Evaluation of Clark State Community College's Advanced Manufacturing in a Global Economy (AMCGE) Training Program

Interim Report #1

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EVALUATION OF CLARK STATE COMMUNITY COLLEGE'S ADVANCING MANUFACTURING TO COMPETE IN A GLOBAL ECONOMY (AMCGE) TRAINING PROGRAM

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Early Implementation Activities - October 2014 to June 2016

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INTRODUCTION

Manufacturing and welding jobs are experiencing a renaissance in West-Central Ohio. After a period of instability caused by increasing globalization, outsourcing, and economic downturn, the manufacturing and welding industries are currently experiencing a tight labor market, with employers unable to locate qualified prospects to fill available jobs. In response to this need, Clark State Community College's Advancing Manufacturing to Compete in a Global Economy (AMCGE) training program aims to prepare students for immediate entry into manufacturing and welding jobs. AMCGE is funded by the U.S. Department of Labor's Trade Adjustment Assistance Community College Career and Training (TAACCCT) grant program, which sought to strengthen community colleges' ability to meet workforce needs by "creating industry-driven strategies that are responsive to regional labor markets and state economies" (U.S. DOL, 2014). To this end, the AMCGE grant expands the college's program offerings in advanced manufacturing through a comprehensive set of reforms, including changes to the physical space and equipment used by the programs; reforms and expansions to the curricula as well as to student support services and advising; and the engagement of local employers.

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

The evaluation includes three reports. In this first interim evaluation report, we will discuss the implementation of grant activities, identifying promising practices as well as areas for improvement. The second interim report will discuss ongoing implementation activities and present preliminary quasi-experimental analyses of student outcomes. The final evaluation report will provide a summary of implementation activities and a complete quasi-experimental analyses of student outcomes. Taken together, the purpose of these reports is to fulfill DOL requirements for program evaluation while also providing the program with tools for continuous quality improvement, based on the observations of a neutral third party.

We begin this report by describing the methods used in the evaluation, then we present the background and context of the grant activities. The next three sections of the report are

organized around key implementation activities from the program logic model, focusing first on curriculum and equipment, then on the navigator and student recruitment, and finally on employer engagement. Next, we provide an overview of student enrollments and completions. The report concludes with recommendations for implementation improvement and a discussion of next steps for the evaluation.

EVALUATION METHODS

EERC's implementation analysis of the AMCGE program is based on a program logic model that the EERC evaluation and Clark State implementation teams built collaboratively in July 2015. Its design was revisited in December 2015 and February 2016 with the program manager, who confirmed that it remained the operating logic of the program. The logic model for the evaluation summarizes how the program's planned work (program inputs and activities) will lead to its intended results (outputs, outcomes, and impacts). This ensures that all stakeholders, including the evaluators, are focused on the same roadmap and have a shared understanding of the detailed plan and goals of the project. The logic model is included in the Appendix. Please note that we have organized this report around the themes of the logic model; in every section we have identified "Key Tasks" based on the logic model. However, some of the components of the logic model have been grouped differently in this report based on how the themes emerged in the research.

EERC's implementation analysis of the AMCGE program in Years 1 and 2 focused on program inputs and the implementation of key grant activities. This report includes information amassed via the following data-collection processes:

(1) Site visits to the college. EERC conducted one early visit to Clark State Community College that served as an informational meeting and baseline Year 1 site visit on July 7–8, 2015, and one Year 2 site visit on February 1–2, 2016. EERC evaluators collected information from multiple stakeholders involved in the project, conducting, across both visits, 18 semi-structured interviews with program staff and faculty involved in the grant along with two student focus groups. In addition, our evaluators toured the physical spaces—including laboratories and classrooms in the new AMCGE facility at Shull Hall both as they were in development and after completion—and observed both structured classes and self-paced open lab hours.

(2) Telephone meetings and interviews with project leads. To understand ongoing program implementation efforts, EERC evaluators held monthly informal check-in meetings with project leads via telephone, and they conducted rounds of formal semi-structured interviews to assess early implementation progress in December 2015 and June 2016. Additionally, the EERC team interviewed consultants associated with the program in Spring 2016.

(3) Document review. Throughout this first data-collection period, EERC evaluators collected documents and reviewed the Clark State Community College website. Information

collected included program descriptions and requirements, course requirements, course outlines, planning documents, meeting minutes, and other informative documents.

(4) Student survey pilot. In the final weeks of the Spring 2016 semester, first-semester Engineering Technology students were sent a survey via e-mail to assess their experiences and satisfaction with the programs as well as their career awareness, preparation, and aspirations. A second survey was sent via e-mail by the navigator to students who had already completed the program. Four first-session students (those students in the first semester of the program) and one graduate responded. Both surveys were distributed online via Qualtrics, and the dissemination experience and initial results will be used to hone the survey for broader distribution in the fall of 2016 and spring of 2017.

EERC staff analyzed all data collected using established analysis techniques. Qualitative data were managed, coded, and analyzed using qualitative analysis software, NVIVO 10.

BACKGROUND AND CONTEXT

In this section, we provide the context for the major activities of the grant. First, we discuss the labor-market needs that motivated the grant activities. We then discuss the specific grant activities detailed in the proposal that were tailored to respond to these labor-market needs. Finally, we discuss the organizational structures that the college established to carry out the grant activities.

Labor-Market Needs

The manufacturing industry has changed significantly in recent decades. Manufacturing, which has seen a steady decline in employment share over the decades since World War II (Baily & Bosworth, 2014), is experiencing a resurgence through glimmers of *reshoring*—recovering jobs lost to globalization—and specialization into more complex middle-skill work in advanced manufacturing. Despite the popular notion that manufacturing jobs have all moved to other countries, manufacturing remains a significant industry in the United States. Today's manufacturing jobs, however, often require higher levels of skills and training and rely more on advanced technology in contrast to the traditional factory work that characterized manufacturing in the postwar era.

Clark State Community College is located in Springfield, Ohio, a small city within an hour's drive of two major Ohio cities (Dayton, 25 miles to the southeast, and Columbus, 45 miles to the east). Clark State serves four Ohio districts—Clark, Champaign, Greene, and Logan—and has multiple campus locations; the largest campuses are the Leffel Lane campus in Springfield, Greene Center in Beavercreek, and the Logan County campus in Bellefontaine. One campus, Green Center, is within a 10-minute drive of Wright-Patterson Air Force Base.

Manufacturing has been a staple industry in the area, providing 7,332 jobs in Clark County in 2012 (Sanctis, 2015a). Yet, as far back as 1996, concerns arose when Springfield's largest employer and manufacturing giant Navistar stated it would cut 3,000 of the 5,000 jobs at its Springfield factory (Bradsher, 1996)—by 2010, the plant only had a few hundred workers. Since then, however, Navistar has undergone a dramatic turnaround, and the company now employs as many as 1,500 workers in Springfield when contractors and management are included. In 2015, Navistar invested around $12.8 million in its facility while adding 300 new jobs (Sanctis, 2015b).

In Clark County, however, workers still generally earn less than those in the rest of Ohio and the United States. In 2012, the average pay for manufacturing workers in Clark County was $48,131, while the national average was $59,985. In 2013, private-industry workers in Clark County earned around $17.50 per hour, while statewide wages in that sector averaged around $22.00 per hour (Sanctis, 2015a).

Despite the lower wages, there is still a hopeful outlook for manufacturing jobs in Clark County and Springfield, particularly with regard to technical training for manufacturing across the region (Sanctis 2015a). The city of Springfield is attempting to improve wages and jobs and encourage more industry to move to the region by investing in education and workforce development. This is especially promising because a recent study has shown that students who graduate from two-year community colleges have in some cases obtained better-paying jobs than those graduating from traditional colleges, likely due to the technical specialization of the programs typically offered by two-year schools (Rowe, 2015).

