U.S. Department of Education

Engaging Employers in Community College Workforce Education Programs: Examples From the Field

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U.S. Department of Education
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LIST OF EXHIBITS

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- Ventura Toyota
- Vestas
- Volkswagen
- Washington State Allied Health Center of Excellence
- Washington State Board for Community and Technical Colleges
- Workforce Development, Inc.
- Yakima Valley Community College
- Yakima Valley Interprofessional Practice and Education Collaborative

ABBREVIATIONS

AAS	Associate of Applied Sciences
ABE	adult basic education
AMP	Automation Mechatronics Program
AMT	advanced manufacturing technician
ATE	advanced technological education
BILT	Business and Industry Leadership Team
Central Florida	College of Central Florida
CHAMP	Colorado Helps Advanced Manufacturing Program
Chattanooga State	Chattanooga State Community College
CNC	computer numerical control
COE	Center of Excellence
CPCC	Central Piedmont Community College
CTE	career and technical education
Gateway	Gateway Community and Technical College
GPA	grade point average
Hawthorne	Hawthorne Education Center
HR	human resources
IT	information technology
K–12	kindergarten through grade 12
KSAs	knowledge, skills, and abilities
KY FAME	Kentucky Federation for Advanced Manufacturing Education
NATEF	National Automotive Technical Education Foundation
National CTC	National Convergence Technology Center

NCICTE	National Center for Innovation in Career and Technical Education
NSF	National Science Foundation
OCTAE	Office of Career, Technical, and Adult Education
OJT	on-the-job training
PCC	Pueblo Community College
RCTC	Rochester Community and Technical College
SBTC	State Board for Community and Technical Colleges
Sentinel Network	Washington State Health Workforce Sentinel Network
TAACCCT	Trade Adjustment Assistance Community College and Career Training
TCAT	Tennessee College of Applied Technology
TNECD	Tennessee Department of Community and Economic Development
T-TEN	Toyota's Technician Training & Education Network
WDI	Workforce Development, Inc.

EXECUTIVE SUMMARY

At the same time that millions of Americans are under- or unemployed, employers report difficulty finding qualified candidates. This disconnect — the skills gap — threatens economic growth and global competitiveness, and blocks access to prosperity for those either without jobs or unsuited for the ones they have. (Accenture, Burning Glass, and Harvard Business School, 2014; Symonds, Schwartz, and Ferguson, 2011).

A gap in perceptions is at the core of the divide: Ninety-six percent of college chief academic officers, including those at community colleges, reported in a survey being extremely or somewhat confident that their institutions can to succeed in the workforce. Only 11 percent of business leaders strongly agreed that the skills and abilities of graduates meet their needs (Lumina Foundation and Gallup, 2014).

Partnerships are critical to reducing the gap between the knowledge, skills, and abilities (KSAs) that graduates possess and those that employers require. Toward that end, employers must be engaged in community college workforce education programs to ensure that youths and adults enter the workforce with industry-vetted, career-ready skills.

Active partnerships between employers and community and technical colleges can include a range of activities for starting up, implementing, and sustaining effective workforce training programs. Strategies for involving employers may range from classroom-based instruction to site-based approaches. For example, employers can develop and regularly review curricula to help ensure a better match between KSAs taught at the college and those needed in the workforce (Wilson, 2015; Soars, 2010). Additionally, work-based learning opportunities, such as apprenticeships, internships, and clinical placements, can help students develop technical skills as well as hard-to-teach employability skills, such as teamwork and communication, that are also highly valued by employers (Holzer and Lerman 2014; Darche, Nayar, and Bracco, 2009; Rogers-Chapman and Darling-Hammond, 2013).

To highlight and document a variety of employer engagement activities used by community college programs, the National Center for Innovation in Career and Technical Education (NCICTE) conducted case studies of nine college-employer partnerships that are preparing students in the high-demand industry sectors of health sciences, information technology (IT), and manufacturing. (See pages xvi–xvii for the list of these partnerships.)

Based on the case studies, this report defines three phases of employer engagement in college-employer partnerships and describes the employer engagement activities that the nine college-employer partnerships have used in each of the three phases:

1. **Getting Started:** In many cases, colleges begin by researching local labor markets and potential sources of funding for engaging employers. The colleges then identify potential employer partners and reach out to them through marketing and other brokers in the community. In other cases, an employer approaches a college to collaborate on workforce education. It is common for the college and employer, as well as other community partners, to identify and secure start-up funds that will support program design and, later, implementation. During their planning, the partners establish clear roles and responsibilities and design effective programs that meet agreed-upon needs.

2. **Implementation:** Colleges and employers cooperate on an ongoing basis to deliver classroom instruction and work-based learning, provide student assistance, support graduates into employment, and track data on their successes and challenges. Programs are changed and updated regularly to ensure that they address evolving employer and students' needs and account for partners' experiences in how best to support students.

3. **Sustainability:** As startup funds decrease, colleges and employers seek additional sources of funding *and* consider how to maintain the program with fewer resources. Partners may consider ways to integrate multiple sources of funding. The partners continue many of the activities undertaken in earlier phases, but responsibilities and existing resources may be redistributed among the college, the employer, and other community partners. The partners may advocate for policies that support ongoing collaboration.

Colleges and employers engage in a mix of activities within and across the three phases, as demonstrated in exhibit ES-1. Some activities span the duration of a college's engagement with a particular employer or employers — from getting started, to implementation, to sustainability — while other partnership activities have proven useful in implementing training programs, and still others in sustaining the training program. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three.

Exhibit ES-1: Engagement activities of colleges and employers across three partnership phases: getting started, implementation, and sustainability

PHASE 1: Getting Started	PHASE 2: Implementation	PHASE 3: Sustainability
Advisory committees, curriculum development, colocation of college and employer facilities, monetary and in-kind contributions		
	Professional development for college faculty and staff, co-teaching or guest teaching, student recruitment and outreach, student supports, work-based learning opportunities, direct hiring	
		Fiscal and policy advocacy
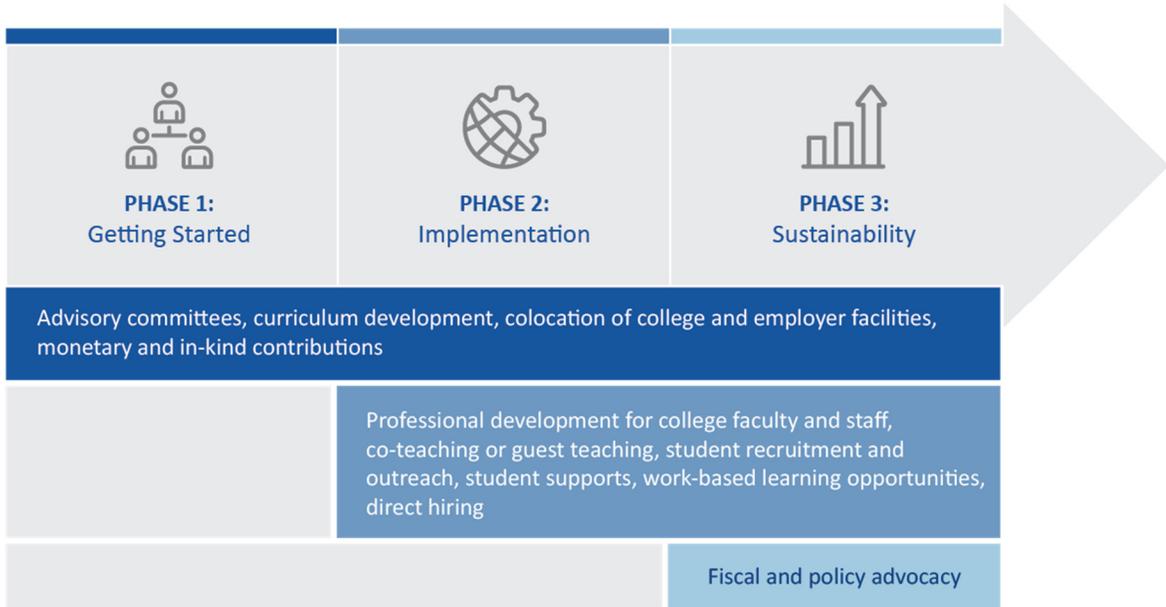
NOTE: The activities for each phase are described elsewhere in this report.

THE COLLEGE-EMPLOYER PARTNERSHIPS

Researchers selected sites for the study based on a literature review, and subsequent suggestions and input from the American Association of Community Colleges and the U.S. Department of Education's Office of Career, Technical, and Adult Education (OCTAE). Sites were selected to represent a range of contexts and employer engagement approaches. Table ES-1 provides details on the sites profiled in this report, including the employer engagement activities within and across phases.

Exhibit ES-2: Workforce education partnerships at nine case study sites, by industry area, college partner, employer partner, program name, location, service area, and engagement activities

Industry	College partner	Featured employer partner(s)	Program name	Location of College	Service area	Engagement activities
Information Technology	College of Central Florida	FedEx	XCEL-IT	Ocala, FL	Statewide	**Phases 1–3:** Advisory committees, curriculum development, monetary and in-kind contributions **Phases 2–3:** Co-teaching or guest teaching, student recruitment and outreach, student supports, work-based learning opportunities
	Collin College	Multiple companies	National Convergence Technology Center	Frisco, TX	National	**Phases 1–3:** Advisory committees, curriculum development **Phases 2–3:** Work-based learning opportunities, direct hiring **Phase 3:** Fiscal and policy advocacy
Health sciences	Rochester Community and Technical College	Mayo Clinic	Bridges to Healthcare	Rochester, MN	Local	**Phases 1–3:** Advisory committees, curriculum development, monetary and in-kind contributions **Phases 2–3:** Professional development for college faculty and staff, student recruitment and outreach, student supports, work-based learning opportunities, direct hiring **Phase 3:** Fiscal and policy advocacy
	Yakima Valley Community College	Multiple companies and industry groups	Allied Health Center of Excellence	Yakima, WA	Statewide	**Phases 1–3:** Advisory committees, curriculum development **Phases 2–3:** Professional development for college faculty and staff, student recruitment and outreach, work-based learning opportunities
Manufacturing	Central Piedmont Community College	Siemens	Apprenticeship Charlotte	Charlotte, NC	Local	**Phases 1–3:** Advisory committees, curriculum development, monetary and in-kind contributions **Phases 2–3:** Professional development for college faculty and staff, co-teaching or guest teaching, student recruitment and outreach, student supports, work-based learning opportunities, direct hiring
	Chattanooga State Community College	Volkswagen Chattanooga	Volkswagen Academy	Chattanooga, TN	Local	**Phases 1–3:** Curriculum development, colocation of college and employer facilities, monetary and in-kind contributions **Phases 2–3:** Professional development for college faculty and staff, student recruitment and outreach, student

Industry	College partner	Featured employer partner(s)	Program name	Location of College	Service area	Engagement activities
						supports, work-based learning opportunities, direct hiring
	Gateway Community and Technical College	Mubea	Several programs, including the customized apprenticeship program, the Advanced Manufacturing Technician program, and the Enhanced Operator Program	Florence, KY	Local	**Phases 1–3:** Advisory committees, curriculum development, monetary and in-kind contributions **Phases 2–3:** Co-teaching or guest teaching, student recruitment and outreach, student supports, work-based learning opportunities, direct hiring
	Pueblo Community College	Vestas	CHAMP	Pueblo, CO	Statewide	**Phases 1–3:** Advisory committees, curriculum development, monetary and in-kind contributions **Phases 2–3:** Student supports, work-based learning opportunities
	Ventura College	Toyota	T-TEN	Ventura, CA	National	**Phases 1–3:** Curriculum development, monetary and in-kind contributions **Phases 2–3:** Professional development for college faculty and staff, work-based learning opportunities, direct hiring

This report provides an overview of employer engagement, as well as detailed profiles of these nine college-employer partnerships that engage employers in the design, implementation, and sustainability of workforce education programs.

INTRODUCTION

Many employers report difficulty finding qualified candidates for jobs, while millions of American workers are under- or unemployed. At the core of this issue is a startling perception gap involving the skills needed for workplace success. Postsecondary educators — including those at community colleges — who prepare workers live on one side of the divide; employers who hire the workers live on the other:

- Ninety-six percent of college chief academic officers reported in surveys being extremely or somewhat confident that their institutions can prepare students to succeed in the workforce; but

- Only 11 percent of business leaders strongly agreed that the skills and abilities of graduates meet their needs (Lumina Foundation & Gallup, 2014).

Engaging employers in community college workforce education programs can help address the gap and assuring that youths and adults have access to industry-vetted, career-ready skills. For that reason, the National Center for Innovation in Career and Technical Education (NCICTE) conducted case studies of nine college-employer partnerships that prepare students in the high-demand industry sectors of health sciences, information technology, and manufacturing. This report documents the range of approaches being used to engage employers in community college programs. The report begins with an overview of employer engagement activities, followed by profiles of nine college-employer partnerships that involve employers in the design, implementation, and sustainability of workforce education programs. Profiles are arranged by industry sector for readers who may want to start or strengthen employer engagement in programs in a particular sector.

METHODOLOGY

This study identifies promising practices for involving employers in community college programs. These practices derive from case studies of the nine college-employer partnerships, which demonstrated high rates of employer engagement and a range of activities to meet employer, college, and student needs (exhibit 1). These sites exemplify promising practices for employer engagement; however, the examples provided are not supported by rigorous research, since it was not the intent of this report to conduct a formal evaluation.

Researchers selected sites based on a literature review and input from the American Association of Community Colleges and the U.S. Department of Education's Office of

Career, Technical, and Adult Education (OCTAE). Sites represent a range of contexts and approaches, including the following:

- *Industry Sector:* Programs addressed one of three high-demand areas: health sciences, IT, or manufacturing.

- *Skills Stratum:* Sites addressed varying skill levels, skill types, and skill specificity, including general employability skills, occupationally specific skills, sector-specific skills, or multisector skills.

- *Service Area:* Researchers selected college-employer partnerships that served students and employers at a range of geographical levels. They include national industry-led networks; state-level networks that shared resources and strategies across colleges; and programs undertaken by individual colleges and employers at a local or regional level.

- *Geographical Domain:* Researchers sought out and selected sites serving rural, suburban, and urban regions across the United States to identify a range of feasible strategies that might work within different contexts.

Within these four domains, researchers identified college-employer partnerships that demonstrated one or more of the following indicators of employer engagement: evidence of community or technical college benefit(s), employer benefit(s), positive student outcome(s), and/or a unique program. The selected sites also demonstrated evidence of one or more of the employer engagement activities that Advance CTE (formerly the National Association of State Directors of Career Technical Education Consortium) indicated to be promising: local advisory committees, curriculum guidance and development, work-based learning opportunities, professional development opportunities, and/or monetary/in-kind contributions.[1, 2] Based on these criteria, researchers recommended nine sites and five alternate sites for OCTAE approval. When several of the nine sites that were originally selected declined to participate in the study, researchers recommended alternate sites, which were approved and selected to participate.

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[1] A list showed different types of employer engagement in the National Association of State Directors of Career Technical Education Consortium's report, *The State of Career Technical Education: Employer Engagement in CTE*. Retrieved from http://careertech.org/sites/default/files/State-of-CTE_Employer-Engagement_FINAL.pdf.

[2] In addition to those promising practices identified in the 2014 report, NCICTE researchers observed several additional employer engagement activities and approaches during the case study site visits to college-employer partnerships; these activities and approaches are also profiled in this report.

Exhibit 1: Case study partnership sites, including scope of service area, location, and industry area

KEY

- ■ Local
- ■ Statewide
- ☐ National
- ● Rural
- ● Suburban
- ○ Urban
- ⊕ Health Sciences
- ⚙ Manufacturing
- 🖥 Information Technology

Washington State Allied Health Center of Excellence at Yakima Valley Community College and multiple companies and industry groups
■ ● ● ○ ⊕

Rochester Community and Technical College and Mayo Clinic, Bridges to Healthcare
■ ○ ⊕

Gateway Community and Technical College and Mubea
■ ● ⚙

Central Piedmont Community College and Siemens
■ ○ ⚙

Ventura College and Toyota, T-TEN
■ ○ ⚙

Pueblo Community College and Vestas, CHAMP
■ ● ⚙

Chattanooga State Community College and Volkswagen
■ ○ ⚙

The National Convergence Technology Center at Collin College and multiple companies, Business and Industry Leadership Teams (BILTs)
☐ ● ● ○ 🖥

College of Central Florida and FedEx, XCEL-IT
■ ● 🖥

Once case study sites were identified, NCICTE researchers collected and analyzed documents and resources related to each program — such as program descriptions, course syllabi, outcomes data, and teaming agreements — to develop preliminary program summaries. Then, during site visits, researchers conducted structured in-person interviews and focus groups with representatives of the college and one appropriate employer partner: senior managers at the college and employer, program coordinators at the college and employer, college faculty members, employer human resources (HR) staff and other volunteers, and additional community or college-employer partnership representatives.[3] Copies of the interview and focus group protocols are included in appendix A.

Profiles of the nine college-employer partnerships rely on information from stakeholder interviews and focus groups and program documents and resources collected during the course of the study. Study coordinators — typically program coordinators or other staff members involved in managing employer engagement activities — at each of the nine study sites reviewed draft profiles for accuracy. Each profile features an overview of employer engagement at the college followed by a description of specific employer engagement activities that the college undertook during the three phases: getting started, implementation, and sustainability. Each profile concludes with lessons for the field based on the experience and advice of community college leaders, faculty and staff members, and representatives of employer partners.

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[3] Interviews and focus groups were conducted with the promise of confidentiality. Therefore, the names of all study participants quoted in this report are withheld by mutual agreement.

WHAT IS EMPLOYER ENGAGEMENT?

Employer engagement refers to a range of activities or approaches — some identified by Advance CTE[4] (see p. 3) and others through data collection during case study site visits[5] — that community and technical colleges may undertake with employers to implement more effective workforce training programs and ensure that program curricula target skills gaps. These activities or approaches could include the following:

- advisory committees
- curriculum development
- colocation of college and employer facilities
- monetary and in-kind contributions
- professional development for college faculty and staff
- co-teaching or guest teaching
- student recruitment and outreach
- student supports
- work-based learning opportunities
- direct hiring of program graduates
- fiscal and policy advocacy

Whatever the partners' characteristics — large or small, local or multinational, public or private—results are best when both education and industry are active partners in the design and delivery of community and technical college workforce education programs. Active partnerships are critical to reducing the gap between the KSAs graduates possess and those that employers want. Additionally, involving employers in developing and regularly reviewing curricula can ensure a better match between KSAs taught at the college and those needed in the workforce (Wilson, 2015; Soares, 2010). Work-based learning opportunities — such as apprenticeships, internships, and clinical placements--help students develop technical skills as well as hard-to-teach employability skills, such as teamwork and communication, which employers also value highly (Holzer and Lerman, 2014; Darche, Nayar, and Bracco, 2009; Rogers-Chapman and Darling-Hammond, 2013).

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[4] See https://www.careertech.org/

[5] Employer engagement activities indicated as promising by Advance CTE include local advisory committees, curriculum guidance and development, work-based learning opportunities, professional development opportunities, and/or monetary or in-kind contributions. In the course of collecting data for this study, NCICTE researchers identified additional employer engagement activities, including colocation of college and employer facilities; co-teaching or guest-teaching; student recruitment and outreach; student supports; direct hiring of program graduates; and fiscal and policy advocacy.

The most useful mix of employer engagement activities will depend on the context, scale, goals, and maturity of a college programs. Some activities span the duration of their engagement with a particular employer or employers — from getting started, to implementation, to sustainability; other engagement activities have proven useful in implementing training programs; and still others help in sustaining the program. Drawing from the nine case studies, this report describes three phases of employer engagement in college-employer partnerships:

1. **Getting Started.** In many cases, colleges begin by researching local labor markets and potential sources of funding for engaging employers. The colleges may use marketing outreach and other community brokers to identify and cultivate potential employer partners. In other cases, an employer will approach a college directly to collaborate on workforce education. In this phrase, the college and employer, as well as other community partners, identify and secure start-up funds that will support program design and, later, implementation. During their planning, the partners establish clear roles and responsibilities and design effective programs that meet agreed-upon needs.

2. **Implementation.** Colleges and employers cooperate to deliver classroom instruction and work-based learning, provide student assistance, support graduates into employment, and track data on their successes and challenges. Changes and updates to the program are made regularly to ensure that it addresses evolving employer needs and accounts for partners' experiences in how best to support students.

Sustainability. As startup funds decrease, colleges and employers seek additional sources of funding *and* consider how to maintain the program with fewer resources. Partners may consider integrating multiple sources of funding. In this third phase, the partners continue many of the activities undertaken in earlier phases, but they may redistribute responsibilities and existing resources among the college, the employer(s), and other community partners. Partners may also advocate for policies that support ongoing collaboration. As demonstrated in exhibit 2, employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three even as the college and employer partners seek additional funding to support partnership activities.

