

John J. Heldrich Center for Workforce Development

evaluation report

Final Evaluation of Essex County College's Trade Adjustment Assistance for Community College Career Training Grant: Program Strategies, Implementation, and Outcomes

by Tony Giordano and Stephanie Holcomb

Executive Summary

Program Description

Essex County College (ECC) used Trade Adjustment Assistance for Community College Career Training (TAACCCT) funding to improve its certificate and degree offerings in Information Technology (IT), focusing on IT in the belief that it would provide “expanded career advancement opportunities for TAA-eligible workers, women, veterans and people of color in high demand, high pay occupations.”¹ With this vision, ECC developed the Newark Area Industry Linked-Information Technology (NAIL-IT) program in 2013. The ultimate goal of the NAIL-IT program was to offer IT courses in such a way that would allow participants to successfully navigate courses and obtain degrees or certifications in a timely manner. The program was comprised of three Associate in Applied Science degree programs: Cybersecurity & Networks, Software Development, and Health & Information Technology.

The NAIL-IT program employed five essential staff positions for the program's implementation and administration within ECC, including a program director. The program also engaged several partners (such as employers) outside ECC to play multiple roles to assist in implementing the program. The program depended on ECC staff for a number of

critical functions such as counseling, advisement, and registration, as well as assistance with recruiting.

Curricula for the three course areas offered under the NAIL-IT program were developed and submitted for state approval. The curricula facilitated the knowledge, skills, and abilities required for IT credentials and could be transferrable to other degree programs. Primarily, adjunct instructors taught program courses, which was the pattern for most courses at ECC, following the program's first semester in Spring 2015.

Upon receiving the grant, ECC contracted with the John J. Heldrich Center for Workforce Development at Rutgers, The State University of New Jersey, to conduct an independent evaluation of its federally funded NAIL-IT activities between 2014 and 2017.

Evaluation Research Design

The Heldrich Center used a variety of qualitative and quantitative data collection methodologies to gather the data used to evaluate the strategies and



Edward J. Bloustein School
of Planning and Public Policy

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outcomes of ECC’s NAIL-IT program. To answer a set of key research questions, the Heldrich Center evaluation team used five primary data collection methods:

Document Review. The evaluators reviewed program descriptions, training modules, course requirements, course outlines, planning documents, and meeting minutes to gain a comprehensive understanding of the program’s components and implementation process.

Site Visits and Structured Interviews. The Heldrich Center conducted three site visits, one each year, during which researchers interviewed program staff

and faculty to collect information on how ECC was implementing its TAACCCT grant, learn how the instructors taught and assessed their students, gain insights as to how the program was progressing, and identify the strengths and weaknesses of the program.

Focus Groups and Survey with Students. The evaluators conducted a focus group with students each year to learn about their experiences in the program. Topics for the focus groups included students’ experiences with the program’s instruction and support services, as well as their perceptions of its challenges, strengths, and weaknesses. Evaluators also developed and administered an online

survey in the program's final semester to capture student experiences.

Structured Telephone Interviews. Each year, the Heldrich Center conducted formal structured telephone interviews with key program stakeholders, including external partners, to assess ongoing program implementation progress and challenges.

Analysis of Participant Data Records. The evaluation team analyzed the participant data records compiled by the program to identify themes, patterns, trends, and outcomes related to the research questions.

Findings

The NAIL-IT program faced many challenges within both the program itself and ECC. Combating an environment of independent departments and reluctance to implement grant-funded programs at ECC, the NAIL-IT program was never fully integrated into the college.

When the program first began, ECC's president provided a necessary champion to support the NAIL-IT mission. However, after an investigation into financial improprieties at the college in early 2016, the college president, top attorney, and 20 other employees were dismissed. While the investigation and staffing decisions did not directly affect the NAIL-IT program, the loss of administrative support for the program significantly slowed its progress. In addition, the lack of a program champion familiar with the ECC bureaucratic environment left the program unable to get marketing materials approved or produced. At that time, ECC also denied requests for the program to have a website or to recruit through a banner on the ECC website, both of which hampered enrollment.

In addition to the fluctuation in ECC staff, issues arose within the program staff as well. In its first year, the NAIL-IT student recruiter left the college, and this position stayed vacant for the remainder of the grant. As a result of this vacancy, the other five program staff had to take on the recruiting tasks in addition to their original responsibilities. However, staff frequently prioritized recruitment behind other duties, typically focusing on student

counseling over other activities. Eventually, this issue put the program in a quandary in that it did not have the capacity to increase recruitment, and was unable to establish meaningful employer partnerships without a more sustainable flow of students. Although the program's external partners were charged with developing employer partnerships, most were underutilized and unsupervised in the early stages of the grant, leading to disappointing contributions to the overall goals. Adding to these internal program challenges was a lack of oversight, both from the program and in the larger ECC environment, of the curriculum and extracurricular participation of adjunct faculty, who were not required to hold office hours or follow a strict course syllabus. This resulted in adjuncts often deviating from planned course content as well as inadequate academic support for students in these challenging courses.

The program met its overall goal of enrolling 30 students in the first year, but fell short on all outcomes that followed. While the program proposed serving 210 students over its three years, it served 130 students. In addition, only 7 students completed the program as of August 2017, significantly short of its initial goal of 114 students. Most students were black males between 23 and 30 years old, and participation was significantly higher for the Cybersecurity & Networks program (86 students) than Health & Information Technology (24 students) and Software Development (20 students).

Despite slow growth and limited impact, NAIL-IT had some successes that will benefit ECC in the long term. Mainly, the program was able to gain state approval for all three degree programs, which are now integrated into ECC departments and will continue to be offered after the completion of the federal grant. In addition, the program established an articulation agreement with the New Jersey Institute of Technology, a four-year public university, for students who complete a NAIL-IT program and want to continue their education. Unfortunately, the state approval did not take place until February 2017, which left the NAIL-IT program courses out of the course catalog and off the website until quite late in the program, exacerbating the problem of student recruitment. During this period in 2017, ECC hired a new dean of science, technology, engineering, and mathematics, who, having

previously worked at ECC, had knowledge of the bureaucratic processes and was able to provide the NAIL-IT program with a champion inside the ECC environment.

The implementation of the federally funded ECC NAIL-IT program provides many lessons to those looking to introduce a similar program. Because of the many challenges NAIL-IT faced, the program's experience offers lessons about what worked and did not work well, and why, both within the program itself as well as in the wider higher education environment in which the program was operating. These include lessons on staffing, navigating the community college environment, the need for a program champion and early recruitment efforts, early employer engagement, and assessing the need for all external partners invited to participate.

Recommendations

1. The NAIL-IT program should attempt to better understand how and where to reach its target population and work with ECC to develop recruiting efforts to this target.
2. When ECC implements grant programs in the future, it should carefully consider each potential partner, its necessity to the larger goal, and the feasibility of implementing their products and tools.
3. Establishing a high-level champion or sponsor for the program within the college at program initiation is important to help ensure adequate interdepartmental cooperation, collaboration, and support for the program.
4. Adjunct faculty need to be compensated, possibly through stipends, in order to have them expand their duties to include participating in program meetings and providing additional student support such as holding office hours.
5. The program should integrate the teaching of key non-technical skills, primarily soft skills and job search skills, throughout the curricula.
6. As early in the program as possible, gaining employers' input on the curricula should be the centerpiece of the program's employer outreach efforts, as it affords the program the best opportunity to meaningfully engage employers.
7. Following any curricula review, the NAIL-IT program should look to engage hiring managers at employer sites rather than reaching out to human resources departments.
8. The program should be careful in how it communicates to students about internships to avoid inadvertently being perceived as promising internships to students.
9. More internship opportunities should be provided for program students since most IT jobs require some work experience and internships are vital and instrumental for this purpose.
10. The program should follow evidence-based practices to increase student retention, beginning with financial aid.
11. Program courses — outlines, texts, grading, and other materials — need to be standardized to provide consistency and ensure that every faculty member teaches each course as planned.
12. A full-time computer science faculty member should be in place to guide and oversee the adjuncts and ensure standardization of courses and adherence to the NAIL-IT curriculum.
13. Tutoring in IT should be made widely available for students in such a technical and challenging program as NAIL-IT.
14. Additional technical supports are needed for program students beginning with course advisement and counseling, including assistance with working effectively in an online environment, and using technology-enabled learning.