The AMCGE program is geared toward a variety of jobs with promising data on future demand. As outlined by the program in its marketing materials, the certificates offered through the AMCGE program lead to a diverse array of jobs with salaries ranging from about $31,000 to $56,000 per year (hourly rates between $15 and $27), placing graduates around the median household income of $43,100, and within the 40th to 80th percentiles among wage earners in the Springfield area (Statistical Atlas). Additive Manufacturing certificate holders can seek jobs as CAD drafters, 3D-design or printer technicians, structural CAD designers, or design engineers, with hourly rates in the $19–27 range. CNC Machining certificate holders can seek jobs as CNC machinists, vertical mill operators, CNC programmer technicians, CNC setup machinists, and CNC mill/lathe setup operators, with hourly rates in the $15–22 range. Industrial Maintenance certificate holders can seek jobs as maintenance-machine mechanics, maintenance technicians, industrial maintenance repairers, plant maintenance technicians, and field service technicians, with hourly rates in the $16–24 range. Welding certificate holders can seek jobs as welding technicians, structural metal workers, tank welders, mechanical engineering technicians, and bridge and building welders, all of which have hourly rates in the $17–27 range.

These careers appeal to students for multiple reasons. Described by one administrator at the college, what attracts students to these pathways is "Employability. Staying within the

community. Not having to relocate. And then, of course, salary, and what they'll be making. That's certainly attractive." Another noted the tough path that some students had experienced:

> I think it's seen as a solid opportunity to advance themselves both professionally and provide for themselves and their families. . . . I have a gentleman who is very open about how they're tired of working three jobs. They know it is a better pathway for his life and his family. So while he's getting his certificate now, maybe working on an associates in the future, to make him a marketable entity. . . . They see it as an opportunity to grow. Some of those guys are general contractors or electricians and again, some of them are in niche markets. They want to broaden their skill base so they can own their own business. Have something that is more stable. Take construction—that's an industry that is very dependent upon housing markets, which have been on a roller coaster lately. They're tired of living through the lean times hoping for another boom to be able to make more money.

Project Goals

Clark State developed the AMCGE program in response to the labor-market needs outlined above, expanding its capacity in manufacturing instruction. This project builds on one preexisting program in the Engineering department (Industrial Maintenance) and adds four new programs (Computer Numerical Control, Welding, Additive Manufacturing, and Supervisory Control and Data Acquisition). Prior to the AMCGE program, the college experienced challenges with completion in its manufacturing-related programs. The college identified two reasons for this issue: First, it was possible for students to obtain employment without completion, and second, developmental education was adversely affecting completion rates.

The project seeks to offer a holistic approach to meeting the needs of Springfield-area students and employers. To address these completion concerns and serve local employers, the AMCGE program offers a highly modularized curriculum that can be taken with multiple entry and exit points and still lead to a certificate and, ultimately, a degree. AMCGE expands the school's capacities into new areas of manufacturing that are in-demand as advised by local employers, incorporates developmental education into core courses rather than isolating it in traditional standalone remedial courses, and adds the more holistic advising of a career navigator to help guide students from recruitment all the way through to employment.

The college's key activities for the AMCGE, which are based on the project's logic model, are summarized in Table 1. The college sought to ensure that instruction in these programs was closely aligned with employer needs by developing a modularized curriculum based on skills identified by employers and by building new labs with new equipment that reflected the state of the industry in the local area. They also sought to improve how students were recruited into the program by hiring a career navigator and conducting focused recruitment efforts for the programs. Finally, they sought to engage with local employers to ensure that the programs were aligned with employer needs and to help support the successful placement of students into internships and eventually into jobs. Ultimately, they hope these

programs will improve the local economy overall by helping to build the local workforce and enticing other companies to come to the area.

TABLE 1. KEY PROJECT ACTIVITIES IN THE EVALUATION OF CLARK STATE COMMUNITY COLLEGE ADVANCED MANUFACTURING PATHWAY TRAINING TAACCCT GRANT

Space and Equipment • Acquisition of new equipment and technology for classrooms/labs • Prepare physical program spaces, including renovation of 7 rooms (labs and classrooms)
Curriculum • Develop modularized curriculum (including foundation skills certificate) and embed five new certificates of competency • Develop an I-BEST-like approach to integrate remedial education into career training with help of expert consultant • Integrate technology-enabled learning with new manufacturing and simulation equipment • Revise procedures and policies for prior learning assessments with help of expert consultant • Integrate use of online learning including simulations • Embed local employers and subject matter experts to consult with faculty • Develop/improve data systems to enhance understanding of student experiences and outcomes
Student Navigator and Recruitment • Develop recruitment strategy, including promotional materials, website • Provide academic and career counseling to advanced manufacturing students with a full-time career navigator co-located at Springfield/Clark AJC and OMJ CCDJFS and accepting referrals from throughout the CCJDFS service area • Adjust intake process to increase individualization for candidates • Leverage CSCC and external resources to assist students as needed
Employer Engagement and Other Collaborations • Engage employers through "employer- engagement teams" to provide assistance in curriculum development, provide work-based learning opportunities, and identify job opportunities for graduates • Coordinate with the public workforce system and align with statewide workforce plans • Engage with collaborating educational institutions and previously funded TAACCCT grants • Engage with local 4-year schools to create articulation agreements for AMCGE students

Project Organization and Staffing

The college established a team and an organizational structure to implement AMCGE activities. The vice president for academic affairs serves as the project director. A project manager is responsible for overall leadership on the grant in terms of implementing the academic reforms of the project. Other key grant personnel include the lead faculty from each of the programs as well as other faculty intended to be hired through the grant. A career navigator is an additional new staff person hired in cooperation with the Ohio Area 7 Workforce Investment Board (WIB) with the intention of improving student recruitment and retention and

supporting employer-engagement activities; the navigator is co-located at Clark State and the Clark County Department of Jobs and Family Services (CCDJFS). The project leadership team—which is chaired by the Vice President and Provost for Academic Affairs and consists of the executive director of the Ohio Area 7 WIB, a representative of CCDJFS, the AMCGE project manager, the faculty, the director of institutional research, the dean of business and applied technologies, and the director of student success and completion—meets twice monthly.

KEY IMPLEMENTATION ACTIVITIES

In addition to establishing the staffing and general organization for the project, the implementation team had several key tasks to accomplish in the first two years of the grant. In the sections that follow, we present findings related to the renovation of space and acquisition of equipment, the development and redesign of curriculum, the student navigator and recruitment, and employer engagement.

As noted above, some of the implementation activities will be discussed in sections other than the ones with which they are aligned in Table 1. This is due to differences in how certain themes actually emerged in the research versus how they were envisioned in the project's logic model prior to program implementation.

Space and Equipment

KEY TASKS: New Equipment & Classrooms/Labs

- Acquire new equipment and technology for classrooms/labs
- Prepare physical program spaces, including renovation of 7 rooms (labs and classrooms)
- Engage with collaborating educational institutions and previously funded TAACCCT grants

The new labs and classrooms are up and running. The AMCGE program occupies a new space in the fully renovated Shull Hall, where it is self-contained and removed from the rest of the Springfield campus. Included in the space are two computer lab-style classrooms, a large central gathering area with some equipment and machines, a 3D-printing lab, a welding lab, a CNC lab, multiple traditional-style classrooms, and a self-paced learning lab. Faculty and grant staff offices are also located in the building. The 12-booth welding lab in particular expands the program's capacities, as previously all welding training had been held at the Career Center, where hours were limited to nights and weekends. Classroom renovations were completed for the first Fall 2015 session, and lab renovations were completed by the second Fall 2015 session; students began using the spaces in the second Fall 2015 session. The program hosted a ribbon-cutting/open house on October 30, 2015, with local leaders and employers; the college invited over 325 people including military, community members, employers, state and local government representatives, board of trustees members, foundation board members, and

Clark State faculty and staff from the broader university as well as Ohio Senator Chris Widener and Representative Kyle Koehler, who spoke at the event. During the event, college staff conducted presentations on the new equipment, described the new programs, and conducted demonstrations of the equipment in use. In advance of the event, the college sent out a press release to highlight the contributions of the new facility to the college and the community.

