NORTH DAKOTA
STATE COLLEGE OF SCIENCE

TAACCCT Project:

North Dakota Advanced Manufacturing Skills Training Initiative (NDAMSTI)

THIRD-PARTY EVALUATION FINAL REPORT

September 2017

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About This Publication

WorkED Consulting, LLC, a small business management consulting firm located in Burke, Virginia, and its evaluation partner, ICF International, located in Fairfax, Virginia, wish to thank and acknowledge staff at North Dakota State College of Science for their many hours of time and effort spent providing qualitative and quantitative data. In particular, the evaluators wish to thank Clint Gilbertson for providing leadership and collaboration on the evaluation.

1.0 Executive Summary

North Dakota State College of Science (NDSCS), located in Wahpeton, ND, is a comprehensive community college that offers certificates and associate's degrees in many fields of study. NDSCS provides a wide array of job training and education tied to local employers' needs for a skilled workforce, and is helping provide skills and competencies to workers looking to advance in their careers and improve their wages through career promotions.

In 2013, NDSCS applied for, and was successfully awarded, a Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant from the U.S. Department of Labor. NDSCS's Advanced Manufacturing Skills Training Initiative (NDAMSTI) project is a single institution award that targets North Dakota's trade-impacted workers, other dislocated workers, and veterans, who need skills' upgrades to pursue jobs and careers in the high-demand fields of welding, manufacturing, and mechatronics.

The primary focus of the NDAMSTI project was to develop comprehensive, high-quality welding and mechatronics career pathways, integrating industry standards and credentials aligned to employment in North Dakota and the neighboring state of Minnesota. Specific enhancements included:

A) Develop and expand online learning options.

B) Develop curriculum that is tailored to the adult learner and teaches new skills.

C) Build latticed and stackable programs that build skills over time utilizing industry-recognized credentials.

D) Expand hours and locations for classes and access to programming.

E) Promote degree completion options through strategies such as prior learning assessment (PLA).

F) Enhance transfer and articulation to four-year universities for recipients of technical associate's degrees.

The **program implementation study** is designed to answer sets of research questions in four key areas: (1) Curriculum Review, Use and Selection; (2) Program Delivery, Design, and Administration; (3) Assessment Tools and Processes; and (4) Partner Contributions. While the program implementation study design incorporated these required research areas, it also extended further in assisting NDSCS program staff and administration with continuous improvement by cross-walking the activities and deliverables in NDSCS's Statement of Work (SOW) with the research questions in the four research areas, and providing a comprehensive picture of ongoing implementation progress, accomplishment of deliverables, and continuous improvement. Therefore, the implementation design became much more than information gathering and analysis, it provided NDSCS leadership with qualitative information and

feedback on areas of improvement as the program progressed over the four-year period of performance. Further, WorkED Consulting includes a third-party review of deliverables as a part of this report.

The **outcomes and impact analysis** utilizes both a pre/post-test and a quasi-experimental design to measure changes in participant outcomes. The pre-/post-test evaluation design assesses the effectiveness of the TrainND workplace-based programs on attendees; specifically, skill and knowledge gains, and employment outcomes achieved post training. For this workplace-based training, which is projected to serve 270 participants during the course of the program, the non-experimental pre-test/post-test design was chosen because of the lack of a suitable comparison group, and the inappropriateness of using a random assignment methodology (i.e., asking employers to allow employees to be randomly assigned to training or non-training groups).

A quasi-experimental two-group/comparison cohort evaluation was used to assess the impact of the enhancements to the NDSCS college credit welding program on individual participants. The quasi-experimental methodology used a matched comparison group. The evaluation compared a cohort of participants who received NDAMSTI welding program services (N=300) to participants enrolled in the welding program five years prior (N=325). This approach enabled the evaluators to examine participant outcomes for those who received the benefit of the NDAMSTI program as compared to those who participated in the program prior to enhancements. For the outcome evaluation, NDSCS utilized its electronic student database to collect data and track NDAMSTI participants and serve as a repository for participant attributes. NDSCS collected data on the number of courses participants enrolled in, the number of courses taken, credentials attained, and basic demographic information such as gender and age. In addition, NDSCS and the evaluation team conducted a participant level baseline and used follow-up surveys to assess knowledge, skills, and employment status outcomes. As of Summer 2016, NDSCS was able to request and obtain unemployment insurance (UI) data for program participants working in North Dakota to supplement employment and wage data collected through surveys.

Outcomes examined by both methods include: program completion rates, credential earnings, enrollment in further education, entered employment, job retention, and wages.

Implementation Findings

The program implementation analysis indicated the following:

- ***NDSCS implemented the year 2 welding curriculum enhancements as outlined in the NADMSTI project plan.*** NDSCS met its established milestones in implementing welding curriculum enhancements that led to a complete two-year associate's degree career pathway, offered at both the Wahpeton main campus and the Fargo satellite location.

Curriculum development and pathway development allowed NDSCS to serve an additional 25 participants annually.

- ***NDSCS appropriately based curriculum modifications and additions based on national industry standards.*** NDSCS created or modified curriculum in a way that met both regional accreditation requirements and incorporated national industry standards, particularly in welding using American Welding Society-developed materials.

- ***NDSCS completed curriculum development and implemented new courses in mechatronics/machining.*** NDSCS completed its fabrication series and upgraded lab space that built capacity to serve more students in the mechatronics career field through broader sets of skills enhancements. NDSCS embedded appropriate industry credentials such as NC3 and NIMS.

- ***TrainND did not make adequate program upgrades through enhanced curriculum or implementation of industry standards.*** Because of the lack of industry standards and credentials and incorporation of a career pathway concept, the TrainND program has questionable employment and earnings impacts for students and/or long-term value for someone wanting to build a career in a technical trade.

- ***Online course development met basic requirements for the grant, but was not a central focus.*** Online and hybrid course development was a key activity of the TrainND portfolio, and other than a handful of courses developed, was not utilized as a flexible option for participants or part of a longer-term strategy for expanding access to short-term training.

- ***NDSCS's Program Director, who had industry and teaching experience and remained in the role throughout the entire grant project, was a key reason the NDAMSTI project was successful.*** NDSCS effectively recruited an individual who had well-rounded experience and was known and respected at the college and in the community. As a result, project milestones were met, and innovative and sustainable practices were implemented.

- ***NDSCS met its program plan milestones for hiring grant personnel, purchasing equipment, renovating space, and executing contracts.*** This was critical to meeting the participant outcomes due to the increased capacity that equipment and renovations allowed for running the welding program. This also points to the importance of equipment and renovations being allowed under TAACCCT, as these activities specifically helped NDSCS expand programming into Fargo.

- ***NDSCS has dramatically expanded its reach throughout the eastern region of North Dakota through expansion of campus locations and the mobile trailer.*** By expanding capacity at the Fargo location, and utilizing the mobile trailer to go to worksites, community events or

other small towns, NDSCS greatly increased exposure to the welding and mechatronics programs and provided actual skills training closer to people's homes.

- ***NDSCS worked diligently to support TrainND activities, but TrainND did not realize its performance outcomes due to a lack of focus and commitment to stated activities and deliverables.*** TrainND did not have specific outcomes aligned to activities, nor a performance-based culture. As a result, the TrainND portion of the project failed to meet its outcome targets or stated deliverables, versus the NDSCS credit-based welding pathway, which made up the difference in outcomes targets.

- ***NDSCS provided adequate competency assessment and career guidance services that benefitted participants.*** NDSCS strategically utilized industry standards and tools to develop its own in-house competency assessment that was focused on helping participants realize their areas of weakness and address them through intensive coursework and tutoring services. Surveys of participants indicate satisfaction with these services.

- ***NDSCS could have used NDAMSTI as an opportunity to implement a more vibrant prior learning assessment practice at the institution.*** While NDSCS has a PLA policy at the institution, it was not a committed practice and a widespread alternative for participants to accelerate their time to completion.

- ***Building off initial success in engaging employers, NDSCS should consider ways to organizationally sustain practices such as creation of a workforce division.*** NDSCS made significant strides in building employer support for its workforce and technical training programs. NDSCS should consider post-TAACCCT methods to ensure employer engagement efforts continue and are focused.

- ***NDSCS worked with Job Service North Dakota and other institutions of higher education in North Dakota to obtain access to state UI wage records.*** North Dakota state law did not allow institutions of higher education access to UI wage records due to state privacy statutes. However, due to diligent efforts by NDSCS and partners, access was granted and data was gathered that informs NDSCS on longer-term employment and earnings gains by participants and future students.

Participant Outcomes and Impacts Findings

The outcomes and impacts evaluation indicated the following:

- ***NDAMSTI participants had a high rate of program completion and often finished the program within one or two years.*** Within that time, students typically completed several credentials. In contrast, few participants held certificates or licenses when they started the program.

- ***The majority of students were interested in further education and also more than half continued their education after completing the program.***

- ***The rate of employment was only slightly higher after the program.*** However, the low increase may reflect that many students decided to continue their education after completion.

- ***In the quarter after completing the program, the majority of incumbent workers still employed had a wage increase and about a third of unemployed participants gained employment.*** The majority of unemployed participants who gained employment retained their employment six months later.

- ***TrainND participants were generally satisfied with the training, but identified areas where the training could be improved.***

Final Conclusions

The following final conclusions are drawn from NDSCS's TAACCCT-funded program:

1. ***Integrating nationally-recognized industry standards and credentials into associate's degree career pathways in technical education is a viable and employment-focused approach to education and training.*** NDSCS focused efforts on enhancing the two-year associate's degree career pathway in welding to promote upward mobility. NDSCS participants who gained an associate's degree were qualified for supervisory and higher paying positions. Utilizing nationally-recognized industry standards and credentials ensured a level of program quality expected by employers, and enhanced participant employment prospects.

2. ***TAACCCT-allowable funded activities, such as equipment purchases and facilities renovation, were critical to the outcomes and success of the NDSCS program.*** Employers and residents in the Fargo metropolitan area requested additional training opportunities and program offerings in welding and other technical fields. Because TAACCCT allowed NDSCS to renovate and equip a facility in Fargo, as well as the main campus in Wahpeton, NDSCS expanded capacity of welding training to 25 participants per year.

3. ***Program leadership in a comprehensive training initiative, such as NDAMSTI, is critical to the completion of deliverables and success of quantifiable outcomes.*** NDSCS recruited, hired, and retained a Program Director, who had expertise in the welding field and teaching experience in the classroom. The Program Director was also involved in national efforts to promote quality welding programs and professional development for instructors. As a result, NDSCS stayed on track with project milestones, and successfully completed program adjustments and continuous improvement when faced with challenges.

4. ***Non-credit training programs can be an effective response to employer needs, but without strategic vision, integration of nationally-recognized standards and credentials into the pathway, and avenues for student engagement in further education, those non-credit programs have questionable effectiveness and results.*** Because TrainND is administratively separate from NDSCS, the NDSCS project leadership had limited ability to impact the activities and commitments conceived in the TAACCCT grant application and included in the statement of work. As a result, TrainND did not implement nationally-recognized, standards-based curriculum improvements, maximize availability of funds for classroom instruction, or meet program outcomes. TrainND's involvement in the NDAMSTI project did not meaningfully contribute to participant outcomes.

5. ***Participants completing the NDAMSTI project obtained credentials that increased employability and potential for career advancement, but participants tended to further their education rather than gain immediate employment.*** Multiple reasons may exist for this observation, including participant perceptions that educational attainment factored into increased earnings opportunities.

6. ***The NDAMSTI project promoted a variety of employment outcomes, including wage increases, employment gains, and industry-recognized credential attainment.*** While the rate of employment was similar before and after the program, the evaluation demonstrated that participants may have benefited in different ways. For example, many incumbent workers realized wage increases, and a portion of unemployed participants obtained and kept employment three quarters after program completion.