Introduction

In an effort to improve the capacity of the nation's community colleges, the U.S. Department of Labor (USDOL) Employment and Training Administration awarded Trade Adjustment Assistance for Community College Career Training (TAACCCT) grants to community colleges in every state. Starting in 2013, Essex County College (ECC) received a three-year Round 3 TAACCCT grant to better align its workforce programs with employer skill needs and improve these programs' student retention and completion rates. In accordance with this goal, ECC created the Newark Area Industry Linked-Information Technology (NAIL-IT) program to create program tracks and align its courses with in-demand industry certifications in the information technology (IT) industry.

Through the TAACCCT grant, ECC developed three new IT programs of study: Cybersecurity & Networks, Software Development, and Health & Information Technology. The program was open to all, but it specifically targeted women, Trade Adjustment Assistance (TAA)-eligible workers, veterans, and people of color. ECC, through partnerships with the Newark Alliance, Jobs for the Future, IQ4, and Wider Opportunities for Women (WOW), intended to meet the needs of both students and employers by creating credit-bearing courses to facilitate the knowledge, skills, and competencies required for IT credentials. ECC planned to align the programs with in-demand industry certifications, provide expanded student supports related to online course requirements, and offer stacked and latticed credentials to accelerate career advancement for workers, as stipulated in the grant proposal.

Upon receiving the grant in 2013, ECC contracted with the John J. Heldrich Center for Workforce Development at Rutgers University to conduct an independent evaluation of its NAIL-IT activities. This third and final report presents an outcome evaluation of how well ECC implemented each of its strategies and the effect of these strategies on a series of intermediate and long-term outcomes, ultimately summarizing implementation results and analyses of the participant outcomes. In describing program outcomes, this report also describes

the challenges that affected outcomes, and makes a series of recommendations to improve future program performance and operations.

Program Design and Administration

Program Description

ECC used TAACCCT funding to improve its certificate and degree offerings in IT. In doing so, program designers focused on IT, believing it would provide "expanded career advancement opportunities for TAA-eligible workers, women, veterans and people of color in high demand, high pay occupations."² With this vision in mind, ECC developed NAIL-IT whose ultimate goal program was to offer IT courses in such a way that would allow participants to successfully navigate courses and obtain degrees or certifications in a timely manner. The program was comprised of three Associate in Applied Science degree programs: Cybersecurity & Networks, Software Development, and Health & Information Technology. The program also offered students the ability to obtain three one-year certificates by taking the courses prescribed in the degree programs. ECC believed these programs directly addressed the hiring needs of employers in Essex County, in northern New Jersey, and in the New York City area.

This section provides a brief description of program staffing and delivery, and the roles of the four original external program partners: the Newark Alliance, Jobs for the Future, IQ4, and WOW. For more information on program design and approach, please see the Heldrich Center's Year 1 evaluation report.³

Program Administration and Staffing

The ECC NAIL-IT program model relied upon five essential staff positions for the program's success. The key positions and descriptions included:

- > Program Manager/Director: This position was responsible for program administration and oversight, and ensuring that the program was meeting its required goals.
- > Online Learning Specialist/Instructional Designer: This position supported faculty and students in their online learning and teaching needs. Some of this support was in the form of workshops as well as individual coaching or advisement. This position helped faculty to design an online course, implement instructional strategies like course sequencing, and publish the course on the learning management system.
- > Employer Coordinator: This position recruited employers to support the NAIL-IT program. Other responsibilities included nurturing employer partnerships to create internship opportunities for students and helping students transition to employment.
- > Technical Manager/Lab Coordinator: This position was responsible for maintaining the computer lab, ensuring all equipment was available and functional. Other responsibilities included lab infrastructure, and creating lab requirements for students based on faculty-provided lab exercises.
- > Technical Assistant: This position initially had been responsible for basic administrative duties in the office. Due to demand, this position transitioned into a coordinator for the Health & Information Technology program, helping students register and find courses, as well as assisting with any other student needs.

Originally, the program hired a full-time student recruiter, but there was turnover in this position in December 2014. After reposting the position and receiving applications only from individuals whom the program staff deemed unqualified, the program decided not to fill this position.

Curriculum

Curricula for the three course areas offered under the NAIL-IT program facilitated the knowledge, skills, and abilities required for IT credentials and could be transferrable to other degree programs. Students could decide if they were interested in obtaining a certification, an industry credential, an Associate's degree, or transferring earned credits toward another degree, such as a Bachelor's of Science in IT. Although the curriculum and programs were approved by ECC, state approval was also required but was not finalized until February 2017.

Technology

The courses that comprised the NAIL-IT program relied upon ECC's technical resources such as software and computer laboratories available from the Computer Science department.

Internships

Critical to the success of the program was the practical work experience students could obtain through internships. Originally, the program envisioned some students completing traditional internships at work sites, and others participating in virtual internships facilitated by IQ4's online platform. However, this system never gained full support from ECC and, therefore, was never used. Program staff and partners increased efforts over the final year of the program to place eligible students at internship sites.

Recruitment

With assistance from program partners, NAIL-IT staff made a number of outreach efforts directed at the target populations of women, TAA-eligible workers, veterans, and people of color, as well as the public. Efforts included flyers, posters, information sessions, and participation at events. The team gave presentations at local churches, One-Stop Career Centers, and other community organizations. The original program plan included a dedicated recruitment specialist, but as noted earlier, this position was eventually left vacant.

Screening and Enrollment

To be eligible for the three NAIL-IT programs, students had to meet three requirements: be accepted into ECC, take a placement exam to demonstrate proficiency in college-level math and English, and meet with the chair of the Engineering department (for Cybersecurity & Networks and Software Development) or the chair of the Allied Health and Nursing department (for Health & Information Technology).

As of August 2017, the NAIL-IT program had enrolled 130 students in one of its full degree programs or a course in one of the program series, falling short of the original goal of 210 students (see Table 1). Of those students, only 7 graduated in Spring 2017, and the program estimates an additional 10 will graduate in Spring 2018. Many of the 130 students, however, either started after the first program semester and were not yet scheduled to graduate (23 students completed their first NAIL-IT course in the 2016-2017 academic year), or only intended to take one or two courses in the program and complete an academic program outside of NAIL-IT.

TABLE 1. ECC NAIL-IT ENROLLMENT AND COMPLETION

	Proposed	Actual
Total NAIL-IT Course Enrollment	210	130
Total Completing Grant-Funded Program of Study	114	7

Source: ECC NAIL-IT program administrative data, 2017.

The Cybersecurity & Networks program had the highest enrollment, with 86 students taking at least one program course since Spring 2015. The Health & Information Technology program trailed with 24 total enrollees, and Software Development had 20 students (see Table 2).

TABLE 2. ECC NAIL-IT TOTAL STUDENT ENROLLMENT, BY PROGRAM (2015-2017)

Program	Total Student Enrollment
Cybersecurity & Networks	86
Health Information & Technology	24
Software Development	20
Total	130

Source: ECC NAIL-IT program administrative data, 2017.

Roles of External Partners

The NAIL-IT program model involved engaging a variety of partners outside ECC to play multiple roles to assist in implementing the program. This portion of the report describes the external partners and their major accomplishments in contributing to the program.

The Newark Alliance

The Newark Alliance is a nonprofit organization that helped NAIL-IT to cultivate relationships with employers, assist with student placement, and recruit IT professionals to serve as adjunct faculty and guest lecturers. The Newark Alliance listed its key accomplishments as:

- > Facilitated two internships at the New Jersey Institute of Technology (NJIT),
- > Involvement in recruitment events and weekly planning meetings,
- > Prepared a database of high school counselors and employers for outreach,
- > Created career pathways documentation for each of the three course programs, and
- > Assisted with engaging several employers with the program.

Jobs for the Future

Jobs for the Future is a national nonprofit headquartered in Massachusetts whose role was to help ECC access peer learning networks and resources, provide professional development and technical assistance to NAIL-IT staff, provide coaching for credentials, and document promising practices. Jobs for the Future listed its key accomplishments as:

- > Provided technical assistance to the program to develop pathways, and increase employer engagement, recruitment, and internship opportunities;
- > Involvement in recruitment events and weekly planning meetings;
- > Assisted program director with program management; and
- > Developed program staff and faculty trainings.

