Evaluation of Richland College's Veterans-Focused Engineering Technology Project

Interim Report #2

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Released October 2017

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EVALUATION OF RICHLAND COLLEGE'S VETERANS-FOCUSED ENGINEERING TECHNOLOGY PROJECT (VFETP)

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INTRODUCTION

The manufacturing and electronics industry continues to be a major driving force in the Dallas economy. Driven by both a skills gap and projected growth in these industries, Richland College's Veterans-Focused Engineering Technology Project (VFETP) seeks to create job-ready certificate- and degree-holding graduates who can flourish in this high-demand job market. The project is in its third year of a Round 4 grant from the U.S. Department of Labor's Trade Adjustment Assistance Community College Career and Training (TAACCCT) grant program. With a no-cost extension, the grant will continue to operate through March 2018. The grant has built on past offerings in the College's preexisting Engineering Technology program (which is comprised of advanced manufacturing and electronics), creating new labs with new equipment, reforming and expanding its curricula, offering extended student support and advising services, and working to engage local employers with the program and school. In the past year its primary focus moved beyond program building, as students filled classrooms and moved through complete program cycles. While some curriculum development continued, the program shifted its focus to increasing its enrollment and retention rates and developing stronger connections to local employers.

The Education and Employment Research Center (EERC) at Rutgers, The State University of New Jersey, is working with Richland College to conduct a comprehensive evaluation of the VFETP grant. The evaluation examines the multiple strategies that Richland is implementing to promote and develop career pathways in its Advanced Manufacturing and Electronics programs and to build partnerships with key outside stakeholders. The evaluation utilizes a mixed-methods approach to gather data from multiple perspectives on grant implementation and outcomes. It examines the college's implementation activities throughout the life of the project, focusing on key issues related to the college's implementation of curriculum development and reform, program design, and administration; student assessment; and partnership expansion. In addition, the evaluation studies the use of new equipment and laboratory space to examine its influence on instruction and learning; the strategies used for employer engagement and how those strategies relate to labor market alignment; and the lessons to be learned from the project's approaches to creating stackable credentials and adopting industry-certification processes.

This report is the second of three evaluation reports. As the program evolves and shifts its focus, so does the evaluation process. The first report, finalized in September 2016, discussed the early implementation of grant activities from the start of the grant in September 2014 to June 2016 and identified promising practices and areas for improvement in the initial planning and launch phases. In the past year, the evaluation grew to incorporate an expanded student study and an expanded employer study. In addition to updating progress on program activities, this report adds greater detail on the experience of two major stakeholder groups—students and local employers—with the new and reformed programs. This report begins with a section that describes the methods used in the evaluation; that discussion is followed by a section on changes in the model of grant activities. Subsequent sections of the report include an update on

the status of the prior planned implementation activities and outputs by the college; an expanded discussion of progress in student recruitment, retention, and completion and how students are reacting to the program a year after its rollout; and an expanded discussion of the program's efforts to engage local employers that incorporates employers' reactions to the program. The report concludes with recommendations for implementation improvement and a discussion of next steps for the evaluation.

EVALUATION METHODS

EERC's early implementation analysis of the VFETP program focused on program inputs and the implementation of key grant activities following a logic model developed collaboratively by the Richland and EERC teams in July and August of 2015.[1] This logic model, which is updated twice yearly, continues to frame our analysis, offering a shared map of how the program is designed and what inputs and activities are necessary to reach the intended targets. For this report, the evaluation expanded to incorporate feedback from key stakeholders—both students and employers—to further illuminate progress on the logic model activities and outputs and offer the first glimpse into program outcomes and potential future impacts. All data included in this report cover the time period between June 2016 and June 2017. This report includes information amassed via the following data collection processes:

Continuing Process Evaluation

(1) Site visit to the college. EERC conducted a formal site visit to Richland College in February 2017. During the site visit, our evaluators collected information from multiple stakeholders involved in the project, conducting 14 semi-structured interviews with program staff and faculty involved in the grant as well as two student focus groups. In addition, evaluators visited classes in both the manufacturing and electronics certificate programs to encourage students to take the student survey (see #4, below) and discussed with college staff their responses to the employer contacts survey (see #7, below).

(2) Telephone meetings and interviews with project leads. To understand ongoing program implementation efforts, EERC called project leads monthly to conduct informal check-in meetings. Additional calls were made to project leads in December 2016 and June 2017 to conduct formal semi-structured interviews to assess implementation progress.

(3) Document review. Throughout the ongoing data collection process, EERC evaluators have continued to collect documents as they have become available (information included meeting minutes, agendas, and other informative documents about employers, job expos, and District planning).

[1] The logic model is included in the Appendix.

Expanded Student Study

(4) Student surveys. Students currently in electronics and manufacturing programs were sent an online (Qualtrics) survey via email. Building on an earlier pilot, this survey was completed by 73 respondents (response rate: 49.3%, completion rate: 92.4%). Topics covered included recruitment, intake, advising, and experience with the program(s); developmental education and prior learning assessments; education and career plans; and basic demographic data. Students who had served in the military were asked to complete an extra panel of questions regarding how they experienced the program as veterans. During the February 2017 site visit, a member of the EERC team visited classes in both programs to ask students to fill out the survey and offer technical assistance as needed to those who agreed to do so.

Less than a fifth (17.1%) had previously declared other majors at Richland College—among those who did, previous majors ranged from mechanical engineering to music. Ages ranged from 19 to 65+. The overwhelming majority were male (90.4%) and permanent U.S. citizens (82.2%).

As the two programs differ in several ways, we split the students into two groups for comparisons based on their responses to the student survey: manufacturing and electronics students. Five students gave no program affiliation and were excluded from the comparisons. The manufacturing students were those who reported that they were currently pursuing or planned to pursue certificates in Advanced Manufacturing, Computer Aided Design, CNC/CAM, or an associate degree in Advanced Manufacturing. The sample contained 36 manufacturing students, comprising 52.9 percent of the 68 respondents who reported program declarations. Electronics students were those who reported that they were currently pursuing either a certificate or an associate degree in Electronics Technology. There were 26 electronics students in our sample, comprising 38.2 percent of the 68 respondents. An additional 6 students reported that they were pursuing certificates or degrees in both manufacturing and electronics. These students were excluded from comparative analyses, though they and the 5 students who gave no program affiliation were included in analyses of the overall respondent population.

(5) Student Administrative Data. Richland College's Office of Planning, Research, Effectiveness, and Development provided us with student data in April 2017 and updates in August 2017. These data—including student demographics and information on program matriculation, retention, and completion—were used to perform an interim outcomes analysis, demonstrating progress toward the final goals as the VFETP program enters its final year. Analyses of these data focus on two samples: manufacturing students enrolled in Richland College between Spring 2015 and the current semester, Fall 2017; and students in information technology (IT) between Spring 2017 and Fall 2017. Study years are comprised of the following semesters, based on the onset of TAACCCT-based program interventions, as demonstrated in Table 1.

TABLE 1. ADMINISTRATIVE DATA AVAILABILITY BY STUDY YEAR FOR RICHLAND VFETP PROGRAMS

Study Year	2014-2015			2015-2016			2016-2017			2017-2018
Semesters Included	Fall 2014	Spring 2015	Sum. 2015	Fall 2015	Spring 2016	Sum. 2016	Fall 2016	Spring 2017	Sum. 2017	Fall 2017
Manufacturing										
IT										

Expanded Employer Study

(6) Employer Interviews. In September and October of 2016, we conducted telephone interviews with five employers identified as program partners by the Richland team. Two additional employers participated in in-person interviews during our February 2017 site visit. Those interviews covered topics such as their perceptions of the state of the industry and the state of the workforce; their workforce needs and HR practices; and their working relationship with Richland and other community college programs.

(7) Employer contacts survey. Prior to the February 2017 site visit, we asked college staff who were involved in employer engagement efforts to complete a short survey. The survey included questions about the kinds of contacts made, the methods of communication used, and the nature of their relationships with employers. Respondents include instructors, navigators, and project and college leadership.

We analyzed all data collected using established analysis techniques. Qualitative data were managed, coded, and analyzed using qualitative analysis software NVIVO 10. Student outcomes data were managed, cleaned, and analyzed using quantitative analysis software SAS.

OVERVIEW OF MAJOR PROGRAM DESIGN CHANGES

Project Modification

In January 2017, the VFETP program was officially awarded a modification to expand the grant along two dimensions: geographically, to extend its service area beyond Dallas County to adjacent Tarrant County, and programmatically, to incorporate the eight certificates[2] and three AAS degrees[3] offered as part of the Computer Information Technology (CIT) program. The CIT program is situated in the School of Engineering & Technology—the same school that housed the original VFETP certificates and AAS degrees.

[2] Certificates offered by CIT include CISCO Certified Network Associate (CCNA), Cisco Certified Network Professional (CCNP), Help Desk/User Support Technician, Personal Computer Specialist, Personal Computer User, Programmer Level I, Technology Support, and UNIX Operating System.

[3] AAS degrees offered by CIT include Network Administration & Support, Personal Computer Support, and Software Programmer/Developer.

The geographical expansion to Tarrant County improves the college's positioning to reach veterans, a population of special focus in the program design but one that the college has struggled to reach. Tarrant County is home to the Naval Air Station Fort Worth Joint Reserve Base. This joint reserve base has over 10,000 active duty military, National Guardsmen, reservists, and civilian employees, bringing together over 40 separate commands that represent four of the five branches of the armed services.[4] If the school can gain access to the base, it may prove fertile ground for veteran recruitment.

The programmatic expansion to the CIT programs improves the college's chances of reaching its student outcomes targets. In addition to expanding the number of students enrolled, CIT carries the benefit of offering shorter programs than the programs in manufacturing and electronics. These shorter programs can more quickly yield completers due to their shorter certificate requirements and more frequent, year-round scheduling options.

To support this expansion, Richland has added a second navigator as well as another full-time faculty position, both at its own expense. While the expansion also increases the targets, that increase is relatively minor, and the VFETP team is optimistic that this will improve its positioning with regard to reaching its outcomes targets overall. As the rollout of the programmatic expansion occurred mid-year, and minimal intervention activities had been carried out as of the evaluation site visit, the outcomes for these programs will be reported in greater detail in the Year 4 report.

Project Staffing

The college expanded its VFETP team. The team added the aforementioned second navigator in addition to two full-time manufacturing faculty in Year 3. Filling the new positions required having some of the faculty qualifications waived by the district, which extended the hiring timelines for both positions; this process was undertaken, however, because previous faculty positions had been difficult to fill. It is therefore likely that these timeline extensions saved time in the end. With the faculty roster for the project now complete, the overall program roster is larger than proposed in the original grant. Richland College has incorporated the additional costs into the college budget.

