Final Evaluation Report

Excellence in Advanced Trade Skills Program
Bossier Parish Community College

Thomas P. Miller & Associates

Thank You

To the ATSP staff of Bossier Parish Community College (BPCC) for your support and active engagement throughout the evaluation.

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Executive Summary

Excellence in Advanced Trade Skills Program

The Excellence in Advanced Trade Skills Program (ATSP) was implemented to deliver rapid training to meet the region's need for highly skilled workers in the oil and gas industry, specifically in advanced welding and oil and gas-related manufacturing (refinery processes) occupations.[1] Bossier Parish Community College (BPCC) was awarded a four-year U.S. Department of Labor (USDOL) Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant totaling $2.5 million. At its inception, BPCC aimed to develop credit and non-credit programs in advanced welding and refinery processes technology that would stack into existing degree offerings at BPCC. BPCC also aimed to implement a comprehensive plan for student support services and coordinate a Registered Apprenticeship initiative in the region in which BPCC would serve as the primary training provider. The grant's target population generally included individuals with barriers to education, including TAA-eligible individuals, veterans, and non-traditional adult learners.

Several programs and courses were developed and refined through the project, including short-term Industrial Readiness Training (IRT) courses, accelerated Certified Production Technician (CPT) courses, and a non-credit Advanced Welding program. The programs/courses incorporated industry-recognized credentials (e.g., OSHA 10 and Manufacturing Skills and Standards Council certifications) and stacked into degrees and certificates offered at BPCC. BPCC implemented a comprehensive plan for student support by hiring a Job Development Coach and Career Coach and worked to establish employer partnerships for work-based learning opportunities and student placement. The approach for this project was based on evidence gathered from previous research noting that these components (i.e., stackable, short-term training programs and work-based learning opportunities) yielded successful outcomes, such as employment and academic success, for participants.[2] The funds provided by USDOL and investments made by other stakeholders (e.g., employers and community-based organizations) made these enhancements and innovations possible.

Using existing curriculum, BPCC was able to leverage resources curriculum development for specific courses/programs. For programs/courses that were developed under the grant, BPCC was afforded the opportunity to better align with needs identified from the local industry, enhancing employer partnerships and participation in the grant. Significant staff turnover and environmental factors led to several delays throughout the project but the ability to leverage existing experience with TAACCCT projects, curriculum, and industry partner participation conversely helped expedite project start-up activities.

Individuals interested in the courses and programs offered through the grant were recruited via several different avenues, depending on the targeted outreach that was conducted for each program/course. Figure 1 on the following page identifies the ways participants moved through the ATSP program.

[1] The ATSP was designed based on USDOL-identified core elements, identified and defined in Appendix A.
[2] For more information about the intervention's evidence base, please see Original ATSP Design and Evidence Base

Figure 1: Participant Flow

Non-Credit Advanced Welding Program	Participants were recruited from area high schools and technical schools using marketing strategies such as billboards and social media	Intermediate and advanced welding classes, hands-on skills practice, projects, and online learning module availability	Prepared for entry to mid-level welding jobs
Veterans' Welding Bootcamp	Participants were recruited from the Barksdale Air Force Base	Entry-level welding bootcamp, hands-on skills practice, projects, and online learning module availability	Welding skills sufficient to advance to non-credit welding program or take an entry-level job
Certified Production Technician	Course availability was advertised using traditional methods such as flyers, billboards, and media	AMFG 107 and 108 course content and articulation, MSSC certifications	Welding skills sufficient to advance to non-credit welding program or take an entry-level job
Industrial Readiness Training	Course availability was advertised using traditional methods such as flyers, and billboards; worked with social service providers including homeless shelters	Basic manufacturing skills, employability skills, and OSHA 10 certification	Prepared to take entry-level manufacturing job (most participants got jobs with BPCC IRT partners)

Program Evaluation

Bossier Parish Community College (BPCC) contracted with Thomas P. Miller & Associates, LLC (TPMA) to serve as an independent, third-party evaluator for the project. The evaluation's primary purpose was to assess the planning, implementation, and effectiveness of the intervention. The evaluation itself consisted of two components.[3]

Implementation Evaluation

The Implementation Evaluation began October 2014 and continued through March 2018[4] to document program progress, monitor program outcomes, and provide recommendations for continuous improvement of program operations. The Implementation Evaluation primarily focused on the training provided by BPCC, but also covered progress of all grant-funded initiatives. A series of research questions guided the Implementation Evaluation (Appendix B). The Implementation Evaluation was primarily qualitative and included conference calls, in-person interviews and focus groups, document reviews, and reports. The methods used to analyze this qualitative data can be found in Appendix B. The Implementation Evaluation can be described in two parts – the formative, or ongoing analysis of the program, and the summative, or the final cumulative program analysis. A general inductive thematic approach was used to analyze the data gathered throughout the Implementation Evaluation.

Outcomes Evaluation

The evaluation plan changed during the life of the program to accommodate for changes in program design and implementation, as well as limitations related to data availability and completeness. The final evaluation for this project was an Outcomes evaluation that examined the extent to which participants completed their programs, earned certifications or credentials, and were employed after program completion. The data for the Outcomes evaluation was collected from BPCC in August 2018, then was cleaned and analyzed to determine participant outcomes. The findings in this report may vary slightly from Annual Progress Reports submitted by BPCC due to the timing of the data being pulled, and because some key analyses in this report were conducted with "program completers" (participants who were identified as having finished their programs) as the population rather than all program participants.

Summary of Evaluation Findings

Between October 2014 and March 2018, BPCC program staff developed and implemented a project designed to increase the number of highly skilled workers in the oil and gas industry. ATSP aimed to capitalize on innovative training models to make credentials attainable for individuals with barriers to education through an approach that integrated stackable, short-term training programs, comprehensive support services, and substantial partner (i.e., employer, community organizations, service providers, workforce providers, and educational institutions) engagement. This approach enabled BPCC to build institutional capacity in these areas.

[3] For a detailed description of the methods, see Appendix B and Appendix C.
[4] All TAACCCT Round 4 grantees received a six-month no-cost extension, extending the grant implementation period through March 2018 instead of September 2017.

Program Changes and Contextual Factors

- To serve more participants, BPCC worked with industry partners to develop and implement 21 customized Industrial Readiness Trainings (IRTs) which incorporated OSHA 10 credentials, company-defined basic skills for production and quality processes, and employability skills.
- BPCC adapted its existing semester-long Certified Production Technician (CPT) Technical Competency Area curriculum to an accelerated summer format, helping participants obtain up to four Manufacturing Skills and Standards Council credentials and six hours of academic credit. BPCC partnered with Barksdale Air Force Base to recruit these additional participants.
- Due to external factors, BPCC did not become a USDOL Registered Apprenticeship Sponsor and training provider during the project period. However, by the end of the project period, BPCC had engaged in serious conversations with two employers (one in the Advanced Manufacturing sector and one in the healthcare sector) to begin conversations about jointly developing Registered Apprenticeship programs. Resources and knowledge gathered during the project period greatly facilitated this progress. By the end of the project period, BPCC and Benteler Steel/Tube had begun planning to launch the BPCC Academy together to train apprentices with BPCC serving as the Registered Apprenticeship Sponsor.
- BPCC did not implement a credit-bearing Advanced Welding program during the project period. To overcome several challenges including lower than anticipated skill levels of participants, BPCC trained participants through non-credit cohorts. By the end of the project period, a credit-bearing welding curriculum was approved and eligible for financial aid. All groundwork for the Advanced Welding Certificate of Technical Studies was laid during the project period.
- Due to a sharp downtown in the oil and gas markets early in the project period and little demand from employers, BPCC did not develop an Oil and Gas Refinery Processes (PTEC) associate degree during the project period. However, by the end of the project period, the sector had begun to recover and the PTEC program was available in the Fall 2018 semester.

Program Accomplishments and Accelerators

Important themes around ATSP's success include:

Developed Foundation for New, In-Demand Credit Program Offering

ATSP activities created a solid foundation for the development and implementation of Advanced Welding Certificate of Technical Studies, a new, in-demand credit program offering for BPCC.

Recognized as Resource to Industry Partners

A significant legacy of the ATSP program was BPCC's improved reputation as a training and hiring resource for local industry partners. Through ATSP, BPCC increased responsiveness to partner needs and dedicated resources to conducting employer outreach and placing program completers.

Capacity to Manage Large-Scale Initiatives

Because of participation in several rounds of TAACCCT, BPCC developed better systemic preparedness to implement future federal grants. Challenges relating the scale and scope of ATSP gave the college the opportunity to shift vision, mentality, and supporting institutional processes to in turn be nimbler and more relevant to the local community and labor market.

Training and Placement Results for Students with Barriers

Through customized instruction and dedicated support services around employability skills and overcoming barriers, ATSP facilitated positive training and placement outcomes for non-traditional students (e.g., low income, veteran, and unemployed or underemployed with significant academic and personal barriers).

Program Barriers and Challenges

Helpful background around ATSP's challenges include:

Retaining Qualified Advanced Welding Program Director

Difficulty in retaining a qualified Program Director for the Advanced Welding program stalled the development of the credit-bearing curriculum and prevented the launch of the program before the end of the project period.

Lower than Anticipated Baseline Welding Skillsets

The underestimation of the baseline skill level of welders trained in the high schools and technical colleges slowed the progress of the Advanced Welding curriculum development and implementation. Program Directors and adjunct instructors had to adapt exercises and instruction to match each participant's skill level in the non-credit Advanced Welding program.

Economic Downturn of Oil and Gas Industry

An economic downturn in the oil and gas markets at the time of program implementation impeded BPCC's ability to launch the planned PTEC curriculum before the end of the project period. Many oil and gas development companies left the area or went out of business entirely, dissuading students from pursuing training or employment in the industry and decreasing partners' capacity to support the program.

Internal Processes and Systems

The scope and scale of ATSP, as well as the fact that the programs offered were designed to be nimble and industry-responsive, created some unexpected institutional challenges. However, by the end of the project period, BPCC had leveraged these experiences to modify challenging institutional processes and improve operational efficiency.

Program Outcomes

- More than three quarters of program participants completed a grant-funded program (76.9%) and an additional 2.7% did not complete a grant-funded program but continued their education in a non-grant-funded program.
- Overall, 76.4% of program participants earned some type of degree or credential or regardless of whether they successfully completed the grant program. However, for those who completed the grant program, nearly all (94.7%) earned some sort of credential.
- Most program completers who earned an Occupational Skills Certification[5] earned multiple certifications, with a total of 507 certifications earned by 257 program completers.

[5] Occupational Skills Certifications reported include: IRT (certificate of completion, which was recognized by the employers with whom BPCC partnered on the courses); Manufacturing Skills and Standards Council (MSSC) Process, Maintenance, Safety and Quality certifications; Certified Welding Inspector; SIEMENS I; and OSHA-10.

- Overall, program completers were significantly more likely to be known to be employed upon program completion (35.6%) than non-completers (12.6%).

Lasting Impact and Sustainability Strategies

One of the many findings within this evaluation report is projects like the ATSP take time to implement, re-examine, and improve upon. Through the grant, BPCC was able to develop the Advanced Manufacturing TCA and Advanced Welding CTS programs that are structured for credit. BPCC anticipates continuing to offer the programs/courses that were developed under the grant using several funding streams and donations from the community. Employers will be consistently engaged and effectively engaged moving forward and the college will continue to work with area employers to establish apprenticeship opportunities. Effects of ATSP are anticipated to continue through the end of the grant and beyond through the following:

- BPCC's Chancellor has committed to sustaining the program for at least two years
- Donations of $1.4 million over five years and $300,000 over three years to support the program's efforts
- BPCC Foundation donation to support the salary for the Welding Program Director

BPCC also anticipates additional funding through the National Fund for Workforce Solutions, in which BPCC is currently managing its third in a series of $100,000 awards.

Replication Strategies

Throughout the grant, BPCC leadership, staff, and instructors identified recommendations for an educational institution considering implementing programs similar to ATSP. These recommendations, at a high-level, include:[6]

Early Planning – Implementing a grant project requires coordination of several different mechanisms including, but not limited to, establishing project priorities, and identifying appropriate program staff. Ensuring these plans, policies, and protocols are in place early in the grant is critical to successful implementation.

Consider Barriers to Innovation and Progress – The purpose of grant funding is to explore new and unique approaches to education. However, with these innovative approaches comes challenges in aligning with existing institutional processes. Maximizing efficiencies created from other initiatives and ensuring that institutional knowledge is documented in cases of staff turnover can help alleviate delays and challenges later in the grant.

Engage Stakeholders – Recognizing potential partners in the community (e.g., employers and community-based organizations) and within the institution (e.g., departments and key personnel) can be beneficial in generating buy-in for training programs, aiding in student enrollment and placement, expediting program development and internal processes, and ensuring program sustainability (e.g., through financial assistance and donations). Establishing these partnerships early in the grant affords partners the opportunity to participate in program design, development, and implementation.

[6] See Future Implementation section for more details.

Future Research

A review of the evaluation findings and limitations suggest several directions for possible future research. Improved data collection systems and processes, which ameliorated significantly over the course of the project period, would greatly improve the validity of any future studies.

Because several of the programs BPCC planned did not enroll any participants until after the end of the project period (Advanced Welding CTS and Oil and Gas Refinery Processes/PTEC concentration), BPCC should consider conducting research investigating the effectiveness of these programs in improving students' employment prospects and assessing student and employer experiences. Additionally, BPCC should consider a qualitative and quantitative study around any Registered Apprenticeship initiatives developed in the future.

The following studies would provide additional insight into the effect of the TAACCCT-funded BPCC programs.

1. A study comparing the employment outcomes of Advanced Welding CTS completers to the non-credit Welding completers, as well as qualitative experiences of the two groups.
2. A study examining whether endorsement or articulation with employers and specific programs improves student academic and employment outcomes.
3. A study examining the experiences and academic and employment outcomes of Registered Apprenticeship participants, and the sponsoring employers.
4. A study examining whether the impacts of the program vary based on whether the student enrolled in the non-credit programs created under the grant because they would otherwise not be able to attend college at all, as compared to preferring the flexibility or format of the TAACCCT-funded program to a traditional program.

A longer study window could have also revealed impacts of greater magnitude and would require extending the post-program observational period for the purposes of examining outcomes. Employing an extended post-program observational period would answer questions about whether the employment effects of TAACCCT-funded programs were different over the short and longer terms.

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Original Program Design Summary

In October 2014, Bossier Parish Community College (BPCC), located in Bossier City, Louisiana, received a $2.5 million U.S. Department of Labor (USDOL) Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant to deliver rapid training to meet the region's need for highly skilled workers in the oil and gas industry, specifically in advanced welding and oil and gas-related manufacturing (refinery processes) occupations. Through the Excellence in Advanced Trade Skills Program (ATSP), BPCC planned to recruit, train, and place displaced workers, veterans, and other non-traditional learners for immediate employment in high-wage, high-skill advanced welding and oil and gas refinery process technology occupations. BPCC developed ATSP's original design through evidence and data, including extensive feedback from industry partners about the significant need for advanced welding skills in the oil and gas industry that was left unmet by available training in the area.

The central planned strategy to carry out this overarching goal included the development of credit and non-credit programs in Advanced Welding and Refinery Processes Technology that would stack into existing offerings at BPCC, including an associate degree in Advanced Manufacturing and Mechatronics. Auxiliary strategies included a comprehensive plan for student support services, incorporating the services of a Career Coach as well as the work of a Job Development Coach to cultivate industry partnerships leading to direct placement for program completers, and to position BPCC optimally for mutually beneficial training and placement relationships. Finally, under the ATSP program, BPCC sought to coordinate a Registered Apprenticeship initiative in the region in partnership with oil and gas and manufacturing companies as well as other sectors that had been addressed by prior rounds of TAACCCT grants, such as cybersecurity. In the planned model, BPCC would serve as the primary training provider as well as the Registered Sponsor for their industry partners' apprenticeships in various occupations, relieving companies of the administrative burden of sponsoring a program.

The following sources were used to determine the effectiveness of the program's model:

- Periodic review of program documentation;
- Monthly implementation update calls with BPCC grant leadership and staff
- In-person interviews with BPCC grant leadership, staff and instructors, employers, and community partners
- In-person focus groups with program participants

The information gathered from these sources were combined to identify the project's scope, grant elements and activities, logic model, participant flow, and evidence base.

Original ATSP Design and Evidence Base

Curriculum and Credentials

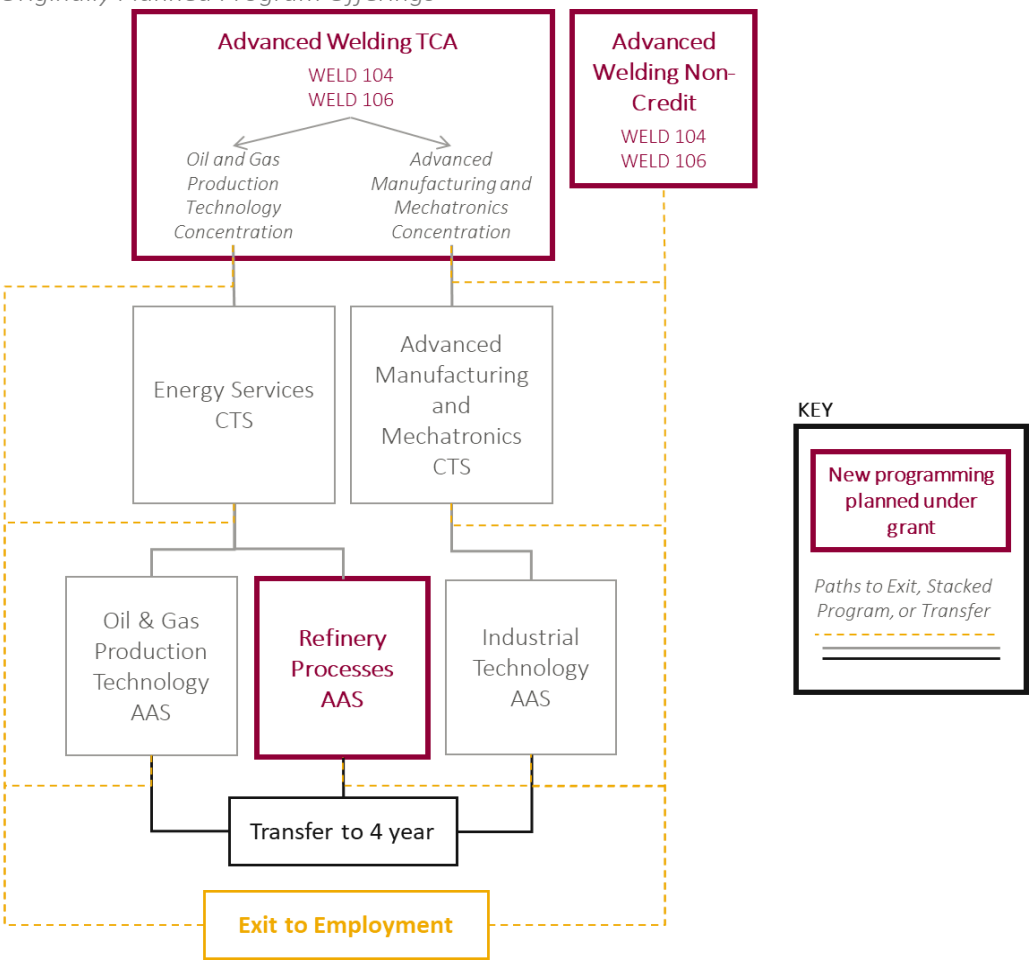
Prior to grant award, BPCC consistently received feedback from industry partners that regional vocational technical colleges and local high schools were not producing completers with the level of advanced welding skills necessary for oil and gas and manufacturing companies to meet their needs and keep up with production demand. In response, BPCC planned to leverage USDOL TAACCCT Round 4 funds to create an entirely new program: a 12-credit hour, one-semester Technical Competency Area in Advanced Welding

(TCA). The TCA would meet the standards of the American Welding Society (AWS) curriculum for Certified Welding Supervisor (CWS) and Certified Welding Instructor (CWI) certifications. After completing the Advanced Welding TCA, students would have the opportunity to test for requisite AWS credentials and to continue to advanced study in a one-year certificate program (Certificate of Technical Studies – CTS). Subsequently, students could remain on the track to pursue one of three Associate of Applied Science (AAS) degrees, concentrating in either Oil and Gas Production Technology or Refinery Processes (a new planned offering under ATSP), or Advanced Manufacturing and Mechatronics. The curriculum and course sequence for the Advanced Welding TCA would be built to stack seamlessly into the two CTS and AAS degree tracks. In addition to developing the Advanced Welding TCA, BPCC planned to offer non-credit welding courses that would prepare students for the TCA.

