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# SECTORAL TRAINING AT COMMUNITY COLLEGES

## A Model for Postsecondary Career and Technical Education

**S**ectoral training programs prepare people for quality jobs in specific industries and occupational clusters—sectors of the labor market—where there is strong local demand and the opportunity for career advancement. Rigorous research conducted by MDRC and others has found that certain innovative, sectoral training programs operated by community-based nonprofit organizations have increased the employment and earnings of adults with low incomes.<sup>1</sup>

Important features of these programs include marketing and recruitment that feature information about careers in the sector; staff members with deep knowledge about the sector; close relationships with employers in the sector; instructors who have experience in the sector; and hands-on, project-based learning that provides some experience applicable to the workplace,<sup>2</sup> among others. Successful programs also tend to be nimble in adapting to shifts in skill demands in the labor market and emphasize “essential skills” (also sometimes referred to as “workplace skills,” including collaboration and problem-solving) that are taught in a way that simulates work in the sector, in addition to technical skills. Although the effects of these nonprofit-led approaches are compelling, such programs typically operate on a small scale, and each program, by design, focuses on only a narrow range of occupations.

Many community college career and technical education (CTE) programs have incorporated some of the same features that have made nonprofit-led sectoral training programs successful for students—particularly nontraditional, adult students and students of color—who are seeking economic mobility.<sup>3</sup> For example, many community colleges already strive to recruit students who are underrepresented among their enrollees or who face structural disadvantages to career mobility (such as students of color and students from low-income families), focus their training particularly on skills that are in high demand in the local labor market, and confer industry-recognized credentials. But most community colleges offer training in so many industries that it is not feasible to implement some of the other important features of the nonprofit sectoral training approach, such as developing deep sector expertise or

relationships with employers across all colleges in a system or region. For employers, too, it can be difficult to know which college in a larger community college system to work with, to develop the supply of skilled labor they need. It is also prohibitively expensive in larger systems to invest in state-of-the-art equipment for the same industry across multiple campuses. If these challenges could be addressed, then given their vast infrastructure and reach throughout the country, community colleges could be in a good position to expand CTE programs that incorporate the features that seem to be responsible for the effectiveness of smaller, nonprofit-run programs.<sup>4</sup>

## **THE CHALLENGES AT CITY COLLEGES OF CHICAGO**

The City Colleges of Chicago (CCC) is a seven-campus community college system serving close to 61,000 students. CCC provides students with a prebaccalaureate curriculum that transfers to four-year institutions, as well as various associate's degrees and certificates meant to prepare students for the workforce. Until the mid-2010s, employers who wanted to work with one of the colleges to communicate training needs, develop apprenticeships, or share job opportunities had to reach out to seven different campuses or connect with college employees at the nearest campus, which would not have concentrated on any particular industry. And for industries where even entry-level jobs require knowledge of high-tech machinery or technical training, such as health care and advanced manufacturing, qualified instructors and expensive equipment were spread thin across the seven campuses.

In 2010, the newly appointed chancellor of the CCC system was charged with “reinventing the City College System from the ground up so that

it better serves the needs of its students and city in the 21<sup>st</sup> century.”<sup>5</sup> The chancellor launched an organizational restructuring called the “Reinvention Initiative,” which aimed to improve student graduation rates across the city and make sure that students were earning credentials with economic value. One of Reinvention's major goals was to redesign academic programs to align them with the job market and eliminate the duplication of programs and resource allocations. It sought to do so by redesigning each campus as a “college-to-career center” and consolidating academic programs in high-demand industries at particular campuses. While the early plans faced some faculty resistance amid fears that a reorganization would close some programs and could disadvantage some students—or take focus away from preparing students to transfer to four-year colleges—the Centers of Excellence model that eventually emerged addressed many of the initial concerns. Capital-intensive programs would be consolidated in one or two campuses under the new model. For programs that would remain open at multiple or all campuses, one campus designated as the Center of Excellence would act as quality control and relationship manager for the industry across all campuses.

In its Centers of Excellence model, each of the seven comprehensive community colleges in the system focuses on a field CCC leaders have identified as experiencing high growth. Each Center has its own employer advisory board, and businesses work closely with each Center to align its curricula and facilities with employer needs. This industry focus within a college enables the college to have a deeper reach into its respective industry, potentially allowing it to be more responsive to local employer demand for skilled labor and thereby offer more value to current and prospective students.