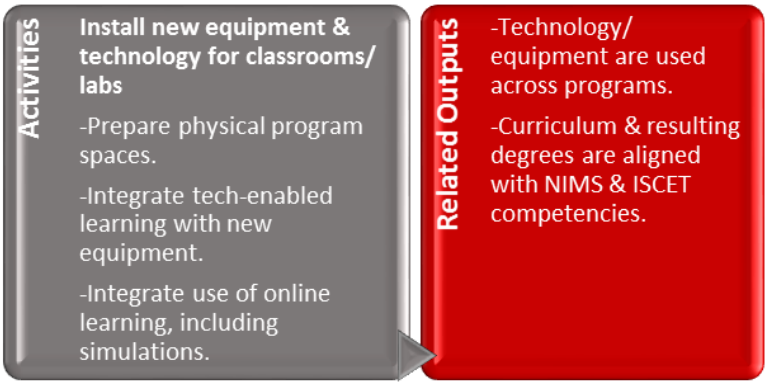
KEY IMPLEMENTATION ACTIVITIES

In the sections that follow, we present updated findings related to progress on implementation activities (space and equipment in the program, curriculum, the student navigator model, recruitment, employer engagement, and workforce system engagement). As the program has now operated for a full year with the majority of its equipment and curriculum reforms in place, this is also an ideal moment to reflect on its outputs and early outcomes.

[4] United States Navy. *Naval Air Station Fort Worth Joint Reserve Base*. Retrieved from US Navy website https://www.cnic.navy.mil/regions/cnrse/installations/nas_jrb_fort_worth.html

This year we also take a deeper dive into how the activities, outputs, and early outcomes are viewed and experienced by two of the program's key stakeholder groups: students (program recruitment and early outcomes; how students experience the program) and employers (evolving strategies for employer engagement; employers' experiences and perspectives on the program) using data derived from our student survey, employer interviews, and employer contact survey.

Space and Equipment



The labs remain a program centerpiece. The labs continue to be premier spaces that faculty and advising staff report are beneficial for both recruitment and for giving students the hands-on experience that employers want to see in job candidates. The manufacturing students appear to be most affected by the quality of the lab space. The labs also appear to have a positive impact on student satisfaction. The manufacturing lab made a big impression on this student:

> I'd say it's actually really, really beyond what I would have thought for a community college. You would expect this sort of program to be at a four-year university—someplace that is very large, that's high quality. The machine shop that we have here is, like, number one in the nation or something like that. It's really, really good. So, so far, stellar.

Finally, the labs appear to make the students more confident in the 'real world' applicability of their skills:

> Well, actually, I just had the opportunity to go to a, like, a machine shop where they actually do all the things that we're learning how to do here, from the initial design process to the finished product. And I understood everything that they're talking about. I recognize all the machines. I know how to operate them, I'd say, fairly well.

The only criticism of the labs that students raised in our focus group was that they wanted more time during class in the labs. Some in manufacturing felt that it was difficult to accomplish everything they needed to in the class time allotted and thought longer classes would be beneficial. This was particularly stressful for students who worked full time or had family/caregiving responsibilities.

Maintenance and repairs are the current priorities regarding space and equipment. In the past year the college shifted from building mode to maintenance mode. Though the

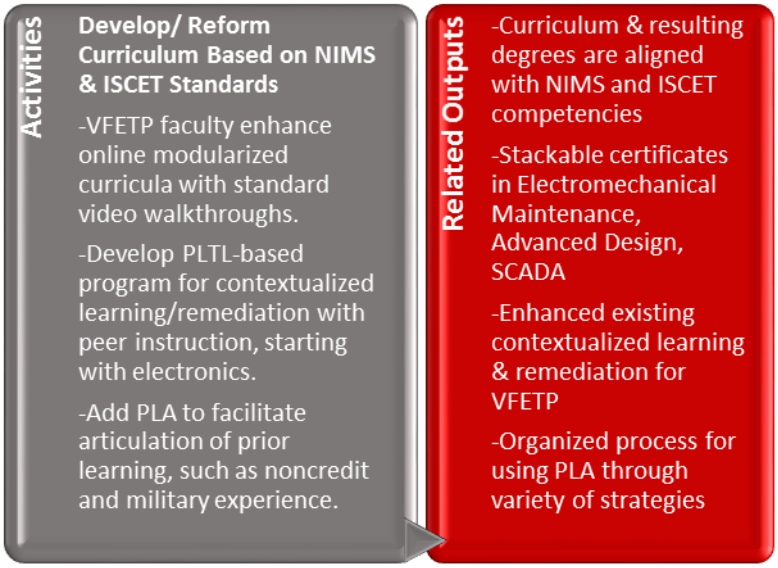
electronics program has been authorized by the Dallas County Community College District (DCCCD) to purchase some equipment with institutional funds to expand its offerings in the final year of the grant, there have been no major acquisitions of equipment in the past year; for the most part, the project faculty and staff have focused solely on maintaining the equipment in place as of December 2015 and making minor purchases such as materials for classes to work with on the machines. The process of getting all this equipment in place had been more involved than anticipated by staff and administrators. This year there was a full-time temporary lab coordinator in place who, along with a student assistant, helped ensure that tools were checked out and checked back in, everything was operating smoothly, and purchasing needs were anticipated in advance; this individual was hired in a permanent position and is shared between programs. This anticipation and planning was beneficial as purchasing is an ongoing issue, with the DCCCD process creating lag times in materials acquisitions.

The flooring in the manufacturing lab has developed extensive cracking that has also spread to the electronics lab due to improper materials having been applied when the labs were built (light concrete, without expansion joints). The architect and Richland's facilities director examined the cracks and determined that they are more likely to be a cosmetic issue than a structural issue that will threaten the stability or safety of the machines. The floors have been repaired with an epoxy filler in the major cracks to prevent further damage, and the facilities director is continuing to work with the school's architect to determine the next steps (one possibility is a complete overlay of spray-on epoxy).

Noncredit students are using the labs as well. Though the priority is given to credit-bearing classes when scheduling lab space, there are continuing education (CE) courses using the lab facilities as well (e.g., those offered to displaced TAA-eligible workers, such as the Vietnamese factory workers who entered the program last year). This creates a link between the two paths and allows the department some flexibility to assist with training when local businesses relocate and leave behind trade-adjusted workers. The CE students are being given a Richland CE certificate and help taking the National Institute for Metalworking Skills (NIMS) certification courses, and are counted toward the TAACCCT tracking totals.

Curriculum

Curriculum development and rollout is nearly complete. As of our Year 2 report, two certificates were up and running, both nested in AAS degrees (Advanced Manufacturing or CNC/CAD/CAM Certificate, and Electronics Technology Certificate). Three more were in process: Electromechanical



Maintenance and Advanced Design, which had been fully designed and were awaiting approval by DCCCD, and SCADA, which was under development by a recently contracted consultant. The two programs awaiting DCCCD approval have since received it and have begun offering classes. The SCADA program, too, is now complete and approved, but it has not been rolled out due to difficulties in locating a qualified instructor.

Peer-Led Team Learning (PLTL) continues to operate this year. It is slowly expanding in electronics but is not a priority in manufacturing. Student workers have filled the available positions, though the positions tend to remain full for only a short time; by the time a student is ready to take on that role, they are also nearly done with the program. With small enrollments it is difficult to test at this point whether the tutoring is making a big difference in student performance, but it does appear to be creating opportunities for students to seek help in a low-pressure environment, as one team member discussed:

> What I can see is a community forming, which is huge for community college—with the transient population, no campus housing—we have one restaurant and no places just to hang out. But students bring in their guitar amplifier, and they hang out and work on it and talk about amplifiers. And someone brings in something else. And so, it's just good for networking for the students, informal. . . . Somebody will come by that might not want to go to tutoring because no one wants to feel like they're dumb. But they're talking about a guitar amp. It's like "Oh, by the way, did you do problem 24?" And then before you know it, they're up at the board [working on the problem] . . .

Certification results varied by program. Manufacturing students continued to take NIMS certification tests in the past year, with a total of 194 NIMS certificates being granted at Richland College to VFETP students or faculty between January 2016 and June 2017. In contrast, the International Society of Certified Electronics Technicians (ISCET) certification has not gained traction among students; in the past year, no students took the ISCET exams. The structure of the ISCET exam is likely part of the challenge. Whereas NIMS exams can be completed as skills are mastered, the ISCET exam is taken after the students have completed their programs and often are already placed into employment. They require greater retrospective study and may be seen as a hassle. To further understand the motivations of students, we asked them a series of questions in the student survey about certifications.

Students were widely—though not universally—interested in certifications. About three quarters of student survey respondents (76.4%) indicated that they had interest in NIMS/ISCET certifications, while almost a quarter (23.6%) indicated they were not interested. (See Table 2.) However, there was a statistically significant difference of roughly 30 percentage points ($p<.05$) between manufacturing and electronics students on this point, with manufacturing students being more likely to have an interest in national certifications.

TABLE 2. STUDENT INTEREST IN NIMS/ISCET CERTIFICATIONS

	Overall population		Manufacturing*		Electronics*	
Interested	55	76.4%	31	86.1%	15	57.7%
Not interested	17	23.6%	5	13.9%	11	42.3%
Total[1]	72	100%	36	100%	26	100%

N=72 students; * p<.05

[1]Manufacturing and electronics students total is lower than the population N because students who reported being enrolled in both programs or neither program were excluded from comparative analyses.

Source: Richland College student survey

Students viewed the certification process as an important way to document their learning. We asked student survey respondents a series of questions regarding the value of certifications and what certifications mean to them. Nearly all students reported they thought certificates would be valuable, with 91 percent either agreeing or strongly agreeing that a certification is an opportunity to document skills and learning. However, slightly fewer students agreed or strongly agreed that certifications were important in either joining their occupation (85.5%) or as an achievement apart from their role in employment (85.3%). Responses to these questions did not appear to systematically vary by program. See Table 3.

TABLE 3. PERCENT OF STUDENTS WHO STRONGLY AGREE OR AGREE WITH STATEMENTS ABOUT THE MEANING OF A CERTIFICATION

	All	Manufacturing	Electronics
A certification is an opportunity to document my skills/learning.	91.4	91.4	92.3
A certification is an important part of joining my occupation.	85.5	88.6	83.9
A certification is an important achievement apart from its role in employment.	85.3	85.7	86.2

N=73 students

Source: Richland College student survey

Many students reported that employers valued certifications as well. We asked students about how they believe employers view and use certifications to gauge their views on the role certifications may play in the job market. The results are presented in Table 4, grouped by topic. Generally speaking, just over half of students (54.3%) indicated the belief that most employers (as opposed to some employers or few employers) would pay more for people with certifications. In terms of hiring, students felt the certifications were more of a preference (54.9%) than a requirement (35.2%) for landing a job. The same was true with regard to promotions—about half of respondents (50.7%) believed employers preferred to promote certified employees vs. only about a third of respondents (36.6%) who believed certifications were required in that situation.

Comparing the two groups of students yields interesting results here. Earlier we found that manufacturing students were more likely than electronics students to have an interest in earning a NIMS/ISCET certification. Yet on this measure, more electronics students than

manufacturing students indicated that employers require certifications when promoting for jobs. While these results seem counterintuitive given the attitudes students expressed toward earning ISCET certification—and the fact that not a single electronics student has taken the ISCET exam—they may reflect a unique feature of the local job market. Texas Instruments, a target for many of these students, has its own internal exam that determines entry. Though not a national certification, it is similar to one in many ways, and it is in fact a required component of candidacy for employment with the company. It is therefore possible that the electronics students taking our survey were more focused on the TI exam than the ISCET simply because the TI exam was more immediately relevant to them.