2.0 Introduction

North Dakota State College of Science (NDSCS), located in Wahpeton, ND, is a comprehensive community college that offers certificates and associate's degrees in many fields of study. NDSCS provides a wide array of job training and education tied to local employers' needs for a skilled workforce. With North Dakota experiencing cyclically low, then growing, rates of unemployment during the past five years, NDSCS is helping provides skills and competencies to workers looking to gain employment, advance in their careers, and improve wages through career promotions.

In 2013, NDSCS applied for, and was successfully awarded, a Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant from the U.S. Department of Labor. NDSCS's Advanced Manufacturing Skills Training Initiative (NDAMSTI) project is a single institution award that targets North Dakota's trade-impacted workers, other dislocated workers, and veterans, who need skills' upgrades in order to pursue jobs and careers in the high-demand fields of welding and mechatronics. As a condition of the award, NDSCS implemented a third-party evaluation plan and hired a third-party evaluator, WorkED Consulting, LLC, based out of Burke, Virginia. In turn, WorkED Consulting procured the services of ICF International, a large professional services company, to co-design and assist with the methodological structure of the evaluation. The third-party evaluation plan contains two major components: (1) a program implementation study, and (2) an impact and outcomes study. Each of these components has been designed to inform NDSCS, the larger community college network, and the workforce investment system regarding successful services and interventions designed to improve the employment and earnings prospects for unemployed and underemployed individuals.

The program implementation study is designed to answer sets of research questions in four key areas: (1) Curriculum Review, Use, and Selection; (2) Program Delivery, Design, and Administration; (3) Assessment Tools and Processes; and (4) Partner Contributions. While the program implementation study design incorporates these research areas, it also extends further in assisting NDSCS program staff and administration with continuous improvement by: (1) detailing important steps and decisions in program implementation, and (2) tracking the rate of program expenditures and whether any delays in procuring services or equipment or hiring staff had an impact on grant activities and/or deliverables. This is embodied in a baseline *Early Implementation Report* that WorkED Consulting issued to NDSCS after year 1 of the period of performance, which outlined progress-to-date and highlighted any potential adjustments that NDSCS staff could consider.

The outcomes and impacts study uses both a pre/post-test and a quasi-experimental design to measure changes in participant outcomes. Specifically, the evaluation of the NDSCS program assesses the impact that enhancements to the NDSCS college credit welding program and workplace-based program (TrainND) have on individual participants. For the NDSCS

college credit welding program, a non-experimental two group/cohort comparison focuses on the expansion of the college credit based program, which anticipated serving approximately 300 participants during the period of performance. For the NDSCS workplace-based program (the TrainND model), which projected to serve 270 participants during the period of performance, the evaluation conducted a pre-test/post-test gain of skills and knowledge, and employment outcomes achieved six months post-training. The non-experimental pre-test/ post-test design was implemented because of a lack of a suitable comparison group, and the inappropriateness of using a random assignment methodology (i.e., asking employers to allow employees to be randomly assigned to training or non-training groups).

The evaluation focused on measuring progress toward the following outcomes:

- Increase in program retention rates
- Increase in program completion/graduation/certification rates
- Decrease in time required to complete program participation
- Increase in participant earnings
- Improvements in participant employment status
- Increase in participant employment stability
- Increase in participant post-program education involvement

3.0 Evaluation Design

The NDAMSTI evaluation design incorporated the two major required study elements—a program implementation analysis and an impact/outcomes study.

3.1 Implementation Design

The program implementation study was designed to answer sets of research questions in four key areas: (1) Curriculum Review, Use, and Selection; (2) Program Delivery, Design, and Administration; (3) Assessment Tools and Processes; and (4) Partner Contributions. While the program implementation study design incorporated these required research areas, it also extended further in assisting NDSCS program staff and administration with continuous improvement by cross-walking the activities and deliverables in NDSCS' Statement of Work (SOW) with the research questions in the four research areas, and providing a comprehensive picture of ongoing implementation progress and a third-party review of accomplishment of deliverables. The implementation design was more than information gathering and analysis; it provided NDSCS leadership with qualitative information and feedback on areas of improvement as the project progressed over the four-year period of performance.

The research questions addressed by the implementation design include the following:

How was the particular curriculum selected, used, or created? NDSCS' goal was to build and improve the second-year welding program to provide a high-quality, associate's degree pathway option for participants, expand the capacity of the welding program to serve more

students through offerings in Fargo, ND and a mobile trailer, incorporate national industry credentials into the welding pathway, and offer hybrid and online modules through the non-credit partner, TrainND. The approach to evaluating curriculum development included: 1) documenting curriculum already in place at NDSCS; 2) assessing new curriculum implemented, including the rationale for the new curriculum and its alignment with national industry and accreditation/certification standards; 3) describing the rationale for new curriculum or refinements to curriculum implemented as a result of employer feedback; and 4) monitoring curriculum implementation progress and whether timelines were met.

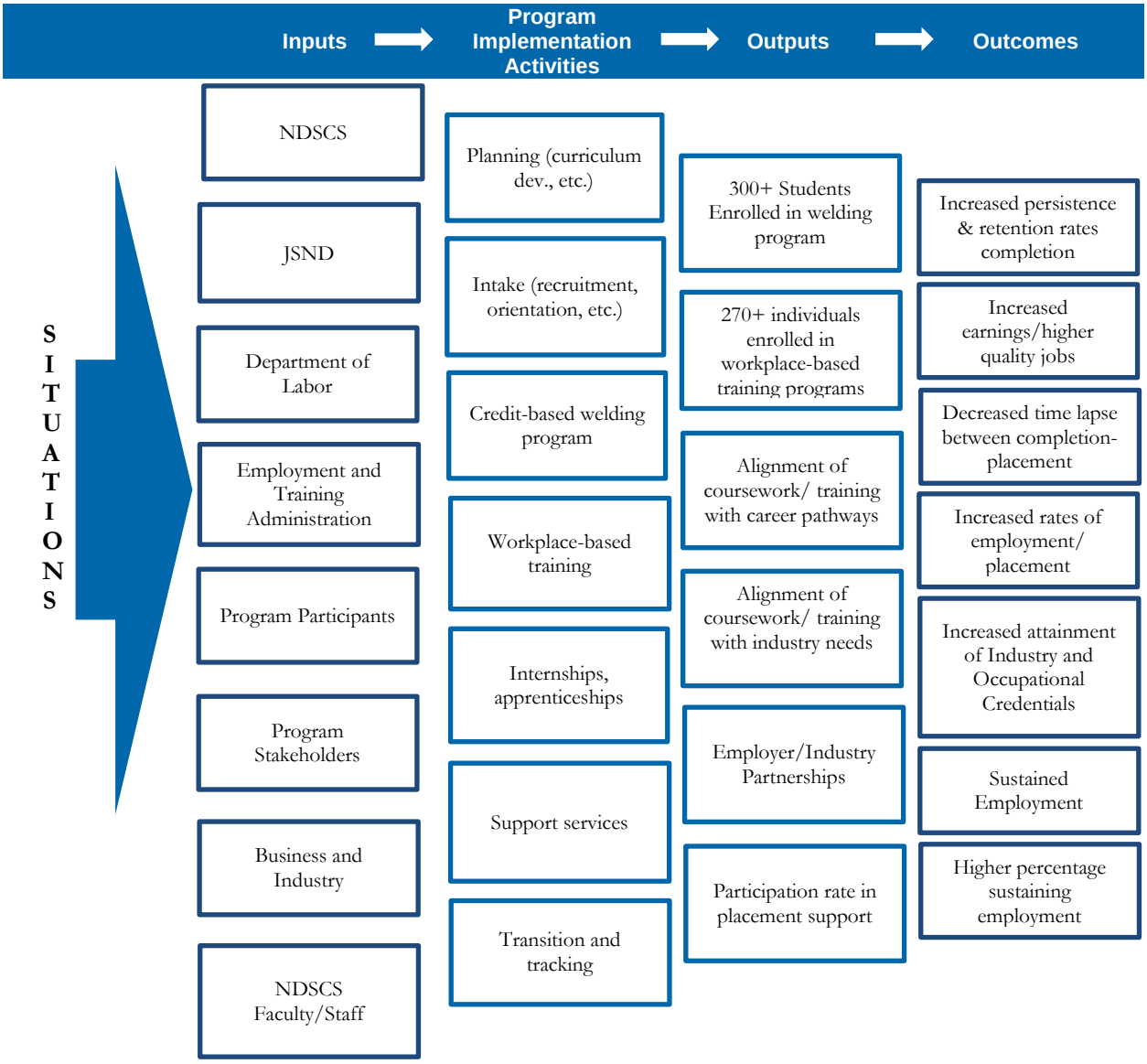
How were programs and program design improved or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support service and other service were offered? When the NDAMSTI project commenced, the North Dakota economy was booming, and demand for workers with technical skills was in high demand. To meet this demand, NDSCS focused the project on quickly building the capacity to serve more individuals in welding and mechatronics through improvements in the second-year welding pathway, increased capacity to serve more students through equipment purchases, building renovations, and instruction, online and hybrid options, and enhanced involvement in programs by employers.

Was an in-depth assessment of participants' skills, abilities, and interests conducted, and how was it conducted? What assessment tools and processes were used? Who conducted the assessment? Were the assessment results useful in determining the appropriate program and course sequence for participants? Was career guidance provided, and if so, through what methods? To train more individuals for work in the manufacturing sector, NDSCS focused assessment efforts on implementing prior learning assessment (PLA) practices to foster career pathway completion, and post-training competency assessments to ensure a higher quality job match and readiness for occupations in the regional labor market.

What contributions did partners make? What factors contributed to partners' involvement or lack of involvement? Which contributions from partners were most critical to the success of the program? Which contributions from partners had less of an impact? Job Service North Dakota was the workforce system partner for NDSCS. Because curriculum and pathway development were core activities of the project, partner employer input was a key feature.

The logic model provided a framework to guide the implementation analysis and act as a point of reference to define and assess fidelity. This included documenting changes to the program that occurred during the implementation and development process, and variations from intended approaches. The NDAMSTI Logic Model is depicted in Figure 1.

Figure 1:
Logic Model for the North Dakota Advanced Manufacturing Skills Training Initiative (NDAMSTI)



Assumptions:
Program Implementation/Activities: The evaluators assume that processes and activities will change and have varied effects on project outputs and outcomes.
Outputs/Participants: Evaluators will monitor changes in participation as a result of project processes and activities across each cohort and type of students.

Additionally, the evaluation plan outlined three activities for accomplishing the implementation analysis, which are outlined below:

(1) Steps taken by institution to create and run the training program. At the commencement of the program and evaluation, NDSCS staff and the third-party evaluation team held weekly conference calls to establish baselines, develop data collection protocols, and

communicate on implementation progress. As the program matured, calls became bi-weekly and then monthly. WorkED Consulting and ICF International conducted four site visits to NDSCS to gather qualitative data. Site visits consisted of classroom observations and interviews with program staff, faculty, administration, and employer partners. Interview protocols were developed prior to site visits, and site visit reports were completed and provided to staff.

(2) Operational strengths and weaknesses of project after implementation. After the first year of implementation and the 2014 site visit, WorkED Consulting produced an *Early Implementation Report* that was issued after year 1 of the period of performance that outlined progress-to-date and highlighted any potential adjustments for NDSCS staff to consider. Further, WorkED Consulting provided assistance to the Program Director during year 1 regarding adjustments required to performance outcomes due to miscalculations in the grant application process. Because delays in hiring, equipment purchases, and implementation of sound program and business practices in year 1 have ripple effects, and thus impacts on final outcomes, the *Early Implementation Report* served as a baseline document from which to measure continuous improvement.

