI race data (where available) to minimize missing values.

Table 28: Zane State College (ZSC) Student Characteristics

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	154	100	137	100	49	100
Age	154	27 (mean)	137	27 (mean)	43	27 (mean)
Male	138	90	123	90	35	81
White	144	98	128	98	40	93
Black	<10	<10	<10	<10	<10	<10
Hispanic	<10	<10	<10	<10	<10	<10
Other	0	0	<10	<10	<10	<10
More than one race	0	0	<10	<10	<10	<10
Veteran	11	7	N/A	N/A	N/A	N/A
Disabled	<10	<10	N/A	N/A	N/A	N/A
Pell Eligible	48	31	N/A	N/A	N/A	N/A
TAA Eligible	<10	<10	N/A	N/A	N/A	N/A
Incumbent Worker	56	47	52	38	29	59
Full Time Enrollment	116	75	N/A	N/A	N/A	N/A
Part Time Enrollment	38	25	N/A	N/A	N/A	N/A

The majority of ZSC TAACCCT participants and comparison group students are male and white. Approximately one-half of ZSC TAACCCT participants report being incumbent workers. Full-time enrollment is reported as occurring at three times the rate of part-time enrollment.

Student Outcomes: The following table details the employment outcomes for participants, participants who are present in the HEI database, and comparison individuals. No direct comparison is made between the groups for the Interim Report. For the Final Report, adjustments

will be made to ensure comparability between groups. Differences in this table should be interpreted with caution for this reason.

When considering employment outcomes by institution, the cell size is insufficient at the time of this report to determine employment retention outcomes for TAACCCT participants. Therefore, comparison group employment retention results were not compiled.

Table 29: Zane State College (ZSC) Employment Outcomes

	TAACCCT (N)	TAACCCT (%)	TAACCCT (HEI) (N)	TAACCCT (HEI) (%)	Comparison (N)	Comparison (%)
Total Individuals	148	100	137	100	49	100
Non-Incumbent Workers Employed 1 Q after completion	<10	<10	<10	<10	N/A	N/A
Non-Incumbent Workers Retained in Employment 3 Quarters After Completion	<10	<10	<10	<10	N/A	N/A
Earnings Increase Post-Enrollment (All)	83	56	83	61	39	80
Earnings Increase Post-Enrollment (Incumbent Workers)	36	67	36	69	26	90

The ZSC comparison group displayed higher percentages of earnings increase than TAACCCT participants, across all employed as well as incumbent workers. For both TAACCCT and comparison groups, incumbent workers demonstrated higher rates of increased earnings compared to the total sample of employed individuals.

Impact Evaluation Next Steps

Based on the information found in this report, a handful of steps need to occur prior to the creation of the final report. Data will continue to be collected three times per year for the duration of the grant. Furthermore, based on the findings of the interim report, comparison groups for certain institutions may be altered to ensure a more accurate final evaluation. All of the work done in the next 15 months will be to prepare for the final impact analysis, which includes a deeper statistical interpretation of the data, in addition to the descriptive statistics found in this report.

Appendix A: Project Description

The OTN colleges offer programs and pathways in Welding, CNC/Machining, Industrial Maintenance, Digital Fabrication/Industrial Automation; and Occupational Safety. Primary foci of the project include:

- Making targeted investments to enhance manufacturing education programs,
- Promoting collaboration among the colleges and other partners for the purposes of scaling successful innovations in training and education delivery,
- Leveraging state and partner investments,
- Working closely with industry partners.

OTN targets individuals interested in the manufacturing sector with special focus on TAA-eligible workers and veterans.

The third-party evaluation assesses the effectiveness of the OTN consortium in implementing the strategies described in the grant proposal. Three gaps, identified in the proposal, drive the strategies of the project:

- Ohio community colleges are rich in programs and services that benefit workers and businesses in the manufacturing sector. There is an opportunity to improve the cohesiveness of these programs and services in order to gain resource efficiencies and provide greater value to jobseekers, workers, and businesses;
- Program technologies, curricula, and instruction need to be updated, enhanced and scaled to meet industry needs while concurrently providing accelerated, accredited skills training/education for adults.
- Student retention and completion in targeted programs needs to be improved.