TABLE 4. PERCENT OF STUDENTS REPORTING THAT MOST EMPLOYERS USE CERTIFICATIONS

	All Students	Manufacturing Students	Electronics Students
Pay more for people with certifications	54.3	51.4	56.0
When hiring…			
Require certifications	35.2	25.0	44.0
Prefer certifications	54.9	50.0	56.0
When promoting…			
Require certifications	36.6	22.2*	48.0*
Prefer certifications	50.7	44.4	48.0

N=71 students; * p<.05
Source: Richland College student survey

NIMS Cognitive Task Analysis was completed. As part of the supplemental grant, the grant team completed a cognitive task analysis (CTA) for a NIMS I and NIMS II certification. The purpose of the CTA is to examine how experts (machinists, in this case) process information and solve problems with the goal of identifying a rules-based method of problem solving that can be taught as part of formal training. The process was the first step to developing a NIMS-standards-based curricula for short-term workshops. CTA is an important component of the grant; the original goal was to build three virtual online training modules for the use of Sinker EDM (Electrical Discharge Machining) and Wire EDM machines. NIMS consultants worked with the team to facilitate the process. As of Summer 2016 the process had fallen behind its targeted completion, so at that time the grant team and NIMS consultants established a timeline to hit certain targets over the following year:

- *Webinar to complete Phase One, targeted to Summer 2016.* This was to involve defining the CTA process, preparing for the first in-person session, and identifying potential projects or jobs for the CTA.
- *In-person meeting with industry leadership to complete Phase Two, targeted to Summer 2016.* This meeting was meant to bring Richland College, employers, vendors, and other industry leaders together to identify cognitive tasks, the knowledge structures associated with the tasks, and industry experts to perform them.

- *In-person meeting in the lab to complete Phase Three, targeted to Fall 2016.* This meeting was meant for setting up and operating the processes with observation.
- *Delivery of report and webinar for industry leaders to complete Phase Four, targeted to Fall 2016*.
    - The overall timeline was delayed, and the report was delivered by NIMS on May 18, 2017. This report includes analysis of the Phase Three observation and formatting results for learning modules.

There were issues in finding dates to have the NIMS team out for observations with employers, so the manufacturing faculty lead took recording equipment out to manufacturers and recorded processes for the NIMS team to observe to get the process started. The CTA was performed in partnership with two local manufacturers: Roden's All-Star Machine and Modern Industries.

As of May 2017, the bidding process with DCCCD and the college was complete, and a report was delivered that outlined findings for Wire EDM and Sinker EDM cognitive tasks. For the Wire EDM CTA, the report explores wire breakage and describes its common causes as identified by an expert at All-Star Machine. For the Sinker EDM CTA, the report describes overburn; the issue was presented but determined to be ineligible for CTA analysis as it did not fit the model of GOMS (Goal, Operations, Methods, and Selection Rules) that CTA was built around, in that it could be prevented with maintenance of the sinker EDM machine and the creation of electrodes. The report recommends having Mitsubishi technicians demonstrate the use of the sinker EDM machines instead. No further NIMS CTA reporting is planned at this time.

A contract is in place with Immerse2Learn to create videos, interactive support, and exercises aligned to NIMS standards using information from the NIMS CTA report. The contract includes three milestones (content scripting and preparation, content production, and content delivery) affiliated with invoice dates over a three-month period. If the contract timeline is honored, the content should be delivered prior to the Spring 2017 semester. The manufacturing faculty lead will continue to work with contractors to further explore CTA and develop NIMS curriculum.

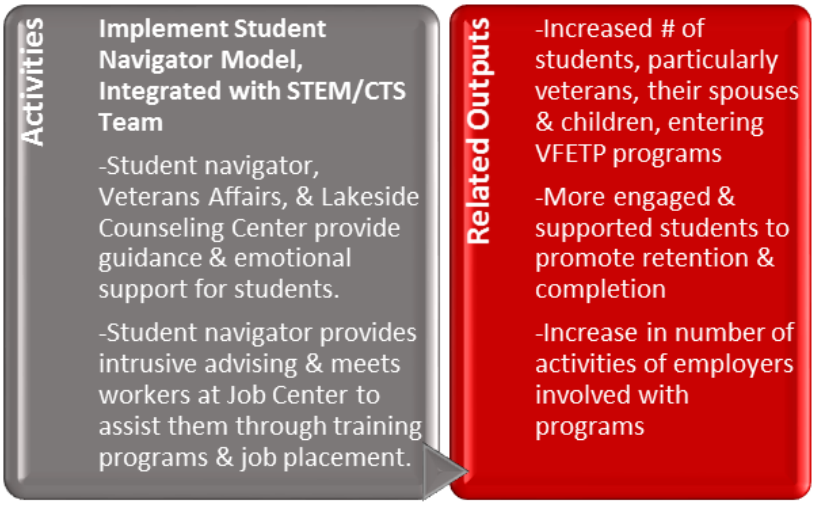
Prior learning assessment (PLA) continues to rely primarily on portfolios, while waiting on a more formal process to be put into place. Grant staff report that the college has been waiting for the DCCCD to formalize a new policy before they create a formal process for PLA. Currently, the department chair oversees PLA on an ad hoc basis, most commonly using portfolios.

Students bring to the colleges a myriad of experiences since many are nontraditional students who have 'real world' experience that puts them ahead in their coursework. We asked student survey respondents about their status on intake. Nearly a third (32.7%) reported that they had worked in a job that used some of the skills they are learning in class, and over a

quarter (28.8%) reported they had obtained program credit for prior learning experience—an unusually high number for prior learning. PLA is particularly important to make the programs more accessible to veterans. When asked if the college is friendly to veterans, at least one noted PLA, stating: "They were able to accept some credits as an equivalent, and some of the equipment is similar."

Student Navigators

The navigator was a new position to Richland with this grant, and the school has demonstrated a commitment to the model by hiring an additional full-time navigator at its own expense. The navigator position continues to evolve as its jurisdiction and role is negotiated among various actors, but there was improved awareness in the past year among faculty and staff of the potential contribution. The second navigator was new at the time of the evaluation visit, so many of the findings are related to the original navigator.



The original navigator has expanded interactions with the school's associate vice president of workforce development. The AVP had only just begun her interaction with the project at the end of the first report and was new to the position in the school itself. While the relationship between the two positions continues to evolve, and jurisdictions continue to be negotiated, the past year saw increased interaction between the navigator and the AVP. This is a promising development; because the two have complementary missions, collaboration might increase the reach and impact of both. Their roles are discussed in more detail in the section on employer engagement.

Lines between the navigators' and STEM advisors' functions remain muddy. The navigators remain situated in the STEM advising center and are considered a part of the STEM team. This means that while the TAACCCT-funded navigator is limited to TAACCCT students, the other navigator sometimes advises STEM students on general issues, and some VFETP students are not making it through to the navigators. Meanwhile, the two navigators are in the process of working out a division of labor amongst themselves; the new navigator has focused more on the student side of the role than the employer side and will have sole jurisdiction over CIT students while also helping with students from the original programs.

The navigator role complements multiple goals of the college, spanning multiple parts of the college. There does not appear to be interest on the part of the program in increasing the boundaries between the navigators and the STEM advisors; since the STEM center runs on a team approach to advising, doing so would be counter to its culture. However, it may be important for these positions to accomplish their goals to consider how to establish a more distinct division of labor. Further, the navigators' employer engagement role is still emergent, but (as discussed below) is an important part of the college's workforce development strategy. While these positions are located in the STEM center, the college may want to consider how to best situate the work of the navigators in the college, and whether they might function more productively separate from the STEM center offices.

The navigators' collaborations with faculty have increased and improved. Faculty and the original navigator all report increased collaboration in the past year; both lead faculty report having regular ("almost daily") interactions with the navigators and making regular referrals to the navigators when students need extra guidance. This in part appears to be a function of familiarity; faculty described hesitation to refer students at the beginning because they weren't sure what the navigator could do and how students would react to being passed along. (One faculty member had been concerned that this would make students think the faculty were uninterested in them.) However, there is much more engagement now between faculty and the navigators, and faculty are even working to bring the navigators up to speed on the technical elements of the programs so they can represent the students more effectively in their interactions with potential employers. This relationship-building process took time, but it appears to be paying off with a more collaborative team oriented toward serving its students.

Student Supports

Student navigators are important sources of student supports and can serve as gateways for Engineering Technology students to increased resources throughout Richland College. To assess the degree to which students used student support resources at the college, the student survey included a question that listed the types of student support services available to them through the program or through Richland College generally and asked them to select all that they had used during the school year. Their responses are presented in Table 5 in descending order of usage. Sixty students selected one or more item. Among all services used by students, the most utilized service was STEM advising (80.0%), followed by tutoring (26.7%). Other popular services among students were financial aid advising (21.7%) and textbook lending (21.7%). Only 13.3 percent of students reported using the navigator's services, though this may be due to the phrasing of the question. In focus groups, when we asked students about contacts with the navigators they were unsure; when we used the navigators' names, most responded that they'd had a contact of some sort, even if it was not one-on-one.[5]

[5] Examples of contact besides one-on-one meetings include the navigators' visits to classes or mass emails.

TABLE 5. RICHLAND STUDENT SERVICES UTILIZED DURING 2016–17 SCHOOL YEAR

Service	Yes	Percent of total
STEM advising	48	80.0
Tutoring (English/Science/Math Corners, the Learning Center)	16	26.7
Financial aid advising	13	21.7
Textbook lending	13	21.7
Career services	9	15.0
Veterans services	9	15.0
Navigator	8	13.3
Transfer center	7	11.7
PLTL	6	10.0
Student life workshops	3	5.0
Online job board	3	5.0
Disability services	2	3.3

N=60 students
Source: Richland College student survey

Despite the presence of the navigators, some students still had concerns about outside pressures affecting their program performance. We asked students whether they had any concerns about passing or doing well in Engineering Technology courses. Though most students were unconcerned, about a quarter (26.0%) of responding students reflected that they had concerns, as demonstrated in Table 6. There were no significant differences in these results between manufacturing and electronics students. Students were given an opportunity to describe their concerns; their most frequently cited concerns involved working and going to school simultaneously. Notably, many students worked—67 percent of students reported they worked—and of those students, 36 percent reported that they worked 40 hours or more.