As with any ambitious construction project, unanticipated issues arose; in this case, the cost of leveling the lab floors and installing sufficient electrical systems to support the labs were the primary challenges. Ultimately, Clark State invested approximately $400,000 to improve the spaces in Shull Hall for the new AMCGE center over and above the TAACCCT funds earmarked for that purpose. The result is a premier center that features the technologies currently favored by local employers. Many employers have come through the spaces already, whether as part of the open house event or on private tours. Some are even asking to use the labs on a contract basis, a good sign that the program is on the right track in terms of equipment and the use of space.

The college sought and carefully incorporated employer input on equipment purchases and also looked to local schools for ideas. When deciding on the type of equipment to purchase for the renovated facility, the college sought feedback from local employers to ensure they got equipment that would be useable by most employers. They also talked with vendors to identify the equipment that was most frequently sold to local employers. The implementation team worked to balance employer needs with feasibility. For example, from talking with employers and visiting some local worksites, implementation team members learned they needed a full CNC machine rather than the tabletop version they had planned to purchase; they also learned they needed mills, not just lathes.

The implementation team did not tailor purchases to the specific needs of any one employer but rather sought a middle ground that would effectively teach the basic skills necessary to succeed across a number of workplace settings. The college sought to avoid spending a lot of money on very specialized equipment that would likely go out of use soon, and reflecting back on their purchases they feel good about the way they invested their funds. Despite the fact that they did not purchase multiple forms of equipment to cater to specific employers, college staff report they have gotten positive feedback from employers on the equipment they purchased. As one staff member noted:

> The temptation was to cater to one or two employers and put a special machine in, and we really—through a series of trial and error—recognized that that was not a good idea. And so we gravitated more towards hitting the middle, and I think that's really paid off for us.

In addition to soliciting employer feedback on the equipment, in January 2015 key staff on the AMCGE implementation team visited four local area colleges to tour their manufacturing lab facilities. These tours were used to gather ideas for designing the AMCGE lab spaces and to help the implementation team put the industrial machinery into an educational context,

supplementing knowledge gained from the employers and vendors and helping implementation team members think through logistics such as layout, cooling, and ventilation. They were also able to talk to instructors at these schools about the pros and cons of certain equipment (including continuing costs, usefulness for instruction, and what equipment was practical versus what was just "showy"). This information, combined with input from instructors on what would work best from an instructional standpoint, informed the team's equipment purchases for the grant.

Curriculum

The Clark State AMCGE TAACCCT grant develops or redesigns five certificate programs: Additive Manufacturing (new), Computer Numerical Control (CNC—new), Industrial Maintenance (redesigned), Supervisory Control and Data Acquisition (SCADA—new), and Welding (new). The SCADA program is still in the design process and hence is excluded from these descriptions unless otherwise noted. For the redesigned programs, the implementation team has worked to incorporate skills that are prioritized by local employers. These changes have been less than 25% of the content of these programs and thus have avoided triggering a new administrative approval process with the state, thus enabling the programs to move forward without administrative delays.

KEY TASKS: Develop/Reform Curriculum

- Develop modularized curriculum (including foundation skills certificate) and embed five new certificates of competency
- Develop an I-BEST-like approach to integrate remedial education into career training with help of expert consultant
- Integrate technology-enabled learning with new manufacturing and simulation equipment
- Add prior learning assessments with help of expert consultant
- Integrate use of online learning including simulations
- Embed local employers and subject matter experts to consult with faculty
- Develop/improve data systems to enhance understanding of student experiences and outcomes
- Engage with local 4-year schools to create articulation agreements for AMCGE students

Along with the redesigned programs, the college is seeking to increase the number of students participating in internships. Internships are now required for associate degree programs; previously only one or two students completed an internship each term. In Fall 2015, they placed five students in internships—the most ever—and two students completed internships in Spring 2016. Interested students work with the internship coordinator; they complete an application, and the coordinator connects them with employers. Potential internship opportunities are also shared with the programs. During the course of this

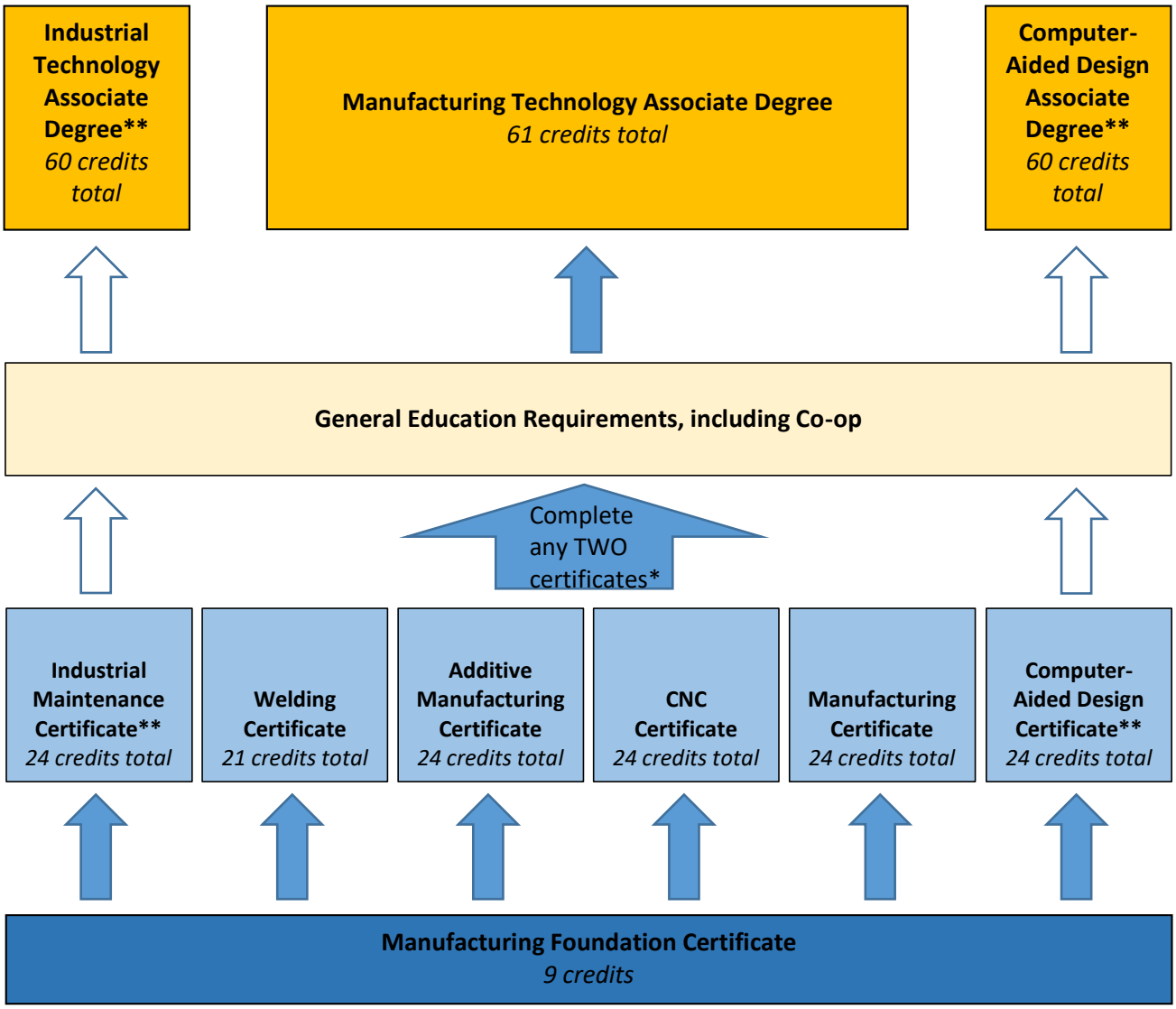
experience, students need to write a reflection paper every two weeks, and the college does a formal check-in halfway through the term. The college expects more emphasis on internships as a result of another grant from the state that is meant to provide paid internships to students.