## PURPOSE OF THIS BRIEF

This brief highlights lessons from CCC's Centers of Excellence model. Evidence from studies of similar sector-focused training models outside of the community college setting suggests that the Centers of Excellence model could be a promising one for other large community colleges systems to emulate, and that it could even have important lessons for smaller systems and stand-alone community colleges. In a system in which each college focuses on a single sector or cluster of related sectors, colleges can be more responsive to employers, become the central point of contact for employers in a given sector, and, in the process, help ensure that students will obtain the skills and education that employers need and that will lead to good jobs with opportunities for career growth.

This brief presents lessons from semistructured interviews conducted in 2021 with CCC faculty and staff members, employers, and community partners at two of the seven colleges in the system: Harry S Truman College and Richard J. Daley College. CCC administrators recommended that researchers focus on these two colleges because they represent two variations of the model: one Center of Excellence focus that is capital-intensive and one that is not. These qualitative research data were analyzed systematically to address the following primary research questions.<sup>6</sup>

- 1 In what ways does the Centers of Excellence model help colleges deepen their knowledge of an industry and its needs? How, if at all, does the model facilitate connections with employers, industry associations, and public workforce agencies or help develop work-based learning opportunities for students?
- 2 How is the Centers of Excellence model put into operation in colleges? In what ways does it inform the development

of career trajectories, services, and other forms of support provided to students in specific industries?

- 3 What are the strengths of the Centers of Excellence model and what aspects could be further strengthened? What lessons does the Centers of Excellence model offer for other colleges and systems?

## WHAT ARE THE CENTERS OF EXCELLENCE AT THE CITY COLLEGES OF CHICAGO?

Before the 2010 reorganization, the seven City Colleges of Chicago had been comprehensive community colleges offering education and training in a range of industries without any institutional specialization. As a result, there was a lot of duplication of offerings across colleges, minimal investment in high-tech facilities, and no clear point of contact for employers in a given sector. With the transition to the Centers of Excellence model, each college began to house a Center that focuses on developing partnerships with employers in a single industry, and on aligning curricula with that industry's needs. This brief focuses on engineering and advanced manufacturing at Richard J. Daley College and education and human and natural sciences at Harry S Truman College. To see the industry focuses of all seven colleges, see Table 1.<sup>7</sup> The model is intended to improve the quality of career and technical education across the system by having one college take the lead on two crucial activities for each sector of focus: (1) innovating and maintaining curricular excellence and (2) developing relationships with employers.

Under this model, the Centers of Excellence received funding from the City Colleges of Chicago to invest in infrastructure such as

**TABLE 1**  
**INDUSTRY FOCUS AT EACH COLLEGE**

Richard J. Daley College	Advanced manufacturing
Harry S Truman College	Education; human and natural sciences
Malcolm X College	Health care
Harold Washington College	Business and professional services
Olive-Harvey College	Transportation, distribution, and logistics
Kennedy-King College	Culinary and hospitality; construction technology
Wilbur Wright College	Engineering and computer science

new buildings and training equipment. As one senior administrator said, “You can’t invest in all seven colleges for medical, manufacturing, or logistics,” which all involve expensive equipment that requires built-out spaces to operate. With the Centers of Excellence, “you can concentrate funds and do a better job of having a more highly developed set of facilities for training. It’s good for high investments, capital investments.”

In some cases, the Center of Excellence is the only school where a particular program is offered, as is the situation with health care at Malcolm X College. In other cases, such as Truman College’s Center of Excellence in education, the Center serves more as the central coordinator for a program and a curriculum that are available across other colleges in the system. As one administrator described Truman, “Truman is the hub of innovation with extra resources that get dispersed across the campuses.”

All colleges offer general education classes, while the Center of Excellence offers more specialized, upper-level classes in the sector. This arrangement allows students to begin college at the most convenient campus, although they may need to commute later in their programs to colleges farther away. The designers of the Centers of Excellence system recognized that travel can be challenging for some students, and viewed this structure as a middle ground that would accommodate students

with transportation challenges for a limited time while still making it possible for CCC to invest in industry specializations at various campuses. Some faculty members and administrators also noted that students will have to find a way to manage transportation to their places of work once they complete their studies and become employed, so traveling to a farther-away campus is in some ways practice for their eventual work commutes.<sup>8</sup>

### **Industry Needs of Chicago**

When a program in an industry is offered at more than one campus, the Centers of Excellence model aims to make one college responsible for the quality of that industry program across all of the campuses. In practice, due to the varying needs of different industries, the Centers’ role as a cross-system lead varies. For example, advanced manufacturing is a capital-intensive industry with employers who have specialized and varying needs. Most of the advanced manufacturing courses and certificate programs are only offered at Daley College, where the system has invested in a state-of-the-art, high-tech training center.