TABLE 6. STUDENT HAS CONCERNS ABOUT PASSING OR DOING WELL IN ENGINEERING TECHNOLOGY COURSES

	Frequency	Percent
No	54	74.0
Yes	19	26.0
Total	73	100

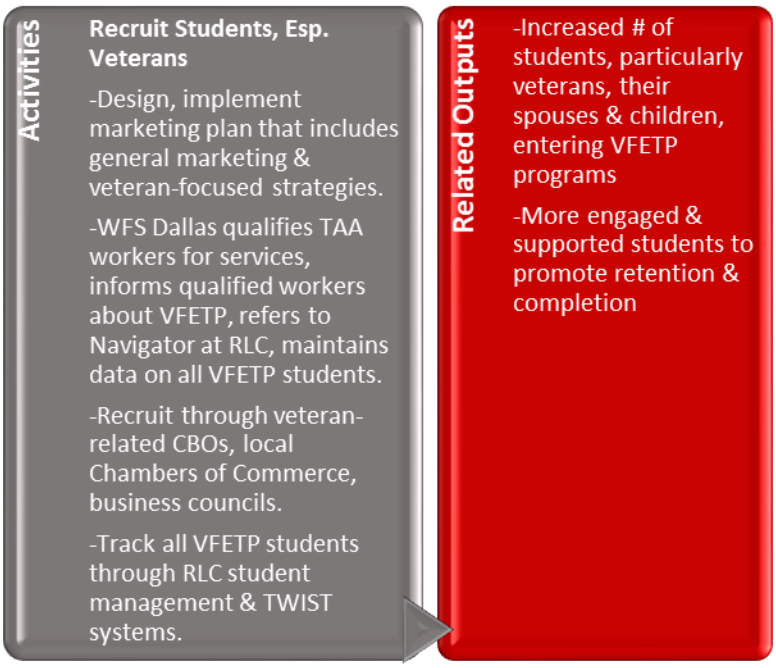
Source: Richland College student survey

Recruitment

Recruitment remains a program focus, with some challenges. The program continues to push student recruitment, relying primarily on the navigators to bring students into the program. Thanks to the recent CIT expansion, it has incorporated 11 new certificate or degree paths, adding students to its TAACCCT outcomes tracking. The closing of ITT Tech[6] was also

[6] Lutz, E. M., & Watkins, M. (2016, Sept. 7). Texas students scramble after ITT Tech shutdown. *The Texas Tribune.* Retrieved from https://www.texastribune.org/2016/09/07/itt-tech-closes-all-campuses-including-10-texas/

viewed as an opportunity; in an effort to recruit those students into the program, faculty and staff put extra work into trying to understand the ITT programs and how they could translate into progress toward Richland's TAACCCT programs.



To understand the student perspective on recruitment, this year we explored the question: Why do students decide to attend the Engineering Technology programs at Richland College?

Students are attracted to job-related features of the programs. In the student survey, we explored several key features of the programs that were designed both to make the process of going to school easier for students and to make the results of going to school more lucrative and appealing. We presented the students with a list of these features and asked them to reply using a Likert-type scale (range 1–4) to indicate whether the item was (1) extremely unimportant, (2) unimportant, (3) important, or (4) extremely important to their participation in the program. The mean and median scores on each item are presented in Table 7 in descending order of importance. On average, students identified hands-on learning experience as the most important feature of the program (3.8), while the ability to complete a program in one year was among the least important issues (2.6). Job outcomes were paramount, with the remaining top four items of importance being the ability to get a stable job (3.7), ability to easily get a job (3.7), and ability to get a high-paying job (3.6). It is notable that all of the program features on our list were viewed positively; the only item that received some ambivalence (earning a mean score in the high 2 range, somewhere between unimportant and important) was the ability to complete the program in less than one year. However, aside from hands-on learning, the students were generally more concerned with job-related features than they were with school-side features (e.g. applying program to further education, self-pacing, taking technical courses without college prep courses first, completing quickly). NIMS and ISCET testing were somewhere in the middle.

Manufacturing and electronics students differ in their orientations toward future education and credentialing. There was one significant difference between students in the manufacturing and electronics programs on these items. On the issue of obtaining NIMS and/or ISCET certificates, there was a statistically significant difference in the mean responses, with manufacturing students more likely to respond positively than electronics students. These results are consistent with those we reported in the Curriculum section. In that section, we

examined a separate question and found that the 76 percent of respondents who expressed interest in pursuing a NIMS and/or ISCET certificate consisted of significantly more manufacturing students than electronics students.

TABLE 7. LEVEL OF IMPORTANCE OF PROGRAM FEATURES FOR PARTICIPANTS IN THE ENGINEERING TECHNOLOGY PROGRAM

Program Feature	% Extremely Important			Mean: Scale from 1 (extremely unimportant) to 4 (extremely important)		
	All	Manufacturing	Electronics	All	Manufacturing	Electronics
Opportunity to have a hands-on learning experience	84.5	86.1	80.8	3.8	3.9	3.8
Ability to get a stable job	74.3	77.8	68.0	3.7	3.8	3.7
Ability to easily get a job	68.6	74.3	61.5	3.7	3.7	3.6
Ability to get a high-paying job	64.8	69.4	57.7	3.6	3.7	3.5
Ability to apply classes toward an Associate Degree	57.8	50.0	61.5	3.5	3.4	3.6
Ability to obtain NIMS and/or ISCET certification	46.4	61.1	25.0	3.3 *	3.5*	2.9*
Availability of self-paced learning options	25.7	19.4	32.0	3.1	3.0	3.2
Ability to take technical courses before completing college preparatory classes	24.3	27.8	15.4	3.0	3.0	3.1
Ability to complete a program in less than one year	11.6	5.6	8.3	2.6	2.6	2.6
Other	53.3	75.0	33.3	3.3	3.5	3.0

N=71 students
Source: Richland College student survey

Nearly all students had some prior interest in the program areas. As demonstrated in Table 8, all but three of the 73 responding students indicated that they had at least some interest in manufacturing or electronics prior to learning about the Engineering Technology program. In fact, the largest group of responding students—38 percent—indicated that they were extremely interested in manufacturing or electronics before learning about the program.

TABLE 8. STUDENTS' INTEREST IN A CAREER IN MANUFACTURING OR ELECTRONICS PRIOR TO LEARNING ABOUT THE ENGINEERING TECHNOLOGY PROGRAM

Level of Interest	Frequency	Percent
Very Interested	27	38.0
Interested	20	28.2
Somewhat interested	21	29.6
Not at all interested	3	4.2
Total	73	100

N=73 students
Source: Richland College student survey

In an open-text response question, we asked survey respondents to describe in their own words what appealed to them about this line of work. Responses varied, but often included the chance to work hands on, to be in an innovative and growth-oriented industry, to earn high pay, to make a job out of a hobby, to complement other degrees they were pursuing, or to expand opportunities in their current jobs. The following statements demonstrate the range of motivations students reported for their enrollment in the programs:

> I've been making things out of metal since before high school. . . . It didn't occur to me then to combine my passion for metal to a career until my parents starting pressuring me to go back to school after a few semesters off. The longer I've been in this program, the more sure I am that this is where I want to be.

> I am already in the manufacturing industry currently. I have learned to service the CNC machine, now I am learning to use them, and later I will have my own show. It is important to me to be able to see things from not only the machinist viewpoint but the engineering side as well.

> For someone with common sense it is great to be able to take courses like this. And is a great path for nonconventional learners to gain the skills they need to make over 50k a year.

Figure 1 presents the terms most often used in these open-text explanations in the form of a word cloud, where the larger words are those that appear most often in the explanations. Favored features, such as hands-on work, jobs, technology, and working, all loom large.

Figure 1. Word cloud of frequently used terms in students' descriptions of motivations for joining Engineering Technology programs

While most students were positive about the programs, a few—fewer than one fifth—had some concerns. Out of 67 student respondents, only about 18 percent found something about a career in manufacturing unappealing, while the majority (82%) did not. (See Table 9.) Those who had reservations were asked to explain in an open-text response; answers included the possibility that they might have to work for a company with whose ethics they disagreed (such as defense) or that the work might be boring, too hands on, or not pay enough.

TABLE 9. STUDENT RESPONSES WHEN ASKED WHETHER ANYTHING ABOUT A CAREER IN MANUFACTURING OR ELECTRONICS TECHNOLOGY WAS UNAPPEALING

Response	Frequency	Percent
Yes	12	17.9
No	55	82.0
Total	67	100

N=67 students
Source: Richland College student survey

Special Population: Veterans

Veterans continue to be a challenging population for the college to reach. The original navigator has begun attending monthly meetings of the Veterans Coalition of North Central Texas and will be doing more outreach in Fort Worth now that the geographical expansion is in place. Despite the project's expansion into Tarrant County as of June 2017, there has not yet been much movement to recruit veterans from the county's joint reserve base. The final year of the grant will feature more targeted efforts to pursue that population, particularly in the newly expanded territory.

To explore the experience of veterans already in the program, we presented an extra panel of focused questions to the 11 veterans who completed the student survey.[7] Among this population, service dates varied; some had joined and exited in the 1970s and 1980s, while about half had entered or exited in the 2000s and 2010s. The mean length of service was 4.2 years. Among the veteran population of student respondents, roughly one quarter reported that they were currently training for a job similar to one they held in the military. Ten of the eleven agreed or strongly agreed that the Engineering Technology program at Richland is veteran-friendly; asked to elaborate, responses included:

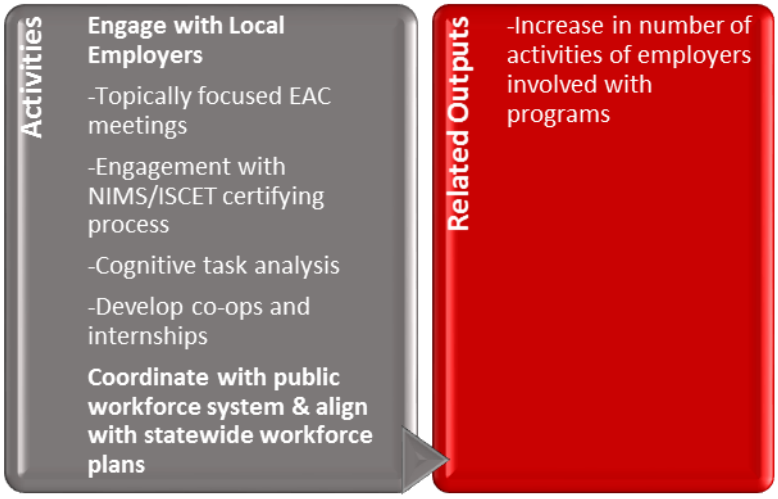
> Every instructor has been very helpful in understanding that I have not been in school for a short while but has also helped me to understand anything that is confusing.

> Richland is a military-friendly school, and their program is very good for veterans.

[7] Veterans represented 15.1 percent of the population of 73 respondents.

We also asked respondents if they had any suggestions for how Richland could more effectively serve veterans. One respondent did not think that the administration was effectively serving veterans, and another asked for more information about jobs.

Employer Engagement



Employers are motivated by hiring needs and a desire to give back. Many employers interviewed gave voice to the importance of 'giving back' as a motivation for their involvement with the program. Some employers interviewed for the evaluation had a long-term relationship with the college and reported their belief in the program was an important motivation for their involvement. As one employer stated: "you know I just think it's an excellent program. It gives students an opportunity to learn, other corporations to participate and work with them, the local colleges. So I'll always have a passion for helping students and getting involved." Another stated that they thought the college filled a special niche by offering technical education for students who do not necessarily have an interest in or inclination toward getting a four-year degree. One employer partner who had a history with Richland College cited both rationales:

> That's kinda overused, "giving back," but it's really true 'cause I'm getting older, I'm doing a lot of mentoring with different people, mentoring young engineers. . . . Richland has been great for me and for my family, you know, as far as accomplishing the goals, the education goals whatever they are, and I think it's just something.

However, while college staff reported many local employers are seeking to give back to the community, they observed that their primary motivation remains the opportunity to find workers whose skills align neatly with their needs. As an instructor commented, "when they need to hire somebody, they'll engage. And when they don't, they may or may not." Many employers "fuss about this idea that they can't find quality workforce." With that in mind, college staff strategically pitch the idea that the college can "give you a pipeline for a quality workforce." When reflecting on employers' reactions, one college staff stated: "That's attractive to people—not only to give back, to be able to partner with the local college [but also to] have a say in how the community's workforce is being prepared."