Additionally, ATSP planned to develop another new curriculum offering: A Refinery Processes (Process Technology – PTEC) concentration for the Oil and Gas AAS degree. Oil and gas students would choose a concentration for the last year of the program and add two new courses for the Refinery Processes concentration. This curriculum was developed during the project period, approved by the BPCC Curriculum committee, and the Louisiana Board of Regents in spring 2018, and offered beginning Fall 2018.

Figure 2 illustrates the curriculum offerings and stacked academic pathways originally planned through the ATSP.

Figure 2: ATSP Originally Planned Program Offerings



Evidence cited for the development of stacked and latticed credentialing pathways beginning with the new Welding TCA included a three-site quasi-experimental design that demonstrated participants in sector-focused training programs earned significantly more than those who did not, and were employed more consistently and stably.[7] Two additional studies found that adult learners are more motivated to get trained and back to work quickly if they have clear credential attainment pathways and if articulation opportunities exist.[8]

Student Support Services

ATSP's original design planned for several different aspects of student support services—both supported learning and career development and are described in greater detail below.

Supported Learning (Developmental Courses, Technology-Enhanced Offerings, and Equipment)

ATSP planned to incorporate the I-BEST (Integrated Basic Education and Skills Training) model to support participants in need of remediation and basic skills training. BPCC would leverage its Open Campus/MOOC (Massive Open Online Courses)[9] program to integrate basic skills training into core technical courses building upon work completed under prior rounds of TAACCCT. Additionally, ATSP would expand upon BPCC's use of Amatrol E-Learning[10] and LabVolt software[11] to offer simulation opportunities for welding and mechatronics courses. Finally, ATSP would purchase state-of-the-art equipment (welding simulators, programmable logic controllers, etc.) to facilitate relevant hands-on learning in the advanced welding program. A synthesis of three independent quasi-experimental design studies confirmed that the I-BEST model increases the likelihood of students earning college and vocational credits, certificates, and associate degrees.[12]

Career Development

To address BPCC's lack of focus on job placement services focused on workforce solutions, the ATSP plan included a Career Coach to provide dedicated support to students around resume writing, interview skills, personal branding, and targeted advising. ATSP's grant proposal cited a study that demonstrated that intensive coaching increased retention and graduation rates by 10 to 15 percent, and that it is a cost-effective strategy.[13] The original proposal also included a Job Development Coach position to advocate for student placement by cultivating relationships with local employers and assisting with placement. The Job Development Coach would plan hiring events and career fairs, as well as serve as a liaison with industry and other partners to ensure program, curriculum, and student feedback is relayed and utilized.

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[7] Maguire, S., Freely, J. Clymer, C. and Conway, M. (2009). Job Training That Works: Findings from the Sectoral Employment Study. *Public Private Ventures* 7.

[8] Twigg. (2005). Increasing Success for Underserved Students: Redesigning Introductory Courses." National Center for Academic Transformation. Conway, M., Blair, A., Hellmer, M. (2012). Courses to Employment: Partnering to Create Paths to Education and Careers. The Aspen Institute.

[9] Open Campus is a college resources that offers free, online preparatory courses for underprepared students using user-friendly video lectures around the topics of basic manufacturing, employability skills, math, English, and reading comprehension. For more information, please see: https://www.opencampus.com/

[10] Amatrol provides skills-based, interactive technical learning through modules, materials, guides, hands-on equipment, and instructor training. For more information, please see: https://amatrol.com/

[11] LabVolt provides products and services for technical education. For more information, please see: https://www.labvolt.com/

[12] Jenkins, D., Zeidenberg, M., Kienzl, G. (2010 and 2009). Educational Outcomes of I-BEST. Washington State Community and Technical College System's Community College Research Center.

[13] Bettinger, E., Baker, R. (2011). The Effects of Student Coaching in College: An Evaluation of a Randomized Experiment in Student Mentoring. *National Bureau of Economic Research* (16881)

Registered Apprenticeship Program

The plan to launch a regional Registered Apprenticeship initiative was at the core of ATSP's original design and was intended to help align program offerings to in-demand occupations and ensure that training would lead to student placement. At the time of ATSP's launch, the ten-parish region BPCC served had four Registered Apprenticeship Sponsors in the area. Additionally, a German manufacturer, Benteler Steel/Tube, had moved operations to the area and taken up residence in BPCC facilities to train staff through an agreement with Louisiana Economic Development (LED). One of their core occupations (Mechatronics Technician) had been approved by the USDOL Office of Apprenticeship as an apprenticeable occupation and BPCC hoped to capitalize on this. By positioning the college as the Registered Sponsor of any apprenticeship programs industry partners wanted to create, BPCC could provide the training as well as remove administrative barriers to participation by handling the paperwork and administrative requirements of developing and maintaining a program. ATSP intended that, in addition to manufacturing-related apprenticeable occupations, BPCC could serve as the Registered Sponsor for apprenticeships in other fields addressed under TAACCCT programs, such as IT occupations. BPCC and Benteler Steel/Tube plann to launch the BPCC Academy together to train apprentices with BPCC serving as the Registered Apprenticeship Sponsor in Fall 2019.

Program Elements and Activities

TAACCCT Core Elements

The core elements of the intervention[14] were developed to build training and educational programs that met industry needs and standards. These elements, with associated ATSP activities explained below, included: (1) evidence-based design, (2) stacked and latticed credentials, (3) transferability and articulation of credit, (4) advanced online and technology-enabled learning, (5) strategic alignment, and (6) alignment with previously funded TAACCCT projects. For the progression and changes to these elements throughout the life of the project, see the Implementation Evaluation chapter.

Evidence-based design – The primary strategies within this element were (1) to develop and promote stacked and latticed credential and degree pathways in several industries that use work-based learning, meet industry-driven competencies, and have clear entry and exit points and (2) to link new degree pathways and apprenticeship opportunities in sector-based pathways to broaden access and accelerate the path to completion, employment, or articulation.[15] To meet these objectives, BPCC sought to align programs to industry needs, integrate specific support positions (e.g., Career Coach and Job Developer) into the program to assist students in navigating the educational system, and design pathways that enhance and accelerate credential attainment that aligned directly industry standards.

Throughout the program, BPCC created implementation and curriculum review and advisory board committees to help ensure that programs met industry standards and community needs, while support positions (i.e., Career Coach and Job Developer) were hired early in the project period to assist students enrolled in the training programs. This approach allowed program staff to establish industry-recognized programs that were rigorous enough to meet industry standards, while also

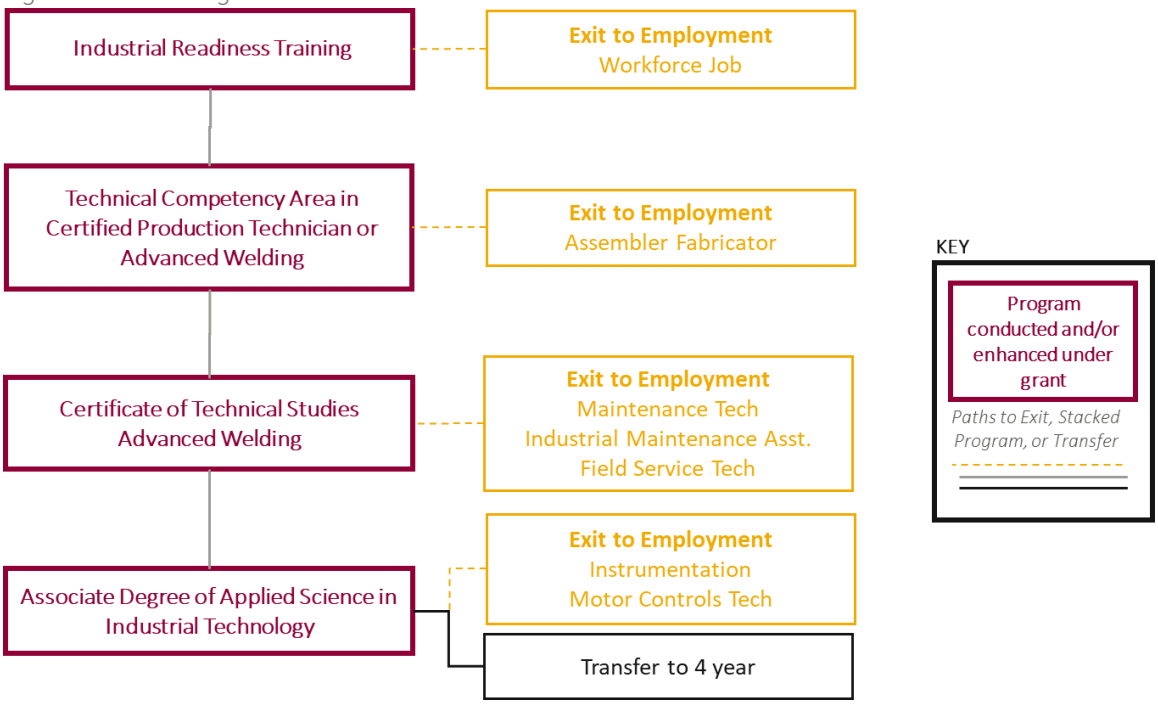
[14] See Appendix A for a detailed description of the TAACCCT Core Elements.
[15] Information drawn from BPCC's original grant narrative.

embedding the support needed to ensure the students could complete the program and become employed.

Stacked and latticed credentials – BPCC program staff developed stacked and latticed credentials with the guidance from implementation and curriculum review committees, advisory board committees, and program staff expertise. Through input received from these groups, BPCC program staff developed several programs including short-term Industrial Readiness Training (IRT) courses, accelerated Certified Production Technician (CPT) courses, and a non-credit advanced welding program. Although the IRT and CPT tracks were not planned in ATSP's original program design, they were valuable resources for industry partners and helped ensure that training objectives could be met when the project encountered serious barriers to implementing the primary training pathways that had been planned. These programs incorporated industry-recognized credentials and, in the case of the CPT track, stacked to existing credit offerings at BPCC.

The short-term IRT courses afforded participants basic entry-level manufacturing and safety certifications (OSHA 10), as well as employability and soft skills training. The accelerated CPT program developed under ATSP is 16 16-credit hour course that stacks into the existing Industrial Technology AAS. This program offered students the foundational skills to continue to the AAS or take an entry-level manufacturing job. The CPT program offered students the option to test for four MSSC certifications (Safety, Quality, Production, and Maintenance) through the Amatrol and LabVolt Learning Management System software purchased under the grant. Some CPT students also took the WELD 101 course created under the program. For the non-credit welding program (including veterans' cohorts) the instruction was customized to meet students where they were and allowed them to gain skills at their own pace, due to a lack of standardization the participants' baseline skill sets.

Figure 3: ATSP Programs



Transferability and articulation of credit – To encourage students to continue their education, BPCC program staff established articulation opportunities within programs and between educational institutions. Within programs, the WELD 101 course was taught in one of the accelerated CPT sequences, allowing for articulation toward the Advanced Welding Certificate of Technical Studies. Completers of the accelerated CPT program could either exit after completion of the Technical Competency Area (TCA) after receiving 16 credits. They could also apply those credits toward the BPCC Industrial Technology AAS degree. Additionally, BPCC signed an articulation agreement with the University of Texas at Tyler for completers of the CPT program to have credit applied to that institution's Industrial Technology AAS degree, including the WLD 101 course.

Toward the end of the project period, program staff-initiated articulation and transfer agreements with local high schools and Northwest Louisiana Technical College welding programs to create a pathway from high school to a technical certificate and ensure adequate preparation to enter BPCC's advanced welding program. Two Memoranda of Agreement were also established with Northwest Louisiana Technical College in the hopes that cross-enrollment and reciprocal use of facilities would be encouraged. BPCC anticipates that these relationships will further strengthen and result in increased articulation and transferability opportunities for students beyond the project period.

Advanced online and technology-enabled learning – BPCC incorporated advanced technology-enabled learning into program design and delivery in several ways. For example, Open Campus and Amatrol programs, as well as media equipment, were purchased with grant funds to assist students in the ATSP programs improve basic math, English, reading comprehension, and employability skills. Some of these online modules were incorporated into non-credit advanced welding courses to help address any instructional gaps that existed for students. Due to the success of the online remediation in the grant-funded programs, its use was eventually expanded across multiple divisions on campus, and industry partners used it as a tool for their employee training.

After the grant concludes, the Industrial Readiness Training will be offered through the Workforce and Continuing Education department. This program will offer entry-level manufacturing knowledge and employability skills to students through these resources. Additionally, the Advanced Welding Program Directors and adjunct instructors used the online U/LINC[16] curriculum to incorporate some modules for participant self-study resources and to reinforce key concepts.

Strategic alignment – BPCC was able to substantially engage employers throughout the project in several ways including participation on implementation and curriculum review committees, advisory board committees, and in the programs (e.g., through presentations and tours) as well as employers providing donations to the programs (e.g., equipment and funding). BPCC pursued programs in which employers emphasized significant demand and customized course offerings to specific employer needs (for example, the CPT and IRT offerings conducted specifically for ValveWorks, Frymaster, Sabre Industries, and others). BPCC anticipates continuing this level of

[16] U/LINC is a welding and cutting curriculum developed by Lincoln Electric. For more information, please see: https://education.lincolnelectric.com/ulinc/

involvement from employers beyond the program to ensure that the training programs continually meet the needs of the industry.

BPCC also pursued engagement from employers with apprenticeships such as those that occurred with Benteler Steel. While BPCC had hoped these opportunities would have been more consistent and standardized, the college anticipates continuing these efforts beyond the project period to increase employer awareness of the importance of apprenticeships and will work with interested employers set up on-the-job training opportunities for new BPCC students. There are already efforts underway to advance apprenticeship programs in partnership with two employers.

Alignment with previously funded TAACCCT projects – BPCC incorporated and aligned with previously funded TAACCCT projects throughout the project. For instance, BPCC capitalized upon existing employer relationships that were established in previous TAACCCT projects, which helped BPCC strengthen their reputation as a trusted, training source for the community and recruitment source for local industry partners. BPCC offered customized training opportunities for specific employers such as the CPT program for ValveWorks and IRT programs for companies such as Sabre Industries and Frymaster. BPCC built upon the curriculum of the C4M (Certification for Manufacturing) program developed under TAACCCT 3 to create a new short-term option for students to gain skills and certifications for manufacturing jobs (accelerated CPT program.) Finally, BPCC continued to advance discussions around apprenticeships with employers in the community throughout the project period, an effort that was launched under a previous TAACCCT project.

Programs Under the Grant

The following programs/courses were developed using grant funds: non-credit Advanced Welding program and Veterans' Welding Bootcamp, Certified Production Technician, and Industrial Readiness Training courses. A Certified Welding Instructor course was also offered using grant funds. Cohort timelines and participant flow for each program/course are highlighted below with a description of the programs/courses.

Students Served

The following types of participants as well as cohort timeframes for BPCC training programs/courses funded under the TAACCCT grant are detailed in Table 1:

Table 1: Participants and Cohort Timeframes

Type of Participants	Cohort Timeframes
Advanced Welding – non-credit	Spring 2016 (January-March) Fall 2016 (August-October, October-December) Spring 2017 (January-March, March-May) Fall 2017 (August-December)
Veterans' Welding Bootcamp	Fall 2015 (November-December) Spring 2016 (January) Summer 2016 (July-August) Summer 2017 (June)

Certified Welding Instructor Class *Conducted in partnership with the American Welding Society*	October 2017
Certified Production Technician *AMFG 107 & 108, WELD 101, and OSHA 10 & MSSC certifications*	Summer 2017 Session One (May-June) Summer 2017 Session Two (July-August) for ValveWorks
Industrial Readiness Training *OSHA 10 certification*	Sabre Industries IRT (June 2017) ValveWorks IRT (July 2017) Frymaster IRT (August 2017) Others from September 2017-March 2018

Participant Flow

The flow of a participant through a BPCC training program/course varied in that recruitment strategies, training content, and employment opportunities were different for each program/course. Several different recruitment strategies were utilized to generate interest and increase enrollment in training programs/courses while relationships and connections with industry partners helped assist participants with obtaining employment.

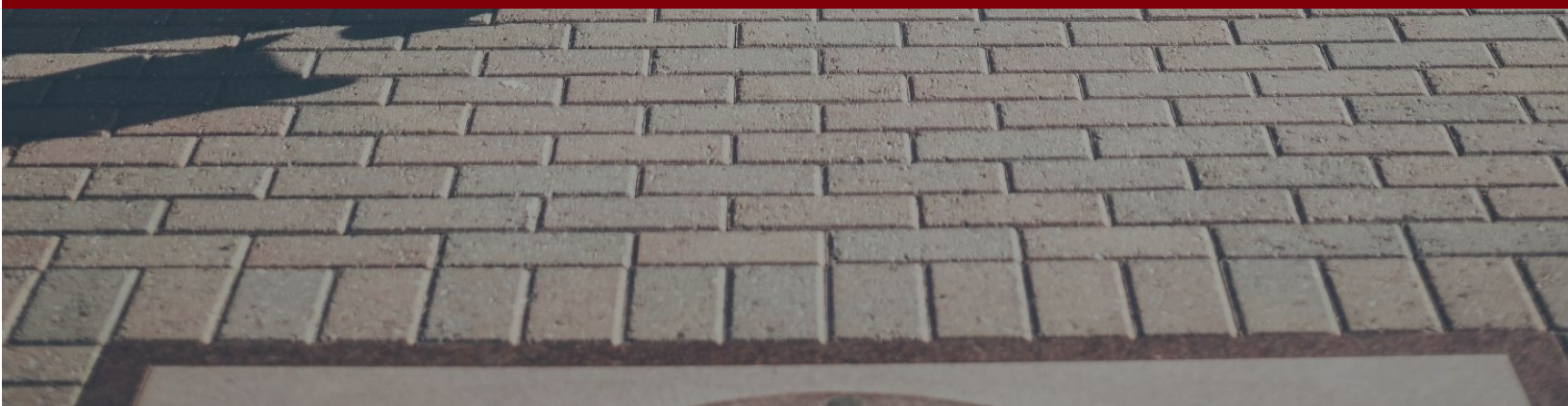
Figure 4 on the following page represents recruiting, programs/courses, and post-program opportunities for a typical participant going through ATSP's Welding, CPT, and IRT programs/courses.