In contrast to advanced manufacturing, early childhood education is, by its nature, a geographically dispersed field where most of the employers (community-based organizations, public schools, and private day care centers) have uniform needs across the city. Wages for early childhood

educators are low (ranging from \$10 per hour for assistant teachers to \$19 for preschool teachers in a school-based setting),<sup>9</sup> and there was resistance among some faculty members to creating a Center of Excellence that would “put people in jobs where there weren’t well-paying wages.” But quality early childhood education is an important need across the city; by making Truman College the Center of Excellence for early childhood education, CCC could ensure that early childhood educators would essentially get the same education regardless of which college they attended, thereby helping meet the need for this essential service.

Students in the early childhood education program are often already employed in the field and come to the City Colleges of Chicago to gain new skills or certifications—with the hope, in some cases, of increasing their wages. Unlike other Centers of Excellence, which are often training new workers for well-paying jobs in high-demand fields, Truman focuses largely on offering incumbent workers additional credentials, for the benefit of the teachers and the communities they serve. Thus, Truman’s Center of Excellence provides support to training programs distributed at colleges across the city, to meet distributed childhood education needs, while Daley College maintains a more highly centralized hub in order to concentrate capital and meet the varied needs of employers.

## **IMPLICATIONS OF IMPLEMENTING THE CENTERS OF EXCELLENCE MODEL**

MDRC conducted 21 interviews with CCC administrators, staff members, and employer partners. These interviews generated lessons about the perceived advantages and disadvantages of the Centers of Excellence model.

### **The Centers of Excellence model aimed to prepare students for careers in particular industries through three main mechanisms: highly knowledgeable faculty and staff members, informed recruitment, and state-of-the-art training equipment.**

#### ***Highly Knowledgeable Faculty and Staff Members***

In the Centers of Excellence model, college personnel either already had or were hired for specialized industry knowledge, and everything from recruitment to career services was tailored to the industry—all important components of successful, evidence-based sectoral training models. In some cases, colleges hired faculty members and administrators with decades of experience in the industry of focus. In other cases, staff members developed specialized knowledge related to the school’s industry focus over time. When administrators, faculty members, and staff members knew a lot about an industry, the entire program benefited: It could tailor its recruitment messages better by offering accurate information about opportunities in the field, develop a higher-quality curriculum, buy the right types of equipment, and offer better career services based on good relationships with employers. At Daley College, the dean of advanced manufacturing and instructors have decades of experience in CNC (computerized numerical control) machining, machine tooling, and welding. That real-world experience gave them the knowledge needed to build a state-of-the-art training facility and program to provide high-quality preparation for jobs in the industry.<sup>10</sup>

Truman College administrators also gain a great deal of knowledge of the early childhood

education field through various “tables” (working groups) in which they participate—for example, a citywide early childhood education workforce table and an employer table. Because Truman is the main higher education “player” in Chicago for the early childhood education workforce and sits at these tables—which is only the case because of the spotlight that the Center of Excellence shines on early childhood education training at Truman, according to one administrator—faculty members have had pivotal roles in shaping the state credentialing system and ensuring that it reflects community needs and serves families and young children, as well as early childhood educators. It also allows staff members to help students understand credentials, state policy issues, and career paths.

When students complete a training program and are ready to begin or continue their careers in their chosen sector, they benefit from career services staff members who have more industry knowledge related to the Center of Excellence industry than others. They can tailor résumé and interview preparation to the industry, for example, in a way they might not be able to do as well for other industries. Career services at Truman are highly tailored to the education field: résumé workshops, career fairs, and job search training all relate to education. While these education-related career services are only offered at Truman, the career services staff members invite education students from all the colleges to use them.

