

DTCC Round 3 TAACCCT Grant Evaluation

Final Report

Report to:
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September 15, 2017

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Hezel Associates, LLC, is a custom research, evaluation, and strategic consulting firm specializing in education. Since 1987, Hezel Associates has embraced its mission to serve clients with *intelligence, experience, and insight to enable them to succeed in creating, managing, and improving education initiatives.*

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This publication was prepared for Delaware Technical Community College, with funding provided by the U.S. Department of Labor.

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EXECUTIVE SUMMARY

In September 2013, Delaware Technical Community College (DTCC) received a Round 3 TAACCCT grant. The grant allowed DTCC to design and implement a fast-tracked remedial Summer Bridge, National Career Readiness Certification (NCRC), Certified Production Technician (CPT), Electromechanical Engineering Technology (ELM), Building Automation Systems (BAS), non-credit Food Safety and Sanitation certificate, and for-credit Food Safety certificate (Food Safety) programs. Trade Adjustment Assistance (TAA)-eligible individuals and veterans, among other learners, had the opportunity to enter into one of these programs, receive nationally recognized certifications through their course work, and complete degree or certificate training in an in-demand industry.

Hezel Associates provided an external evaluation of the TAACCCT Round 3 project, examining both the quality of program implementation and impact of the program on students. Using a concurrent embedded mixed methods study, the evaluation was designed to answer the following research questions regarding *impact* on participants:

1. To what extent did the program increase the attainment of certifications, certificates, diplomas, or other recognized credentials?
2. To what extent did program activities increase student retention rates for TAA-eligible workers and other adults?
3. To what extent did the program improve participants' employment outcomes?

The impact of the project was measured using extant data on program participants and comparison groups established by the PI and Hezel Associates Project Leader. Hezel Associates analyzed student outcome data using descriptive statistics and conducted chi-square analyses where appropriate to test for differences in outcomes between TAACCCT participants and comparison groups.

The evaluation also focused on the following research questions to assess *implementation* fidelity and quality:

4. How was the curriculum selected, used, or created?
5. How was the program managed and implemented?
 - 5.1. How were programs and program designs improved or expanded using grant funds?
 - 5.2. What delivery methods were offered?
 - 5.3. What was the program administrative structure?
 - 5.4. What support services and other services were offered?
6. Did the grantees conduct an in-depth assessment of participants' abilities, skills, and interests to select participants into the grant program?
 - 6.1. What assessment tools and processes were used?
 - 6.2. Who conducted the assessment?
 - 6.3. How were the assessment results used?
 - 6.4. Were the assessment results useful in determining the appropriate program and course sequence for participants?
 - 6.5. Was career guidance provided and, if so, through what methods?

7. What contributions did each of the partners (i.e., employers, workforce systems, other training providers and educators, philanthropic organizations, and others as applicable) make in terms of (a) program design, (b) curriculum development, (c) recruitment, (d) training, (e) placement, (f) program management, (g) leveraging of resources, and (h) commitment to program sustainability?
 - 7.1. What factors contributed to partners' involvement or lack of involvement in the program?
 - 7.2. Which contributions from partners were most and least critical to the success of the grant program?
8. To what extent did project activities result in desired student perceptions?

Hezel Associates used a mixed methods evaluation approach to assess implementation of DTCC's project activities. The primary activities—based on the work plan DTCC proposed to the USDOL—included: (1) establishment of new manufacturing programs, including BAS and ELM; (2) establishment of credit and non-credit Food Safety programs; (3) establishment of a bridge program for developmental education; and (4) integration of stacked credentials, such as the NCRC and CPT certificate. Data collection methods included document review, a student questionnaire, and interviews with project staff and employer partners. Data from each collection method were analyzed separately and then triangulated in Year 4 to develop a comprehensive understanding of program implementation.

Based on the findings that emerged from data collected throughout the four-year grant, Hezel Associates developed the following conclusions:

- **Enrollment was on target for most programs, but retention was a challenge.** DTCC met most of their enrollment goals for the BAS, ELM, and Food Safety programs; however, few students completed their program. Across these three programs, 102 students enrolled, 93 earned credit hours, 16 completed the program, and 2 are still enrolled. There was no significant difference in completion rates between TAACCCT and comparison groups when analyzing BAS and ELM data; however, there was a low completion rate for the comparison groups as well. Retention may not only be a challenge for TAACCCT-funded programs, but across the institution.
- **Program completers are well-positioned for entry-level jobs.** Though employment outcomes could not be fully assessed, interview data provided insight regarding the employability of TAACCCT participants. Project staff indicated that most program completers are able to find employment or continue on to further their education. The programs provide students with the foundational skills needed to obtain employment in the industry and advance with additional on-the-job training. Throughout the program, students gain hands-on experience in labs that mimic the work environment, and receive career guidance such as résumé development.
- **Programs are aligned with local industry need.** Project staff worked with advisory boards, comprised of regional industry experts, to develop curricula that include skills relevant to the current labor market. Employers confirmed the curricula teach skills they are looking for in an employee. In addition, grant funds enabled DTCC to establish labs

with equipment that allows students to have hands-on learning opportunities. As part of the ELM and BAS programs, students also afforded the opportunity to participate in internships. Having hands-on practice to develop skills is important for finding employment, as employers reported they are looking to hire applicants that can demonstrate mastery of skills.

- **DTCC developed positive relationships with local employers.** Overall, local industry partners had positive opinions regarding the TAACCCT programs and working with DTCC. They expect to continue working with DTCC in the future. This relationship with local employers was a critical to preparing students for in-demand careers in the region. Employers have been happy with the performance of program completers so far and plan to continue hiring program graduates.
- **Students feel prepared to apply their skills in a work setting.** TAACCCT participants mostly agreed that their program prepared them to apply a variety of technical and soft skills in a work setting. Technical skills included operating equipment or machinery, troubleshooting technical problems, and using computer software. Soft skills included effective communication, prioritizing tasks, managing time, and working as a member of a team.

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INTRODUCTION

The U.S. Department of Labor (USDOL) sought to provide funding to community colleges to improve workforce outcomes through the Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant. In September 2013, Delaware Technical Community College (DTCC) received a Round 3 TAACCCT grant, which allowed DTCC to design and implement a fast-tracked remedial Summer Bridge, National Career Readiness Certification (NCRC), Certified Production Technician (CPT), Electromechanical Engineering Technology (ELM), Building Automation Systems (BAS), non-credit Food Safety and Sanitation certificate, and for-credit Food Safety certificate (Food Safety) programs. Trade Adjustment Assistance (TAA)-eligible individuals and veterans, among other learners, had the opportunity to enroll in one of these programs, receive nationally recognized certifications through their course work, and complete degree or certificate training in an in-demand industry.

Hezel Associates provided an external evaluation of the TAACCCT Round 3 project, examining both the quality of program implementation and impact of the program on students. Using a concurrent embedded mixed methods study, the evaluation was designed to answer the following research questions regarding *impact* on participants:

1. To what extent did the program increase the attainment of certifications, certificates, diplomas, or other recognized credentials?
2. To what extent did program activities increase student retention rates for TAA-eligible workers and other adults?
3. To what extent did the program improve participants' employment outcomes?

In addition, the evaluation focused on the following research questions to assess *implementation* fidelity and quality:

4. How was the curriculum selected, used, or created?
5. How was the program managed and implemented?
 - 5.1. How were programs and program designs improved or expanded using grant funds?
 - 5.2. What delivery methods were offered?
 - 5.3. What was the program administrative structure?
 - 5.4. What support services and other services were offered?
6. Did the grantees conduct an in-depth assessment of participants' abilities, skills, and interests to select participants into the grant program?
 - 6.1. What assessment tools and processes were used?
 - 6.2. Who conducted the assessment?
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7. What contributions did each of the partners (i.e., employers, workforce systems, other training providers and educators, philanthropic organizations, and others as applicable) make in terms of (a) program design, (b) curriculum development, (c) recruitment, (d) training, (e) placement, (f) program management, (g) leveraging of resources, and (h) commitment to program sustainability?
 - 7.1. What factors contributed to partners' involvement or lack of involvement in the program?
 - 7.2. Which contributions from partners were most and least critical to the success of the grant program?
8. To what extent did project activities result in desired student perceptions?

Hezel Associates is pleased to present this final evaluation report on DTCC's TAACCCT Round 3 project. This report discusses data collection, analysis, and findings from all four years of the TAACCCT Round 3 project. Since this is a final, summative report, the evaluator also offers conclusions and recommendations based on the final synthesis of findings.

METHODS SUMMARY

Hezel Associates used a mixed methods evaluation approach to assess implementation and impact of DTCC's project activities. The primary activities—based on the work plan DTCC proposed to the USDOL—included: (1) establishment of new manufacturing programs, including BAS and ELM; (2) establishment of credit and non-credit Food Safety programs; (3) establishment of a bridge program for developmental education; and (4) integration of stacked credentials, such as the NCRC and CPT certificates.

The following sections summarize the data collection and analysis processes applied through the four years of the grant. A more detailed description of the evaluation methodology is included as Appendix A.

Document Review

Hezel Associates developed a Document Review Framework (see Appendix B) that was aligned with DTCC's work plan. The framework outlined project activities and milestones, and the dates they should be completed. Throughout the four years of the grant, the Principal Investigator (PI) shared program documents with Hezel Associates to demonstrate evidence of completing the various activities and milestones outlined in the framework. As documents were shared, Hezel Associates maintained a log of all files collected. Hezel Associates reviewed documents annually against the framework, recording notes on how each document showed progress toward or completion of each activity or milestone. Document review findings were used to address Research Questions 5–7. In Year 4, the findings from the document review were synthesized with findings from other data sources.

Staff Interviews

Hezel Associates developed a Staff Interview Protocol (see Appendix C) to gather project staff perceptions of the implementation and impact of the project. Staff interviews were conducted in Years 1, 3, and 4 of the grant. Interviews were conducted via phone and recorded with participant consent. Recordings of the interviews were later transcribed for analysis. Interview data were analyzed using an open-coding approach, in which each transcript was reviewed multiple times to identify themes from which the evaluator made low-level inferences. In Year 4, staff interview data were synthesized with findings from other data sources to identify themes across the full grant period.

Employer Interviews

Hezel Associates developed an Employer Interview Protocol (see Appendix D) to guide conversations with local industry partners about the implementation and impact of the program. Employer interviews were conducted in Years 2–4 of the grant. Interviews were conducted via phone, recorded with participant consent, and later transcribed for analysis. Interview data were analyzed using an open-coding approach, in which each transcript was reviewed multiple times to identify themes, which then informed the evaluator's low level inferences. In Year 4, employer interview data were synthesized with findings from other data sources to identify themes across the full grant period.