(3) How operations might be strengthened. During the course of the implementation analysis, WorkED Consulting continually communicated and provided NDSCS with recommendations and information to be used for continuous improvement and best practices to consider sustaining after the end of the grant-funded program. Additionally, the program implementation analysis design, which incorporated program deliverables, allowed NDSCS to track items also subject to core monitoring by the Federal Project Officer (FPO). WorkED Consulting provided data and information to NDSCS staff prior to the federal monitoring visit that assisted in preparation for the visit and served as a confirmation of areas of strength and weakness during and after the monitoring visit.

3.2 Outcomes/Impact Design

The outcome study methodology assesses the impact of the TAACCCT program on participant outcomes. The four areas addressed in this section are: evaluation questions, research design, data collection methods, and limitations and challenges. The purpose of this section is to highlight the type of outcomes that the evaluation focuses on, share the process used to obtain information, and clarify the type of information the evaluation is able to provide.

1. Evaluation Questions

The outcome evaluation questions were designed to help understand how well the NDSCS TAACCCT program improved student persistence in training, employment and career outcomes, and student career pathways. The research questions are listed below in Table 1 and includes the data sources used to address each question.

Table 1: Outcome Questions and Data Sources

#	Evaluation Question	Outcome Data Source		
		Online Student Surveys	Administrative Data	State Unemployment & Education Data
1	***Persistence***[1]			
1a	Does the enhanced welding program result in increased graduation/certification rates relative to the comparison group?		X	
1b	Does the workplace-based trainings program result in decreased time to achieve certification/ graduation?		X	
1c	Does the workplace-based trainings program result in increased retention in training programs?		X	
1d	Does the workplace-based trainings program result in increased course completion rates?		X	
1e	Does the workplace-based trainings program result in improved industry and occupational skills/ program-related credentials?	X	X	
1f	Does the welding program result in increases in the # and % of students who pursue additional education post program participation relative to the comparison group?			X
2	***Employment/Career outcomes***			
2a	Does the welding/workplace-based trainings program result in increased rates of employment (for welding, relative to comparison group)?			X
2b	Does the welding/workplace-based trainings program result in increased earnings?			X
2c	Does the welding program result in a decreased time lapse between graduation and job placement relative to the comparison group?[1]			
2d	Does the workplace-based trainings program result in a decreased time lapse between completion and job placement?			X
2e	Does the welding/workplace-based trainings program result in higher quality jobs (benefits, wages, etc.)?			X
3	***Career pathways***			
3a	Does the welding/workplace-based trainings program result in sustained employment in the target industry?[1]	X		X
3b	Does the welding/workplace-based trainings program result in an increase in promotions?[1]			

Notes: [1]Question could not be addressed with the available data. Administrative data was obtained from NDSCS student data. State data was requested from the North Dakota State Longitudinal Data System (SLDS) which provided unemployment insurance data and college enrollment data.

2. Research Design

To assess the outcomes and impact of the NDAMSTI, the outcome evaluation questions were addressed using multiple research designs. In selecting the designs, the most rigorous ones possible were used to understand the program's effects, given feasibility constraints. In particular, since a comparison group was only available for students in the welding program, the evaluation focused on understanding outcomes for that particular group. The study uses less rigorous designs (post-test only and pre-test/post-test) to study the remaining students.

The evaluation used the following designs for each type of training program:

- **TrainND workshop participants.** For students in workplace-based training that used the TrainND model, the evaluation described the characteristics of participants and their feedback on the workshop. As the training was short-term, it was not expected to have an effect on changes in employment from before and after the training. In addition, a comparison group was not available for this group of trainees. Therefore, the study used a post-test only design to describe the employment and educational characteristics and attitudes among those who completed the training.
- **All NDSCS participants in TAACCCT-funded programs.** For the participants who enrolled in one of the TAACCCT-funded certificate or associate's degree programs at NDSCS, the study used a pre-test/post-test design that examined changes in participants' employment and career outcomes before, and after, completing the training. This design was used because a comparison group was not available for the overall TAACCCT program.
- **NDSCS welding participants.** For the welding participants, there was a retrospective comparison group available that was used to assess the grant program's impact. Specifically, the evaluation assessed the impact of the NDSCS welding program enhancements on participants by identifying a cohort that received NDAMSTI welding program services and compared that group to participants enrolled in the welding program five years prior, while controlling for differences between the two groups using a propensity score matching approach.

3. Data Collection Sources

To answer the outcome evaluation questions, different data collection sources were used, including surveys, school administrative data, and state unemployment insurance and education data.

NDSCS-Enrolled TAACCCT Participants

*Surveys***.** A survey was administered to participants at three time points: during the semester participants began the program (baseline survey), the semester participants completed the program (exit survey), and six months following program completion (follow-up survey). The baseline and exit surveys were administered in class, and the follow-up survey was emailed to

participants six months after leaving the program. However, because the follow-up survey received a small number of responses, those responses were excluded from the analysis. The analysis, therefore, only includes baseline and exit survey data.

Administrative data. The NDSCS provided the evaluation team with administrative data on the individuals participating in TAACCCT–funded programs and the comparison group of welding students. NDSCS provided data on students from Fall 2009 to Spring 2017. The Spring 2017 semester was the final semester for grant participant enrollment.

State Employment and Education Data. In addition, the evaluation team requested Unemployment Insurance and education data from the Statewide Longitudinal Data System in North Dakota to understand employment and education outcomes for participants.

TrainND Workshop Participants

TrainND participants completed a pre- and post- workshop survey that asked about their employment and educational backgrounds, demographics, career attitudes, and feedback on the workshop. A preliminary review of the data indicated that less than 20 participants responded to both surveys. Accordingly, the analysis included only the post-training survey, which had a total of 100 workshop respondents.

4. Limitations & Challenges

Study design. For most participants in the program, the evaluation used a pre-test/post-test design that examined changes over time. Without a comparison group to estimate what would have happened had the participant not enrolled in the program, it is unclear how much of a change was due to the program or other circumstances. For example, if a participant's wage increased, it is possible it could have occurred simply because time had passed since he/she started the program, rather than due to the training itself. Therefore, while the design can suggest what employment outcomes resulted from the program, it cannot definitively show that the program caused them.

Comparison group. The comparison group was created from students who took welding courses between Fall 2009-Spring 2013, prior to the implementation of the TAACCCT-funded programs. The use of the historical welding comparison group had some limitations. First, in attempting to control for differences between the two groups (current welding students and historical sample of welding students), the analysis only used the student characteristics of gender, age, and race/ethnicity. There are potentially other differences between the two groups that were not controlled for. In addition, since the design used a retrospective comparison group, there are possibly historical effects that would at least partially account for differences between the comparison group and the treatment group.

Survey sample and response rate. Since not all participants in the TAACCCT program completed both the baseline and exit surveys, the survey data only represents a sample of TAACCCT participants. Further, the baseline survey was not always administered in the same

semester that the participant started the program, and the exit survey was not given in the same semester of completion. In those cases, the data was not included in the analysis below. As a result, the final sample for the survey data was 80 of the 760 students in the intervention (11%). Another challenge with the survey data was that because the six-month follow-up data had a low response, it could not be used for the analysis; this limited the ability to obtain participant perspectives after leaving the program.

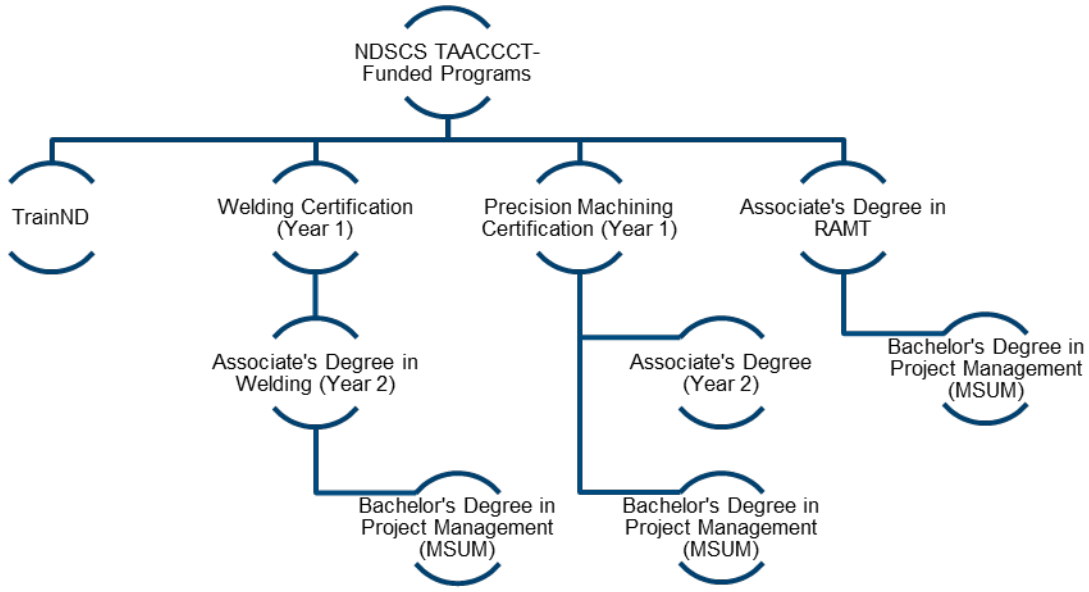
Unemployment and education data. The data obtained from the state had advantages over the survey data because it was available for more people, and also did not rely on participant self-report. Still, this data had some limitations. First, employment and wage information was not available for participants who were independent contractors, self-employed, worked out of state, and/or did not have a regular employer. This may have underestimated the employment rates and wages of some participants after leaving the program. The education data also may not have captured all of the participants. Specifically, the education registry that provided data for participants pursuing education out of state is voluntary for schools to participate in, and there might have been some participants who enrolled in a school that was not part of the national registry. However, it is expected this applies to a small number of students.

4.0 Implementation Findings

NDSCS TAACCCT-funded investments in equipment, instruction, and certification impacted a number of programs at the college. While the evaluation focuses on the welding program and the TrainND program, TAACCCT equipment and instructor investments also impacted other programs including Precision Machining and Robotics, Automation, and Mechatronics Technology (RAMT).

Participants in these pathways generally have the option of earning a certificate after year 1, then continuing the program for a second year to earn an associate's degree. In addition, NDSCS has an articulation agreement with Minnesota State University Moorhead (MSUM) for students who have two-year degrees in technical fields to earn a Bachelor's Degree in Project Management. This arrangement makes it possible for NDSCS graduates to transfer all credits from their associate's degree, allowing them to complete their four-year degree in just two additional years. Through the TAACCCT grant, the TAACCCT Program Director was able to foster relationships with educational partners and renew existing articulation agreements. Figure 2 depicts the various program pathways available to students in the NDAMSTI program.

Figure 2: NDSCS TAACCCT-Funded Programs and Career Pathways



4.1 Activities and Deliverables Matrix

As part of their application to the Employment and Training Administration, NDSCS provided a workplan that contained activities and deliverables. Many of the activities and deliverables crosswalk directly with required evaluation research questions. Further, TAACCCT grantees are required to conduct a third-party review of deliverables.

As part of the evaluation design and methodology, WorkED Consulting segregated NDSCS' workplan into activities and deliverables under 14 separate strategies. Then, as part of the *Interim Evaluation Report*, strategies, activities, and deliverables were crosswalked against the four required TAACCCT program implementation analysis research areas and commensurate research questions. Finally, based upon site visits, interviews, data, and observations, "Findings" were developed that included continuous improvement recommendations.

This same format is followed in the sections below. The first step is the third-party review of deliverables, and includes a determination as to whether NDSCS met completion of the activity or deliverable.