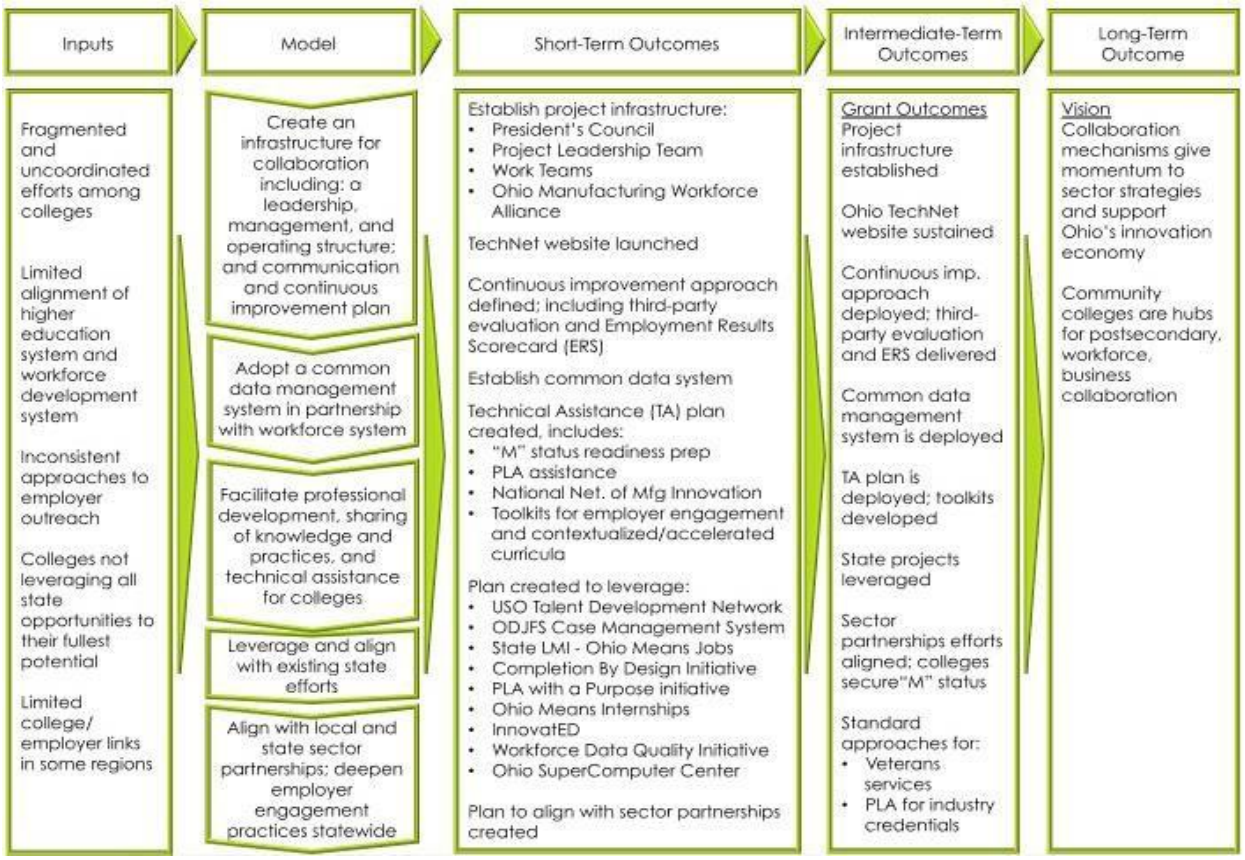
In response to these gaps, three strategies were proposed. The strategies are outlined below as they were described in the original grant proposal. Strategies have evolved as the project has been implemented. For more, see the implementation evaluation section, below.

Strategy 1: Create mechanisms for statewide collaboration among consortium partners and economic and workforce development allies that help advance Ohio's innovation economy.