Exhibit 2: Engagement activities of colleges and employers across three partnership phases: getting started, implementation, and sustainability

PHASE 1: Getting Started	PHASE 2: Implementation	PHASE 3: Sustainability
Advisory committees, curriculum development, colocation of college and employer facilities, monetary and in-kind contributions		
	Professional development for college faculty and staff, co-teaching or guest teaching, student recruitment and outreach, student supports, work-based learning opportunities, direct hiring	
		Fiscal and policy advocacy
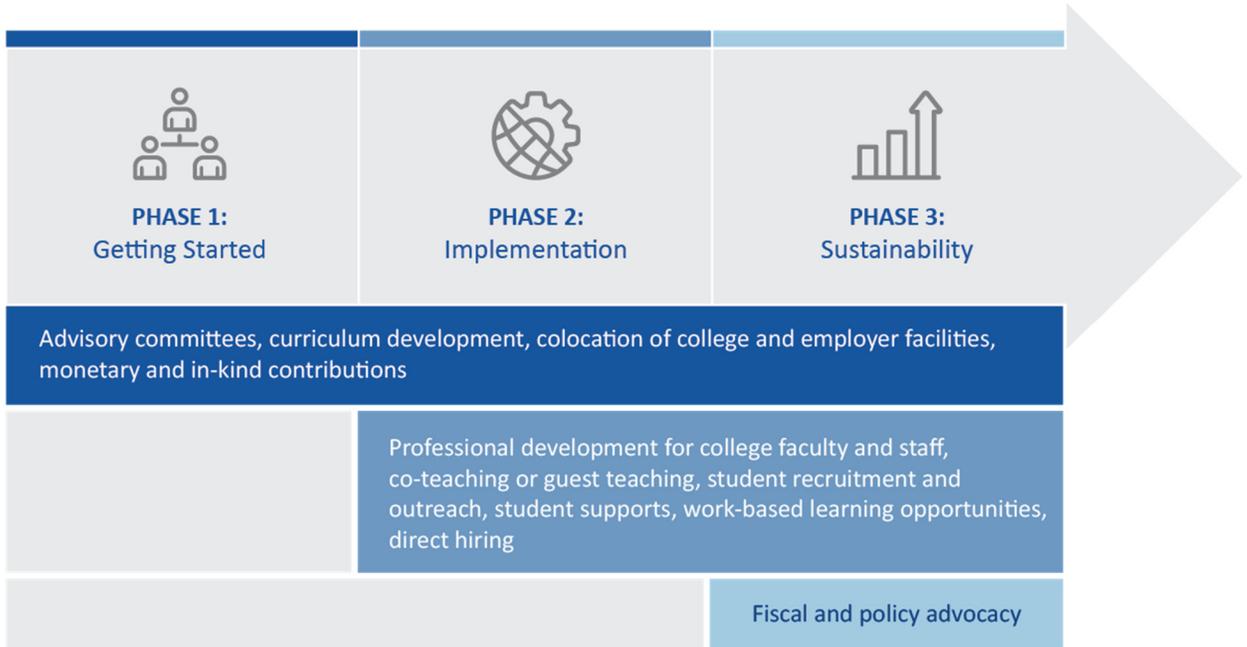
PROFILES OF COMMUNITY COLLEGE-EMPLOYER PARTNERSHIPS

COLLEGE OF CENTRAL FLORIDA — XCEL-IT

Ocala, Florida

INFORMATION TECHNOLOGY AND LOGISTICS

The College

College of Central Florida (Central Florida) serves over 10,000 students from three surrounding counties — Marion, Citrus, and Levy. The college offers over 70 degree and certificate programs, and its mission is to provide high-quality, high-value degrees and promote the economic, social, and cultural development of the local community.

Overview of Employer Engagement

Fluctuations in the regional economy and programmatic changes at Central Florida have historically impacted its partnerships with area employers. Double-digit unemployment and slow hiring in the Ocala region during the recent recession, coupled with reductions to the corporate training arm at the college, resulted in a decline of once-strong college-employer relationships. With partial support from nearly $3.5 million in incentives from Marion County and the City of Ocala, however, FedEx opened a new hub facility in Ocala in August 2016, prompting Central Florida to engage with FedEx with the goal of creating job opportunities for its students. This boom has coincided with the college's XCEL-IT Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant program,[6] positioning the college to expand and cement stronger relationships with regional employers.

> **SNAPSHOT**
>
> - *Service Area: Local*
> - *Location: Rural*
> - *Fields: Accounting, business and organizational management, engineering, information technology*

Employer engagement is an essential part of XCEL-IT and includes outreach to more than 30 local employers in the Ocala region,

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[6] See https://doleta.gov/taaccct/

including businesses, nonprofits, and local government agencies. FedEx participates in the logistics and supply chain management strand of XCEL-IT.

XCEL-IT offerings include degree and certificate tracks in four primary program sectors:

1. *Accounting:* Accounting Technology

2. *Business and Organizational Management*: Business Administration, Entrepreneurship, Management Information Systems, Logistics and Supply Chain Management

3. *Engineering:* Advanced Manufacturing

4. *IT:* Computer Information Technology, Network Security

Exhibit 3 highlights the employer engagement activities used by XCEL-IT across and within three phases: getting started, implementation, and sustainability. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three. These activities are detailed in the subsequent sections.

Exhibit 3: Employer engagement activities used by the College of Central Florida's XCEL-IT program, by phase
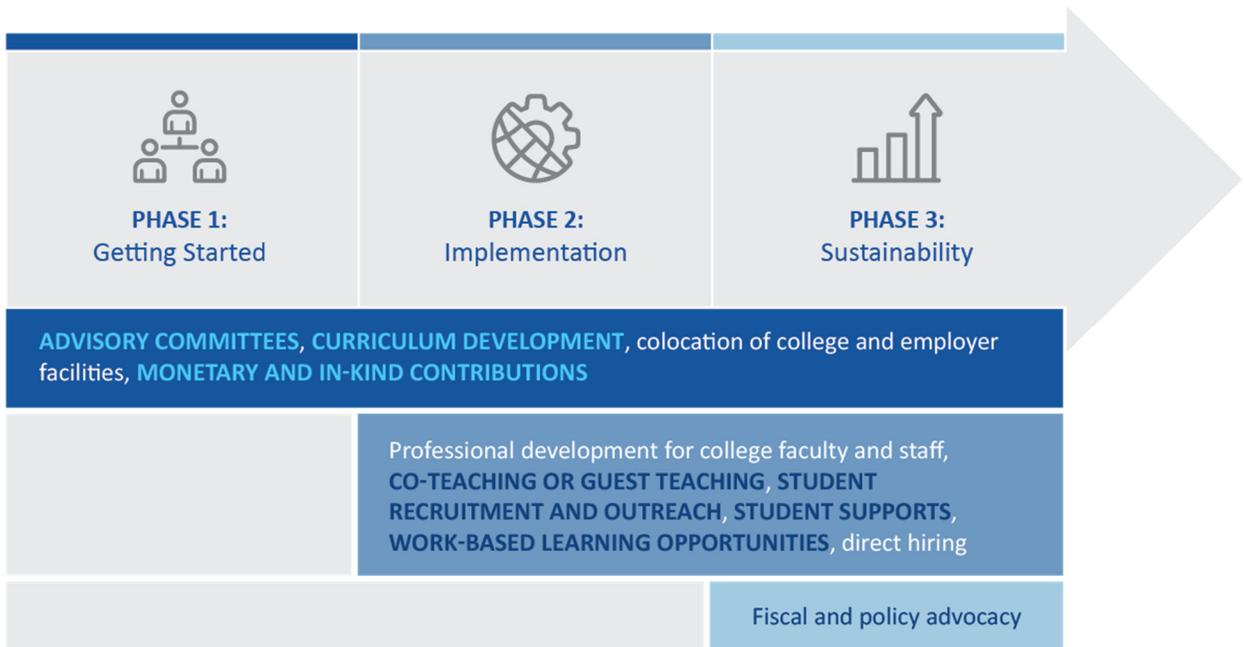
PHASE 1: Getting Started	PHASE 2: Implementation	PHASE 3: Sustainability
ADVISORY COMMITTEES, CURRICULUM DEVELOPMENT, colocation of college and employer facilities, MONETARY AND IN-KIND CONTRIBUTIONS		
	Professional development for college faculty and staff, CO-TEACHING OR GUEST TEACHING, STUDENT RECRUITMENT AND OUTREACH, STUDENT SUPPORTS, WORK-BASED LEARNING OPPORTUNITIES, direct hiring	
		Fiscal and policy advocacy

NOTE: The items in capital letters highlight the employer engagement activities used in this college-employer partnership.

Phase 1: Getting Started

Central Florida capitalized on XCEL-IT to promote a culture change at the college, which emphasized substantively engaging employers in their programs. In 2015, the state of Florida introduced a performance-based funding model for state colleges, under which a portion of state funds was allocated to colleges based on their scores on a set of four metrics. These metrics included student retention, completion, employment, and wages after graduation. The performance-based funding priorities provided additional incentive for the college to work more closely with employers, in a process one staff member described as "rebuilding bridges," to get their students career- ready and placed in jobs.

Early activities focused on broadening the college's base of employer partners and engaging those partners more substantively. In the first year, the college developed a marketing campaign — which included brochures, fliers, and an employer connection website — to spread awareness of the college and its programs among local employers. Through the website, employers can send requests directly to the college; XCEL-IT has also used the website to build a database of employer contacts.

Beginning in this phase, and continuing through ensuing phases, Central Florida has engaged employers in XCEL-IT activities that include the following:

"The students are our customers, but the community, the businesses, they're also our customers. They're our stakeholders and we have to treat them that way."

Leader, Central Florida

Advisory committees. The college convenes advisory committees for each XCEL-IT program. Committee members review curriculum changes and pathways and suggest additional areas of study or industry credentials that might be incorporated into XCEL-IT programs. Early in the program, XCEL-IT staff boosted employer participation in existing twice-yearly advisory committees, both in numbers and level of engagement.

Curriculum development. Many faculty members reshaped their curricula in response to industry feedback from advisory committees. For example, employers suggested that some students and graduates lack customer service or employability skills. Based on this feedback from employers, Central Florida updated its curricula to emphasize these skills.

Monetary and in-kind contributions. Although most of the XCEL-IT program is funded with TAACCCT funds, employer partners provide some in-kind supports to XCEL-IT, such as providing meeting space or sponsoring meals and refreshments (which cannot be purchased under a federal grant). Employer partners have also donated equipment to some XCEL-IT programs.

Phase 2: Implementation

During the implementation phase, Central Florida and employer partners have collaborated on XCEL-IT activities that include the following:

Co-teaching or guest teaching. Several employer representatives serve as part-time adjunct instructors of Central Florida courses, including an employee from FedEx in the Logistics and Supply Chain Management program.

Student recruitment and outreach. Just as the college markets XCEL-IT programs to employers, it has also invested in marketing programs to current and prospective students in the community. The college visits classrooms, promotes events, and produces radio and print advertisements. Several employer partners directly encourage their employees to pursue further education through XCEL-IT at Central Florida. As a result, faculty members have seen enrollment in their programs swell, and the college has exceeded its institutional goal for participants completing a grant-funded course of study (goal: 130; actual: 276).

Student supports. XCEL-IT staff members are dedicated to the constant and continual engagement of both students and employer partners. Staff members advise students on internship and hiring opportunities, advertise events to both parties, and reach out directly to human resources departments at employer partners to promote their programs, the skills of their graduates, and explore internship and hiring opportunities. A placement team provides students with job search strategies, resume reviews, practice interviews, and information about local employers.

Central Florida's XCEL-IT team works closely with CareerSource Citrus Levy Marion, the local workforce development board. CareerSource Citrus Levy Marion provides XCEL-IT with state unemployment insurance wage data that allows it to track students into employment. The two entities have also partnered to develop the Talent Center, opened in late 2016 and located on Central Florida's campus, to offer recruitment services to employers, and career exploration and job seeking services to college students and recent graduates. Job seeker resources available at no cost through the Talent Center include career coaching, recruiting and networking, skills development, resume and interview guidance, and internship assistance. The Talent Center offers hiring workshops and resume assistance to all Central Florida students.

Work-based learning opportunities. Several XCEL-IT employer partners offer co-ops or internships to XCEL-IT students as well as company tours. From spring 2014 through fall 2016, 93 XCEL-IT students were placed in internships or co-ops. Employers with co-ops and internships provide feedback on students' performance directly to Central Florida faculty members. A few current Central Florida students also work part time at FedEx; these

numbers will likely increase as the FedEx hub, still new, continues staffing up. Employer representatives engage directly with students through in-class guest lectures, speaking engagements, and larger events. Increased engagement through XCEL-IT has helped make these opportunities available; faculty members can choose to avail themselves of the opportunity, and many do. XCEL-IT staff members value employer partners' presence on campus and face-to-face interaction with students for the exposure to new careers it provides.

Central Florida, employer partners, and Talent Center collaborate to offer a series of large and small on-campus events to expose students to careers and specific hiring opportunities. At monthly Coffee and Career Chats, for example, students learn about internship opportunities and potential career pathways; employer representatives serve on panels and network with students to introduce careers at their companies. Large-scale Career Chats occur biannually for each major XCEL-IT sector. In addition, the college hosts monthly information sessions focused on a single employer. Twice-yearly Hire-a-Grad job fairs introduce students to local industries actively looking to hire; they are free and open to all degree, certificate, and technical graduates of Central Florida. XCEL-IT staff members have continued their focus on marketing, and they broadcast each of their on-campus events to students and employers. Central Florida also hosted a job fair for FedEx, attended by more than 900 potential applicants.

Phase 3: Sustainability

Central Florida has developed a written sustainability plan for its XCEL-IT work. The plan calls for distributing functions currently fulfilled by grant-funded staff members to other staff, faculty members, administrators, and partners on the campus. Academic programs, for example, will continue to hold twice-yearly advisory committees. The Talent Center will play an increasingly prominent role, absorbing some placement and internship services for students and taking on planning and hosting career-focused events.

Benefits and Outcomes

XCEL-IT's employer engagement efforts benefit the college, employers, and students (exhibit 4).

Engaging with employers keeps Central Florida's faculty and staff up to date and knowledgeable about the current state of various fields. For the college, engaging an employer with the size and reputation of FedEx brings visibility to its efforts in the community. College faculty and staff view this engagement as one way to invest in the success of the community.

FedEx faced considerable hiring needs with the opening of its new hub facility. The partnership with Central Florida continues to help the company recruit and prepare new employees to meet this demand. Through XCEL-IT, the company can provide input on desirable skills in new employees and influence the college's curriculum in response to its needs.

For students, XCEL-IT provides access to up-to-date curricula informed directly by industry. The various avenues of employer engagement also offer opportunities for on-the-job experience through internships or co-ops and networking. Although XCEL-IT does not guarantee its graduates employment with employer partners, its staff provides students with information on job opportunities and ensures they are prepared to take advantage of those opportunities.

Exhibit 4: Benefits of employer engagement efforts in the College of Central Florida's XCEL-IT program, by beneficiary

College	Employers	Students
Faculty members aware of current state of their fields	Able to recruit and hire employees to meet workforce needs	Access to up-to-date curricula informed by industry
Increased visibility because of association with employers	Ensure students' knowledge, skills, and abilities match their needs	Opportunities for internships, co-ops, and networking
		Support in finding employment with local companies

As of the fall of 2016, XCEL-IT staff noted the following program outcomes:

- A total of 816 students have participated in the program, 276 of whom completed it.

- XCEL-IT students earned a total of 364 credentials.

- Six hundred nineteen students remained in a course of study at Central Florida.

- Many XCEL-IT students were already working at the time of their enrollment; 389 of these students received a wage increase post-enrollment.

Challenges

The XCEL-IT program encountered challenges in starting up the grant-funded effort and in turnover of staff and leadership. Turnover strains the continuity of ongoing relationships with employer representatives, resulting in the potential loss of valuable information and

history. In addition, some leaders at the college have been more supportive of employer engagement efforts than have others; some XCEL-IT staff members felt they might have made progress earlier with more support from some senior leaders. Finally, funding scarcity at the college also can inhibit flexibility, rapid decision making, and responsiveness to industry requests, especially in starting new programs that require significant upfront investments in space or equipment.

Lessons for the Field

The XCEL-IT program has the following lessons to offer the field on engaging employers in community college programs:

- Start early and plan carefully to engage employers. Garnering buy-in from college faculty and staff early on engages them in building and maintaining employer relationships.

- Ask for help and borrow ideas from other colleges doing similar work in planning and implementing employer engagement programs.

- Create regular opportunities for students and employer representatives to interact directly, whether in internships, guest lectures, or networking events. These opportunities allow employers and students to learn what they can offer each other and maintain visibility.

- Follow through on commitments made to employer partners. Keeping promises builds trust.

COLLIN COLLEGE — NATIONAL CONVERGENCE TECHNOLOGY CENTER

Frisco, Texas

INFORMATION TECHNOLOGY

The College

Collin College, a community college that serves about 53,000 students in the Dallas-Fort Worth metro area, offers credit and continuing education toward more than 100 degrees and certificates. Through its strategic goals, the college seeks to create streamlined pathways from high school and into four-year colleges and expand career and technical offerings that align with regional labor market demand.

Overview of Employer Engagement

The National Convergence Technology Center (National CTC) at Collin College is funded as part of the National Science Foundation's (NSF) Advanced Technological Education (ATE) program.[7] NSF's ATE program facilitates partnerships between two-year colleges and industry to enhance the workforce of technicians in high-technology fields.

> **SNAPSHOT**
>
> - *Service area: National, 68 colleges*
> - *Location: Suburban*
> - *Field: Information technology*

The National CTC began as a regional center with the goal of involving businesses in community colleges' efforts to meet the growing need for workers in the convergence technology field (i.e., IT and communications technology). The center grew by first adding partners in California, Wisconsin, Michigan, and Florida, and became an ATE national Center of Excellence before adding even more partners in additional states. Today, the National CTC is national in scope, with a network of 68 participating colleges in the Convergence College Network, and continues to grow. The four main goals of the National CTC are to

1. improve programs to meet workforce needs;

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[7] See https://www.nsf.gov/ate

2. provide access for technology-enabled instructional support systems to assist colleges in launching convergence programs;

3. increase the number of degree/certificate completers ready to meet workforce needs; and

4. build capacity and disseminate information.

In addition to funding from NSF, members of the National CTC have received funding to support employer engagement through the U.S. Department of Labor's Trade Adjustment Assistance Community College Career Training (TAACCCT) program;[8] through this grant they formed the National Information, Security, and Geospatial Technology Consortium (NISGTC).

Exhibit 5 highlights the employer engagement activities used by Collin College across three phases: getting started, implementation, and sustainability. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three. These activities are detailed in the subsequent sections.

Exhibit 5: Employer engagement activities by Collin College's National Convergence Technology Center, by phase
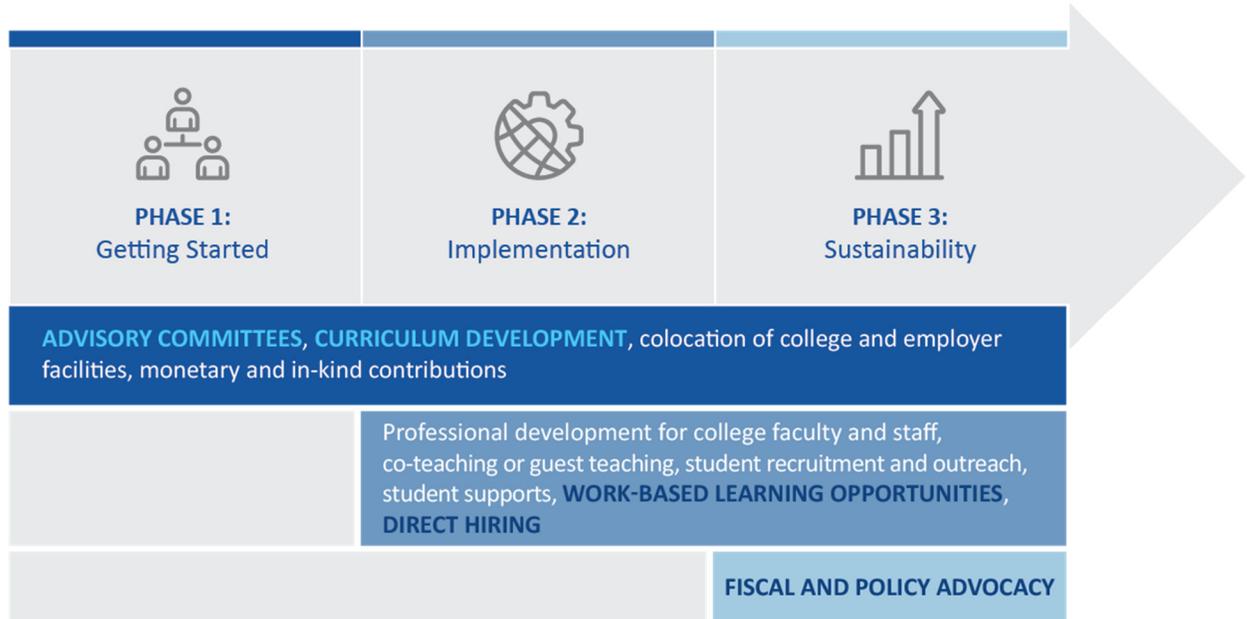
NOTE: The items in capital letters highlight the employer engagement activities used in this college-employer partnership.

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[8] See https://doleta.gov/taaccct/

Phase 1: Getting Started

Beginning in this phase, and continuing through ensuing phases, Collin College has collaborated with employers through the National CTC on activities that include the following:

Advisory committees. The National CTC has developed actively engaged business teams through its Business and Industry Leadership Team (BILT) model. BILT is an employer engagement strategy in which representatives from business and industry co-lead community college IT training programs. The BILTs are composed of industry representatives, including high-level executives, managers, and technicians. The National CTC and the BILTs focus on the IT area of network infrastructure with an additional focus on cybersecurity. The National CTC at Collin College hosts a national BILT that leads overall activities, while local and regional BILTs work with additional colleges that participate in the network.