The AMCGE program establishes clear educational pathways. The AMCGE program is based on stackable credentialing and thus offers both a manageable bridge into higher education as well as ample opportunities for students to leave their programs early with a credential (or set of credentials) to show for their efforts (see Figure 1). In the first semester all students complete a Manufacturing Foundations certificate, which serves as a core curriculum for all the certificate classes and will soon incorporate developmental education using an I-BEST-type model. (That model will be described in the section that follows.) The Manufacturing Foundations certificate also ensures that, should a student leave the program after one semester, he or she will walk away with a certificate and training in skills deemed to be foundational by the Clark County Manufacturing Collaborative. All certificate courses can be applied to the Manufacturing Engineering Technology (MET) Associate of Applied Science Degree. All MET AAS students are required to complete two departmental certificates (in addition to the five TAACCCT-developed certificates, there is one other option: Computer Aided Design), meaning that all MET AAS students will benefit from TAACCCT-developed courses. The MET AAS and its related certificate programs are offered at the Springfield campus only. If students satisfy all prerequisites and college preparatory minimums, the AAS can be completed in two years (including a 2-credit summer co-op between Years 1 and 2). For the certificate programs, students who satisfy all prerequisites and college preparatory minimums can complete their credentials within one year (all certificate programs require 24 credits except welding, which requires 21 credits).

The Manufacturing Foundations certificate completely overlaps with 12 of the 15 credits required for the first semester of the AAS degree (the only course not represented in these programs is ENG 1111, or English I). Among the four certificates currently outlined, the Additive Manufacturing and CNC certificates offer the most efficient integration with Year 1 of the MET AAS degree, as these two certificates also offer complete overlap with 12 of the 16 required credits in the second semester of the AAS degree (the only course not represented is MTH 1280, College Algebra) as well. The Industrial Maintenance and Welding certificate programs, on the other hand, overlap with two elective certificate courses in the second semester of the AAS but do not overlap with the remaining 10 credits outlined in the MET AAS program.

In addition to the MET AAS, students in the Industrial Maintenance certificate program have a second option: the Industrial Technology AAS, which has a much cleaner integration (all credits can be applied, rather than the 18 of 24 that can be applied to the MET AAS). If a student on the certificate-only path moves to the Industrial Technology AAS path and wishes to "catch up" before Year 2, it should be fairly easy to do so; based on the college's Summer 2015 offerings, multiple sections of the English and Math courses required for the AAS but not included in the certificate programs are offered over the summer session.

Figure1. Pathways to an Associate Degree through Clark State College's Advanced Manufacturing Program



**Completion of any two specialty certificates plus the Manufacturing Foundation Certificate will yield 33-39 unique credit hours, depending upon the combination. All of these credit hours can be applied toward the Manufacturing Technology AAS.*

***Both the Industrial Maintenance and Computer-Aided Design Certificates can be fully applied toward the Manufacturing Technology AAS. However, they also nest within separate AAS degrees that correspond directly to their subject matter, as demonstrated here.*

The program staff and faculty work to ensure that students understand exactly how the pathways work and what outcomes they can achieve by following those paths. The navigator, whose role will be discussed further in sections to follow, has an active role in working with students and enlightening them to the possibilities of stacking credentials to work toward a degree, and Enrollment Services and Career Services also work to make sure that these paths are conveyed clearly. As one administrator described it:

> Yes, it's really important for students [to understand what their career prospects are] so they understand what could be possible in the end. Because we don't want students declaring a major thinking that it's one thing, and then finding out it's something else.

The SCADA program is not yet operational. The college has not made much progress in launching SCADA. This was a strategic decision made in February 2015. Whereas the four other pathways are extensions of pre-existing programs, SCADA is a fresh start. Originally intended to overlap with the Cybersecurity certificate and AAS, the implementation team has taken the program in a different direction.

College staff reported that SCADA is something new that they would have to sell to employers; they did not find a lot of expressed interest for it among their employer-engagement team members, and employers were generally neutral towards it. They were originally planning to market the program to cybersecurity students and the employers that typically hire those students, but college staff were not convinced that those students would be interested in the program, either. However, in speaking with employers the college staff learned that SCADA does exist in manufacturing companies that manage data. In order to meet these needs, the program was changed from an IT-centered program to an Industrial Maintenance-centered program.

Still, it remained the case that SCADA skills were not a major need among local employers. Rather than creating a standalone certificate that may not in itself lead to employment, in developing the program the implementation team decided that SCADA was instead better suited to serve as a shorter, optional add-on to the Industrial Maintenance certificate. In Spring 2017 they plan to launch one course in SCADA. If there is demand, and they find that the program adds value to the students' credentials, a bigger standalone certificate will be developed. The success of the development and implementation of SCADA is dependent on a great deal of outreach that college staff must begin to conduct on two fronts: one with potential students, and one with potential employers.

Employers provided input in the process of developing/redesigning curriculum. From the beginning of the project, the implementation team has sought employer feedback into skills missing from the job market and the best equipment for training (for more on employers and their roles in the program, see the section on employer engagement, below). College staff reported that employers were particularly useful in designing the Welding program, as it was a completely new program and could be built from the ground up with employer feedback.

I-BEST is a work in progress. Developmental education was identified by Clark State in their project narrative as a significant challenge to student retention and performance; in addition, it was noted that developmental education can hinder students in certificate courses who seek to return quickly to the workforce. To address this issue, the AMCGE program sought to adopt an I-BEST-like approach (hereafter referred to as I-BEST), using strategies from Washington state's I-BEST model of integrating basic skills instruction into technical instruction as part of a single coherent program of study (Wachen, Jenkins, & Van Noy, 2010). To do so, the college sought to integrate contextualized basic skills instruction into two core foundations courses: reading and writing into ENT 1000 (Introduction to Industrial and Engineering Technology) and math into ENT 1050 (Manufacturing Foundations). Their goal is to have each section of these courses incorporate I-BEST, though it is challenging to balance instructor loads; they have only one instructor who can work with ENT 1050, while two instructors can cover sections of ENT 1000.

Currently students take developmental education courses concurrently with their program courses; they are not prerequisites and are not required for those who want to get a certificate only. This model has the potential to create an extra layer of complication for those who complete certificates and wish to go on to complete their AAS, as they can get through a certificate without developmental education and then find themselves unprepared to begin the general education courses needed to attain the degree. By integrating developmental education into the certificate classes themselves, the goal is to produce better retention and completion rates and improve both academic performance and college readiness among certificate-only students.

I-BEST implementation was delayed. The original plan for I-BEST implementation was to have the model implemented in Fall 2015; however, this timeline was delayed for multiple reasons. Some staff involved in the project reported that so much of the activity in the first year of the grant was focused on getting the equipment installed that it was difficult to pay attention to this aspect of the grant at the same time. Some further reflected that this deadline was too aggressive and not realistic for the college. They were still working on revising the curriculum for ENT 1000 and were not ready to think about how to integrate I-BEST. The program will now launch in Fall 2016.