This strategy responds to the first gap, indicating an opportunity to improve collaboration among OTN colleges, public workforce and economic development entities, existing state initiatives and projects, and employers and industry partners. The hypothesis is that enhanced collaboration will enable colleges to marshal resources and create efficiencies in operations and spending, while unlocking a broader, consortium-wide array of programs and services for workers and businesses in each college's district. Additionally, there is a spoken belief that the

consortium may be able to affect policy change in the state by speaking with a unified voice, although specific messages or agendas are not determined at this time. The strategy entails establishing structures that bring together grant partners, leverage existing projects and initiatives in the state, and establish processes for using this consortium as a platform for promoting systems improvements statewide. Figure 1 depicts the logic model drawing on the contents of the grant proposal. The intermediate-term outcomes are those described in the proposal.

Figure 1: Strategy 1 Logic Model



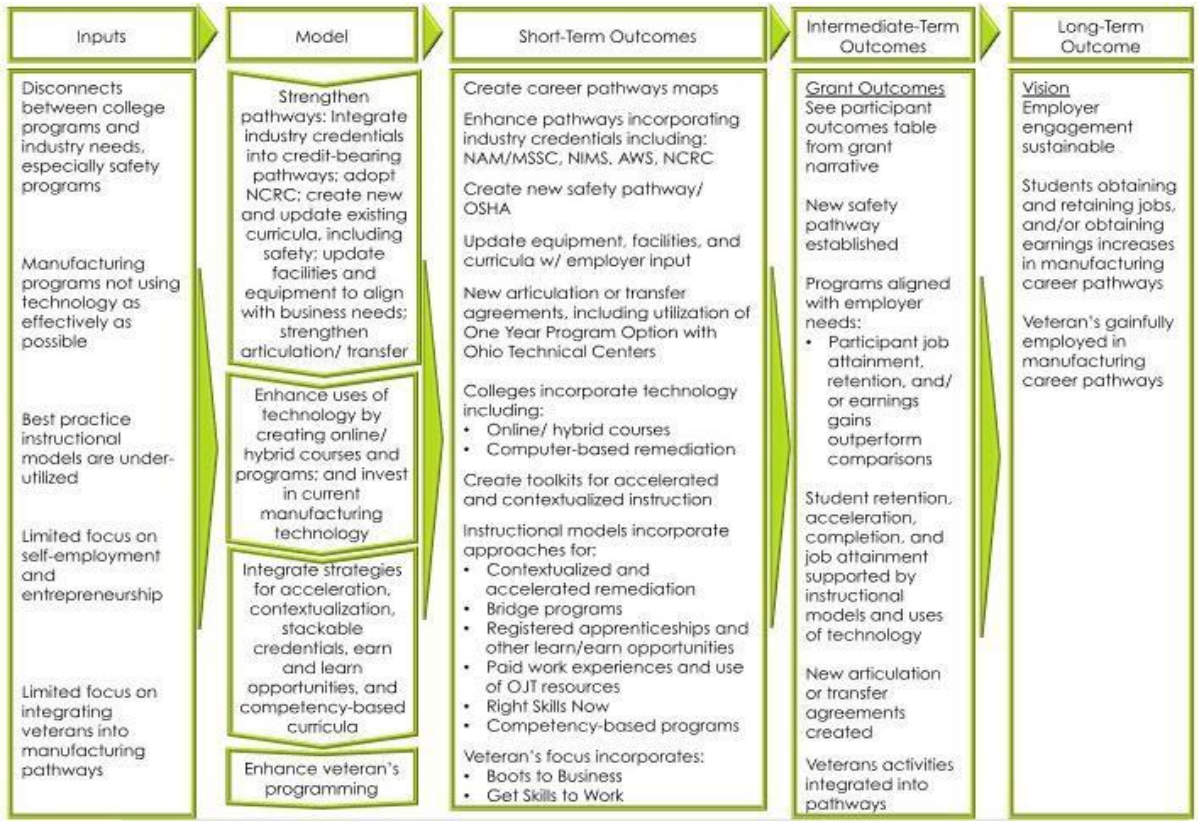
Strategy 2: Transform instructional design and delivery systems for customization to individual student needs and rapid response to labor market demand.