Deliverable	Completed?	Review Findings
Strategy 1.1: Work-Based Training Opportunities		
Activity 1: Hire Grant Management and Evaluation Staff	YES	NDSCS hired a Program Director, who maintained oversight of the entire project throughout the period of performance. NDSCS procured WorkED Consulting as the third-party evaluator through a competitive bid process.
Activity 2: Purchase Equipment and Supplies for Advanced Welding, Automation, and Machining Curricula	YES	NDSCS submitted their request for equipment approval upon commencement of the period of performance and purchased all equipment within the first year of the grant period of performance.
Activity 3: Lab Renovations at Fargo and Wahpeton Locations	YES	Lab renovations at both locations were approved and completed on a timely basis, and have increased the capacity to serve more students.
Activity 4: Hire 9-month Faculty	YES	Two full-time faculty in welding and mechatronics were hired and have been maintained on staff throughout the grant period of performance.
Deliverable 1: Development of Second-Year Welding Curriculum	**YES**	The second-year welding curriculum was completed and implemented at NDSCS. The second-year curriculum consists of 31 credit hours and integration of industry-recognized credentials through AWS and NCCER. The second-year curriculum is being provided at both the Wahpeton and Fargo campus locations, thus expanding capacity to serve students throughout a larger geographical region, as requested by employers.

Strategy 1.2: Expand Customized Training Opportunities for Local Employers Through TrainND		
Activity 5: Hire Customized Training Instructor	YES	NDSCS hired a customized training instructor to oversee implementation of training curriculum and instruction as part of the TrainND pathway enhancement.

Deliverable 2: Purchase Trailer for Creation of Mobile Training Unit	**YES**	The trailer was purchased early in the grant period of performance and utilized throughout the majority of the grant period. The trailer was used to enhance NDSCS' outreach efforts across a larger geographical region, including activities in the cities of Fargo and Minot. NDSCS leveraged the purchase of the trailer and saved funds through use of a state fleet pickup truck at a lower cost in order to move the trailer to various locations.

Strategy 2.1: Design and Implement Stackable Credentials for Gas Metal Arc Welding (GMAW) that Includes Credit and Non-Credit Courses		
Deliverable 1: Curriculum Development with Input from Business and Industry Partners	**YES- NDSCS** **TrainND did not meet its commitment to implement AWS SENSE and credentials**	NDSCS implemented stackable credentials as part of both years 1 and 2 of the welding associate's degree pathway. AWS SENSE standards and credentials were embedded in the pathway and serve as a program capstone, as well as appropriate NCCER and OSHA credentials. The non-credit program housed through TrainND did not meet its commitment to embed industry-recognized credentials. NDSCS fostered an approach that would have utilized a consistent AWS credentialing framework in the TrainND program, but was not successful.

Strategy 2.2: Design and Implement Latticed Courses in the Fields of Mechatronics, Welding, and Machining		
Activity 1: Hire Mechatronics Instructor	YES	NDSCS hired a full-time mechatronics instructor and maintained the position throughout the grant period of performance.
Deliverable 2: Curriculum Development with Input from Business and Industry Partners	**YES**	NDSCS successfully built a two-year, associate's degree pathway in welding, expanding the program both in Wahpeton and in Fargo. The Fargo expansion, in particular, was due to direct input from employers that expressed a need for more skilled workers. NDSCS also bolstered the mechatronics/machining programs as set forth in their statement of work.

Strategy 2.3: Faculty Professional Development Activities to Support Project Goals and Outcomes		
Activity 2: Attend Professional Development Events	YES	Faculty participated in a number of key professional development activities, such as obtaining their AWS CWI certification and NC3 certification, participating in NIMS accreditation, and receiving OSHA training.

Strategy 2.4: Increase Enrollment in Certificate, Diploma and AAS Degree in Technical Studies		
Activity 3: Build Capacity in Existing Programs and Promote Technical Studies Degree Options	YES	NDSCS met increased participant outcomes through expansion of programming. Particularly, NDSCS was able to increase its second-year welding associate's degree student enrollment by 25 participants per year, for a 100 participant, four-year total. Through the TAACCCT funding, NDSCS was able to develop an option for a technical studies degree, which provides students with a broad arrange of skills, with options for a focus such as welding or machining.

Strategy 3.1: Grow Relationships with Four-Year Colleges and Universities to Increase the Transferability of Technical Degrees to Bachelor Programs		
Activity 1: Continue to Work with MSUM to Facilitate Transfer to Bachelor's in Operations Management and Explore New Options	YES	NDSCS and MSUM facilitated completion of a 2+2 option for technical studies students through an articulation agreement that includes guaranteed admission for NDSCS students completing the associate's degree. Further, staff for each institution participate on the other institution's advisory boards.
Activity 2: Continue to Work with VCSU to Facilitate Transfer to Bachelor's in Career and Technical Education and Explore New Options	YES	The groundwork has been laid through the TAACCCT grant to allow this to happen. NDSCS began a "Grow Your Own" campaign to promote the linkage with VCSU. Further work will continue under an NSF ATE grant awarded to NDSCS.
Activity 3: Review North Dakota University System Sanctioned Agreements for Transfer	YES	Progress was made with discussions and meetings occurring to finalize transfer

		agreements. The biggest issue the System is grappling with is the wide variation in program quality across higher education institutions in North Dakota. Under the recently awarded NSF ATE grant to NDSCS, high school articulation to NDSCS for technical education programming will occur.

Strategy 3.2: Promote Current Options for Prior Learning Credit, Military Experience, and Registered Apprenticeships for Credit Applied toward Associate's Degrees at NDSCS		
Activity 4: Outreach to Veterans Organizations	YES	The mechatronics instructor is a veteran, and led outreach efforts to veterans' organizations. Progress was made on review of military transcripts and articulation for credit.
Activity 5: Promote Prior Learning Credits to TAA Workers, Under-Employed Individuals, and Veterans	YES	NDSCS has a PLA policy in place, and did review some participant's experience as eligible for prior learning. However, this is an underutilized tool at NDSCS that could be promoted as a sustainable strategy.

Strategy 4.1: Provide Greater Flexibility for Employed Individuals to Participate in Courses Online		
Deliverable 1: Develop Online Modules for the GMAW Stackable Courses	**YES**	Three online modules were created for TrainND. While the development of the modules met the requirement for the deliverable, TrainND did not use the online modules with participants on a consistent basis, thus missing an important opportunity to expand training options.
Deliverable 2: Automation Curriculum Enhanced with the Incorporation of Online Modules Designed by FANUC Robotics	**YES**	NDSCS did adopt FANUC online and created hybrid options for participants. Every new mechatronics and first year welding courses were converted to online/hybrid teach modules, allowing participants to learn concepts online and then participate in lab experiences in-person.
Activity 1: Utilize Existing Relationship with Pearson to Assist with Online Content Design and Delivery	N/A	Pearson's system at NDSCS is an online Learning Management System and is not connected to online content design and delivery.

Strategy 4.2: Implementation of Technologies such as the Learning Outcome Manager to Improve Assessment of Student Learning		
Deliverable 3: Competency-Based Assessment Implemented	**YES**	NDSCS created a comprehensive competency-based assessment that utilized in-house tools and rubrics using national NOCTI tools tied to national standards. Using competency assessments as a feedback loop, NDSCS made continual curriculum upgrades to improve participant outcomes. NDSCS competency assessment approach incorporated a student self-assessment component so students could see their strengths and weaknesses with a technical field of study and make corrections in conjunction with focused instruction by teachers.

Strategy 5.1: Align Project Goals and Objectives with Interests of Key Stakeholders		
Activity 1: Sustain Coordination with Employers and Industry	YES	Employer partners have driven the design and delivery of education and training services under the TAACCCT funded program. Greater Fargo EDC partnered with NDSCS on development of the Fargo welding program and incorporated workforce activities into their economic development design and promotion.
Activity 2: Sustain Coordination with Public Workforce System	YES	Job Service North Dakota is the workforce partner for NDSCS and provided participant referrals and employment assistance for participants. Activities will continue after the TAACCCT program ends.
Activity 3: Sustain Coordination with Philanthropic Organizations	YES	NDSCS partnered with a number of industry associations and organizations to integrate credentials and funding into programming designed to sustain capacity at the college.
Activity 4: Sustain Project Alignment with Governor's Initiatives	YES	NDSCS has aligned the program to gubernatorial and state initiatives to build and maintain a skilled workforce.
Activity 5: Coordinate with SLDS for Data Collection	YES	NDSCS was able to obtain UI wage records and access to SLDS data for the first time ever. This was a huge victory

		for the college in being able to access data for continuous improvement.

Strategy 5.2: Data Analysis and Program Evaluation of Program Goals and Objectives with Results Openly Disseminated		
Activity 1: Program Evaluation Completed with External Evaluator	YES	All evaluation activities completed.

Strategy 6.1: Collaborate with Central Lake College, Chattanooga State Community College, and Lake Region State College		
Activity 1: Share Curriculum, Lessons Learned and Course Program Content with Central Lake College	YES	Completed
Activity 2: Share Curriculum, Lessons Learned and Course Program Content with Chattanooga State Community College	YES	Completed
Activity 3: Share Lessons Learned and Best Practices with Lake Region State College	YES	Completed

Strategy 6.2: Faculty Visits to TAACCCT Collaborators		
Activity 4: Travel to TAACCCT Collaborating Institutions	YES	The Program Director traveled and collaborated with TAACCCT institutions such as Palm Beach State College and the Round 3 BTG West Virginia consortium.
Activity 5: Program Director Travels to USDOL Meetings	YES	Completed

4.2 Curriculum Review, Use, and Selection

Strategy 1.1: Work-Based Training Opportunities
Deliverable 1: Development of Second-Year Welding Curriculum

Strategy 2.1: Design and Implement Stackable Credentials for Gas Metal Arc Welding (GMAW) that Includes Credit and Non-Credit Courses
Deliverable 1: Curriculum Development with Input from Business and Industry Partners

Strategy 2.2: Design and Implement Latticed Courses in the Fields of Mechatronics, Welding, and Machining
Deliverable 2: Curriculum Development with Input from Business and Industry Partners

Strategy 4.1: Provide Greater Flexibility for Employed Individuals to Participate in Courses Online
Deliverable 1: Develop Online Modules for the GMAW Stackable Courses
Deliverable 2: Automation Curriculum Enhanced with the Incorporation of Online Modules Designed by FANUC Robotics

Research Question: How was the particular curriculum selected, used, or created?

The NDSCS NDAMSTI project focuses on the building and expansion of technical training programs through enhanced curriculum, upgraded equipment aligned to employer techniques, and expansion of programs to new geographical regions. The NDAMSTI project specifically targeted the following curriculum enhancements:

1. Building and enhancing the second year of the NDSCS welding program leading to an associate's degree and embedding industry-recognized standards and credentials into the career pathway.
2. Expanding the enhanced two-year welding program to a new geographic region—the Fargo metropolitan area—in response to employer needs and collaboration.
3. Supporting TrainND's mission to provide short-term training to meet immediate employer needs by bolstering the TrainND welding program through integration of industry standards and credentials into the non-credit curriculum.
4. Upgrading the NDSCS mechatronics/machining program though development of a fabrication series, which is four tracks of stackable courses cover the topics of shearing, print reading, forming (press brake) and measuring.

NDSCS met its core goal of developing and implementing a high-quality second year welding program leading to an associate's degree that met employer requirements for a skilled workforce, while also promoting transferability and articulation to a four-year bachelor's degree program. Further, curriculum enhancements allowed NDSCS to serve a wider population area and boost capacity to serve more students annually.

NDSCS new curriculum embedded industry-recognized standards and credentials, including the American Welding Society's (AWS) SENSE standards. The implementation of SENSE standards was a critical component of the program model because these standards provided a platform for both the two-year NDSCS credit-bearing welding program and the TrainND short-term, non-credit welding program to provide a consistent credential portfolio for workers seeking employment.