Initially it took some time to educate faculty about the I-BEST approach. An issue that delayed the implementation of I-BEST was the need to develop an understanding within the college about the I-BEST approach, particularly amongst faculty not involved in the grant. A significant challenge was that developmental education faculty were not included in initial discussions about I-BEST during the proposal development. At the outset of the I-BEST implementation in Spring 2015, faculty participated in a half-day workshop on integrated career pathways that was intended to provide an introduction to I-BEST concepts. Many attendees did not have any background on I-BEST. Some voiced concerns about the I-BEST approach or their ability to implement the new approach given their involvement in multiple other initiatives

going on at the college. Other staff reported that I-BEST represents a culture shift for the college, reflecting that it would take time to socialize people to the idea of I-BEST and that the process could not happen quickly.

Importantly, the lead technical faculty for the AMCGE grant are open to moving forward with I-BEST integration and also possess backgrounds in teaching basic skills. This faculty knowledge is a unique asset that the college brings to this process, as these faculty members play an important role in bringing other faculty together around the idea. Ultimately they plan to begin by working with other faculty who express openness to I-BEST. Eventually they hope that early-adopter faculty will act as champions of the idea, do the work to implement it, and then share it with others at the college.

More concrete progress on I-BEST implementation began in Spring 2016. At this time consultants conducted a two-day in-person training on I-BEST. This intensive training provided faculty with the opportunity to gain an understanding of the I-BEST approach—in particular to understand that the content would be taught in an applied as opposed to a theoretical way. However, teaching teams (of basic skills and technical instructors) were not fully determined at the time of the training, so planning at that stage was somewhat tentative. As follow-up to this training, faculty were to attend a half-day workshop in the summer of 2016 to analyze student learning outcomes and develop a strategy to integrate curriculum.

The college will need to devote focused attention and continue ongoing conversations to fully develop I-BEST. While the college has made some progress internally in conveying the concept of the I-BEST approach to others at the college, this will be an ongoing process of communication and coordination. They will run their first pilots in Fall 2016 and will need to reflect on these to determine what worked well and what needs to be changed or refined. It is likely the college may encounter challenges in making sure others on campus understand what they are doing and ensuring faculty reach solid agreements that logistically support their working together. To ensure their efforts are successful, the college ought to consider holding regular meetings of I-BEST instructors and college administrators—perhaps on a monthly or quarterly basis—to keep this work moving forward. The goal of these meetings would be to ensure the teams learn from each other by sharing information on what is working and what is not and to keep others updated on the implementation process.

The role of the consultants appears to have evolved slightly throughout the project as the needs and the timeline of the college became clearer. However, the work of the two consultant groups could be even more clearly delineated and coordinated, as one group focuses more on teaching support whereas the other focuses more on the development of broader pathways. College staff expressed interest in ongoing support from the consultants including observations of teaching to provide feedback and ideas. The consultants reported they are available to do web conferences or consult via phone or e-mail. The consultants have played an important role in developing faculty understanding of the I-BEST approach, and their continued assistance can help keep this aspect of the project moving ahead.

College staff hold some concerns about students' readiness after I-BEST. They reported that I-BEST would be helpful because there are many classes students need to take to complete developmental education, or College Preparedness Education (CPE), requirements and that as a result they often get "caught in the CPE cycle." At the same time, some college staff reported concerns about whether students would really be ready for college-level English and math after I-BEST. They voiced concerns about how to know if a student is ready and what to do if a student gets to the end of the foundations courses and still is not ready for college-level work. The greatest concerns exist with math classes; college staff reported more confidence that they will be able to get students prepared with English than with math. To address this concern, the implementation team is considering the creation of a bridge course to finish the math preparation for students interested in continuing on to pursue AAS degrees. Along these lines, the college may also need to reconsider their ideas of developmental education and the sequence of courses, which are fairly traditional and might be reformed to provide students with more options.

The PLA reforms are part of a larger reform effort at the college. Clark State sought to review its college-wide PLA efforts and organized a PLA committee with broad representation from across the college. The administration worked with outside consultants on the project to clarify the goals of PLA at the college and determine an approach to developing their new policy. They reviewed what the college was already doing with PLA to determine what would work best for them and used templates for policy from outside consultants, customizing them to their needs. The PLA committee found that many policies existed throughout the school that were disconnected from each other. Ultimately they plan to coordinate these efforts and have a Web-based repository to make all PLA-related information available in one place.

The college's previous approach to PLA relied primarily on portfolios; although these were rarely used, their existence meant that many people at the college were open to the idea of PLA. Through this reform process, the PLA committee has been trying to get others at the college to recognize a wider range of options for PLA, including CLEP, international baccalaureate, and challenge proficiency exams. With the new policy under development, portfolios will be the last option considered after other options; the new model favors challenge exams and national exams that will allow the college to determine standard cut-off scores.

Practical issues remain that will need to be worked out in implementing the new PLA policies, including mapping out the roles and responsibilities of college staff, how many PLA credits to allow for a CSCC degree, how to transcribe PLA, and how much to charge students for PLA. Further, the college is grappling with how to create challenge exams in a timely fashion and how to compensate faculty for them; they are currently considering the possibility of using grant funds to pay faculty to develop challenge exams and are engaging with their consultants to discuss assessments and how to create a good challenge exam.

The college is coordinating its PLA reforms with statewide policy reforms. At the same time as these college-wide reform efforts are taking place, Ohio has also been conducting statewide work on PLA. The PLA committee at Clark State is trying to make the college's work consistent with the state's direction, although that process is moving more slowly. The college is participating in the statewide committee and is involved in testing a state framework and a rubric for portfolio-based assessment. A significant benefit to coordinating with the statewide efforts is to ensure the transferability of PLA credits to other institutions.

The college is promoting PLA for TAACCCT students while college-wide implementation of PLA reform proceeds. Even though the reformed, more uniform PLA policy is not yet fully in place for all students, the college is promoting PLA to students in the TAACCCT grant ahead of full college-wide approval. The official process for adopting the new PLA policy college-wide will take more time given the need to present it to the faculty Senate and address questions that have already been raised by that group (which has limited meetings, adding time to the process). Some issues the faculty raised include questions about cost and who will pay for PLA, questions about a clearer crosswalk, and where testing will occur. Since PLA is already possible, the implementation team will proceed. They plan to begin outreach to AMCGE students so they may take advantage of the new PLA policies starting in Fall 2016 and are already discussing the possibilities with prospective students as part of their recruitment efforts.

Career Navigator, Workforce Connections, and Recruitment

The career navigator (hereafter referred to as the navigator) is a new position to Clark State and, if successful, may serve as a model for other programs. The position bridges Clark State and the Clark County Department of Jobs and Family Services (CCDJFS), with the navigator splitting time between offices at each location. The majority of her time is spent at her Clark State office or on the road recruiting. Because the navigator has replaced the deputy director of workforce development as the representative of CCDJFS at project lead meetings and communicates between the systems, she is able to stay abreast of happenings in the local market that may create more potential students or more opportunities for students and to refer students at Clark State who need further assistance to relevant CCDJFS services, as will be described below.