### ***Informed Recruitment***

As noted earlier, recruitment that highlights information about careers in the sector is a vital element of successful sector-based training programs. Staff members’ personal experience and knowledge of the industry allows them to deliver recruitment messages that do not just describe the logistics of the programs but the careers they

can lead to. As one administrator said, “[We need to be] able to familiarize ourselves with factory automation, welding, other key programs. We as administrators have to be familiar with these programs so we can highlight them to our community. We want to let prospective students know not only what we offer but where can they go beyond that, where they can go with some of the industry credentials they’ll earn, how some of these jobs are readily available, even in the midst of a pandemic. Every day, we hear about open positions, sustainable and available, good-paying jobs. It’s upon us as administrators to be better educated and highlight these programs, so our students know what’s available.” When well-informed staff members help market sector-focused training programs by describing the jobs and career paths that the sector offers, students are better able to make informed choices about their courses of study and chosen career paths. These informed choices are more likely to lead to students choosing training that is the right fit for them, which can in turn lead to more successful training-completion and employment outcomes.

### ***State-of-the-Art Training Equipment***

The Centers of Excellence model of concentrating capital investments in one campus allows students to train on high-quality, state-of-the-art machinery that area employers use. One instructor at Daley College described bringing personal welding equipment into the college so that students could practice using it, because the college could not afford to buy the equipment that employers were using. Once Daley College became a Center of Excellence, it was able to invest in and train students on the exact manufacturing equipment that Chicago-area employers use in their facilities, increasing graduates’ competitiveness for available jobs. Not only did the Center’s leaders buy high-quality equipment, but they decided to invest specifically

in “machinery that everyone would know—not an off brand that was cheaper,” as one instructor put it. Because the program instructors had industry experience, they knew which equipment would help students get marketable training: “We went for branding, for marketing purposes. Everyone knows what a Fluke instrument is, Snap-On—everyone recognizes them, and it gives you a certain marketing ability. We all thought this was especially important in an underserved community. This is aimed at bringing them up.”

**The Centers of Excellence model makes it easier to use data to target labor market needs and analyze industry-specific student pathways, and thereby support students.**

Daley College’s focus on a single industry allows its administrators to use industry-specific labor market data to inform the selection of classes the college offers. Working with a limited set of pathways allows them to deepen their knowledge about open positions in the industry, what those occupations entail, and what kinds of positions are expected to open up in the near future, in a way that would be impossible to do across multiple industries.

This targeted labor market information, combined with close relationships with employers in a single industry, allows administrators and faculty members to stay up to date on the latest trends and needs in the industry and to adapt the college’s curricula and course offerings accordingly. As one instructor reported, before the establishment of the Center of Excellence in Manufacturing, Daley College’s manufacturing curriculum was “dated.” The advent of the Center—with its better understanding of employer needs and additional resources—saw the creation of a new curriculum: “Thirty brand-new classes and five different tracks, whereas we used to have two.”

Previously students had to choose welding or cutting, and then if they changed their minds about their interests, or immediate employer needs changed, they had to start over in the other track. Now the Center teaches basics in manufacturing first, “so people don’t get stuck in one path,” according to the instructor. Continual, close contact with employers in the industry keeps Daley College leaders abreast of changing needs, to which the college can respond accordingly by adapting or adding course material.

**The colleges’ focus on a particular industry or two offers employers a steady supply of potential workers who have the skills they desire.**

The model is helping to develop a steady supply of students who have the skills that employers desire by giving employers a single-campus point of contact. Comprehensive knowledge of the industry and strong connections with employers—another feature of successful, evidence-based sectoral training models—ultimately benefit students, who have more opportunities to participate in work-based learning experiences and are in a better position to find employment in their field of study. One college program coordinator noted that thanks to Daley College’s relationships with employers, students enrolled in a special student support program were able to get on-the-job training. “Because they know the employers, they’re able to offer industry-specific opportunities and skills. They offer support courses and [industry-recognized] microcredentials that they can add to the welding program that are a value add. They give students a boost. It’s more usable, less general.”

In the case of Truman College, the single-industry focus allows the college to respond to the local community labor market. At Truman College, community-based organizations, Chicago

Public Schools, early learning organizations, and for-profit companies all sit on an employer advisory board that communicates with the college about their training needs. Through the employer advisory board, early childhood education centers and Chicago Public Schools share with Truman College what skills the workforce needs. When advisory board members indicated to their Truman College partners that Chicago Public Schools teachers needed endorsements (to show that they had received training in teaching in special education and teaching English Language Learners), Truman designed a remote program that teachers could attend to get city-approved credentials.