Figure 5: Participant Flow

Non-Credit Welding Program	Participants were recruited from area Job Corps, high schools, and technical colleges using marketing strategies such as billboards and social media, and direct outreach by the project team	Intermediate and advanced welding classes, hands-on skills practice, projects, and online learning module availability (U/Linc)	Prepared for entry to mid-level welding jobs
Veterans' Welding Bootcamp	Participants were recruited from the Barksdale Air Force Base	Entry-level welding bootcamp, hands-on skills practice, projects, and online learning module availability U/Linc)	Welding skills sufficient to advance to non-credit welding program or take an entry-level job

Certified Production Technician	Course availability was advertised using traditional methods such as flyers, billboards, and media, and many participants were recruited from the Barksdale Air Force Base	WELD 101, AMFG 107 and 108 course content and articulation, MSSC certifications	Basic manufacturing skills sufficient to advance to non-credit welding program, advanced manufacturing, or mechatronics associate degree, or take an entry to mid-level job in manufacturing
Industrial Readiness Training	Course availability was advertised using traditional methods such as flyers and billboards; program staff also worked with social service providers including homeless shelters and a temporary employment agency to recruit	Basic manufacturing skills, employability and soft skills training, and OSHA 10 certification	Prepared to take entry-level manufacturing job (most participants were hired by BPCC IRT partners)

Implementation Evaluation



Implementation Evaluation

Design Summary

The Implementation Evaluation of ATSP began in October 2014 and continued through March 2018. [17] The purpose of the Implementation Evaluation was to document project progress, internal and environmental factors that influenced ATSP's rollout and operations, monitor project outcomes, and generate recommendations for continuous improvement of project operations. The Implementation Evaluation primarily focused on the training provided by BPCC, but also covered progress of all grant-funded initiatives. A series of research questions guided the Implementation Evaluation (Appendix B). The Evaluation Team conducted a formative and summative evaluation, primarily focused on BPCC's programs and structures, key factors that influenced decision-making, and stakeholders' experiences with ATSP. Another goal of the Implementation Evaluation was to establish lessons learned to enhance program implementation and results in real-time. Evaluation feedback was provided through analysis of the following primary themes:[18]

- Progress toward achieving program outcomes or milestones;
- Program accelerators and barriers;
- How unsuccessful strategies or activities could be adapted or modified to the realities surrounding the project; and
- Context for sustaining project activities.

To gather information on the themes above, the Evaluation Team used a combination of conference calls, in-person interviews and focus groups, and document reviews including:[19]

- Monthly implementation update calls with BPCC grant leadership and staff
- In-person interviews with BPCC grant leadership, staff and instructors, employers, and community partners
- In-person focus groups with program participants
- BPCC documents, including quarterly program reports, work products and promotional materials, curriculum documents, and others

The Implementation Evaluation enabled the Evaluation Team and BPCC staff and instructors to better understand the project's core activities and the outputs produced by each activity. The analysis qualitatively evaluated ATSP's operations, activities, and results, placing the outcomes of the intervention into context with the implementation process and determining the degree of fidelity to the original project implementation plan, noting contextual factors that affected the program. This allowed the Evaluation Team to uncover potential threats to the validity of the study[20] and helped project staff understand how the process might be modified to produce better results.

[17] All TAACCCT Round 4 grantees received a six-month no-cost extension, extending the grant implementation period through March 2018 instead of September 2017.
[18] See Appendix B: Implementation Evaluation Methods for more information.
[19] Appendix B: Implementation Evaluation Methods contains descriptions of each Implementation Evaluation data source. Triangulating results from these varying sources was used as an attempt to address the limitation of partial and biased findings.
[20] See Appendix B: Informing Outcome Evaluation section.

Findings Overview

Findings for the Implementation Evaluation were grouped by research question themes. Every Implementation Evaluation research question is represented within this section. Overall themes within the Implementation Evaluation findings are outlined below:

Accomplishments and Accelerators

- ATSP activities created a solid foundation for the **development and implementation of a new, in-demand credit program** offering: Advanced Welding Certificate of Technical Studies.
- A significant legacy of the ATSP program was the enhancement of BPCC's **reputation training and hiring resource** for local industry partners.
- Through ATSP, BPCC has developed **significant capacity to manage large-scale strategic initiatives** and funding.
- ATSP facilitated positive training and placement results for **students with barriers.**

Barriers and Challenges

- The **inability to retain a qualified Program Director for the Advanced Welding program** stalled the development of the credit-bearing curriculum and prevented the launch of the program before the end of the project period.
- BPCC's **underestimation of the baseline skill level** of welders trained in the high schools and technical colleges slowed the progress of the Advanced Welding curriculum development and implementation.
- **An economic downturn in the oil and gas markets** at the time of program implementation impeded BPCC's ability to launch the planned PTEC before the end of the project period.
- Throughout the project implementation period, BPCC's internal **processes and systems were largely inadequate** to effectively manage the requirements of a large federal grant.

Program Implementation

The content within this section of findings focuses on research questions grouped around the common elements of project implementation. These findings discuss the overall program rollout, changes, and project outputs.

Research Questions

- How were programs and program designs modified or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support services and other services were offered?
- Was an in-depth assessment of participants' abilities, skills, and interests conducted to select participants into the grant program? What assessment tools and processes were used? Who conducted the assessment? How were the assessment results used? 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?
- What program outputs have been generated to date?

Annual Activities

Key activities associated with major program milestones are listed below in the following categories: program administration; curriculum development; training offerings; recruitment and students services; and industry and community partnerships.

Year 1 (October 1, 2014 – September 30, 2015)

Project Administration and Setup – In Year 1, BPCC's first Program Director initiated project launch activities around hiring and procurement. With this, BPCC launched the search for an Advanced Welding Program Director and Apprenticeship Coordinator. BPCC also hired the first non-credit welding instructor who started in September 2015 as well as a Job Development, Career Coach, and Grant Accountant. The third-party evaluator was also hired, and an evaluation plan was developed based on the original program design. Finally, discussions started with employers around developing courses for the PTEC concentration and BPCC staff participated in career fairs and visited technical high schools and colleges to raise awareness about the non-credit welding offerings.

Training Offerings – An accelerated remediation bootcamp was offered in Fall 2015 using Open Campus resources.

Recruitment and Student Services – Targeted outreach to Barksdale Air Force Base was conducted in Year 1 to recruit participants for non-credit welding offerings.

Year 2 (October 1, 2015 – September 30, 2016)

Project Administration – An Apprenticeship Coordinator was hired in October of Year 2, while the Career Coach was lost in March 2016. A replacement, however, was hired in July 2016. The Program Director was also lost to a new position at BPCC, so the existing Apprenticeship Coordinator assumed the Director position in May 2016, with a second Apprenticeship Coordinator hired in September 2016. The Advanced Welding Program Instructor was also lost in Year 2 (June 2016) with a replacement adjunct instructor hired to teach non-credit courses. A full replacement was hired in September 2016 who was certified to teach courses for credit. Finally, BPCC developed a $750,000 state grant proposal to support the welding program, which leveraged TAACCCT funds.

Curriculum Development – Year 2 also included development and revision of curriculum by the Advanced Welding Program Instructor for courses that would start in January 2016. This included extensive planning of lab projects, aligning training with AWS standards, and development of student assessment protocol. In addition, significant work was completed in Year 2 around employer engagement including contact with Lincoln Electric to obtain curriculum resources and Oil and Gas concentration advisory board meetings to inform the content in the refinery processes concentration curriculum. From discussions with employers, BPCC developed four new refinery processes program course outlines that were run through the college's curriculum committees, worked with the North American Process Technology Alliance (NAPTA) to accredit the curriculum, and experienced curriculum development delays due to external factors. Finally, welding lab enhancements were initiated including equipment purchases (i.e., welding trainers, simulators and training packages, welding tables, portable plasma covers, computers, and consumable supplies like gases and rods).

Training Offerings – In Year 2, several programs/courses started running including three cohorts of veterans for the Veterans' Welding Bootcamp, which took place in November/December 2015, January 2016, and July-August 2016. The majority of these participants were recruited from Barksdale Air Force

Base. Three cohorts of non-credit advanced welding training were also delivered in January-March 2016, April-June 2016 (some participants carried over from the first cohort), and August 2016.

Recruitment and Student Services – Year 2 also included several outreach activities such as a marketing and social media campaign for the welding program, outreach to Calumet and Sabre Industries to recruit participants for the welding program, extensive participation in career fairs at technical high schools and other venues, and outreach to Barksdale Air Force Base for the Veterans' Welding Bootcamps (including onsite recruitment and advertisements in Air Force publications). BPCC grant staff also assisted students with interviews – coaching Oil and Gas program students for interviews with Calumet, coordinating and coaching welding students for interviews at ValveWorks (in which several were hired), and starting an interview skills and job readiness training for students in programs within the Division of Technology, Engineering, and Mathematics.

Industry and Community Partnerships – BPCC staff conducted outreach to Oil and Gas industry employers to determine their need for employees with PTEC skills and conducted outreach to welding employers who expressed interest in upskilling incumbents. BPCC staff promoted the apprenticeship concept in meetings with employers, the Bossier City Chamber, and other partners, and also hosted the first Apprenticeship Advisory Council meeting to assess interest among industry partners. Research was also conducted on the details of launching the apprenticeship initiative, which ultimately was delayed due to the absence of a State Apprenticeship Division Director for nearly a year.

Year 3 (October 1, 2016 – September 30, 2017)

Project Administration – The second Apprenticeship Coordinator was hired to replace the first Coordinator who took the Program Director position. This individual later resigned in April 2017. The college also lost the second Advanced Welding Program Director in April 2017 and started the search for a replacement after that.

Curriculum Development – BPCC hosted a North American Process Technology Alliance (NAPTA) program in Year 3 and conducted a curriculum audit in October 2016 to gain an endorsement for the refinery processes curriculum. The welding program curriculum was also further refined, with resources added from the Lincoln Electric curriculum such as reading material and self-assessments. The Advanced Welding Certificate of Technical Studies (CTS) curriculum was also submitted in March 2017 to the BPCC curriculum committee and the Board of Regents to replace the originally-planned Advanced Welding Competency Area.

Training Offerings – BPCC continued to offer non-credit advanced welding training taught by the Advanced Welding Program Director and adjunct faculty in Year 3. The spring 2017 cohort included four advanced students who transitioned from the intermediate level. The fourth cohort of the Veterans' Welding Bootcamp was also offered in June 2017. In addition, the following training sessions were offered in Year 3:

- CPT Fast Track to Manufacturing Session One (May-June 2017);
- CPT Fast Track to Manufacturing Session Two in partnership with ValveWorks (July-August 2017);
- First Industrial Readiness Training (IRT) in partnership with Sabre Industries (June 2017);
- Industrial Readiness Training in partnership with ValveWorks (July 2017); and
- Industrial Readiness Training in partnership with Frymaster and other employers (August 2017).

Recruitment and Student Services – BPCC offered ongoing classes and one-on-one assistance with resume development, interviewing, and soft skills for students in the Division of Technology, Engineering, and Mathematics. A "Value Added" series was also offered in Year 3 with two tracks in which elements were incorporated into the Industrial Readiness trainings.

- LEAN[21] principles (employed to identify career vision and goals)
- Career preparation (soft skills, personal branding, and resume writing)

Industry and Community Partnerships – In Year 3, outreach continued with technical colleges and high schools to create pathways for welding program students who discussed hosting an instructor seminar to train AWS standards and create standardization in instruction across training providers. On- and off-campus activities were also conducted for National Apprenticeship Week, including a social media campaign. Several meetings were hosted with industry partners including those interested in customized welding and refinery processes training, those interested in promoting the "Value Added" series, meetings with the Bossier Family Medical facility to discuss medical coding apprenticeships, and presenting to a convention of employers on apprenticeships in partnership with the State Apprenticeship Office. BPCC also coordinated National Welding Month activities in April including tours, an open house with an attending Congressman, social media, art competition, and hosting an AWS chapter meeting. Finally, Sabre Industries offered a welding course/interview opportunity for past BPCC training program students.

Extension Period (October 1, 2017 – March 31, 2018)

Project Administration – During the extension period, BPCC hired a third Advanced Welding Program Director with credentials to teach CTS curriculum for credit.

Training Offerings – BPCC continued to offer non-credit advanced welding training through an adjunct instructor (through December 2017) as well as an additional non-credit course in January 2018, WELD 101 (for credit) in March, a Certified Welding Inspector class in partnership with AWS, and additional Industrial Readiness training in partnership with Frymaster.

Recruitment and Student Services – A two-day job search and interview preparation class was offered to former students during the extension period.

Industry and Community Partnerships – BPCC began conversations with Benteler Steel and Tube and Louisiana Economic Development regarding an apprenticeship partnership for electricians and industrial mechanics occupations.

[21] LEAN is a business methodology that encompasses seven principles that can be applied to any team, organization, and industry. For more information, please see: https://leankit.com/learn/lean/lean-principles/

Program Changes

As highlighted in the Implementation Evaluation narrative above, throughout the course of the grant, changes and adjustments were made to the original project model. Reflecting on the original design created for the grant application, several adjustments were made to account for lessons learned and contingencies that surfaced during actual program rollout and implementation. These adjustments were modifications to grant concepts and activities.

Table 2: Summary of Program Changes

Change	Rationale
BPCC developed and implemented 21 customized Industrial Readiness Trainings (IRTs) for industry partners incorporating OSHA 10 credentials, company-defined basic skills for production and quality processes, and employability skills.	When it became apparent that ATSP needed to serve more participants, BPCC capitalized on strong relationships with several key local manufacturers and previous work done under TAACCCT in the fields of advanced manufacturing and mechatronics to customize trainings for industry partners who needed to fill entry-level positions quickly. These trainings were well-received by industry partners and participants and led to students with barriers being placed into living wage jobs and/or starting an education pathway.
BPCC adapted its Certified Production Technician (CPT) curriculum to an accelerated format, helping participants obtain MSSC credentials and six hours of academic credit.	To serve more participants, BPCC adapted its semester-long CPT offering to an accelerated summer format and partnered with Barksdale Air Force Base to recruit participants. The accelerated CPT training prepared participants to work in entry-level manufacturing positions and provided the opportunity to test for four Manufacturing Skills and Standards Council credentials. Additionally, successful completers received academic credit for two BPCC courses: AMFG 107 (Manufacturing Safety, Quality, and Measurements) and AMFG 108 (Manufacturing Processes, Production, and Maintenance Awareness).
BPCC did not become a USDOL Registered Apprenticeship Sponsor and training provider during the project period.	Due to several external factors outside of BPCC's control, the college did not become a USDOL Registered Apprenticeship Training Sponsor and training provider on behalf of partner companies as planned. These factors are discussed throughout the report sections below. However, through a staff position dedicated to the Registered Apprenticeship program, BPCC was able to develop internal expertise on designing and implementing a Registered Apprenticeship program. As reported by grant leadership, BPCC's enhanced industry partner relationships over the course of the project paved the way for a Registered Apprenticeship partnership with Benteler Steel/Tube and a large healthcare system in the area toward the end of the implementation period. By the end of the project period, BPCC and Benteler Steel/Tube had begun planning to launch the BPCC Academy together to train apprentices with BPCC serving as the Registered Apprenticeship Sponsor.

Change	Rationale
BPCC did not implement a credit-bearing Advanced Welding program during the project period.	BPCC experienced many challenges when working to implement a credit-bearing Advanced Welding Certificate of Technical Studies program during the project period, discussed in detail in several sections below. However, by the end of the project period, the credit-bearing curriculum had been approved by BPCC's curriculum committee and the Louisiana Board of Regents and was eligible for Title IV financial aid. The Program Directors developed curriculum resources and worked with program staff to purchase equipment and materials for the welding lab. Adapting to turnover in the Program Director position and the lower than anticipated skill levels of participants, ATSP trained participants through non-credit cohorts.
BPCC did not develop an Oil and Gas Refinery Processes (PTEC) associate degree during the project period.	BPCC originally planned to develop a PTEC concentration for its Oil and Gas program, which previously offered a Production Technology concentration. Due to a sharp downturn in the oil and gas markets shortly after the beginning of the project period, there was little demand on the part of employers or students for this program. In fact, many oil and gas industry partners with whom BPCC had worked previously went out of business. However, by the end of the project period, the cyclical oil and gas markets had recovered, and industry partners were once again showing interest in BPCC offering a PTEC concentration. Work accomplished during the project period to define PTEC-specific course content is anticipated to facilitate program development and by Fall 2018, the college reported plans to offer this concentration.

Findings

The content within this section of findings focuses on research questions grouped around the common theme of program progress and internal and external factors that facilitated and hindered such progress. These findings incorporate discussion and stakeholder perspectives around ATSP's rollout and implementation dynamics, successes, barriers, contextual factors, and program outputs.

Research Questions

- What have been accelerators and obstacles to program performance?
- What barriers hindered output achievement? What factors unexpectedly improved output achievement? Why?

Accomplishments and Accelerators

Strengths and accelerators are defined as elements of ATSP that positively impacted project outputs, outcomes, and/or implementation. Project accelerators and accomplishments included:

- Foundation for New, In-Demand Credit Program Offering
- Recognized as Resource to Local Industry Partners
- Capacity to Manage Large-Scale Initiatives
- Training and Placement Results for Students with Barriers

Foundation for New, In-Demand Credit Program Offering

BPCC decided to create an Advanced Welding program based on feedback by several industry partners that a second-tier welding program was needed to prepare incumbent workers for advanced welding and supervisory roles. According to these partners, a lack of advanced welding skillsets in the region was a major impediment to their business expansion and ramping up production. While basic welding training existed in the area through the high schools, Northwest Louisiana Technical College campuses, and Job Corps sites, no advanced welding program existed prior to ATSP. BPCC agreed to take on the initiative as a core component of ATSP.

During the first two years of the program, staff and two Advanced Welding Program Directors focused their efforts on designing an Advanced Welding program, preparing the lab with appropriate equipment, and simultaneously conducting non-credit welding training. Materials and equipment purchased to support the Advanced Welding program are described in the table below. Because of the turnover in the Program Director position (the implications of which are discussed elsewhere in this report), the team struggled to maintain the supplies and equipment considered most relevant for training by the different instructors but worked diligently to ensure the Program Director and adjuncts had what they needed to keep training going. Program staff and BPCC administration indicated that BPCC would not have been able to launch the Advanced Welding program without TAACCT support because of the high cost of the equipment. BPCC was able to leverage TAACCCT to get more than $2 million in state grants to help fund additional equipment purchases and ongoing supply purchases.