Participant Questionnaire

Hezel Associates developed the Participant Questionnaire (see Appendix E) to gather feedback from program participants on the implementation and impact of the project. The questionnaire was administered online in the spring of Years 3 and 4. Survey data were analyzed using descriptive statistics (i.e., frequencies, means, standard deviations) each year. For the final analysis, data from Years 3 and 4 were combined and analyzed together. Hezel Associates confirmed that each case in the dataset represented a unique TAACCCT participant.

Extant Data

Following the requirements established by the USDOL, the impact of the project was measured using extant data on program participants and comparison groups established by the PI and Hezel Associates Project Leader. DTCC staff shared student outcome data with Hezel Associates in August 2017 via DTCC's secure file transfer protocol. Hezel Associates analyzed these data using descriptive statistics and conducted chi-square analyses where appropriate to test for differences in outcomes between TAACCCT participants and comparison groups.

FINDINGS

The findings presented reflect themes that emerged from analysis of all data collection methods across all years of the grant. The findings are presented by research question; the first three questions address program impact, while the remaining five questions address program implementation.

Research Question 1

To address Research Question 1, “To what extent did the project increase the attainment of certifications, certificates, diplomas, or other recognized credentials?” Hezel Associates analyzed program completion rates of students enrolled in a TAACCCT Round 3 program.

BAS

DTCC’s total enrollment goal for the BAS program was six students. Throughout the project, 25 students enrolled. Three of these students completed the program and earned a two-year BAS degree, one student is still enrolled, and twenty-one withdrew. To assess differences in completion rates between the TAACCCT and comparison (students from DTCC’s similar HVAC program) groups, Hezel Associates conducted a chi-square statistic on the matched comparison group (containing 23 matches, 46 students total). Table 1 displays the number of students in each group who either completed or withdrew from their program. Students who were still enrolled were excluded from this table and the analysis.

Table 1. Crosstabulation of Program Completion by Group (BAS)

| Outcome | Frequency | |
|-----------|-------------|------------|
| | TAACCCT BAS | Comparison |
| Completed | 3 | 6 |
| Withdrew | 19 | 14 |

Note. Students who were still enrolled in the program were excluded from the table.

Chi-square statistic assumptions were not met, so Hezel Associates researchers used Fisher’s exact test to examine if there was a statistically significant difference in completion rates between the TAACCCT BAS and comparison groups. There was no significant difference between the completion rates of the two groups ($p = 0.269$, Fisher’s exact test).

ELM

The enrollment goal for the ELM program was 12 students. Throughout the project, 45 students enrolled. Seven of these students completed the program and earned a two-year ELM degree, one student is still enrolled, and thirty-seven withdrew. Hezel Associates conducted a chi-square statistic to assess significant differences in completion rates between the TAACCCT and comparison groups. Table 2 displays the number of students in each group who either completed or withdrew from their program. Students who were still enrolled were excluded from this table and the analysis.

Table 2. Crosstabulation of Program Completion by Group (ELM)

| Outcome | Frequency | |
|-----------|-------------|------------|
| | TAACCCT ELM | Comparison |
| Completed | 7 | 13 |
| Withdrew | 37 | 53 |

Note. Students who were still enrolled in the program were excluded from the table.

Given the discrepancy in sample sizes, researchers used Fisher's exact test to examine if there was a statistically significant difference in completion rates between the TAACCCT ELM and comparison groups. There was no significant difference between the completion rates of the two groups ($p = 0.801$, Fisher's exact test).

Food Safety

The total enrollment goal for the Food Safety certificate program was 36 students (18 credit, 18 non-credit). Thirty-two students enrolled in the for-credit Food Safety certificate program; six completed the program and earned a certificate, and the rest withdrew. Forty-four individuals completed the non-credit Food Safety certificate program. A comparison group was not identified for the Food Safety program, so difference in attainment of credentials could not be measured.

Other TAACCCT Credentials

Extant data on completion rates were provided for the NCRC, CPT, and Summer Bridge programs. Based on data from the document review and Participant Questionnaire, at least 10 ELM students enrolled in NCRC (goal of 20) and at least 1 student completed the certificate. Interview findings suggest students did well on the exam and found the program to be easy to complete. Seven students enrolled in CPT (goal of 16), but none have completed the test. According to interview data, students did not see the value of this credential and reported that it was too much work to complete the six-month training while enrolled in the ELM program. Lastly, DTCC aimed to have 90 students enroll in the Summer Bridge program. At least 17 students enrolled in Year 1, and 51 in Year 3. Staff indicated students did well in the program and excelled in college-level classes after completing the program.

All Programs

Table 3 displays a summary of the number of TAACCCT students who enrolled, completed credit hours, were still enrolled, completed the program, or withdrew from the program as of August 2017.

Table 3. Summary of Program Status

| Status | Frequency | | | |
|------------------------|-----------|-----|----------------------|-------|
| | BAS | ELM | Food Safety (credit) | Total |
| Enrolled | 25 | 45 | 32 | 102 |
| Completed Credit Hours | 23 | 40 | 30 | 93 |
| Completed Program | 3 | 7 | 6 | 16 |
| Still Enrolled | 1 | 1 | 0 | 2 |
| Withdrew | 21 | 37 | 26 | 84 |

Research Question 2

Research Question 2, “To what extent did project activities increase student retention rates for Trade Adjustment Assistance (TAA)-eligible workers and other adults?” was addressed by examining student program status. Students in the BAS, ELM, and Food Safety (credit) programs were considered retained if program status was *Completed* or *Still Enrolled*.

BAS

Table 4 displays the number of BAS and comparison group students (using matched pairs) retained in their program. A chi-square statistic was conducted and assumptions were met. There was no significant difference in retention between the BAS and comparison groups ($\chi^2 = 2.68$, $df = 1$, $n = 46$, $p = 0.102$).

Table 4. Crosstabulation of Program Retention by Group (BAS)

| Outcome | Frequency | |
|----------|-------------|------------|
| | TAACCCT BAS | Comparison |
| Retained | 4 | 9 |
| Withdrew | 19 | 14 |

ELM

Table 5 displays the number of ELM and comparison group students retained in their program. A chi-square statistic was conducted, but due to discrepant sample sizes, Fisher’s exact test is reported. There was no significant difference in retention between the ELM and comparison groups ($p = 0.800$, Fisher’s exact test).

Table 5. Crosstabulation of Program Retention by Group (ELM)

| Outcome | Frequency | |
|----------|-------------|------------|
| | TAACCCT ELM | Comparison |
| Retained | 8 | 13 |
| Withdrew | 37 | 53 |

Food Safety

Six students completed the Food Safety credit program and are considered retained, twenty-six withdrew. No comparison group was identified for the Food Safety program, so a difference in retention could not be measured.

All Programs

Table 6 displays a summary of the number of TAACCCT students who were retained in their TAACCCT program.

Table 6. Summary of Retention Across Programs

| Status | Frequency | | | |
|----------|-----------|-----|----------------------|-------|
| | BAS | ELM | Food Safety (credit) | Total |
| Retained | 4 | 8 | 6 | 18 |

Research Question 3

To determine the extent to which the project improved employment outcomes for students, Hezel Associates intended to examine extant data on program completers' employment and wage information. Since project staff were unable to obtain employment and wage data, Hezel Associates was unable to assess the impact of the program on these outcomes.

The Participant Questionnaire contains several variables about students' employment status and wages, so Hezel Associates referred to these data to garner information about these outcomes. Students were asked about their employment status since completing their program; however, this item was administered to all respondents regardless of whether they completed their program. The majority of respondents were still enrolled in their program at the time they completed the questionnaire. Table 7 denotes respondents' employment status. Respondents were either unemployed or working at the same company as before enrolling in the program.

Table 7. Employment Status

| Response | Frequency |
|---|-----------|
| I am working at the same company I was at before I started the program. | 6 |
| I am working at a different company than I was working at before I started the program. | 0 |
| I am not employed. | 4 |
| Total | 10 |

Of the six respondents that were working at the same company they were employed at prior to enrollment, five were in the same position at the time of questionnaire completion (Table 8), including the one respondent who completed his/her program. Three respondents—two Food Safety (credit) students and one BAS student—indicated their current job is related to their program, while two respondents—ELM and BAS students—have jobs that are unrelated. Furthermore, one ELM respondent indicated receiving a wage increase since enrolling in the program. Four of the Food Safety (credit) respondents and one BAS respondent indicated their wages stayed the same.

Table 8. Employment Status at Same Company

| Response | Frequency |
|--|-----------|
| I have the same job I had before I started the program. | 5 |
| I moved to an equivalent position with a similar salary range and job title. | 0 |
| I was promoted. | 0 |
| I was demoted. | 0 |
| Unsure | 1 |
| Total | 6 |

Students were asked whether the training they received in their program satisfied at least the minimum requirements for their current jobs. Two Food Safety (credit) respondents and one BAS respondent indicated the training received in their programs does satisfy the minimum

requirements for their current job. In addition, three respondents were unsure if they obtained the minimum requirements for their current job.

Most of the questionnaire respondents were still enrolled in their program at the time they completed the questionnaire; however, two ELM respondents agreed they have more employment options than before they started the program. Moreover, three Food Safety (credit) respondents reported they enrolled in further education, which is consistent with the extant data showing the six students completing the Food Safety credit program also enrolled in the two-year degree Food Safety program at DTCC.

Staff and employer interview data also revealed findings about student employment. Interviewees reported that the ELM industry is competitive. Employers are looking for technicians with work experience and students coming out of the program will be competing with people with years of experience. However, program completers are suited for entry-level technician positions and will be able to advance in their career with additional training and experience. Employers indicated the program provides the foundational technical skills and hands-on experience they are looking for in an employee. Some employers offer internships, which is a requirement of the program. For example, one company offers an internship in which students participate on a 3- to 4-month project, attending 3 days a week for 8 hours a day. During the internship, students have the opportunity to participate in meetings and trainings at the company. The ELM industry has been expanding; employers noted the workforce in this industry is aging and near retirement so they expect to have position openings. Some employers have already hired graduates and expect to hire their interns. Staff reported students are getting hired or going on for further education. DTCC has an articulation agreement with Southern Illinois University at Edwardsville (SIUE); some students are pursuing their bachelor's degree there while working.

BAS employers emphasized they are looking to hire candidates with real work experience in addition to a degree. There is a demand for BAS technicians in the area and students coming out of the program are prepared for these entry-level technician positions. Employers noted the program is a great starting point for students, as it provides foundational skills they are looking for in an employee. It is the nature of the industry to hire candidates as entry level employees and then provide on-the-job training that is specific to their company. Students receive hands on training in the lab at DTCC as part of the program and must complete a capstone project to earn their degree. Some employers have hired program graduates already and are happy with their performance. Per staff, all graduates have a job or are pursuing additional education. Employers are ready to hire students and feel the graduates are well positioned for employment, but there have not been enough students completing the program to fill their open positions.