TrainND is hosted by NDSCS, but it is an organization that is state-funded and administratively separate from the college. TrainND provides customized training services for local employers, and TrainND's revenues come from contracts with employers to conduct such training. TrainND's training is non-credit, and often tailored to an employer's specific needs rather than utilizing industry-standards, thus limiting the potential portability of the training received by a TrainND participant. In addition, the contracts with employers are often of a very short training-time duration (sometimes as low as 20 hours of training for a participant) so articulation to college credit does not occur.

In addition to committing to embedding the AWS SENSE standards into all welding training and curriculum, both NDSCS and TrainND were committed to utilizing prior learning assessment and engaging employers in understanding the importance of structuring

customized training contracts with the time necessary for an individual to articulate the learning from the training into college credit.

NDSCS enhanced its mechatronics/machining program through completion and utilization of the fabrication series courses, and did identify industry-recognized credentials, which are now being offered to participants

EVALUATION FINDINGS

NDSCS implemented the year 2 curriculum enhancements as outlined in the NADMSTI project plan. NDSCS met its established milestones in implementing curriculum enhancements that led to a complete two-year associate's degree career pathway, offered at both the Wahpeton main campus and the Fargo satellite location. Curriculum development and pathway development allowed NDSCS to serve an additional 25 participants annually, for a total of 100 over the four-year period of performance. Further, NDSCS appropriately engaged local employer and national industry partners in reviewing curriculum so that courses and credentials met the standards necessary for participant employment.

NDSCS appropriately based curriculum modifications and additions based on national industry standards. NDSCS's curriculum enhancements were all credit-based so that participants earn college credit toward an associate's degree. NDSCS created or modified curriculum in a way that met both regional accreditation requirements and incorporated national industry standards, particularly in welding using American Welding Society-developed materials. These enhancements provide the most options for earnings improvements and upward mobility in the labor market as workers in the region are often lacking this level of credential.

NDSCS completed curriculum development and implemented new courses in mechatronics/machining. NDSCS completed its fabrication series and upgraded lab space that built capacity to serve more students in the mechatronics career field through broader sets of skills enhancements. NDSCS embedded appropriate industry credentials such as NC3 and NIMS.

TrainND did not make adequate program upgrades through enhanced curriculum or implementation of industry standards. Because TrainND's role and mission is to meet individual employer needs for specific customized training, the certificate received by the TrainND participant is recognized by the individual employer, but is not portable or necessarily recognized by institutions of higher education or other employers. To enhance the quality of their program, make it part of larger career pathways, and provide portable credentials to students, TrainND was supposed to incorporate industry standards and credentials, particularly AWS SENSE. When conducting observational analysis of students, it was not clear that they were being taught anything more than rudimentary exposure to the field of welding. Because of the lack of industry standards and credentials and incorporation of a career pathway

concept, the TrainND program has questionable employment and earnings impacts for students and/or long-term value for someone wanting to build a career in a technical trade.

Online course development met basic requirements for the grant, but was not a central focus. Online and hybrid course development was a key activity of the TrainND portfolio, and other than a handful of courses developed, was not utilized as a flexible option for participants or part of a longer-term strategy for expanding access to short-term training.

4.3 Program Design, Delivery, and Administration

Strategy 1.1: Work-Based Training Opportunities
Activity 1: Hire Grant Management and Evaluation Staff
Activity 2: Purchase Equipment and Supplies for Advanced Welding, Automation, and Machining Curricula
Activity 3: Lab Renovations at Fargo and Wahpeton Locations
Activity 4: Hire 9-month Faculty

Strategy 1.2: Expand Customized Training Opportunities for Local Employers Through TrainND
Activity 5: Hire Customized Training Instructor
Deliverable 2: Purchase Trailer for Creation of Mobile Training Unit

Strategy 2.2: Design and Implement Latticed Courses in the Fields of Mechatronics, Welding, and Machining
Activity 1: Hire Mechatronics Instructor

Research Questions: How were programs and program design improved or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support service and other service were offered?

NDSCS developed and implemented a program design model that seeks to meet regional and local employers' needs for a skilled welding and manufacturing workforce. At the onset of the grant project, the State of North Dakota had an unemployment rate that was one of the lowest in the nation due to the energy boom, with employers needing workers to fill a variety of jobs such as assembler, welder, and manufacturing technician. However, just past the midway point of the period of performance, the price of oil plummeted and many workers were dislocated, as a result. Further, the State faced immediate budget issues, and higher education institutions realized shocking budget reductions. Despite this exogenous factor, NDSCS continued to implement deliverables in a timely fashion, recruited and served participants, and continued to build a skilled workforce, knowing that economic conditions would recover.

NDSCS's grant administrative structure was anchored by a Program Director, who has welding industry experience and has served as faculty. The individual serving as Program Director maintained the position throughout the entire period of the grant project, thus ensuring consistent leadership, understanding, and experience. The Program Director was supported by non-grant funded staff in conducting accounting functions and other generalized support. Grant funds expanded instruction as faculty positions were filled quickly and

maintained throughout the participant services period of the grant. Sustainable strategies include maintaining the capacity to continue enhanced instruction and support on the NDSCS program side. Funds used to hire the TrainND faculty position were originally budgeted to transition to a state-funded, sustainable position after the end of the grant. However, the position has been reassigned from full-time faculty to part-time instruction in welding at less frequency and smaller student capacity, as well as outreach to employers to solicit new customized training contracts. Therefore, TrainND's long-term instructional capacity in welding is limited.

During year 1 of the period of performance, funds were used to purchase and install key equipment in order to train additional participants, as well as renovate three locations, including an expansion of the NDSCS Fargo campus. Equipment and renovations became key activities that allowed NDSCS to provide services to a wider geographical region and population. Due to travel times from Fargo to Wahpeton, many potential participants would not enter the program; however, the new renovated space provided a full learning lab opportunity for these individuals. Another renovation provided additional training space and capacity for TrainND on the main Wahpeton campus, but was underutilized and a question as to how this space will be maintained after the grant ends.

EVALUATION FINDINGS

NDSCS's Program Director, who had industry and teaching experience and remained in the role throughout the entire grant project, was a key reason the NDAMSTI project was successful. Leadership is an essential part of any organization or project. NDSCS effectively recruited an individual who had well-rounded experience and was known and respected at the college and in the community. As a result, project milestones were met, and innovative and sustainable practices were implemented that will benefit students and employers beyond the TAACCCT grant period of performance.

NDSCS met its program plan milestones for hiring grant personnel, purchasing equipment, renovating space, and executing contracts. In a review of NDSCS' project plan, all program administration and budget commitments were met. This was critical to meeting the participant outcomes due to the increased capacity that equipment and renovations allowed for running the welding program. This also points to the importance of equipment and renovations being allowed under TAACCCT, as these activities specifically helped NDSCS expand programming into Fargo.

NDSCS has dramatically expanded its reach throughout the eastern region of North Dakota through expansion of campus locations and the mobile trailer. Because of the rural nature of the NDSCS service region, potential participants faced traveling long distances to access the NDSCS main campus in Wahpeton. By expanding capacity at the Fargo location, and utilizing the mobile trailer to go to worksites, community events or other small towns, NDSCS greatly

increase exposure to the welding and mechatronics programs and provided actual skills training closer to people's homes.

NDSCS worked diligently to support TrainND activities, but TrainND did not realize its performance outcomes due to a lack of focus and commitment to stated activities and deliverables. NDSCS provided renovated space, supplies and equipment and a customized training instructor who organizationally reported to TrainND. The faculty position was supposed to focus on implementing AWS SENSE standards into TrainND customized training activities and better engaging employers. However, as a state-funded entity, TrainND did not have specific outcomes aligned to activities, nor a performance-based culture. As a result, the TrainND portion of the project failed to meet its outcome targets or stated deliverables, versus the NDSCS credit-based welding pathway, which made up the difference in outcomes targets.

4.4 Assessment Tools and Processes

Strategy 3.2: Promote Current Options for Prior Learning Credit, Military Experience, and Registered Apprenticeships for Credit Applied toward Associate's Degrees at NDSCS
Activity 5: Promote Prior Learning Credits to TAA Workers, Under-Employed Individuals, and Veterans

Strategy 4.2: Implementation of Technologies such as the Learning Outcome Manager to Improve Assessment of Student Learning
Deliverable 3: Competency-Based Assessment Implemented

Research Questions: Was an in-depth assessment of participants' skills, abilities and interests conducted, and how was it conducted? What assessment tools and processes were used? Who conducted the assessment? Were the assessment results useful in determining the appropriate program and course sequence for participants? Was career guidance provided, and if so, through what methods?

NDSCS implemented an in-house competency assessment using national standards as a framework. The competency assessment was used to establish a "participant dashboard" in order to quickly identify issues to be addressed, while providing the participant with a gauge for progress made in educational programming. To mitigate issues related to low literacy or numeracy skills, NDSCS implemented basic math and reading competencies into welding and mechatronics courses, and had a specific tutoring and development education services unit on campus where students could seek additional help to remove barriers. NDSCS worked to implement a more comprehensive prior learning assessment policy and practice, but did not utilize this strategy to the benefit of a large number of participants.

EVALUATION FINDINGS

NDSCS provided adequate competency assessment and career guidance services that benefitted participants. NDSCS strategically utilized industry standards and tools to develop its own in-house competency assessment that was focused on helping participants realize their areas of weakness and address them through intensive coursework and tutoring services.

Because NDSCS met participant outcome targets, indications are that participants were provided with an appropriate level of assessment and guidance services. Surveys of participants indicate satisfaction with these services, as well.

NDSCS could have used NDAMSTI as an opportunity to implement a more vibrant prior learning assessment practice at the institution. Prior learning assessment is a means to accelerate students' completion of a credentialed career pathway program. While NDSCS has a PLA policy at the institution, it was not a committed practice and a widespread alternative for participants to accelerate their time to completion.

4.5 Partner Contributions

Strategy 3.1: Grow Relationships with Four-Year Colleges and Universities to Increase the Transferability of Technical Degrees to Bachelor Programs

Activity 1: Continue to Work with MSUM to Facilitate Transfer to Bachelor's in Operations Management and Explore New Options

Activity 2: Continue to Work with VCSU to Facilitate Transfer to Bachelor's in Career and Technical Education and Explore New Options

Activity 3: Review North Dakota University System Sanctioned Agreements for Transfer

Strategy 5.1: Align Project Goals and Objectives with Interests of Key Stakeholders

Activity 1: Sustain Coordination with Employers and Industry

Activity 2: Sustain Coordination with Public Workforce System

Activity 3: Sustain Coordination with Philanthropic Organizations

Research Questions: What contributions did partners make? What factors contributed to partners' involvement or lack of involvement? Which contributions from partners were most critical to the success of the program? Which contributions from partners had less of an impact?

NDSCS has three major partners in the NDAMSTI project: TrainND, Job Service North Dakota (workforce investment partner) and employers. TrainND was a training partner, and NDSCS worked to integrate common training strategies, industry standards, and curriculum. Job Service North Dakota was generally supportive of the project, but their involvement in the project was limited to some referrals and employment assistance.

NDSCS maintained a strong base of employers needing welders and other technicians. In particular, two companies worked closely with NDSCS to advise, hire participants, and provide feedback: Caterpillar and Trail King. One challenge faced by NDSCS at points in the project was employers wanting to hire welders, assemblers, and technicians prior to completion of their training program and credential attainment. While immediate employment was a goal of the NDAMSTI program, long-term employability and earnings was also a major goal of NDSCS.

Because of the NDAMSTI program, NDSCS has been able to expand its employer base, especially geographically. Because of the rural nature of North Dakota, while the higher

education system does have services regions attached to institutions, both employers and students work with the institution that is most aligned to their individual or organizational needs. In the case of employers, NDSCS provided unique opportunities to find skilled workers in the fields of welding and mechatronics.