The BILTs were designed to promote deeper engagement by employers than is typical of advisory committees (exhibit 6). Some business advisory committees meet once or twice a year, and advise programs by reviewing and approving curricula and programs. They may not involve representatives from the right levels of industry to ensure that a program is aligned with business needs. By contrast, BILTs are designed to co-lead a program and involve representatives from multiple levels of industry — including high-level executives and technicians — to ensure program alignment with industry needs.

> *"Many colleges think that business advisory councils are rubber stamp groups. And the saddest thing is that you may have graduates who get straight A's, but cannot get a job because their skills are not aligned with business needs."*
>
> **Leader, National CTC**

Exhibit 6: Differences between business advisory committees and Business and Industry Leadership Teams (BILTs)

Business advisory committee	BILT
Industry **advises** program: • Industry suggests knowledge, skills, and abilities • Industry suggests enhancements to curriculum	Industry **co-leads** program: • Industry provides required knowledge, skills, and abilities • Industry approves curriculum

SOURCE: Adapted from Beheler, Ann, and Helen Sullivan. 2016. Tight Engagement with Business Produces Successful Graduates. Presented at the STEMTech Conference.[9]

The National CTC director and staff members also support the development and implementation of local and regional BILTs. The National CTC provides support to establish a local BILT, recruits members, conducts meetings, and sustains membership. The National CTC has also developed resources that assist recruitment efforts, which include overall guides to establishing a BILT, checklists for conducting meetings, sample recruitment letters, and phone scripts. In developing the national BILT and helping other colleges start up their own local and regional BILTs, National CTC staff members developed the following steps and accompanying advice for colleges:

1. Determine which businesses, industries, agencies, nonprofits, and universities should be represented in the BILT. Consider a distribution of representatives from organizations of different sizes and types. Medium and small organizations can provide perspectives that may be missing from large organizations.

2. Determine what you want to get from the BILT and develop a sales pitch to prospective industry partners. Establish expectations of involvement and the time commitment per quarter.

3. Find and retain appropriate business partners by starting with the target organization's highest-level officer in the region. Personal contact works better than mass mailings or mass emails. The National CTC sends initial communication to prospective members in letters enclosed in hand-addressed, stamped envelopes rather than emails.

4. Conduct an initial BILT meeting. Faculty members should attend the meeting as observers. Start and end the meeting on time and take minutes of the meeting.

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[9] See
http://nationalctc.mobilectc.wikispaces.net/file/view/STEMtech%202015%20BILT.pdf/580784837/STEMtech%202015%20BILT.pdf

5. Recognize the efforts of BILT members through news releases, thank you emails, and letters to team members and leadership at their organizations, and provide certificates and plaques.

6. Report the minutes of meetings and program accomplishments. Students' stories about the effects of the program are a powerful way of communicating the outcomes of a program.

7. Keep the BILT current by adding new members each quarter and getting feedback from members on how to improve the partnership. It is as important to follow through on any feedback as it is to collect it.

Meeting four times a year is essential to the BILT programs. Conduct three of the four meetings virtually and one is in-person. The virtual meetings can be conducted via webinar or phone conferences with the goal of keeping programs up to date on current trends in IT. The virtual meetings last a maximum of 90 minutes

Curriculum development. During the quarterly meetings, BILT members share emerging trends in their fields, forecast future hiring needs, provide feedback and support on grants and other initiatives, and review the programmatic work of participating colleges, including certificates, degrees, and curriculum.

The national BILT spearheads the establishment and annual review of KSAs for curriculum based on industry and national trends. Local BILTs then adapt the KSAs to focus on their regional needs. The annual, in-person meeting for BILT lasts for five hours. At this gathering, BILT considers the KSAs graduates' need to work in a specific IT field and discusses which KSAs are the top priorities for graduates to be readily employable in 12–36 months.

Based on a process developed by the U.S. Air Force called Performance Criteria Analysis, BILT members review and rank KSA statements for entry-level employees based on (1) overall importance, (2) level of proficiency needed for entry-level roles, (3) how much time an employee would be expected to spend on tasks involving the KSAs, and (4) how difficult it is to learn the KSAs. Faculty members attend the meeting, but only as observers. They may ask questions, but the focus of the meeting is on BILT members. After the meeting, faculty representatives map the overall highest-ranked KSAs to their current curricula. College staff members then use the resulting map to identify gaps and update curricula as needed. In addition, the result can be used to determine valuable credentials to offer. At subsequent meetings, BILT members review and approve the updated curricula.

Phase 2: Implementation

During the implementation phase, the National CTC's BILTs collaborated on activities for education and training programs that include the following:

Work-based learning opportunities. Many IT students at community colleges lack the time to commit to an internship. They work part- or full-time and have family responsibilities in addition to their academic work. Staff members at the National CTC have developed virtual internships as a way for students to conduct real-world projects as part of their coursework under the guidance of industry employees. In this simulated work-based learning approach, over the course of a semester students design and implement a solution to a real-world IT problem. During the process, students are guided by a mentor from the BILT via webinar, email, and phone calls. At the end of the semester, the students present their work to a panel of BILT members who provide feedback. Members of the national and local BILTs both participate in virtual internships and in hiring students.

Direct hiring. As in the XCEL-IT program at Central Florida, the National CTC and its BILTS do not guarantee employment for students; they do, however, facilitate connections between students and employers by having students attend and present at BILT meetings and through the virtual internships. BILT members are more inclined to hire students when they have seen and heard firsthand how community college programs prepare students with the knowledge and skills for employment. BILT members trust the imprimatur of preparation through National CTC-affiliated colleges when making hiring decisions.

Phase 3: Sustainability

Maintaining strong relationships is a key to sustaining the BILTs. The National CTC director meets with BILT members individually at least once a year to make sure they see the connection between their participation and benefits for them and their organizations. In addition, National CTC staff members publicly recognize the contributions of BILT members regularly. BILT members have also contributed to sustaining and spreading the BILT model through advocacy.

Fiscal and policy advocacy. National BILT members speak at national conferences and events to advocate for the BILT model. They have also participated in national networks, such as the TechHire initiative,[10] to advocate for building pathways into IT employment in communities around the country.

Benefits and Outcomes

Employers and college staff describe the BILT model as a win-win-win. When industry co-leads programs, students, employers, and colleges all benefit (exhibit 7).

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[10] See https://techhire.org/

Exhibit 7: Benefits of employer engagement efforts in the Collin College National Convergence Technology Center program, by beneficiary

Colleges	Employers	Students
Increased reputation due to association with business	Less on-the-job training	Ability to build relationships with employers before graduation
Increased enrollment	Early access to qualified talent	Graduate with up-to-date, in-demand skills
Faculty and administration better aware of industry trends in IT	More qualified applicants	Access to broad employment network
Programs and curricula aligned to industry needs	Opportunity to give back to communities	

NOTE: "IT" here refers to information technology.

Student outcomes related to National CTC services and the BILTs are difficult to quantify because member colleges in the Convergence College Network use their own methods for tracking graduates. The National CTC, however, takes increasing meeting attendance rates by BILT members and Convergence College Network members as evidence that their partners have become more engaged over time.

Challenges

Businesses and colleges use different processes and procedures. Business representatives sometimes have difficulty understanding the rules and regulations that govern how community colleges operate. BILT members have offered suggestions that conflict with the accreditation and funding realities at community colleges. For example, based on a training course at an organization, one BILT member suggested having an instructor at one community college teach an online course for students from different colleges across the nation. The suggestion ran into difficulty due to the rules around accreditation, finance, and governance at community colleges, whereas the suggestions had easily been achieved in the private sector.

Managing a diverse group of industry representatives from the executive level to the technician level also comes with challenges. Sometimes BILT members are very passionate about their areas of expertise. Careful facilitation is needed to ensure participation from all members at BILT meetings.

Lessons for the Field

The National CTC at Collin College has the following lessons to offer the field on engaging employers in community college programs:

- Involve industry as co-leaders in a program to create a sense of ownership and facilitate active engagement.

- Target specific employer partners that can help co-lead a program, considering a mix of small, medium, and large organizations.

- Be clear about roles and expectations with potential employer partners. Setting expectations for time commitments helps maintain a good relationship.

- Meet with employer partners regularly throughout the year. Meeting infrequently can put the college-employer partnership "out of sight, out of mind" for employers.

- Require business and industry to co-lead the regular review and updates of curriculum. Moreover, colleges should demonstrate to business and industry how their feedback has influenced curriculum changes.

- Continually emphasize the mutual benefits of the college-employer partnership to sustain business and industry partners' engagement in co-leading a program.

For more information about the BILTs, visit:

http://www.connectedtech.org/about_us/business_and_industry_leadership_team.html.

ROCHESTER COMMUNITY AND TECHNICAL COLLEGE — BRIDGES TO HEALTHCARE

Rochester, Minnesota

HEALTH SCIENCES

The College

Located in southeast Minnesota, Rochester Community and Technical College (RCTC) annually serves 12,000 students in credit-based programs and 5,000 in noncredit and credit-based workforce initiatives. Serving as a hub for the economic and workforce development needs of the region, the college's mission is "to provide accessible, affordable, quality learning opportunities."

Overview of Employer Engagement

The Bridges to Healthcare program at RCTC helps prepare low-income students for health-care careers by improving access to career opportunities for underserved populations and redressing local workforce shortages. RCTC has worked closely with Mayo Clinic — by far the largest employer in the region with more than 34,000 employees at its Rochester campus — in in planning, implementing, and

> **SNAPSHOT**
>
> - *Service area: Local*
> - *Location: Urban*
> - *Field: Healthcare*

sustaining Bridges to Healthcare. Bridges to Healthcare is modeled after Washington state's Integrated Basic Education and Skills Training[11] strategy to serve refugee, immigrant, and adult learners with remedial education needs while developing their technical skills for employment.

The college-employer partnership between RCTC and Mayo Clinic addresses barriers to student success by supporting the academic, social, and financial needs of refugee, immigrant, and underprepared adult learners. To do so, Bridges to Healthcare engages additional community partners in providing its students with a continuum of support.

- The *Hawthorne Education Center* [12](Hawthorne) is part of the local kindergarten through grade 12 (K–12) school district, Rochester Public Schools. It serves

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[11] See https://www.sbctc.edu/colleges-staff/programs-services/i-best/

[12] See http://www.rochesterce.org/hawthorne/

approximately 2,000 adult basic education (ABE) students annually. Students enrolled in Bridges to Healthcare complete a basic skills and health-care preparatory program at Hawthorne and can then enroll directly in college-level courses at RCTC without taking an entry exam.

- *Workforce Development, Inc.[13]* (WDI), southeastern Minnesota's Workforce Investment Board, serves between 4,000 and 6,000 individuals annually with the goal of developing and advancing the regional workforce and promoting economic prosperity in the region. WDI personnel act as navigators — located at both RCTC and Hawthorne — assist students in overcoming life challenges, navigating academic and financial systems, and finding jobs.

The Bridges to Healthcare college-employer partnership prepares students for careers in the following pathways: certified nurse assistant, advanced hospital nursing assistant, administrative clinic assistant, licensed practical nurse, registered nurse, and health unit coordinator.

> *"The biggest key is being present at meetings and feeling like you own a piece of the pie. In many partnerships, that doesn't happen on the employer's side."*
>
> **Employee, Mayo Clinic**

Exhibit 8 highlights the employer engagement activities used by Bridges to Healthcare across three phases: getting started, implementation, and sustainability. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three. These activities are detailed in the subsequent sections.

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[13] See https://www.workforcedevelopmentinc.org/

Exhibit 8: Employer engagement activities used by the Rochester Community and Technical College's Bridges to Healthcare program, by phase
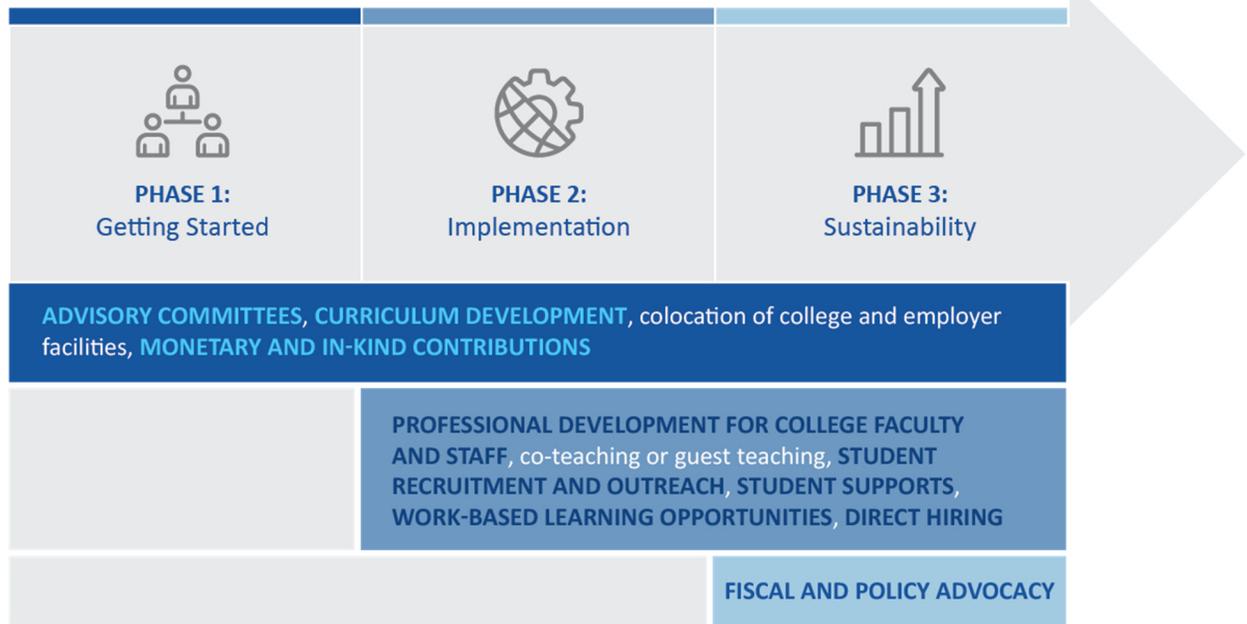
PHASE 1: Getting Started	PHASE 2: Implementation	PHASE 3: Sustainability
ADVISORY COMMITTEES, **CURRICULUM DEVELOPMENT**, colocation of college and employer facilities, **MONETARY AND IN-KIND CONTRIBUTIONS**		
	PROFESSIONAL DEVELOPMENT FOR COLLEGE FACULTY AND STAFF, co-teaching or guest teaching, **STUDENT RECRUITMENT AND OUTREACH**, **STUDENT SUPPORTS**, **WORK-BASED LEARNING OPPORTUNITIES**, **DIRECT HIRING**	
		FISCAL AND POLICY ADVOCACY

NOTE: The items in capital letters highlight the employer engagement activities used in this college-employer partnership.

Phase 1: Getting Started

RCTC and Mayo Clinic have worked together on workforce training programs stretching back over 100 years. The Bridges to Healthcare college-employer partnership began in 2011 with a Trade Adjustment Assistance Community College Career Training (TAACCCT) grant. The partners — RCTC, Mayo Clinic, Hawthorne, and WDI — recognized that the previous system of serving refugee, immigrant, and underprepared adult learners created barriers to student success. ABE students frequently required remedial education even after completing the necessary requirements for college preparation and a placement test. Many of these students dropped out without completing a college-level course. Mayo Clinic, meanwhile, was having trouble filling open positions due to a low local unemployment rate and high turnover in entry-level positions. Collaborating through Bridges to Healthcare has given Mayo Clinic access to new talent by creating a pipeline of workers from a population that previously would not have qualified to work at Mayo Clinic.

Advisory committees. Employer representatives participated in monthly leadership team meetings to provide input in the creation of the new program. Monthly leadership team meetings have continued through the implementation and sustainability phases, also attended by RCTC, Hawthorne, and WDI directors. This sustained engagement encourages a sense of ownership of Bridges to Healthcare among Mayo Clinic staff.

Curriculum development. Mayo Clinic staff collaborated with RCTC staff on curriculum development to ensure that students graduate with the necessary skills for employment, not only at Mayo Clinic but also at other employers in the health care field. For example, to fill a need identified by Mayo Clinic, RCTC developed a new program to train administrative clinical assistants. RCTC and Hawthorne staff shadowed and worked with Mayo Clinic staff to

"My philosophy is that we give [RCTC] the ideas of what we need. I'm not a curriculum expert and I'm not an education expert. That's where we rely on the college."

Employee, Mayo Clinic

develop the curriculum. RCTC staff also held meetings and focus groups with Mayo Clinic staff members to determine the skills needed for specific roles in the health care industry. Mayo Clinic staff participated in the first cohort to test the curriculum and give feedback. Through the college-employer partnership, the team members have come to understand their respective roles; Mayo Clinic supplies important information on workforce needs and the skills required for

certain jobs and leaves curriculum development to community college experts. In addition, faculty from RCTC and Hawthorne co-designed and co-taught courses to ease the transition between the two institutions.

Monetary and in-kind contributions. Early college-employer partnership activities were supported by grant funding. Mayo Clinic has provided scholarship money to support students who encounter barriers to accessing financial aid. The funding allows students to continue in the program while waiting for financial aid to be approved. Mayo Clinic has invested more financially in the program in subsequent phases (for more information, see Phase 3: Sustainability).

Phase 2: Implementation

During the implementation phase, RCTC, Mayo Clinic, and their community partners have collaborated on activities for Bridges to Healthcare that include the following:

Professional development for college faculty and staff. Mayo Clinic staffs have hosted job shadowing for RCTC and Hawthorne instructors. Although Bridges to Healthcare has dedicated representatives from Mayo Clinic, it can also access expertise from up to 180 managers within the organization as needed.

Student recruitment and outreach. Bridges to Healthcare supports advisers and navigators to work with students transitioning from Hawthorne to RCTC. Bridges to Healthcare advisers have smaller caseloads than others at the college, so they can work hands-on with students to walk them through application, enrollment, and financial aid processes. This support helps maintain enrollment at the college. Mayo Clinic also relies heavily on RCTC training programs for recruiting entry-level workers; the collaboration between RCTC and

Mayo Clinic is a means of reaching potential employees and convincing them that Mayo Clinic is an "employer of choice."

Student supports. Bridges to Healthcare provides students with social and financial support in addition to academic preparation. Navigators at Hawthorne and RCTC guide students through the complexities of enrollment and transitions. Students also receive financial literacy training during the early stages of their training at Hawthorne. To further support students, the college-employer partnership implemented mandatory tutoring during the students' first semester of the program.

> *"Another great thing about clinical experience is that supervisors can see how people work and it might give them a leg up in the interview process."*
>
> **Employee, Mayo Clinic**

Work-based learning opportunities. Mayo Clinic provides work-based learning for students. They can shadow Mayo Clinic staff members as they work. Mayo Clinic also provides students with week-long clinical trainings. Clinical experiences are an important part of training in the health-care field and allow students to make connections with a potential employer.

Direct hiring. Mayo Clinic staff members conduct practice interviews with Bridges to Healthcare students as they complete their training and advise them on navigating the Mayo Clinic hiring process. The Clinic has hired close to 100 Bridges to Healthcare students over the last three years, with 73 percent of those students coming from diverse backgrounds.

Phase 3: Sustainability

Financial support and advocacy from Mayo Clinic have been crucial to sustaining Bridges to Healthcare thus far. The college-employer partnership uses braided funding — combining funding streams from multiple sources — to facilitate sustainability, allowing the college-employer partnership to adjust if one funding source ends.

Fiscal and policy advocacy. When the college-employer partnership's initial TAACCCT grant ended, the program received some funding from the Minnesota State Department of Employment and Economic Development, but it was not enough to keep the program running fully. Mayo Clinic helped to bridge the gap by committing to contribute $85,000 over the course of five years. With another grant ending, the team is currently putting together resources and planning to make up for the shortfall. Trust among all partners is key to this approach. If partners are worried that funding will not be distributed equally, it is very difficult to weave together various funding streams across the organizations.

> *"Braided funding allows WDI to put a little in, Hawthorne to put a little in, RCTC to put a little in, and Mayo to put a little in. By leveraging the resources from all, we can sustain this model."*
>
> **Leader, RCTC**

In addition to supporting the partnership financially, Mayo Clinic advocates and lobbies for the program. It has met with state legislators to discuss dedicated funding for Bridges to Healthcare. From the perspective of state legislators, enough evidence exists to justify funding Bridges to Healthcare because the program prepares people who might otherwise need public assistance for employment at wages that enable them to live independent of public assistance. Senior staff members at Mayo Clinic also advocate for the program in regional workforce meetings.

Benefits and Outcomes

The collaboration between RCTC, Mayo Clinic, WDI, and Hawthorne provides mutual benefits to the college, the employer, and students, as shown in exhibit 9.