Food industry employers indicated they have not had many openings for employment and when they do, the jobs tend to be seasonal. They reported the Food Safety certificate program provides basic skills, and program completers start in entry level positions with the potential for career advancement with additional training and experience. According to staff, the majority of students in the program are working and have continued on to the two-year degree program at DTCC. Some students received promotions at their current job after earning the certificate. Staff expect students will receive an increase in wages.

Research Question 4

Hezel Associates interviewed staff and employers to answer Research Question 4, “How was the particular curriculum selected, used, or created?” The programs were primarily developed internally by program staff; however, they received input from advisory boards and purchased some curricula through outside vendors.

The ELM program was an existing program at DTCC, which program staff improved with grant funds. Staff convened an advisory board made up of industry partners and received feedback on the skills needed in the current labor market. The new ELM program was redesigned to be more in line with what employers are looking for in an employee. Staff eliminated courses that were not aligned with current trends in the industry, and added new courses. The format of the program is mostly face-to-face with a lab component for hands-on training. The program also includes a portable training program, which employers can use onsite at their company to train current employees. The portable curriculum was purchased through Pearson and program staff checked with the National Center for Construction Education and Research to make sure they are delivering training topics currently in demand.

ELM students had the opportunity to earn two additional credentials while enrolled in the program. The NCRC curriculum was purchased through ACT. The curriculum targets soft skills, such as interviewing and résumé writing. In addition, program staff obtained the CPT course through ToolingU. Through this program, students earn a stackable certificate with which they can gain employment and earn credit toward the ELM program.

The BAS program is a new program at DTCC. The program was designed with industry input, which was gathered through an advisory board made up of industry experts. These local industry partners provided recommendations on text books, equipment, curricula, and program design. Program staff also looked at other institutions’ BAS programs for ideas. The new BAS program integrates some of DTCC’s engineering courses as well as additional new courses. The format of the classes is face-to-face with a lab component for hands-on training. Program staff recruited at STEM related activities and noted it has been a difficult program to sell to students. They typically generate interest in the program by offering tours of the lab to prospective students.

The Food Safety certificate program is a new program that is aligned with DTCC’s Food Safety degree program, with both a credit and non-credit option. The program is a hybrid format, offering both face-to-face and online coursework. The students gain hands on experience in the kitchen facility developed to mimic a restaurant environment. Program staff developed the certificate program with input from an advisory board and an instructional designer. In addition, the program lead attended local industry training to understand how to integrate in-demand skills into the program.

As part of the grant, program staff also developed a remedial Summer Bridge program that prepares Food Safety students for college-level courses. The bridge program is based on an existing developmental program at DTCC, which was adapted to align with the Food Safety curriculum.

Curriculum development mostly occurred in Year 1 of the grant for all programs, with curriculum review and minor revisions taking place in Years 2–4. Advisory boards continuously met to review and revise curriculum with program staff throughout the grant. Program enrollment started at the end of Year 1 for BAS and ELM, and in Year 2 for Food Safety. There were some delays in the kitchen renovations for the Food Safety program, but program staff started by marketing the non-credit certificate program to the Department of Corrections, helping inmates learn marketable skills to utilize once they are released. All programs enrolled students throughout Years 2–3. Target enrollment numbers were typically met for all programs; however, they had difficulty with program retention and completion.

Most program staff and employer partners had positive feedback about the curricula and design of each program. Employers were happy with the amount of hands-on experience students receive during the program, and feel the curricula are aligned with what they are looking for in employees. One ELM and one BAS employer noted they would like the curricula to be more tailored to the specific skills they need at their companies. Program staff reported that the programs are designed to teach basic, foundational skills because equipment or processes may differ across companies. Program staff and many employers noted that teaching more specific skill sets would be a lot to fit in a two-year degree program. The intention of the two-year programs is to provide the basic skills needed to be hired in an entry-level position. It is expected that students will progress in their company after completing company-specific training.

Research Question 5

Research Question 5 asks, “How was the project managed and implemented?” To answer this question, Hezel Associates examined how the programs were improved or expanded using grant funds (Research Question 5.1). Grant funds were used to improve one existing program (i.e., ELM) and develop several new programs (i.e., BAS, Food Safety certificate) and supplementary programs (i.e., Summer Bridge, NCRC, CPT). Funds enabled staff to obtain or develop new curricula, hire additional faculty or lab technicians, and procure equipment for students to train with.

Hezel Associates also examined the different delivery methods employed at each program (Research Question 5.2). The ELM and BAS programs have a face-to-face format with a lab component. The ELM program also has a required internship. The portable training option of the ELM program is offered onsite at company locations; there was mixed feedback on this depending on the employer—some prefer to have the onsite training, others prefer to have employees go to the college for training. Furthermore, the NCRC and CPT trainings are offered online, but students have the option to seek out help on DTCC’s campus.

The Food Safety program is hybrid, a mix of face-to-face time and online learning. The program also incorporated field trips and use of a kitchen facility for learning in a restaurant environment. The credit program is 16–22 weeks, and the non-credit program is a condensed version offered over 6 weeks. The Summer Bridge program is partially offered online, but includes class time to review material. The program occurs over 4 weeks in the summer.

Research Question 5.3 addresses the administrative structure of the project. The project lead is the PI, who is responsible for overseeing the implementation of the grant at DTCC. Program staff had positive feedback about the project leadership. There was a change in PI part-way through the grant, though staff reported this was a smooth transition. In addition to the PI, the program leads oversee the implementation of each program (i.e., ELM, BAS, Food Safety). There are also campus leads at each DTCC campus to direct implementation activities at each campus. Moreover, each program has program managers leading curriculum development and program design. Faculty also contribute to curriculum development, in addition to teaching courses. Overall, program staff had positive feedback about the administrative structure of the grant, noting there was regular communication.

Lastly, Research Question 5.4 addresses support services offered as a result of the grant. According to document review and interview findings, there were no student support services specific to the grant, or developed with grant funds. Students in each program had access to DTCC student services such as tutoring or career counseling; however, these services were not part of the grant. Program staff from each program have helped students find internship or job opportunities. In addition, during the fall semester following the Summer Bridge program, mentors are assigned to students to ensure students are progressing through their college-level courses successfully.

Overall, the programs were implemented with fidelity to the work plan. Program staff noted that implementation of the Round 3 grant was somewhat easier given the institution's prior experience with previous TAACCCT grant rounds, which provided them familiarity with the funding and reporting processes. Program staff expect the BAS, ELM, and Food Safety programs will be sustained with continued student enrollment. Food Safety program staff are looking for ways to expand the program, adding more specialized pieces to the program. Program staff also expect the Summer Bridge program will be sustained; however, they are looking for ways to help students with the tuition costs. On the other hand, ELM program staff are not optimistic about the continuation of the CPT training due to lack of interest from students.

Research Question 6

Hezel Associates referred to evidence from the document review to answer Research Question 6, "Did the grantees conduct an in-depth assessment of participants' abilities, skills, and interests to select participants into the grant program?" and the associated subquestions. The TAACCCT Round 3 programs did not utilize in-depth assessments to select participants. Students are expected to take placement exams to determine the need for developmental courses; however, there were no other assessments conducted.

BAS program staff reported a high student attrition rate. They indicated many of the students were not prepared and had a lack of STEM background. There were no selection criteria to enroll students in the program other than placement exams. Many of the students in the program needed development courses, and some were unable to get through those courses.

Research Question 7

Research Question 7 asks, "What contributions did each of the partners make in terms of (a) program design, (b) curriculum development, (c) recruitment, (d) training, (e) placement, (f)

program management, (g) leveraging of resources, and (h) commitment to program sustainability?” Industry partners largely contributed to grant activities by participating in advisory boards. The ELM, BAS, and Food Safety programs each had an advisory board comprised of program staff, local employers, and industry experts. Advisory boards met regularly throughout the grant period and discussed topics such as program design, curriculum, and job opportunities. While much of the curricula were developed by DTCC staff, industry partners reviewed and gave feedback on content.

Industry partners also provided students with industry exposure, through in-class presentations, attending career fairs, conducting mock interviews, or offering site tours at their facilities. ELM industry partners offer internship opportunities. One employer reported that at the end of the internship, they review and help develop students’ résumés and students leave the internship with a portfolio they can show future employers to demonstrate their experience. In addition, most employers from each program reported to have hired or are expecting to hire program graduates.

The employers interviewed reported being actively involved in the grant activities and expect to continue to partner with DTCC after the grant. Employers see a value in the partnership because these programs are tailored to industries that have a demand for new employees. The programs are designed to develop entry level employees that will have the basic skills needed to be successful in the industry. Furthermore, employers that offer internships can experience the work quality of students before making hiring decisions. Partners may be less likely to participate in the partnership if the employees they need require a specific skill set not addressed by the programs. The most critical industry partner contributions appear to be the input on program design, curricula, and equipment, as students are receiving training on topics that are relevant to the workplace, and gaining hands on experience in those areas.

Research Question 8

To assess the extent to which project activities resulted in desired student perceptions of the program, Hezel Associates examined data from the Participant Questionnaire—administered to TAACCCT students in the BAS, ELM, and Food Safety programs in Years 3 and 4 of the grant. Eleven students completed the questionnaire in Year 3 and two students completed the questionnaire in Year 4. Due to the low response rate, data from Years 3 and 4 were combined (Hezel Associates confirmed each respondent was a unique TAACCCT participant). There were a total of 13 respondents, 4 in the BAS program, 4 in ELM, and 5 in Food Safety (credit). Table 9 displays demographic information about the questionnaire respondents. In addition, of the nine respondents who reported their age, the youngest was 19 and oldest was 63 ($M = 39.2$, $SD = 16.36$).

Table 9. Demographics

| Demographics | Frequency |
|---|-----------|
| <i>Gender</i> | |
| Male | 8 |
| Female | 3 |
| <i>Race/Ethnicity^a</i> | |
| White/Caucasian | 7 |
| Black/African American | 4 |
| American Indian/Alaskan Native | 2 |
| Asian | 2 |
| Hispanic/Latino | 0 |
| Native Hawaiian/Pacific Islander | 0 |
| <i>Rights Criteria</i> | |
| Trade Adjustment Assistance (TAA) eligible ^b | 1 |
| Veteran/Spouse eligible for Priority of Service | 0 |

^a Respondents had the option to select more than one race/ethnicity.

^b Four respondents were unsure about their TAA eligibility.

Respondents had varying degrees of education prior to enrolling in the program (Table 10), and the majority (8) had prior work experience (Table 11). About half (5) of the respondents had work experience in a field related to their program.