KEY TASKS: Increase Recruitment and Implement Career Navigator Model

- Develop recruitment strategy, including promotional materials, website
- Provide academic and career counseling to advanced manufacturing students with a full-time career navigator co-located at Springfield/Clark AJC and CCDJFS and accepting referrals from throughout the service area
- Adjust intake process to increase individualization for candidates
- Leverage CSCC and external resources to assist students as needed
- Coordinate with the public workforce system and align with statewide workforce plans

The organizational context for student intake is favorable to the program. Clark State is

committed to building a strong individualized student intake process and has recently undergone some reforms to improve its processes. They recently added new student planning software (Student Planner) to show students what their progress is toward their major and facilitate communications with advisors, transitioning what was once a pen-and-paper process into a centralized and interactive online repository. There is a strong culture of advising at the school; all students are directed toward general advising to develop maps for their academic progress in their first semester and then are transitioned later to a faculty advisor in their program (though it is not required for students to see an advisor to enroll for most courses). Enrollment Services works to tie students' academic planning to Career Services and has been very cooperative in working with the navigator.

Recruitment is ongoing. The job of recruitment is largely placed with the navigator—who has been credited by others with filling classes (even for summer terms) and getting unique participants into the program—and the marketing department staff, who have developed a marketing plan and created items such as flyers and brochures (their work will be discussed in greater detail below). The grant is currently meeting its targets for students touched by TAACCCT. Recruitment efforts have been so successful that the challenge for AMCGE is to keep up with it in its course offerings; sections are capped low to ensure that students can safely access lab equipment (the student limits are as low as 12 in some courses), and the current faculty staffing levels may not be sufficient to meet future demand for courses.

The navigator has a multifaceted approach to recruitment. One strategy involves working the phones and e-mail to build contacts—of potential students as well as partners who might lead her to potential students and/or to career opportunities for students. The navigator has contacted students who indicated interest in engineering on their intake forms. She has also contacted local recruiting offices, veterans' offices, high schools, need-based organizations, and businesses to develop contacts and working relationships. Through one contact, she facilitated an e-mail blast to senior citizens. She has also sent mailers to churches, which yielded some interest. Finally, she has worked with AMCGE faculty and staff to leverage their contacts and follow up on leads that they receive.

Another strategy is in-person recruitment. The navigator has attended county fairs and events sponsored by the Clark County Department of Family Services and local GED programs, distributing flyers and brochures and speaking with attendees who were interested in manufacturing careers. She has attended classes in the program to reach out to students already enrolled and others who may be interested in enrolling. She has spoken to students at local high schools as well, and she has met with Clark County Career Technical Center instructors in an effort to build a pipeline of students from their program.

One final strategy is leveraging her position at CCDJFS to stay abreast of happenings in the local market and find potential recruits. She has monitored the TAA-eligibility status of National Oilwell Varco (formerly Moyno, Inc.), which closed its local facility in 2015 and laid off 153 employees. The navigator met with company officials and was given access to the facility to

visit each shift and discuss the AMCGE program, admissions process, and scheduling. She also worked with Clark State's dean of enrollment services to ease the transition into college for these workers. In addition, she is part of a group at CCDJFS that is working with emancipated students, giving presentations on short-term training programs at Clark State.

The navigator is also working on retention and student assistance. In addition to recruitment, the navigator is tasked with advising students and supporting them in their efforts to follow the program pathways. The office of the dean of enrollment services has been working collaboratively with the navigator, sending her weekly updates with information on any students that have applied to the school with an engineering interest. This allows the navigator to reach out directly to those students and begin to guide them through intake. As described by one administrator,

> During the normal enrolment period, [students] would get an e-mail with all of [their] acceptance information. She's supplementing that with the phone call and inviting them into more of a personal process. It's done really well. And she's trying to attend some orientations when she can, which is great to meet the students.

The navigator also helps students to set goals with their eyes on bigger possibilities beyond the certificate alone. As described by one administrator,

> She's been trying to have that broader conversation about moving into a degree and those things, and building into that. And for those students who just want the Welding certificate or something, then of course we help to meet their needs. But trying to build that into that degree and see what that outcome could look like.

The same administrator further noted that students who arrived at new-student orientation often mentioned that they'd spoken with the navigator, who they knew by name.

The navigator has worked with students on scheduling and overcoming challenges. She also looks through student records to find students who are taking courses in the program but are listed as other majors to see if they need to be updated in the system. Her caseload exceeded 100 students as of Spring 2016. Several student participants in one focus group reported that she had reached out to them directly when they were falling through the cracks and had made sure that they had schedules that met their needs as well as the resources they needed to stay on their pathways. In another focus group, students had less contact with her, but this may have been due to the early timing of the focus group in the semester.

The navigator serves as a resource for instructors as well, and she can take on some of the tasks of assisting students. Asked whether he had referred students to the navigator, one instructor noted:

> I've had a few struggling with attendance. One in particular that said he thought he was a graphic major and was in the wrong classes, so I referred [him to] her. Most definitely [she] is a

> resource I can use. It's that personal connection. I did have someone who didn't show up for a few weeks and they were on them like a mud hound. We're trying to help him make this more of a priority and work with whatever else is going on in his life. It's a wonderful piece to have that relationship. The students have someone who is genuinely there to help.

The program has strong printed advertising materials. The marketing department has created a large trifold brochure, *Advanced Manufacturing Certificates: Gear Up For Your Future,* that is clear, eye-catching, and full of important information about the program. It includes material on all five certificates, including the objectives of each program, jobs that the programs prepare students for, and their average hourly salaries. There are stock photos representing each type of job, with diverse workers that represent minorities and both genders, and each program is color-coded to clarify the large amount of information being presented about each certificate.

In addition, the brochure features a section discussing the decision students can make at the end of the program: "Associates Degree or Workforce?" This is an important message to convey: The program presents options for students to pursue. However, it does not include any discussion of a third option: simultaneously pursuing an AAS while working. This might be a useful separate pamphlet to issue in the future, as it would present the AAS program in a way that is more accessible to potential students who may not be able to afford to continue their education beyond the certificate without first entering the workforce.

The central website for the program is difficult to find and could be expanded. There are no department-specific websites at Clark State in general, so there is no departmental site to link to the website for the AMCGE program. At the Clark State main splash page, there is a link to Workforce Development, which does link to two Welding courses, but is focused more generally on employers. The Advanced Manufacturing program is generally not linked from the main Clark State page. In order to arrive at the official AMCGE program website, one has to Google "Clark State manufacturing programs" or enter the direct Web address: http://clarkstate.edu/advanced-manufacturing. This takes the reader to a splash page with a very cursory overview of the program; upon clicking any of the certificate titles listed, the reader is directed to the academic catalog for the selected program. There are no mentions of what jobs specifically these programs prepare students for.

For those attempting to navigate to the program through the college website, there is an Academics tab on the main website, and that leads to a menu that includes the option Majors & Programs. From there, the TAACCCT-related programs are listed under Engineering and Engineering Certificates. However, clicking on any program leads directly to the course catalog's description of the program of study. The AAS degrees are explained in detail, listing occupations the programs prepare students for and describing special elements of study such as co-ops, scholastic preparation, learning outcomes, transfer options, and outlining the course requirements. However, the pages for the certificate programs include only a cursory description of each program and the course requirements. These certificate pages could be expanded to include more information, modeled on the AAS pages, or linked directly to a

standalone AMCGE program page that covers this information, outlines pathways, and links to the current course-catalog pages as well as to the full AMCGE program website.

The AMCGE program website could be improved by incorporating the information available in the trifold, introducing the navigator and lead faculty, and perhaps even listing employers currently serving on the program's employer engagement team. Additionally, it would be helpful to feature the program in a rotating news item on the school's front page, as the Precision Machining Technology training program is currently presented. It is also worth noting that the main site has no link on the school's Workforce Training page, and the one link to Welding leads to a 72-hour non-credit course. As a program that marries practical workforce training with academic credit, ACMGE may appeal to some of the prospective students and employers who would go to the Workforce Training page.