This strategy responds to the second gap and seeks to make targeted investments in programs that meet industry needs and deliver accelerated and flexible programs that meet the needs of students. Enhancements include new or improved curricula, facilities, and equipment; new uses of technology in instruction or other innovative instructional models; and improved engagement

with employers. A focus on veterans and entrepreneurs is incorporated into this strategy and the grant's participant outcomes (USDOL Outcomes 1 through 9) are driven by this strategy. The hypothesis is that better alignment between instructional content and models and the skills demanded by businesses will improve participant educational success and strengthen connections to jobs and career advancement in manufacturing. The expectation is that program investments will affect completion rates, credential attainment rates, and employment attainment and earnings improvement rates.

OTN colleges exist in different contexts with varying needs and constraints; the proposal submitted to the USDOL is diffuse in describing how colleges will implement this strategy. In other words, there is no single prescribed intervention for colleges to implement. A variety of programmatic activities are described, but specific models are not attributed to particular partners, nor is it expected that partners will participate evenly in the list of activities. Thus, the implementation evaluation approach is a critical component of the overall evaluation; it will capture and attribute specifics of on-the-ground implementation at each college. Figure 2 depicts the logic model.

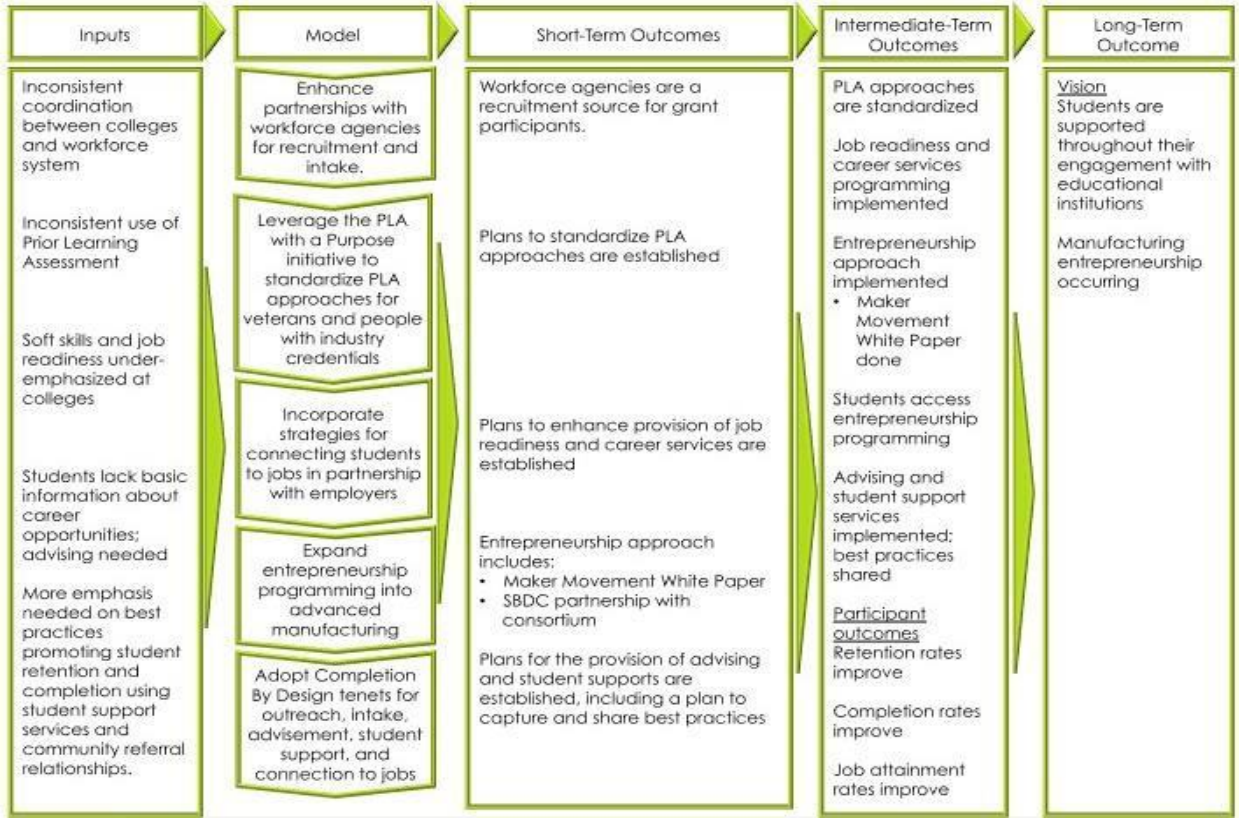
Figure 2: Strategy 2 Logic Model



Strategy 3: Expand best practices that redesign student intake, success, and placement.