Exhibit 9: Benefits of employer engagement efforts in the Rochester Community and Technical College's Bridges to Healthcare program, by beneficiary

College	Employer	Students
Access to professional development for faculty	Address workforce shortages	Removes barriers to transitioning from adult basic education to community college
Curricula aligned with industry needs	Progress toward meeting diversity goals	Access to jobs at Mayo Clinic and other health-care providers
Enhanced reputation due to association with leading employer		Support for continuing education

Completion (81.1 percent) and retention (82 percent) rates for students served by Bridges to Healthcare are promising, as are hiring rates, since 74 percent of students exiting the program obtained employment directly related to their training. Bridges to Healthcare students have been hired by over 50 employers across the region.

In addition, Mayo Clinic's clients are becoming more and more diverse, and it would like its workforce to reflect the population served. Bridges to Healthcare is helping Mayo Clinic meet this priority.

Challenges

The main challenge for Mayo Clinic is freeing up staff time to participate in the partnership. It can be difficult to find time for staff members to serve on a focus group or guide job shadowing. Senior staff members at Mayo Clinic manage this challenge by underscoring the importance of the work to the staff; sharing examples of successful employees emerging from the partnership helps convince staff to commit the time. For the other partners,

difficulties have arisen around managing diverse financial and data systems and contracting processes. The processes vary at RCTC, Hawthorne, and WDI, and reconciling the differences is time consuming and challenging. WDI provides fiscal services for the partnership and takes on much of the financial and data tracking; because it is a relatively small organization, it can process and approve contracts quickly.

Lessons for the Field

Bridges to Healthcare has the following lessons to offer the field on engaging employers in community college programs:

- Engage employers as more than advisors. Involve employers at the beginning of the partnership, including in the grant writing and planning stages, to develop a sense of co-ownership for the program.

- Ensure that college curricula match the knowledge and skills required in the workplace through job-shadowing for faculty, employer focus groups, and having employers test parts of the curriculum. Weave together many different streams of funding — braided funding — to make a program rely less on one or two sources of support and to avoid shut down if one piece of funding ends.

For more information about Bridges to Healthcare, visit http://www.rochesterce.org/hawthorne/bridges_to_success.

YAKIMA VALLEY COMMUNITY COLLEGE — ALLIED HEALTH CENTER OF EXCELLENCE

Yakima, Washington

HEALTH SCIENCES

The College

Yakima Valley Community College in rural Washington state serves over 4,000 students through programs encompassing adult basic education, English as a second language, lower division arts and sciences, professional and technical education, and community services. Yakima Valley Community College houses one of 10 sector-specific Centers of Excellence (COEs) hosted by community and technical colleges across Washington state. Each COE focuses on four core expectations: (1) economic development; (2) industry-sector strategy; (3) education, innovation, and efficiency; and (4) workforce supply and demand. Although COEs are housed at individual colleges, they offer sector-based employer engagement strategies that serve the entire state. The Allied Health COE at Yakima Valley Community College supports health-focused programs at Washington's 34 community and technical colleges.

> **SNAPSHOT**
>
> - *Service area: Statewide, 34 colleges*
> - *Location: Rural*
> - *Field: Healthcare*

> **WASHINGTON STATE'S CENTERS OF EXCELLENCE:**
>
> - AEROSPACE AND ADVANCED MANUFACTURING
> - AGRICULTURE
> - ALLIED HEALTH
> - CLEAN ENERGY
> - CONSTRUCTION
> - EDUCATION
> - GLOBAL TRADE AND SUPPLY CHAIN MANAGEMENT
> - HOMELAND SECURITY AND EMERGENCY MANAGEMENT
> - INFORMATION AND COMPUTING TECHNOLOGY
> - MARINE MANUFACTURING AND TECHNOLOGY

Overview of Employer Engagement

Washington state's COEs are codified in state statute and funded through the State Board for Community and Technical Colleges (SBTC).[14] Each COE focuses on bridging gaps among business, labor, and education systems in one targeted industry. The COEs synthesize and disseminate information regarding skills gaps, training needs, and best

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[14] RCW 28B.50.902 (*Centers of Excellence*), first passed in 2009, established the Centers of Excellence program with community and technical colleges as eligible applicants (see https://app.leg.wa.gov/rcw/default.aspx?cite=28B.50.902).

practices with the goal of fostering workforce development to meet the needs of important industries that drive economic development in Washington state.

The Allied Health COE builds and leverages partnerships among industry, labor organizations, and community and technical colleges to help community colleges across the state develop a continuous, responsive pipeline of health-care workers. Key strategies include

- developing new and enhancing existing health-care pathways;

- facilitating collaboration among community and technical colleges, businesses, industry groups, K–12 schools, government agencies, and community groups;

- acting as a broker of information among industry representatives, community and technical colleges, four-year colleges and universities, community groups, and the workforce system; and

- bringing together industry partners and education institutions to maximize resources for training health-care workers.

In contrast to many of the sites profiled in this report, the Allied Health COE does not manage individual partnerships between colleges and employers; rather, it acts as a broker of information between industry and community and technical colleges. In its capacity as a resource provider and information broker, the Allied Health COE both provides information to individual colleges and represents college-allied health programs on other statewide bodies, including the following:

1. _The Washington State Health Workforce Sentinel Network (Sentinel Network)._[15] Because the workforce needs of the health-care industry can change rapidly, Washington state's Workforce Board and the University of Washington Center for Health Workforce Studies established the Sentinel Network to help the education and training system stay up to date with the health care industry's needs and workforce skill demands. Health-care facilities throughout the state act as "health workforce sentinels" by providing data on current workforce needs every four months. The Sentinel Network analyzes the data and disseminates trends and demand information to education and training providers, including community and technical colleges. The Allied Health COE represents the voice of the state's community and technical colleges in the Sentinel Network.

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[15] See http://www.wtb.wa.gov/HealthSentinel/

2. *The [Yakima Valley Interprofessional Practice and Education Collaborative](link)*[16]. Based on feedback from industry, the COE recognized the need for colleges to integrate team-based care into their programs. The Yakima Valley Interprofessional Practice and Education Collaborative develops strategies for infusing interprofessional practice into health-care training programs at community and technical colleges across the state. The Allied Health COE serves on the steering committee for the collaborative.

The COEs represent a statewide approach to improving connections between employers and the education and training system to identify and address workforce needs and drive economic development. Exhibit 10 highlights the employer engagement activities used by the Allied Health COE across three phases: getting started, implementation, and sustainability. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three. These activities are detailed in the subsequent sections.

Exhibit 10: Employer engagement activities used by the Washington State Allied Health Center of Excellence at Yakima Valley Community College, by phase
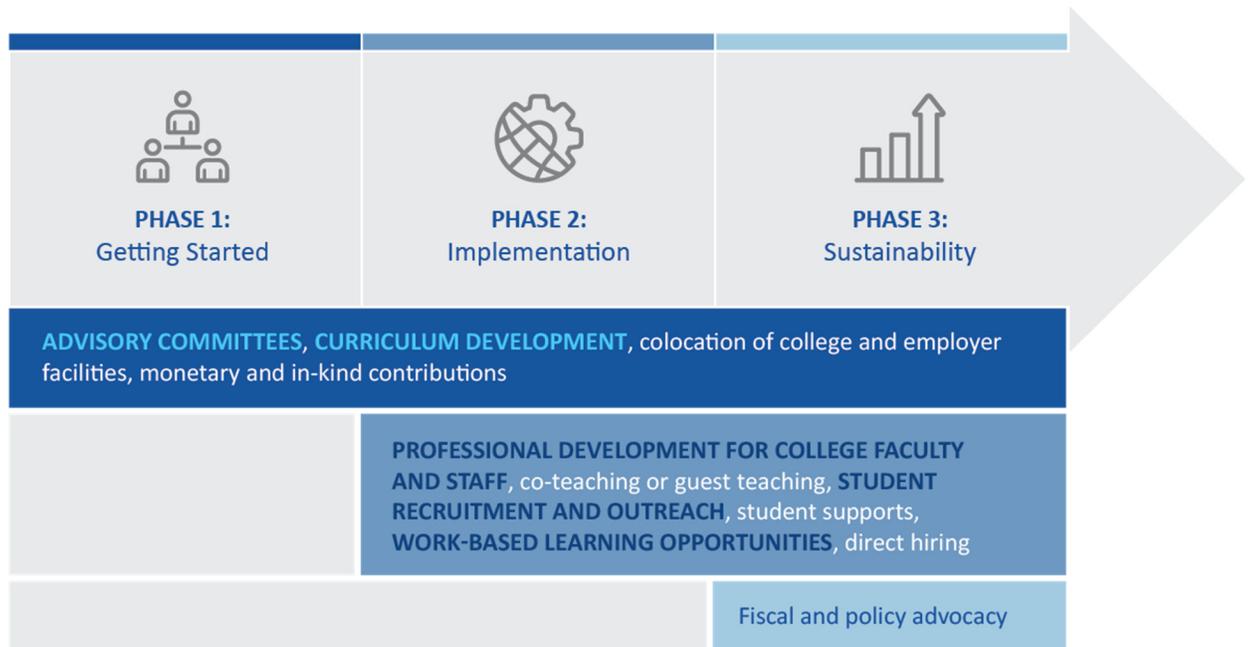
PHASE 1: Getting Started

PHASE 2: Implementation

PHASE 3: Sustainability

ADVISORY COMMITTEES, CURRICULUM DEVELOPMENT, colocation of college and employer facilities, monetary and in-kind contributions

PROFESSIONAL DEVELOPMENT FOR COLLEGE FACULTY AND STAFF, co-teaching or guest teaching, STUDENT RECRUITMENT AND OUTREACH, student supports, WORK-BASED LEARNING OPPORTUNITIES, direct hiring

Fiscal and policy advocacy

NOTE: The items in capital letters highlight the employer engagement activities used in this college-employer partnership.

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[16] See http://www.pnwu.edu/inside-pnwu/yvipec/

Phase 1: Getting Started

> *"It is pretty hard for an individual campus to see the trends emerging in various fields. The Centers were envisioned as a way to meet our systems goals around economic development and innovation."*
>
> **Leader, Washington State Board for Community and Technical Colleges**

Washington state started the COEs as a statewide economic development initiative in 2004. The SBTC selected 10 community and technical colleges to serve as COEs based on expertise in the targeted sectors. As codified by state statute in 2009, the SBTC allocates base funding to the colleges that host each of the COEs from state general funds. Staff at the SBTC envisioned the COEs as a way to promote coordination among community and technical colleges with a special focus on employer engagement. SBTC staff noted that it was difficult for individual colleges to monitor and respond to industry trends; the COEs were established as a way to support colleges in responding to industry and at the same time facilitate economic development. From early on, the Allied Health COE engaged employers in activities that include the following:

Advisory committees. The Allied Health COE collects information on employer needs through its advisory board, composed of representatives of individual employers and of industry associations. Working with industry organizations, like the Northwest Regional Primary Care Association,[17] means that the Allied Health COE does not have to communicate and interact with all the health-care providers in the state to understand their sometimes-disparate workforce needs, allowing the Allied Health COE to more efficiently collect and disseminate information. Advisory board members view engagement in the Allied Health COE as a means to build and access a better prepared workforce. In addition, advisory board members appreciate the opportunity to keep abreast of trends identified by other organizations or in other sectors of the health care field. At quarterly in-person and virtual meetings, advisory board members share their organization or association's workforce needs, focusing on KSAs required for in-demand roles and emerging labor market trends.

Curriculum development. The Allied Health COE does not itself develop curricula or programs. Instead, it focuses on bringing together faculty experts from colleges and providing them with up-to-date industry research to inform curricula. The Allied Health COE also helps translate the implications of state policy changes on curricula for faculty. The Allied Health COE connects employer advisers with curriculum developers to ensure new curricula are vetted by industry experts. This collaborative approach strengthens curricula and promotes consistency in health education and training programs across the state.

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[17] See http://www.nwrpca.org/

Phase 2: Implementation

During the implementation phase, the Allied Health COE has focused largely on collecting and synthesizing research on industry needs, translating these needs into best practices, and disseminating current information on workforce needs and training priorities to colleges in the state. They do this through meetings, regular email communication, and resources collected on the Allied Health COE's website.

"We recognized that there is a lot of value in training the future workforce that are going through community colleges and then recruiting them directly into positions at community health centers."

Leader, Northwest Regional Primary Care Association

In their ongoing efforts to connect employers and colleges, the Allied Health COE has collaborated with employers and colleges to support and promote activities that include the following:

Professional development for college faculty and staff. Three times a year the Allied Health COE plans and leads a meeting of the deans and directors of allied health programs from all the community and technical colleges in Washington state. The meetings focus on identifying health-care skills gaps and workforce demand issues, using information provided by industry partners, and developing solutions to address them.

In addition to working at the statewide systems level, the Allied Health COE also provides consultation on industry trends and workforce needs to leaders, faculty, and staff at individual colleges. For example, the Allied Health COE provides coaching and mentoring to college deans and program chairs on how to maximize the value of their partnerships with employers.

COMPANIES AND INDUSTRY GROUPS ON THE WASHINGTON STATE ALLIED HEALTH COE ADVISORY BOARD

- YAKIMA VALLEY MEMORIAL HOSPITAL
- NORTHWEST MEDSTAR – INLAND NORTHWEST HEALTH SERVICES
- SNOQUALMIE VALLEY HOSPITAL DISTRICT
- NORTHWEST REGIONAL PRIMARY CARE ASSOCIATION
- KITSAP MENTAL HEALTH SERVICES
- XEROX HEATLHCARE PROVIDER SOLUTIONS

Student recruitment and outreach. The Allied Health COE does not directly recruit students, but it has in some cases been integral in connecting colleges with employers who can provide financial incentives for students to enroll in specific training programs. Advisory board members also see partnering with community colleges through the Allied Health COE as a valuable channel for recruiting a diverse health-care workforce that will reflect the patients they serve.

Work-based learning opportunities. Work-based learning clinical placements for students are negotiated between individual colleges and employers. The role of the Allied Health COE has been to identify promising practices from various allied health programs and share

them with colleges across the state. For example, the Allied Health COE promotes more involvement from employers and community partners in developing standards and assessments for work-based learning placements.

In addition, the Allied Health COE participates in planning and facilitating events that bring together the health-care education, industry, and workforce development communities. For example, the Allied Health COE co-planned and moderated the Healthcare Futures Summit, a conference attended by businesses, industry groups, and educators to discuss the implications of health-care reform.

Phase 3: Sustainability

Because the COEs are funded directly by state statute, they have access to financial resources for the ongoing functioning of the program. The approach is already recognized as benefiting the state's community and technical colleges and health-care workforce.

"First of all you have to recognize that there's a purpose to come together. Then, identify those areas of interest that if you collaborated on, you might get more ultimate benefit."

**Leader, Allied Health Center
of Excellence**

The Allied Health COE director uses strategies gleaned from Collective Impact[18] — a framework that guides organizations from different sectors in solving social problems — to facilitate and sustain collaboration among businesses, industry groups, and colleges. The director promotes a shared vision, common agenda, and mutually reinforcing activities. He facilitates continuous communication and works to help the partners see the benefits of shared outcomes.

Benefits and Outcomes

Allied Health COE leaders and staff, college faculty and leaders, and advisory board members pointed to the relationships built through the Allied Health COE as its primary benefit. Collaboration through the Allied Health COE also provided mutual benefits, including those depicted in exhibit 11.

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[18] For more information visit http://www.fsg.org/ideas-in-action/collective-impact.

Exhibit 11: Benefits of employer engagement efforts in the Yakima Valley Community College's Allied Health Center of Excellence, by beneficiary

Colleges	Employers	Students
COE promotes efficiency by collecting and disseminating up-to-date information from multiple sources statewide at the systems level	Influence college curriculum to reflect workforce needs	Connections between colleges and employers support recruitment and hiring
Provides rural colleges with access to current information on industry trends	Build connections with local education and training providers	Curricula reflect up-to-date knowledge, skills, and abilities needed by industry
COE facilitates collaboration among colleges to update programs and solve challenges	Gain exposure to industry trends and training needs from colleagues in other organizations	
Community and technical colleges represented on statewide bodies related to health care workforce		

NOTE: "COE" here refers to Center of Excellence.

Because the Allied Health COE does not serve students directly, it does not quantify student outcomes. Rather, Allied Health COE leaders look for more qualitative indicators of their success. For example, they take the increased attendance of college leaders and industry representatives at their meetings as evidence of greater engagement and buy-in to their efforts to promote collaboration. They also look to programmatic changes reflecting their priorities at participating colleges — for example, in a greater focus on cross-disciplinary integration.

Challenges

At times, it has been challenging for employers and representatives of industry groups to find time and funds to participate in the work of the Allied Health COE. The Allied Health COE director works to overcome this participation challenge by (1) designing advisory board meetings so that busy members can attend virtually, saving them travel time; and (2) ensuring that business and industry representatives understand the return on investment from their participation, which allows them to see their time spent as an investment for their organizations.

Another challenge centers on the differences in the respective cultures of community and technical colleges and business and industry. The Allied Health COE acts as a bridge between these two groups, ensuring that the voices of both community and technical college

staff members and industry are heard and valued. Overall, the Allied Health COE has a role in making sure that business and industry representatives feel appreciated and understand the results of their efforts.

Lessons for the Field

The Allied Health COE has the following lessons to offer the field on engaging employers in community college programs:

- Ensure consistency in information on important KSAs and emerging trends through a statewide policy approach to engaging employers in community and technical colleges' programs.

- Gather emerging workforce trends and disseminate them to a network of colleges through a central statewide hub that links industry and colleges.

- Facilitate engagement between industry and community colleges by identifying shared interests and outcomes.

For more information about the Allied Health COE, visit
http://www2.yvcc.edu/coe/default.html.

CENTRAL PIEDMONT COMMUNITY COLLEGE — APPRENTICESHIP CHARLOTTE

Charlotte, North Carolina

⚙ MANUFACTURING

The College

Central Piedmont Community College (CPCC) serves more than 70,000 students in the Charlotte, North Carolina, metropolitan area. The college has sought to establish a culture of meeting employer needs with strong regional workforce development programs. CPCC has been involved in work-based learning and apprenticeships since the 1990s, initially serving as the educational partner in a consortium of companies that formed Apprenticeship 2000, and more recently in the creation of Apprenticeship Charlotte. CPCC's apprenticeship programs offer technical training opportunities to high school juniors and seniors as well as guaranteed employment after graduation from a four-year program.

> **SNAPSHOT**
>
> - *Service area: Local*
> - *Location: Urban*
> - *Field: Manufacturing*

Overview of Employer Engagement

As part of the Apprenticeship Charlotte initiative, CPCC partners with Siemens to offer apprenticeship programs for students in computer numerical control (CNC). CPCC also serves as the training hub for current Siemens employees and new hires. CPCC has a dedicated office and staff for employer engagement and apprenticeship programs that are heavily involved in the college-employer partnership. One of the coordinators is a former engineer who worked in industry prior to taking the position as an apprenticeship coordinator. Siemens also has staff members dedicated to the program: a coordinator who manages the apprenticeship program and a training manager who works with CPCC on customized training for current Siemens staff. These individuals work closely with CPCC in both the apprenticeship and customized training programs. The training manager previously worked in the North Carolina community college system and understands the culture at the college and how to navigate decision making and hurdles. Having dedicated staff members with clear roles and responsibilities has help build a

"Our vision is to be the national leader of workforce development. If we're going to be the leader in workforce development, we have to be demand-driven, we have to understand what employers need."

Leader, CPCC

trusting relationship on both sides.

Siemens brought its German roots in apprenticeships to its American locations and is a strong advocate for and believer in blending relevant classroom instruction with paid on-the-job training (OTJ).[19] The German apprenticeship model is apparent in the structure of the Siemens apprenticeship program. CPCC is responsible for 1,600 hours of classroom instruction, while Siemens provides 6,400 hours of OTJ during the four-year apprenticeship. Currently, there are 15 Siemens apprentices in the program, with six to seven new apprentices added every year.

Exhibit 12 highlights the employer engagement activities used by CPCC across three phases: getting started, implementation, and sustainability. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three. These activities are detailed in the subsequent sections.

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[19] Apprenticeship programs in Germany, also known as "dual training," combine classroom instruction at a vocational school with on-the-job training at a company in two- to four-year programs that range across sectors. Occupational profiles for each training program are standardized across the country. Apprentices are paid for their time during training. Collaboration between companies and public vocational schools is regulated by the *2005 Vocational Training Act* (see https://www.bmbf.de/pub/The_2005_Vocational_Training_Act.pdf). Several of the college-employer partnerships profiled in this report — including CPCC and Siemens, Chattanooga State Community College and Volkswagen, and Gateway Community and Technical College and Mubea — offer apprenticeships that are in part modeled after apprenticeships offered by the companies in their German branches.