Table 3: Advanced Welding Lab and Program Enhancements

TAACCCT-Funded Advanced Welding Lab and Program Enhancements

- Welding Trainers (Pipeworx)
- Welding Simulators and Training Packages
- U/Linc Curriculum (online modules)
- Instructional Tools
- Welding Tables
- Portable Plasma Cutters
- Computer and Technical Lab Equipment
- Gases
- Welding Rods and Consumables
- PE for Students to Check Out
- Welding Tools
- AWS Fees
- ATMAE Accreditation Costs

> "[At the technical college], I didn't get a lot of practical instruction. At BPCC, I got a lot of attention because the instructor-student ratio is low; and I also got a lot of practice on the machines, which is great because that's how I learn."
> *Advanced Welding Participant*

After an AWS-certified Advanced Welding Instructor joined the team in September 2015, the first non-credit Advanced Welding cohort was launched in January 2016. All subsequent cohorts with the Program Directors and adjunct instructors during the project implementation period (through March 2018), including the veterans' cohorts, were run as non-credit. However, the work that went into developing the non-credit training provided valuable information and insight for credit program development. For example, the instructors experimented with the U/Linc online curriculum and alignment of instructional activities and projects with AWS Sense standards (Levels 1 and 2). The second Program Director also incorporated small lecture components that taught technical language and addressed basic math skills that were found to be lacking in some students. The Program Director also implemented a standardized hands-on pre-assessment, which was necessary to determine the skill level of individual students before they began the class and determine appropriate projects for them to learn. Interviewed participants across several cohorts praised the instructional format of the course, including the amount of hands-on practice they received and the way the instructors customized projects to their specific needs and level of proficiency.

Although the departure of the second Advanced Welding Program Director in April 2017 (Year 3 of program implementation) stalled the implementation of the program as academic credit, the year-long certificate course sequence had been developed and approved through BPCC's curriculum committee and the Louisiana Board of Regents. The missing piece was to locate another Program Director with sufficient credentials for the program to be SACS (Southern Association of Colleges and Schools)-accredited so it could be offered for credit and eligible for Title IV financial aid. This Program Director was hired from industry in early 2018, during the extension period of the grant.

Table 4: Advanced Welding Certificate of Technical Studies Curriculum

Advanced Welding Certificate of Technical Studies Curriculum

First Semester

- MATH 102 College Algebra or MATH 111 Pre-Calculus (3 credit hours)
- TEED 101: Basic Electricity (4 credit hours)
- WELD 103: Advanced Shielded Metal Arc Welding (4 credit hours)
- WELD 105: Advanced Gas Tungsten Arc Welding (4 credit hours)

Second Semester

- MATH 112: Trigonometry (3 credit hours)
- TEED 142: Industrial Graphics (3 credit hours)
- WELD 107: Advanced Flux Cored Arc Welding and Gas Metal Arc Welding (4 credit hours)
- WELD 109: Advanced Pipe Welding and Fitting (4 credit hours)

"We are getting a lot of feedback that [industry partners] want us to help them develop their pipeline; I also think this program can turn into a third-party welding skill assessment facility, which will help generate revenue for the college."
Advanced Welding Program Director

Although the new Program Director is highly qualified and experienced in the manufacturing field, the Program Director had little experience as a welder but had some training and certification through AWS. The new Program Director is currently working to define CTS course content and sequencing more specifically and determining the extent to which the U/Linc and AWS standards should be used to define lesson plans and hands-on projects. The Program Director is also launching an employer advisory board to inform these decisions and anticipates that when the details are worked out, the CTS will be a great benefit to industry partners.

Recognized as Resource to Local Industry Partners

"They [BPCC] are very responsive to our feedback and willing to change what they teach, which you don't always find in academia."
Industry Partner

The most significant legacy of the ATSP was the enhancement of BPCC's reputation as an important training and hiring resource in the region among industry partners. This was accomplished through extensive activities and a cultural shift within the institution to increase responsiveness to local industry partner needs and resources dedicated directly to placing program completers and conducting employer outreach. This included: the development of customized Industrial Readiness (IRT) trainings for several industry partners; advancement toward the goal of becoming a USDOL Registered Apprenticeship sponsor on behalf of local companies; practices undertaken to incorporate meaningful partner feedback into curriculum; and an intense focus on student preparation for the workforce via employability skills training, resume workshops, exposure to industry, and other forms of employer engagement. Evidence of local industry's perception of BPCC as an important training resource includes the many direct hires from different trainings run under the program, as well as the receipt of financial support.

> "Employee training [like the IRT] can cost up to $1,000 per participant; BPCC provided it at no cost to us and recruited for us too.
> *Industry Partner*

BPCC customized 21 Industrial Readiness trainings for three major manufacturing employers in the area—Frymaster, Sabre Industries, and ValveWorks – ensuring that content specific to the manufacturer's production and quality processes were addressed. BPCC stakeholders reported that the employers hired most of the successful completers in these courses in positions ranging from $9-$17/hour. BPCC also developed interview and hiring guides for the companies to further facilitate and encourage hiring. Industry partners expressed appreciation for BPCC's willingness to provide this training for free, given the expenses employers incur for on-the-job training. Additionally, these same partners hired several welders who participated in the non-credit welding cohorts, and one found the skill level of two completers who worked in robotic welding at their facility appropriate to assist with a large-scale plant relocation in another state.

BPCC struggled to advance toward the goal of becoming a Registered Sponsor for multiple apprenticable occupations, including those addressed through other rounds of TAACCCT, due to compounding factors of leadership turnover at the State Apprenticeship Office, a downturn in the oil and gas industry during the project period, and the reported difficulty of getting employers to commit to the concept of an apprenticeship program. However, by the end of the project period, BPCC staff reported the knowledge and expertise around the process of developing Registered Apprenticeship programs positioned the college well to engage in partnership discussions with Benteler Steel/Tube. A German company – Benteler Steel/Tube – that had moved operations to the area and taken up residence in BPCC facilities to train staff through an agreement with Louisiana Economic Development (LED) prior to the project period, was ready to engage in serious discussions with BPCC about collaboratively developing a Registered program for one of its core occupations (Mechatronics Technician), as well as welding apprenticeships. BPCC, LED, and Benteler Steel/Tube are currently working on this initiative. The apprenticeship program, for which BPCC will serve as the Registered Sponsor and the education and training provider, is expected to launch in the fall of 2019. Additionally, discussions are underway with Willis-Knighton Health System, a major employer in Northwest Louisiana, to launch CNA and LPN to RN apprenticeship programs.

Throughout the project, BPCC made significant efforts to incorporate formal and informal industry partner feedback into curriculum design and content. This occurred through advisory board meetings, but also through routine meetings with the Job Developer and other program staff. For example, a representative from one partner shared their observation that students they interviewed for jobs needed to have a better understanding of valve operations, and this was immediately shared and addressed in the oil and gas curriculum through additional content and added learning objectives.

Program staff and BPCC administrators emphasized the intensive efforts BPCC underwent, and resources dedicated to preparing program completers and other students for employment, to meaningfully engage employers in the design and implementation of training programs. These efforts ranged from partner-hosted classes, demonstrations, and speaking engagements to open houses and special events, such as participation in National Welding and Manufacturing Month activities. Prior to the TAACCCT projects, the college was not equipped to engage in these kinds of activities, but through efforts of program staff dedicated specifically to employer engagement and employability skills, both internal and external stakeholders noticed results. Additionally, throughout the program, staff organized employability skill events and trainings for participants and students involving employer partners, such as resume cafes and round-robin mock interviews. ATSP and the other TAACCCT project also cultivated a greater focus on tracking program completers and graduates as well as understanding their employment outcomes, in which these data are necessary to make informed decisions about training offerings. Now that Louisiana is asking colleges to do this for state funding, BPCC is prepared with the lessons learned through the TAACCCT project. Underscoring the college's understanding of the importance of maintaining an active focus on employer engagement and student preparation for the workforce, the Division of Technology, Engineering, and Mathematics, where ATSP was housed, has sustained the Job Developer position through a state Rapid Response grant. BPCC administrators are currently seeking additional support for Job Developer positions to be integrated throughout the college through Department of Education Title III grants.

> "Changing the way academic divisions treat workforce training has absolutely happened at BPCC. Now everything we did to up the game on employer engagement has been institutionalized…We can't go back to doing it the way we did before."
> *BPCC Administrator*

Industry partners' recognition of the vital role BPCC plays in developing their workforce is evidenced by financial support. For example, ValveWorks, who hired several BPCC-trained welders and many IRT completers, pledged $120,000 to the college to support Division of Technology, Engineering and Mathematics operations and scholarships. Red Ball Oxygen has committed $120,000. This funding can be leveraged for additional state and federal funding opportunities.

Capacity to Manage Large-Scale Initiatives

As discussed below in the Barriers and Challenges section, BPCC's procurement, hiring, and data collection systems and their limitations caused challenges in implementing grant activities and tracking participant data in a timely and efficient manner. BPCC needed to develop workarounds to existing process and new data collection systems to be more conducive to the level of responsiveness and flexibility federal grants require. Consequently, because of TAACCCT, BPCC developed better systemic preparedness to implement future federal grants. Both the scope and scale of the project, as well as the fact that the programs were designed to be nimble and industry-responsive, created some unexpected institutional challenges. These challenges gave the college the opportunity to shift vision, mentality, and supporting institutional processes to in turn be nimbler and more relevant to the local community and labor market.

> "One big accomplishment is now we know what the requirements of federal grants are, and what it takes to implement them, so we are better prepared for next time."
> *ATSP Staff*

BPCC's purchasing process was reported as difficult to navigate and generated much frustration for program staff, instructors, and even students as equipment and supply purchases were often prolonged and delayed (more details are included below). Because BPCC is a state agency, it complied with state purchasing process requirements, which tend to be more restrictive than those at the federal level. The purchasing department at the college struggled to adapt to the grant's rapid purchasing timeline. However, staff were willing to attend a Uniform Guidance training and learned when purchasing for federal grants, federal processes can be followed.

Challenges with data collection and data systems also hampered BPCC's ability to report effectively on participants, generating a significant amount of work for program staff. Data collection systems for non-credit offerings were rudimentary and much of the required data collection for federal reporting and the evaluation was completed through SurveyMonkey and post-training completion follow-up efforts via phone and e-mail with participants. By the end of the project, program staff indicated adaptation to the challenges and learned by trial-and-error working with GSTARS and understanding its limitations how to mitigate data collection and storage challenges. Additionally, the learning process contributed to a greater understanding of participant wage and employment outcomes, which BPCC values in the context of their focus on providing training that is responsive to the labor market and industry needs.

Additionally, ATSP afforded program staff many opportunities to travel, network, and learn, which greatly increased their knowledge and exposure to best practices in training programs and development of work-based learning opportunities. Staff also noted that they gained access to cutting-edge information about Registered Apprenticeship programs and welding curriculum resources through travel and conferences. Staff also found it helpful to understand labor market dynamics in other areas of the country—such as salaries for certain occupations—as they were able to bring that knowledge back to industry partners.

Training and Placement Results for Students with Barriers

ATSP's program offerings served many non-traditional students (e.g., low income, veteran, unemployed or underemployed with significant academic and personal barriers). While some participants were employed in the civilian or military workforce while enrolled in the training offerings (particularly the CPTs and the welding participants), many welding and most IRT students were not and faced challenging circumstances. Through customized instruction and dedicated program staff support services around employability skills and overcoming barriers, ATSP facilitated positive training and placement outcomes for many of them.

Grant-funded supports that program staff found particularly helpful for ATSP participants and underprepared students in other parts of the college included the media site equipment purchased and the expansion of Open Campus offerings. Originally intended to be used to help welding students in need of developmental math coursework, this resource was expanded to the entire Division of Technology, Engineering, and Mathematics as well as the rest of the campus and included offerings in developmental math, reading comprehension, English, and employability skills. This resource widely benefited BPCC students, reducing barriers for students who could not begin to work on credit coursework until remedial coursework had been completed, and will be sustained and continued to be leveraged across campus departments and disciplines.

Although many non-credit Advanced Welding and Veterans' Welding cohort participants were employed during the training, others were not, and reported that they advanced significantly in their skill levels during the training. Students expressed confidence in their ability to obtain a welding position or advance in their current jobs because of the training. They noted that other training providers in the area were not as closely aligned with AWS SENSE standards and felt this was a differentiating factor. Program staff indicated that the Veterans' Welding cohorts helped participants understand whether welding was a skill they wanted to pursue once they come out of the military. BPCC program staff reported that almost all Advanced Welding participants across cohorts were employed by the time they exited the training, many of which with BPCC's close partners such as Sabre Industries and ValveWorks, and several of which were promoted since exiting the training.

> "When I started, I didn't even know how to turn on the machine; now I have transferable skill. And I couldn't have done my resume [without the staff's} help."
> *Welding Cohort Participant*

Although BPCC staff noted that many of the accelerated CPT students were employed in the military workforce during the trainings, the instructor believed that they gained valuable skills that would increase their employability and ease the transition once they were ready to enter the civilian world. Their skill sets were "legitimized" through the Manufacturing Skills and Standards Council credits they were able to earn. Staff indicated that of the accelerated CPT students who took the credentialing exams, greater than ninety percent passed all four. This also translated into six hours of college credit that can be applied to an Industrial Technology AAS.

The Industrial Readiness trainings ATSP conducted for industry partners served a group of participants with significant barriers, and it was reported that most of those students were able to be placed in jobs with above-minimum wage pay and advancement opportunities after only two to four weeks of training. BPCC stakeholders noted that factors such as lack of education, generational poverty, homelessness, and criminal backgrounds made it extremely difficult for some of these participants to engage and be successful in the training. However, program staff addressed those barriers by working closely with service providers (including Providence House, a homeless shelter, and Goodwill Industries) to implement a high standard of accountability, a focus on basic employability skills (like punctuality, personal hygiene, and conflict management) and helped students find resources to address student barriers. After completing the IRT and obtaining entry-level manufacturing-related employment, several participants reported they were eventually able to move out of the homeless shelter and obtain a more permanent housing situation. Some IRT completers who were placed reported difficulty adjusting to the work environment, but still benefited from the lessons learned about appropriate workplace etiquette and indicated they would not have had that experience without the IRT.

> "We've placed some people with very difficult backgrounds and circumstances [through IRT] into life-changing employment."
> *ATSP Staff*

Barriers and Challenges

Internal and external barriers and challenges, as well as contextual factors, inevitably play a role in program implementation and impact program accomplishments. For ATSP, these barriers, challenges, and contextual factors are:

- Retaining Qualified Advanced Welding Program Director
- Lower than Anticipated Baseline Welding Skillsets
- Economic Downturn of Oil and Gas Industry
- Internal Processes and Systems

Retaining Qualified Advanced Welding Program Director

BPCC stakeholders noted that the inability to retain a qualified Program Director for the Advanced Welding program stalled the development of the curriculum and prevented the launch of the credit certificate program before the end of the project period. Throughout the project period, BPCC struggled to retain an Advanced Welding Program Director that had the proper credentials to develop and implement rigorous curriculum, teach the certificate program for credit, that "fit" with the academic environment, and worked well with partners. BPCC hired the first Advanced Welding Program Director in September 2015, almost a full year after the program period began. This individual departed in June of 2016, and a replacement was hired in September 2016, who subsequently departed in April 2017. Finally, BPCC hired the third Program Director in the extension period of the program. This turnover was the primary reason for the delay in developing and offering the Advanced Welding Certificate of Technical Studies. For much of the program period, BPCC relied heavily on adjunct instructors from Job Corps programs or the technical college, who could teach hands-on welding skills but lacked the ability and credentials to develop and implement a standardized curriculum that could be accredited. ATSP staff and BPCC administrators agreed that the divergent focus of the different Program Directors on different types of welding created problems for understanding the types of equipment and supplies that should be purchased. Additionally, the turnover and periods without a Program Director generated gaps in the focus on identifying proper curriculum resources, laying out course content, and generating standards for baseline student skill sets.

> "It's hard to go from fast-paced manufacturing to very slow-paced academia, from very prepared workers to very underprepared students.
> *ATSP Staff*

Program staff and administrators identified two primary reasons for the Advanced Welding Program Director turnover: compensation and "fit." Program staff and administrators noted that welders with the level of qualifications required to be a Program Director can make salaries of up to three times working in the field compared to what BPCC was able to offer. This is due to salary ranges and caps that BPCC is subject to because of its status as a state agency. Additionally, the slow nature of processes and the red tape that characterize the academic environment a source of frustration for instructors coming from the business world who are accustomed to getting things done quickly and avoiding cumbersome processes. FInally, although these individuals are highly skilled in their professions, they may not necessarily know how to teach. One Program Director, though highly qualified and intelligent, reportedly did not work well with other key partners. For example, the Program Director and adjuncts disagreed on the level of math that was built into the curriculum; the adjuncts believed trigonometry to be unnecessary for the work environment and were concerned that it would deter some students from pursuing the certificate.

In the extension period of the grant, BPCC hired the third Advanced Welding Program Director, whose salary will be supported through a match from a family foundation and eventually, revenue generated through Advanced Welding CTS program fees and tuition. The third Program Director comes from industry and has significant experience in the manufacturing field but has never worked as a welder; although, was able to obtain some AWS certifications and training.

Lower than Anticipated Baseline Welding Skillsets

When the non-credit welding program was launched, it was immediately apparent that prospective students recruited for the program were not prepared for advanced-level welding coursework. BPCC stakeholders indicated that some students were not even prepared for basic welding. To mitigate this, the Program Directors and adjunct instructors adapted exercises and instruction to each participant's skill level, which was reportedly cumbersome for them and led to a lack of standardization of the curriculum. The U/Linc curriculum provided some structure for students who needed additional math and theoretical instruction through online modules. While this flexibility in training protocol opened doors for students who needed basic training, including veterans, it contributed to the delays in adopting a standard curriculum and identifying the level and quality of work that signified successfully. By accepting students with a wide range of welding skills, it was impossible to adopt consistent curriculum in the class, as each student was at a different level. This also made it challenging to standardize program entry requirements and instructors noted that it could make it difficult to identify the level and quality of work that signifies a successful program completer.

> "There needed to be a step in between, before they could get to the higher-level welds, economics of welding, and all the things industry wanted…they didn't understand the effort it would take."
>
> *BPCC Administrator*

Program staff and administrators identified the root cause of this problem as an overestimation of the basic welding training available in the community as well as the difficulty that industry partners had articulating the specific level of skills that they needed and wanted in advanced welders. The premise of the original program design was that there was an abundance of basic welding training in the community, but no advanced programs—and that there was no need for an intermediate step to prepare those coming from the basic programs to take an advanced curriculum. BPCC staff reported that they quickly learned that even the incumbent workers coming into the training did not have the skill level close to what they needed to advance to more advanced welding skills. At that point, the program staff and instructors adapted to this reality by meeting the students where they were and providing that intermediate step. Although industry partners were clear on what they needed from program completers, they could not tell BPCC how to adequately prepare participants, because they lacked an understanding of the limitations of the basic welding programs available.