Table 10. Highest Level of Education

| Response | Frequency |
|---|-----------|
| Completed some high school | 0 |
| High school diploma or equivalent | 1 |
| Some college | 3 |
| Earned a one-year (or less) certificate | 1 |
| Associate's (2-year) degree | 0 |
| Bachelor's (4-year) degree | 2 |
| Master's degree | 0 |
| Doctoral degree | 0 |
| Other ^a | 2 |
| Total | 9 |

^a One respondent reported completing 4 years of electrical apprenticeship training, the other respondent did not provide an explanation of "Other."

Table 11. Prior Work Experience

| Response | Frequency |
|--|-----------|
| I did not have any prior work experience. | 2 |
| I had experience in a field similar to my program. | 5 |
| I had experience in an unrelated field. | 3 |
| Total | 10 |

Respondents were also asked about what motivated them to enroll in their program. Table 12 displays students' responses regarding reasons for enrolling. The most commonly identified reasons for enrolling were "*Interest in the field*" and "*To gain new skills.*"

Table 12. Reasons for Enrolling

| Response | Frequency |
|--|-----------|
| Interest in the field | 8 |
| To gain new skills | 8 |
| To get a job | 3 |
| To receive a promotion at my current place of employment | 4 |
| To receive higher wages | 6 |
| Other ^a | 2 |

Note. Respondents had the option to select more than one response.

^a No description of “Other” was provided.

Four Food Safety (credit), three BAS, and three ELM respondents were still enrolled in their program at the time they completed the questionnaire; one Food Safety (credit) respondent completed the program. As part of DTCC’s TAACCCT Round 3 grant, students had the opportunity to complete a remedial Summer Bridge program or earn additional credentials (i.e., NCRC, CPT certificate). None of the questionnaire respondents indicated they completed the remedial Summer Bridge program nor the CPT certificate. One respondent (in the ELM program) earned the NCRC.

Figure 1 displays students’ responses to the extent to which they feel prepared for the work setting since enrolling in or completing their program. Overall, most students agreed to some extent that they feel prepared to perform the listed tasks in a work setting. One Food Safety (credit) respondent disagreed that the program prepared him/her to troubleshoot technical problems, use required computer software, and apply technical and writing skills.

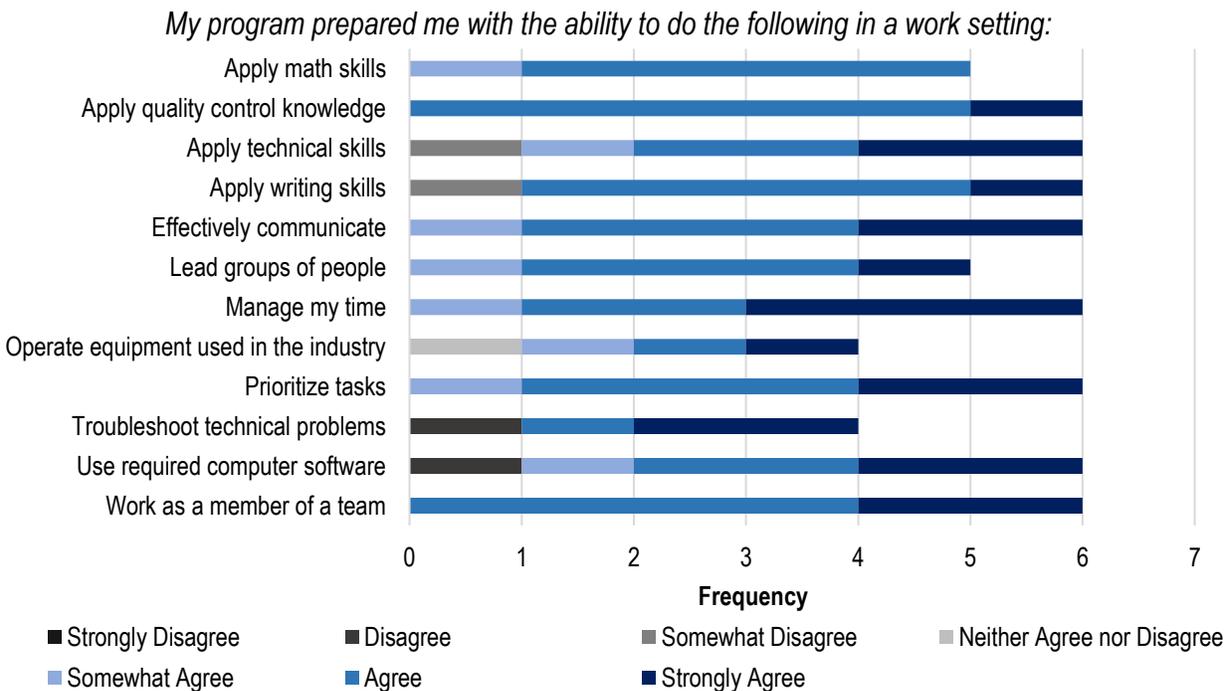


Figure 1. Students’ perceptions of the degree to which their program prepared them to perform various tasks in the workplace.

EVALUATION LIMITATIONS

The ELM and BAS extant student data consisted of a small population of program participants. This is important to consider when interpreting findings regarding program impact. Though the chi-square tests revealed no significant differences on completion and retention rates between TAACCCT and comparison groups, this may be due to the sample size. In order to detect an effect of the program on student outcomes, there would have to be a large effect given the small sample size. Program effects are more likely to be detected in a larger sample. In addition, without a Food Safety comparison group, true increases in program completion and retention rates cannot be concluded.

CONCLUSIONS

Based on the findings that emerged from data collected throughout the four-year grant, Hezel Associates developed the following conclusions:

Enrollment was on target for most programs, but retention was a challenge. DTCC met most of their enrollment goals for the BAS, ELM, and Food Safety programs; however, few students completed their program. Across these three programs, 102 students enrolled, 93 earned credit hours, 16 completed the program, and 2 are still enrolled. There was no significant difference in completion rates between TAACCCT and comparison groups when analyzing BAS and ELM data; however, there was a low completion rate for the comparison groups as well. Retention may not only be a challenge for TAACCCT-funded programs, but across the institution.

Program completers are well-positioned for entry-level jobs. Though employment outcomes could not be fully assessed, interview data provided some insight surrounding the employability of TAACCCT participants. Project staff indicated that most program completers are able to find employment or continue on to further their education. The programs provide students with the foundational skills needed to obtain employment in the industry and advance with additional on-the-job training. Throughout the program, students gain hands-on experience in labs that mimic the work environment, and receive career guidance such as résumé development.

Programs are aligned with local industry need. Project staff worked with advisory boards, made up of regional industry experts, to develop curricula that include skills relevant to the current labor market. Employers confirmed the curricula include skills they are looking for in an employee. In addition, grant funds enabled DTCC to establish labs with equipment that allow students to have hands-on learning opportunities. As part of the ELM and BAS programs, students also have the opportunity to participate in internships. Having hands-on practice to develop skills is important for finding employment, as employers reported they are looking to hire applicants that can demonstrate mastery of skills.

DTCC developed positive relationships with local employers. Overall, local industry partners had positive opinions of the TAACCCT programs and working with DTCC. They expect to continue working with DTCC in the future. Having this relationship with local employers was a critical piece for preparing students for in-demand careers in the region. Employers have been

happy with the performance of program completers so far and plan to continue hiring program graduates.

Students feel prepared to apply their skills in a work setting. TAACCCT participants who responded to the questionnaire mostly agreed that their program prepared them to apply a variety of technical and soft skills in a work setting. Technical skills included operating equipment or machinery, troubleshooting technical problems, and using computer software. Soft skills included effective communication, prioritizing tasks, managing time, and working as a member of a team.

RECOMMENDATIONS

Based on the evaluation, Hezel Associates offers the following recommendations for the continued improvement and sustainability of programs developed under TAACCCT Round 3.

Focus on retention. To address challenges with retention, DTCC should consider developing in-depth assessments of students during the application process, beyond placement exams. Having a deeper understanding of an applicant's background may help staff develop an attainable trajectory through the program for each student. DTCC may also designate a staff member to check-in with students periodically to revise this trajectory as needed along the way.

BAS staff noted that many students do not complete the program because they are unable to get through the courses, which may be due to lacking foundational STEM knowledge or developmental skills. Having a developmental program for STEM program students, similar to the Summer Bridge program for the Food Safety program, may help bring students to the level required to succeed in these programs. The National STEM Consortium¹ developed free developmental STEM programs under a Round 1 TAACCCT grant that could be incorporated into the BAS program or used as a model.

Review marketing strategies. Project staff should continuously review the intended market for each program, including credit and non-credit programs. An essential element for marketing to prospective students is focusing on the opportunity for employment. Incorporating endorsements from local employers and sharing student success stories may encourage students to complete their programs of study. One way to share this information is through a webpage dedicated to each program. The webpage can serve as a hub for applicants to learn more about where the program can take their career.

Plan for sustainability. One obstacle to the continuation of the programs is lack of funding and other resources. Pursuing additional grant funding would be worthwhile; however, staff should focus on securing funding for aspects of the programs that are valued. For example, having labs with up-to-date equipment and internship opportunities were critical aspects of the program model, as they provided students the opportunity to practice skills. However, the CPT, NCRC, and portable training module were not highly utilized. Staff should revisit regional demand for such credentials and training options to determine if they are still worth marketing. Potential funders include the National Science Foundation, particularly the Advanced Technology

¹ <http://oli.cmu.edu/courses/free-open/stem-foundations/>; <http://oli.cmu.edu/courses/free-open/stem-readiness/>

Education program; the Bill & Melinda Gates Foundation; as well as several STEM-specific opportunities listed on the U.S. Department of Education website².

Continue employer partnerships. Input from local industry was an integral part of the TAACCCT programs. DTCC staff should develop a strategic plan, identifying staff who will actively manage these relationships. Sustained partnerships with local employers is important for the institution, its students, and local employers. Industry will continue to change, so having regular input from local employers will ensure programs are aligned with what employers need.

² <http://www2.ed.gov/about/offices/list/ovae/pi/cclo/stem.html>

APPENDIX A: DETAILED METHODOLOGY

The purpose of Hezel Associates' evaluation was to provide DTCC and USDOL with rigorous formative and summative feedback on DTCC's Round 3 TAACCCT programs. This feedback includes details about program impact and implementation fidelity and quality. Hezel Associates researchers developed a set of research questions pertaining to program impact and implementation to guide evaluation activities. To answer research questions pertaining to implementation, Hezel Associates used a *convergent parallel* mixed methods design, collecting both qualitative and quantitative data simultaneously, analyzing each separately, and then triangulating findings (Creswell, 2014). In this evaluation, qualitative data were collected through document review and interviews with program staff and employer partners. Quantitative data were collected through a participant questionnaire. Moreover, to answer research questions pertaining to program impact, Hezel Associates researchers used a quasi-experimental design. For this part of the evaluation, DTCC shared extant data with Hezel Associates, including data for program participants and students from comparison groups.