NDSCS' work with employers has led, in part, to larger policy discussions in North Dakota concerning the balance and priorities within higher education for traditional four-year bachelor's degree pathways and two-year associate's degree technical skills programs. This discussion was embodied in an article published in August 2015[1] demonstrating employer support for NDSCS's efforts to expand the Fargo campus for expanded technical programs to meet job demand. NDSCS can continue to build on the employer support it has received through the TAACCCT funding and other initiatives to build capacity and implement sustainable practices.

EVALUATION FINDINGS

NDSCS' relationship with local employers is strong, and the NDAMSTI project demonstrated responsiveness to demand for labor, which could translate to further efforts on additional workforce practices such as "earn and learn." NDSCS demonstrated responsiveness to employers with the creation of the Fargo welding location, as one example. A challenge continually dealt with was the high demand for labor during points in the project, which led, at times, to participants jumping quickly from training to employment without completion of the program or credentials. As NDSCS's foundational work in TAACCCT continues to mature, one option to balance the need for workers with supporting educational attainment is to implement "earn and learn" options, such as apprenticeship into the technical studies pathway.

Building off initial success in engaging employers, NDSCS should consider ways to organizationally sustain practices such as creation of a workforce division. NDSCS made significant strides in building employer support for its workforce and technical training programs. Using this momentum, NDSCS should consider post-TAACCCT methods to ensure employer engagement efforts continue and are focused.

NDSCS worked with Job Service North Dakota and other institutions of higher education in North Dakota to obtain access to state UI wage records. North Dakota state law did not allow institutions of higher education access to UI wage records due to state privacy statutes. However, due to diligent efforts by NDSCS and partners, access was granted and data was gathered that informs NDSCS on longer-term employment and earnings gains by participants and future students.

[1] http://www.inforum.com/news/3811079-fargo-business-leaders-urge-nd-higher-ed-boss-push-tech-schools

5.0 Outcomes and Data Findings

This first section of the outcome findings shares results for the traditional participants (this excludes TrainND workshop participants) enrolled in the NDSCS program. Findings are presented both for the full sample of students participating in TAACCCT-funded programs as well as a subset of those students who completed both the baseline- and exit-survey. Data analyzed in response to the research questions include survey data, administrative data, and UI data for all students who participated in TAACCCT-funded programs.

5.1 Participant Demographics

Characteristics for traditional NDSCS TAACCCT participants were obtained from the baseline survey (n=80) and administrative data (n=760) to understand the type of students participating in the TAACCCT-funded programs. Evaluators obtained Unemployment Insurance and state education data for all students with an administrative data record. As shown in Table 2, the majority of participants were white (95%) men (97%). The sample was also young, with the majority of students aged between 18 and 21 years of age (87%). Most participants did not have a disability (92%) or had never served in the armed forces (95%). As shown below, the welding treatment group had similar demographics to the welding comparison group, with the majority of students in both samples between 18 years and 21 years, white, and male.

Table 2: Participant Demographics

	TAACCCT Sample		Welding Sample	
Demographics	**All TAACCCT Students (n=760)**	**Baseline & Exit Survey (n=80)**	**Treatment (n=230)**	**Comparison (n=143)**
Gender				
Male	97%	98%	95%	97%
Female	3%	3%	5%	3%
Age				
18-21	87%	84%	77%	81%
22-29	10%	10%	13%	12%
30-39	2%	5%	6%	4%
40 and older	1%	1%	5%	3%
Race and Ethnicity				
Hispanic/Latino	1%	0%	1%	3%
Black or African American	2%	4%	3%	6%
White	95%	95%	90%	90%
Other or more than one race/ethnicity	2%	1%	4%	1%
Had a Disability	**n=203**	**n=80**	**n=125**	**-**
No	92%	91%	94%	
Yes	3%	3%	2%	
Do not wish to disclose	4%	6%	5%	

	TAACCCT Sample		Welding Sample	
Veteran Status	**n=151**	**n=80**	**n=113**	**-**
Yes, on active duty in the past, but not now	3%	1%	1%	
No, never on active duty except for initial/basic training	3%	1%	2%	
No, never served in the US Armed Forces	95%	98%	97%	

Source: NDSCS Administrative Data and NDAMSTI Baseline Survey
Note. Some totals do not add up to 100% due to rounding error.

While the participants tended to be young, they varied in their past work experience (see Table 3). Work experience ranged from less than one year (8%) to 11 or more years (10%). Most had at least three years of work experience. The sample included mostly those with a high school diploma (62%) or some college credit (32%). Almost all (99%) did not have a certificate or license prior to entering the program. The students in the welding program had a similar pattern in terms of career background to the overall TAACCCT sample. Survey data on the comparison sample was not available since the comparison group did not take the survey.

Table 3: Career Background

	TAAACCT Sample		Welding Sample
Career Background	**All TAACCCT Students (n=760)**	**Baseline & Exit Survey (n=80)**	**Welding Treatment (N=230)**
Vocational, technical, or professional certificates or licenses	**n=124**	**n=60**	**n=90**
Yes	<1%	0%	0%
No	99%	100%	100%
Education	**n=151**	**n=80**	**n=113**
High school graduate - high school diploma or the equivalent (e.g. GED)	62%	59%	62%
Some college credit, no degree	32%	38%	35%
Associate's degree (e.g. AA, AS)	5%	4%	4%
Ever held a paying job?	**n=149**	**n=78**	**n=111**
Yes	99%	99%	98%
No	1%	1%	2%
Years of experience	**n=149**	**n=78**	**n=111**
Less than 1 year	8%	8%	9%
1-2 years	13%	15%	14%
3-5 years	52%	49%	54%
6-10 years	17%	21%	16%
11 or more years	10%	8%	7%

Source: NDAMSTI Baseline Survey

5.2 Persistence and Educational Outcomes

A key aim of the project was to provide individuals with training that would lead to high paying jobs. This included people building career-relevant skills and earning credentials that demonstrated their competencies to potential employers. Within the program, participants were able to earn different types of credentials including associate's degrees, college certificates, and industry-recognized credentials. The section presents findings on persistence in the program, such as completion of a program and receipt of credentials from training.

The majority of participants completed their programs within two years of enrolling and earned an average of five credentials. Of participants who started a TAACCCT-funded program before Fall 2016, almost all (92%) completed their programs by Spring 2017. Generally, program completion took only one year or less (67%) (see Table 4). Most of the remaining participants completed the program within two years (32%). The welding program also had a high completion rate (81%) which was higher than the comparison group (65%), suggesting the TAACCCT-funding welding program may have encouraged program completion. This suggests generally that participants who started the program tended to complete it, and that they often did so within one or two years. While in the program, participants who completed the program often earned about five to nine industry credentials. Since most participants reported that they did not have an associate's degree or industry certification (see Table 3 above) at enrollment, the credential attainment during the program shows how participants' credential attainment expanded within a short time.

Table 4: Educational Outcomes: Completion and Credential Attainment

Educational Outcomes	All TAACCT)	Welding (Treatment)	Welding (Comparison)
Program Completers (Cohort 1-3 only)	(n=611)	(n=142)	(n=230)
Yes	92%	81%	65%
No	8%	19%	35%
Semesters to Complete (Program Completers only)	(n=690)		
1 year or less	67%	96%	97%
1 year and 1 semester to 2 years	32%	4%	3%
More than 2 years	1%	-	-
Number of Credentials Earned (Program Completers only)	(n=623)	(n=66)	-
1-4	24%	33%	NA
5-9	71%	23%	NA
10 or more	5%	44%	NA

Source: NDSCS Administrative Data

Continuing education. On the exit survey (n=95), students were asked about their interests in continuing education. Less than half (45%) were enrolled in another program or planning to enroll in one (see Table 5). However, a greater proportion of students (85%) agreed that they wanted to get more education. This indicates that many participants had the intention to further

their training, even if they were not planning to do so immediately. Further, almost all (98%) felt that they knew what additional skills they need to move ahead in their careers, suggesting that participants believed they had the knowledge they need to identify additional training opportunities.

The state education data provided information on whether students continued education after completing the program. Of the TAACCCT participants (excluding those starting Fall 2016 or later), over half (60%) continued their education after completing the TAACCCT program. For the welding students, a slightly higher percent of students in the comparison group (53%) continued their education than those in the treatment group (47%). However, since the treatment data did not exclude recent completers (Fall 2016 or later) who have not had an opportunity to enroll in additional education, the continuing education rate may underestimate the number of welding students continuing.

Table 5: Educational Outcomes: Continuing Education

Educational Outcomes	Percent
Are you currently enrolled or planning to enroll in another program/training? (n=96)	
Yes	45%
No	55%
I have a clear idea of what skills I need to move ahead in my career (at exit) (n=98)	
Strongly Agree	61%
Agree	37%
Disagree	1%
Strongly Disagree	0%
Prefer Not to Respond	1%
I want to get more education (at exit) (n=95)	
Strongly Agree	46%
Agree	39%
Disagree	11%
Strongly Disagree	4%
Prefer Not to Respond	0%

Sources: Administrative Data and NDAMSTI exit surveys

5.3 Employment and Career Outcomes

This section presents findings on participant employment and career outcomes, including participants' employment rate and increased earnings.

Employment rates. By participating in the TAACCCT training, students were expected to increase their rate of employment, particularly as students who were unemployed before enrollment attained jobs. According to the baseline survey, about half (47%) of the participants were unemployed at baseline. Most of the participants who indicated they were employed worked part-time (50%), and only three percent worked full-time. However, since the baseline survey was administered shortly after enrollment into the program, the participants' baseline

employment status may not reflect their employment prior to program participation. Of those who were unemployed at baseline, about half (48%) were employed when they took the exit survey, which was similar to the employment rate at baseline (47%). When completing the exit survey, the majority (93%) of participants agreed or strongly agreed that they would remain in their trained occupation for at least five years, which was slightly higher than the percentage before the training (84%), suggesting a possible increase in commitment to pursuing the career path in which they were trained.

Table 6: Employment Status

Employment	Baseline	Completion
Employment Status	**n=60**	**n=76**
Full time	3%	12%
Part time	50%	39%
Not Employed	47%	47%
Employed (part or full time not specified)	0%	1%
I intend to remain in the occupation I have been trained in for at least five years	**n=80**	**n=78**
Strongly Agree	55%	60%
Agree	29%	33%
Disagree	1%	3%
Strongly Disagree	4%	0%
Prefer Not to Respond	0%	4%

Source: Baseline and Exit surveys for those in the Pre-Post Sample

While the survey data showed the rate of employment after completion, the Unemployment Insurance (UI) data examined the rate of employment in the first complete quarter before initial enrollment and the first quarter after program completion. The UI data also represented a larger proportion of participants in the program than the survey data. However, as noted above, it may have underestimated the number of participants employed and with a wage increase since some participant data may not have been in the data system (e.g., people who were self-employed).

Similar to the survey data, the rate of employment calculated from the UI data only slightly increased from baseline (53%) to completion (54%) for all TAACCCT completers. A third (32%) of participants unemployed before the program gained employment in the quarter following program completion. For the welding students, the employment increase was, in fact, slightly larger for the comparison group than the treatment group. These data suggest that while the program may have helped some obtain employment, the results were not consistent across participants. It is possible that the reason the evaluators did not observe a notable increase in the employment rate is that many participants opted to continue their education rather than obtain employment after completing the program.