The cyclical nature of the labor market demand among some local employers makes their involvement in the college programs wax and wane with their employment needs. The

college and a longstanding local employer partner often experienced these fluctuations in the labor market, and it had negative effects on their relationship. With those experiences in mind, the two groups are working together to ensure that the programs are more broadly focused; this may help the program remain more stable than it was when it focused more narrowly on the fluctuating needs of that single employer. College staff noted that their engagement with another large local employer had been intensive only when that employer had an urgent, immediate hiring need. Once that need became somewhat less immediate, so did the relationship. They did, however, remain at least somewhat engaged with the intention of cultivating the relationship for long-term hiring needs in recognition of their aging workforce. To the extent this projection holds true, the college has been laying the groundwork to have a pipeline for placing students into these opportunities when they arise.

Employers highlighted the ability of community colleges to adapt to local needs. Employers interviewed for the evaluation had positive comments about the role of the college in workforce preparation and their level of responsiveness to employer needs. One employer we interviewed stated: "I see the role as partnering with the industry in the community and allowing them to voice what their needs are to the community college, and then the community college tailoring programs to the needs of the manufacturing industry." Other employers recognized that community colleges are a local resource in the community that can help with their hiring needs. As one employer stated about the role of community colleges: "One is certainly for the people who just want to earn an associate degree—that is a local pipeline with technicians—and we've got [the main campus of] Richland, literally just—what?—a mile and a half away from this campus." Additional interviews and surveys to be completed in the coming year will gather more information from a wide range of employers and report more broadly on their perceptions of and experiences with the college.

Employers valued the associate degree for technician positions, but it is not clear how much they value industry certifications. Employers interviewed for the evaluation reported that they do hire technicians with associate degrees, although none of the interviewees had recently hired any graduates from the college. Nevertheless, they reported that the associate degree provided valuable preparation for workers. As one stated: "I think it gave them the hands-on experience to interact with the CAD tools . . . a lot of employers want to know if you know how to use the tool. That way you're not training each individual how to use the tool as opposed to learning the job function." No employers reported the industry certifications as a requirement or a priority when hiring technicians. College staff reported they were still working on ways to increase awareness among employers about industry certifications as well as on efforts to market them—the NIMS certification in particular.

Multiple strategies of employer engagement have been used, with varying levels of success. Ongoing employer-engagement efforts through mass outreach have been less successful than networking at building personal contact with employers. The college conducted some mass mailings to a large number of local employers (information was sent to over 900 addressees found through a database search of local employers with 10 or more employees

within five miles of the college); though college staff reported garnering interest from a couple of new employers through the mailings, they were not convinced by the effectiveness of this type of outreach overall. They pointed out the likelihood of an email from someone an employer does not know ending up being ignored or filtered directly into a spam folder, or a mass mailing ending up being immediately tossed into the recycling bin if not for a personal connection.

However, with the hiring of a new associate vice president for workforce and continuing education, the college has conducted more of its new outreach efforts by making in-person connections with employers. College staff reported that they "got down to the grass roots of 'Go out, walk onto their doorstep.' " Consistent with this approach, one instructor commented: "You have to go visit these people. And it takes—it's time consuming, and somehow you've got to find the time to do that. Because what is the number one goal? It's developing that community relationship." Making the first personal contact is often a challenge, but once that happens, staff members are able to network beyond that first contact and get to the people within the organization who can help.

> So, once you talk to that person, it's a matter of talking to them and saying, "Do you know anybody else that's looking to hire people? Do you know any companies? Can you give me the—would you mind giving me their contact information?" or "Can I give you my contact information to pass along?"

Establishing this kind of working communication flow also makes it easier to get the employer to help complete surveys and other forms that the college would like completed. To some extent the approach may vary with each employer. One college staff person who makes a lot of contacts with employers remarked: "I think it really depends on the employer. There are some that you can call and they are responsive to phone calls. There are others that we've had problems with."

The most common method used by staff members to communicate with employers was email; most college staff reported they often used this form of communication to get in touch. The least common forms of communication included in-person contacts at the employer's site or at industry or local development meetings. In-person contact at on-campus events was more common, however. Table 10 summarizes the most common modes of communication reported by college staff who interact with employers—each staff reported on five employers they have relationships with. In interviews, employers reported that their informal conversations with college staff were valuable to them. One employer highlighted the importance of "hallway conversations, just saying what's going on, how are you doing, walking down the hallways and just seeing the labs with the faculty and with the people and being in attendance at the advisory boards and again having just conversations with them." This points to the ongoing need to move towards more personal forms of connecting with employers.

TABLE 10: MODES OF COMMUNICATION WITH EMPLOYERS, SORTED BY MOST COMMON

Mode of Communication	Often	Sometimes	Rarely	Never
Email	13	1	1	0
Phone call	6	4	1	0
On campus	6	3	2	0
At employer site	7	1	0	3
Industry meetings	1	1	1	4

Source: Richland employer contacts survey

College staff report that they engaged with new employers through local industry meetings. For example, the Chamber of Commerce and its subcommittees, as well as other local leadership organizations, have been a source of contacts—primarily high-level industry contacts—that could lead to additional employer partnerships for the programs. Attendance at these meetings is intended to generate interest and awareness of what the college is doing. As one high-level college staff person stated: "That's an ongoing area for us that I think we just have to continue to pay attention to. We have—we serve on Chamber of Commerce boards, committees, so that we're out there. We're visible. We're present." These high-level connections are important for the college, particularly when reaching out to the large companies. Several college staff reflected on the importance of these high-level conversations in kicking off the partnerships with those employers.

New instructors with industry experience also helped bolster employer-engagement efforts. Some of the new instructors hired for the grant have brought in new industry contacts who have been helpful to the programs. One of the instructors contacted former colleagues in industry and invited them to be part of the advisory committee. Another instructor has accompanied the navigator on visits to personal industry contacts. Earlier in the grant period, the college struggled to find instructors with the qualifications needed for the position and were eventually able to get the degree requirement waived to hire an instructor. This allowed the college to hire an instructor with deep industry connections who previously would not have been considered for the position; that instructor is now making an impact on how the programs approach industry.

College staff report that they are starting to get interest via word-of-mouth referrals. In one instance, a college staff member reported that one of their former students was in a position to hire and was sending staff to recruit from the college; in other cases referrals were coming from a variety of word-of-mouth referrals. One college staff member reflected on this new development in their relationships with local employers: "I also have a lot of hiring firms that are calling us. And so, I started to ask, 'How did you all find us?' And one was saying another former student, and the other said our website. So we were like, 'Yay! It's doing what it's supposed to do. That's awesome.' " Once some employers have developed good relationships with the college, they begin talking with other employers, and the word starts to spread. One instructor reflected on this process:

> All you need is, like, five or six major companies—not big, not retailers necessarily—community companies that you have a strong relationship [with] because they all talk to each other. And one will say "Hey . . . where are you getting your employees from?" "Well, I get them from Richland College. You know about them?" "No." "Well, blah, blah, blah." And they go in. Now you've connected with that company, and you don't even know it.

College staff noted that an essential part of employer outreach is selling the program and its students. When college staff are talking with industry, they must know the details about the programs and the students' capabilities. While certain college staff members who do not teach in the programs—such as the navigators—have a good knowledge of how the programs are designed, they have more recently been working on gaining more technical knowledge of program content so they may more effectively engage with employers. As one instructor noted, it was important to teach the college staff

> . . . how to walk the walk, the talk, so they're comfortable with that . . . . They don't know everything about it, but if they can just convey enough that they've been involved or concerned or excited—that type of thing—the employer's going to go, "Great, great."

In addition to learning more about the program so they may more comfortably converse about it, some outreach staff mentioned the importance of bringing materials on their visits with employers, in addition to program brochures, that would show what the students in the program can do. As one instructor stated:

> What they should do is walk in there with a set of prints. Say, "Here's what I got. Here's what we're doing. Here's what we're making." We'll show them. "Here's the prints. Here's the tolerances we work with. Here's what the students make." They understand that language. "And here are the machines that we use." . . . I mean, they know we have industry standard [equipment], what they're—we got what they've got.

Another instructor promoted the value of showing final products that the students have made as evidence of their skills:

> You have to be able to sell these programs to industries. To sell, you have to have the final product. And let them look at it, let them feel it, let them see it, so they utilize all their senses for what we do here. You can talk about it all day long, but the imagination [only] goes so far.

The college is still grappling with the format for formal advisory board meetings. They have tried different formats, including in-person and teleconference, and have held them at different times of the day, including lunch time and immediately after standard business hours. They are also considering holding a breakfast meeting and a meeting off site, perhaps at an employer site. One employer interviewed for the evaluation reported that it was helpful that the college scheduled the meetings during work time, which made participation more possible than other times. It is not clear how widely held that preference is among other employers. Experimentation with other times and formats will help the college determine which formats work for the most employers. While college staff thought the teleconference meetings would

help promote participation, they found that only the most dedicated members participated in them. Still, one industry member commented that the phone meetings were run well in that they had an agenda and started and ended on time. Like most meeting held so far, much of the teleconference meetings involved listening and reacting to updates on what the college had been doing. Some college staff have questioned this structure, suggesting a need for a more engaging format that includes more back-and-forth with employers rather than a format primarily focused on employers receiving updates. Finally, some college staff expressed concern about how much they can accomplish in a formal meeting context, suggesting that they may feel they are accomplishing more through their individual contacts at this time.

In addition, the college is still developing ideas about the content of the advisory board meetings. With new college leadership providing guidance on how to run the meetings, they are thinking about how to engage new members and seek input from all who participate, recognizing the variety of experiences board members bring to the table based on their unique industry expertise. Primary goals of the meetings include conveying more information to employers about the curriculum and what students are learning, and conducting a structured conversation to get their feedback on the program. One possible way to spark this kind of dialogue would be to share examples of products the students have made, a practice some college staff are already using in their outreach with employers. The college also views the meetings as an opportunity to ask employers to get involved with the programs in other ways, such as by providing internships or serving as a guest speaker.

Other college staff have suggested that meetings should be focused on solving a specific problem. This approach would mirror the way that industry functions, and that familiarity may encourage more participation. As one industry member stated:

> In industry, we have a meeting because there's a problem, or there's a situation that comes up, and we need to have a meeting to understand that better. And then we [ask] "What is our solution to that?" And what we do is . . . we get together on a solution, then we make assignments. And [at the] next meeting, we follow up, see where we're at, and then we make a decision on whether we go or not.

College staff have developed a list of ways that employers can get involved with the college, and they have plans to share that with employers moving forward. However, to date, this has not been done. They may also consider developing subcommittees on which employers can focus on specific interests. Such an arrangement could have the unintended positive consequence of enhancing an aspect of working with the college that one employer cited as an existing benefit: connecting with others in the same industry and learning about trends. One employer reflected on the benefit of participating in the college advisory board:

> It's great seeing the other companies there, how the industry outlook is, kind of get a feel of not just what you are doing but what other companies are doing. So if you see an industry trend, you'll know this in a room full of people that are either hiring or they are having a hiring freeze. You could kind of get a sense of if it's just localized or if it is kind of more global.