The following sections describe the sampling, instrumentation, data collection, and analysis processes used for the evaluation of TAACCCT Round 3 programs.

Sample

Hezel Associates collected data from a variety of program stakeholders, including program staff and faculty, employer partners, and program participants. In addition, DTCC shared extant data with Hezel Associates on program participants and comparison groups. Each of these groups of individuals are described in the following sections.

Program Staff and Faculty

Program staff and faculty included individuals involved in the development and implementation of the programs as well as faculty teaching the courses implemented under the grant. Program staff and faculty were asked to participate in interviews with Hezel Associates. The PI provided Hezel Associates a list of program staff and faculty each year data were collected from this group (i.e., Years 1, 3, and 4). Hezel Associates used convenience sampling; all individuals on the list were recruited and interviews were conducted with program staff and faculty willing to participate. Table A1 displays the number of program staff and faculty that were recruited and participated in interviews each year.

Table A1. Program Staff and Faculty Interview Recruitment and Participation

| Year | Program | Recruited | Participated |
|------|---------------|-----------|--------------|
| 1 | ELM | 1 | 1 |
| | BAS | 1 | 1 |
| | Food Safety | 4 | 2 |
| | Summer Bridge | 1 | 1 |
| | NCRC | 2 | 2 |
| 3 | ELM | 1 | 1 |
| | BAS | 1 | 1 |
| | Food Safety | 3 | 3 |
| | Summer Bridge | 1 | 1 |
| | NCRC | 2 | 2 |

| Year | Program | Recruited | Participated |
|------|---------------|-----------|--------------|
| 4 | ELM | 1 | 1 |
| | BAS | 2 | 2 |
| | Food Safety | 2 | 1 |
| | Summer Bridge | 1 | 0 |
| | NCRC | 2 | 1 |

Employer Partners

Employer partners included individuals employed at local companies involved in the development and implementation of the programs implemented under the Round 3 grant. Employer partners were asked to participate in interviews with Hezel Associates. The PI provided Hezel Associates a list of employer partners each year data were collected from this group (i.e., Years 2–4). Hezel Associates used convenience sampling; all individuals on the list were recruited and interviews were conducted with employer partners willing to participate. Table A2 displays the number of employer partners that were recruited and participated in interviews each year.

Table A2. Employer Partner Interview Recruitment and Participation

| Year | Program | Recruited | Participated |
|------|-------------|-----------|--------------|
| 2 | ELM | 8 | 4 |
| | BAS | 4 | 4 |
| | Food Safety | 5 | 4 |
| 3 | ELM | 8 | 1 |
| | BAS | 5 | 4 |
| | Food Safety | 5 | 1 |
| 4 | ELM | 9 | 2 |
| | BAS | 5 | 2 |
| | Food Safety | 5 | 2 |

Student Participants

Student participants are students who were enrolled in a TAACCCT Round 3 program during the grant period (i.e., students in the ELM, BAS, and Food Safety programs, students from these programs may also have been enrolled in NCRC, CPT, and Summer Bridge). Students were asked to complete a questionnaire in Years 3 and 4 of the grant. All students who participated in a program were invited to complete the questionnaire. Table A3 displays the number of students in each program who completed the questionnaire.

Table A3. Student Participant Questionnaire Participation

| Year | Program | Participated |
|------|-------------|--------------|
| 3 | ELM | 2 |
| | BAS | 4 |
| | Food Safety | 5 |
| 4 | ELM | 2 |
| | BAS | 0 |
| | Food Safety | 0 |

In addition, extant data on student participants were shared with Hezel Associates to assess the impact of the program. Data for students who enrolled in the TAACCCT ELM, BAS, and Food Safety programs were shared with Hezel Associates for the analysis.

Comparison Groups

To assess program impact using a quasi-experimental design, Hezel Associates worked with the PI to identify comparison groups for each program. The ELM comparison group was comprised of students enrolled in the pre-existing ELM program (i.e., students who were enrolled in this program prior to the start of TAACCCT Round 3). Since student participant data spans the 4-year grant period, comparison group data (historic ELM data) from up to four years prior to TAACCCT Round 3 were shared for the analysis.

The BAS comparison group was comprised of students enrolled in DTCC’s HVAC degree program. This is a current program at DTCC, which is similar to DTCC’s new BAS degree program. Data from students enrolled in the HVAC degree program during the 4-year TAACCCT Round 3 grant period were shared with Hezel Associates for analysis.

Hezel Associates and DTCC were unable to identify a comparable group for the Food Safety program. The Project Leader and PI reviewed DTCC’s current and historic certificate programs and were unable to find a certificate program that was similar enough to serve as a basis for comparison for the new TAACCCT Round 3 Food Safety certificate program. Thus, there was no comparison group for the Food Safety program.

Table A4 displays the number of students in each TAACCCT Round 3-funded program, and the number of students in the respective comparison groups. It is important to note that due to the large discrepancy in sample size of the BAS TAACCCT and comparison groups, Hezel Associates identified 23 matched pairs (23 individuals from each group) based on age and gender. The data from these matched pairs were used in the impact analysis.

Table A4. Student Participant and Comparison Group Size

| Program | TAACCCT | Comparison |
|------------------|---------|----------------|
| ELM | 45 | 66 |
| BAS ^a | 25 | 109 |
| Food Safety | 32 | - ^b |

^a 23 matched pairs (23 TAACCCT and 23 Comparison cases) were used in the analysis.

^b No comparison group was identified.

Instrumentation

Hezel Associates developed four instruments for the evaluation: Document Review Framework, Staff/Faculty Interview Protocol, Employer Interview Protocol, and Participant Questionnaire. Once developed, each instrument was approved by DTCC staff and Hezel Associates’ institutional review board (IRB), Solutions IRB. Each instrument is described in detail in the following sections.

Document Review Framework

Hezel Associates designed the Document Review Framework based on the work plan developed by DTCC staff (included in the technical proposal to USDOL). The work plan outlines major activities and milestones for the implementation of the programs, as well as a timeline for implementation. Based on this work plan, Hezel Associates developed the Document Review Framework as a matrix of the activities, milestones, and timeline specified in the work plan. The framework served as a basis for reviewing program documents. The framework was divided into 6 main activities and 57 milestones over the course of the 3 implementation years of the grant (Years 1–3). The primary purpose of this instrument was to address Research Questions 4–7. The Document Review Framework is included as Appendix B.

Staff/Faculty Interview Protocol

Hezel Associates created a semi-structured interview protocol to guide conversations with program staff. The protocol contains 13 open-ended questions (some questions changed depending on the year of the grant) under 5 main topics: organizational structure and governance, curriculum development, program design, partner support, and broader view and the future of grant activities. The open-ended questions were designed to obtain feedback from respondents regarding their perceptions of the organization of the project, how curricula for the educational pathways are being developed, how the new TAACCCT Round 3 grant programs are designed, and thoughts on the progress of the grant. The intent of this instrument was to gather data to address Research Questions 4, 5, and 7. The Staff/Faculty Interview Protocol is included as Appendix C.

Employer Partner Interview Protocol

Hezel Associates developed a semi-structured interview protocol to guide conversations with employers and industry stakeholders. The protocol contained ten open-ended questions under three main topics: background of the company, involvement with DTCC, and alignment with industry needs. The open-ended questions were designed to obtain feedback from respondents regarding (a) their relationship with DTCC, (b) their contributions to TAACCCT Round 3, (c) alignment between the employer and their relevant program, (d) the type of worker or specific skills needed, and (e) thoughts on the progress of the grant. This instrument was used to address Research Questions 4, 5, and 7. The Employer Partner Interview Protocol is included as Appendix D.

Participant Questionnaire

Hezel Associates developed a 26-item questionnaire to gather student perceptions of the TAACCCT Round 3 grant-funded programs and to address Research Question 8. The questionnaire contains 24 multiple choice items and 2 open ended items, covering topics such as enrollment, work experience, the Remedial Summer Bridge program, credentials, employment and wages, and demographics. The questionnaire was programmed in Qualtrics, an online survey program, and administered online to program participants in Years 3 and 4. The Participant Questionnaire is included as Appendix E.

Data Collection

Hezel Associates gathered data in a variety of ways throughout the evaluation, including collection of program documents and student extant data, interviews, and a questionnaire. The data collection processes are described in the following sections.

Document Review

DTCC project staff gathered and organized program documentation pertaining to the implementation of TAACCCT Round 3 activities and milestones outlined in the Document Review Framework. Once documentation was gathered, the PI uploaded documents to the secure file transfer protocol (SFTP). A total of 67 documents were collected throughout Years 1–3, detailing the progress made toward implementing the program and enrolling students. Documents included emails, meeting minutes, recruitment materials, enrollment records, and quarterly reports. Once documents were received, the Hezel Associates Project Leader logged each document in a tracking sheet, noting the name of the document, the date, and a brief description of the contents.

Student Extant Data

Hezel Associates developed a list of variables needed from DTCC’s institutional research office to measure the impact of the TAACCCT Round 3 programs. The list included variables for students in the ELM, BAS, and Food Safety programs, as well as students in the comparison groups (i.e., ELM program prior to TAACCCT, and HVAC program). Variables spanned topics such as demographics, grades, degree and credential attainment, credits, education history, remedial courses, and wages and employment. Hezel Associates submitted the variable list to the institutional research office in February 2017. DTCC shared the requested student extant data with Hezel Associates in August 2017 via DTCC’s SFTP.

While DTCC was able to provide most of the data requested, they were unable to obtain employment and wage data from the Delaware Department of Labor (DDOL). DTCC staff made considerable efforts to obtain these data. In Spring 2013, they began working with DDOL to access employment data; DTCC had a data sharing agreement in place with DDOL that granted them access to aggregate data for students they requested. Later in Fall 2013, DTCC staff received an aggregate report from DDOL; however, these reports were not sufficient for comparison purposes.

Staff and Faculty Interviews

Staff and faculty interviews were conducted by Hezel Associates researchers in Years 1, 3, and 4 of the grant. For each round of interviews, the PI emailed a list of faculty and staff members contributing to the implementation of TAACCCT Round 3 to Hezel Associates. A Hezel Associates researcher sent a recruitment email to the potential respondents inviting them to participate in a phone interview. A reminder email was sent to potential respondents who did not respond to the initial email. Once staff and faculty responded to the recruitment email, a confirmation email was sent noting the date and time of the phone interview and containing informed consent language as an attachment. At the time of the scheduled interview, a Hezel Associates researcher called to confirm consent, conduct the interview, and record the interview with permission. In cases where participants did not want to be recorded, the researcher took notes. Interview recordings were later transcribed for analysis. Seven interviews were conducted

in Year 1, eight in Year 3, and five in Year 4. Some staff were interviewed in more than one year.