Table 7: Employment Status

	Percent Employed	
Sample	Baseline	Completion
TAACCCT Program Completers **n**=561 (cohorts 1-3 only)	53%	54%
Welding Program Completers (Treatment) n=116	62%	64%
Welding Program Completers (Comparison) n=149	55%	66%

Source: Unemployment Insurance Data

Wages. The participants who were employed at completion had a higher hourly wage (average=$13.82) than students employed at baseline ($10.79) (see Table 8). Only including those who were employed at both baseline and exit (n=12), the average increase in hourly wage was $2.49. However, given the small sample size, this might not be representative of the larger group of participants who completed the training. In addition, since this survey was administered during the end of participant training rather than in the months following, it is possible their wage would further change once leaving the program.

Table 8: Wages (Student Self-Report)

	Baseline	Completion
Hourly wage (*Employed Students Only*)	**n=32**	**n=39**
$9.99 or less	28%	18%
$10 to $14.99	53%	31%
$15 or more	9%	33%
No response	9%	18%
Average Wage (Standard Deviation)	$10.79 ($2.38)	$13.82 ($5.55)

Source: Baseline and Exit surveys for those in the Pre-Post Sample

Table 9 shows the percent of incumbent workers still employed, who had a wage increase after completing the program. These data show that the majority (73%) of these participants had a wage increase, with a higher rate for welding participants (78%). However, the rate of wage increases was slightly higher for the welding comparison group.

Table 9: Wage Increases

Sample (Only includes incumbent workers who were still employed after completion)	Percent with a Wage Increase
TAACCCT Program Completers (n=222) (Cohort 1-3 only)	73%
Welding Program Completers (Treatment) (n=50)	78%
Welding Program Completers (Comparison) (n=68)	84%

Source: Unemployment Insurance Data

5.4 Career Pathways

NDAMSTI aimed to increase participants' job retention once they gained employment. The UI data provided the number of non-incumbent participants who were not only employed in the first quarter after completion, but also retained employment six months later. The welding program data is not included in this analysis since it was too early to look at retention data for participants who started in Fall 2016, Spring 2017 (cohort 4 starters). Table 10 below shows that

the majority of non-incumbent participants employed in the first quarter after completion, tended to retain employment two quarters later. This indicated that most participants who obtained a job continued to work for at least six months later.

Table 10: Employment Retention

Sample (Non-Incumbent Students Only)	Percent with Employment Retention
TAACCCT Program Completers (n=83) (Cohorts 1-3 only)	63%

Source: Unemployment Insurance Data
Note. TAACCCT Program Completers data only includes cohorts 1-3.

6.0 TrainND Outcomes Findings

TrainND provides non-credit, contract training. It is administratively and fiscally separate from NDSCS, but housed on the Wahpeton campus. Local employers contract with TrainND to conduct training for employees to improve technical skills. This next section shares findings from an online post-workshop survey of TrainND participants, focusing on trainee characteristics and program feedback.

6.1 TrainND: Participant Demographics

As previously mentioned, a post-test examination of TrainND participants was selected due to the lack of a suitable comparison group and the limited number of participants who completed both a pre- and post-training survey. This analysis provides a description of the participants who completed the training and their feedback on the training, using data from the post-training survey. This first section describes participant demographic characteristics such as age, gender, ethnicity, and previous education and employment.

Table 11 shows participants' demographics of trainees in the TrainND track. Participants who completed training in these areas were mostly males (99%), with almost half were between the ages of 18 and 21 years of age (48%). The majority of the participants surveyed had not served in the U.S. Armed Forces (95%), and were White (79%).

Table 11: Trainee Demographics

Demographics	Percent
Gender (n=101)	
Male	99%
Female	1%
Age (n=88)	
18-21	48%
22-29	32%
30-39	11%
40 and older	8%
Disability (n=9)	
No	0%

Demographics	Percent
Yes	44%
I do not wish to disclose	56%
Veteran Status (n=98)	
No, never served in the U.S. Armed Forces	95%
No, never on active duty except for initial/basic training	1%
Yes, on active duty in the past, but not now	3%
Yes, now on active duty	1%
Race and Ethnicity (n=99)	
Hispanic/Latino	7%
Black or African American	11%
White	79%
Other	3%

Source: TrainND Post-Workshop Survey

Table 12 shows employment status and earnings of TrainND trainees. Forty-nine percent of participants reported being employed full- or part-time, and 40 percent earned $10 per hour or more. According to program staff, TrainND participants tended to be transient and two-thirds of trainees (66%) indicated that they planned to change jobs after the training.

Table 12: Employment Background

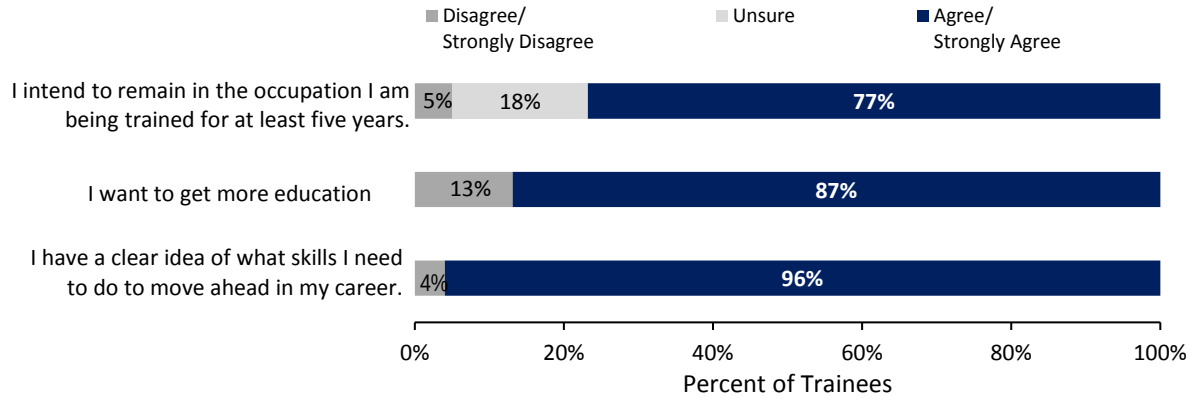
Employment Background (Baseline)	Percent
Employment Status (n=101)	
Full time	14%
Part time	35%
Not employed	51%
Hourly wage (n=101)	
$9.99 or less	60%
$10 to $14.99	13%
$15 or more	27%
Plan to change jobs after training (n=100)	
Yes	66%

Source: TrainND Post-Training Survey

6.2 TrainND: Career Outcomes

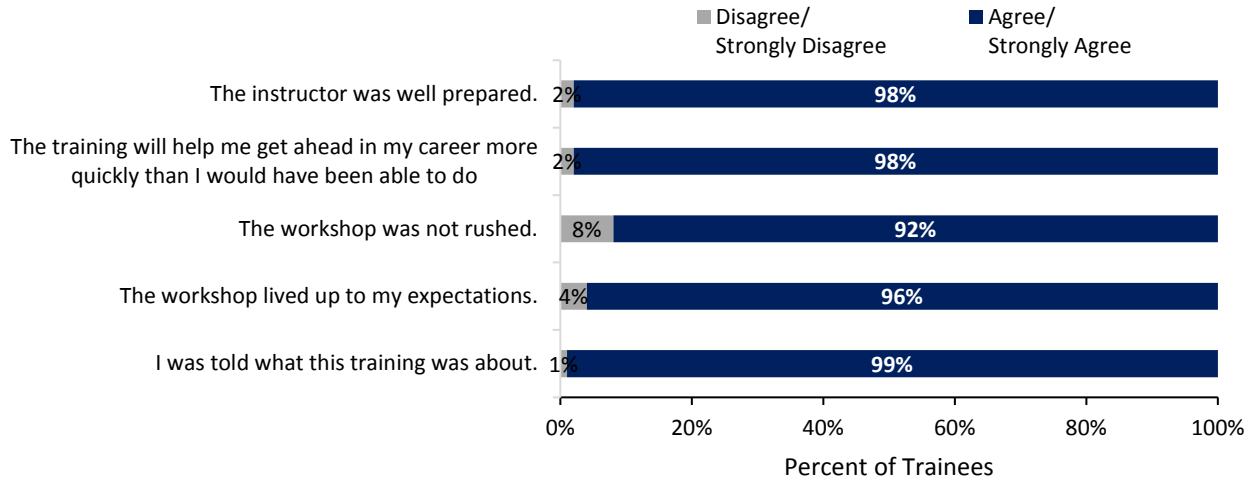
The majority of TrainND survey respondents were optimistic about their job and career prospects (see Graph 1). Seventy-seven percent of surveyed participants reported that they intended to remain in the occupation they trained in, and nearly all participants expressed the desire to pursue additional education (96%).

Graph 1[2]: Participants' optimism about their job and educational prospects after TrainND (N=99)



Overall, surveyed participants reacted positively to the training received (see Graph 2). The majority of participants indicated optimism about the career possibilities from their training program (98%), and expressed satisfaction with the instructor's preparedness (98%) and pace of the workshop (92%).

Graph 2[3]: Participants' optimism about their received TrainND workshop (N=99)



In an open-ended question, TrainND participants also shared general feedback on the training. Table 13 presents a sample of the feedback received from participants organized around major themes. Participants expressed the need for more hands-on opportunities and more challenging and better-structured training lessons.

[2] Evaluation questions used a five-point Likert Scale (Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree) to interpret participant responses.

[3] Ibid.

Table 13: Student Training Feedback

Category	Quotes
More opportunities for hands-on training activities and related materials	▪ "A few more new CNC machines so there's more available to use" ▪ "More digital electronics" ▪ "More real-life Welding situations, like repairs and projects" ▪ "A real-life situation, like on the job or if the field" ▪ "More hours, more time with each machine, and lab hours"
Improve training pace and intensity	▪ "Longer training period" ▪ "Not being rushed" ▪ "More advanced training" ▪ "Maybe just push us a little bit more" ▪ "Either decrease hours or allow students to work at their own pace" ▪ "More accountability for specific projects and hours to better prepare for final grading"
Other feedback	▪ "More mechanical and welding training for 1st year students" ▪ "Cheaper enrollment fees" ▪ "[Would like] better training material" ▪ "For the instructor to have more time to spend in the lab" ▪ "Instructors need to be on floor more often, always in office doing" paperwork''

7.0 Final Conclusions

The following final conclusions are drawn from NDSCS's TAACCCT-funded program:

1. ***Integrating nationally-recognized industry standards and credentials into associate's degree career pathways in technical education is a viable and employment-focused approach to education and training.*** NDSCS focused efforts on enhancing the two-year associate's degree career pathway in welding to promote upward mobility. NDSCS participants who gained an associate's degree were qualified for supervisory and higher paying positions. Utilizing nationally-recognized industry standards and credentials ensured a level of program quality expected by employers, and enhanced participant employment prospects.

2. ***TAACCCT-allowable funded activities, such as equipment purchases and facilities renovation, were critical to the outcomes and success of the NDSCS program.*** Employers and residents in the Fargo metropolitan area requested additional training opportunities and program offerings in welding and other technical fields. Because TAACCCT allowed NDSCS to renovate and equip a facility in Fargo, as well as the main campus in Wahpeton, NDSCS expanded capacity of welding training to 25 participants per year.

3. ***Program leadership in a comprehensive training initiative, such as NDAMSTI, is critical to the completion of deliverables and success of quantifiable outcomes.*** NDSCS recruited, hired, and retained a Program Director, who had expertise in the welding field and teaching

experience in the classroom. The Program Director was also involved in national efforts to promote quality welding programs and professional development for instructors. As a result, NDSCS stayed on track with project milestones, and successfully completed program adjustments and continuous improvement when faced with challenges.