Follow-ups are critical to employer engagement. Once an initial contact with an employer is made, it is essential to maintain momentum, and the college is exploring how best to follow up with interested employers. Some college staff noted the need to strike a balance between remaining engaged enough to maintain a proper relationship with the employer and being seen as "too pushy." Nevertheless, follow-up is essential to keep the contact active. As one college staff member observed:

> Most folks when they connect with us, it's more so for a hiring need. They're looking to fill it so they can get whatever their product is out. I don't know that hiring pushes them to get involved. I think it's the follow-up with us. If we're not following up with them, if we're not there, if we're not talking to them, they're less likely to say "I'm going to come around on my own."

College staff have found that once they are able to engage the employer in at least one way, they can often lead that employer into a more fruitful, ongoing relationship. As one staff member observed:

> I think this list [of ways employers can engage with the college] is it. Like, we are actually going to them and saying "Can you do any of these things?" "Yes." And it doesn't have to just be one thing. If you got a couple of things that you can do, even if it's once a year, that you can come out or you can provide a tour of your facility for our students, let's say once a semester, that is your give-back. And so once they start to see students come in, and they're excited about what it is that they're doing, when they do have those hiring needs it's like, "Oh, I already know where I'm going. I want to go over to Richland."

The college offers multiple ways to engage, including advisory board participation, providing feedback on curriculum, guest speaking in classes, and providing tours of their facilities. Additionally, some college staff have suggested that the college have more interaction with their employer partners between advisory board meetings by sending regular email updates on the program and by letting them know of other opportunities to be involved with the college.

College staff reported a variety of contacts with employers outside of advisory board meetings. When asked about the ways in which they interacted with the top five employers they have worked with in the past year, the forms of interaction most commonly mentioned were: discussing skill needs with employers, discussing internships and co-ops with employers, and responding to employers seeking Richland students to fill job openings. In contrast, the least common interactions with these employers were: having the employer serve as a guest speaker in class, meeting at a networking event, and taking students on a tour of the employer work site. Table 11 summarizes these college interactions with employers as reported by college staff in the employer contacts survey for five employers they each have relationships with.

TABLE 11. COLLEGE INTERACTIONS WITH EMPLOYERS, BY MOST COMMON

	During current semester	During current school year	Since beginning of project	Total
Discuss skill needs	2	10	2	14
Discuss internships, co-op	1	11	1	13
Employer seeking students	1	12	0	13
Discuss short term training opportunities	0	8	3	11
Feedback on curriculum	1	7	2	10
Discuss perception of local market	1	7	2	10
Tour of program facilities	2	5	3	10
College seeking jobs for students	0	8	0	8
Guest lecturer	2	2	3	7
Networking event	0	5	0	5
Tour of employer worksite	2	1	1	4
Total	12	76	17	105

Source: Richland employer contact survey

College staff are focused to different degrees on taking an active role in making matches between students and employers. The college plays a role in providing a pool of potential candidates for employers seeking to fill open positions; this process is an exercise in trust building. College staff will respond to these requests by collecting a few student resumes and offering them to the employer. Several college staff reflected on the importance of making good matches between students and employers. As one college staff member stated: "It's not just about who's in the database and who might be available. We have to do further screening on that." In one case in the past involving a large local employer, a placed student did not perform well, and the college sought to be more cautious in making matches as a result of that experience. College staff spoke of making sure the students understand the job and employers' expectations to make sure they are prepared to be successful. Further, some college staff discussed instances in which employers have a positive experience with a student and ask for another like that one. One college staff person reflected on the program's intern-placement process with one large local employer:

> We've got a relationship with them where every year, we're vetting resumes and giving them resumes to look at, and they're interviewing our students and choosing from a pool of students that we provide or two other of our sister colleges provide.

With smaller companies, college staff might review the job description and then decide who among the students would be a good match. An instructor articulated the value of the college in the matching process as follows:

> I think it's a matter of letting employers in the area know what kind of programs we have and how they can benefit from a prescreened candidate that they can bring into the workforce.

Further, college instructors report that they keep in touch with employers to find out how their students are performing on the job.

College staff agree that internships are important to learning, but barriers remain with regard to involving both employers and students at a broad scale. College staff observed the importance of internships for students' learning; as one staff person stated: "What that does, when they go to work, they value and appreciate what they learn in the classroom." One concern that college staff mentioned is that some students cannot afford to take on internships; for those who have jobs and families to help support, it would be too risky to give up a permanent, paid position for an internship. On the other hand, college staff reported shortcomings on the side of employers as well—many are simply not set up to manage interns. Those smaller companies who do take interns often will take them only as long as they have a temporary vacancy; once they fill the position, they terminate the internship. The larger companies are more likely to offer a more regular, ongoing internship program regardless of their exact hiring need for that time. With internships in place, the college expects at least some of these students will be hired. The college reports that some interns were placed into permanent jobs over the summer, which will be explored in greater detail in the final evaluation report.

Ongoing internship programs require a strong commitment from the employer. As one college staff stated: "That's definitely a harder sell because just like hiring a new employee, you've got onboarding time, you've got train-up time, and it's definitely a commitment on the company's part to work with a revolving internship experience." The college is building this type of relationship with a couple of the large local employers and is hoping to increase the scale of these programs over time. To date, the college has had 17 students placed in internships during the grant period.

Cultivating relationships with employers takes time and requires dedicated staff hours. The new AVP and the navigator devote much of their time to the process of engaging employers. The AVP, along with others at the college, generates some of the new employer leads, and the navigator helps to follow up with these employers and connect them to specific opportunities for engagement within the college. Without these staff roles, employer engagement at the college would not be able to function as it has. Existing faculty help to generate leads and find opportunities for engagement, but they do not have the capacity to handle the level of coordination and follow-up that is necessary to support the kind of employer engagement that the grant has sought to promote. Several staff reported that it has taken time for their work to translate into employer engagement, but those connections are beginning to materialize through word-of-mouth contacts and relationship-building efforts.

Partnership occurs at multiple levels, and relationships slowly build over time as employer have good experiences with students that lead to more engagement. Particularly with large companies, the connections among high-level leadership at the employer and at the college is important. As one college staff person stated: "The challenge has been getting to the

right person who can affect some kind of change." These "right people" are the staff members who are able to make broad decisions about the ways in which the company's engagement with the college may proceed—such as whether to offer internships. Multiple levels of contact within the employer are important, as one college staff person observed:

> The higher-level people can make more decisions about things like opening positions up to us, letting us have job descriptions, giving us HR contacts that we can have real-time communication with about vacancies that come available, doing internships that are paid. Those are the kinds of things that the higher-level people can make decisions on. Some of the people that maybe may not be at that decision-making level can get on a committee with us or can take part in a conference and give us feedback. They can come over to the campus and talk to the students. They can tour our lab. Those kinds of things. But the lasting partnerships come when you're kind of able to infiltrate at a more global level and have all of that going on with that company at the same time.

In some cases, high-level contacts with employers occur at the district level and then get developed at multiple levels within the college. This process can take time and requires care at every step to make sure the relationship is cultivated and the employer is satisfied—by making good matches with student interns, for example, or ensuring that the college is responsive and attentive to their needs. As a college staff person stated: "It's just doing right by them in the smaller opportunities so that the largest opportunities and the additional introductions to people can occur." In the case of one large local employer, the college has embarked on a long-term process of understanding the company's needs, including visiting programs in other states they felt were already well-suited to meet the employer's requirements. Some of this work is still in process, and that employer remains one among several employer partners who are still waiting to see what the program graduates are like and whether they will be qualified to fill upcoming vacancies. Another employer reported feeling optimistic about the college's ability to deliver:

> [The college] just saw the opportunity and kind of seized upon it, and they really drove hard to get that grant and make some changes. . . . I'm certainly impressed with the facility they have, and I'm impressed with the dialogue we have with them.

At the same time, some employers also noted that the relationships they were building with the college were longer-term in their view and would take time to yield the kind of results they need. As one employer stated: "In the last couple years, we have consciously made a significant effort to try and really attend the career fairs and get involved with the students with the analogy that we're planting seeds for the future."

The college continues to have a need for a collegewide system that will allow them to coordinate multiple contacts with employers made by various staff members. College leadership is holding regular meetings to coordinate and align workforce activities. Staff report that through these efforts they are trying to break down silos within the college. At present, staff that are working most directly on employer-engagement activities are trying to coordinate

their efforts by holding regular meetings to share information on contacts as they are developed and followed up.

The current system for coordinating employer contacts is also informal; while there are plans to move to a more formal system, nothing has yet been established. College staff are making so many contacts, it is hard to keep track of them. Employers are contacting a variety of people within the college, leaving staff members with the challenge of trying to bring all of this information together. An employer may work with multiple instructors to make arrangements to come to campus to speak and take a tour of the labs, and there is no specific system in place to make sure that others at the college know this. The college is still using individual tracking sheets to record their employer contacts. A more complex data tracking system for this type of management would better organize and manage these multiple relationships. College staff reported that it is a goal to have all this information in one place. In Spring 2017 the college reported that staff members were building spreadsheets using a shared template that would help to standardize the information they collect and record.

Given the amount of employer-engagement activity at the college and the importance of involving people from multiple tiers within it, there is a need to coordinate these efforts and be aware of these multiple levels of possible activity. While some instructors are already involved in many aspects of employer engagement, it may be possible to figure out more ways to involve all faculty, including new faculty. Since instructors have the most direct and intimate knowledge of the program and its students, they would make good ambassadors to employer partners.

The grant and the programs each have advisory board meetings that could benefit from more coordination with one another, especially given the overlap in employer members of these groups. The college also hosts district-level meetings—called compressions planning meetings—that may involve similar sets of employers. With all these meetings happening, the college needs to consider how to best coordinate their outreach efforts.

The college has an institutional commitment to employer engagement, and the grant is supporting this shift. Through the grant, the college is showing a commitment to conducting employer engagement; in addition, their commitment to hiring a high-level staff person to oversee workforce connections and take the lead on generating industry contacts also reflects the importance of this part of the college's mission. They have added participation in internships as a major priority for their work; this was reflected in the recent addition of that activity to the college's list of institutional performance indicators. The grant has fueled the momentum at the college towards meeting this goal.

Despite all the employer-engagement efforts, many students report having no contact with employers. About 61 percent of respondents to the student survey indicated they have not met any employers through the program at all. However, if students did meet an employer, it was most likely in one or more of their classes (25%) or through an Engineering Technology

event (12.5%). Only about 4 percent indicated they met an employer through an internship or co-op opportunity. (See Table 12.)

TABLE 12. STUDENTS' EXPOSURE TO EMPLOYERS THROUGH THE ENGINEERING TECHNOLOGY PROGRAM

Location	Respondents reporting exposure	Percent of respondents
Contact through class	18	25.0
Contact through Engineering Technology events	9	12.5
Directly introduced by a faculty or staff member	4	5.6
Contact through an internship or co-op	3	4.2
No contact	44	61.1

N=78

Source: Richland College student survey

Students relied most on faculty and the navigator for help with their job search. Among the 45 students actively seeking employment, 42 percent received help in their job search from an Engineering Technology faculty member, while 40 percent received help from a navigator. Richland's Office of Career Services was the least popular source of help on our list, having been visited by only 22 percent of responding students. (See Table 13.)