Spaces and equipment can be helpful in combating some outdated views of manufacturing. Some college staff report they hear concerns about the manufacturing industry among the public—that it is dirty or unappealing work. For example, one college staff member stated:

> They think of the manufacturing they're used [to hearing about] as they grew up—it's dirty, dangerous, noisy, and then, 'You go to manufacturing and you lose your job.' This is [a very] unfortunate happening that we now have to deal with, because it's a prevalent public perception.

This misperception creates a stigma that negatively affects some manufacturing programs (such as CNC) more than others (such as CAD). In their outreach efforts, college staff are seeking to change this perception and let people know that the manufacturing industry is becoming more high-tech. Collectively, the labs themselves and the equipment housed within them are one potential avenue for changing these perceptions; they are open, bright, and clean, offering an effective counterargument to the notion that manufacturing is a 'dirty job.' However, they are an underutilized resource in this regard; though the open house and ribbon-cutting ceremony featured many local dignitaries, and the implementation team works to bring employers through the facilities regularly, there have been fewer efforts to bring potential students through the program spaces. The navigator has taken some high school groups through on tours, and Student Support Services staff have taken potential students through on an ad hoc basis. Adding open houses aimed at different target populations (e.g., high school students or new Clark State students and their parents) might increase recruitment to the programs.

Employer Engagement

KEY TASKS: Engage with Local Employers

- Engage employers through "employer engagement teams" to provide assistance in curriculum development, provide work-based learning opportunities, and identify job opportunities for graduates
- Develop co-ops and internships

In the proposal, the college identified an employer engagement team (EET), a group of employers who agreed to be involved with the program by providing feedback on curriculum, offering internship opportunities, and assisting in identifying jobs for graduates. Building on their relationships with the EET, the college sought to expand the number of employers engaged in the programs in a variety of ways; those efforts are the focus of this section.

The renovated facility provided a rallying point for employer engagement. As noted in the discussion of space and equipment, the new facilities have given the program a great deal of momentum. One area where this is especially notable is in employer engagement. As one college staff person stated: "It's having equipment that will ring the bell of the employer." College staff report the facility has served as a starting point for them to reach out to employers; inviting employers to come for a tour gives staff members the opportunity to show off the new equipment and to start a conversation about the employers' needs. When employers come to the college for a tour, college staff report they have a lot of individual interaction, and they often provide very specific tours of the facility that are designed to address the employers' interests in addition to providing a very general overview of the facility and their programs. Likewise, the ribbon cutting/open house for the renovated facility generated interest among employers in learning more about the programs. The college is seeking ways to continue to engage employers after the tour to convert these interactions into more ongoing relationships.

The college sought a variety of engagement activities beyond formal meetings. The college had one EET meeting early in the grant and subsequently has conducted program advisory board meetings twice per year in the spring and fall. In general, college staff reported they had a difficult time getting many employers to participate in formal meetings. Overall the college's experience with formal meetings is mixed, and college staff voiced several concerns about them. One concern is that their employer–partners are very busy with their businesses and do not have time to devote to attending in-person meetings. A related concern is about using employers' time wisely by making sure that meetings have a clear purpose.

Thus, college staff began to adapt their approach to employer engagement. While still conducting formal engagement activities based in meetings, college staff increasingly sought to conduct more informal outreach with individual employers. In addition to inviting employers for tours and for classroom visits, college staff report that e-mail and phone calls are an important way to engage with employers other than meetings. They also began to communicate with employers through a regular newsletter. In addition, the college has worked to connect

with a wider group of new employers by attending meetings that employers already attend, such as the Dayton Regional Manufacturers Association Breakfast or local economic development meetings. They have spoken at these meetings and have made contacts with employers there who are interested in touring the facility. The college has found that this strategy of piggybacking off of other meetings employers are already attending is promising.

Employers have been involved in the program in various ways that the college plans to expand. Some EET members have reviewed curricula as subject-matter experts (SMEs), providing feedback on syllabi in terms of objectives and outcomes. Others have been invited into the classroom to help and to co-teach. They hope to expand on these efforts, particularly to have SMEs help co-teach courses or serve as adjunct instructors. In some classes, instructors have committed to inviting an SME to class at least once per term. Where helpful to the class, some instructors have brought in multiple SMEs to speak about specific issues. For example, in the welding program, an application engineer from a local company gave a demonstration on aluminum welding, and retired engineers from another company will help with the lab to teach students about specific types of welding and special topics like welding exotic materials. Some instructors invite employers to observe classes and ask questions. The goal for this interaction is to help employers understand what students are learning in the class and possibly meet some students they might be interested in hiring. The college also expects to place more emphasis on involving employers in offering internships and assisting with placement.

Many people at the college are reaching out to employers with little coordination. The college is increasingly emphasizing employer outreach for its programs, and many people at the college are involved in this effort, including the president, the provost, deans, the grant program manager, and faculty leads. Members of the college leadership serve on various local boards that help generate new employer contacts. Nevertheless, a wide range of staff report being involved with the college's employer-engagement activities related to the grant. The college conducts outreach to employers for a variety of its activities, including its foundation, its workforce programs (including each program's own advisory committee), and its internship program. These are all very separate activities, and they do not always know what the others are doing; this raises concerns about dropping balls or duplicating contacts in the college's communication with employers. While college staff report there is good communication among people at the college, those internal exchanges tend to happen more informally via e-mail.

While many college staff are engaging with employers, there is no one single person in charge of nor a system to track and coordinate these contacts. This lack of coordination is a challenge that needs to be addressed within the college. They have had discussions about the need to clarify who is responsible for coordinating employer outreach at the college and have raised the possibility of creating a tracking system for employer contacts. Direct action has yet to be taken on these issues, however; though college staff began looking into tracking systems, the project got lost in other priorities during the Spring 2016 term. The need for some sort of employer-contact-management system will need to be addressed as the college continues to grow and develop its employer-engagement activities. As various faculty and staff members

build more contacts with employers, a more formal system to coordinate these contacts will help them more effectively manage these relationships and document their outreach efforts.

STUDENT ENROLLMENTS AND COMPLETIONS

Enrollments are on target. The targets for unique participants served were 48 in Year 1 of the grant and 96 in Year 2; the program has comfortably met these targets. As the grant was in its planning and beginning stages (2014–15), 199 students were enrolled in grant-related manufacturing programs. Prior to the beginning of AMCGE, 189 students were enrolled at Clark State as engineering majors (Summer 2013–Spring 2014).

Table 2 summarizes the characteristics of students in AMCGE programs. The group continues to skew heavily male and has actually seen a decline in minority participation. Though not a formal goal of the grant, targeted efforts to bring in women and minorities may be one strategy to increase enrollment. The majority of students place into developmental math, and about one fifth place into developmental writing, indicating that efforts to innovate in developmental education have the potential to benefit the majority of the population of students in these programs. An additional strategy to keep recruitment numbers up and build bridges to employers is to do more outreach to business and industry so the program can enroll more incumbent workers. This would build on existing incumbent-worker training, such as a class currently bring taught to 12 employees of a company called Cascade.

TABLE 2. DEMOGRAPHIC PROFILE OF STUDENTS ENROLLED IN CLARK STATE'S ADVANCED MANUFACTURING PROGRAMS BEFORE AND AFTER GRANT IMPLEMENTATION

	Advanced Manufacturing 2010–14 cohort	**Advanced Manufacturing 2015–16 cohort[1]**
Percent female	9%	11%
Percent white	69%	84%
Percent black	19%	8%
Percent Hispanic	1%	0.6%
Percent other	11%	7%
Average age	33	32
Percent placing into developmental math	57%	72%
Percent placing into developmental reading	13%	6%
Percent placing into developmental writing	38%	21%
Percent enrolled full time	39%	43%

[1]Data are limited to unique students who newly enrolled in a grant-related Advanced Manufacturing program during the Fall 2015, Spring 2016, or Summer 2016 sessions.