IQ4

IQ4 is a New York City-based technology firm tasked with providing advanced matches between student skills and employer needs, generating support among employers, and coordinating virtual internships. IQ4 listed its accomplishments as:

- > Building an online system for virtual internships and mentorships; and
- > Providing training to staff, faculty, and students on an electronic internship product.

Wider Opportunities for Women

WOW is a national nonprofit organization that aims to build pathways to economic independence and opportunity equality for women, families, and seniors through educational empowerment. With one focus of the NAIL-IT program being the targeted recruitment of women, WOW's intended role with the program was to provide resources

and assistance for the recruitment and orientation of women, as well as provide professional development and coaching for staff and faculty on gender-targeted and inclusive practices. WOW discontinued its work in the program following its limited contributions in the early stages of the program.

Research Questions

The Heldrich Center identified 18 key research questions that it sought to answer throughout the course of the evaluation of the NAIL-IT program:

1. Was the program staffed in a timely manner with the staff members necessary to help the program achieve its goals?
2. To what extent did the program meet the enrollment targets it set forth in its proposal to USDOL? What strategies did it apply to meet its enrollment goals?
3. What strategies did the program use to recruit students, and, in particular, women, TAA-eligible workers, veterans, and people of color?
4. To what extent were various stakeholders in the program, including program staff, faculty, partners, and employers, aware of and in agreement with the goals that the program sought to achieve?
5. What support or other services did ECC offer participants outside of the classroom?
6. What support or collaboration did ECC offer for the program's implementation?
7. To what extent was the program successful in working within the context of ECC to achieve program goals?
8. To what extent did the program develop a curriculum for each of the three tracks that employers thought would enable students to acquire the skills they need to be successful in

the occupations for which the program provided training?

9. What instructional strategies did the program apply to build the students' technical, basic, and soft skills? How effective were these strategies and in what ways could they be improved?
10. What were the roles and contributions of the external partners?
11. How effective was the program at identifying and placing students in meaningful internship experiences that helped the students develop their skills?
12. What strategies did the program implement to engage employers in meaningful ways, resulting in curriculum feedback, internship opportunities, and job placements?
13. What barriers did the program encounter during implementation?
14. In what ways was the program modified from the original design to improve its effectiveness and/or address challenges that arose during the course of implementation?
15. What were the academic, employment, and earnings outcomes of the students who participated in the NAIL-IT program?
16. How many women enrolled in the NAIL-IT course programs?
17. How many employers participated in the program and what was the nature of the employer involvement?
18. Could this model be replicated at other community colleges?

Evaluation Methodology

The Heldrich Center used a variety of qualitative and quantitative data collection methodologies to gather the data used to evaluate the strategies and outcomes of ECC's NAIL-IT program. The Heldrich Center evaluation team used five primary data collection methods:

Document Review. The evaluators requested copies of key documents associated with the program, including academic program descriptions, training modules, course requirements, course outlines, planning documents, and meeting minutes to gain a comprehensive understanding of the program implementation process at ECC.

Site Visits and Structured Interviews. The Heldrich Center conducted three site visits, one each year, during which researchers interviewed program staff and faculty to collect information on how ECC was implementing its TAACCCT grant, learn how the instructors taught and assessed their students, gain insights as to how the program was progressing, identify the strengths and weaknesses of the program, and identify suggestions regarding how to improve the NAIL-IT program for future students.

Focus Groups and Survey with Students. The evaluators conducted a focus group with students each year to learn about their experiences in the program. Topics for the focus groups included students' experiences with the program's instruction and support services, as well as their perceptions of its challenges, strengths, and weaknesses. Evaluators also developed and administered an online survey in the program's final semester to capture student experiences.

Structured Telephone Interviews. Each year, the Heldrich Center conducted formal structured telephone interviews with key program stakeholders, including external partners, to assess ongoing program implementation progress and challenges.

Analysis of Participant Data Records. The evaluation team analyzed the participant data records compiled by the program to identify themes, patterns, trends, and outcomes related to the research questions. Due to the lower-than-expected number

of program participants, this analysis was primarily descriptive since original statistical methods require larger datasets.

Findings

NAIL-IT faced many challenges that hampered its ability to achieve its objectives. This section describes the program's outcomes and challenges.

Program Model

Finding #1. The NAIL-IT program attempted to have ECC students with two-year degrees compete for technical jobs with many students who possess four-year degrees, which is a clear competitive advantage. Evident in student outcomes — six of the seven program graduates continued their education at four-year colleges — the program may be better suited as an initial step in IT education rather than immediate employment.

Employers generally hire Bachelor's degree graduates in Software Development and Cybersecurity & Networks jobs for which the program was training its students. This means that the NAIL-IT program would have to make the case that its Associate's degree graduates could be as effective as employees who possess a Bachelor's degree. Making this case successfully would have required working to build trust with employers, and this largely did not happen with the NAIL-IT program. Because of this, the ECC program graduates with an Associate's degree seeking IT jobs faced a significant disadvantage competing with graduates having four-year degrees.

The NAIL-IT program model was designed to focus on disadvantaged students who often lacked a strong academic background. This, in turn, led to the reduction in robustness of coursework. The program outcomes — six of the seven graduates continued their education at four-year colleges — suggest that the program was better suited for starting students in IT education than for immediate employment (see Finding #33 for details on outcomes).

Recruitment

Finding #2. In Year 1, the program met its overall enrollment goal for the initial semester, though it fell short of its initial goal of enrolling 10 students in the Health & Information Technology program at that time.

In its proposal to USDOL, ECC indicated that it would enroll at least 10 students in each of the three NAIL-IT programs during the first semester. With 36 students enrolled, the program exceeded its goal of 30 students for Year 1. The Health & Information Technology program, however, enrolled only seven students during the first semester.

Based on focus groups with students and interviews with faculty, the overall program appeared to be enrolling qualified and motivated students. However, recruitment fell short of the objective during the subsequent semesters when the recruitment goals were higher.

Finding #3. The lack of a dedicated student recruiter resulted in ongoing recruiting challenges during most of the program's three years. Other program staff needed to take on recruiting responsibilities for which they were not trained or prepared.

The program ceased efforts to hire a recruiter in Year 1 since the first few attempts were unsuccessful and the process was believed to be taking too much time at a key point in the implementation when staff needed to initiate many activities. Program staff noted that while they did what they could to recruit students, the lack of a qualified recruiter was a major barrier to success. With many other responsibilities to handle, assistance with recruitment typically was not the most important priority for program staff. Moreover, the need for program staff to spend time on recruiting to support upcoming events diverted staff time from other important functions.

Finding #4. Recruitment for the program began to lag behind the higher enrollment goals set for Year 2 compared to Year 1. In response, program staff and partners made greater efforts to recruit students, organizing recruitment events and at-

tending networking events to attract students to the program.

After meeting the relatively modest overall recruitment goal for Year 1, the program began lagging behind meeting the much higher recruitment goals for Year 2. This was due in part to the long delay in receiving state approval of the program, which made it more difficult to assist students with their financial constraints since only students enrolled in approved, credit-bearing programs were able to receive financial aid according to state regulations. In addition, programs are not included in the ECC course catalog until they receive state approval, which limited program visibility for the majority of the program's implementation.

To overcome the challenge of recruiting sufficient numbers of students, the program director, program staff, and several external partners organized and attended multiple recruitment events. They also distributed materials and gave presentations to community groups such as faith-based organizations, other community colleges, and One-Stop Career Centers. While this generated a number of recruits, it was not sufficient to reach the enrollment goals. (See proposed enrollments and completions under Finding #33.)

Finding #5. In Year 3, recruitment for the program continued to be disappointingly low, due in part to inadequate marketing.

As one student commented, "The program is a hidden secret; not many students know about it." The inadequate recruitment was a major problem in several respects: having too few students in some courses, which are costly to run, or had to be canceled; and too few students to attract sustainable interest from employers. The program was not able to put its course offerings in the course catalog until the last semester since state approval of the program was significantly delayed due to mishandling of the application by ECC. The original rejection was due to a lack of science, technology, engineering, and mathematics (STEM)-related qualifications by the third-party independent consultant. When the state approval finally came in February 2017, it was too late to affect recruitment. The program staff did little recruitment in Year 3 as the program approached its end.