The Centers of Excellence provide a “north star,” as one administrator put it, for employers in an industry: They know exactly where to go to seek out customized training, work-based learning and education opportunities, and qualified job applicants, rather than having to choose which of seven colleges to collaborate with. The Center of Excellence creates a central contact for the entire system to discuss these needs and opportunities and to adjust curricula accordingly. In the past, employers had a different workforce partnership contact at each of the CCC campuses, and the contact did not have a specialized industry focus but was instead a generalized CTE dean. With the Centers of Excellence, according to one staff member, employers were more likely to partner with the college because there’s “more confidence on behalf of the [employer] that it will be worthwhile—that it will lead to jobs.”

When Daley College administrators took on apprenticeship development in manufacturing, they reduced the burdens on small- and mid-sized employers related to developing work-based learning opportunities. Working with the Illinois Department of Labor, the college organized a

program for the most common apprenticeships in CNC machining, welding, and machine maintenance, and going forward, CCC can modify the curriculum, wages, hours, and classes to meet the needs of employers. As one administrator said, “The Centers of Excellence model is an advantage [for apprenticeships] because everything is coming to one spot—employers, associations—a group of people who are energetic about progressing these things because they know that students need it, and they know employers need it, too.”

At Daley College, employers use their relationships with the college to recruit students for open positions. The college maintains relationships with area employers through twice-yearly advisory council meetings and through frequent one-on-one check-ins. The dean connects them with students through apprenticeships, internships, recruitment events, and classroom visits. One Daley College administrator said he uses these connections to “understand what [employers’] training needs are to make sure they’re integrated into the program. We take their input so we can benefit employers with the students coming out of the program.”

**The new model requires students to travel to the campus that specializes in their industry of interest, which could sometimes be far from where they live.**

With the Centers of Excellence model, students can take general education and elective courses at any of the seven campuses, but—depending on the school—certain industry-specific courses are only offered at the Center of Excellence college. Some students take their general education courses at the campus closest to them, and then travel to take nursing courses at Malcolm X College or advanced manufacturing courses at Daley College, but “there is a common

misconception that you have to take all your classes at the Center of Excellence campus,” said one administrator. When it comes to recruiting and enrolling students, this administrator said the college mainly focuses on recruiting students within its geographical footprint but noted that students do come from all over the city.

Some interviewees reported that one of the concerns that arose from the community when the Centers of Excellence model was being considered was that it would be a burden to some students because they would need to travel to distant campuses. On the other hand, some interviewees said that students could benefit from figuring out how to navigate the city while they were in college, since they were likely to need to travel to jobs when they graduated. When the campuses were originally reorganizing programs, CCC offered a shuttle bus that ran among campuses for students and staff members to use, but an administrator reported that it was shut down because few students used it. “We spent a lot of money on a service that a couple of staff members used.” Without enough data on student commutes before and after the Centers of Excellence model was implemented, it is impossible to know whether the model is burdensome and, if it is, for what proportion of students.

### **Opportunities for Further Enhancement**

While the Centers of Excellence exhibit some of the traits of an effective sector-focused structure for delivering training, opportunities remain to enhance and strengthen the model. For example, in the current formulation of the Centers of Excellence model, academic advisers at the colleges remain generalists and are not provided with additional training or resources to familiarize themselves with the Center of Excellence industry

focus. If academic advisers were steeped in sector knowledge—as career services staff members are—they could potentially advise students on how to “stack” credentials (that is, earn additional credentials that add skills and can lead to advancement) or move from short-term CTE training to academic degree programs within the Center’s industry focus to advance their careers.

As discussed earlier, though the Centers of Excellence have improved the collection and analysis of some data—such as labor market data in the sector of focus and data about students’ trajectories within their programs—data that could help the Centers understand students’ pathways after they complete the programs are still lacking. When asked whether the Centers track student outcomes such as certificate attainment or transfers to academic programs, one administrator responded by saying, “We are very bad at that.” To some extent, the data on certificate attainment depend on the college and the sector focus of its Center of Excellence. For example, Daley College pays for certification exams in manufacturing, so the college receives data on how many students take and pass those exams. But for some sectors in which students take certification exams on their own—for example, CompTIA certifications for students studying information technology—the colleges have no way of knowing how many students take the exams or obtain the credentials. Because of this overall lack of data about student outcomes, CCC is not able to say whether the Centers of Excellence model leads to better outcomes for students than the previous structure did. Better data on outcomes across all of the Centers, and the ability to disaggregate data by gender, race, ethnicity, and other demographic factors, could help Center administrators better understand the pathways their students take, which groups of students tend to need more support to succeed

in their programs, and the kinds of jobs, careers, and pay students can expect when they complete the programs. While some of the colleges are making some strides in this area, there is much more that could be done across the system.