TABLE 13. SOURCES OF ASSISTANCE STUDENTS RECEIVED IN THEIR CURRENT JOB SEARCH

Department	Yes	Percent of total*
Engineering Technology Faculty	19	42.2
Navigator	18	40.0
Richland Career Services	10	22.2
Other	10	22.2

N=45

*Column total >100 because students could choose multiple answers.

Source: Richland College student survey

Workforce System Engagement

College staff continue to report difficulties in coordinating with the workforce system, apart from getting wage outcomes data on students. The grant proposal stated that students would be entered into the TWIST database. One goal of entering students into the system was to obtain wage outcomes data. Later became clear it was not necessary to enter students into this system to obtain that information, as this match can be done through other mechanisms. However, another goal of entering students into the system was students getting more services from the workforce system. This goal of getting students entered into TWIST has not been realized and is a source of frustration for the college as college staff continue to pursue this arrangement.

Additionally, the college has hoped that the workforce system would be a source of student referrals to their programs. However, college staff has reported little success in working with workforce system staff. While they have sought to contact workforce system colleagues, they report they have continually encountered challenges in getting responses from counselors who would refer their students. Staff reported that while the college's Richland Garland campus has a history of establishing strong working relationships with the workforce system, workforce system outreach is new for the main campus and multiple workforce contacts have failed to meet the original expectations and agreements for the grant. At this point in the grant, the college needs to pay attention to this relationship and determine a clear plan of action to facilitate contact. The recent changes in college leadership may be a good opportunity to change the nature of this relationship and facilitate contact between college staff and the workforce system staff.

INTERIM OUTCOMES ANALYSIS

This year the evaluation team conducted preliminary outcomes analyses based on student data provided by Richland College and data from the student survey. These analyses offer a preview of the final outcomes that can be expected and an opportunity to review who is enrolling in the program and what their paths through the program look like.

Student Enrollment and Completion

Total enrollment in VFETP programs appears to be growing. Table 14 presents the total number of students enrolling in the VFETP programs by program year. Though it is difficult to extrapolate findings in Years 2014-2015 and 2017-2018, which do not include all semesters, the trend generally appears to be an upward trajectory, with 2017-2018 enrollments on pace to continue a pattern of growth.

TABLE 14. TOTAL ENROLLMENT IN EACH YEAR

Year	Manufacturing/electronics		Information Technology	
	N	%	N	%
2014-2015	105	14.7%	NA	NA
2015-2016	181	25.4%	NA	NA
2016-2017	235	33.0%	259	49.0%
2017-2018	192	26.9%	270	51.0%
Total	713	100.0%	529	100.0%

Source: Richland College student administrative data

Enrollments have remained on target to meet grant goals. Outcome target number 1 in the TAACCCT program is defined in terms of unique participants served, and the VFETP program has already far exceeded its target of 337 unique participants over the course of the grant, as demonstrated by Table 15. Between Spring 2015 and Fall 2017, 523 and 458 unique students were identified as manufacturing and IT students, respectively, in TAAACCT

programs. The number of students in manufacturing under TAAACCT program increased slightly over the cohort years[8]. Since the 2017-2018 IT cohort only contains students enrolled in Fall 2017, it is unclear whether there will be an increase in IT enrollment[9] over time.

TABLE 15. UNIQUE PARTICIPANT ENROLLMENT OVER TIME

Year	Manufacturing/electronics		Information Technology	
	N	%	N	%
2014-2015	105	20.1%	NA	NA
2015-2016	145	27.7%	NA	NA
2016-2017	159	30.4%	259	56.6%
2017-2018	114	21.8%	199	43.5%
Total	*523*	*100.0%*	*458*	*100.0%*

Source: Richland College student administrative data

Table 16 reports on VFETP students' demographic characteristics and their economic, military, and academic backgrounds. We found that similar to manufacturing programs at other community colleges, the programs were dominated by male students, with 86 percent of the manufacturing students and 78 percent of the IT students identifying as male.
The highest proportion of manufacturing student were white (34.6%), followed by Hispanic student (27.9%), African-American (15.9%) and Asian (12.6%). There were very few American Indian, Pacific Islander, and international students. Seven students reported as of two or more races. In contrast, white, Hispanic, and African –American students were more equally distributed in the IT program than in manufacturing program. A large proportion of the IT students were Hispanic (29.5%), followed by African-American (27.3%), and white students (24.0%). The proportions of Asian, American Indian, international students, and students reporting 2 or more races were similar to that among manufacturing students.

The distributions of students receiving financial aid, veteran student, full time student, and age were similar between manufacturing and IT students. About one fifth of the students received financial assistance, the Pell grant. About twenty-one percent of manufacturing students received the Pell compared with twenty-two percent among IT students. Although the VFETP program is centered around serving veterans, only about eight percent of manufacturing students and ten percent of IT students had military experience.

Many students in the programs are non-traditional. The vast majority of students are registered as part-time: 85 percent of manufacturing and 86 percent of IT students. Over half of students were non-traditional students (age 25 or older). Fifty-seven percent of the manufacturing students and fifty-nine percent of the IT students were non-traditional students.

[8] We consider academic years in this report, i.e. year 2014 consists of fall semester 2014, spring 2015, and summer 2015.
[9] Very few students were identified as first enrolled in Spring and Summer terms if we use the course history records.

TABLE 16. STUDENT CHARACTERISTICS

Background Variables	Manufacturing/electronics		Information Technology	
	N	%	N	%
Gender				
Female student	71	13.6%	102	22.3%
Male student	452	86.4%	356	77.7%
Race/Ethnicity				
White	181	34.6%	110	24.0%
African-American	83	15.9%	125	27.3%
Hispanic	146	27.9%	135	29.5%
Asian	66	12.6%	62	13.5%
American Indian	2	0.4%	1	0.2%
International	3	0.6%	1	0.2%
Pacific Islander	1	0.2%	NA	NA
Two or more races	7	1.3%	6	1.3%
Not Reported	34	6.5%	18	3.9%
Financial aid				
Pell	111	21.2%	100	21.8%
Military background				
Veteran	42	8.0%	46	10.0%
Registration status				
Full-time student	78	14.9%	64	14.0%
Part-time student	445	85.1%	394	86.0%
Age				
Non-traditional student	299	57.2%	269	58.7%
Traditional student	224	42.8%	189	41.3%
Total number of student	523		458	

Source: Richland College student administrative data.

Credential completion must increase in order to meet grant goals. Outcome target number 2 is the total number of students who have completed a grant-funded program of study; the overall VFETP target is 265 students. Due to the timing of the expansion into IT programs, for this report outcome analysis of program completion focused on manufacturing students only. Three types of credentials were awarded in these programs: associate degrees, short-term certificates which can be completed in less than one year, and long-term certificates which take 1 to 2 years to finish.

Since spring 2015, 32 of the 523 manufacturing students have earned sixty credentials. Table 13 presents the number of credentials earned by each cohort. The earlier cohort who started in spring 2015 earned the most of the credentials (45 out of 60, 75%). And the latter two cohorts who started the program in 2015 and 2016 only earned 7 associate degrees, 6 Level I certificates,

and 2 Level II certificates. Over half of the credential earned were associate degrees (31 out of 60), followed by Level I certificates (21 out of 60). Very few students completed Level II certificates.[10]

TABLE 17. NUMBER OF CERTIFICATES AND ASSOCIATE DEGREES EARNED BY MANUFACTURING/ELECTRONICS STUDENTS SINCE SPRING 2015[11]

Cohort	Associate degree	Level I certificate	Level II certificate	Total
2014 cohort	24	15	6	45
2015 cohort	6	5	2	13
2016 cohort	1	1	0	2
Total	31	21	8	60

Source: Richland College student administrative data

Student Outlook on the Labor Market

While we do not yet have employment data to examine, the survey included questions for students about their outlook on the labor market. These data provide a sense of student perspectives on how their programs prepared them for work.

Students were generally very confident in the likelihood that they will find a job after program completion. Only 12 percent of students thought they were unlikely to find employment. (See Table 18.) Surprisingly, having met an employer through the program was not significantly correlated with having a positive outlook about one's job prospects.

TABLE 18. STUDENTS' CONFIDENCE IN OCCUPATIONAL OUTLOOK

Student Response	Frequency	Percent
Unlikely	8	12.1
Likely	28	42.4
Very Likely	30	45.5
Total	66	100

N=73 students; Source: Richland College student survey

In general, students felt prepared for work. Students were asked to agree or disagree with the statement "I feel confident about my ability to do the job for which I have trained" on a scale from strongly disagree (1) to strongly agree (4). Results are shown in Table 19. The mean score of 3.0 tells us that on average students agreed they had confidence about the training they

[10] Certificates are organized into Level I (short term) and Level II (long term) certificates. Level I certificate students are waived from the requirements to meet the Texas Success Initiative (TSI) standards for math, reading, and writing, and include: Advanced Manufacturing and Design Certificate,
Electronics Technology Certificate, CAD Skills Achievement Award, CNC/CAM Skills Achievement Award, and Mechanical and Electrical Maintenance. Level II certificate students must meet the TSI standards. The only Level II certificate currently in the program is the CNC/CAD/CAM certificate.

[11] Credential data for the 2017-2018 cohort are not available yet.

received. There were no statistically significant differences between the means of manufacturing and electronics students.

TABLE 19. STUDENTS' CONFIDENCE IN THEIR ABILITY TO SUCCESSFULLY PERFORM THE JOB THEY WERE TRAINED TO DO

Level of Agreement	Frequency	Percent
Strongly disagree	8	11.3
Disagree	6	8.5
Agree	36	50.7
Strongly agree	21	29.6
Total	71	100

Source: Richland College student survey

For the most part, students are already participating in the local labor market. Most students in the Engineering Technology programs (65.3%) report they are currently employed part or full time for pay, as shown in Table 20. Another 20 percent are unemployed, with most either not having filed for benefits or no longer receiving benefits. Of those who were employed, the majority worked at least full time; approximately 36 percent of survey respondents reported that they worked 40 or more hours for pay weekly.

TABLE 20. CURRENT EMPLOYMENT STATUS OF STUDENT SURVEY RESPONDENTS

Employment Status	Frequency	Percent
Employed part or full time for pay	47	65.3
0-9 hours per week	2	2.7
10-19 hours per week	3	4.1
20-29 hours per week	7	9.6
30-39 hours per week	9	12.3
40-49 hours per week	24	32.9
50+ hours per week	2	2.7
Unemployed and have not filed for benefits	8	11.1
Unemployed and receiving benefits	2	2.8
Unemployed and no longer receiving benefits	4	5.6
A homemaker or stay-at-home parent	2	2.8
Retired	1	1.4
Other, please specify	8	11.1
Total	72	100.0

N=72 students

Source: Richland College student survey

Student Satisfaction with Program and Program Elements

We examined student satisfaction as part of the student survey, asking respondents about their experiences with the program generally and about certain specific elements. We presented students with a table of program elements and asked them to report their satisfaction on each

using a 5-point Likert-type scale.[12] The mean for each response item is presented in Table 21. The labs were the most popular items, scoring 4.6 out of 5 in satisfaction. Class sizes, the relevance of the coursework to the chosen career, and availability of the faculty also scored high satisfaction marks. On average, students indicated that they were least satisfied with the process of preparing for the NIMS and ISCET certifications (3.4) and the timing of courses offered (3.7). However, no item dipped to a mean of 2 or less, indicating that most items either elicited satisfaction or, at worst, ambivalence.