Exhibit 12: Employer engagement activities in used by Central Piedmont Community College's Apprenticeship Charlotte program, by phase
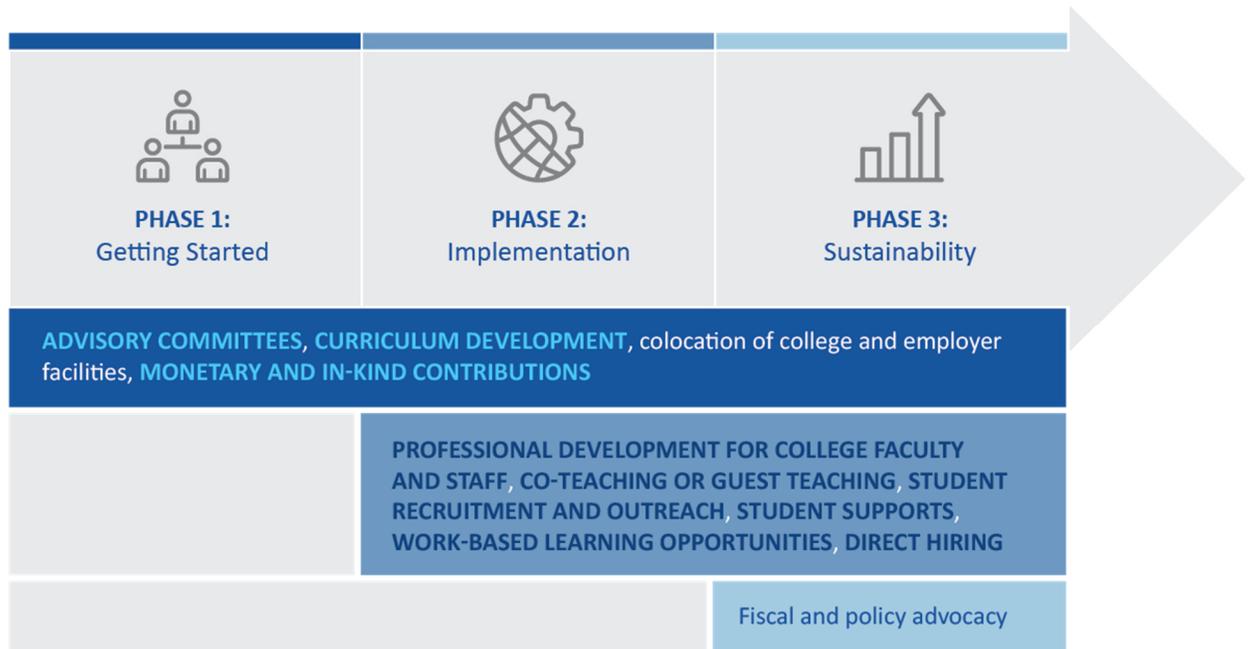
NOTE: The items in capital letters highlight the employer engagement activities used in this college-employer partnership.

Phase 1: Getting Started

CPCC's partnership with Siemens began in 2011 when the company moved its turbine production to the Charlotte area; 850 new employees were needed to fill its production demands, and skills for current employees needed upgrading. At the time, CPCC was already engaged in apprenticeship programs with other companies as part of the Apprenticeship 2000 program. CPCC's existing footprint in apprenticeship programs and its focus on economic and workforce development as part of its core mission led Siemens to partner with CPCC to help train current employees and new hires and build a workforce pipeline for the company.

CPCC's Corporate Learning Center identifies and serves the company's training needs at multiple levels. The relationship began with customized training for Siemens employees and new hires, but CPCC now serves as the training hub for the company. Over time, because Siemens needed its program to be more customized than Apprenticeship 2000 was able to provide, Siemens transitioned out of the Apprenticeship 2000 partnership and into Apprenticeship Charlotte. Apprenticeship Charlotte now provides a steady flow of apprentices that receive tailored classroom instruction coupled with on-the-job (OJT) training at the Siemens facility.

Beginning in this phase, and continuing through ensuing phases, CPCC and Siemens have collaborated on activities for the apprenticeship program that include the following:

Advisory committees. Siemens has participated regularly on advisory boards for CPCC's manufacturing programs and committees for apprenticeships, and the company has also collaborated with the program faculty on curriculum design.

Curriculum development. CPCC worked with Siemens employees to design a technical curriculum for industrial maintenance in its mechatronics program tailored to Siemens. The apprenticeship program follows clear guidelines developed for the Apprenticeship 2000 program.

Siemens' continued involvement in designing and updating curriculum is crucial to the program's success. Not only does its involvement ensure that students are being taught the knowledge and skills to make them successful at Siemens, but they can succeed at other companies, as well. Siemens has already mapped competencies for certifications, and CPCC endeavors to align its courses and curriculum with those competencies as it evolves.

Monetary and in-kind contributions. During planning for the college-employer partnership, both CPCC and Siemens dedicated resources to help initiate and grow the program. CPCC and Siemens share costs for running the apprenticeship program. In addition to funding dedicated staff members to run the program on the employer side, Siemens covers the cost of its apprentices' salaries and tuition. Siemens has also donated $32 million (retail value) worth of product lifecycle management software to CPCC, which benefits the entire manufacturing department.

Phase 2: Implementation

CPCC and Siemens' partnership has evolved over time. Siemens has shifted its need from mechatronics to CNC machining and reconfigured its apprenticeship program. During the implementation phase, CPCC and Siemens have collaborated on activities for the apprenticeship program that include the following:

Professional development for college faculty and staff. Siemens and CPCC jointly invest in professional development for faculty members, who all have prior industry experience. Siemens has offered eight CPCC faculty members and three CPCC administrators the opportunity to train at the Siemens Technical Academy in Berlin, Germany. CPCC has invested $120,000 in professional development tuition thus far, and there is increasing support from Siemens to continue to offer the opportunity. In addition to the Siemens Technical Academy, faculty members are working closely with Siemens staff members and leadership to stay current on the latest developments and skills needed in industry. In

helping keep the students' skills current, the faculty benefits as well. Siemens has been very satisfied with the quality of instructors that CPCC has selected to work in the machining program.

Co-teaching or guest teaching. CPCC faculty teaches customized training for Siemens employees based on the company's specific needs.

Student recruitment and outreach. Siemens and CPCC collaborate on student recruitment. CPCC has a long-standing relationship with the local K–12 system, workforce development board, veterans groups, and other community organizations, and thus, it is well-positioned to help Siemens recruit potential apprentices. Siemens and CPCC have worked jointly to educate students and their families about career opportunities in manufacturing.

Interested high school seniors attend an orientation in the spring of their senior year. Students must have at least a 2.8 grade point average (GPA) to apply, and they are screened for advanced math courses and attendance. Students who apply for the program are notified of their acceptance in June. Roughly 40–45 students complete a paid internship program at a partner employer during the summer while taking two courses at CPCC. This serves as a trial run for the apprenticeship program. At the end of summer, approximately 15–20 students are selected for the apprenticeship program that begins in the fall. The partners now work to recruit more nontraditional students (current workers, post–high school applicants, and veterans) with different entrance criteria in the apprenticeship program, in addition to traditional students out of high school. The program, however, remains a four-year program.

Student supports. Two full-time staff members at CPCC manage the apprenticeship program for the college through Apprenticeship Charlotte. Once students are accepted into the summer internship program with Siemens, college staff members assist with registering the students for the program and for classes.

The college ensures student success by tracking the students' grades and providing academic supports. The college communicates with Siemens about how the apprentices are doing academically. If any apprentice is struggling, the partners develop a support plan to ensure the apprentice stays on course. Despite the entrance requirements, some students come into the program underprepared in math, reading, and writing. In response, CPCC implemented tutoring programs and encouraged instructors to work more closely with these struggling students. This system of continuous monitoring and support was built over years of implementation and was informed by feedback from students, faculty, Siemens, and CPCC program staff.

Work-based learning opportunities. Apprentices practice knowledge and skills directly tied to their academic training during their 6,400 hours of required OJT at Siemens.

Direct hiring. The company hires most apprentices upon completion of the program.

Phase 3: Sustainability

Most CPCC and Siemens employees believe the apprenticeship program will continue to thrive and potentially expand into different technical areas. Both CPCC and Siemens have shared investments in the program. Both parties are also marketing the program and continuing to bring national attention to the apprenticeships. It is unclear whether Siemens will be able to support more than six to seven apprentices a year, but the apprenticeship coordinator is looking for additional support with hopes of expanding. Siemens continues to pay salary and tuition costs for apprentices. CPSS is committed to updating the program to meet Siemens' needs as the college-employer partnership progresses.

To support Siemens' hiring initiatives brought on by the expansion of the company's gas turbine plant, the state's NC Works Customized Training Project provided funds valued at $5 million to allow Siemens to train and teach new skills to both new and existing employees. Since the inception of the project, 2,083 classes representing nearly 21,000 hours of training have been provided. Because Siemens has met its hiring requirements for the plant's expansion, the funding stream will be ending; however, Siemens continues to work closely with CPCC to address other training needs.

In fall 2016, recognizing the benefits of apprenticeship programs such as that with Siemens, the state of North Carolina passed a bill providing tuition for any apprentice that started an apprenticeship while in high school to alleviate some of the employer costs.

Benefits and Outcomes

Employer engagement in Apprenticeship Charlotte benefits the college, employer, and students (exhibit 13).

The most beneficial aspects of the program for the college are the availability of work-based learning opportunities for students and the opportunities for most apprentices to obtain full-time employment after completing the program. The adapted German apprenticeship model is helpful because of its structure, paid OJT, and aligned curriculum. Siemens' input on curriculum, with an up-to-date and ever-evolving perspective from industry, has also been helpful to the college. Working with employers has provided the college — and students — with access to the latest skills and technology.

For Siemens, the most beneficial aspect of the partnership is the pipeline of skilled candidates that the program produces. Through customized training, Siemens can also teach new skills to their employees for a fraction of what it would cost otherwise and work with CPCC to design the training. Students benefit by receiving valuable degrees and credentials, while earning wages as apprentices. The four-year program results in the following degrees and certifications: an Associate of Applied Sciences (AAS) degree in computer-integrated machining technology or mechatronics engineering technology, a journeyman's card, a certificate by the State of North Carolina, and a certificate from the U.S. Department of Labor.

Exhibit 13: Benefits of the Central Piedmont Community College's Apprenticeship Charlotte program, by beneficiary

College	Employer	Students
Availability of work-based learning opportunities for students	Access to a pipeline of skilled graduates	Gain valuable degrees and credentials
Up-to-date curriculum	Cost-effective way to learn or teach new workforce skills	Earn wages while completing training
Access to the latest technology		Access to jobs after completing the program

Outcomes of the program have been promising. All apprentices in the first cohort received full-time employment with Siemens upon completion of the program. In subsequent cohorts, around 80 percent of graduating apprentices continued into full-time employment with Siemens.

Challenges

As with any program, both CPCC and Siemens have navigated challenges. First, the speed of change in industry versus the community college system is very different. While industry responds to change quickly, community colleges often must follow slow processes and procedures. This is sometimes difficult for the program, but both CPCC and Siemens have employees who have worked on both sides of the industry–education cultural divide. Employees at both partners allude to the value of "knowing how to speak the language," — of having employees with experience in both industry and education — to assure a strong college-employer partnership.

> *"I think it's important for an industry partner to understand the confines that educational partners work in."*
>
> **Staff, CPCC**

The timeline of the Apprenticeship Charlotte program presents a logistical challenge. Following a rigorous, multistep recruitment and application process that spans most of their senior year, students are notified of their acceptance to the summer program in June. For those students who are deciding between the program and attending a university, June is often too late to notify the university of their intent to register. Therefore, the program loses students who choose to attend a university instead.

The stigma around career and technical education (CTE) and manufacturing continues to be a persistent challenge. High school counselors and teachers are ill-informed about the highly skilled nature of advanced manufacturing, and the culture at most schools favors student attendance at four-year universities.

Lessons for the Field

Apprenticeship Charlotte has the following lessons to offer the field on engaging employers in community college programs:

- Secure leadership buy-in from the top to promote an employer-friendly environment that attracts employer partners.

- Hire dedicated staff members to engage employers, run employer-driven initiatives, and ensure programs are responsive to employer needs. This sometimes requires working in a different way than is typical for the college.

- Hire staff and faculty who have experience in industry and can communicate with employer representatives.

- Communicate often and openly with employer partners to build solid relationships and institutional-level trust.

- Continually update programs based on feedback from employer partners.

- Rely on industry partners to keep program content up to date with industry standards.

For more information about Apprenticeship Charlotte, visit http://www.cpcc.edu/workplacelearning/Apprenticeships.

CHATTANOOGA STATE COMMUNITY COLLEGE — VOLKSWAGEN ACADEMY

Chattanooga, Tennessee

⚙️ MANUFACTURING

The College

Chattanooga State Community College (Chattanooga State) serves more than 10,000 students in southeastern Tennessee. The college campus houses one of the state's 27 Tennessee Colleges of Applied Technology (TCAT), which offers 20 one-year technical diplomas and six certificates. Through its Workforce Development office, the college offers worker training and assessments for business and industry partners in the Chattanooga region. Chattanooga State is driven by its mission as a community college to meet the needs of the regional economy; in recent years, the college has developed and implemented new programs focused on skilled trades to meet the demands of major employers coming into the area.

Overview of Employer Engagement

The Volkswagen Academy, a partnership between Chattanooga State and Volkswagen Chattanooga, offers apprenticeships in its Automation Mechatronics Program (AMP). In addition, the Volkswagen Academy serves as a training facility for current Volkswagen employees and offers a high school academy that introduces students to the mechatronics field. The AMP apprenticeship is guided by Volkswagen's German apprenticeship model and global standards, blending classroom instruction with hands-on experiences and paid OJT. Apprenticeship graduates earn an AAS degree and certification from the German American Chamber of Commerce. Nearly all graduates are placed in employment at Volkswagen Chattanooga. In the 2015–16 school year, 12 apprentices graduated from AMP.

> **SNAPSHOT**
>
> - *Service area: Local*
> - *Location: Urban*
> - *Field: Manufacturing*

"I like it because we have the input as to the way the curriculum goes… When they graduate, we try to get them as much 'plug and play' as possible."

Employee, Volkswagen

The first cohort of 20 AMP apprentices entered the academy in the fall semester of 2010 as part of Chattanooga State's TCAT. After the first two cohorts, the number of students in each annual cohort was reduced from 20 to 12 as hiring

needs at the plant stabilized in order to improve instructor-student ratios and make equipment more available for apprentices. The AMP program's curriculum and structure are continually updated for improvement based on experience; for example, the program shifted after the 2011–2012 school year from TCAT's technical certificate model to a credit-bearing, AAS degree-granting program that allowed for the inclusion of rigorous academic content. Also in 2011–2012, the program added a new specialization in car mechatronics, which focused on vehicle maintenance.

In the 2016–17 school year, the partnership added the Mechatronics Akademie,[20] a two-year program that would introduce 24 Hamilton County high school juniors to mechatronics. The Mechatronics Akademie offers high school students dual credit and dual enrollment opportunities, as well as a pathway to Chattanooga State's AAS in engineering systems technology with only one additional year of postsecondary study.

Exhibit 14 highlights the employer engagement activities used across three phases: getting started, implementation, and sustainability. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three. These activities are detailed in the subsequent sections.

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[20] See https://www.chattanoogastate.edu/high-school/mechatronics-akademie

Exhibit 14: Employer engagement activities used by Chattanooga State Community College's Volkswagen Academy, by phase
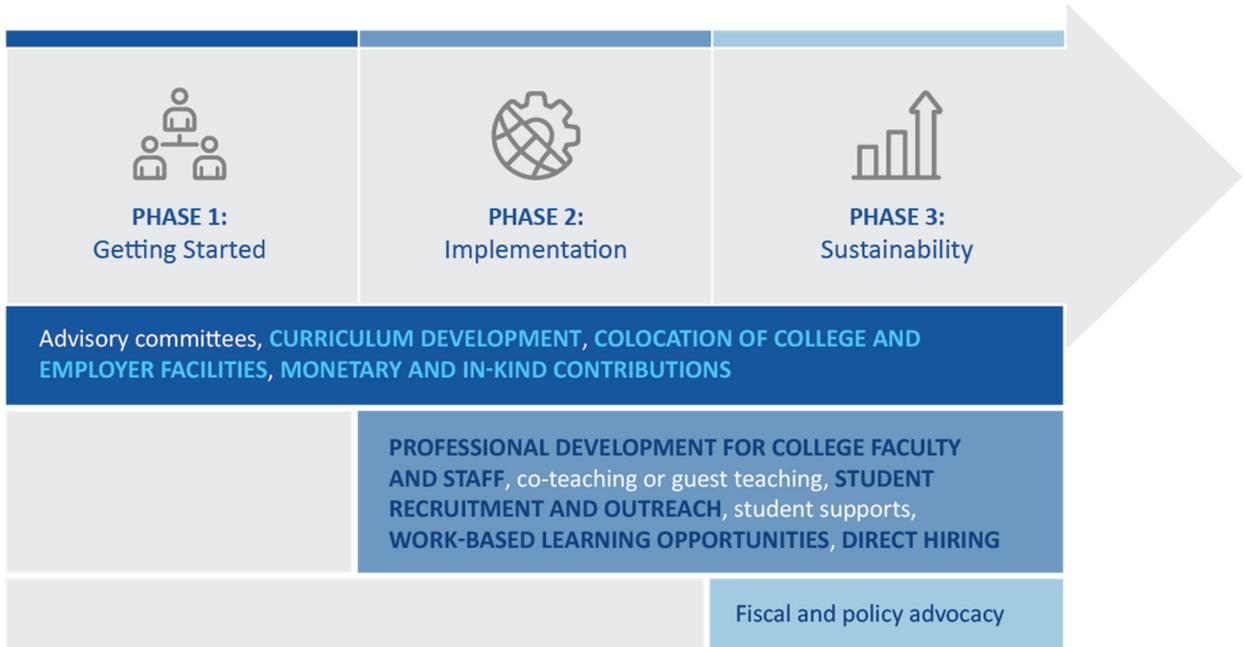
PHASE 1: Getting Started	PHASE 2: Implementation	PHASE 3: Sustainability

Advisory committees, **CURRICULUM DEVELOPMENT**, **COLOCATION OF COLLEGE AND EMPLOYER FACILITIES**, **MONETARY AND IN-KIND CONTRIBUTIONS**

PROFESSIONAL DEVELOPMENT FOR COLLEGE FACULTY AND STAFF, co-teaching or guest teaching, **STUDENT RECRUITMENT AND OUTREACH**, student supports, **WORK-BASED LEARNING OPPORTUNITIES**, **DIRECT HIRING**

Fiscal and policy advocacy

NOTE: The items in capital letters highlight the employer engagement activities used by Chattanooga State Community College and Volkswagen Academy in this college-employer partnership.

Phase 1: Getting Started

The opening of Volkswagen's only U.S. plant in Chattanooga was announced in 2008, and shortly thereafter the plant was rapidly constructed and the workforce onboarding. Chattanooga State's relationship with Volkswagen began during startup of the plant as a training and assessment provider. According to college leaders, Volkswagen chose Chattanooga State as its training partner because of the college's agility, ability to quickly develop programs to meet company needs, and its ongoing commitment to maintaining strong relationships with industry partners.

During ramp-up of the Volkswagen facility, the company asked Chattanooga State to develop a training program in automotive mechatronics that would prepare and supply skilled workers for the plant. Beginning in this phase, and continuing through ensuing phases, Chattanooga State and Volkswagen have collaborated on activities that include the following:

Curriculum development. During planning for the Volkswagen Academy, college and business leaders collaborated to develop the academy's curriculum and course sequence; this curriculum drew heavily on existing German curricular resources and learning objectives, with some tweaks made to fit the different structure and expectations of the American

educational system. Today, with the partnership up and running, curricular input from Volkswagen is less frequent, though the partners remain committed to flexibility to meet their mutual needs. For example, there are continual updates to the curriculum to reflect changing technologies in the plant, changes to scheduling, and fluctuating numbers of apprentices enrolled.

Colocation of college and employer facilities. The Volkswagen Academy facility is colocated with the Volkswagen assembly plant on a campus in Chattanooga. As the training program was developed, the Volkswagen Academy facility was also being built, funded by a $40 million grant from the Tennessee Department of Economic and Community Development (TNECD). Chattanooga State acted as fiscal agent of a $16 million grant that supported training for Volkswagen employees as well as the academy's apprenticeships. The college was chosen as fund administrator because it had "ready-to-go" mechanisms in place for managing large funding streams.

Monetary and in-kind contributions. Both partners commit monetary, human, and in-kind resources to the Volkswagen Academy. The TNECD grant covered most Volkswagen Academy expenses in its first five years, including facilities and equipment and some salary support for Chattanooga State employees. With that grant's expiration in 2015, both partners have absorbed some expenses. Volkswagen now covers operating costs for the Volkswagen Academy facility. Volkswagen pays apprentices' salaries during OJT semesters and provides a partial tuition stipend to students during classroom instruction, roughly the equivalent of one course per semester. The company has also purchased students' books.

Chattanooga State treats the academy as an academic department, with funding from a mix of tuition and various state and federal sources. The college now covers salaries for its four full-time Volkswagen Academy faculty members, and Volkswagen remunerates the college for a portion of the Chattanooga State salary expense. The college also assumes support for consumables required by the program. For some students, the Tennessee Promise scholarship[21] covers two years of their tuition in the program. The college also helps students find additional scholarships and resources to cover tuition.

Phase 2: Implementation

There is currently no official industry advisory committee to the program, but ongoing communication still occurs, and the partners collaborate on several activities during the implementation phase. At weekly meetings between coordinators on each side, sometimes attended by senior managers, the partners discuss details of ongoing program operations,

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[21] See https://www.tn.gov/collegepays/article/tennessee-promise-scholarship

such as students' progress, logistics and scheduling, equipment, and financial support. Over time, the partnership has evolved from a largely Volkswagen-driven contract approach to a more complementary relationship between the college and employer.