Now that the Advanced Welding Certificate of Technical Studies is slated to be offered in Fall 2018, program staff have worked diligently with potential feeder institutions to ensure that students are better prepared in basic welding coursework to be successful in the certificate program. BPCC established two Memoranda of Understanding with Northwest Louisiana Technical College (NWLTC), which facilities dual enrollment and reciprocal use of facilities for students. The Advanced Welding Program Director and NLTC instructors have met and worked together to ensure the appropriate skills are taught for adequate preparation for BPCC's certificate program. Additionally, the Bossier and Shreveport high school technical welding programs have begun to introduce students to AWS Sense standards incorporated into BPCC's curriculum. Over time, these

efforts should enhance articulation and produce students who are better prepared to enter a college-level advanced welding program.

Economic Downturn of Oil and Gas Industry

An economic downturn in the oil and gas markets at the time of program implementation impeded BPCC's ability to launch the planned PTEC (Refinery Processes associate degree) program before the end of the project period. As was the case with the Advanced Welding program, BPCC decided to create an Oil and Gas Process Technology (PTEC) concentration in the form of an associate degree after industry partners approached the college saying that they needed more employees with refinery process training. Prior to the ATSP, BPCC identified itself as a "production" school. The college's oil and gas program addressed downstream oil and gas production – the act of extraction. When this program was launched it was reported as successful; there was no need for program staff to dedicate time to recruit for the program to remain full. That changed toward the beginning of the project period due to the downturn in the oil and gas industry. With a dramatic reduction in drills working in the Gulf of Mexico, BPCC stakeholders noted that layoffs were felt as far as Northwest Louisiana and downstream production jobs shrank as the project launched. Oil and gas development companies left the area or went out of business entirely. Staff emphasized that this had the effect of dissuading students from pursuing training or employment in oil and gas and decreasing partners' capacity to support the program. With the diminished opportunity in this field, program staff focused on how to provide other types of training for participants that would lead to immediate placement in jobs that were available immediately. Therefore, for most of the project period, little progress was made toward the goal of developing the PTEC concentration.

> "The price of gas tanked just as we launched the program. [Developers] are back now because it's back up. Those economic and environmental factors, we couldn't have predicted."
> *BPCC Administrator*

However, by the end of the project period, the cyclical oil and gas industry was once again on the upswing and faculty and industry partners were ready to resurrect the discussion about a PTEC concentration. Calumet, one of BPCC's key industry partners, has committed to work with the Program Director on an advisory board. The curriculum will align strongly with that of the Oil and Gas Production Technology associate degree, and the additional courses will include some content from the Advanced Manufacturing and Mechatronics concentration within the Associate of Applied Science in Industrial Technology degree. Students in the concentration must be trained in advanced mechatronics and robotics, so BPCC will be able to leverage its existing curricula to quickly advance toward the goal of offering both "upstream" and "downstream" oil and gas programs, which differentiates the institution as most colleges tend to focus on only one concentration.

Internal Processes and Systems

Both the scope and scale of the project, as well as the fact that the programs offered were designed to be nimble and industry-responsive, created some unexpected institutional challenges. These challenges gave the college the opportunity to shift vision, mentality, and supporting institutional processes to in turn be nimbler and more relevant to the local community and labor market.

At the beginning of the project implementation period, BPCC's procurement process, data infrastructure, and staff support were not suitable to effectively manage the requirements of a large federal grant. BPCC's procurement, hiring, and data collection systems and their limitations caused challenges in implementing

grant activities and tracking participant data efficiently. Program staff and students alike noticed the implications of BPCC's slow and inflexible procurement systems for obtaining needed supplies for training in a timely manner. However, procurement department staff attended a Uniform Guidance training and learned that federal purchasing requirements are different than purchasing processes for state dollars. As a state agency, BPCC's purchasing department believed the institution needed to comply with the state of Louisiana's purchasing requirements, which are more stringent than federal requirements. While BPPC's purchasing department is accustomed to moving cyclically throughout the year, federal grant purchasing needs are constant. After the Uniform Guidance training, the procurement department learned that exceptions could be made to the state processes for expenditures involving federal dollars. Administrators and program staff believed that the relationship with procurement had improved by the end of the project period.

The level of data collection and maintenance TAACCCT required imposed burdens on the project team because BPCC data processes and infrastructure were relatively unestablished for non-credit students. Although the project team had access to GSTARs for participant data collection, they found it was not a user-friendly system. The team had to use SurveyMonkey and other tools to collect and enter data manually and then transfer it to GSTARS. Additionally, because the Louisiana Workforce Commission does not allow easy access to individual-level Unemployment Insurance data, even for community colleges, program staff had to follow up with participants via phone and email to obtain data on wage and employment outcomes, a time-consuming and frustrating process. All of this was exacerbated early in the project period with the departure of the first Career Coach, who had maintained responsibility for data up until that point. The team discovered that many files were missing or not in working order, and much of the data had to be collected again. By the end of the project, program staff had adapted to the challenges and learned by trial-and-error working with GSTARS and understanding its limitations as well as how to mitigate data collection and storage problems. Creative strategies were also developed to increase responsiveness from former participants when seeking follow-up data about wage and employment outcomes. Administration noted that BPCC is well-prepared to fulfill any state requirements around student employment data collection post-program completion because of what they had learned from the TAACCCT requirements.

Some turnover in administration at the college and leadership of Division of Technology, Engineering, and Mathematics created challenges with consistent vision for the program, primarily because of a lack of institutional knowledge. Leadership supported ATSP conceptually and wanted to see the program succeed, develop institutional capacity to increase responsiveness to industry, and serve students with barriers. However, competing priorities and learning curves made it difficult for the administration to offer guidance on how to overcome certain challenges. Additionally, even Division-level leadership has limited ability to change or expedite bureaucratic processes for curriculum approval, hiring, facilities use, and procurement. However, by the end of the project, BPCC had developed new processes to mitigate similar challenges in the future (primarily in the areas of procurement and data collection). Leadership at the level of the college and the Division had also demonstrated a strong commitment to sustaining core components of ATSP—student support staff, the Welding Program Instructor position, and short-term training incorporating employability skills, and continuing to work towards the goal of becoming a Registered Apprenticeship sponsor.

Student Progress

The content within this section of findings focuses on research questions grouped around the common theme of student progress and outputs. These findings outline student feedback as well as enrollment numbers and other quantitative data.

Research Questions

- How satisfied are participants with the program? Why?

Student Perspectives

Interviewed students reported overall satisfaction with the program offerings and structure of ATSP. Students indicated satisfaction with the following:

Ability to Learn at Own Pace – Welding students cited an appreciation for the ability to learn the course content at their own pace. Students emphasized the importance of an instruction structure that supports students' different capability levels, as some students began training with previous welding work experience while others were learning the content for the first time. Interviewed students noted the structure of the courses enabled them to work on individualized projects with the instructor based on their own skill level but also work independently, providing additional content comprehension time and online curriculum resources as needed.

> "[During class] people can be working on different things depending on their skill level."
> *Welding Participant*

Dedicated Staff and Instructors – The dedication of the program staff, particularly the Career Coach and Job Development Coach, and instructors toward student success and job placement was noted during student interviews as a significant strength of the programs. Welding students cited assistance with job searching, resume development and updating, and interviewing. In interviews, students reported that the dedication of the program staff and instructors to the students' success and job placement resulted in the students getting hired upon program completion. This student experience is supported through evidence of how relationships cultivated by staff led to interviews and placement of students at industry partners such as Calumet and ValveWorks.

> "They were great at helping us find jobs and updating our resumes."
> *Welding Participant*

Non-Traditional Learner Support – Because many of the students participating in the programs were non-traditional (e.g., adult learners, veterans, unemployed), students emphasized the importance of that additional support that was provided to support their success. Most notably, interviewed welding students reported an appreciation for the ability to learn about different trades for no cost. For many students that were seeking employment and/or upskilling, free access to training was critical to their ability to enroll, earn credentials for an entry-level position, and complete the program.

> "As a veteran, I need opportunities to get back into the workforce, this is helping me bridge that gap."
> *Veteran Welding Participant*

Program staff and instructors noted in interviews that many students recruited for the Industrial Readiness trainings came from difficult backgrounds (e.g., when recruited for the programs, they were unemployed, homeless, and/or had criminal records) and yet were able to earn a

credential (OSHA 10) quickly, find full-time, $12/hour jobs, or experience significant increases in pay because of the program. One example included an IRT student who previously worked as a custodian at BPCC and received a job offer and two raises shortly after completion. Another student struggled with skills as basic as personal hygiene, so program staff successfully worked with the individual to identify a struggle with depression and mitigate the root causes and symptoms of the problem, significantly increasing his employability. One program staff member cited, "Many students come through the program and say it has changed their life, and we are seeing that…they came to [the IRT program] for the opportunity to get a job, but it became so much more than that."

Program Partners

The content within this section is focused on partner engagement and perspectives. Throughout the course of the evaluation, the Evaluation Team interviewed employers and community partners, and discussed partner engagement with the program and college.

Research Questions

- How satisfied are program partners with the program? Why?
- What contributions did each of the partners (employer, workforce system, other training providers and educators, philanthropic organizations, and others as applicable) make in terms of: (1) program design; (2) curriculum development; (3) recruitment; (4) training; (5) placement; (6) program management; (7) leveraging of resources; and (8) commitments to program sustainability? What factors contributed to partners' involvement or lack of involvement in the program? Which contributions from partners were the most critical to the success of the grant program? Which contributions from partners had less of an impact?

Partnership Engagement and Perspectives

Partners reported overall satisfaction with ATSP, noting the program staff's high level of responsiveness and willingness to customize training content to meet their specific need. Interviewed employer partners described BPCC and ATSP grant staff as "responsive," "accommodating," "open," and "willing to help." One employer that hired several welding students noted that they loved that the Job Development Coach was "just down the road," and that they could "come talk to [them] whenever [they] want" and expect prompt and reasonable feedback. When comparing BPCC to other post-secondary institutions in the area, one partner described BPCC as more "eager, hungry, and willing to look for opportunities for change." Others spoke to BPCC's community involvement saying BPCC is "down-to-earth" and "in touch with the community."

Through the Industrial Readiness Training component of the program, BPCC customized intensive trainings for entry-level manufacturing positions, including OSHA 10 certifications, for three companies: Sabre Industries, ValveWorks, and Frymaster. These partners appreciated the significant training and recruiting resources BPCC provided free of cost to them and that they did not have to spend their own resources recruiting participants who would become employees. They also praised the quality of the technical and soft skills training. One company hired eleven out of the thirteen participants in the IRT BPCC customized specifically for them.

> "We needed people with very specific skills quickly, and BPCC was able to deliver with the IRT."
> *Industry Partner*

Partner engagement in the development and implementation of ATSP primarily took the following forms:

Project Design and Curriculum

Through Employer Advisory Boards and informal conversations, grant staff and instructors received curriculum and program feedback. The grant staff used input from partners to decide what should be include in the curriculum and the program. For example, one employer partner encouraged BPCC to find a way for welding students to get experience climbing rig equipment and welding in different positions, so students do not go into a program without realizing they are afraid of heights. Another employer said she felt like her company had ample opportunity to give input, including having discussions about AWS

certifications. A third employer partner gave feedback about specific knowledge Oil and Gas students they interviewed lacked about the mechanics of valve operations and found that this gap had been addressed in the curriculum through subsequent interviews with different students.

Additionally, national organizations like American Welding Society (AWS) and North American Process Technology Alliance (NAPTA) were helpful to BPCC as they began to develop the curriculum. AWS supported ATSP through resource sharing and assistance in identifying potential adjutant instructors for the program. NAPTA shared curricula and learning outcomes and how to create a program around Oil and Production.

Financial Support

ATSP received financial support and commitments from state, foundation, and industry partners during implementation and commitments to sustain certain aspects of the program. During the term of the ATSP grant, Louisiana Community and Technical College System awarded BPCC $1,589,666 in grant funds to support advanced manufacturing and advanced welding. During the final year of the program, the Davis Family Foundation committed $126,000 over three years to match BPCC's contribution to continue to fund the Advanced Welding Program Director's salary, previously covered by the TAACCCT 4 grant. This match allowed the college to pay a salary that was competitive in attracting talent from industry and overcome the challenges of recruiting and retaining a qualified welding instructor. Industry partners have also supported Division of Technology, Engineering, and Mathematics through long-term financial commitments. For example, Red Ball Oxygen committed to donating $125,000 over five years to the program to fund student scholarships and support program expenses. Valveworks committed $120,000 over four years to support the Division's operations and student scholarships.

Outreach and Recruitment

Barksdale Air Force Base partnered with BPCC to recruit veterans transitioning to civilian life for the veterans' welding cohorts. These participants were exposed to welding as a career and several of them continued training past the veteran-specific cohorts. This partnership opened more career possibilities for veterans who struggled to translate their military experience to securing employment in the civilian world.

Career Development

Employers provided career advice and exposure to ATSP participants and other Division of Technology, Engineering, and Mathematics students. Employers participated in participated in resume cafes/buffets and mock and speed interviews. Program staff and faculty hosted employers in class presentations, and one industry partner offered a free specialized class to welding students which included job interviews at the end. Veterans who worked at key partner companies spoke to the veterans' welding cohorts about translating military experience and language to the civilian world and leveraging that experience for jobs. In addition, partner companies directly hired many welding and IRT participants.

Lasting Impact and Sustainability Strategies

The following research questions focus on sustainable change created through the program and considerations for other institutions of higher education that may implement a project similar to ATSP.

Research Questions

- How can program processes, tools, and/or systems be modified to improve performance?
- How can the program expand or enhance institutional capacity? What are the most promising programmatic components to use institution-wide? Why?

Program Sustainability

Reflecting over the project period, BPCC program staff indicated overall satisfaction with ATSP's accomplishments. Through the grant, BPCC was able to develop several programs including the accelerated Advanced Manufacturing Certified Production Technician training and Advanced Welding Certificate of Technical Studies programs that are structured for credit and fully Title IV financial aid and Pell Grant-eligible.

Moving forward, BPCC anticipates continuing to offer the programs that were developed and refined under the grant using several different funding streams and donations from the community. BPCC's Chancellor has also committed to sustaining the program for at least two years. To continue to grow these programs, BPCC will continue to engage employers through the strong partnerships that were developed through the grant, and employers will continue to serve on implementation and curriculum review and advisory board committees. The college will also work with area employers such as Benteler Steel to establish apprenticeship opportunities and continue encouraging and educating the local workforce on the benefits of apprenticeships. BPCC will also continue collaboration efforts with the Northwest Louisiana Technical College campuses through two Memoranda of Agreement, which provides cross-enrollment of students and reciprocal use of facilities.

BPCC program staff reported satisfaction with several outcomes, including a positive participant experience,[22] mutually beneficial relationships developed between employers and partners,[23] and several sustained changes from the programs. The following are legacies of ATSP:

- Strong Partner Relationships
- Demand-Driven Approach
- Newly Developed Industry-Recognized Programs
- Focus on Work-Based Learning Opportunities

Strong Partner Relationships

Throughout the project, program staff worked to establish strong partner relationships to promote implementation progress and student success. These partners included employers, workforce development boards, community and national organizations, and other educational institutions (i.e., high schools and technical colleges). Sustainable elements of these relationships are described in greater detail below:

[22] See Student Progress and Outputs section for more information.
[23] See Program Partners section for more information.

Employer Partnerships

BPCC program staff reported a continuation of the strong and sustainable employer support that was established throughout the project. Employers will continue to serve on implementation and curriculum review and advisory board committees to validate skills and participate in employment efforts, which will occur officially on an annual basis. Many employers that were partners throughout the project have confirmed their willingness to continue engaging with the college's programs, hire successful completers and assess program effectiveness. With this, BPCC will also identify the employers that are interested in offering on-the-job training opportunities for students and will begin exploring those options beyond the grant.

> "The biggest impact of TAACCCT for this division has been to learn how to speak with industry partners. It was not something was engrained. [During ATSP], we had companies come in to participate in resume cafes and round robin interviews. Now that's all that has been institutionalized. The division now sees there's such benefit to working with industry partners."
> *Director of Grants*

Workforce Development Board Partnerships

Several Workforce Development Boards have committed to continuing collaborative efforts around the training programs developed within the grant. Some of these local boards include: Bureau Chief, City of Shreveport Community Development Workforce Bureau, and Seventh Planning District Consortium Workforce Development Board. With this, the boards have committed to the following:

- Including BPCC training programs on list of eligible training providers
- Identify and refer TAA-eligible workers, unemployed, veterans, and other participants based on skills and other assessments
- Connect TAA-eligible workers and other program participants to employers
- Provide support services where appropriate
- Track TAA-eligible workers and other program participants as they enter the workforce

Community and National Organization Partnerships

Throughout the project, BPCC received several private donations from community organizations to sustain the training programs. These donations will contribute to program sustainability and include:

- $1.4 million over five years to support the program's efforts from state grants
- $300,000 in private corporate funding over three years to support the program's efforts
- BPCC Foundation received a donation from the Davis Family Foundation to support the salary for the Welding Program Director

BPCC is also currently managing its third in a series of $100,000 awards from the National Fund for Workforce Solutions, which is expected to continue beyond the grant.

Educational Institution Partnerships

Beyond the grant, BPCC will continue collaborating with the five campuses of Northwest Louisiana Technical College through two Memoranda of Agreement. These agreements seek to provide cross-enrollment of technical college students to BPCC and reciprocal use of facilities for students. Students will also be able to access welding, manufacturing, and mathematics remediation online courses through Open Campus.

BPCC will also continue working with local high school welding programs in the region to encourage curriculum articulation. The Bossier and Shreveport high school technical welding programs have already started introducing students to AWS standards and encouraging students to enroll at BPCC. This articulation is anticipated to continue beyond the grant with students enrolling at BPCC provided with the option to complete the technical certificate programs that stack into the Mechatronics Associate of Applied Science in Advanced Manufacturing or Oil and Gas Process Technology.

Demand-Driven Approach

BPCC program staff experienced a strengthened focus on the needs identified by employers in programmatic development and implementation. Specifically, this demand-driven approach enabled the program staff to gather feedback from employers to determine the best programs to implement and how those programs should be structured (e.g., what content to focus on). BPCC program staff continue to refine programs based on the needs of the community and developed new partnerships relationships through the grant to facilitate this demand-driven approach.

Newly Developed Industry-Recognized Programs

Grant funds enabled BPCC program staff to develop new training programs through an understanding of labor market demand, gathering employer input, and leveraging staff expertise. The understanding of labor market demand helped BPCC program staff initially determine the programs that may align with community needs, while gathering input from employers, not only on the programs that are needed but the curriculum itself, helped ensure that the programs aligned with industry skill needs and requirements. These efforts helped ensure that the programs developed under this grant were relevant and incorporated industry-recognized skills and credentials that could lead to student employment. Moreover, BPCC demonstrated flexibility and was able to pivot when external economic forces dictated a shift in the focus of program offerings.