Employer Partner Interviews

Employer partner interviews were conducted by Hezel Associates researchers in Years 2–4 of the grant. For each round of interviews, the PI emailed a list of employer partners contributing to the implementation of TAACCCT Round 3 to Hezel Associates. A Hezel Associates researcher sent a recruitment email to the potential respondents inviting them to participate in a phone interview. A reminder email was sent to potential respondents who did not respond to the initial email. Once employer partners responded to the recruitment email, a confirmation email was sent noting the date and time of the phone interview and containing informed consent language as an attachment. At the time of the scheduled interview, a Hezel Associates researcher called to confirm consent, conduct the interview, and record the interview with permission. In cases where participants did not want to be recorded, the researcher took notes. Interview recordings were later transcribed for analysis. Twelve interviews were conducted in Year 2, six in Year 3, and six in Year 4. Some employers were interviewed in more than one year.

Participant Questionnaire

In Years 3 and 4 of the grant, Hezel Associates administered the Participant Questionnaire for students enrolled in the newly developed programs. The questionnaire was administered using Qualtrics survey software. Hezel Associates provided a link to the questionnaire to DTCC project staff who then distributed invitation emails with the questionnaire link to students. The invitation email was sent to students in the BAS, ELM, and Food Safety programs. Informed consent text was included in the invitation email, and students provided consent by clicking the questionnaire link provided. In Year 3, the questionnaire remained available to students from early May to mid-July of 2016. In Year 4, the questionnaire remained available to students from mid-April to July of 2017. Raw data were downloaded directly from Qualtrics by Hezel Associates researchers. Once the data were downloaded, Hezel Associates applied a standard set of data cleaning procedures before analysis (e.g., checking for correct response coding). Ten students completed the questionnaire in Year 3 and two completed the questionnaire in Year 4.

Data Analysis

Hezel Associates conducted qualitative content analysis of program documents and interview data, and quantitative analysis of student questionnaire and extant data. Analysis of program documents, interviews, and student questionnaire data were conducted separately. Findings from each source were synthesized to answer research questions pertaining to program implementation. Analysis of student extant data was conducted separately and findings were used to answer research questions regarding program impact. Each analysis method is described in detail below.

Document Review

Hezel Associates indexed and assessed documents received in relation to the established framework. All provided documentation included dates, which indicated when grant-related events occurred. Hezel Associates researchers assessed how the project was implemented by determining compliance with the milestones and deliverables according to the project timeline as outlined in the framework. Notes recorded under “Evidence” were analyzed for concepts related

to Research Questions 4 through 7. Analysis of documents was conducted separately from interview and questionnaire analysis; however, once data from each source were analyzed, findings from the document review were used to build upon themes that emerged from the interviews where applicable.

Interviews

Data from staff and faculty, and employer partner interviews were analyzed in identical ways. As both protocols were established prior to the beginning of data collection, researchers used a *preordinate scheme* to guide the content analysis. Hezel Associates researchers used interview transcripts as the basis for this analysis. From the loose written transcriptions collected during the interviews, researchers applied an open coding approach (Strauss & Corbin, 1998). This method parsed lengthy discussions into bits of content, which were fitted to the conceptual framework established by the questions of interest: how was the program managed and implemented, and what contributions did each of the partners make to the project. Each excerpted bit was tested against not only the construct addressed by the evaluation question, but also against the accumulating narrative content associated with it, applying a condensed *constant comparative method* to isolate each construct and clarify how it was labeled or *coded* (Dey, 1993). Researchers identified logical linkages among the named constructs. These patterns or *threads*, once identified, raised descriptions to low-level inferences in order to develop recommendations. This process was continued until the data set was exhausted and the resulting set of concepts captured the full range of ideas from the employer partners and staff and faculty members. Once interview analysis was complete, the resulting themes were compared to findings from the document review to answer research questions about program implementation.

Participant Questionnaire

Hezel Associates researchers ran descriptive statistics on the Participant Questionnaire data, calculating frequency of responses. Due to the small sample size, calculating percentage of responses and inferential statistics were deemed inappropriate for this dataset. Findings were used to answer Research Question 8.

Student Outcomes Data

Hezel Associates researchers analyzed extant data on ELM, BAS, and Food Safety students to answer Research Questions 1–3. The ELM and BAS datasets also included comparison group data. Once Hezel Associates researchers received the dataset from DTCC, they performed a series of data quality and integrity checks to ensure accuracy of findings.

The ELM TAACCCT and comparison groups had similar sample sizes and gender ratio so matching was not conducted. The BAS TAACCCT and comparison groups sample sizes greatly differed, so Hezel Associates researchers randomly matched students based on age and gender using Stata statistics software, more specifically the “*ccmatch*” function. The resultant dataset contained 23 matches, or 46 student cases. The Food Safety dataset only contained data for TAACCCT participants as no comparison group was identified.

For the ELM and BAS datasets, Hezel Associates conducted chi-square tests to assess differences in program completion and retention rates between the TAACCCT and comparison groups. When chi-square test assumptions were not met, Hezel Associates reported Fisher’s

exact test. Descriptive statistics were used to analyze the Food Safety program since there was no comparison group to assess differences.

References

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Los Angeles, CA: SAGE Publications.

Dey, I. (1993). *Qualitative data analysis: A user-friendly guide for social scientists*. London, UK: Routledge.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: SAGE Publications.

APPENDIX B: DOCUMENT REVIEW FRAMEWORK

TAACCCT Round 3 Grant Document Review Framework

| | |
|---------------------|--|
| Format | Qualitative research to assess fidelity with which program activities were implemented and in compliance with the timeline. |
| Timeline | Data collection and analysis will be conducted annually throughout the grant. |
| Process | <p>Documents will be collected through the Principal Investigator. Documents will be provided to Hezel Associates via email or secure file transfer protocol (SFTP) using Hezel Associates' internal server dependent upon the sensitivity of the documentation.</p> <p>The activities in the work plan will guide the identification of documentation to use as evidence. Once documents have been collected and sorted, content in each document will be examined and entered in the following matrix aligned with the appropriate milestones. Hezel Associates will list each document and what DTCC has done to justify fulfilling that milestone under Evidence. The date that that dimension was fulfilled will be listed under Date. Status for meeting the listed milestones will be marked <i>met through self-reporting, met through documentary evidence, met outside the timeframe, met with no reference to the timeframe, not addressed by the documentation, or in progress</i>.</p> |
| Instructions | Provide documentation supporting milestones, activities, and deliverables listed in the following matrix. Include any evidence of program implementation and compliance with timeline. Documents can be submitted as attachments via email or using Hezel Associates' internal server via SFTP if documents contain sensitive information. Hezel Associates will fill in Date, Status, and Evidence boxes during analysis. |
| Definitions | <p>Year: Year of the grant in which the milestone will be met</p> <p>Milestone: Milestones as listed in the work plan included in the technical proposal</p> <p>Deliverable: Project deliverables as defined in the work plan</p> <p>Date Accomplished: Date the milestone was met</p> <p>Status: Status for meeting milestones: Met through self-reporting, met through documentary evidence, met outside the timeframe, met with no reference to the timeframe, not addressed by the documentation, or in progress</p> <p>Evidence: Document providing evidence of milestone and explanation for how the milestone was fulfilled.</p> |

| Manufacturing Activity 1: Develop and implement soft skills curriculum and certify soft skills through NCRC+ examinations. | | | | | |
|---|---|--|--------------------------|---------------|-----------------|
| Year | Milestones | Deliverables | Date Accomplished | Status | Evidence |
| 1 | a. Develop soft skills curriculum and integrate with foundational courses | 1. Curriculum for foundational courses with soft skills embedded. 2. Infrastructure for NCRC+ testing | | | |
| | b. Obtain institutional approval for programs | | | | |
| | c. Conduct instructor training | | | | |
| | d. Enroll 2 students | | | | |
| 2 | a. Enroll 8 students | | | | |
| | b. Review/revise curriculum | | | | |
| | c. Continue instruction | | | | |
| 3 | a. Enroll 10 students | | | | |
| | b. Continue instruction | | | | |

| Manufacturing Activity 2: Revise Electromechanical Engineering Technology Degree Program (ELM) to align with NAM-endorsed certifications. | | | | | |
|--|--|---|--------------------------|---------------|-----------------|
| Year | Milestones | Deliverables | Date Accomplished | Status | Evidence |
| 1 | a. Obtain simulation software equipment | 1. Syllabi and curricula aligned to MSSC CPT 2. Curricula that include activities and instruction supported by simulation software | | | |
| | b. Revise first year and second year courses | | | | |
| | c. Begin process of obtaining ABET accreditation for revised program | | | | |
| | d. Conduct instructor training | | | | |
| | e. Certify 1 enrollee as CPT | | | | |
| | f. Enroll 1 ELM student | | | | |

| Manufacturing Activity 2: Revise Electromechanical Engineering Technology Degree Program (ELM) to align with NAM-endorsed certifications. | | | | | |
|--|---|---------------------------------------|--------------------------|---------------|-----------------|
| Year | Milestones | Deliverables | Date Accomplished | Status | Evidence |
| | g. Develop portable, modular training curriculum to support onsite training at local manufacturing facilities | 3. ABET accreditation for the program | | | |
| 2 | a. Certify 5 enrollees as CPT | | | | |
| | b. Enroll 4 ELM students | | | | |
| | c. Review/revise curriculum | | | | |
| | d. Continue instruction | | | | |
| | e. Complete ABET accreditation process | | | | |
| 3 | a. Certify 10 enrollees as CPT | | | | |
| | b. Enroll 7 ELM students | | | | |
| | c. Continue instruction | | | | |

| Manufacturing Activity 3: Develop and implement Building Automation Systems Degree Program (BAS) and align with NAM-endorsed certifications. | | | | | |
|---|--|---|--------------------------|---------------|-----------------|
| Year | Milestones | Deliverables | Date Accomplished | Status | Evidence |
| 1 | a. Obtain equipment | 1. Syllabi and curricula aligned to MSSC CPT. 2. Shareable training modules for onsite training. | | | |
| | b. Develop first and second year courses | | | | |
| | c. Obtain institution approval for new programs | | | | |
| | d. Begin process of obtaining ABET accreditation for new program | | | | |
| | e. Conduct instructor training | | | | |

Manufacturing Activity 3: Develop and implement Building Automation Systems Degree Program (BAS) and align with NAM-endorsed certifications.

| Year | Milestones | Deliverables | Date Accomplished | Status | Evidence |
|------|--|--|-------------------|--------|----------|
| | f. Enroll 1 BAS student | 3. Institutionally approved new program. 4. ABET accreditation for the program. | | | |
| 2 | a. Enroll 1 student | | | | |
| | b. Review/revise curriculum | | | | |
| | c. Continue instruction | | | | |
| | d. Complete ABET accreditation process | | | | |
| 3 | a. Enroll 4 students | | | | |
| | b. Continue instruction | | | | |