4. ***Non-credit training programs can be an effective response to employer needs, but without strategic vision, integration of nationally-recognized standards and credentials into the pathway, and avenues for student engagement in further education, those non-credit programs have questionable effectiveness and results.*** Because TrainND is administratively separate from NDSCS, the NDSCS project leadership had limited ability to impact the activities and commitments conceived in the TAACCCT grant application and included in the statement of work. As a result, TrainND did not implement nationally-recognized, standards-based curriculum improvements, maximize availability of funds for classroom instruction, or meet program outcomes. TrainND's involvement in the NDAMSTI project did not meaningfully contribute to participant outcomes.

5. ***Participants completing the NDAMSTI project obtained credentials that increased employability and potential for career advancement, but participants tended to further their education rather than gain immediate employment.*** Multiple reasons may exist for this observation, including participant perceptions that educational attainment factored into increased earnings opportunities.

6. ***The NDAMSTI project promoted a variety of employment outcomes, including wage increases, employment gains, and industry-recognized credential attainment.*** While the rate of employment was similar before and after the program, the evaluation demonstrated that participants may have benefited in different ways. For example, many incumbent workers realized wage increases, and a portion of unemployed participants obtained and kept employment three quarters after program completion.

8.0 Appendices

Appendix 1: Student Baseline Survey

TRAINING INSTRUCTOR USE ONLY

Location of Training: _____

Type of Training: _____

Length of training: _____

PLEASE ANSWER QUESTIONS BELOW

As part of the North Dakota Advanced Manufacturing Skills Training Initiative (NDAMSTI) being led by the North Dakota State College of Science (NDSCS), your TAACCCT-funded training is designed to develop the skills needed that are comprehensive and customized to the learner. This type of training model enables North Dakota businesses to maintain a well-trained workforce to stay viable and competitive. Your responses to this survey will help us achieve these goals by helping us learn more about individuals like yourselves who are participating in related trainings.

DEMOGRAPHICS

1. Student ID _____
2. First three letters of your last name:_____
3. How old are you? _____

Please STOP filling out this survey if you are under 18 years old.
Hand your survey back to the survey administrator.

4. Do you have a disability?
   - ☐ Yes
   - ☐ No
   - ☐ I do not wish to disclose

5. What is the highest degree or level of school you have completed? (**If currently enrolled, mark the last grade or highest degree received- Please check only one***)*
   - ☐ Less than high school, no diploma
   - ☐ High school graduate - high school diploma or the equivalent (E.g. GED)
   - ☐ Some college credit, no degree
   - ☐ Associate degree (for example: AA, AS)
   - ☐ Bachelor's degree or higher (for example: BA, AB, BS)

6. Do you hold any vocational, technical, or professional certificates or licenses?
   - ☐ I don't hold any vocational, technical, or professional certificates or licenses.
   - ☐ Vocational, Technical, or Trade School Diploma/Certificate
   - ☐ Professional License

EMPLOYMENT HISTORY

7. Have you ever held a paying job?
   - ☐ Yes
   - ☐ No

8. How many years of work experience do you have? ____ Years

9. Are you currently (**Please check only one**):
   - ☐ Employed for wages (**GO TO Q. 10**)
   - ☐ Self-employed (**SKIP TO Q. 12**)
   - ☐ A homemaker (**SKIP TO Q. 15**)
   - ☐ Out of work and looking for work (**SKIP TO Q. 15**)
   - ☐ Out of work but not currently looking for work (**SKIP TO Q. 15**)
   - ☐ A student (**SKIP TO Q. 15**)
   - ☐ Retired (**SKIP TO Q. 15**)
   - ☐ Unable to work (**SKIP TO Q. 15**)

10. Do you currently work part-time or full-time?
    - ☐ Part time
    - ☐ Full time
      - o If part time- how many hours do you usually work per week? _____

11. Who do you work for?
    _____

12. What is your current job or what do you do at work?
    _____

13. How long have you worked for your employer? _____ (months)

14. How much do you get paid per hour at your current job? $_____

15. How long were you employed at your last job before this one? _____ (months)

16. How much did you get paid per hour at your previous job? $_____

SCHOOL ENROLLMENT AND PROGRAM PARTICIPATION

17. What program are you currently enrolled in or planning to be enrolled in?
    _____

18. In which semester do you plan on graduating or completing your classes?

    _____ Semester _____Year

EMPLOYMENT PROSPECTS

19. Do you have plans to find or change jobs after the training?
    - ☐ Yes, please describe this job _____
    - ☐ No

20. Do you expect your employment situation to change after you complete the training?
    - ☐ Yes
        a. If so how_____
    - ☐ No

21. What is MOST LIKELY to be your PRIMARY activity upon completing your training?
    - ☐ Employment, full-time paid
    - ☐ Employment, part-time paid
    - ☐ Further undergraduate, full-time
    - ☐ Further undergraduate, part-time
    - ☐ Military service Volunteer activity
    - ☐ Other, please specify:_____

22. What do you want to do, in terms of your career goals, once you complete this training?
    _____
    _____
    _____

23. Please indicate on a scale of 1 to 4 how strongly you agree or disagree with the following statements:

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Prefer not to Respond
I was told what the training was about	1	2	3	4	○
The training will help me get ahead in my career more quickly than I would have been able to do on my own.	1	2	3	4	○
I have a clear idea of what skills I need to move ahead in my career	1	2	3	4	○
I want to get more education	1	2	3	4	○
I intend to remain in the occupation I am being trained for at least five years	1	2	3	4	○

Thank you for your time in completing this survey!

Appendix 2: Site Visit Interview and Focus Group Protocols

Program Director

Brief Introductions

Brief description of the purpose of the interview (i.e., high-level reflection of the grant's successes, challenges, and lessons learned).

Discussion Questions

Looking Back Discussion

1. How has program delivery changed over the duration of the *NDAMSTI* grant?
    - What changed, and when?
    - Why did these changes need to occur?
2. Looking back on the grant as a whole, what were the most notable successes? Why?
3. What do you feel were the most notable challenges? (i.e., what do you wish would have gone better?)
    - How were these challenges addressed?
4. What do you wish you would have known from the beginning of the grant? (I.e., what are some lessons that you learned from this grant process?)
    - What resources were you lacking that would have helped improve the program?
5. How do you think your grant has impacted the college?
    - How do you think that student outcomes have been affected by the grant? Why?
6. On a scale of 1-10, 1 being low and 10 being high, how would you rate the success of the program in terms of student outcomes? Please explain your rating
7. Overall, how satisfied are you with the program? Why?

Program Implementation Discussion

Student Supports

1. Which supports are offered to students?
    - Which of the supports that you offer to students tend to be the most utilized? Which are the least utilized?
2. Which element of the program do you feel is most important/really drives positive student outcomes?
    - Which elements do you think were the least effective in driving student outcomes?
3. What are the challenges that students have faced with participating in the *NDAMSTI* program?
    - How do these challenges affect retention and completion?

Job Placement and Readiness

4. What were the primary job readiness services that you offered to students? What went well? What didn't go well?
    - What was most impactful for getting participants employed, in your opinion?
5. What were the primary job placement supports? What went well? What didn't go well?
    - What was most impactful for getting participants employed, in your opinion?
6. How were partners actually engaged throughout the program for recruitment and/or placement purposes?

- How did you build these partnerships?
- Who would you consider to be the college's most influential partner and in what way(s) have they been involved in grant activities? *(Specific employers, workforce system, specific philanthropic organizations, educators, etc.)*
- Who would you consider to be the least influential and why?

7. Tell me what you have heard from employer partners about *NDAMSTI* graduates.
8. What kind of feedback have you received from employers about the credentials earned?
    - How relevant do the employers feel the credentials are?
9. What were the major challenges and barriers to connecting students to employment? Specifically in terms of job readiness, and job placement.
10. On a scale of 1 to 10, with 1 being not at all, do you find that participants are ready for the job market? Please explain your rating.

Looking Forward Discussion

1. What elements/programs do you believe will be sustained beyond the grant?
    - Are there components that you feel *should* be sustained and why?
2. Looking to the remainder of the grant, what kinds of activities do you plan to accomplish with the time left?
3. Any additional thoughts about the grant, in general?

Wrap-up

Outcomes and Data Specialist

Brief Introductions

- Brief description of the purpose of the interview.

Discussion Questions

- Could you please describe your role on the TAACCCT grant?
- Survey Data
    - 59 students took the baseline survey, and 149 took the post survey. Is this correct? Should there have been this many post survey respondents?
    - For the TrainND survey, there are 27 pre- and 105 post respondents. Is this correct?
    - When and how were TrainND students surveyed? How many workshops have taken place? Has data been collected on those participants?
    - In what settings do students take each survey? Are the baseline and post surveys taken in class? Are the follow up surveys emailed?
- UI Data
    - Discussion of the format required for the UI request.
    - How will requests be structured? Which students should be included for the evaluation? For grant reporting?
- Administrative Student Data
    - Is the survey data matched to the administrative dataset you sent to us? If so, which survey and can all three be matched easily?
    - Can we request similar data for the comparison group that contains name and student ID? If not, can college staff make the request directly for UI for the comparison group?
    - What do highlighted and blue records indicate?
    - Are there any missing data issues we should be aware of?
    - Are non-completers included? Is that indicated in “credential”?
    - What do blanks mean for each variable? E.g., for degree earned should we assume they are still enrolled or non-completers?
    - Which certificate can one earn once they get on the welding career pathway?

Instructors

Brief Introductions

- Brief description of the purpose of the interview (i.e., high-level reflection of the grant's successes, challenges, and lessons learned)

Discussion Questions

Looking Back Discussion

1. What has been your experience to date with the rollout of the TAACCCT-funded welding program?
    - Have you experienced any challenges? Please describe.
    - Have you experienced any surprises? Please describe.
2. What do you like about the program?
    - On a scale of 1-10, how would you rate the curriculum/equipment/program? Why are you rating that way?
3. What, if anything, would you change?
4. Overall, how satisfied are you with the program? Why?

Program Implementation Discussion

5. What are the challenges that students have faced with participating in the program?
6. How are employer partners involved in your programs?
    - How did you build these partnerships?
    - Who would you consider to be the college's most influential partner and in what way(s) have they been involved in grant activities? *(Specific employers, workforce system, specific philanthropic organizations, educators, etc.)*
    - Who would you consider to be the least influential and why?
7. Tell me what you have heard from employer partners about *NDAMSTI* graduates.
8. What kind of feedback have you received from employers about the credentials earned?
    - How relevant do the employers feel the credentials are?
9. On a scale of 1-10, with 1 being not at all, to what extent do you feel the program adequately prepares students for employment/ better pay? Please explain your rating.
    - To what extent, do you feel that the credentials that students earn are relevant for the job market in the area?
    - What, if any, other courses, assessments, or credentials do you think could have led to better outcomes or could better prepare students for the job markets?

Looking Forward Discussion

10. What elements/programs do you believe will be sustained beyond the grant?
    - Are there are components that you feel *should* be sustained and why?
11. Any additional thoughts about your program or the grant in general?

Wrap up

Students

Introduction

Brief introduction to evaluation outlining who we are, why we are there, and how we will use and report the information gathered from the focus group.

1. Please state your name.

Discussion Questions

2. Tell me about what you are studying.
3. How did you initially learn about this program?
4. What interested you most about it? (I.e., what factors encouraged you to enroll?)
5. Tell me about any supports (like testing or counseling) you have received.
    - What support services do you feel were most useful in helping you stay and complete your training program?
    - What support services do you feel were most helpful to you in terms of getting ready for a job and job placement? Why?
6. Tell me about your experience with your classes.
    - What do you like?
    - If you could change one thing, what would it be?
    - In what ways do you feel that the credentials you will earn through this program will help you get a job in the field?
7. On a scale of 1-10, how satisfied are you with the courses you are taking in the program? Tell me about that rating.
8. What will completing this program help you do? (probe re: jobs, continuing education)
9. What advice would you give a future student who was interested in enrolling in a program at this college?
10. Any additional thoughts about the courses you are taking?

Wrap up