Focus on Work-Based Learning Opportunities

Throughout the project, BPCC maintained a focus on increasing awareness around and recognition of the importance of work-based learning opportunities such as apprenticeships. The plan to launch a regional Registered Apprenticeship initiative was at the core at ATSP's design to help align offerings to in-demand occupations and ensure student placement. There were several challenges associated with this approach throughout the project, including the absence of formal guidance from a State Apprenticeship program director for an extended period, and greater reluctance than anticipated to commit to the model on the part of employers. However, BPCC is a member of the Registered Apprenticeship College Consortium (RACC) and will continue encouraging and educating the local workforce on the benefits of apprenticeships beyond the grant. BPCC will continue to work with several employers that have indicated an interest in partnering with them on developing Registered Apprenticeship programs for several manufacturing and healthcare occupations.

Future Implementation

BPCC grant leadership, staff, and instructors identified the following recommendations for an educational institution considering implementing a program similar to that of ATSP. It is important to note that these recommendations were drawn from best practices utilized by ATSP as well as lessons learned that were identified by program stakeholders. These best practices and lessons learned fall into three general categories – program design and development, program implementation, and stakeholder engagement and collaboration.

Considerations for Program Design and Development

- Understand Impact of Institutional Processes on Innovative Practices
- Identify Project Priorities First
- Strategically Identify Program Staff Early in Project

Considerations for Program Implementation

- Maintain Flexibility in Project Implementation
- Consistently Document Institutional Knowledge

Considerations for Stakeholder Engagement and Collaboration

- Share Expertise to Maximize Efficiencies Across College
- Prioritize College and Community Investment in Planning and Implementation

Considerations for Program Design and Development

Understand Impact of Institutional Processes on Innovative Practices

In general, innovating within existing institutional processes can be difficult, especially when the inherent nature of the policies and procedures inhibit innovation and innovative practices. To ensure that innovation can occur within existing institutional processes, there are several factors that must be in place. These factors include:

- College participation and support to encourage a forum for creativity;
- Effective leadership that encourages and facilitates innovative thinking;
- Appropriate timing and adaption to the context of the region so there is capacity to support innovation;
- Clear objectives to guide the innovative activity/idea;
- Opportunities for reflection, learning, and feedback to encourage continual and consistent innovation; and
- Activities implemented at a steady pace, so individuals have the freedom to innovate rather than managing a chaotic, fast-paced environment.[24]

In addition to the points above, taking a more systematic approach, in which innovative practices are adapted to function within existing processes, could help expedite implementation. This approach can account for the processes that the program is functioning within and encourage communication and involvement of the relevant parties early on. Finding ways to function within the existing processes, which cannot be dismantled anyway, could facilitate success.

[24] Thomas, P., McDonell, J., McCulloch, J., and While, A. (2005). *Increasing Capacity for Innovation in Bureaucratic Systems.* Retrieved from www.ncbi.nlm.nih.gov/pmc/articles/PMC1466894/

Identify Project Priorities First

The team that will lead and implement the project should consider identifying the priorities of the project as early as possible – even during the proposal writing process. These priorities (e.g., specific training programs, targeting specific populations, implementing specific initiatives such as becoming a Registered Apprenticeship site) guide all decisions ranging from design to implementation. These priorities can also help expedite decisions as project leadership understands, and has already agreed upon, the guiding principles of the project. For instance, if the college wants to become a registered state/national site in a specific area (for apprenticeships, welding, etc.), identifying this as a priority early on can help determine immediate next steps such as communicating with the state to identify requirements and processes. It is critical for project leadership to discuss and determine the priorities of the project prior to development and implementation so these next steps and action plans can be enacted quickly. It is also critical for institutional leadership to buy into these goals and to be willing to leverage political capital to advancing action towards the goal.

Strategically Identify Program Staff Early in the Project

Identifying the appropriate program staff early in the grant project can help facilitate successful implementation. Program staff should be specialized enough that they are able to fulfill their job responsibilities but also maximized to fulfill the needs of the grant. For instance, program staff and instructors with industry-relevant experience are critical as they can provide students with real-world instruction, create more meaningful partnerships with employers as they can speak the industry language, and assist with curriculum development and equipment identification. Additionally, individuals with data collection experience can help meet the data collection and reporting requirements of the grant in a more cost- and time-efficient way. While locating these types of individuals for short-term positions can be a challenge, this effort should be prioritized to help expedite program start up processes and facilitate successful implementation.

Considerations for Program Implementation

Maintain Flexibility in Project Implementation

Throughout any grant project, programs, staff, processes, and other components may need to be changed to accommodate project/process delays, external factors outside of the institution's control, changes in priorities/objectives, and staffing models. Because of this reality, it is important to remain flexible throughout project implementation to ensure that grant objectives are still met. Following a specific project plan and timeline are important as it encourages accountability and sets deadlines for grant components, but it is important to recognize that this plan is malleable. This approach enables the project team to adjust to the realities of grant implementation more easily, which can facilitate successful grant implementation.

Consistently Document Institutional Knowledge

Because grant programs are only funded for a specific amount of time, staffing can sometimes pose a challenge. Individuals are either temporarily hired or drawn from other areas in the organization, adding the grant responsibilities to their already full-time workload. With this, grant staff turnover tends to be common within grant-funded programs (due to finding other jobs or returning to full-time job responsibilities), which creates challenges for grant implementation in that the institutional knowledge of the grant's progress, objectives, challenges, and processes leave with those people. To avoid this, consistently documenting institutional knowledge could help mitigate the delays experienced with mid-

grant hires and help create efficiencies for future, similar grant projects. The types of information that could be documented include, but are not limited to:

- Grant goals and objectives, including federal requirements (e.g., monitoring and auditing requirements)
- Implementation progress over time and most recent status update
- Challenges and mitigation plans (e.g., navigating internal processes) as well as appropriate contact persons/departments
- Success stories and other best practices
- Budget and finance tracking, including plans for modifications
- Staff job descriptions, including roles and responsibilities
- Data tracking/collection procedures

Documenting, and regularly updating, the information listed above (as well as any other information that is relevant) could help ensure that this knowledge can easily be transferred in the event of staffing changes.

Considerations for Stakeholder Engagement and Collaboration

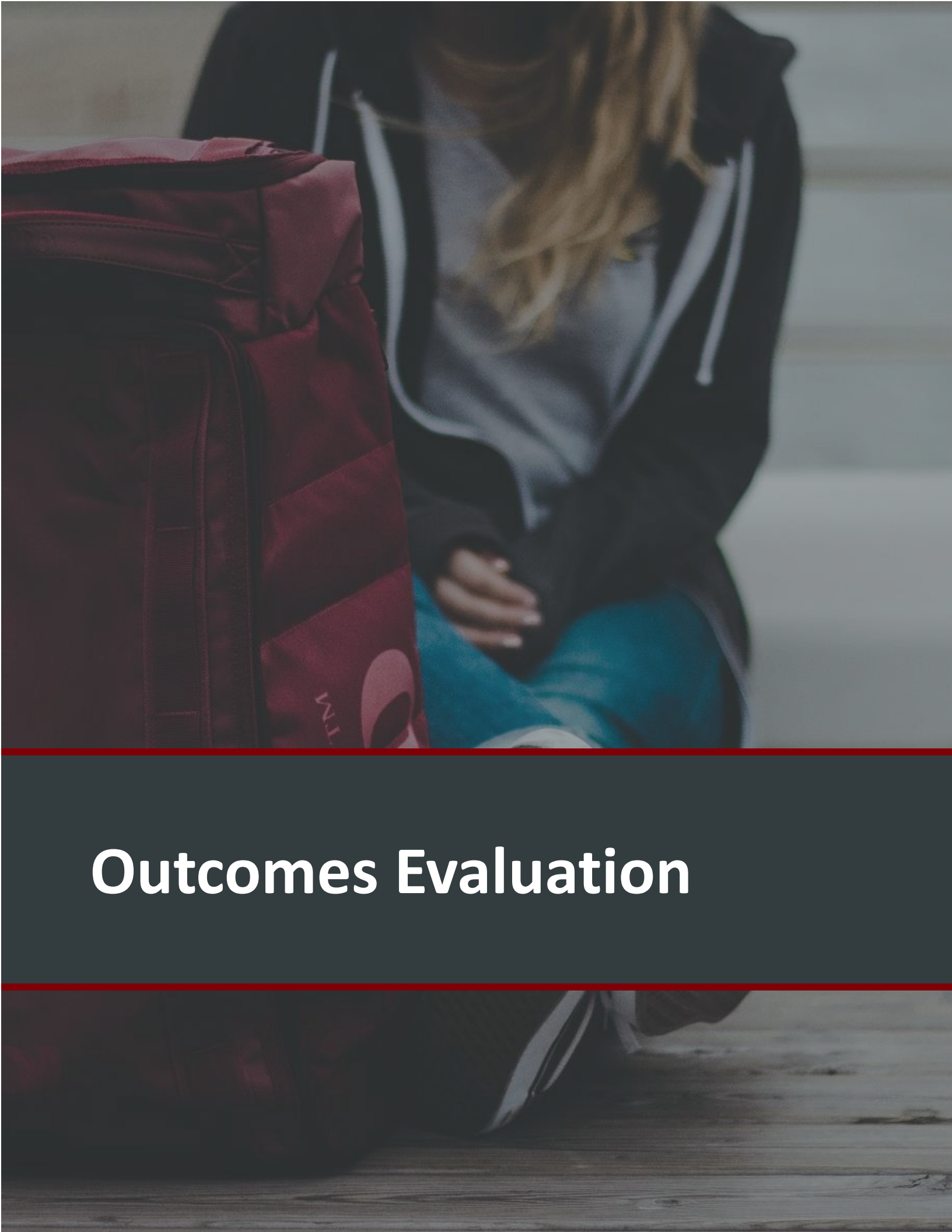
Share Expertise to Maximize Efficiencies Across College

For institutions that receive multiple grants (or have received similar grants previously), developing operational efficiencies and sharing best practices can help ensure all grants (1) adhere to the requirements and regulations of the grant, (2) promote successful best practices in program development and implementation, and (3) share resources, if applicable (e.g., partnerships and data tracking practices). Institutions can also develop a structure to share content knowledge across all grants to better create efficiencies. For instance, Project Directors from past grants could meet with new Directors to share best practices and lessons learned. ATSP's Program Director documented many of the lessons learned through project implementation in training manuals for future staff.

Prioritize College and Community Investment in Planning and Implementation

College and community investment in new grant projects is important when considering grant success. Discussions with key representatives from these areas help the grant development team achieve buy-in from stakeholders and determine how it makes sense to work and communicate throughout the grant. Engaging these individuals from the beginning could expedite program development and implementation, as these departments are already aware of the grant objectives and activities as well as their role in the project. For instance, meeting with college leadership early in the planning process can help generate buy-in as the leadership can assist in identifying the appropriate people/departments to coordinate with on grant-related activities and best practices in navigating college processes (e.g., around curriculum development and budget modifications). College leadership, in turn, must be willing to leverage their influence to facilitate progress towards project goals.

Coordinating with local employers and partners can also uncover project priorities including the programs that are best to develop, the needs of the community, and best practices in communicating with local employers. These discussions with the college and community can also encourage conversations around federal policies and other potential obstacles that could hinder grant implementation.



Outcomes Evaluation

Outcomes Evaluation

Design Summary

The evaluation plan changed during the life of the program to accommodate for changes in program implementation, as well as limitations related to data availability and completeness. The Evaluation Team originally intended to conduct a comparison group analysis using quasi-experimental design (QED) to explore the impact of the grant on the participants enrolled in the planned Oil and Gas Refinery Processes (PTEC) concentration. Additionally, a one-group study was planned for students in credit and non-credit Welding programs.

Upon reviewing the grant program data availability and completeness, and due to the grant programs not being developed as planned (reference the Program Changes section for explanations about why the credit Welding program and the Oil and Gas Refinery Processes-PTEC concentration did not develop and enroll participants during the project period), the Evaluation Team revised the approach from an impact evaluation to Outcomes evaluation. The primary reason for the change in study design is that no suitable comparison group existed for any of the core programs (non-credit Advanced Welding, CPT, and IRT) that ultimately were developed with grant funding. No programs at BPCC or elsewhere in the geographic area that were sufficiently similar in terms of the core program designs, from which it would have been feasible to draw a comparison group and access data. While Welding programs exist elsewhere in the community, they operate in high schools and vocational schools, and there was no way to access data for program participants outside of the institution. Additionally, the skills taught in these programs are different than the skills taught in BPCC's non-credit Advanced Welding program. The IRT program was a unique intervention developed under the grant, and BPCC does not have any sufficiently similar programs in terms of length or content. The CPT program developed under the grant is an adaptation of a semester-long offering at BPCC, but the small number of participants in this core program limits the options for a comparison group design.

The table below provides an overview of each original research question as noted in the evaluation plan at the beginning of the project, the final research question(s) used in this report and the rationale for why each research questions for the evaluation changed.

Table 5: Summary of Research Questions and Changes

Original Research Question	Final Research Question	Rationale for Change
Do treatment group members who receive the defined intervention demonstrate greater persistence outcomes than do equivalent comparison group members in similar programs who do not receive the defined intervention?	n/a	Persistence was not measured because two of the core programs (CPT and IRT) were only comprised of one session. Completing the session, which was often as short as two weeks, is counted as completion of that program. For the non-credit Advanced Welding program, persistence was not an appropriate measure of program success because it was not structured in typical course sequence (though the Advanced Welding CTS eventually developed under the grant was), and participants exited when

Original Research Question	Final Research Question	Rationale for Change
		they had attained the skills they needed to improve their employment prospects.
Do treatment group members who receive the defined intervention demonstrate increased probability of completion outcomes than do equivalent comparison group members in similar programs who do not receive the defined intervention?	To what extent do program participants complete their programs? What known factors are correlated with program completion?	A comparison group design was originally planned for the Oil and Gas Refinery Processes (PTEC) program, but this program did not develop during the grant period. There was no suitable comparison group for two of the core programs that did develop under the grant: non-credit Advanced Welding student group and the IRT group. Additionally, the relatively small number of participants in the CPT program limits the options for a comparison group design.
n/a	To what extent do participants earn industry-recognized certifications or credentials as part of this intervention? What known factors are correlated with certification or credential earning?	Because the core programs emphasized development of in-demand industry skills (though academic credit was available for the CPT program), and offered industry-recognized credentials, the number of industry-recognized credentials or certifications earned is a more appropriate measure.
Do treatment group members who receive the intervention demonstrate more improved employment outcomes than do equivalent comparison group members in similar programs who do not receive the intervention?	Are program completers or credential earners more likely than their peers to be employed upon program completion?	A comparison group study design was not available for the core programs. We hypothesize that program completers and those that earn credentials are more likely to be employed than those who did not complete or earn credentials.

Upon receiving participant data from Bossier Parish Community College, the Evaluation Team cleaned and combined the data and recoded variables where necessary. Details about data sources, data cleaning procedures and data limitations for this report are available in Appendix C. Descriptive analytics were run on outcomes for all grant-affiliated participants, and comparisons between groups were analyzed on key outcome measures relevant to the research questions. Most of the analysis for this report focuses on outcomes for program completers. Because of this, statistics cited in this report may not align exactly with BPCC's submitted Annual Performance Reporting numbers.

Findings

The Outcomes evaluation for this program looked at participant's program completion, certification or credential earning, and employment after exiting the program. Additionally, program data was matched

with National Directory of New Hires (NDNH) data to examine whether program participants realized compensation gains after completing the program.

Program Demographics

This program included enrollees in a variety of different courses, as described in the Excellence in Advanced Training Skills Program Description at the beginning of this report. For the Outcomes evaluation, the programs have been delineated as follows. Participants in core programs developed under the grant (non-credit Advanced Welding, CPT, and IRT) were considered as three different groups for analysis, while all other participants were grouped in a separate category. The participants in the "Other" category include primarily BPCC students who received grant-funded career and employability skills services or used Amatrol E-Learning and media equipment resources purchased under the grant for soft skills development remedial coursework but were not participants in the core programs. For the Outcomes section of the report, the term "All Programs" refers to anyone who participated in any part of a grant funded program, including Certified Production Technician (CPT), Industrial Readiness Training (IRT), Advanced Welding or another program that used grant resources.

Table 6: Program Participant Count

Program	Participant Count
CPT	38
IRT	266
Advanced Welding	80
Other	253
All Programs	**636**

In total 636 students participated in grant-funded services or programs at BPCC. Of them, just more than a quarter were female (25.9%), and the other three quarters were male. The IRT core program had a larger percentage of female participants than other core programs.

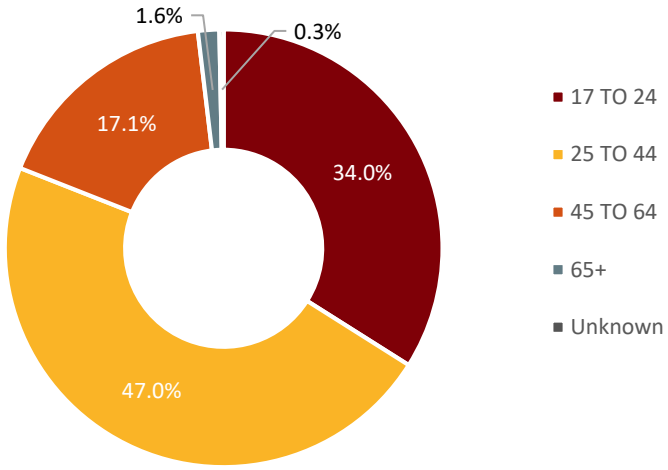
Table 7: Participants by Gender

Program	Female	Male
CPT	10.8%	89.2%
IRT	35.3%	64.3%
Advanced Welding	7.5%	92.5%
All Programs	**25.9% (165)**	**73.9% (470)**

**Raw numbers suppressed for breakouts by program type due to small N sizes.*

Age breakouts for participants were similar across programs; overall, more than a third of participants (216) were young adults ages 17 to 24, and an additional 47.0% were ages 25 to 44 (299). The average program participant was age 33.

Figure 6: Participants in All Programs by Age



Overall, about half of program participants were White, and the other half were Black or African American. However, within programs, the racial breakdowns varied greatly. The CPT program had the highest percentage of individuals who identified as Hispanic of any race. Additionally, there was a much smaller proportion of White participants in the IRT program than in the other two programs, and a higher proportion of Black or African American participants.

Table 8: Participants by Race/Ethnicity

Program	White/ Caucasian	Black/ African American	Other or Not Disclosed	Hispanic (of any race)
CPT	59.5%	21.6%	8.1%	10.8%
IRT	24.4%	71.8%	3.4%	0.4%
Advanced Welding	76.3%	15.0%	2.5%	6.3%
All Programs	**44.8% (285)**	**46.9% (298)**	**5.5% (35)**	**2.8% (18)**

**Raw numbers suppressed for breakouts by program type due to small N sizes.*

A total of 17.3% of program participants were Pell grant eligible (a proxy for low income status), and 2.8% were TAA eligible. Additionally, the program served 90 veterans and 127 individuals who reported that they were incumbent workers. The IRT program had lower percentages of both veterans and incumbent workers than the other grant funded programs. One of the CPT sessions recruited primarily from Barksdale Air Force base. Several Veterans' Welding Bootcamps also were offered under the grant, and many of those participants underwent additional Advanced Welding training.