Manufacturing Activity 4: Develop articulation agreements/credit transfer agreements.

| Year | Milestones | Deliverables | Date Accomplished | Status | Evidence |
|------|--|---|-------------------|--------|----------|
| 1 | None | 1. Three approved agreements for articulated/connected degree programs offering AAS to BS pathway for students. | | | |
| 2 | a. Develop articulation agreements/credit transfer agreements connecting ELM and BAS programs to bachelor's programs at each four-year institution | | | | |
| | b. Obtain bilateral institutional approval for each grant. | | | | |
| 3 | None | | | | |

| Food Safety Activity 1: Develop a developmental bridge program for entering Food Safety students. | | | | | |
|--|---|--|--------------------------|---------------|-----------------|
| Year | Milestones | Deliverables | Date Accomplished | Status | Evidence |
| 1 | a. Develop bridge program curriculum | 1. Developmental education curriculum (mathematics, reading/writing, and student success instruction) for 4-week bridge program 2. 4-week bridge program implemented for food safety students in need of developmental instruction. | | | |
| | b. Establish guidelines for required/optional participation in the bridge program for incoming food safety students | | | | |
| | c. Obtain institutional approval for program | | | | |
| | d. Conduct instructor training | | | | |
| | e. Enroll up to 20 students | | | | |
| 2 | a. Review and revise curriculum | | | | |
| | b. Enroll up to 30 students | | | | |
| 3 | a. Review and revise curriculum | | | | |
| | b. Enroll up to 40 students | | | | |

| Food Safety Activity 2: Develop and implement non-credit Food Sanitation & Safety certificate program and for-credit Food Safety certificate program. | | | | | |
|--|--|---|--------------------------|---------------|-----------------|
| Year | Milestones | Deliverables | Date Accomplished | Status | Evidence |
| 1 | a. Obtain equipment | 1. Syllabi and curricula for non-credit and credit Food Safety certificate programs | | | |
| | b. Develop credit and non-credit certificate program curricula | | | | |
| | c. Obtain institutional approval for program | | | | |
| | d. Conduct instructor training | | | | |
| 2 | a. Review and revise curriculum | | | | |
| | b. Enroll 8 students in non-credit certificate program | | | | |

Food Safety Activity 2: Develop and implement non-credit Food Sanitation & Safety certificate program and for-credit Food Safety certificate program.

| Year | Milestones | Deliverables | Date Accomplished | Status | Evidence |
|------|---|--------------|-------------------|--------|----------|
| | c. Enroll 8 students in credit certificate program | | | | |
| 3 | a. Enroll 10 students in non-credit certificate program | | | | |
| | b. Enroll 10 students in credit certificate program | | | | |

APPENDIX C: STAFF INTERVIEW PROTOCOL

TAACCCT Round 3 Grant Staff In-depth Interview Protocol

| | |
|---------------------------|--|
| Format | Qualitative research to collect opinions that span a broad range of issues regarding: <ul style="list-style-type: none">• Organizational Structure/Governance• Curriculum Development• Program Design• Partner Support• Broader View/Future Semi-structured interview protocol outlines pre-determined questions, and allows the interview to probe and pursue unplanned tangents as conversations warrant. Respondents will be recruited via email. |
| Targets | Respondents will be faculty and staff members involved in program development. |
| Research Questions | Interview questions will address Research Questions 4, 5, 5.1, 5.2, 5.3, 5.4, 7, 7.1, 7.2, and 7.3. |
| Timeline | Interviews will take approximately 45-60 minutes and will be conducted in Years 1, 3, and 4. |

Initial Recruiting Email

Delaware Technical Community College (DTCC) has selected Hezel Associates, a research firm in Syracuse, NY, to conduct the independent evaluation of the TAACCCT Round 3 grant awarded to DTCC.

As a part of our responsibilities, we will be conducting phone interviews with representatives of each of the DTCC Round 3 programs to better understand the grant activities. You have been selected as a potential participant due to your involvement in the grant activities. The purpose of our study is to provide formative feedback to the DTCC Project Director and to help improve grant funded activities.

Telephone interviews will require 45-60 minutes. We are scheduling interviews between [specify date range]. Please respond to this email with times and dates if you are available to participate in an interview during this timeframe.

This study is being coordinated with Martha Hofstetter, TAACCCT Principal Investigator, DTCC. If you have any questions about the evaluation or interviews, she can be reached by email at mhofstel@dtcc.edu. You are also welcome to contact me if you need more specific information regarding details of the evaluation study.

Hezel Associates, LLC

Thank you in advance for your support as we move forward with this important study.

Sincerely,
[SIGNATURE OF SENDER]

Pre-Interview Confirmation (via email)

Thank you for agreeing to participate in the DTCC TAACCCT Round 3 grant evaluation process. Your interview has been scheduled for [INSERT DATE / TIME]. We will call you at [INSERT PHONE #]. We expect the interview will last 45 minutes to 1 hour.

As part of the DTCC TAACCCT Round 3 project evaluation, Hezel Associates will be interviewing program staff to explore the TAACCCT Round 3 grant’s development and implementation.

Your individual responses will be kept confidential and aggregated for the report. No personally identifying information will be reported, and we will make every effort to protect your identity when we present our findings. If you have any questions about the evaluation or your participation feel free to contact myself, Martha Hofstetter, or you may email Solutions IRB (our external review board charged with ensuring we treat evaluation study participants ethically) at participants@solutionsirb.com.

Thank you for your participation,
[SIGNATURE OF SENDER]

Introduction

Hello, this is _____ from Hezel Associates. I’m a member of the evaluation team for the DTCC TAACCCT 3 grant.

Is now still a convenient time to talk?

As a reminder, your responses will be kept confidential and aggregated for the report. No personally identifying information will be reported, and we will make every effort to protect your identity when we present our findings. You can stop the interview at any time and skip any questions you are not comfortable answering. You can also choose to withdraw your responses.

Have you read the informed consent document that was emailed to you? Do you have any questions concerning the consent form or the evaluation?

Do you agree to participate in the interview?

May I have your permission to record our conversation? The recording is strictly used to support my note-taking, and will not be used for any other purpose.

IF PARTICIPANT DECLINES RECORDING, RESEARCHER WILL TAKE NOTES.

Hezel Associates, LLC

Organizational Structure/Governance

To start off, I'd like to talk about the organizational structure and governance of the Round 3 TAACCCT grant.

1. To begin, could you tell me about your role in the grant at DTCC?
2. Can you explain the organizational structure of DTCC's TAACCCT Round 3 grant? *(Probe: implementation of strategies, leadership, administrative structure)*
3. Can you describe any capacity building at DTCC or within your department you expect to see as a result of this grant funding?

Curriculum Development

Next, I'd like to know more about your curriculum development...

Years 1 & 2

4. Has curriculum development started for your program or department?
5. *(If yes)* Could you walk me through your curriculum development process? *(Probe: how it was/will be selected/created/used, communication methods, plan for industry alignment, challenges, success)*
6. *(If no)* What is your plan for curriculum development? *(Probe: how it was/will be selected/created/used, communication methods, plan for industry alignment)*

Years 3 & 4

Are there any needs for curriculum revision at this point? If so, please describe.

What is your opinion of the curriculum? *(Probe: sequence, flow, how are students progressing through)*

Program Design

Shifting now to the program design...

7. Can you tell me how your program (*e.g., course sequencing, format*) has changed or will change as a result of this grant funding? *(Probe: improvement, expansion, delivery method, administrative structure)*
8. What student support or other services are offered or will be offered as a result of grant funding?

Partner Support

I'd like to know more about partner support...

9. Can you tell me about the contributions that partners have made or are planning to make to the program? *(Probe: factors impacting involvement, most and least critical contributions, challenges, successes)*

Conclusion

10. What are your plans for sustaining your program once the grant is over?

11. What is your overall opinion of the TAACCCT Round 3 grant?
12. Do you have any suggestions on what would strengthen the project? (*Draw from negative answers in previous question*)
13. **Years 3–4:** What effect is your program having on the attainment of certificates/credentials/degrees or employment?

Thank you! That's it for my questions. Is there anything else you'd like to say that I haven't asked you about?

APPENDIX D: EMPLOYER INTERVIEW PROTOCOL

TAACCCT Round 3 Grant Employer Interview Protocol

| | |
|-----------------|--|
| Format | Qualitative research to collect information on contributions of employers and industry stakeholders on the TAACCCT Round 3 project. The semi-structured interview protocol outlines pre-determined questions, and allows the interviewer to probe and pursue unplanned tangents as conversations warrant. Respondents will be recruited via email from a list provided by the Principal Investigator. |
| Targets | Respondents will be employers and industry stakeholders involved in program development. |
| Timeline | Interviews will take approximately 30 minutes and will be conducted by telephone in Years 2–4. |

Initial Recruiting Email

Delaware Technical Community College (DTCC) has selected Hezel Associates to conduct the evaluation of the U.S. Department of Labor grant that is funding the development of the [PROGRAM] program.

As a part of our responsibilities, we will be conducting phone interviews with key employers and industry stakeholders who have advised DTCC on the program's development and implementation. You have been selected as a potential participant due to your involvement in the grant activities. We are specifically interested in your perceptions of the program and the alignment of the educational program and regional workforce needs.

Telephone interviews will last approximately 30 minutes. We are scheduling interviews between [DATE RANGE]. Please respond to this email with times and dates if you are available to participate in an interview during this timeframe.

This study is being coordinated with Martha Hofstetter, TAACCCT Principal Investigator at DTCC. If you have any questions about the evaluation or interviews, she can be reached by email at mhofstet1@dtcc.edu. You are also welcome to contact me if you need more specific information regarding details of the evaluation study.

Thank you in advance for your participation.

Sincerely,
Hezel Associates, LLC

[SIGNATURE OF SENDER]

Pre-Interview Confirmation (via email)

Thank you for agreeing to participate in the DTCC TAACCCT Round 3 grant evaluation process. Your interview has been scheduled for [INSERT DATE / TIME]. We will call you at [INSERT PHONE #]. We expect the interview will last about 30 minutes.

I have attached an informed consent document with information about the risks and benefits of participating in this interview. Please read through the document before your interview.

If you have any questions about the evaluation or your participation, feel free to contact me, Martha Hofstetter (mhofstet1@dtcc.edu), or you can email Solutions IRB (our external review board charged with ensuring we treat evaluation study participants ethically) at participants@solutionsirb.com.

Thank you for your participation,
[SIGNATURE OF SENDER]

Introduction

Hello, this is _____ from Hezel Associates, I'm calling for your interview.

Is now still a convenient time to talk?