TABLE 21. STUDENTS' LEVEL OF SATISFACTION WITH ELEMENTS OF THE ENGINEERING TECHNOLOGY PROGRAM

Response Item	Mean, scale of 1 (completely dissatisfied) to 5 (completely satisfied)			% Satisfied or completely satisfied		
	All	Manufacturing	Electronics	All	Manufacturing	Electronics
Specific program elements						
Lab space and equipment	4.6	4.7	4.4	94.4	97.1	92.3
Class sizes	4.2	4.1	4.4	89.1	83.3	96.2
Relevance of coursework to my chosen career	4.2	4.1	4.4	88.4	82.9	96
Availability of faculty	4.1	4.1	4.1	84.3	85.7	87.5
Availability of academic support services	4.0	3.8	4.2	72.9	60.6	84.6
Plans developed with my advisor or navigator	4.0	3.9	4.1	73.1	62.5	84.0
Overall quality of instruction	4.0	4.0	3.9	80.3	80.6	83.3
Amount of time spent doing hands-on work in classes/labs	3.9	3.8	4.0	76.4	74.3	76.9
The timing of courses offered	3.7	3.6	3.7	69.5	66.7	77
Preparation for NIMS and/or ISCET certification processes	3.4	3.4	3.5	56.1	48.4	58.8
Overall Satisfaction						
Overall Experience at Richland	4.2	4.2	4.2	84.5	85.7	80.0
Overall experience in the Engineering Technology program	4.1	4.1	4.1	85.7	88.2	84.6

Source: Richland College student survey

Students who responded to the survey were satisfied with their programs. The mean satisfaction on students' overall experience at Richland was high (4.2), as was their satisfaction with the overall experience in the Engineering Technology program (4.1). There were no

[12] Scale items were ranked as follows: 1=completely dissatisfied, 2=dissatisfied, 3=neither satisfied nor dissatisfied, 4=satisfied, and 5=completely satisfied.

statistically significant differences between the programs on any of the items in the satisfaction series.

In addition to forced-choice responses, we presented the students with three open-response items: What do you like most about the Engineering Technology program? What do you like least about the Engineering Technology program? Do you have any recommendations for improving the Engineering Technology program? Among students' favorite things were the real-world experience and helpful approach of their professors, the hands-on learning and equipment, and the helpfulness of the staff; these were mentioned many times. One student touched on all these points:

> I am looking forward to the NIMS program that we will start on in coming weeks. The lab and equipment are up-to-date with what is to see in the manufacturing and engineering world. The instructors are all very eager to assist, whether a direct instructor or that of another class. The program seems to be lined out well for work and class completion.

Students were least happy with the time it took to get the program up and running, the timeliness of feedback and instructor class attendance in manufacturing, the timing and availability of some classes, and the size of some classes relative to available equipment. Suggestions for improvement were related to these concerns: Offer more classes, and do so at more times such as evenings and summers; bring in more instructors; teach instructors how to give assessments/feedback and require their presence in classes; offer weekend hours for labs to help students who work during the week.

Some of the concerns and suggestions may have been influenced by the demographic characteristics of the survey participants, which tell a story of competing demands and responsibilities. While many respondents (41.4%) reported that they were not the primary breadwinner for their households, more than half (58.6%) either self-identified as primary breadwinners or reported that they shared that role equally with a partner or parent. While the family composition of the participants trended toward never married (46.6%), nearly a third of the sample was currently married (31.5%). About one fifth had children under the age of 18 (21.9%) and had significant caregiving roles. Of these parents, half considered themselves the primary caregiver of their children, and another 38 percent shared the role equally with another parent or grandparent.

NEXT STEPS

Recommendations for Implementation

Based on these findings, we have several recommendations for the college to consider in the final year of implementation of grant activities:

- Build momentum in the approved modification areas by

- pursuing opportunities to recruit students in Tarrant County, particularly at the Naval Air Station Fort Worth Joint Reserve Base.
- examining opportunities for reform in the CIT program, including an expanded navigator role.

- Continue to build on teamwork among program faculty by
  - working actively to integrate the new manufacturing faculty hires into a collaborative role in program leadership, where possible.
  - continuing to actively integrate the navigators into the grant team via student referrals and shared meetings with employers.

- Continue to build on the momentum and excitement of the new lab space and work to translate this into increased student enrollment and employer engagement by
  - continuing to host open houses for prospective students and community members.
  - continuing to find ways to bring employers into the spaces as often as possible.

- Finalize curriculum reform and ensure the value of certificates, degrees, and credentialing by
  - continuing the push to get programs through the DCCCD processes.
  - considering continuing education as a way to get programs started while their credential approvals are pending.
  - implementing current plans to work with consultants on SCADA and CTA.
  - investing more attention in marketing industry credentials to employers.
  - more actively promoting PLA and planning for a more formal process.

- Clarify the role of the navigator by
  - ensuring sufficient emphasis on recruiting students.
  - creating a more consistent role in working with employers.
  - clarifying how the navigator role fits in with the STEM advising center team.
  - ensuring that all program students have increased contact with the navigator through referrals.

- Invest significant attention to improving student recruitment and retention by
  - educating students, parents, and the public about careers in advanced manufacturing and electronics.
  - increasing program-specific marketing efforts.
  - continuing to explore mechanisms to reach out to veterans.
  - investing significant attention to retention at the critical time after the first term of enrollment.

- Strengthen and build on employer engagement by
  - trying new strategies to meaningfully engage employers at EAC meetings.

- focusing on relationship building with local employers
- developing a system to coordinate employer outreach across actors at the college.
- developing a greater number of internships.
- hiring adjunct instructors from industry and finding new ways to connect students directly with employers in a course environment.
- continuing to support staff investment in employer engagement.

- Build relationships with the workforce system by
  - clarifying a referral process for workforce system participants.
  - identifying opportunities to share information.

- Expand efforts to retain and promote completion among students by
  - concentrating team efforts on engaging students to remain enrolled and take courses that lead to timely completion.
  - aligning grant efforts with larger college efforts to promote student success.

Evaluation Preview

In the coming year, we will continue to collect data regarding implementation activities and outcomes through site visits, interviews, focus groups, participant observation, and document reviews. In addition, we will create new instruments to gauge employer perspectives:

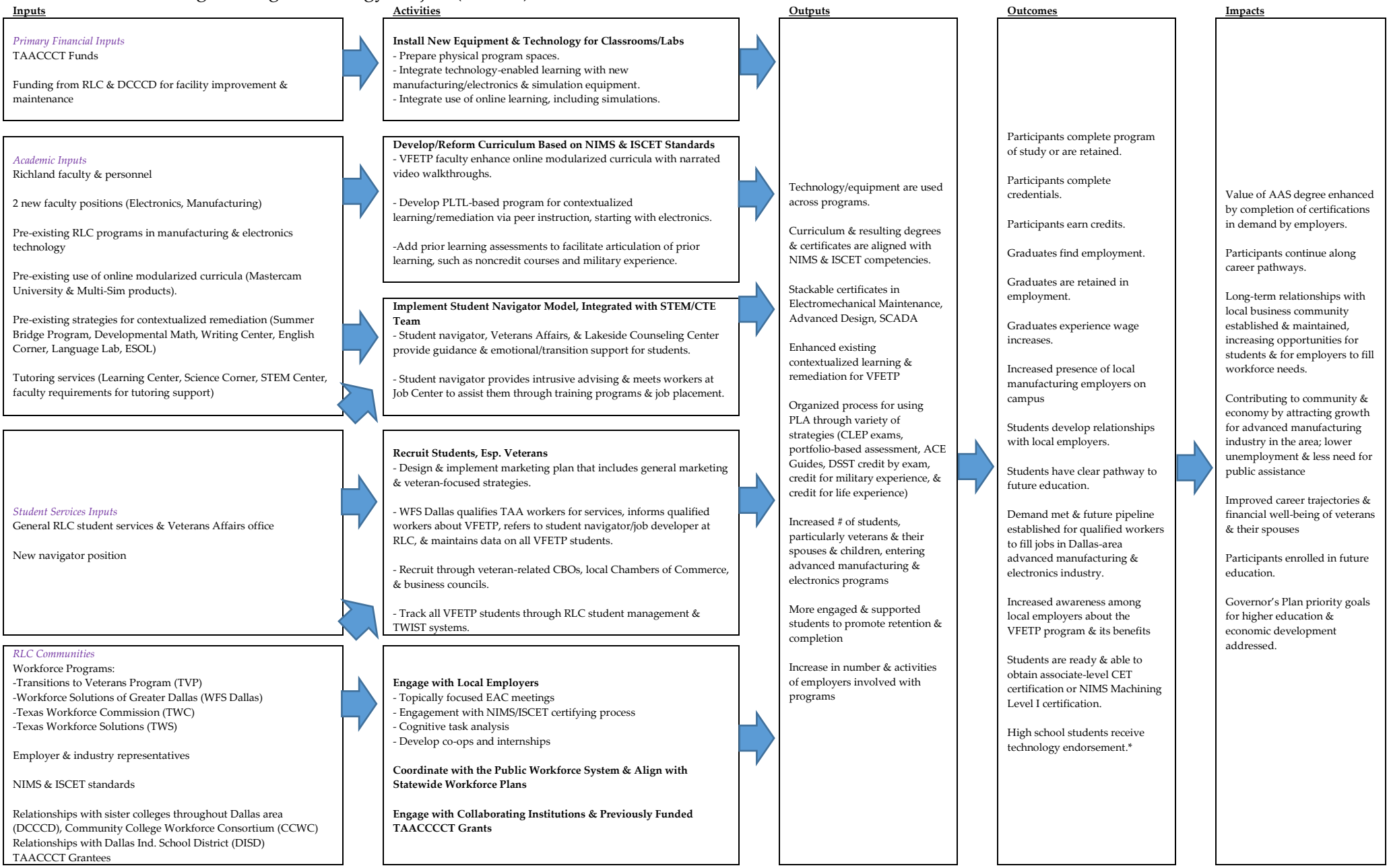
(1) Employer case studies. Building on earlier interviews and employer contact surveys with grant staff, we have selected a short list of employers to target for further interviews in the fall and winter. These interviews will examine employers' satisfaction with their engagement with the program, their perceptions of the quality of the programs, and their experiences with students from the program. The interviews will also examine employers' assessments of industry and skill needs.

(2) Student studies. Building on student focus groups from Year 2 and the pilot student surveys, a final round of student focus groups is planned for the spring of 2018 site visit. These focus groups will examine student perceptions of the program, including satisfaction with the program experience, outlook for the future, and any challenges they may have experienced.

(3) Quantitative analysis. In the coming year, we will continue to work with individual data from the college and will conduct a quasi-experimental analysis of program outcomes.

In all these endeavors, the EERC team will continue to work with the Richland team to identify opportunities for study, address emerging topics of interest, and ensure that the timing and method of study are minimally burdensome to respondents. We look forward to continuing our collaborative relationship in the coming year.

APPENDIX 1. RICHLAND COLLEGE (RLC) TAACCCT-EVALUATION LOGIC MODEL: Veterans-Focused Engineering Technology Project (VFETP)



* Not in DOL grant application but a college goal of this project. High school students enrolled in dual-credit option are not tracked by the evaluation.