Student recruitment and outreach. Both partners contribute to student recruitment efforts, which include representation at college and career fairs at local secondary schools, including some presentations for eighth-graders. They also host public open houses at the academy facility. Chattanooga State supports limited advertising for the apprenticeship on radio and billboards. Going forward, apprentice positions will also be posted on Volkswagen's job board. The partners have found word-of-mouth from those involved with the program to be their best recruitment tool. With these recruitment strategies in place, applications typically exceed the number of positions open in the program. Both Chattanooga State and Volkswagen representatives are included in interview teams and the final selection of apprentices. Cohorts generally are a mix of traditional college-age students and nontraditional students from a variety of backgrounds.

Work-based learning opportunities. Apprentices begin with two semesters of classroom instruction in the fall of their first year. Early classroom instruction focuses on foundational skills, including the use of hand tools, which introduce the basics behind the work students will practice later with automated equipment. The first semester also incorporates a college and work success class to introduce employability skills that will be emphasized throughout the program. During classroom semesters, instructors practice a mix of 30 percent lecture to 70 percent hands-on lab experience.

"I think it's a great way to learn…If I'm going to take you out in the class, then the shop …that immediate return, they immediately connect to that. I just think it is the best way to teach."

Instructor, Volkswagen Academy

For the remaining seven semesters, students alternate between classroom instruction and OJT. Apprentices are paid a starting wage of $10 an hour in their first semester of OJT, with hourly pay increasing in each subsequent OJT semester. In their third semester overall, and first in OJT, all apprentices gain experience on the production line of the Volkswagen plant to understand the basics of assembling vehicles. In subsequent OJT semesters, they cycle through placements in several departments in the plant, first shadowing plant employees, and then gradually moving to more hands-on responsibilities. The program strives to place students in their last OJT semester in the same department in which they will eventually be placed upon graduation. Throughout OJT, students are enrolled in a one-credit course at Chattanooga State to maintain enrollment at the college.

Leaders from the college and Volkswagen shop managers meet each semester to discuss the overall progress of their apprentices, with the OJT placements serving as a "preview" of work performance for hiring managers at Volkswagen.

The level of staffing has shifted slightly over time, with more Chattanooga State and Volkswagen employees directly engaged in Volkswagen Academy activities at earlier stages of the partnership. Currently, four full-time Chattanooga State faculty members teach apprentices on-site at the academy, with additional faculty visiting periodically from the main campus for instruction on specific topics that include general education requirements. Likewise, faculty housed at the academy sometimes teach courses on Chattanooga State's primary campus. Another Chattanooga State faculty member teaches safety courses at the Volkswagen Academy for both plant employees and apprentices.

Volkswagen employees in the plant are engaged as OJT supervisors, while HR representatives participate in planning for the Academy and assessing workforce needs that inform the apprenticeship. For these employees, their duties with the Volkswagen Academy are written into their job descriptions as essential functions.

Direct hiring. Once admitted to the apprenticeship program, students are offered a provisional hiring commitment from Volkswagen pending successful completion of the program. Students who successfully complete the apprenticeship are made a firm offer of employment at Volkswagen. A subset that is not placed in employment may have left the program early, decided to pursue further education, or relocated.

Phase 3: Sustainability

Both partners remain committed to the Volkswagen Academy, even as the TNECD grant ends, and maintaining resources for the academy has become more challenging. Leaders on both sides have hammered out the contractual details of who will pay for what going forward. They plan to maintain the college-employer partnership at its current level, or close to it, and see their mutual work in support of the Volkswagen Academy increasingly becoming a "well-oiled machine." They will continually update the curriculum to reflect industry needs in the future, such as the increasing production of electric cars. Can

The Volkswagen Academy is still relatively young. The balance between Volkswagen's hiring needs and skilled expertise in local workers may stabilize, so the partners are considering the potential role in the academy of Volkswagen suppliers, whose needs for expertise overlap to some extent with Volkswagen's itself. The Volkswagen Academy facility is large enough to handle additional apprentices, possibly from Volkswagen suppliers. The partners also plan to continue their investments in building stronger relationships with local secondary schools to

strengthen the workforce pipeline into the Volkswagen Academy and, eventually, into employment in the region.

Benefits and Outcomes

Volkswagen Academy faculty members benefit from being able to incorporate Volkswagen's needs and current industry standards directly into their curricula. Faculty can also participate in ongoing professional learning delivered to Volkswagen staff. For the college as a whole, the partnership boosts its credibility and in doing so improves its ability to meet the needs of the regional economy and respond to industry needs. The successful partnership with an employer as large as Volkswagen gives their college programs cachet, into additional partnerships with other local large manufacturing employers.

Volkswagen remains interested in gaining access to skilled employees in the region to provide a stable workforce at its plant. The apprenticeship pipeline has been reliable in filling Volkswagen's maintenance positions. Managers at the plant, meanwhile, appreciate the manpower of having apprentices in their shops. The operational structures already in place at Chattanooga State have also eased the hectic process of building and staffing a large plant and developing reliable training programs.

"The part that's most interesting from an HR perspective, and why I think the HR department really supports it, is looking at workforce stability."

Employee, Volkswagen

Apprentices who graduate from the Volkswagen Academy earn an AAS from Chattanooga State and certification from the German American Chamber of Commerce, which is recognized in other Volkswagen locations. Most significantly, the majority of Volkswagen Academy graduates are qualified for and placed in more advanced jobs within Volkswagen than they would without the apprenticeship training. During their last two years of high school, Akademie students can earn more than 40 credits towards their AAS. The Akademie also represents an opportunity for Hamilton County Schools to build stronger links with local industry.

Exhibit 15 details the mutual benefits to the college, the company, and students from involvement in the Volkswagen Academy.

Exhibit 15: Benefits of employer engagement efforts in the Chattanooga State Community College's Volkswagen Academy, by beneficiary

College	Employer	Students
Ability to incorporate employer needs directly into curriculum	Stable workforce pipeline	Graduate with valuable degrees and credentials
Professional development for faculty provided by employer	Apprentices add value at workplace	Employment upon graduation
Increased reputation because of association with employer	Support in staffing new plant	Earn college credit and wages while completing on-the-job training

Outcomes for the program have been promising. In the first semester of the high school Mechatronics Akademie, launched in 2016, secondary students' GPAs increased, and attendance was nearly 100 percent. Chattanooga State reports that the overall graduation rate for the AMP program is 60 percent, and that 100 percent of the graduates were offered positions with Volkswagen.

Challenges

The biggest challenges confronting the Volkswagen Academy have involved cultural differences of higher education and industry in Germany and the United States. Early on, it was challenging to bring U.S.-based workers to understand, accept, and adapt to the German apprenticeship model. Moreover, the different paces of change at the college versus the company have proved an ongoing conundrum. The rapid pace of decision making and action at Volkswagen have confronted the college's slower pace — for example, gaining state-level approval for curriculum changes takes longer than Volkswagen expected. Maintaining clear boundaries between apprenticeship activities that are carried out for the company versus those carried out for the college purely as training exercises has also at times been vexing. Although the learning curve has been steep, over time the partners have come to better understand how the other works.

> *"There is a speed difference… That was probably the biggest difference, is having to find a happy medium where we could speed up enough to meet Volkswagen slowing down."*
>
> **Employee, Volkswagen**

Lessons for the Field

The partnership between Chattanooga State and Volkswagen has the following lessons to offer the field on engaging employers in community college programs:

- Lean on existing resources and models to build a program that meets each partner's needs.

- Consider how to balance enrollment in training programs with hiring needs of the employer.

- Invest in understanding the unique needs of employer partners so their interests are addressed. Both partners should be flexible in adjusting the way they work.

- Colocate college faculty and staff at the employer partner to facilitate communication and continual improvement in the program.

- Include instructors in planning curriculum and equipment purchases to ensure they have the needed materials on hand to teach.

- Address the struggle that students, families, and secondary school advisers confront in order to see technical training as a viable education and employment pathway. Start recruitment efforts early, and offer dual enrollment programs for high school students to help redress any negative perceptions.

For more information about Volkswagen Academy, visit https://www.chattanoogastate.edu/engineering-information-technologies/partnerships/vw-academy.

GATEWAY COMMUNITY AND TECHNICAL COLLEGE — ADVANCED MANUFACTURING TRAINING PROGRAMS

Florence, Kentucky

MANUFACTURING

The College

Gateway Community and Technical College (Gateway) serves nearly 5,000 students in northern Kentucky, just outside of Cincinnati. The college offers credits in more than 30 subject areas and focuses on preparing students for careers. Gateway's goal in all its programming is to ensure employment for its students and graduates. Through its Gateway Workforce Solutions division, the college provides continuing education, testing, and customized training to local employers.

Overview of Employer Engagement

Gateway collaborates with more than 20 manufacturing companies in the northern Kentucky region, largely to address shortages in skilled workers to fill open positions. In 2010, Gateway opened the Center for Advanced Manufacturing at their Boone campus, strategically located centrally around many local manufacturers to ease collaboration.

> **SNAPSHOT**
>
> - *Service Area: Local*
> - *Location: Suburban*
> - *Field: Manufacturing*

One example of Gateway's collaboration with local manufacturers is its work with Mubea, a lightweight vehicle parts manufacturer based in Germany. Gateway and Mubea partner on a range of apprenticeship and training programs at their Florence, Kentucky, facilities. These programs are developed cooperatively, with significant input from the employer on the design and content of each.

Gateway and Mubea engage on programs that include the following:

- **The Customized Apprenticeship Program**. The customized apprenticeship that Gateway developed with Mubea is a 3 1/2-year program in which apprentices work full time at Mubea while attending 20 hours of classroom instruction per week at the college.

- **The Advanced Manufacturing Technician (AMT) program**. The AMT is a two-year associate degree track developed through the Kentucky Federation for

Advanced Manufacturing (KY FAME)[22] initiative. Manufacturing companies established KY FAME to build and support apprenticeships and apprenticeship-style programs in regions across the state. Regional KY FAME chapters engage local education partners to help develop and administer apprenticeships. Mubea is one of 13 sponsoring companies in the northern Kentucky region, and its training manager serves as the chapter president; Gateway was selected as the local education partner because of its existing relationships with manufacturers. Gateway's AMT apprenticeship is modeled after a program between Toyota and Bluegrass Community and Technical College in Lexington, Kentucky.

- **The Enhanced Operator Program**. This 16-week competency-based program was designed by local employers to address their common needs for specific skills in machine operators. The hybrid online and hands-on training leads to an Enhanced Operator Certificate, a locally recognized industry credential.

Although the specific academic pathways that students follow in each of these three programs are different, common threads include close collaboration between the college and employer on planning and implementation and support for students from dedicated staff members at both partners.

Gateway employs an apprenticeship coordinator to manage apprenticeship programs and serve as the primary point of contact for employer partners. Nine full-time instructors teach advanced manufacturing courses. Five years of experience in industry is the minimum required to teach technical courses, although most instructors have more. The Manufacturing Engineering Technology program pulls in part-time instructors to meet demand for its offerings, but the college struggles to find high-quality instructors who are available and willing to teach full time.

Mubea's training manager has been heavily involved in the apprenticeship programs, starting with design and continuing through ongoing instruction, advising, and support. Mubea also employs a training coordinator, who manages logistics for the apprenticeships and advises apprentices. Mubea employees mentor apprentices one-on-one to address technical skills.

Exhibit 16 highlights the employer engagement activities used by Gateway across three phases: getting started, implementation, and sustainability. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three. These activities are detailed in the subsequent sections.

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[22] See http://kyfame.com/

Exhibit 16: Employer engagement activities used by Gateway Community and Technical College and Mubea, by phase
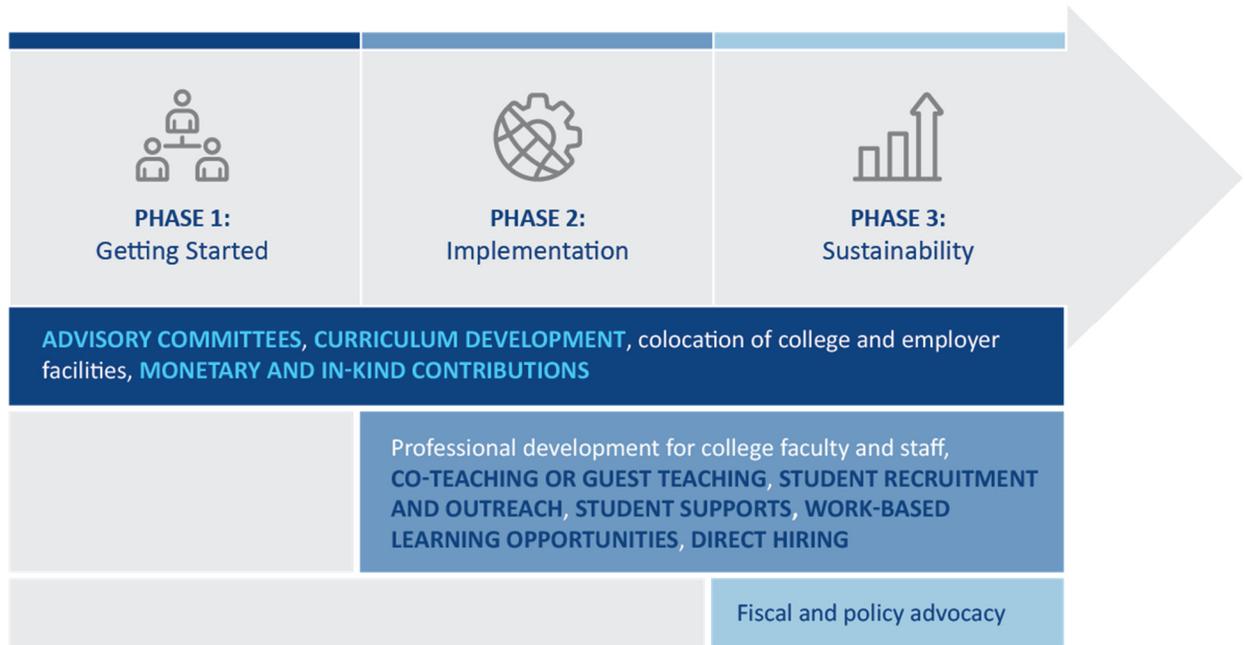
PHASE 1: Getting Started	PHASE 2: Implementation	PHASE 3: Sustainability

ADVISORY COMMITTEES, **CURRICULUM DEVELOPMENT**, colocation of college and employer facilities, **MONETARY AND IN-KIND CONTRIBUTIONS**

Professional development for college faculty and staff, **CO-TEACHING OR GUEST TEACHING**, **STUDENT RECRUITMENT AND OUTREACH**, **STUDENT SUPPORTS**, **WORK-BASED LEARNING OPPORTUNITIES**, **DIRECT HIRING**

Fiscal and policy advocacy

NOTE: The items in capital letters highlight the employer engagement activities used in this college-employer partnership.

Phase 1: Getting Started

Gateway's partnership with Mubea began with providing pre-hire assessments and incumbent worker training in 2005. This existing relationship strengthened in 2012 with the development of the customized apprenticeship programs, in 2015 with the advent of the AMT apprenticeship, and in 2016 with the establishment of the enhanced operator training.

Beginning in this phase, and continuing through ensuing phases, Gateway and Mubea have collaborated on activities for each of their education and training programs that include the following:

Advisory committees. The college runs a separate advisory committee for each academic program in advanced manufacturing. Mubea staff members attend twice-yearly advisory committee meetings for the academic programs relevant to its business. These committees advise Gateway faculty and staff on curriculum and equipment, which has led to both curriculum changes and new equipment purchases.

Curriculum development. The customized apprenticeship, AMT apprenticeship, and the enhanced operator training each incorporate some combination of hands-on and classroom or online learning. All curricula were codeveloped by Gateway and employer partners. On

the academic side, student success in the training programs is tracked by course grades, persistence, graduation, and credentials received.

- *Customized apprenticeship.* Mubea initially considered developing this apprenticeship in-house, drawing on its apprenticeship model in Germany. The company eventually turned to Gateway to incorporate more academic preparation. Mubea seeks to model its apprenticeship after the company's German apprenticeship, with adaptations for the American educational system and Kentucky's curriculum requirements. Mubea staff members travel regularly to Germany to learn from the more established apprenticeship program there. Curriculum input from Mubea over time has resulted in changes, such as adding a German language class focused on technical vocabulary and requiring students to convert measurements from the imperial to the metric system.

  Mubea apprentices in the customized apprenticeship program attend their classes along with Gateway students in the general manufacturing pathway. The apprenticeship program is academically rigorous, requiring students to complete over 100 credits of instruction at the behest of Mubea, whereas a typical Gateway associate degree requires only 66 credits.

- *AMT.* The curriculum for the AMT was co-designed among Gateway and the 13 KY FAME manufacturers in the Northern Kentucky chapter. In contrast to the customized apprenticeship, the AMT is a cohort-based approach in which students take courses exclusively with other apprentices. KY FAME encourages graduating apprentices to obtain their bachelor's degree through transfer agreements with four-year universities in the state.

- *Enhanced operator.* The curriculum for the enhanced operator training was designed by Gateway and 16 sponsoring companies to meet the demand for specific skills in machine operators.

Monetary and in-kind contributions: Mubea's apprenticeship programs are funded directly by the company, which has invested more than $2 million in building its future workforce. In addition to paying apprentices' salaries, the company covers tuition, fees, and books. Mubea has also invested significantly in equipping a separate lab for apprentices at the company's training facility.

"Keep that open mind. Work together, not against each other … You just need to throw all the egos to the side, roll up the sleeves, and find compromises and work together."

Staff, Mubea

Phase 2: Implementation

During the implementation phase, Gateway and Mubea have collaborated on activities for each of their education and training programs that include the following:

Co-teaching or guest teaching. Mubea's training manager regularly visits Gateway classes to observe, evaluate, and make suggestions using a checklist adapted from Mubea's German apprenticeship program. The training manager also occasionally-guest teaches class sessions.

Student recruitment and outreach. Gateway and Mubea recruit students through visits to local high schools, open houses and job fairs, radio and online advertising, and tours of Gateway and local companies. Recently the partners have extended their recruitment efforts into middle schools. Current apprentices sometimes accompany Gateway and Mubea staff members to recruiting events. Mubea makes admission decisions for apprentices, and applicants follow the hiring process at Mubea. With these recruitment efforts, the Customized Apprenticeship Program has become more selective over time. About 65 percent of the students selected for customized apprenticeships are typically traditional college-age students, while the rest are a mix of nontraditional students and veterans. The average age of starting AMT students is about 25, older than the traditional college-age student.

Student supports. Gateway's apprenticeship coordinator supports students through the admissions process, placement testing, course registration, and academic advising. The training coordinator at Mubea also meets with apprentices one-on-one to help them balance academic and work commitments. Gateway and Mubea staff meet regularly to discuss whether students need additional support in the classroom or on the job, and, if so, how they can address those problems in an approach one staff member described as "all hands on deck for student support." Apprentices who need additional help are offered tutoring at the college or additional customized on-the-job training at Mubea.

Work-based learning opportunities. Students in the customized apprenticeship and AMT serve practicums at Mubea while they complete their Gateway coursework. Mubea tests apprentices and assesses their performance during work rotations.

- *Customized apprenticeship.* Students work full time at Mubea from the beginning of the customized apprenticeship. In the last year of the apprenticeship, top performers are given the opportunity to travel to Mubea's German branch for a cultural exchange. Gateway and Mubea strive for continuity between what students learn in the classroom and practice at Mubea.

"The students coming out [of the apprenticeship program] now get the most up-to-date training they possibly can, instead of us set teaching the old way … And all that's because of the industry."

Instructor, Gateway

- *AMT.* Students attend class at Gateway two days a week and work at sponsoring manufacturers three days each week. Students study and practice topics including electricity, fluid power, mechanics, fabrication, troubleshooting, and problem solving.

Direct hiring. Mubea considers its partnership with Gateway an investment in building its workforce and, accordingly, hires most apprentices.

- *Customized apprenticeship.* Students in the customized apprenticeship programs are hired as Mubea employees at the outset of their training. They are paid hourly wages starting at $14.30, with progressive increases up to $26 an hour upon its completion.

- *AMT.* Apprentices receive wages from sponsoring companies for their work during the training program. Although apprentices are not guaranteed employment, employer sponsors commit to granting interviews, and most apprentices are hired.

Phase 3: Sustainability

At present, both partners are satisfied with the existing apprenticeship programs and have no plans to diminish or eliminate them. Mubea and Gateway plan to sustain the cooperative activities they have implemented and engaged in thus far. Because company funds support the apprenticeship programs, sustainability will depend largely on the continued strength of Mubea's business. The company and college are committed to the KY FAME program for at least two more years, and additional technical tracks are being planned in the AMT apprenticeship program.

> *"Ultimately, when you're talking about apprentices, [success is] 'How satisfied is the apprentice with their job and how satisfied is the company with their employee?'"*
>
> **Staff, Gateway**

Benefits and Outcomes

At present, both partners are satisfied with the existing apprenticeship programs and have no plans to diminish or eliminate them. Ultimately both Gateway and Mubea look to whether graduating apprentices are retained by the company and advance within it as their primary measure of success for the college-employer partnership. Beyond this measure, however, partners recognize the many benefits of the collaboration — for the college, the employer, and students (as shown in exhibit 17).