In addition, marketing support from ECC was virtually non-existent throughout the program. Program staff believed that the marketing director and other department heads were not inclined to support other departments or grant programs in general. The lack of marketing support was one of several critical examples of the lack of support and collaboration from ECC that limited recruitment and the program's success.

The difficulties and inadequacies of recruiting was a primary reason for the program operating on a much smaller scale than anticipated and producing far fewer graduates relative to the goals. For example, as listed in Finding #33, the program had 7 graduates, falling far below its goal of 114 graduating students. When looking at broad participation, the program served 130 students, short of its goal of 210 students.

Finding #6. Recruitment of women was an issue needing more attention throughout the life of the program, which lacked an effective, systematic strategy for targeting and enrolling women.

Women are traditionally underrepresented in the IT field, and recruiting women into IT training programs and jobs has proven a challenge nationwide. As such, recruiting women was a top priority for the NAIL-IT program. Early in the program's implementation, program staff and faculty discussed a shortage of women participants, despite some targeted recruitment efforts. Instructors and program staff commented that women represented a lower proportion of program enrollments than had been planned. For the three years of the program, women comprised 25% of the students who enrolled in NAIL-IT courses.

The partner WOW organized and held a recruitment event, ostensibly targeting women early in Year 1, but it was not well received by ECC. Although the event drew a significant crowd, program staff felt that the event served much more to promote WOW than to promote the NAIL-IT program. Following its limited contributions in the early stages of the program, WOW discontinued its work in the area. The program made additional efforts to recruit women, for example, creating flyers to target women, but eventually program staff modified some materials in fear that students would

think the program was exclusively for women. Two external partners, the Newark Alliance and Jobs for the Future, also pitched in at events to recruit women. However, an effective, systematic strategy for recruiting women was never developed.

Participant Profiles

The program collected limited data about the participants’ demographic profiles. It is important to note that the program collected information on all students who completed at least one course in one of its academic programs, but may not have officially enrolled in one of the NAIL-IT programs.

Finding #7. Most program participants were black males between 23 and 30 years old, and participation was highest for the Cybersecurity & Networks program.

While a program goal was to increase the number of women in technology fields, less than 25% of the NAIL-IT participants were women (see Table 3). Following the end of WOW’s participation, and with a lack of focus on recruitment without a recruitment coordinator on staff, the NAIL-IT program broadened its scope for participant recruitment.

TABLE 3. PROGRAM PARTICIPANTS, BY GENDER

Gender	Percent
Male	75.5%
Female	24.5%

Source: ECC NAIL-IT program administrative data, 2017.

The program had a wide range of diversity related to the races of participants. Almost 45% of program participants were black, 22% were Hispanic, and 14% were Asian (see Table 4).

Another program goal was to focus on older job seekers who were shifting careers. Again, this focus broadened as the program struggled to recruit students. As such, over half of participants were under 30 years old, with an additional 23% between 31 and 40 years old (see Table 5).

TABLE 4. PROGRAM PARTICIPANTS, BY RACE

Race	Percent
Black	44.8%
Hispanic	22.4%
Asian	14.3%
White	8.1%
Other	5.2%
Native Hawaiian/Other Pacific Island	0.5%
No Data	4.8%

Source: ECC NAIL-IT program administrative data, 2017.

TABLE 5. PROGRAM PARTICIPANTS, BY AGE RANGE

Age Range	Percent
19-22	19.0%
23-30	40.0%
31-40	22.9%
41-50	10.0%
51-60	5.7%
61+	2.4%

Source: ECC NAIL-IT program administrative data, 2017.

As previously discussed, not all students included in the program totals completed the full degree program; many students only enrolled in one or two courses within a program series. As shown in Table 6, the majority of students (53%) completed only one course in their indicated program, with most students (86%) completing less than five courses.

This trend was strong for the Cybersecurity & Networks and Software Development students, both of which had at least 80% of students completing only one or two courses, compared to 54% of Health & Information Technology students. Many students in the Cybersecurity & Networks and Software Development programs only completed the Network Fundamentals and Introductory to Programming in Java courses.

TABLE 6. NUMBER OF COURSE ENROLLMENTS, BY PROGRAM

	Cybersecurity & Networks	Health & Information Technology	Software Development	Total
1 Course	48	9	12	69
2 Courses	20	4	6	30
3-4 Courses	8	4	1	13
5-6 Courses	3	1	0	4
7-8 Courses	2	1	1	4
More than 8 Courses	5	5	0	10

Source: ECC NAIL-IT program administrative data, 2017.

Remedial course taking is a common practice at community colleges, which at times can hinder the speed at which students are able to complete their degrees. However, these courses are often necessary foundational elements to introductory courses. Overall, 57% of students who completed a NAIL-IT program course also enrolled in a remedial course during their time at ECC. Of those who took a remedial course, 8% took one course, 42% took two courses, 27% took three courses, and 23% took four or more remedial courses at ECC.

Program Administration

Finding #8. In the early stages of the program, program staff and faculty were not clear on the objectives or ultimate goal of the NAIL-IT program. The situation improved among program staff in Year 2.

Interviews with program staff found that they were initially heavily focused on the program's short-term needs, but were not consistently clear about the overall goal of the program or the various objectives they needed to achieve to reach the goal. Likewise, in early interviews with faculty, although they understood that the program was receiving outside funding, only one of the three faculty members from the first semester of the program could articulate a clear vision or understanding of the program and its objectives. By Year 2, program staff demonstrated a better understanding of the program's objectives.

Finding #9. An innovative program of this nature involving multiple partners and stakeholders requires a great deal of oversight, monitoring, and accountability, which the program director and staff were not always able to provide. The fluctuation in leadership at ECC only made this more difficult.

Several staff commented that the program lacked clear measurable short-term goals that could be tracked to ensure the program was progressing as planned. Program staff, stakeholders, and partners were not held accountable on a regular basis for fulfilling their responsibilities in achieving the program's goals. This appeared to have been compounded by the difficulties the program had in trying to work with college departments that were not always cooperative or helpful. This situation may also be related to the early confusion about program leadership. The staff representing the partners tended to be high-level, experienced people. One of the partners felt early in the implementation that it was to be co-chairing the program. Later when the program director took charge, she sometimes seemed to lack experience and ability in managing multiple partners and stakeholders and holding them accountable.

Finding #10. The program director was in place more than a year before ECC provided access to the budget, making it difficult for program staff to track expenses and manage the budget.

The necessary funds for the program were in the budget but the program did not approve of the various budget categories that ECC had set. This made it more difficult for the program to understand and manage the budget. Because of this and previously mentioned difficulties related to marketing, the program's period of performance ended with considerable funding dedicated to marketing that it was unable to use. Since the grant was on a cost reimbursement basis, the funds could not be used for other purposes.

Finding #11. Student counseling and advisement on such crucial matters as which NAIL-IT courses to take had to be provided primarily by program staff, who lacked the training and technical expertise to know what was best for students trying to compete for jobs in particular technical fields.

Based on feedback from students and staff, the program director and staff invested a great deal of time over the program's three years on student needs, such as counseling, advisement, tutoring, and registration, versus focusing on program oversight, student recruitment, and coordination with external partners and faculty. One of the program staff members providing advisement and other supports to students was the administrative assistant. It appears that the program staff performed these student support functions because they saw that college staff were not providing these services, and the program staff knew that retaining the few program students was essential. Program staff were also providing a lot of social support to students, for example, for personal/family challenges. Performing these unplanned functions diverted staff time from the crucial functions of managing and coordinating program activities with partners, faculty, and ECC departments.

Finding #12. There was inadequate coordination of the program with the faculty, who were mostly adjuncts, as well as insufficient oversight of faculty responsibilities under the program. This led to variation in course content and delivery.

Program staff did not meet with the adjunct faculty teaching the curricula to provide guidance and gain cooperation for program needs. This led to variation in course delivery. In addition, it appeared that neither the Computer Science department nor the program director provided oversight to the faculty to ensure they adhered to such things as the designated course textbooks and outlines. The program reportedly attempted to have faculty follow the program curricula more closely, but were not successful. This situation did not improve until the new dean of STEM began overseeing the program in Year 3.