This strategy responds to the third gap and seeks to enhance practices that support student retention and completion in targeted programs and job attainment in targeted fields. Key features include the incorporation of approaches for intrusive advising, intensive student support services, job readiness training, and the incorporation of prior learning credit. It also incorporates an approach for aligning and articulating non-credit credentials delivered by Ohio's non-credit Technical Center system – a separate adult vocational training system. The hypothesis is that these activities will promote increases in student retention and completion rates in targeted programs and job attainment rates in targeted fields. Similar to Strategy 2, there is no prescribed model for how colleges will implement this strategy. The implementation evaluation will determine the specifics of on-the-ground implementation and seek to make connections to the impact evaluation. Strategy 1, which aims to add cohesion to the initiative, will interact with this strategy and so will Strategy 2, which focuses on updating program technologies, curricula and instruction. Therefore, student outcomes related to these measures are incorporated into this strategy. Figure 3 shows the logic model.

Figure 3: Strategy 3 Logic Model



Appendix B: Implementation of grant strategies and fidelity to model

The following are responses to a survey tracking grant implementation provided in Spring 2016. This section should be thought of as an inventory conducted at a moment in time. The survey will be conducted again in Spring 2018 to assess changes. Much of the information duplicates elements stated previously.

To track the implementation of grant models and strategies and fidelity to the proposed model, the evaluation team administers a continuous improvement survey to each of the consortium colleges. The surveys ask each college to gage their participation in each of the grant models described in the proposal. Participation by grant model is detailed below:

Strong participation (more than half indicate progress is either Ongoing or Complete):

Key areas with strong participation:

Presidents' Council, M Status, OMJ engagement, career pathway maps, stacked and latticed credential implementation, industry credential incorporation, implement online programs, partner with veteran's services, engage WDB's and employers in recruitment, engage employers on advisory boards, comprehensive career planning, intrusive advising.

Strategy 1

- President's Council participation (6 ongoing, 3 intended, 1 complete)
- Achieve M Status (4 ongoing, 6 complete, 1 Intended)
- Engagement of state infrastructure
    - Common data management system (9 ongoing, 1 intended, 1 no participation planned)
    - USO TDN (7 ongoing, 1 intended, 2 no participation planned)
    - Increase OMJ utilization (11 ongoing)
    - Leverage OMJ website (9 ongoing, 2 intended)
    - Use Ohio Means Internships (6 ongoing, 2 intended, 2 no participation planned)
- Some, but not all, activities pertaining to enhancing partnerships and growing networks
    - Solicit employer recommendations to coordinate support services (6 ongoing, 2 intended, 3 no planned participation)
    - Expand or create new articulation and transfer agreements (8 ongoing, 1 intended, 1 no participation planned)

- Engage industry associations (9 ongoing, 2 intended)
- Identify employer and other partners (9 ongoing, 1 intended, 1 no participation planned)

Strategy 2

- Map career pathways (8 ongoing, 2 complete, 1 intended)
- Adopt stacked and latticed credentials (8 ongoing, 2 complete, 1 intended)
- Incorporation of industry credentials
  - Embed industry credentials (8 ongoing, 2 complete, 1 intended)
  - Align with nationally recognized certifications (7 ongoing, 3 complete, 1 intended)
  - Align with MSSC and other entities (7 ongoing, 1 complete, 1 intended, 2 no planned participation)
  - Crosswalk industry credentials to courses (6 ongoing, 1 complete, 2 intended, 1 no participation planned)
  - Adopt NCRC (5 ongoing, 2 complete, 1 intended, 3 no planned participation)
- Some, but not all, activities associated with integration of new technologies into programs
  - Integrate online, tech-enabled, or competency-based learning (9 ongoing, 2 intended)
  - Implement online/ hybrid platforms (7 ongoing, 1 complete, 2 intended, 1 no planned participation)
  - Adopt flipped classrooms (7 ongoing, 2 intended, 1 no planned participation)
  - Host or attend workshops on competency-based models (5 ongoing, 1 complete, 3 intended)
- Only one activity associated with implementing accelerated or contextualized instruction
  - Offer programs that include more certificated creating multiple entry-exit points (6 ongoing, 2 intended, 2 no participation planned)
- Only one activity associated with improving instructional delivery
  - Incorporate approaches for paid work experiences and use of OJT resources (6 ongoing, 3 intended, 2 no planned participation)
- Some, but not all, activities for veterans
  - Partner with veterans service programs (7 ongoing, 1 complete, 3 intended)
  - Coordinate with OMJ Veterans (9 ongoing, 2 intended)
- Some, but not all activities associated with engaging employers in instructional design
  - Maintain ongoing communication with industry (10 ongoing, 1 intended)
  - Engage employers as advisory committee members (10 ongoing, 1 intended)