Exhibit 17: Benefits of employer engagement efforts in the Gateway Community and Technical College-Mubea partnership programs, by beneficiary

College	Employer	Students
Maintain enrollment numbers	Influence college curriculum to reflect workforce needs	Earn credentials and degrees
Up-to-date curricula based on industry trends and needs	Raised visibility helps recruitment and quality of applicants and new hires improves	Paid employment during apprenticeships and direct hiring by employer partners after completion
Faculty gain knowledge of current equipment and in-demand skills	Build and maintain local highly skilled workforce	Tuition, fees, and books paid by the company

Students participating in the customized apprenticeship, AMT, and enhanced operator training are better prepared for employment, and at the same time earn academic credentials. Customized apprenticeship participants earn an AAS degree, as well as a journeyman license from the state of Kentucky and an average of nine additional credentials, including from the American Welding Society. Mubea has hired nearly all apprentices for permanent employment once they have completed their training. AMT students earn an AAS degree and AMT certification. Enhanced operator participants earn the locally recognized Enhanced Operator Certificate, receive preparation for the Lean Six Sigma Yellow Belt[23] certification exam, and earn college credit that can be applied to an AAS degree.

"When a company comes to us and says, 'We want to hire these people,' and then sends them to you for training, that's a no-brainer. It serves the students, it serves the local economy, it serves the company; it just is a good thing to participate in all around."

Staff, Gateway

Challenges

Like some other colleges profiled in this report, in recruiting Gateway confronts a stigma around community colleges in general, and manufacturing in particular. The college and the company are both working to recast the image of manufacturing as a high-skilled, high-tech sphere, particularly among skeptical students, parents, and counselors.

At the college, the Manufacturing Engineering Technology program has found it difficult to find and hire highly qualified full-time instructors to meet the demand for their courses. Juggling lab time, space, and equipment can also be challenging. To address these problems, the college has developed modular training units that can be easily switched out so that students and instructors can devote the time to learning that they would otherwise spend on

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[23] See https://www.6sigma.us/six-sigma-yellow-belt.php

setting up their lab spaces They have also scheduled classes on weekends and evenings to make the most of lab time and space.

The requirement for state-level curriculum approval means that Gateway cannot always be as responsive to curricular input as Mubea might like, but the college can make minor adjustments or additions at the company's request. Although Mubea representatives have found this rigidity frustrating, open lines of communication and opportunities to discuss their different perspectives have kept the partnership functioning smoothly.

> *"Efficiency, productivity. That's where we don't really see eye to eye sometimes."*
>
> **Staff, Mubea**

Lessons for the Field

The partnership between Gateway and Mubea provides the following lessons to offer the field on engaging employers in community college programs:

- Senior leaders at both the college and the employer should encourage employer engagement. State-level investment also creates a supportive context for employer engagement.

- Approach employer partners with a customer service orientation, listen closely to partners' needs, and strive to respond to employer partners' requests.

- Hire dedicated staff to manage college-employer partnerships so that instructors and technical staff members can concentrate on what they do best.

- Consider strategies for attracting and retaining instructors that allow some flexibility, such as recruiting retiring professionals who are no longer working full time or making evening classes available for part-time instructors.

For more information about customized apprenticeships at Gateway, visit https://gateway.kctcs.edu/workforcesolutions/Customized%20Apprenticeship.aspx.

For more information about the AMT apprenticeship, visit https://gateway.kctcs.edu/academics/stem_education/advanced_manufacturing_program/about_the_amt_program.aspx.

PUEBLO COMMUNITY COLLEGE — CHAMP

Pueblo, Colorado

⚙ MANUFACTURING

The College

Pueblo Community College (PCC) serves just over 5,000 students, many of them from rural communities, at three campuses in southern Colorado. Employer engagement at PCC is guided by an expectation from the very top that the college will say "yes to everything" in responding to employer requests, and that the college's reason for existence is to serve its community and local industry. PCC leaders view education, workforce, and industry as a "three-legged stool" that supports both students and employers. College staff members consider themselves the "connector" between the goals of students and the needs of employers.

Overview of Employer Engagement

Advanced manufacturing in Colorado has seen increased production in recent years and was a $22.6 billion industry in the state in 2016, according to the Bureau of Economic Analysis in the U.S. Department of Commerce.[24] Many Colorado manufacturing companies that are seeking to hire, however, confront a serious shortage of skilled workers. The Colorado Helps Advanced

> **SNAPSHOT**
>
> - *Service Area: Statewide, nine colleges*
> - *Location: Rural*
> - *Field: Manufacturing*

Manufacturing Program (CHAMP), an initiative of the nine colleges in the Colorado Community College System, aims to prepare a skilled workforce by increasing the attainment of advanced manufacturing degrees and certificates in high-demand fields across that state. These training programs focus on industry-recognized skills and competencies. Through a combination of hybrid and face-to-face courses, PCC's CHAMP offers certificates in manual machining, CNC machining, inspection, welding, electromechanical technology, and production technician. The program also offers advising, retention, and placement services to students.

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[24] See https://www.bea.gov/iTable/iTableHtml.cfm?reqid=70&step=10&isuri=1&7003=200&7035=-1&7004=naics&7005=12&7006=08000&7036=-1&7001=1200&7002=1&7090=70&7007=2016&7093=levels

Vestas is a global energy company that produces wind towers at its Pueblo facility. Since 2009, the company had a working relationship with PCC's noncredit arm, Pueblo Corporate College, to deliver customized training for new hires and current workers. The CHAMP consortium includes 27 manufacturers across the state; PCC has worked with 12 employers in the Pueblo region in addition to Vestas. PCC also works closely with the Pueblo Workforce Center to develop and strengthen relationships with regional employers.

Exhibit 18 highlights the employer engagement activities used by PCC across three phases: getting started, implementation, and sustainability. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three. These activities are detailed in the subsequent sections.

Exhibit 18: Employer engagement activities used by Pueblo Community College's CHAMP, by phase
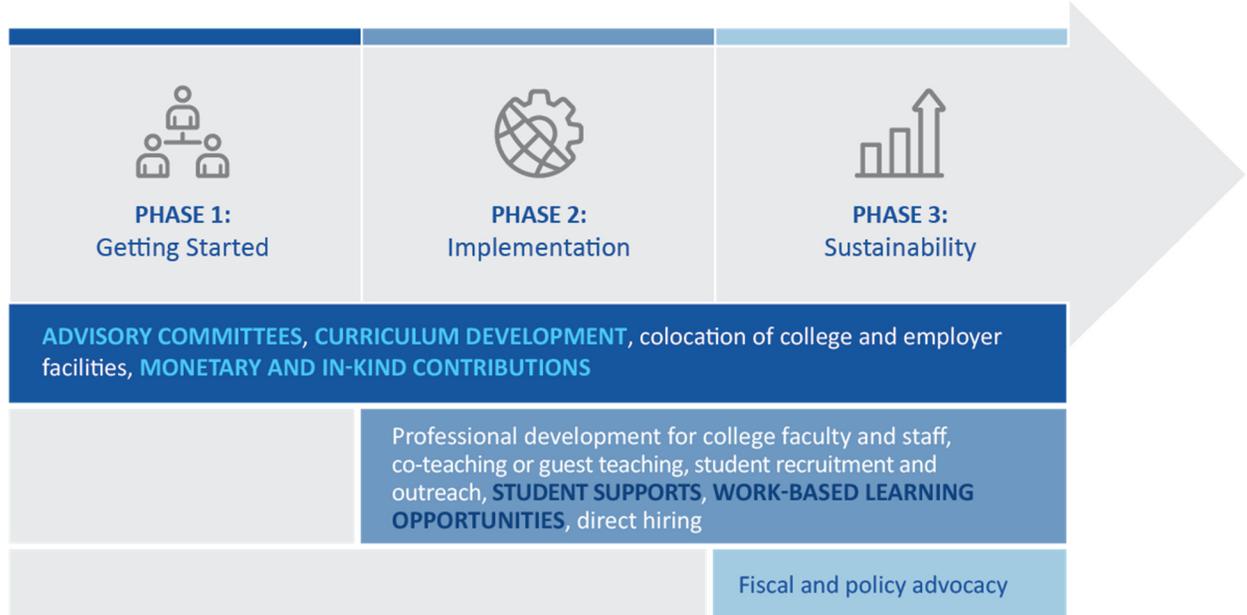
PHASE 1: Getting Started	PHASE 2: Implementation	PHASE 3: Sustainability

ADVISORY COMMITTEES, CURRICULUM DEVELOPMENT, colocation of college and employer facilities, **MONETARY AND IN-KIND CONTRIBUTIONS**

Professional development for college faculty and staff, co-teaching or guest teaching, student recruitment and outreach, **STUDENT SUPPORTS, WORK-BASED LEARNING OPPORTUNITIES,** direct hiring

Fiscal and policy advocacy

NOTE: The items in capital letters highlight the employer engagement activities used in this college-employer partnership.

Phase 1: Getting Started

In 2013, PCC received a TAACCCT grant from the U.S. Department of Labor to develop CHAMP and increase its employer engagement efforts. Although PCC had existing relationships with employers in the region, CHAMP has led to stronger relationships and more sustained engagement. The director of CHAMP has 30 years of experience in the manufacturing industry, a boon to the program because it meant that she "spoke the language" of employer partners. The dean of business and advanced technology and college president also support the program and engage with employers and community partners.

In planning for the CHAMP grant, PCC asked Vestas to sign on as one of 27 employer partners across the state and commit to expanding its relationship to work with students. Vestas, in need of skilled welders and machinists, agreed.

PCC and employer partners have collaborated on CHAMP activities that include the following:

Advisory committees. PCC uses several avenues for identifying business and industry needs: For example, PCC's president sits on the Pueblo Economic Development Corporation board, through which she can learn about regional employers' training needs. Representatives from the college also engage regularly with the Southern Colorado Manufacturing Group, the regional chapter of a statewide industry association. Employer representatives also sit on the college's advisory committees, which meet twice yearly for each academic program. Through the advisory committees, employer partners are able to provide input on the KSAs they seek in workers.

Curriculum development. Early in the CHAMP initiative, PCC's instructional designer was tasked with designing or redesigning the program's courses, instructional materials, assessments, and supports. This course design process involved both content updates and novel formats, such as hybrid courses that combine online learning with face-to-face instruction and compressed, "fast track" programs that students can complete more quickly than regular programs. Industry input, through advisory committees and feedback on work-based learning placements, is continuously infused into updating these curricula.

Monetary and in-kind contributions. Employer partners donate equipment and materials to PCC's classrooms.

Phase 2: Implementation

During the implementation phase, PCC and employer partners have collaborated on CHAMP activities that include the following:

Student supports. As students move into, through, and out of CHAMP and into employment, the CHAMP navigator, a PCC staff member hired with support from the CHAMP grant, plays an advising role. The navigator helps students identify their interests, select an appropriate course of study, access work-based learning opportunities, and find and prepare for job opportunities.

Work-based learning opportunities. Most CHAMP programs feature some kind of work-based learning opportunity. Work-based learning helps CHAMP students gain hands-on experience and demonstrate their skills and professionalism; it also benefits employers. With stiff competition among regional employers for skilled workers, work-based learning can

serve as an early opportunity for businesses to "sell" themselves to students as good employers.

In CHAMP, work-based learning placements in the electromechanical track have been readily available, but they have proven more difficult to secure in welding and machining. The CHAMP director and navigator have worked to secure additional work-based learning opportunities with employer partners and secure memoranda of understanding to institutionalize work-based learning arrangements currently in place. Vestas, for example, hosts a 40-hour-a-week work-based learning placement for CHAMP students.

Direct hiring. Although the partnership does not guarantee employment for completing students, work-based learning placements can help facilitate connections between students and potential employers. Vestas, for example, guarantees an interview after work-based learning placements, and the company has hired three of the four CHAMP students it has hosted. In addition, Vestas representatives provide feedback to CHAMP staff on students' strengths and weaknesses in interviews.

Phase 3: Sustainability

PCC has sought additional sources of support for CHAMP students. In addition to TAACCCT funding, the college applied for and received scholarships for welding and production technician students from the Colorado Opportunity Scholarship Initiative, with matching funds from local foundations.

Sustaining the employer engagement built through CHAMP may prove challenging at PCC. Leaders at PCC would like to retain TAACCCT-funded CHAMP staff members, partly out of concern that the strength of employer relationships may slip when there are no longer staff members with dedicated time for maintaining those relationships. Faculty, busy with teaching courses, may not be able to sustain a similar level of engagement with employers. Leaders are also concerned about losing the navigator position; the college's existing advising staff members have a heavy student load, and they will not be able to devote as much time and attention to advanced manufacturing students. Maintaining staff will prove challenging as the college faces limited resources and declining enrollment.

Benefits and Outcomes

Employer engagement in CHAMP benefits the college, employers, and students (exhibit 19).

CHAMP has strengthened PCC's relationships with employers. Engaging employers helps the college meet its ultimate goals of securing employment for graduates and

"From the faculty standpoint, for me it's the satisfaction of seeing the students that you've taught over the years move on and be able to earn a good living."

Instructor, PCC

strengthening the Pueblo community. For area employers, CHAMP provides an opportunity for a meaningful say on curricula and outcomes. The more streamlined CHAMP courses train skilled workers to fill their hiring needs more quickly than previous PCC programs. Vestas and other employers will have an ongoing need to build and replenish their skilled workforce as aging employees retire and others turn over; CHAMP at PCC is helping create an applicant pool to fill open positions at regional employers. CHAMP students learn new skills and earn certificates quickly, enabling them to reenter the workforce. Credits for all CHAMP courses also count toward a PCC degree should students decide to continue their education. They benefit from up-to-date curricula and industry connections through work-based learning opportunities.

Exhibit 19: Benefits of employer engagement efforts in Pueblo Community College's CHAMP, by beneficiary

College	Employers	Students
Build stronger relationships with employers	Gain access to highly skilled, well trained technicians	Gain credential quickly
Place graduates into jobs	Provide meaningful input on student knowledge, skills, and abilities	Learn up-to-date and in-demand skills
	Fill hiring needs	Interact with employers through work-based learning opportunities

Some outcomes indicate that the program is having a positive effect. For example, the certificate attainment rate is 76 percent. In addition, 72 percent of welding students have been placed into employment after completing the program.

Challenges

Both partners have been challenged by the level of bureaucracy and slow pace of change in the community college system. The college is not always able to respond to industry requests quickly and completely because of curricular changes that require state-level approval, the slow program approval processes, and limited space and resources. In addition, the college may not be able to start new programs quickly enough to satisfy businesses or enroll the number of students companies would like to see trained. Although these differences can lead to misunderstandings, CHAMP has ameliorated frustrations in some instances by dedicating CHAMP staff members' time and resources to attend to industry concerns.

"The issue that I find is that community colleges don't adapt that quickly. Whether it's manufacturing or even healthcare or IT, their world is moving much, much faster."

Staff, PCC

CHAMP staff members would like to see regular opportunities to interact with employers to collect input on curriculum. Although the college holds the minimum required twice-yearly advisory committee meetings, college staff members would like more frequent working meetings to address specific topics and needs.

Vestas representatives would like to see increased rigor and hands-on experience incorporated into CHAMP courses. They would also like longer and more intensive work-based learning placements than are currently available so that students are better prepared for the manufacturing environment.

Lessons for the Field

The CHAMP program has the following lessons to offer the field on engaging employers in community college programs:

- Tie employer engagement efforts into the existing state or regional fabric for workforce development.

- Connect workforce education programs with industry-driven sector partnerships, if available.

- Hold advisory committee meetings early and often. Colleges should engage employer partners in a substantive, working capacity rather than just an informational one.

- Listen carefully to employer partners' needs, and follow through on commitments to them. Broken trust takes a long time to rebuild.

- Strive to take risks in responding to employer needs. Consider course content and delivery that is outside the bounds of the education system's tradition.

For more information about CHAMP, visit https://www.pueblocc.edu/CHAMP.

VENTURA COLLEGE — T-TEN

Ventura, California

⚙ MANUFACTURING

The College

Ventura College serves more than 13,000 students just outside of Los Angeles. The Workforce and Economic Development department of the college houses over 20 different programs that lead to associate degrees and certifications in various technical industries. The Automotive Technology program at Ventura College is certified by the National Automotive Technical Education Foundation (NATEF) and the California Bureau of Automotive Repair (BAR).

Overview of Employer Engagement

Toyota's Technician Training & Education Network (T-TEN) program, a partnership between Toyota dealers and their local community colleges, provides a fast-track, two-year program to become a certified automotive technician that combines classroom hours, job shadowing, and internships at Toyota dealers. There are currently 36 T-TEN partnerships throughout the country. T-TEN colleges adhere to strict and high-quality curriculum standards guided by Toyota. Nearly all graduates are placed at Toyota or one of its sister dealerships. Since its inception, Toyota T-TEN has been the preferred route to becoming a certified technician for Toyota and its sister dealerships. Ventura College hosted one of the earliest T-TEN programs. At Ventura College, the current program coordinator is a graduate of the T-TEN program himself and returned to run the program after working for Toyota dealerships and Toyota Corporate. The program relies primarily on word of mouth from its current students and alumni to recruit new students. Despite little to no official recruitment outreach, the program continues to draw more applicants than it can accept every year.

> **SNAPSHOT**
>
> - *Service area: National; network of 36 colleges*
> - *Location: Suburban*
> - *Field: Manufacturing*

Exhibit 20 highlights the employer engagement activities used by T-TEN across three phases: getting started, implementation, and sustainability. Employer engagement activities that begin in phase one continue through phases two and three. Employer engagement activities that begin in phase two continue through phase three. These activities are detailed in subsequent sections.

Exhibit 20: Employer engagement activities used by Ventura College's T-TEN program, by phase
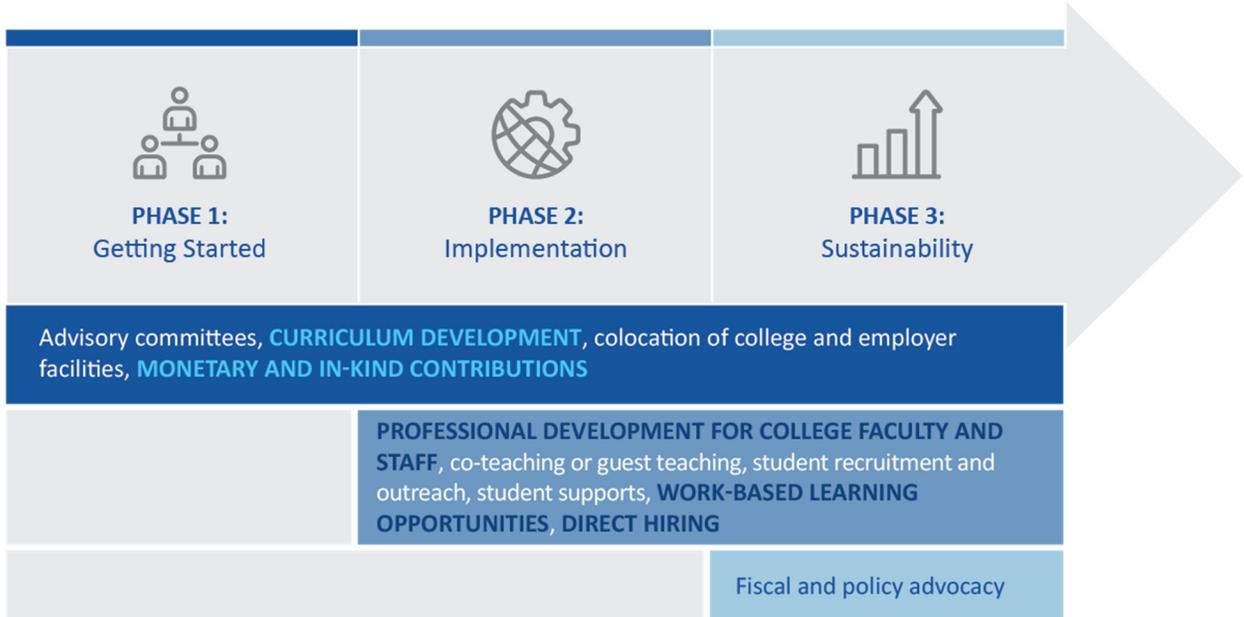
PHASE 1: Getting Started	PHASE 2: Implementation	PHASE 3: Sustainability
Advisory committees, **CURRICULUM DEVELOPMENT**, colocation of college and employer facilities, **MONETARY AND IN-KIND CONTRIBUTIONS**		
	PROFESSIONAL DEVELOPMENT FOR COLLEGE FACULTY AND STAFF, co-teaching or guest teaching, student recruitment and outreach, student supports, **WORK-BASED LEARNING OPPORTUNITIES**, **DIRECT HIRING**	
		Fiscal and policy advocacy

NOTE: The items in capital letters highlight the employer engagement activities used in this college-employer partnership.

Phase 1: Getting Started

The partnership between Ventura College and Ventura Toyota began in 1985, one year before the official launch of the nationwide T-TEN program. Drawing on the experiences of leaders who were accustomed to European apprenticeship models, Ventura Toyota reached out to Ventura College to create a similar apprenticeship program. Toyota was interested in combining classroom instruction with hands-on training to develop successful technicians. The manager at Ventura Toyota, one instructor at Ventura College, and the dean of education at Ventura College developed one of the earliest iterations of the T-TEN program. Strong leadership buy-in at the college played a major role in forming the college-employer partnership.

"Toyota basically found out it was better to go through a schooling process, intern at the job, then start [working] full time."

**Instructor,
Ventura College**

The number of staff members at Ventura College who support T-TEN has remained relatively small for the program's size and complexity. It is currently managed by three faculty members who play multiple roles as instructors, curriculum developers, and liaisons with the local dealerships, and they sometimes struggle to manage competing demands on their time.