Finding #13. In the third year of the NAIL-IT program, a new dean of STEM began overseeing the program and undertook several activities to address ongoing problems the program was having in trying to collaborate with the other college departments.

In Year 3, the new dean of STEM rewrote the Health & Information Technology program submission for state review, which, along with the other two programs, gained state approval in February 2017. The dean also developed an overall marketing plan for the program. These essential actions would have been important to have been undertaken in Years 1 or 2.

Program staff had problems early on in achieving collaboration and support from ECC staff. None of the program staff came from within ECC. Familiarity with the ECC bureaucracy and culture could have helped the program navigate the college's bureaucracy and achieve some of the needed collaboration with ECC and its departments and faculty.

Retention

Finding #14. Personal financial difficulties led some students to exit the program. This also led to a slow progression through the program for most remaining students, who frequently took fewer courses than expected per semester or enrolled one semester and not the next.

Program staff discussed the non-traditional paths taken by many students, who were not usually able to take a full course load, or enrolled one semester but not the next, largely due to financial constraints and the need to work. Students echoed this in focus groups, and also discussed the limited flexibility in course offerings and schedules that frequently interfered with their work commitments. The delay in state program approval made it more difficult for the program to assist students with their financial constraints since only students enrolled in approved, credit-bearing programs are able to receive financial aid according to state regulations. To address the financial aid issue, ECC, at the program director's request, provided funding for the few students affected by this approval gap so that those students could be retained over the one semester during which this posed a financial aid issue.

Since the grant did not offer scholarships for the original target population of displaced, disadvantaged, and often unemployed or underemployed individuals, many potential recruits did not have the financial resources or support to enter or complete the program, even if they were ready academically. Because many ECC students have low incomes, the NAIL-IT program's lack of scholarships made it difficult or impossible financially for many potential students in the Newark area to enter the program. The program's reduced ability to recruit from the original target population led program staff to respond by broadening the target population to include many traditional community college students. Nevertheless, financial challenges arose for many students.

Finding #15. While most NAIL-IT students who were surveyed expressed positive views of the NAIL-IT courses and the overall program, some students identified several shortcomings in the program, such as the need for more hands-on experiences and tutoring for technical courses.

In addition to having high satisfaction with the courses, the instruction, and the program staff, the majority of the students had positive views of their overall involvement with the program. Students remarked that program staff were always available, hands on, helpful, and took the time to get to know them, providing a feeling of community. Students

reported receiving an adequate amount of training with the equipment and programs they would use in their future fields. Most of the students surveyed reported that the NAIL-IT course program they were taking was a good match with their skills, interests, and abilities, adding that their plans for employment or further education would be within that field of study. Similarly, the majority of the students planned to complete their degree through the NAIL-IT program.

However, a few students wanted more hands-on experience in the classes, such as working with electronic health records, and some wished there was more tutoring available. Several students also commented on the challenges and inconveniences due to the lack of program integration into ECC's operations as a whole, adversely affecting such things as software availability and regular lab access. In addition, a number of students felt there needed to be more internship opportunities.

Curriculum, Faculty, and Instruction

Finding #16. Having received state approval for the curricula quite late in the program's implementation (February 2017 in Year 3), the NAIL-IT program and courses were put into the college catalog too late to influence better program outcomes.

The submission of the NAIL-IT curricula for state approval was overseen by ECC, which did not handle this responsibility in a timely manner. As a result of a lack of STEM-related qualifications by the third-party independent consultant ECC engaged to complete these applications upon original submission in Summer 2016, none of the three degree programs received state approval until the program's third and final year. The long delay in state approval significantly hampered recruitment since the program's absence from the college catalog and website made it less visible to students.

ECC later rewrote parts of the submission for state approval, which was finally granted in February 2017. Program staff reported that this development appeared to have a positive effect on student-initiated enrollments since the program became much

more visible, particularly being in the college catalog. Though the positive effect on recruitment was limited to a small period late in the program's operation, the integration of the curriculum into ECC's overall offerings and operations is a significant development for the long term. This approval and integration enhanced the likelihood of sustainability of the program.

Finding #17. Program faculty had substantial autonomy with regard to text selection and course content, sometimes deviating from the program's planned course content.

Because of the substantial autonomy and lack of oversight of program faculty, the curricula and course outlines were not closely followed by faculty in a consistent way, nor were courses always of sufficient robustness to adequately prepare students for IT jobs. Many courses were reduced to a near introductory level and did not cover all the things students needed to know in order to be able to obtain competitive employment. This situation existed throughout the life of the program.

Finding #18. Throughout the grant period, the program lacked a systematic strategy for teaching soft skills. Although each of the instructors taught soft skills to some degree, there was significant variation in the extent to which they incorporated soft-skills training in their courses.

While faculty were able to bring in their technical experiences, most did not fully integrate soft skills as originally intended by the program. The possession of soft skills, such as the ability to communicate and relate to people effectively in everyday interactions, is seen as crucial to the attainment of employment in IT positions. Several employers had emphasized that job applicants tend to need stronger soft skills. Most of the instructors brought soft skills into the classroom conversation on at least an ad hoc basis. One instructor, however, structured her course so that the students acquired soft skills as a natural part of the instructional/learning process. For example, to build students' teamwork and presentation skills as well as their confidence speaking in public, she assigned students to work together in teams and required them to make oral presentations to their fellow students. She also included a speaking requirement whereby each

student had to critique a fellow student's presentation in an effort to build students' ability to comment tactfully on the work of their colleagues. This instructor took it upon herself to do this, however; as a whole, the program did not develop a standard soft-skills instruction plan.

Finding #19. Adjunct instructors taught the majority of the NAIL-IT courses and most did not participate in program-related activities beyond classroom teaching, seldom participating in program meetings or trainings.

While the program director attempted to engage the adjunct faculty in outside-the-classroom program activities, it was not successful. This inhibited such things as smooth program implementation, consistency of courses, and adherence to the curriculum. The program partners were especially frustrated by this situation. Adjunct faculty are typically compensated at a much lower rate than full-time faculty and, traditionally, most adjuncts are not expected to participate in college functions outside of teaching. Consequently, adjunct instructors tend to do only what they are compensated to do — teach. Several adjuncts commented in interviews that their sole purpose at the college was to teach.

It was not the case, however, that all of the program faculty were weakly engaged in the program beyond teaching. One instructor continuously went beyond the typical adjunct requirements by attending and actively participating in program meetings and taking a number of steps to try to make the program as successful as possible. This, however, was the exception to the rule.

Finding #20. Because of the unwillingness of adjunct faculty to participate in special meetings or teleconferences related to the NAIL-IT program, the adjunct faculty did not get sufficient guidance to follow and support the program.

The adjunct instructors operated fairly independently in their courses, including textbook selection, and teaching around that. This environment occurred during most of the life of the program and meant that an instructor could deviate from the planned course content on his/her own. The new dean of STEM took on the role of overseeing the program in Year 3 and began making improve-

ments in a number of areas, including beginning to standardize the courses and strengthening the rigor of course materials and requirements.

Technology

Finding #21. The acquisition of additional technical resources for the program courses could have enhanced instruction.

In interviews with the evaluation team in Year 1, the faculty indicated that their instruction would benefit from having additional technical resources, such as software, to help students gain a better understanding of the field, including: Packet Tracer (learning software that allows students to build networks) and Pearson eText (an online database of course content). Students echoed this recommendation in a focus group, explaining that they would have learned more from some of their class projects had they been able to use certain software. Students were concerned that without the exposure to these resources, they would not be competitive in the IT field. The availability of technical resources did not improve substantially during the grant period.

Finding #22. According to some staff, the NAIL-IT program's technology-enabled learning was not as extensive and effective as it could have been.

The existing technology at ECC included unfriendly user sites that could not incorporate a lot of other technology. The technology was restrictive in many ways: a user could only do certain things, it was not easy to navigate, the processing in ECC's Moodle system was not very efficient; the system was not mobile friendly, and the search capability was lacking. In order to be competitive in technology and online learning, the system appeared to need an overhaul, but there was no plan known to the NAIL-IT staff to do that. The program's technology-related challenges were compounded by the fact that the courses sometimes lacked necessary resources — for example, computer labs were often booked, and some courses lacked critical software, such as an online health record for the Health & Information Technology courses.