Strategy 3

- Engage WDBs in recruitment (8 ongoing, 3 intended)
- Engage employers in recruitment (10 ongoing, 1 intended)
- Only one PLA activity
    - Develop or adopt tool to predict likelihood of PLA credit awards (6 ongoing, 2 intended, 2 no planned participation)
- Some, but not all activities associated with improving job readiness and career services
    - Utilize joint promotion with some level of employment guarantee for completers (7 ongoing, 3 intended)
    - Involve employers in identification of hiring trends (11 ongoing)
    - Involve employers in design of expanded earn and learn opportunities (6 ongoing, 2 intended, 3 no planned participation)
- Most activities associated with incorporating best practices in advising and student support services
    - Advisors help students create action plans (10 ongoing, 1 intended)
    - Utilize intrusive advising tools and strategies (9 ongoing, 2 intended)
    - Provide comprehensive career exploration (8 ongoing, 1 intended, 2 no participation planned)
- Some, but not all, activities associated with leveraging existing resources to redesign student intake, success, and placement
    - Establish a professional development schedule (6 ongoing, 2 intended, 3 no planned participation)
    - Maximize use of free resources on OMJ (10 ongoing, 1 intended)
    - Share or leverage Completion By Design tenets (6 ongoing, 1 intended, 2 no planned participation)

Limited participation (more than half indicate progress is either Intended or No Planned Participation):

Key areas with limited participation: Almost all references to toolkits (NNMI, employer engagement, contextualized/ accelerated remediation, etc.), OWT Workforce Information Exchange, almost all references to leveraging best practices from other schools or external entities (NNMI, InnovateED), collaborate with ABE, align with state Unified Plan, adoption of specific models (STEM bridge, Right Skills Now, Boots to Business, virtual welders), expansion of CBE, development of safety programs, almost all entrepreneurship activities, many PLA activities (expand marketing, collaborate with state PLA w/ Purpose)

Strategy 1

- Most activities associated with establishing and utilizing technical assistance
    - Utilize PLA TA toolkits assembled by consortium leadership (3 ongoing, 8 intended)
    - Contribute to NNMI toolkits assembled by consortium leadership (1 ongoing, 4 intended, 4 no planned participation)
    - Use NNMI toolkits assembled by consortium leadership (1 ongoing, 5 intended, 3 no planned participation)
    - Contribute to employer engagement toolkits (1 ongoing, 6 intended, 1 no participation planned)
    - Contribute to contextualized and accelerated curricula toolkits (3 ongoing, 5 intended, 3 no participation planned)
    - Use contextualized and accelerated remediation toolkits (2 ongoing, 6 intended, 2 no planned participation)
- Some, but not all, activities associated with enhancing partnerships and growing networks
    - Share educational innovations coming out of NNMI (1 ongoing, 7 intended, 2 no planned participation)
    - Use information coming out of NNMI to improve programs (1 ongoing, 7 intended, 2 no planned participation)
    - Use OWT's Workforce Information Exchange (2 ongoing, 4 intended, 4 no planned participation)