As a reminder, your responses will be kept confidential and aggregated for the report. No personally identifying information will be reported. You can stop the interview at any time and skip any questions you are not comfortable answering. You can also choose to withdraw your responses.

Have you read the informed consent document that was emailed to you? Do you have any questions concerning the consent form or the evaluation?

Do you agree to participate in the interview?

May I have your permission to record our conversation for note-taking purposes?

IF PARTICIPANT DECLINES RECORDING, RESEARCHER WILL ONLY TAKE NOTES.

Background

1. To begin, could you tell me a little about your agency/company? (*Probe: industry, size, needs*)

Involvement with DTCC

Next, I'd like to know more about your involvement with DTCC and the TAACCCT project...

2. Can you tell me about your company's and your individual relationship with DTCC in regards to the TAACCCT project? (*Probe: specific program*)
3. Can you describe the contributions you and/or other employers and industry stakeholders made to the development of the [PROGRAM]? (*Probe: curriculum development, program design, recruitment, training, placement, resources, commitment to sustainability*)
4. As an employer, what is your opinion of the [PROGRAM] at DTCC? (*Probe: strengths and weaknesses, suggestions for improvement*)

Alignment with Industry Needs

Thinking about how the program applies to your needs...

5. How does the [PROGRAM] align with the type of worker you would be interested in hiring?
6. How do the skills taught in the program align with the skills you are looking for in your workers? (*Probe: missing skills, additional job training required, what other employers are looking for*)
7. Have you hired new employees out of this program? (*Probe: internships or job shadowing. **If no:** why not and if considering in the future*)
8. Have you recommended any of the available training programs to your current employees? (***If no,** probe: why not and if considering in the future*)
9. (Manufacturing Only) Have you utilized the modular, portable training programs? (***If no,** probe: why not and if considering in the future*)
10. Any other thoughts you would like to add?

APPENDIX E: PARTICIPANT QUESTIONNAIRE

TAACCCT Round 3 Grant Participant Questionnaire

Email to potential respondents

Subject: [Program] Participant Questionnaire

Hello,

In 2013, Delaware Technical Community College received a U.S. Department of Labor TAACCCT grant to create new programs that incorporate educational strategies that support student success. Since your program, [PROGRAM NAME], was a part of the grant, we would like to invite you to complete a brief questionnaire.

The purpose of this questionnaire is to help us understand the DTCC TAACCCT Round 3 grant-funded programs of study. Your feedback is important and will potentially help improve these programs.

Please answer the following questions as honestly as possible. The online form should take about 10 minutes to complete. After you have reviewed the Informed Consent information below, you may click this link to begin:

<Questionnaire link>

Thank you for your participation!

Informed Consent

Completing this questionnaire is not anticipated to pose any risk to you. Your participation is strictly voluntary and you may withdraw your participation at any time without penalty.

All information collected will be used for research purposes only. Because this questionnaire is anonymous, there will be no connection to you specifically in the results or in future publication of the results. If you have any questions, contact the DTCC TAACCCT Round 3 Principal Investigator, Martha Hofstetter, at mhofste1@dtcc.edu.

Additionally, if you have any concerns about your treatment as a participant in this study, please contact Hezel Associates' external institutional review board (IRB), Solutions IRB, at participants@solutionsirb.com or 1-855-226-4472.

By clicking the questionnaire link above, you are verifying that you have read the explanation of the study, and that you agree to participate. You also understand that your participation in this study is strictly voluntary.

Sarah Glazier

Research Analyst

Hezel Associates, LLC

Hezel Associates, LLC

DTCC TAACCCT Round 3 Participant Questionnaire

Thank you for participating in this survey! Hezel Associates is looking for feedback on the TAACCCT Round 3 program at your college. Your feedback will potentially help improve the TAACCCT-funded programs at DTCC. This questionnaire will take approximately 10–15 minutes. Be assured that your individual responses are confidential and will be reported only as part of group feedback.

Are you 18 years of age or older? *[Required question]*

- Yes
- No *[Go to Termination Page]*

1. Please select the TAACCCT program you were enrolled in at DTCC. *[Required question]*

- Building Automation Systems (BAS)
- Electromechanical Engineering Technology (ELM)
- For-credit Food Safety Certificate
- Non-credit Food Safety and Sanitation Certificate
- Unsure *[Go to Termination Page]*
- None of these *[Go to Termination Page]*

2. Please indicate the DTCC campus where you were enrolled in a TAACCCT program. *If you have enrolled in more than one of these locations, please choose the one where you enrolled most recently.*

- George
- Owens
- Terry
- Unsure *[Go to Termination Page]*
- None of these *[Go to Termination Page]*

3. Why did you enroll in the [program name from Q1] program at DTCC? *Mark all that apply.*

- Interest in the field
- To gain new skills
- To get a job
- To receive a promotion at my current place of employment
- To receive higher wages
- Other _____

4. Are you still enrolled in your [program name from Q1] program at DTCC? *[Required question]*

- Yes *[Go to Q7]*
- No
- Unsure

5. Did you...

- complete the program (earn a credential, certificate, or associate's degree)?
- withdraw from the program without completing a credential, certificate, or associate's degree?
- other _____

[If "Complete the program" or "Other," go to Q7]

6. Why did you withdraw from the program? Mark all that apply.

- Completed what I intended to
- Conflict with work schedule
- Decided program was not what I wanted
- Difficulty with program requirements
- Family or other external obligations
- Financial difficulties
- Found a job
- Medical issues
- Program was different than expected
- Transferred to another college
- Transferred to another program at the college
- Prefer not to answer
- Other _____

7. Which best describes your work experience before you began your [program name from Q1] program?

- I did not have any prior work experience.
- I had experience in a field similar to my program.
- I had experience in an unrelated field.

8. Before enrolling in the [program name from Q1] program, what was the highest level of education you completed?

- Completed some high school
- High school diploma or equivalent
- Some college
- Earned a one-year (or less) certificate
- Associate's (2-year) degree
- Bachelor's (4-year) degree
- Master's degree
- Doctoral degree
- Other _____

9. Did you participate in the Remedial Summer Bridge program?

- Yes
- No
- Unsure

[If "No" or "Unsure" go to Q11]

Hezel Associates, LLC

10. To what extent do you agree or disagree with the following statements?

Participating in the Remedial Summer Bridge program...

| | Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree | Not applicable |
|--------------------------------------|-------------------|----------|-------------------|----------------------------|----------------|-------|----------------|----------------|
| a. helped prepare me for my program. | | | | | | | | |
| b. improved my math skills. | | | | | | | | |
| c. improved my computer skills. | | | | | | | | |
| d. improved my reading skills. | | | | | | | | |
| e. improved my workforce skills. | | | | | | | | |

[If Q4 = Yes, go to demographics page]

11. Did you earn any of the following credentials? Mark all that apply.

- National Career Readiness Certificate (NCRC)
- Certified Production Technician (CPT)
- None of these
- Unsure

12. Choose which best describes your employment status since completing the [program name from Q1] program.

- I am working at the same company I was at before I started the program. *[Go to Q13]*
- I am working at a different company than I was working at before I started the program. *[Go to Q14]*
- I am not employed. *[Go to Q18]*

[Required question]

13. After completing the program, which best describes your status with your company?

- I have the same job I had before I started the program.
- I moved to an equivalent position with a similar salary range and job title.
- I was promoted.
- I was demoted.
- Unsure

14. Is your current job related to the [program name from Q1] program you completed?

- Yes
- No
- Unsure

[If Q12 = "I am working at the same company...", go to Q16]

15. Which of the following, if any, helped you get this job? Mark all that apply.

- An instructor helped me make a connection with the company
- Apprenticeship or internship
- College-organized tour of employer facility
- Made a connection with the employer when they visited my college
- Program Navigator
- None of the above
- Other _____

16. Does the education you received in your [program name from Q1] program satisfy at least the minimum requirements for your current job?

- Yes
- No
- Unsure

17. How would you describe the changes, if any, to your wages from before your enrollment to after you left the [program name from Q1] program?

- My wages increased.
- My wages stayed about the same.
- My wages decreased.

[If Q12 = "I am working at the same company...", go to Q19]

18. How would you describe the changes, if any, to your employment options (e.g., number of jobs you qualified for) from before your enrollment to after you left the [program name from Q1] program?

- My employment options stayed the same.
- I had more options for employment than before.
- I had less options for employment than before.
- Unsure

19. Have you enrolled in further education since completing the [program name from Q1] program?

- Yes
- No

[If Q12 = "I am not employed," go to Q21]

20. Thinking about your current employment, please rate the extent to which you agree or disagree with the following statements:

My program prepared me with the ability to do the following in a work setting...

| | Strongly disagree | Disagree | Somewh at disagree | Neither agree nor disagree | Somewh at agree | Agree | Strongly agree | Not applicabl e |
|---|-------------------|----------|--------------------|----------------------------|-----------------|-------|----------------|-----------------|
| a. Apply math skills | | | | | | | | |
| b. Apply quality control knowledge | | | | | | | | |
| c. Apply technical skills | | | | | | | | |
| d. Apply writing skills | | | | | | | | |
| e. Effectively communicate | | | | | | | | |
| f. Lead groups of people | | | | | | | | |
| g. Manage my time | | | | | | | | |
| h. Operate equipment used in the industry | | | | | | | | |
| i. Prioritize tasks | | | | | | | | |
| j. Troubleshoot technical problems | | | | | | | | |
| k. Use required computer software | | | | | | | | |
| l. Work as a member of a team | | | | | | | | |

Demographics

21. What is your gender?

- Male
- Female
- Prefer not to answer

22. Which of the following best describes you? Mark all that apply.

- American Indian/Alaska Native
- Asian
- Black/African American
- Hispanic/Latino
- Native Hawaiian/Other Pacific Islander
- White
- Prefer not to answer
- Other _____

23. Do any of the following apply to you?

| | Yes | No | Unsure | Prefer not to answer |
|--|-----|----|--------|----------------------|
| Pell Grant recipient | | | | |
| Student with a disability | | | | |
| Trade Adjustment Assistance (TAA)-eligible | | | | |
| Veteran or Spouse eligible for Priority of Service | | | | |

[If TAA-eligible = "Yes," go to Q24, otherwise go to Q25.]

24. Did you use any of the following TAA Benefits? Mark all that apply.

- Assistance with health care insurance coverage.
- Career Counseling
- Extended income support
- Job Search and relocation allowances
- TAA-funded training
- Wage insurance benefits
- Unsure
- None of these

25. What is your age? Numeric responses only.

26. Please share any additional comments you may have about your experience with the TAACCCT Round 3 programs at DTCC:

Completion Page

Thank you for completing the questionnaire!

Termination Page

Unfortunately, your responses do not meet the criteria for this questionnaire. Thank you for participating!