Student Support

Finding #23. The NAIL-IT program suffered from inadequate academic support for students, most importantly IT tutoring and faculty office hours as resources for the sizeable number of students having difficulties with the highly technical course material.

The lack of adequate academic support for these new, technical courses was crucial. Many students lacked these qualifications and, therefore, needed remedial courses, not just in math and English, but also in basic computer science, in addition to needing more in-person support from faculty or tutors. However, since the adjunct instructors were not required to hold office hours, it was often difficult for students to see instructors outside of the classroom. One program staff member familiar with the technical content of the Java course provided ad hoc tutoring to students in addition to their regular responsibilities. More student support such as IT tutoring might have obviated the need for faculty to modify some coursework, and the result could have been more robust courses that better prepared students for competitive employment.

Finding #24. Some NAIL-IT program staff felt that many students needed more in-person help to get started with online learning and technology-enabled learning before they could learn how to work independently in an effective way.

For the many students inexperienced with online learning and the use of new technologies, it was not realistic to have them begin operating online entirely on their own. Students appeared to need more classroom or other in-person orientation to online work rather than have to rely exclusively on online assistance with how to independently engage with the online environment and become a successful learner. One staff member was responsible for bringing both faculty and students up to speed in this area, but felt the need to spend some time on responsibilities outside of this scope.

Support from ECC

Finding #25. According to program staff and the partners, the ECC president in place at the outset of the program was a strong supporter and an asset to the program. However, the change in leadership at ECC had the effect of hindering the program's growth and presenting a significant barrier to its success.

The departure of the initially supportive ECC president early in the program's implementation threw the program into disarray organizationally as it was unable to get timely authorizations and approvals for program needs. During the course of the program, several changes occurred in ECC's top leadership positions in addition to the president, resulting in frequently changing reporting relationships and a leadership team that was cited as not knowledgeable, committed to, or supportive of the NAIL-IT program. The lack of perceived support from ECC leadership and the changes in leadership consistently came up in interviews as barriers with program staff and partners. This changing leadership combined with the poor program integration throughout ECC as a whole made progress particularly difficult. This issue was especially harmful to decision making and program planning efforts.

Strong, consistent college leadership support would likely have produced more cooperation and teamwork within ECC with critical functions such as marketing/recruitment and student support that became serious barriers for the program. The poor communication and cooperation from college leadership and key departments was such that some program staff called it "resistance," believing that ECC was sometimes "working against them."

Finding #26. The ECC environment and its independent departmental structure inhibited the program's ability to collaborate with departments and obtain necessary support.

The ECC environment in place during much of the program's implementation was reportedly such that programs and functions were highly independent. This structure inhibited teamwork between departments, which the NAIL-IT program required in a number of ways. The difficult support environment appeared to worsen with the appointment of the

new college president after the program began. By way of example, ECC has a department, Training Inc., whose function is to get students ready for careers, which could have been a crucial service to the students in the NAIL-IT program. However, program staff reported that Training Inc. did not respond to requests to work with the program's students. The head of Training Inc. had a different story, however, contending that the program director did not respond to the department's offers to help.

Program staff frequently heard from others at ECC that grants do not typically last at the college and thus are not seen as worth the time and resources they were requesting. As a result, program staff felt that ECC as an institution provided little support to them.

External Partners

Finding #27. The inclusion of multiple external partners in the program presented a number of challenges to effective program implementation, particularly early in the grant when the partners and program staff had different understandings of the various partners' roles. The NAIL-IT program director eventually took a stronger leadership role in pulling the partners together behind the program's needs and objectives.

The inclusion of many partners in a grant presents opportunities but also challenges. First, for the partners to work well together, they need to have a shared understanding of the goals of the program. Because each partner might have a different set of interests and perspectives, it can be challenging to get agreement that is deeper than just consensus on the grant's overall purpose. Moreover, the more partners there are, the greater the logistical challenge of coordinating their involvement so they can meet and iron out their understandings of the goals of the grant and their place within it. These challenges were particularly evident in the NAIL-IT program's first several months of operation.

At the start of grant, the various partners did not share the same vision for the program as the NAIL-IT program staff. In interviews, program staff indicated that the partners were focused more on

process than on accomplishing the individual tasks they had been assigned in the grant application. According to interviews with the partners, because multiple partners shared pieces of the grant, such as employer engagement and recruitment, and because they often had different ideas on how to help ECC achieve its goals, many meetings and phone calls were required to resolve differences among them. In addition, the partners thought that the NAIL-IT program staff and ECC needed to make decisions on a series of issues before they could complete their tasks. The inherently slow nature of the college bureaucracy and the complexity of some of the decisions that needed to be made were not conducive to a quick clarification of the various issues.

Exemplifying the uncertainties about roles, there was initial confusion related to who was responsible for managing program partners. Initially, the program director did not exercise strong program coordination with the partners and, as a result, interactions between ECC and the partners were somewhat uneven. Later in Year 1, the program director did take a stronger lead in directing the partners in terms of what she wanted them to accomplish, and she better clarified the partners' responsibilities. Leadership at partner organizations then began working more collaboratively with the program director. Review of minutes from partner meetings showed progress in aligning partners' activities toward the program goals later in the program's implementation.

Finding #28. Initially, each partner appeared to have something useful and important to contribute to the program. However, in the end, most of the products and tools the partners proposed or worked on did not significantly contribute to successful program outcomes.

The online portfolio developed by IQ4 initially showed promise by allowing students the ability to reflect on their skills and on what they learned, and engage in a process of writing down the skills to help solidify what they learned. IQ4 also developed an electronic internship product that was intended to place students in virtual internships with real employers where they would be able to complete industry-related projects. However, these tools never got off the ground; virtual internships

did not appear to be valued by employers, and the program director felt the tools would be more likely to work at schools and programs that had greater upper-level support.

The Newark Alliance appeared to have the relationships, knowledge, and professional experience in the healthcare industry to help the NAIL-IT program build substantive relationships with health-care employers. This process was slow to develop and, in the end, the overall number of employers engaged by the Newark Alliance was short of the level originally anticipated.

Since a goal of the skills-based programming of the NAIL-IT degree programs was to teach employability skills to students, Jobs for the Future began developing a program for faculty integration of employability skills. However, since most of the adjunct instructors did not become involved in these kinds of program enhancements, the Jobs for the Future program was not included in the course curriculum.

WOW stopped working with the program following limited contributions in the early stages. WOW's original goal was to plan and implement practices to recruit and retain women in the NAIL-IT program.

Finding #29. In the end, program staff were disappointed with the external partners, feeling that they did not contribute enough to the program overall, especially considering their fees, and the evidence bore out these observations. The Newark Alliance was the one partner that made substantial contributions to the program.

The external partners mostly attended the many program meetings, discussed suggestions and possible actions, and sometimes began developing a potential tool or resource. In addition, while all the partners completed their deliverables as contracted, rarely was anything concrete and useful actually implemented. Some of the tools were not right for the program, or faculty or ECC did not support some. Moreover, not all the partners turned out to be necessary for the program. Most of the partners delivered more "theory" than action. All the partners indicated wanting to accomplish more

and expressed disappointment in the reality of the program compared to their initial visions.

Program staff felt that the Newark Alliance was the partner that contributed the most. The Newark Alliance is a local organization and its history and connections made it well suited to be the employer liaison with many local companies, helping to engage some employers and set up internships. The Newark Alliance contributed to the program's efforts to engage employers, including participating in recruiting events and facilitating several internships. However, despite the program staff's view that the Newark Alliance was the most productive partner, there was a feeling in the program that the Newark Alliance could have done more in terms of employer engagement for internships and considering program graduates for hire. For its part, the Newark Alliance felt that the program had too few students to attract sustainable interest from many employers, and that those students may not have been qualified. The Newark Alliance felt the program was not "ready for public outreach," and did not appear to see sufficient effort in the program or ECC to get it ready. The Newark Alliance also felt that its career pathways work was a significant contribution to the program, though it was not used.