Table 9: Program Participants by Incumbent Worker or Veteran Status

Program	Incumbent Workers	Veterans
CPT	37.8%	40.5%
IRT	12.4%	9.4%
Advanced Welding	32.5%	45.0%
All Programs	**20.0% (127)**	**14.2% (90)**

**Raw numbers suppressed for breakouts by program type due to small N sizes.*

Completion

To what extent do program participants complete the program? What known factors are correlated with program completion?

In total 76.9% of program participants completed a grant-funded program; an additional 2.7% did not complete a grant-funded program but continued their education in a non-grant-funded program. The following table shows the percentage of completers in each of the core ATSP programs. Most participants in the IRT program, that had the highest number of enrollees of all the core programs at 266, completed the program (89.8%). The high completion rate among IRT participants is likely due to an intense staff focus on mitigating student barriers to participation and completion, as well as the short-term nature of the course.

Table 10: Participants who Successfully Completed Programs

Program	Completion Rate
CPT	45.9% (17)
IRT	89.8% (239)
Advanced Welding	66.3% (53)
All Programs	**76.9% (489)**

Core program completion rates were similar for veteran and non-veteran participants. However, non-incumbent workers were significantly more likely to complete a grant-funded core program than incumbent workers.[25] This may be due to several factors, Unemployed participants may have had higher motivation to gain job skills since they were in immediate need of employment, or unemployed participants may have had more time to devote to the program.

Table 11: Veteran and Incumbent Worker Status of Program Completers

Status	Completion
Non-Veteran	76.2% (356)
Veteran	72.2% (65)
Non-Incumbent Workers	82.0% (309)
Incumbent Workers	64.6% (82)

Certification/Credential/Degree

To what extent do participants earn industry-recognized certifications or credentials as part of this intervention? What known factors are correlated with certification or credential earning?

Overall, 76.4% of all program participants earned some type of degree, credential or certificate (438 participants), regardless of whether they successfully completed their program. However, when program completers only are considered, nearly all (94.7%, or 463 individuals) earned some sort of credential. Of them, 88.1% earned a certificate, 52.6% earned an Occupational Skills Certification, 5.3% earned a degree, and 1.2% earned another credential.

In the core programs, completer rates of earning certificates, credentials, or degrees are outlined below. For those who completed the IRT core program, fully 99.6% of individuals earned some type of certification,

[25] Incumbent workers (M= 0.65; SD= 0.48); Non-incumbent workers (M= 0.82, SD= 0.39); (t= -3.70, $p< 0.01$, d= -0.40)

which is reflective of the high completion rate for the sessions and the intensive staff focus on employability skills.

Table 12: Completers Earning a Certificate, Credential, or Degree

Program	Completion
CPT	94.1% (16)
IRT	99.6% (238)
Advanced Welding	84.9% (45)
All Programs	**94.7% (463)**

Most completers who earned an Occupational Skills Certification[26] earned multiple certifications, with a total of 507 certifications earned by 257 program completers.

- 218 completers earned OSHA-10 certification (34.6% of all program enrollees)
- 235 completers earned IRT certifications (209 IRT students (98.1%), plus an additional 28 certifications from students in other programs)
- 18 CPT completers earned a total of 41 certifications (42.5% of CPT completers earned credentials.)

Overall, all program completers earned significantly more skill certifications and credentials than non-completers. Moreover, these findings were practically relevant, with large to very large effect sizes for both outcomes (Cohen's *d* for Earned Skill Certification=1.39; Cohen's *d* for Earned Any Credential= 2.74).

Table 13: Program Completers vs Non-Completers and Earned Certifications and Credentials

	Completed Program	N	Mean	Std. Deviation	t-statistic	Effect Size
Earned Skill Certification	No	147	0.04	0.20	17.37**	1.39
	Yes	489	0.53	0.50		
Earned Any Credential	No	147	0.15	0.36	25.53**	2.74
	Yes	489	0.95	0.22		

Veterans who completed their programs were more likely than incumbents to earn a credential, certificate, or degree (96.9% of veterans compared to 81.7% of incumbent workers).

Table 14: Program Completers Earning a Certificate, Credential or Degree

	Veterans	Incumbents	All Completers
Occupational Skills Certification	44.6%	43.9%	52.6%
Certificate (less than one year)	90.8%	78.0%	88.1%
Degree	6.2%	3.7%	5.3%
Another credential	0.0%	0.0%	1.2%
Earned any credential	**96.9% (63)**	**81.7% (67)**	**94.7% (463)**

[26] Occupational Skills Certifications reported include: IRT (certificate of completion, which was recognized by the employers with whom BPCC partnered on the courses); Manufacturing Skills and Standards Council (MSSC) Process, Maintenance, Safety and Quality certifications; Certified Welding Inspector; SIEMENS I; and OSHA-10.

**Raw numbers suppressed for breakouts by program type due to small N sizes.*

Veterans who completed their programs were significantly less likely than non-Veterans to earn an Occupational Skills Certification[27], but equally as likely as non-Veterans to earn any type of credential.[28] However, incumbent workers who completed the program were both less likely than non-incumbent workers to earn an Occupational Skills Certification[29] and to earn any type of credential.[30]

Employment

Are program completers or credential earners more likely than their peers to be employed upon program completion? What known factors are correlated with post-program-enrollment employment?

In total, 30.7% of all program participants and 35.6% of program completers were known to be employed after the program. This analysis does not include individuals in corporate training courses or who are not eligible to be counted for employment.[31] Data for this variable was obtained by collecting data from participants at program exit and BPCC program staff contacting past program participants and industry partners to collect information on employment and wage status. See Appendix C.

Overall, program completers were significantly more likely to be known to be employed upon program completion than non-completers with medium effect sizes.[32] Additionally, credential earners of any type were more likely to be employed after the program than non-earners. This finding may be due in part to the method of data collection for this variable.

Table 15: Percent of Participants Known to be Employed

Group	Completion Rate
Program Completers	35.6% (166)
Non-Completers	12.6% (16)
Credential, Certificate or Degree Earners	34.8% (164)
Non- Credential, Certificate or Degree Earners	14.9% (18)

BPCC was able to follow up with IRT students at higher rates than they were with students in other programs due to their close relationships with the industry partners with whom they worked to provide the trainings. All participants with missing data were counted as not being employed for this analysis. Therefore, due to the varying degrees of success in reaching participants or industry partners to discern post-program completion employment status among programs, employment rates for the other core programs may be underestimated. This is especially true for non-completers or individuals for whom BPCC did not have reliable contact information. In the IRT program, 48.3% of completers were known to be employed after the program, whereas only 23.1% of completers in Welding were known to be employed.

[27] Veterans (M= 0.45; SD= 0.50); Non-Veterans (M= 0.63, SD= 0.48); (t= -2.74, p< 0.01, *d*= -0.37)
[28] Veterans (M= 0.97; SD= 0.17); Non-Veterans (M= 0.94, SD= 0.24); (t= 0.92, *p*> 0.05, *d*= 0.14)
[29] Incumbent workers (M= 0.44; SD= 0.50); Non-incumbent workers (M= 0.68, SD= 0.47); (t= -3.93, *p*< 0.01, *d*= -0.50)
[30] Incumbent workers (M= 0.82; SD= 0.39); Non-incumbent workers (M= 0.98, SD= 0.13); (t= -3.83, p< 0.01, *d*= -0.65)
[31] BPCC data noted 18 individuals as "not eligible to be counted" for employment
[32] Completers (M= 0.35, SD= 0.48), Non-completers (M= 0.12, SD= 0.32), *t*= 6.58, *p*< 0.001, *d*= 0.58

Additionally, program completers in any program type were more likely to be known to be employed after their program than those who did not complete the program, with more than a third of completers employed (35.6%) compared to only 12.6% of non-completers.

Table 16: Percentage Known to be Employed by Completer Status

Program	Completers	Non-Completers
CPT	35.3% (*)	15.0%
IRT	48.3% (115)	18.5%
Advanced Welding	23.1% (12)	11.1%
All Programs	**35.6% (166)**	**12.6% (16)**

**Raw numbers suppressed by program type due to small N sizes.*

Non-incumbent workers who completed their programs were more likely than incumbent workers to be known to be employed after their program (38.5% and 27.8%, respectively). Similarly, non-veterans were more likely to be employed (39.1%) than their veteran peers (31.3%) who completed the program. However, in the Advanced Welding core program, the veterans were more likely to be known to be employed than non-veterans. The higher rate of post-program veteran employment in the Advanced Welding program may be due to the bootcamp participants from Barksdale Air Force base, who tended to have jobs at the base.

Table 17: Completers Known to be Employed by Group (Core Programs)

Program	Veterans	Non-Veterans	Incumbent Workers	Non-Incumbent Workers
CPT	28.6%	37.5%	60.0%	18.2%
IRT	34.8%	50.2%	44.8%	47.5%
Advanced Welding	30.8%	16.0%	4.8%	33.3%
All Core Programs	**31.3% (20)**	**39.1% (136)**	**27.8% (22)**	**38.5% (119)**

**Raw numbers suppressed for breakouts by program type due to small N sizes.*

Conclusions

Conclusions

Lasting Effects of the Program

It is beyond the scope of this evaluation to make value judgments about whether the degree of tangible and intangible success obtained as a result of the ATSP was sufficient to warrant the amount of public investment made, or to otherwise draw conclusions about the benefit of the ATSP. Qualitative evidence suggestions, however, that effects of the ATSP are likely to continue through the end of the grant and beyond.[33] Although the ATSP project experienced several changes to the original design due to contextual factors and other challenges, the time that was invested has positioned program staff, instructors, partners, and participants for continued success.

Capacity Building – The ATSP facilitated capacity building within BPCC by enhancing existing program offerings, developing new program offerings, and allowing program staff to test programming innovations (e.g., online components). While some programmatic elements of these innovations will last – ATSP program structure – even more so, the effects will be on the capacity of BPCC and the ATSP to offer enhanced and expanded programs targeting non-traditional learners.

Enhanced Programming and Services – Significant enhancements in the program offerings and support services offered, including support staff and program equipment, and in curriculum and program development will continue to benefit BPCC staff, instructors, and students. Interviewed program participants identified the program staff and support as unique and valuable components of the ATSP. Similarly, partners noted that the program structure and employer involvement helped BPCC provide relevant training and support for the target population.

Stakeholder Engagement and Collaboration – Because progress success was heavily dependent on partnerships and investments made by employers, community partners, and other stakeholders, the grant aided in increased connections between BPCC and these entities. Partner engagement findings are qualitatively described within the Implementation Evaluation: Program Partners section.

Looking Beyond the Program

At the end of the project period, BPCC determined next steps for the ATSP. Due to the funding from USDOL and investments made by BPCC and the community, the ATSP was able to expand and enhance programs to offer innovative, short-term programming. Because of this, and commitment from BPCC and others, program staff anticipate sustaining all programs and continuing to expand partnerships with employers moving forward. Moving beyond the grant, program staff anticipate the following activities to take place.

Strengthened Partnerships

BPCC established several partnerships with local employers, educational institutions, and other community organizations that will likely continue beyond the grant. These partnerships have resulted in customized training programs, donations and investments, hiring and interviewing commitments, and potential to develop work-based training opportunities (e.g., apprenticeships).

[33] Training funds ended in March 2018 and all other grant funding ended in September 2018.

BPCC program staff noted enhanced employer partnerships as a significant success from the grant and anticipate building these relationships moving forward. Program staff also anticipate strengthening articulation and transfer agreements with local educational institutions, especially for the Advanced Welding CTS.

Continued Initiatives

As part of the original design, BPCC sought to become a Registered Sponsor for apprenticeships so that students could easily access these work-based learning opportunities and local industry could utilize the college's facilities and resources. While no apprenticeship programs materialized under the project period, BPCC made significant progress toward developing the expertise necessary to become a sponsor and building relationships with industry partners interested in developing apprenticeship programs for key occupations. Discussions with two major employers—one in the manufacturing sector and one in the healthcare sector—were well underway by the end of the project. By the end of the project period, BPCC and Benteler Steel/Tube had begun planning to launch the BPCC Academy together in Fall 2019 to train apprentices with BPCC serving as the Registered Apprenticeship Sponsor.

Enhanced Programs

Because the programs were designed to align with industry demand, program staff noted the importance of continuing the grant-funded programs beyond the funding period. Utilizing advisory board and implementation and curriculum review committees, the course curriculum, equipment, and structure will be revisited at least annually to ensure the programs continue to meet the needs of industry. The Industrial Readiness Trainings will be offered through BPCC's Workforce department, and the Advanced Welding CTS and Oil and Gas Refinery Processes (PTEC) concentration launched in the academic divisions in Fall 2018.

Future Research Opportunities

A review of the evaluation findings and limitations suggest several directions for possible future research. Improved data collection systems and processes, which ameliorated significantly over the course of the project period, would greatly improve the validity of any future studies.

Because several of the programs BPCC planned did not enroll any participants until after the end of the project period (Advanced Welding CTS and Oil and Gas Refinery Processes/PTEC concentration), BPCC should consider conducting research investigating the effectiveness of these programs in improving students' employment prospects and assessing student and employer experiences. Additionally, BPCC should consider a qualitative and quantitative study around any Registered Apprenticeship initiatives developed in the future.

The following studies would provide additional insight into the effect of the TAACCCT-funded BPCC programs.

1. A study comparing the employment outcomes of Advanced Welding CTS completers to the non-credit Welding completers, as well as qualitative experiences of the two groups.
2. A study examining whether endorsement or articulation with employers and specific programs improves student academic and employment outcomes.

3. A study examining the experiences and academic and employment outcomes of Registered Apprenticeship participants, and the sponsoring employers.
4. A study examining whether the impacts of the program vary based on whether the student enrolled in the non-credit programs created under the grant because they would otherwise not be able to attend college at all, as compared to preferring the flexibility or format of the TAACCCT-funded program to a traditional program.

A longer study window could have also revealed impacts of greater magnitude and would require extending the post-program observational period for the purposes of examining outcomes. Employing an extended post-program observational period would answer questions about whether the employment effects of TAACCCT-funded programs were different over the short and longer terms.

Appendices

Appendix A: USDOL-Identified TAACCCT Core Elements

Information from this section was drawn from the USDOL-TAACCCT Solicitation for Grant Applications – see Table 18 below:

Table 18: TAACCCT Core Elements

Evidence-Based Design	Implement projects that seek to use evidence to design program strategies – new or the replication of existing strategies – that are committed to using data for continuous improvement of programs that provide workers with the education and skills to succeed in high-wage, high-skill occupations.
Stacked and Latticed Credentials	Incorporate a variety of credentials, including certificates, certifications, diplomas, and degrees. These credentials should be earned in sequence and build on previously learned content, or "stacked," as students progress through their programs, allowing them to build a portfolio of credentials that can serve them well as they transition from learning to work.
Transferability and Articulation of Credit	Transferability and articulation of academic credit to create career pathways for TAA-eligible workers and other adults to further their education. This can be accomplished through increased cooperation among institutions within and across state lines, as well as through linkages with programs, such as postsecondary career and technical education, pre-apprenticeship and apprenticeship programs, and other programs that lead to credit-bearing coursework and employment.
Advanced Online and Technology-Enabled Learning	Incorporate online and/or technology-enabled learning strategies that provide adults an opportunity to balance the competing demands of work and family with acquiring new knowledge and skills at a time, place, and/or pace that is convenient for them.
Strategic Alignment	Demonstrate outreach to, and information on, relevant entities in the communities to be served by the project, including those that can provide data on the characteristics and skill needs of workers receiving TAA benefits and services in the community. Align programs to Governor efforts (Economic Development and WIOA state plans); employers and industry; public workforce systems; and philanthropic organizations, business-related and other non-profit organizations, community-based organizations, and labor organizations.
Alignment with Previously-Funded TAACCCT Projects	To help decrease duplication and to strengthen the geographic reach of the project, and coordinate efforts where possible.

Appendix B: Implementation Evaluation Methods

Introduction

The Implementation Evaluation for ATSP began in October 2014 and continued through March 2018 to document program progress, monitor program outcomes, assess program accomplishments and barriers, and provide recommendations for continuous improvement of program outcomes. Throughout the execution of the evaluation, and especially through the Implementation Evaluation, the Evaluation Team employed principles of a utilization-focused framework.[34] The substantiated assumptions[35] of utilization-focused evaluations are: (1) intended users are more likely to utilize evaluation findings if they understand and value the evaluation's process; (2) intended users are more likely to understand and value the evaluation's process if they are engaged in evaluation decisions; (3) engaged intended users both enhance the credibility of evaluation findings and possess greater capacity for utilizing findings to improve the project; and (4) capacity for utilizing findings relies heavily on a collaborative, functional relationship between intended users and evaluators.

Additionally, the formative component of the Implementation Evaluation offered real-time feedback as the project rolled out, as opposed to offering information only retrospectively, through frequent calls and annual reports following evaluation site visits. This provided the opportunity to identify early evidence of strengths and areas for growth throughout the development of the project.

Research Questions

Table 19 summarizes the research questions examined through the Implementation Evaluation, including ties to data sources and collection tools/protocols, and analysis methods. Further details on data sources and collection plans, analysis methods, and potential limitations of the Implementation Evaluation are detailed in subsequent sections.

Table 19: Implementation Evaluation Research Questions, Data Source, and Analysis Methods

Research Question	Data Sources and Collection	Analysis Methods
How was the particular curriculum selected, used, and/or created?	• Telephone conference calls (monthly and quarterly) • Site visit interviews • Review of written program documentation (quarterly reports, course catalogues)	Inductive thematic approach- Document, code, and synthesize themes from leadership, instructors and staff, and participants; review and synthesize written documentation.

[34] Patton, M.Q. (2012) *Essentials of Utilization-Focused Evaluation*. Thousand Oaks, CA: Sage.
[35] Brandon, P., Smith, N., Trenholm, C., and Devaney, B. (2010). "The Critical Importance of Stakeholder Relations in a National, Experimental Abstinence Education Evaluation." *American Journal of Evaluation*, 31, 4: 517-531.
Patton, M. Q. (2012). *Essentials of utilization-focused evaluation*. Thousand Oaks, CA: Sage.
Taut, S. (2008). What have we learned about stakeholder involvement in program evaluation? *Studies in Educational Evaluation,* 34.

Research Question	Data Sources and Collection	Analysis Methods
How were programs and program designs improved or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support services and other services were offered?	• Telephone conference calls (monthly and quarterly) • Site visit interviews • Review of written program documentation (quarterly reports, course catalogues, organizational charts)	Inductive thematic approach- Document, code, and synthesize themes from leadership, instructors and staff, and participants; review and synthesize written documentation.
Was an in-depth assessment of participants' abilities, skills, and interests conducted to select participants into the grant program? What assessment tools and processes were used? Who conducted the assessment? How were the assessment results used? 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?	• Telephone conference calls (monthly and quarterly) • Site visit interviews and focus groups	Inductive thematic approach- Document, code, and synthesize themes from leadership, instructors and staff, and participants; review and synthesize written documentation.
What contributions did each of the partners (employers, workforce system, other training providers and educators, philanthropic organizations, and others as applicable) make in terms of 1) program design; 2) curriculum development; 3) recruitment; 4) training; 5) placement; 6) program management; 7) leveraging of resources; and 8) commitment to program sustainability? What factors contributed to partners' involvement or lack of involvement in the program? Which contributions from partners were most critical to the success of the grant project? Which contributions from partners had less of an impact?	• Telephone conference calls (monthly and quarterly) • Site visit interviews and focus groups • Review of written program documentation (marketing materials, grant applications, written commitments of funding sustainability)	Inductive thematic approach- Document, code, and synthesize themes from leadership, instructors and staff, and participants; review and synthesize written documentation.