Strategy 2

- One activity associated with integrating technology into programs
    - Utilize LCCC's pilot for predictive analysis (2 ongoing, 5 intended, 3 no planned participation)
- Nearly all activities associated with implementing accelerated or contextualized instruction
    - Leverage best practices and new curriculum models in digital design (3 ongoing, 3 intended, 4 no planned participation)
    - Leverage Columbus State's programs (1 ongoing, 4 intended, 4 no planned participation)
    - Leverage Cincinnati State's programs (2 ongoing, 6 intended, 1 no planned participation)
    - Leverage Tri-C's programs (3 ongoing, 3 intended, 4 no planned participation)
    - Develop contextualized math for industrial maintenance (2 complete, 2 ongoing, 2 intended, 4 no planned participation)
    - Leverage Rhodes programs (2 ongoing, 1 intended, 5 no planned participation)

    - Provide accelerated and contextualized basic skills (1 complete, 4 ongoing, 3 intended, 2 no planned participation)
    - Share best practices and support replication of CBE models such as Tooling U. (4 ongoing, 3 intended, 3 no planned participation)
    - Collaborate with ABE for contextualization and acceleration (3 ongoing, 4 intended, 3 no planned participation)
    - Connect through technical work groups with Ohio's Unified State Plan for Perkins, WIA and ABLE (3 ongoing, 3 intended, 4 no planned participation)
    - Align accelerated and contextualized instruction to the Ohio Unified State Plan (2 ongoing, 2 intended, 5 no planned participation)
- Most activities associated with improving instructional delivery
    - Use or expand a STEM bridge (3 ongoing, 8 no planned participation)
    - Align credit programs with registered apprenticeships (4 ongoing, 5 intended, 1 no planned participation)
    - Utilize Right Skills Now (4 ongoing, 3 intended, 4 no planned participation)
    - Expand use of CBE (4 ongoing, 4 intended, 3 no planned participation)
- Some, but not all, activities for veterans
    - Replicate SBDC's Boots to Business (2 ongoing, 4 intended, 5 no planned participation)
    - Partner with employers on programs such as Get Skills to Work (3 ongoing, 3 intended, 4 no planned participation)
- Some, but not all activities associated with engaging employers in instructional design
    - Create toolkits for employer engagement (2 ongoing, 5 intended, 2 no planned participation)
    - Utilize toolkits for ongoing employer engagement (4 ongoing efforts, 5 intended, 1 no planned participation)

<u>Strategy 3</u>

- Activities associated with updating equipment and facilities (listed in the narrative)
    - Purchase Virtual Welders and design a course called Welding for the Non-Welder (3 ongoing, 1 intended, 5 no planned participation)
    - Purchase self-contained portable welder (2 ongoing, 1 intended, 4 no planned participation)
- All activities associated with creating a new safety credential
    - Expand degree options for safety professionals (4 ongoing, 1 intended, 6 no planned participation)

    - Launch dual enrollment OSHA SPCP (3 ongoing, 8 no planned participation)
    - Launch ATS in Safety (2 ongoing, 9 no planned participation)
- Most PLA activities
    - Develop a crosswalk mapping PLA credits to courses in key programs such as welding (1 complete, 3 ongoing, 4 intended, 1 no planned participation)
    - Increase PLA marketing (4 ongoing, 6 intended)
    - Coordinate with state PLA initiatives (4 ongoing, 4 intended, 1 no planned participation)
- Some, but not all activities associated with improving job readiness and career services
    - Leverage Cincinnati State's best practices (2 ongoing, 7 no planned participation)
    - Leverage LCCC's pilot (3 ongoing, 5 intended, 1 no planned participation)
- All activities associated with entrepreneurship
    - Replicate Boots to Business (4 ongoing, 1 intended, 6 no planned participation)
    - Expand entrepreneurship training (4 ongoing, 1 intended, 6 no planned participation)
    - Participate in working group with SBDC and DOL on entrepreneurship training (3 ongoing, 3 intended, 5 no planned participation)
    - Embed entrepreneurship in credit-bearing programs (4 ongoing, 1 intended, 6 no planned participation)
    - Sustainability or replication planning for entrepreneurship training (3 ongoing, 2 intended, 6 no planned participation)
    - Advisors provide information and referrals on SBDC and entrepreneurship (5 ongoing, 1 intended, 5 no planned participation)
- One activity associated with leveraging existing resources to redesign student intake, success, and placement
    - Leverage best practices learned through InnovatED (2 ongoing, 2 intended, 5 no planned participation)

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