Employer Engagement

Finding #30. From the outset, the program lacked an effective strategy for building interest among employers, focusing primarily on the program's social value rather than on the valuable skills participants could offer. As a result, employer engagement was one of the weakest components of the program.

The program's efforts to engage employers, beginning with curricula review, produced mixed results despite having external partners responsible for engagement. NAIL-IT program staff, largely due to implementation challenges, were unable to provide employers a meaningful opportunity to offer input on program curricula. One exception was the Health & Information Technology program, which received some initial input. However, the curricula were not provided to employers before they were finalized.

Two issues with engagement were notable. First, the program focused on engaging human resources professionals rather than engaging and building relationships with the hiring managers who are ultimately responsible for determining the skill needs and the hiring schedules in IT businesses.

Second, the absence of strong engagement of ECC faculty in the program prevented it from using faculty to engage employers. It is generally the instructors and the heads of curriculum for these programs who have the in-depth subject-matter knowledge and, therefore, are the most capable of making the case to an employer that the program teaches the skills employers need.

In interviews, program staff indicated that their messaging to employers primarily emphasized the social value of the program in terms of providing opportunities to underrepresented workers, with less emphasis on the skills of the participants and the value that those participants can bring to an employer.

Finding #31. Insufficient employer engagement in the program's early stages with curricula review had adverse consequences later on, such as insufficient internship opportunities. Program staff reported that even after more than two years of operation, the program had only six employer partners with limited contributions.

Program staff and partners did succeed in developing relationships with several area employers, including a few local hospitals. These employer contacts resulted in internships for a relatively small number of students, leaving quite a few students looking unsuccessfully for internships. As previously reported, the employer engagement piece was largely lacking from the beginning of the NAIL-IT program when the curriculum, with the exception of Health & Information Technology, was developed with little employer input, and employer engagement remained underdeveloped throughout the life of the program. The grant proposal called for an employer advisory board and a college executive board, but these were either not created or sustained.

Critical to the success of the program was the practical work experience students could obtain through internships. Originally, the program envisioned some students completing traditional internships at work sites, and others participating in virtual internships facilitated by IQ4's online platform. However, several employers expressed a lack of interest in a virtual platform. Consequently, the virtual internship system never gained full support from ECC and, therefore, was never used.

The inability of the program and its partners to engage many employers made it that much more difficult to arrange internships. In a focus group, students expressed a great deal of concern about whether the program would be able to set them up with traditional internships. One student indicated that he had switched to the NAIL-IT program from a traditional computer science Associate's degree program, because, as he understood it, he was promised that he would obtain an internship through the NAIL-IT program. Though program staff and partners increased efforts over the final year of the program to successfully place eligible students at internship sites, only five traditional internships were arranged over the program's life, short of the demand from students.

Finding #32. The partners' views that the program lacked a sufficient number of students overall led them to be less aggressive in seeking to engage employers. These partners felt that the program did not have enough to interest most employers.

It had been expected that some of the external partners, such as the Newark Alliance, would use their relationships to cultivate employer engagement for the program, for example, to provide internships, and later, job opportunities. However, according to the Newark Alliance, the small number of students in the program was insufficient to attract interest from many employers. As one program partner commented, "You can't sell something you don't have." The Newark Alliance felt that a critical mass of students/graduates was needed to generate real interest among employers. One partner implied that many of the program's students were not "ready to see employers," referring to students' lack of strong soft skills along with their qualifications relative to four-year graduates.

Outcomes and Successes

Finding #33. As a result of the many obstacles and challenges the program faced, it fell short of its proposed levels of enrollment, completion, and employment.

In view of the many obstacles the NAIL-IT program faced, perhaps most importantly the long delay in obtaining state approval, the lack of a student recruiter, the inability to offer financial aid to many students, and the lack of marketing support from ECC, the program fell far short of the originally proposed enrollment levels. As shown in Table 7, the program was able to only graduate seven students and, as a result, fell well below most of the proposed goals.

TABLE 7. PARTICIPANT OUTCOMES

	Proposed	Actual
Total NAIL-IT Course Enrollment	210	130
Total Enrolled in Further Study after Completing Grant-funded Program of Study	48	6
Total Completing Grant-funded Program of Study	114	7
Total Earning Credentials	114	0
Total Employed After Completing Grant-funded Program	62	1

Source: ECC NAIL-IT program administrative data, 2017.

Of the seven students who graduated from the NAIL-IT program with Associate's degrees in one of the three fields, five chose to continue their education at NJIT (two from the Health & Information Technology program and three from the Cybersecurity & Networks program). One student accepted employment, and one moved out of state but is expected to enroll in further education.

Finding #34. As the grant neared its end, program staff and partners expressed mixed views over the future and the sustainability of the program at ECC following the grant.

In interviews near the grant's end, program staff and partners expressed mixed opinions regarding the future of the program. While some remained hopeful that the program could become more successful in its remaining months, others doubted ECC's ability to maintain the program following the grant. However, the new dean of the STEM department supports the program, recently rewriting program curriculum and overseeing integration of the programs into established ECC departments. Given the benefits that follow receiving state approval, and the introduction of the new dean of STEM to manage the programs going forward, there is an increased chance of program sustainability following the grant.

Finding #35. The greatest success of the ECC NAIL-IT grant program was getting the three new technical programs approved by the state, and then established and integrated into the college offerings for the first time.

Though the process took longer than expected because of the challenges the program faced, the approval and establishment of the three NAIL-IT programs at ECC is a major accomplishment. Having the three new IT programs of study significantly broadens and strengthens the college's academic offerings and provides an opportunity to better prepare interested students for competitive employment in the growing IT field.

Finding #36. The articulation agreement established with NJIT was a significant success of the NAIL-IT program. Many ECC students plan to continue their education after they complete their Associate's degree.

The program developed a dual enrollment agreement with NJIT for the Health & Information Technology program that ECC has formally approved. Having a four-year college degree from a reputable institution such as NJIT may put the participating students in a much better position to compete for IT jobs. It is anticipated that this articulation agreement could attract more students to the program.

Of the seven students who completed the program as of July 2017, five planned to attend NJIT in Fall 2017.

The program also began exploring possible articulation agreements with Montclair State University and Kean University. Work ceased on an agreement with Montclair State University, however. Work on developing an agreement with Kean University was picked up by the dean of STEM and it is not known whether this has come to fruition.

Finding #37. The experiences and lessons of the NAIL-IT program helped to identify the resources, collaborations, and other requirements that would be necessary for another community college to replicate the program with modifications and enhancements.

As a result of facing so many challenges, the grant program's experiences produced many lessons about what worked and did not work well, and why, both within the program itself as well as in the wider institutional environment in which the program was operating. This knowledge can be an invaluable asset to the start-up of this type of program at another college looking to structure and implement a robust set of technical programs. Such a replication can use the many lessons of this grant program and build on them to maximize the likelihood of success.

Recommendations

The Heldrich Center offers 14 recommendations for improving the implementation of the NAIL-IT program and increasing the likelihood of success for future programs at ECC.

Recommendation #1. The NAIL-IT program should attempt to better understand how and where to reach its target population and work with ECC to develop recruiting efforts to this target.

The goal of the NAIL-IT program was to increase technical education for high-demand occupations, specifically targeting women, veterans, and minorities. However, when the program failed to recruit many students from the target population, it broadened its target to include traditional community

college students rather than strengthen its original recruiting strategy. It would be beneficial for the program to learn where women, veterans, and minorities spend time in order to direct recruitment efforts to them. In addition, the program should work to identify evidence-based practices for recruiting women into IT programs and professions and attempt to replicate them. One recent study of IT programs at community colleges in Iowa suggests building up young women's confidence within a supportive environment throughout their education, implementing strategies that engage female students such as small class and work group sizes, a supportive and approachable mentoring system, and highlighting role models for women in the industry.⁴

Recommendation #2. When ECC implements grant programs in the future, it should carefully consider each potential partner, its necessity to the larger goal, and the feasibility of implementing their products and tools.

In many grant-funded programs with multiple partners, the start of the program can be somewhat disorganized, with no clear leadership or division of labor. Future programs should be certain of upper-level support of any products to be developed by program partners, and should carefully consider deliverables to avoid under-utilization of partner products and duplication of services. Erring on the side of integrating a smaller number of partners could cut down on uncertainties at the start of the program and save funding for other purposes. In addition, partners need to be held accountable for the commitments they make to the program.