Completions are not yet on target. Including both the Fall 2015 and Spring 2016 semester, certificates were awarded to 20 students in Manufacturing Foundations, 6 in CAD, 2 in Industrial Technologies, and 3 in Welding. Though more may complete in the summer

sessions, completions are likely to fall short of the goal of 115 certificates awarded by the end of Year 2. Even with the five-month extension, there is only about one-and-a-half years left in the grant; it is critical that recruitment remain strong and that the program translates that success into completed certificates and degrees. To this end, it may be important for other implementation team members to consider strategies for moving more students through to completion.

NEXT STEPS

Our first interim evaluation report is intended to provide feedback on the implementation of grant activities to allow for mid-course corrections. With that goal in mind, this section discusses recommendations for ongoing implementation of grant activities. This section also provides a preview of upcoming evaluation activities.

Recommendations for Implementation

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

- Continue with a team-based approach to project implementation by continuing to hold regular meetings with key staff aimed at maintaining communications and working through challenges.

- Continue to build on the momentum and excitement of the new lab space and work to translate this into increased student enrollment and employer engagement by
    - continuing to host open houses and tours for employers
    - hosting open houses for prospective students and their families
    - developing concrete next steps to follow up with those parties after initial contacts are made

- Finalize curriculum reform and ensure the value of certificates and degrees by
    - investing attention in marketing AMCGE certificates to employers
    - implementing current plans to work on SCADA and ensuring that the credential is valued in the marketplace
    - providing ongoing support for I-BEST reform through regular meetings among college staff and communication with consultants
    - developing a process to assess college readiness among I-BEST completers, reviewing developmental education requirements reforms as necessary
    - continuing to work to reform PLA policies and to resolve pragmatic issues around its implementation
    - begin communicating new PLA policies to students

- Support the ongoing work of the navigator and program recruitment by

- continuing to foster the collaborative efforts of the navigator and Clark State Enrollment Services.
- ensuring that all students in the AMCGE program have contact with the navigator
- ensuring that course offerings can meet student demand
- developing literature that highlights the possibility of working while pursuing the AAS
- expanding information on the program website to include more detailed information about credentialing, jobs, and career pathways and adding the website to the scrolling highlighted section on the homepage of the general Clark State site
- working with employers to identify ways to train their incumbent workers

- Strengthen and build on employer engagement by
  - developing a seamless strategy to engage employers in an ongoing manner after their initial interaction with the program
  - continuing individual contacts with employers and reconsidering strategies for formal in-person meetings with employers
  - developing a system to coordinate and track contacts with employers across college departments and staff
  - expanding efforts to involve EET members and other employers as instructors or speakers in the classroom, in offering internships, and in assisting with job placement

- Invest significant attention to improving completion rates by
  - focusing the navigator's work on supporting students to proactively promote their completion
  - identifying ways all staff, in addition to the navigator, can contribute to students' engagement and completion

Evaluation Preview

In the coming year, the EERC team will continue to collect data regarding implementation activities and outcomes through site visits, interviews, focus groups, participant observation, and document reviews. In addition, the EERC team will launch a new phase of research that delves more fully into the employer and student perspectives:

(1) **Employer studies.** Building on our examination of the Springfield context, the EERC team will begin reaching out to employers and representatives of the workforce system directly to participate in 30-minute interviews. These interviews may be conducted via telephone or in person during one of the EERC visits to Clark State. The interviews will inform the development of an employer survey. These surveys will examine employers'

satisfaction with their engagement with the program, their perceptions of the quality of the programs, and their experiences with students from the program.

(2) **Student studies.** Building on student focus groups from Year 2 and the pilot student surveys, a broader student survey distribution is planned for the fall of 2016 and spring of 2017. These surveys will examine student perceptions of the program, including satisfaction with the program experience, outlook for the future, and any challenges they may have experienced. These surveys will be distributed online.

(3) **Quantitative analysis.** In the coming year, we will begin to work with individual-level data from the college.

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

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APPENDIX A. CLARK STATE TAACCCT EVALUATION LOGIC MODEL: Advanced Manufacturing Career Pathway Training

Inputs	Activities	Outputs	Outcomes	Impacts
Primary financial inputs TAACCCT Funds Funding from CSCC for facilities improvement and maintenance	Acquisition of new equipment and technology for classrooms/labs Prepare physical program spaces, including renovation of 7 rooms (labs and classrooms)	Technology/equipment used across programs New lab and collaborative area for manufacturing program	Advanced Manufacturing Career Pathway Training program occupies premier space that facilitates learning, collaboration, and attracts new students	Increased profile for advanced manufacturing programs and CSCC in local area Participants continue along career pathways. Model for scaling I-BEST, PLA, and wrap-around services in other CSCC programs Long-term relationships with local business community established and maintained, increasing opportunities for students, and for employers to fill workforce needs Contributing to community and economy by attracting growth for manufacturing industry in the area; lower unemployment and less need for public assistance Participants enrolled in future education
Academic inputs CSCC faculty & personnel Pre-existing CSCC programs in manufacturing Institutional research	Develop modularized curriculum (including foundation skills certificate) and embed five new certificates of competency Develop an I-BEST-like approach to integrate remedial education into career training with help of expert consultant Integrate technology-enabled learning with new manufacturing and simulation equipment Add prior learning assessments with help of expert consultant Integrate use of online learning including simulations Embed local employers and subject matter experts to consult with faculty Develop/improve data systems to enhance understanding of student experiences and outcomes	Modularized curriculum and new certificates aligned with NIMS competencies Improved program coherence because of interlocking certificates Stackable certificates in: Welding (new), CNC (redesigned), Additive Manufacturing (new), Industrial Maintenance (redesigned), SCADA Curriculum with remedial education integrated into career training using an I-BEST-like approach Organized process for using PLA assessments, including portfolio-based assessment/credit for life experience, American Council on Education (ACE) guide, credit by exam program, credit for military experience, credit for prior certifications New/improved data tracking systems*	Participants complete program of study or retained Participants complete credentials Participants earn credits Graduates find employment. Graduates retained in employment. Graduates experience wage increases. Create "purposeful synergy" to enhance learning experience for students Data tracking systems serve as models campuswide	
Student Services inputs General CSCC student services New career navigator position In-progress CSCC efforts to improve student intake and counseling (increased individualization; e.g. counseling, more holistic assessment and intrusive advising) Matching funding for internships from OMIC 2.5	Develop recruitment strategy, including promotional materials and, website Provide academic and career counseling to advanced manufacturing students with a full-time career navigator co-located at Springfield/Clark AJC and CCDJFS and accepting referrals from throughout the service area Adjust intake process to increase individualization for candidates Leverage CSCC and external resources to assist students as needed	Promotional materials about programs, and improved website Increased # of students, particularly veterans, entering to advanced manufacturing programs More engaged and supported students to promote retention and completion		
CSCC Communities Program partners: -Ohio Area 7 Workforce Investment Board, - Ohio Department of Job and Family Services, -Employer and industry representatives TAACCCT Grantees Relationships with local 2- and 4- year colleges	Engage employers through "employer engagement teams" to provide assistance in curriculum development, provide work-based learning opportunities, and identify job opportunities for graduates Coordinate with the public workforce system and align with statewide workforce plans Engage with collaborating educational institutions and previously funded TAACCCT grants, Engage with local 4-year schools to create articulation agreements for students	Increase in # of employees involved with programs & # of activities Articulation agreements with local 4-year schools	Increased presence of local manufacturing employers on campus Students develop relationships with local employers Students have clear pathway to future education	