In planning and developing the program, Toyota and T-TEN colleges have collaborated on activities that include the following:

Curriculum development. Toyota is heavily involved in shaping the curriculum at individual T-TEN sites. Existing T-TEN colleges must obtain a periodic recertification of the program to obtain monetary and in-kind support from Toyota. This rigorous process can take several years, with many layers of reviews and resubmissions of the curriculum and course materials associated with T-TEN courses. Although colleges have some autonomy in adjusting the curriculum to local needs, Toyota Corporate sets most of the standards. This is the primary method that Toyota uses to ensure high quality and consistency across its T-TEN sites. Ventura College is currently undergoing Toyota's extensive curriculum review process and expects to renew its certification as a T-TEN site

"I've never seen this level of support from any manufacturer at all, and I've never seen this level of success from any program as well, as far as how to engage employers."

Instructor, Ventura College

in 2017. Based on feedback the college received from employers during regular visits to partnering dealerships, it also plans to integrate Toyota's employability requirements into the curriculum, which include wearing uniforms and learning and using appropriate workplace etiquette.

Monetary and in-kind contributions. Although Ventura College provided funding for program operations in its earliest years, it has since scaled back its support. The college pays the salaries of instructors, and allocates an operating budget of $4,500 per year for any additional expenses such as equipment and supplies. Most funding for the program comes from Toyota. Ventura College makes a "wish list" of items it would like purchased for the program, and Toyota Corporate tries to procure the items. Ventura College faculty members estimate that Toyota Corporate donates roughly $300,000 a year in equipment and other resources. Much of this donation comes in the form of newer-model used cars on which students can practice, as well as faulty engines, which are ideal learning tools. Toyota also waives fees for T-TEN instructors to get certified at their local Toyota school. Local Toyota dealers commit resources, as well: Toyota dealerships pay student salaries during their summer internships.

Phase 2: Implementation

There is currently no official advisory board for the program at the local or national level. Regional T-TEN sites meet yearly, and many attend an annual T-TEN conference. Presentations and workshops in these conferences are led by T-TEN program administrators at various colleges and by Toyota staff members. Sites share ideas and curriculum materials while working together to help streamline the program's operation. Toyota and T-TEN colleges collaborate on activities that include the following:

Professional development for college faculty and staff. Since T-TEN's inception, Toyota has introduced a requirement that all T-TEN instructors become fully Toyota-certified themselves. To accomplish this goal, T-TEN instructors may attend training at the nearest Toyota school at no cost; these courses are normally thousands of dollars. This allows instructors to become Toyota-certified in the subjects they teach and keep their skills up-to-date with the latest advances in the automotive industry.

Work-based learning opportunities. Ventura's T-TEN program offers job-shadowing opportunities for its students during the school year and paid summer internships at local Toyota dealerships. Students work in the service department, gaining hands-on knowledge and skills under the tutelage of seasoned technicians. Students are required to have a minimum of 640 hours of on-the-job experience to graduate from the program. The originators of the program hoped for better integration of classroom instruction and hands-on experience, similar to a true apprenticeship. Some logistical and cost-related issues that prevented this from happening, but the quality of the candidates that graduate from the program is still very high per feedback from local employers.

Direct hiring. Internships at local dealerships help T-TEN students gain experience and build connections with local employers. The vast majority of T-TEN students are hired by Toyota or Lexus dealerships after completing their training.

Phase 3: Sustainability

Toyota remains committed to the program and is satisfied with the amount of funding it currently contributes to Ventura College. Commitment from the college is a key to maintaining and growing the program further, but as budget constraints and other priorities have taken precedence, the T-TEN program is currently unable to meet the demand for the number of technician positions open in the local area. Ventura College's T-TEN staff members were planning to seek additional funds from the college in their annual program review to support a full-time instructional lab technician. Without additional support from the college, Ventura College will be unable to expand the program.

Benefits and Outcomes

The T-TEN partnership benefits colleges, employers, and students (exhibit 21). Its primary benefit to the college is being able to place students in jobs — a major goal for leadership at Ventura College. In addition, Toyota ensures that the program is equipped with cars that are no more than four years old so that students learn on models that they would see on the job. Procuring newer-model cars is very costly, which the college would not be able to provide without Toyota's donations.

For students, participation in T-TEN means they are likely to obtain employment. NATEF certification for the program serves as a marker of program quality and ensures that students receive up-to-date, comprehensive training and exit the program with expertise inning and skills outcomes. Graduates of the T-TEN program earn Toyota-certified technician credentials in addition to Automotive Service Excellence certifications. Students also have the option to earn an associate of science degree. Toyota hires most students after they complete the program because of their reputation as highly qualified and well-trained technicians. However, there is no requirement that students must work for Toyota for any length of time after they graduate.

There is currently a shortage of qualified technicians to meet the area's growing demand, which has been one of Toyota's major motivations in starting and maintaining the program. Toyota secures a pipeline of highly skilled, well-trained candidates to fill their technician positions at a cost that Toyota does not absorb directly. Attending Toyota schools is the only other route to Toyota certification, which costs local dealerships approximately $21,000 per technician and can take several years. T-TEN is able to certify Toyota candidates in two years and at a fraction of the cost.

Exhibit 21: Benefits of employer engagement efforts in Ventura College's T-TEN program, by beneficiary

Colleges	Employers	Students
Placement of students into employment	Access to highly-skilled, well trained technicians	Graduate with valuable industry-recognized credentials
Up-to-date equipment and resources for program provided by employer	Less on-the-job training	Paid internship placements during training
	Decreased training costs	Most hired directly by Toyota or Lexus dealers upon program completion
		Become attractive candidates to many different employers

The key outcomes tracked by Toyota for the T-TEN program are program completers and placement of graduates in technician positions at dealerships. Since the program began in 1986, 10,000 students have completed the program and received certification. Across all T-TEN sites, nine out of 10 graduates have been hired by a Toyota or Lexus dealer.

Challenges

Ventura College and Ventura Toyota have faced several challenges in implementing T-TEN. The biggest of these has been the shortage of staff to manage and teach in the program.

Ventura College's three program staff members currently serve multiple roles in the program; it is unclear how sustainable that approach will be in the long run.

As with many other employer engagement programs, differences exist in the cultures of industry and education. Rules and regulations of the community college system have prevented Ventura College from implementing some program features that Toyota has requested. For example, Toyota would like the T-TEN cohort to be a separate cohort from the other automotive students, but Ventura College is required by California law to open the T-TEN classes to all students and cannot limit who can and cannot enroll.[25] In addition, Toyota's requests for changes may take a year or more to implement because those made in industry typically occur much faster than in community colleges. The program coordinator at Ventura College works diligently to find a middle ground in any request for changes. His industry background helps him understand both sides of the partnership.

Finally, the stigma around community college technical programs has challenged Ventura's T-TEN partnership by creating a disconnect between local high schools and the community college. High school counselors send students who are not prepared for college work because the counselors do not understand how advanced and sophisticated automotive technology has become. As a result, students entering the T-TEN program often do not have the foundational math and reading skills to succeed as technicians. The low starting pay for technicians is also a barrier to recruitment. Toyota may update its salary structure, but low starting salaries do not draw the best students into the profession.

Lessons for the Field

The T-TEN program has the following lessons to offer the field on engaging employers in community college programs:

- Invest in planning with college administrators, faculty, and employer partners to detail roles and responsibilities and long-term plans for the program.

- Secure leadership buy-in at the college to demonstrate to employer partners a commitment to collaboration.

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[25] 5 CCR § 51006, *Open Courses,* requires California community college districts to adopt a resolution that reads, in part, "… every course, course section, or class, reported for state aid, wherever offered or maintained by the district, shall be fully open to enrollment and participation by any person who has been admitted to the college(s)…" (see https://govt.westlaw.com/calregs/Document/I42146CE0D48411DEBC02831C6D6C108E?view Type=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&context Data=(sc.Default)).

- Secure institutional support for the program. Colleges should commit staff members, space, equipment, and other resources to run workforce education programs successfully.

- Reach out to other colleges that have implemented similar programs well. Colleges that have done so can share potential challenges that may arise so colleges can plan for them accordingly.

For more information about T-TEN at Ventura College, visit http://www.toyota.com/usa/tten/schoolprofile.html?schoolId=54008.

CONCLUSION

Strengthening relationships between colleges and employers can help to align the training colleges provide with the skills that employers need. This report gives examples of colleges and employers who have built mutually beneficial partnerships in the healthcare, IT, and manufacturing fields. The examples provided are intended to offer lessons for colleges to apply in their efforts to involve business and industry throughout all stages of a workforce education program. Although the nine college-employer partnerships profiled operate in different contexts, each demonstrates that effective college-employer partnerships require leadership, innovation, and investment from both employers and leaders of community and technical colleges. Across the three phases of employer engagement, common features emerged among the partnerships profiled:

1. **Getting Started.** In this phase, colleges often began by researching labor markets and sources of support before identifying and partnering with employers and other organizations. In other cases, an employer approached a college to collaborate on workforce education. The partners then worked together to find and secure funding and cooperated in program development.

   The colleges profiled in this report often invested up front in building an environment that was conducive to employer engagement. They did so by gaining commitment from senior college leadership — including presidents, provosts, and deans — signaling to the rest of the college and to regional employers that working closely with employers is critical for the institution. Many colleges engaged employers who were likely to have substantial hiring needs and had demonstrated commitment to supporting students' career prospects and developing their communities. In many cases, college leaders allowed their faculty and staff the flexibility to work with these employers in ways that deviated from traditional higher education structures and processes.

2. **Implementing the Program**. This phase involved ongoing cooperation between colleges and employers to provide instruction and work-based learning, support for students in finding employment, and the collection of data on the successes and challenges of the program.

   In collaborating with employers to implement workforce education programs, colleges defined clear roles and responsibilities for each partner. They built regular, structured opportunities for frequent communication into their programs. College-employer partnerships incorporated industry needs and standards into student selection, curriculum, and instruction. During implementation, partnerships

continuously updated programs to address evolving employer needs and improve student services.

3. **Sustaining the Program.** There was often a point at which college-employer partnerships needed to consider how to maintain a program in the face of reduced funding or other obstacles. Colleges and employers sought out new sources of funding and considered how to sustain the program with fewer resources.

   In some cases, sustaining college-employer partnerships required that the partners look to evidence of success to determine which aspects of the program to sustain. Both partners provided support and advocacy for institutionalizing the program.

Building strong, sustainable partnerships between community colleges and employers is an essential piece in developing a system that produces workers with the technical and employability skills that employers need. Employer engagement can create better alignment between the knowledge, skills, and abilities graduates possess and those that employers desire. This can benefit employers, colleges, students, and communities alike.

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APPENDIX A: INTERVIEW AND FOCUS GROUP PROTOCOLS

COLLEGE COORDINATOR PROTOCOL

Phase 1: Information Collection. Researchers will initially analyze publicly available information and documents to answer this first set of questions. Documents will be collected via online research and requesting documents from the program coordinator at the college. Example documents may include annual reports, brochures, website content, and school or local news clippings. The information gathered will then be sent to the program coordinator in writing for verification, clarification, or additions prior to phase two.

1. Please describe the program.

   - Description of program
   - Date of program inception
   - Number of students enrolled in program currently

2. Number of faculty involved in program. Is <program> a TAACCCT grantee?

   a. Did the program exist before the TAACCCT grant? If so, what changes were made because of the grant?

3. Do you participate in the network of other colleges that are implementing the program?

   a. If yes, please describe network activities and/or supports.

4. As part of the program, does the employer engage in the following activities:

	Yes	No
An advisory committee?		
If yes, please describe		
Curriculum development?		
If yes, please describe		
Work-based learning opportunities for students (e.g. internships, mentorships, co-ops)?		
If yes, please describe		
Professional development for your staff and faculty?		
If yes, please describe		

	Yes	No
Monetary or in-kind contributions (e.g. equipment, money, staff time)?		
If yes, please describe		
Direct hiring of program graduates?		
If yes, please describe		
Other engagement activities?		
If yes, please describe		

5. What other organizations or groups (e.g., community-based organizations, non-profits, workforce organizations, government agencies), if any, are involved in the partnership you have with <employer> for this program?

6. Have you received any support for the program from local, state, or the federal government (e.g. funding, policies, legislative actions)?

7. How do you measure success in the program? What implementation and/or outcome indicators and metrics are you using?

8. What, if any, quantifiable data is available and can be shared for

   a. students?
   b. faculty/staff?
   c. the community/technical college, generally?
   d. the community or region?

Phase 2: Structured Interview. Researchers will follow up with the program coordinator via an interview to respond to the following interview questions. The interview will last approximately one hour.

Script

Thank you for agreeing to participate in this study that looks at community and technical colleges' engagement with employers in specific programs. This interview will capture information about your experiences and engagement with <employer> in the program. Most questions will be in regards to the partnership your college has with <employer> as part of the <program>. We hope that the analysis from the interviews we are conducting can help inform other colleges about best practices regarding employer engagement.

The first set of questions will help us understand how and why your engagement with <employer> emerged and the context in which it operates. When we refer to employer engagement, we are referring to activities carried out by the employer organization and its employees in planning and implementing <program>.

Interview Questions:

1. What were the motivators for starting a partnership with <employer>?

2. What are some factors at your college that have made employer engagement challenging?

3. Please describe the history of your partnership with <employer>. How and why has the partnership changed over time?

If the site was part of a statewide or nationwide network of sites, ask the following additional question:

4. How has the network helped you with engaging employers and sustaining partnerships?

The next set of questions will help us understand the impact of your engagement with <employer> in the program.

5. Of the employer engagement activities you reported in the written responses, which have been the most helpful?

6. What aspects of the partnership with <employer> do you feel have been the most successful so far and why?

7. Describe the challenges of the partnership with <employer> in program development, implementation, and sustainability.

8. How has the experience of engaging this employer led to other changes in your department or the college as a whole, if at all?

9. Describe the benefits of the partnership with <employer> to

    a. students?
    b. faculty/staff?
    c. the community/technical college, generally?
    d. the community or region?

Wrap-Up Questions

10. What do you see in the future of your partnership? Are there any concrete plans for sustainability and/or expansion?

11. What are your top three pieces of advice for other community or technical colleges looking to implement a similar partnership or program?

12. Thinking back, is there anything you would have done differently over the course of program development and implementation in regards to partnership with <employer>?

13. Is there anything else you would like to add about employer engagement in general?

COMMUNITY COLLEGE PRESIDENT PROTOCOL

Script

Thank you for agreeing to participate in this short interview that looks at community and technical colleges' engagement with employers in specific programs. This interview will capture information about your experiences and engagement with \<employer\> for your college. We hope that the analysis from the interviews we are conducting can help inform other colleges about best practices regarding employer engagement.

Interview Questions:

1. How, if at all, were you or your office involved in the initiation of the partnership between your college and \<employer\> for the \<program\>? How are you or your office involved currently?

2. What are the college's motivations for engaging in partnerships with employers? What are the factors that promote or inhibit employer engagement?

3. Has the partnership with \<employer\> in \<program\> led to additional opportunities for your college? Please describe.

4. What advice would you give to leaders at other colleges that want to start similar partnerships?

EMPLOYER REPRESENTATIVE PROTOCOL

Script
Thank you for agreeing to participate in this study that looks at community and technical colleges' engagement with employers in specific programs. This interview will capture information about your company's experiences and engagement with <college> in the program. Most questions will be in regards to the partnership your company has with <college> as part of the <program>. We hope that the analysis from the interviews we are conducting can help inform other colleges about best practices regarding employer engagement.

The first set of questions will help us understand how and why your engagement with <college> emerged and the context in which it operates. When we refer to engagement with the college, we are referring to the college administration and any staff or faculty at the college who work with the program. When we refer to your engagement, we are referring to activities carried out by <company> and its employees in planning and implementing <program>.

Interview Questions:

1. What were the motivators for starting a partnership with <college> for this program?

2. What are some factors in place at <college> that helped promote your company's engagement?

3. What factors limit your company's engagement with <college>?

4. Please describe the history of the partnership with your company and <college>. How and why has the partnership changed over time?

If the site was a TAACCCT grantee, ask the following additional questions:

5. How much has TAACCCT played a role in your engagement with <college>?

The next set of questions will help us understand the impact of your engagement with <college> in the program.

Interview Questions:

6. Of the engagement activities you reported, which has been the most helpful for your company?

7. What aspects of the partnership with <college> do you feel have been the most successful so far and why?

8. Describe the challenges of the partnership with <college> in program development, implementation, and sustainability.

9. How has the experience of engaging with this college led to other changes in your company, if at all?

10. Describe the benefits of the partnership with <college> to:

    a. students?
    b. your company?
    c. your employees/staff?
    d. the community or region?

Wrap-Up Questions

11. What do you see in the future of your partnership? Are there any concrete plans for sustainability and/or expansion?

12. What are your top three pieces of advice for other colleges or employers looking to implement a similar partnership or program?

13. Thinking back, is there anything you would have done differently over the course of program development and implementation in regards to partnership with <college>?

14. Is there anything else you would like to add about employer engagement in general?

EMPLOYEE VOLUNTEERS PROTOCOL

Script

Thank you all for agreeing to participate in this study that looks at community and technical colleges' engagement with employers in specific programs. This focus group will capture information about your experiences and engagement with <community college> in the program. Most questions will be in regards to the partnership your company has with <community college> as part of the <program>. We hope that the analysis from the focus groups and interviews we are conducting can help inform other colleges about best practices regarding employer engagement.

The first set of questions will help us understand how and why engagement with <community college> emerged and the context in which it operates. When we refer to employer engagement, we are referring to activities carried out by the community college and its employees in planning and implementing <program>.

Interview Questions:

1. What factors contributed to why you have signed up to volunteer/be a part of this program?

2. What are some factors at your company that have helped to promote engagement with the community college?

3. What are some factors at your company that have made engagement with the community college challenging?

4. What changes would you recommend to the program from a volunteer perspective?

The next set of questions will help us understand the impact of your engagement with <employer> in the program.

5. Of the employer engagement activities reported, what has been the most helpful for employee volunteers in the program?

6. Describe the benefits of the partnership with <employer> to

    a. employees in the program?
    b. students?

7. What aspects of the partnership with <community college> do you feel have been the most successful so far, and why?

8. Describe the challenges of the partnership with <community college> in program development, implementation, and sustainability.

9. Please describe your role, as employees, in the partnership. What aspects of your role have been most effective? How could employee engagement be made stronger?

Wrap-Up Questions

10. What do you see in the future of the partnership? Are there any concrete plans for sustainability and/or expansion?

11. What are your top three pieces of advice for other community or technical colleges looking to implement a similar partnership or program?

12. Thinking back, is there anything you would have done differently over the course of program development and implementation in regards to the partnership with <community college>?

13. Is there anything else you would like to add about employer engagement in general?

FACULTY INSTRUCTORS PROTOCOL

<u>*Script*</u>

Thank you all for agreeing to participate in this study that looks at community and technical colleges' engagement with employers in specific programs. This focus group will capture information about your experiences and engagement with <employer> in the program. Most questions will be in regards to the partnership your college has with <employer> as part of the <program>. We hope that the analysis from the focus groups and interviews we are conducting can help inform other colleges about best practices regarding employer engagement.

The first set of questions will help us understand how and why engagement with <employer> emerged and the context in which it operates. When we refer to employer engagement, we are referring to activities carried out by the employer organization and its employees in planning and implementing <program>.

Interview Questions:

1. What are some factors at your college that have helped to promote employer engagement?

2. What are some factors at your college that have made employer engagement challenging?

3. Please describe the history of your partnership with <employer>. How and why has the partnership changed over time?

The next set of questions will help us understand the impact of your engagement with <employer> in the program.

4. Of the employer engagement activities reported, what has been the most helpful for faculty in the program?

5. Describe the benefits of the partnership with <employer> to
   a. faculty/staff in the program?
   b. students?

6. What aspects of the partnership with <employer> do you feel have been the most successful so far and why?

7. Describe the challenges of the partnership with <employer> in program development, implementation, and sustainability.

8. How has the experience of engaging this employer led to other changes in your department, if at all?

9. Please describe your role, as faculty members, in the employer partnership. What aspects of your role have been most effective? How could faculty engagement with employer partners be made stronger?

Wrap-Up Questions

10. What do you see in the future of your partnership? Are there any concrete plans for sustainability and/or expansion?

11. What are your top three pieces of advice for other community or technical colleges looking to implement a similar partnership or program?

12. Thinking back, is there anything you would have done differently over the course of program development and implementation in regards to the partnership with <employer>?

13. Is there anything else you would like to add about employer engagement in general?

SENIOR EMPLOYER MANAGER PROTOCOL

Script

Thank you for agreeing to participate in this short interview that looks at community and technical colleges' engagement with employers in specific programs. This interview will capture information about your experiences and engagement with \<community college\>. We hope that the analysis from the interviews we are conducting can help inform other colleges about best practices regarding employer engagement.

Interview Questions:

1. How, if at all, were you or your staff involved in the initiation of the partnership between your college and \<employer\> for the \<program\>? How are you or your staff involved currently?

2. What are the company's motivations for engaging in partnerships with community college? What are the factors that promote or inhibit engagement with community colleges?

3. Has the partnership with \<community college\> in \<program\> led to additional partnerships? Please describe.

4. What advice would you give to leaders at other colleges that want to start similar partnerships?