Research Question	Data Sources and Collection	Analysis Methods
How satisfied are program leadership, staff, and participants with the program? Why?[36]	• Site visit interviews and focus groups with students and program staff	Inductive thematic approach- Document, code, and synthesize themes from leadership, instructors and staff, and participants.
What program outputs have been generated to date? What barriers hindered output achievement? What factors unexpectedly improved output achievement? Why?[37]	• Telephone conference calls (monthly and quarterly) • Site visit interviews • Review of written program documentation (quarterly reports)	Inductive thematic approach- Document, code, and synthesize themes from leadership, instructors and staff, and participants; review and synthesize written documentation.
What have been accelerators and obstacles to program performance?	• Telephone conference calls (monthly and quarterly) • Site visit interviews and focus groups • Review of written program documentation (quarterly reports)	Inductive thematic approach- Document, code, and synthesize themes from leadership, instructors and staff, and participants; review and synthesize written documentation.
How can program processes, tools, and/or systems be modified to improve performance?	• Telephone conference calls (monthly and quarterly) • Site visit interviews • Review of written program documentation (quarterly reports)	Inductive thematic approach- Document, code, and synthesize themes from leadership, instructors and staff, and participants; review and synthesize written documentation.
How can the program expand or enhance institutional capacity? What are the most promising programmatic components to use institution-wide? Why?	• Telephone conference calls (monthly and quarterly) • Site visit interviews and focus groups	Inductive thematic approach- Document, code, and synthesize themes from leadership, instructors and staff, and participants.

[36] Note that this question, within the *Implementation Evaluation* section, is separated into two questions.
[37] Note that this question, within the *Implementation Evaluation* section, is separated into two questions.

Data Sources and Collection

Data for the Implementation Evaluation was collected from the following data sources:

- Monthly and quarterly implementation update calls with BPCC grant leadership and staff
- In-person interviews with BPCC administrators, program staff and instructors, and industry partners.
- In-person focus groups with program participants
- BPCC documents, including quarterly program reports, curriculum documentation and course catalogues, marketing materials, and others

Implementation Update Calls

Implementation update calls between the Evaluation Team and BPCC grant leadership and staff took place monthly. These calls enabled BPCC grant leadership and staff to provide the Evaluation Team with timely information regarding the project's processes, progress, obstacles, and successes. These findings were elaborated upon during site visit interviews, but calls provided BPCC administrators and program staff with an opportunity to recall events and challenges more frequently than the annual site visits. Members of the Evaluation Team maintained detailed notes from each call, which were stored on TPMA servers and provided a timeline of relevant occurrences used as a reference point for staff, instructors, and employer/partner interviews as well as student focus groups. When USDOL granted the six-month extension, the Evaluation Team incorporated additional update calls to supplement the final site visit and ensure that ample qualitative data were being collected.

Interviews and Focus Groups

Site visit plans included a series of annual site visits for one-on-one interviews and in-person focus groups in October 2014, September 2016, August 2017, and May 2018. The Evaluation Team developed interview discussion guides to be used with each of the site visits. These guides were originally deployed during the initial site visit and were modified for use in the subsequent site visits based on changing program dynamics. For the final site visit, the guide was revised to focus on final implementation strategy and themes and issues that had emerged throughout the years of implementation as well as program sustainability and lessons learned.

The Evaluation Team visited BPCC and conducted interviews with stakeholder groups outlined in the table below.

Table 20: Stakeholder Groups

Stakeholder	Description	Totals
BPCC Administrators	The Evaluation Team conducted semi-structured 60-90-minute interviews with BPCC grant leadership on program activities and integration, collaboration/partnerships, resources, lessons learned, and sustainability.	>10 interviews
BPCC Staff	Semi-structured 30-60-minute small-group and individual interviews were held with BPCC staff, covering program activities and integration, collaboration/partnerships, resources, lessons learned, and sustainability.	>15 interviews

ATSP Instructors	As available, 30-minute semi-structured small-group interviews were conducted with ATSP instructors. Discussions centered on program activities, collaboration/partnerships, resources, and lessons learned.	7 interviews
Industry Partners	Semi-structured 30-60-minute interviews were held with regional employers and partners. These interviews took place at BPCC. Employer discussions focused on program engagement, impacts to the business, and overall satisfaction.	5 interviews
ATSP Participants	The Evaluation Team held semi-structured 30- to 60-minute in-person focus groups with grant participants. Discussions focused on the individual's goals, program experience and satisfaction to date, accessibility of staff and online platform, and overall program feedback.	4 focus groups

Interviews were semi-structured with open-ended questions used for probing and conversational inquiry. In line with the principles of applied thematic research, this interview approach enabled participants to speak about experiences in their own words, free of the constraints imposed by fixed-response questions. Inductive probing allowed the Evaluation Team to clarify statements, meaning, and the feelings associated with the experiences, to promote accuracy in detailed observational notes. This interview framework also provided the means to "[learn] from the participants' talk and dynamically [seek] to guide the inquiry in response to what is being learned."[38]

To increase validity of the interviews, the Project Manager was present for every site visit and participated in the Implementation Evaluation update calls, document reviews, and report writing. This consistency helped build and preserve institutional knowledge across site visits. In addition, these methods are consistent with recommendations made by qualitative researchers,[39] and allow a member of the Evaluation Team to focus on facilitation and a second member to take detailed notes.

Document Review

The Evaluation Team reviewed a variety of program artifacts including, but not limited to:

- Quarterly program narrative reports sent by BPCC grant leadership to USDOL;
- Marketing materials highlighting ATSP programs (e.g., brochures);
- Relevant documentation with partners (e.g., Memorandum of Understanding agreements).
- Curriculum documentation, including printed and online course catalogues.

These documents provided additional context and information to evaluate project implementation at each stage – challenges, successes, unintended consequences (both positive and negative), and the reasons for accelerated or delayed progress. Context from these documents informed questions for the monthly

[38] Guest, G., MacQueen, K.M., and Namey, E.E. (2011). *Applied Thematic Analysis*. Thousand Oaks, CA: Sage.
[39] Kidd, P. S. & Parshall, M. B. (2000). Getting the focus and the group: Enhancing analytical rigor in focus group research. *Qualitative Health Research*, 10, 3: 293-308.

implementation update calls, on-site interviews and focus groups, and informed context within evaluation reports.

Analysis Methods

Thematic Analysis

A general inductive thematic approach[40] was used to analyze the qualitative data generated from the interviews and focus groups. This approach was selected because of its usefulness in drawing clear links between research questions or objectives and data collection results, and because it provides a theoretical foundation for subjective meaning to be interpreted and extrapolated from discourse. The analytical framework used for the analysis included a time-dependent gradient (before the project, changes occurring in each year of project implementation, and post-project scaling) and a program-dependent gradient (analyzing the program components).

Units of analysis included the programs, BPCC grant leadership, BPCC staff and instructors, employers and community partners, and participants.

Emerging themes were then developed according to the analytical framework and through a review of (1) the notes taken during monthly calls; (2) ATSP documents and artifacts; (3) detailed notes taken during site visits; and (4) the Evaluation Team's extensive experience with technical training programs and the body of evaluation knowledge built through their work. Guidance about what was important came from the Project Narrative, Evaluation Plan, and calls that had occurred throughout the grant period. Following the initial theme development, additional Evaluation Team members reviewed the results, adding contextual details and examples. These themes were divided into five categories:

- *Interim Progress* – Documentable steps that had been taken to advance or achieve grant outcomes, deliverables, milestones, and/or goals;
- *Accelerators/Strengths of Progress* – Factors that had enhanced grant progress and improved the ability of grant staff to carry out grant initiatives, focused on internal factors (program design, modifications, implementation, and application);
- *Barriers/Challenges to Progress* – Persistent difficulties grant staff faced in accomplishing grant initiatives;
- *Recommendations* – Opportunities the Evaluation Team identified for improving progress toward grant outcomes (in Interim Reports), and recommendations for other education institutions looking to start similar programs and initiatives; and
- *Sustainability* – Components of the program that will continue once funding ends.

The results were again compared to the analytical framework and the anticipated reporting elements. The final step in the analysis was to send the summarized results to BPCC grant leadership for clarification and additional contextual details.

To strengthen the accuracy and credibility of implementation study findings, the Evaluation Team relied on triangulation and collaborative inquiry. By comparing findings based on different data sources and using

[40] Thomas D. R. (2006). A general inductive thematic approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27: 237-245.

approaches that incorporated both evidence and negative evidence, the Evaluation Team created a robust and dynamic depiction of implementation.[41] By presenting findings to BPCC stakeholders for elaboration, corroboration, and modification, the Evaluation Team confirmed and updated analyses. Additionally, by sharing findings with intended users as they emerged, the Evaluation Team built a collaborative relationship with stakeholders that encouraged higher quality first-person data and increased the likelihood the evaluation could produce timely, user-relevant findings.[42]

Reporting

Data were interpreted, analyzed, and included in one Interim Report, finalized in November 2016, and the Final Report, drafted in Summer 2018 and finalized by September 2018. The reports contained the results of the analysis, recommendations for improvements, rationale for recommended modifications, and any threats or challenges that may have arisen as a result of recommended modifications. BPCC stakeholders conducted an in-depth review of these reports for member checking, factual verification, and elaboration on findings and recommendations. Subsequently, the reports were submitted to the USDOL.

Limitations

Limitations for the Implementation Evaluation included three main elements:

Partial and Biased Findings – Qualitative and perceptual research methods offer good insights, but are, by nature, partial and biased. To attempt to address this limitation, the Evaluation Team took advantage of an opportunity embedded in mixed-methods evaluation, the triangulation of data.[43] Triangulating results from multiple sources, such as comparing findings among stakeholder interviews and with documents reviewed, creates more credible evaluation results, and is considered critical to the validity and reliability of findings. Findings that have been corroborated through triangulation tend to be sufficiently robust and credible.[44]

Selection Bias – To address the threat of non-response and non-consent and to improve the likelihood that sufficient data could be collected to draw valid conclusions, the Evaluation Team relied on purposive and convenience sampling coordinated by project staff. However, this approach introduced selection bias into the findings. Students and industry partners more interested in providing feedback or more involved in the program may have chosen to participate in interviews at a higher rate than less interested or less engaged participants and employers, and project staff responsible for coordinating interviews may have selected only those cases where they anticipated favorable responses to interview questions. Neutral and critical feedback from participants and employers, however, supported the notion that these research participants were chosen primarily for their willingness to participate in the study rather than the likelihood that they would cast the program in a favorable light.

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[41] Brewer, J. and Hunter, A. (2006). *Foundations of multimethod research: Synthesizing styles.* Thousand Oaks, CA: Sage.
[42] Cousins, J. B. and Whitmore, E. (1998). Framing participatory evaluation. New Directors for Evaluation, 80. 5-23.
Greene, J.G. (1998). Stakeholder participation and utilization in program evaluation. Evaluation Review, 12. 91-116.
Reineke, R. A. (1991). Stakeholder involvement in evaluation: Suggestions for practice. American Journal of Evaluation, 12. 39-44.
[43] Brewer, J. and Hunter, A. (2006). *Foundations of multidimensional research: Synthesizing styles*. Thousand Oaks, CA: Sage.
[44] Denzin, N. K. (1978). The research act: A theoretical introduction to sociological methods (2nd edition). New York, NY. McGraw-Hill.

Researcher Extrapolation – Analyses conducted with an interpretive and analytical framework, influenced by phenomenology, suffer from the threat that researcher extrapolation and interpretation may go too far beyond what is present in, and supported by, data.[45] Indeed, the recommendations provided in this report are based on a combination of what was learned and supported by data and the experiences and findings of the evaluator's previous experience designing, implementing, and evaluating various training programs.

[45] Guest, G., MacQueen, K.M., & Namey, E.E. (2011) *Applied thematic analysis.* Thousand Oaks, CA: Sage.

Appendix C: Outcomes Evaluation Methods

Introduction

Originally, the Evaluation Team planned an impact evaluation of the ATSP initiative. Due to program changes and data availability, a comparison group design was no longer appropriate for the analysis, and a plan for an Outcomes evaluation was developed. The Outcomes evaluation uses descriptive and inferential statistics to estimate program participants' completion rates, the extent to which they earned certifications and credentials, and their employment outcomes. The Evaluation Team considered how demographic factors were associated with each of these outcomes. Limitations in available data sources, discussed below and in the body of the report, may have affected the findings of the study.

Research Questions

The final research questions for the ATSP program are as follows:

1) To what extent did program participants complete their programs? What known factors are correlated with program completion?
2) To what extent do participants earn industry-recognized certifications or credentials as part of this intervention? What known factors are correlated with earning certifications or credentials?
3) Are program completers or credential earners more likely than their peers to be employed upon program completion? What known factors are correlated with post-program enrollment employment?

Data Sources and Collection

Participant data for the Outcomes evaluation was drawn from two sources: BPCC data systems developed for ATSP, (data collected and entered by program staff) and extracted via queries, and wage data from the National Directory of New Hires.

BPCC Data Systems Developed for ATSP

BPCC's processes for collecting data on credit and non-credit students vary. Traditionally, data collection processes for non-credit standards and programs has not been standardized at the college, and different types of variables and data points are collected depending on the requirements of the program. For the ATSP core programs (Welding, CPT, and IRT), ATSP program staff developed the following procedures for participant data collection. For participants not in core programs (e.g., students in credit-bearing programs whose only contact with grant-funded services was use of the media equipment and Amatrol E - Learning/LabVolt courses or career/employability skills services), similar data points were drawn from BPCC's student information system for credit-bearing programs.

Program Intake

Upon registration for a core program, BPCC staff administered a Survey Monkey survey that collected data on the following variables for each participant:

- Name
- Social Security number
- Age
- Sex

- Incumbent worker status
- Veteran status
- Race
- Ethnicity
- Whether participant was Pell-grant eligible (since most students were in non-credit programs, guidelines were provided to help them answer. Eligibility for Pell serves as a proxy for low-income status)
- Whether participant was TAA eligible
- Program of entry

The Survey Monkey tool was administered to participants in one of three ways: staff gave participants a web link to the survey for them to complete, staff gave participants a printed copy of the survey to complete, or staff interviewed the participant to obtain this information. At regular intervals, program staff and student workers downloaded data from Survey Monkey and used these outputs (as well as any paper copies) to manually enter data for each field into GSTARS, a software program BPCC purchased to manage TACCCT reporting requirements.

Program Exit

At the end of each session for CPT and IRT, program staff added indicators of successful program completion for each participant into GSTARS. At the end of each Welding bootcamp or session, they tracked whether participants stayed for the entire session and entered that information into a field in GSTARS. When new Welding sessions started, they also noted whether participants returned. At this time, data on any industry-recognized credentials or certifications participants earned was also put into GSTARS.

Employment

Program staff attempted to capture employment and wage information from students immediately upon program exit via surveys conducted at the end of each session. In the case of the IRT core program, for many of the sessions most participants were hired upon program completion by the industry partner (Frymaster, Sabre Industries, or ValveWorks). Staff knowledge of participants' employment status post-completion, based on their relationship with the industry partners, allowed them to fill in some of the gaps left by the participant surveys. When participants were not employed immediately at program completion, they were flagged for phone and e-mail follow-up in one month. Indicators of employment post-program completion were additional GSTARS fields and data was entered by program staff regularly after sessions ended.

When program staff were unable to capture employment data from participants immediately upon program exit, they implemented a system to follow up with participants at intervals by phone or e-mail. They attempted to reach students by phone and email once upon program exit, again several weeks later, and again three months post-program exit. Program staff's relationships with industry participants also facilitated some of the longer-term employment data collection. Staff made phone calls to employers as well to check on participant employment status. Program staff tracked all employment data and participant follow-up status on a spreadsheet and manually entered information recorded there into GSTARS at intervals.

Data Cleaning and Analysis Methods

The Evaluation Team received data on grant program participants in July 2018. The data set was comprised on participant records from October 1, 2014-March 31, 2018. The data file contained a raw data set as well as tabs that listed participants in each program, CPT, IRT, and Advanced Welding independently, and a separate tab tracking participant employment. Upon receiving the final data file from Bossier Parish Community College, the Evaluation Team performed the following data cleaning procedures.

Creating a Program Type Variable – The Evaluation Team used Excel to create a program type variable using VLOOKUP to match student records in the program tab with students in the raw file tab. Each program was pulled into a unique column on the raw data file. Upon verification that there was no overlap in program enrollment amongst participants, the three program columns were combined into a single Program Type variable for analysis.

Creating Separate Occupational Skill Certification Variables – The raw data file included a single column that listed all occupational skill certifications that each participant earned. Frist, the Evaluation Team used an IF statement in Excel to create a new binary variable to show whether a participant earned any type of occupational skill certification. Then the Evaluation team used text to columns data conversions to create single column binary variables for each unique type of certification.

Re-coding Program Completion – The raw data file contained a variable called Successfully Completed Program which only contained five "no" entries, a large number of "yes" entries and a large number of blank cells (142, or 22.3% of all cells in that variable). For this analysis, all blank cells in the program completion variable were assumed to be non-program completers.

Because of the way that the program was implemented, the Evaluation Team was not able to use the originally planned quasi-experimental design. Instead descriptive analytics were run on outcomes for all grant-affiliated participants, and comparisons between groups were analyzed on the key outcome measures of program completion; certificate, degree, or credential earning, and post-program employment.

Limitations

Data Missingness Within Variables – Many variables in the data set contained missing data or cell entries for "not self-disclosed". For this analysis, blank cells in the Employment and Successfully Completed Program variables were assumed to be "no," and blank cells in demographic variables were not analyzed. For example, when comparing Veterans to Non-Veterans, the Evaluation Team only analyzed those for whom a specific "yes" or "no" was entered.

Low Data Quality for Employment Variable – The employment variable was populated based on BPCC calling past program participants and asking whether they were employed. This required that BPCC had current contact information and that participants or past participants were willing and able to answer their call and respond truthfully about their employment status. Overall 63.1% of all cells in the employment variable were blank (401 cells). BPCC was diligent about attaining information from participants in the IRT program and had strong relationships with the industry partners involved. However, even in that program, the data set included 144 blank cells (54.1%) in the employment field.

Record Keeping Errors—Because much of the data was manually transmitted by staff from one collection source to another, the possibility of human error in inputting information, or information lost between two

sources, is high. Additionally, early in the project period, the departure of a staff member who had maintained responsibility for data up until that point revealed many missing files that were not in good order. This data had to be collected again, and some participants were gone by that time, so the quality of those records may have been compromised.

No Comparison Group or Impacts Analysis – While the outcomes data provided in the Outcomes evaluation section provides meaningful insight about changes in the lives of program participants, the analysis is not able to attribute changes to the effects of the program itself. Participants may or may not have had similar employment outcomes regardless of their program experience.