Recommendation #3. Establishing a high-level champion or sponsor for the program within the college at program initiation is important to help ensure adequate interdepartmental cooperation, collaboration, and support for the program.

The NAIL-IT program suffered from lack of consistent high-level leadership support, which can be crucial for gaining the necessary broad collaboration and support from others. The new dean of STEM, who was previously employed at ECC and has experience with its administration and bureaucracy, began overseeing the program in Year 3 and appeared to achieve many positive results. How-

ever, this role would have been most helpful in the early phases of the program when there was a need for broad assistance and support with such critical tasks as marketing and recruitment, state approval of the course program, and faculty involvement. A strong program champion can facilitate collaboration and overcome department independence.

Recommendation #4. Adjunct faculty need to be compensated, possibly through stipends, in order to have them expand their duties to include participating in program meetings and providing additional student support such as holding office hours.

Many students in a technical program like NAIL-IT need additional academic attention with regard to basic computer skills as well as course content. The adjunct role in this program proved to be inadequate and required more consistent involvement and support where many students needed academic support outside the classroom. In addition, new programs like NAIL-IT require that faculty participate in program meetings and other activities in order to effectively and consistently roll out the courses as planned.

Paying adjuncts a stipend might incentivize them to become more integrated in the program. For example, prior to introducing a course, program staff could meet with faculty to ascertain any resource needs, like additional software, so that it can be purchased and installed in time for students to use in their projects and labs. For introductory online courses, it would be helpful to schedule periodic labs to give students opportunities to come together and ask faculty any questions or concerns in person. In addition, ECC should strongly consider paying instructors to develop recorded lectures that can be stored online for students to access to better understand the material. This practice would support student learning.

Recommendation #5. The program should integrate the teaching of key non-technical skills, primarily soft skills and job search skills, throughout the curricula.

The NAIL-IT program is different from many other programs at ECC, because it was explicitly funded to help the participants achieve an employment

outcome. Employers routinely say that they will train their entry-level employees in the technical skills they need, but that students need to have excellent soft skills in order to be hired. Working with its instructors, many of whom are employed full time in the IT industry, the NAIL-IT program should identify the soft skills that IT employers value the most, identify the teaching exercises and classroom experiences that can support the development of these skills, and then systematically identify the points in the curricula when these skills can first be taught and further reinforced in subsequent classes. The program should also identify the job search skills that students need to have, develop the exercises to teach them, and find the courses in which these skills should be taught.

Recommendation #6. As early in the program as possible, gaining employers' input on the curricula should be the centerpiece of the program's employer outreach efforts, as it affords the program the best opportunity to meaningfully engage employers.

Program staff, including the faculty responsible for developing the curricula, should reach out to local IT employers to solicit feedback for the course curricula. This would not only give the program more validity in the eyes of the students, knowing the program has been reviewed and supported by local employers, but will also expose local employers to the program. This is another key function that faculty can perform if they are integrated into the program. Program staff and faculty could work with the Newark Alliance to build relationships with employers by reaching out to employers to describe the curriculum and obtain their feedback. Cultivating employer engagement from the outset could pay off in more internships, and hopefully job offers, later on. In developing the NAIL-IT program, early implementation delays did not allow for this type of collaboration. As such, employers were only able to review the curricula after it was finalized, which did not facilitate early foundational partnerships with employers.

Recommendation #7. Following any curricula review, the NAIL-IT program should look to engage hiring managers at employer sites rather than reaching out to human resources departments.

The strategy of conducting outreach to human resources departments is unlikely to yield any benefits in the short term since human resources departments do not make hiring decisions. The evaluation team recommends that outreach to human resources departments should be placed on hold until after the program has built solid relationships with the hiring managers, as these are the individuals who are ultimately responsible for determining the skill needs and the hiring schedules in IT businesses. Once the hiring managers have been convinced of the program's quality, the program should ask the hiring managers to connect them with their human resource offices, which can ensure that the human resource processes do not discourage applicants from the NAIL-IT program.

Recommendation #8. The program should be careful in how it communicates to students about internships to avoid inadvertently being perceived as promising internships to students.

Until the program has established an effective process for identifying internship opportunities, the evaluation team recommends that program staff be transparent about the ability to secure internships for students. As noted in a student focus group, students found the internship component attractive and were looking for internship opportunities. For example, program and ECC staff and partners should identify a handful of internship-for-credit models, such as Capstone projects, that colleges have developed. It may be helpful to reach out to colleges that have these models in order to gain insight into how to set up these programs so that they provide value for employers and students.

Recommendation #9. More internship opportunities should be provided for program students since most IT jobs require some work experience and internships are vital and instrumental for this purpose.

The ECC program sought and provided primarily the type of internship that can lead to full-time employment, but these internship opportunities are relatively rare and, therefore, difficult to obtain. As a result, the number of ECC students obtaining internships was lower than anticipated, disappointing many students. Increasing the number of intern-

ships for students can be accomplished by seeking some internships strictly for learning, which are more plentiful than the few internships leading to jobs.

Recommendation #10. The program should follow evidence-based practices to increase student retention, beginning with financial aid.

Since student retention at two-year colleges tends to be low for a variety of reasons, and in view of the low enrollments in NAIL-IT program courses, the program should develop practices to increase student retention. Main causes of attrition reported in this area were student inability to pay for courses or take time away from work. Future programs, particularly those at community colleges in low-income areas, should place more emphasis on cultivating student financial aid. When looking at predictors of student retention, research literature confirms that receipt of financial aid is associated with retention.⁵

The long delay in receiving state approval for the NAIL-IT course programs clearly affected the program's success. In the future, once approval is received for courses and enrolled students became eligible for financial aid, program staff should take steps to ensure students are aware of the aid available. According to some measures, 55% of community college students never complete the FAFSA (Free Application for Federal Student Aid) form required to receive financial aid.⁶ Staff at ECC, NAIL-IT, and partnering organizations should stress the importance of applying for financial aid and work to inform students of this process.

Recommendation #11. Program courses — outlines, texts, grading, and other materials — need to be standardized to provide consistency and ensure that every faculty member teaches each course as planned.

It is essential to ensure that students fully obtain the course preparation as envisioned. A lack of standardization of course material for faculty and the reduction in rigor of courses is counter-productive and is simply an easy, short-term solution that creates a bigger, long-term problem: program completers who are less than fully prepared for employment. If some students are unable to master all

the material, other steps should be taken, such as tutoring or improved access to faculty, rather than over-simplifying or omitting some course content.

Recommendation #12. A full-time computer science faculty member should be in place to guide and oversee the adjuncts and ensure standardization of courses and adherence to the NAIL-IT curriculum.

As noted by one program staff member interviewed for this study, "It is very hard to run a program with adjuncts." Adjuncts have a limited, temporary, and often short-term responsibility to the college — traditionally they just teach their course and leave. A full-time faculty member who chairs and oversees the adjuncts can ensure that all the faculty are teaching to the curriculum, that students receive the academic support needed, and that the program courses are rolling out as planned.

Recommendation #13. Tutoring in IT should be made widely available for students in such a technical and challenging program as NAIL-IT.

Since many students entered the program with relatively poor computer skills along with deficiencies in math and English, there is a need for more tutoring in addition to faculty office hours for academic support. It may be possible to integrate IT tutoring into the ECC tutoring center using previous program students with strong academic credentials who exhibit mastery of the course material.

Recommendation #14. Additional technical supports are needed for program students beginning with course advisement and counseling, including assistance with working effectively in an online environment, and using technology-enabled learning.

Effective advisement for students on such things as course selection and sequence was largely missing from NAIL-IT since ECC staff were unfamiliar with the program courses, and program staff were unprepared to take on this function, although they felt compelled to try to fill the gap. Once students began their courses, many were unprepared to begin working in an online environment and to use technology-enabled learning. In the NAIL-IT program, the guidance and supports for online learn-

ing were provided primarily online, but this did not help students having difficulty getting started online. Initial guidance and some support should be provided to students in person to enable them to successfully navigate the online content.

Endnotes

1. Essex County College, Round 3 TAACCCT grant application.
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