## **CONCLUSIONS AND AREAS FOR FURTHER EXPLORATION**

CCC's experience of restructuring its seven colleges into Centers of Excellence offers lessons for other community colleges and systems that may be interested in being more responsive to employers in growing sectors and industries in their areas and, in turn, to students as well. The model can clearly be applied to other large, urban community college systems with multiple colleges or campuses across a metropolitan area or region. Its lessons could also be applied to highly centralized state community college systems. Smaller systems or stand-alone community colleges that cannot spread industries across multiple campuses can still benefit from identifying one or two regional industries that are important in the local economy and that require a substantial skilled workforce, developing their knowledge of and relationships with those industries, and—if they are capital-intensive industries—making the investments necessary to give students the best possible education and opportunities for employment and advancement.

For industries that are not as capital-intensive, such as early childhood education, business, and information technology, the reasons for establishing a Center of Excellence may not be as obvious, and it could take more deliberate planning to ensure that the Center benefits any other programs in that industry across other colleges in a system. According to one administrator from CCC, however, from the perspective of employers, there is as much reason to centralize expertise in Centers of Excellence for non-capital-intensive

industries as there is for ones that are capital-intensive: “Business is not capital-intensive. If you don't have [a Center of Excellence], you have seven colleges calling accountants to sit on an advisory council. Or you have [seven] different councils giving different advice [to their respective colleges' business programs]. Having collective conversations and respecting partners' time—not having them do things seven times—this is the real benefit when there's not a capital investment.” Additionally, a Center can play a role in ensuring that curricula and assessments are standardized across colleges and that students get the same elements of an education in the field regardless of which campus is their home base.

Additional exploration of the Centers of Excellence at CCC could glean even more useful lessons not only for CCC but for other community colleges and systems as well. As noted earlier, because of a lack of data, it is not currently possible to determine whether the Centers of Excellence structure leads to better employment outcomes than the previous structure did. But improved data collection going forward could help determine whether the current structure leads to improved completion rates, employment in the students' fields of study, family-sustaining wages, and other outcomes of interest. Because one presumed downside to the Centers of Excellence model is the need for students to travel farther than they had to before, it could be useful to conduct a geographic analysis of students' commutes to the various colleges to see whether the required travel is in fact a burden on students. Historical data about the proximity of students' home addresses to the campuses where they enrolled could be used to determine whether students' commutes changed, on average, after the Centers of Excellence were instituted. Perhaps most valuable would be focus groups with or surveys of students to get their perspectives on the Centers of Excellence model and their experiences of it.

Finally, the model might be strengthened by adding some features of sector programs that are currently not a part of the Centers of Excellence, such as sector-tailored career-readiness classes or postemployment follow-up to support employment retention and advancement. While it could be

challenging to test the effectiveness of this model, since there is no parallel community college system in Chicago to serve as a comparison, much could still be learned from employers, students, and perhaps CCC and state administrative data.

## ENDNOTES

- 1** Richard Hendra, David H. Greenberg, Gayle Hamilton, Ari Oppenheim, Alexandra Pennington, Kelsey Shaberg, and Betsy Tessler, *Encouraging Evidence on a Sector-Focused Advancement Strategy: Two-Year Impacts from the WorkAdvance Demonstration* (New York: MDRC, 2016); Sheila Maguire, Joshua Freely, Carol Clymer, Maureen Conway, and Deena Schwartz, *Tuning in to Local Labor Markets: Findings from the Sectoral Employment Study* (Philadelphia: Public/Private Ventures, 2010).
- 2** Hands-on training and work-based learning can give much-needed experience to students trying to enter a new field, which can help them obtain jobs they might otherwise be denied.
- 3** Nontraditional students include those who have delayed their enrollment in college (that is, who did not enter college in the same calendar year as they finished high school), who are attending part time, who are working full time, who are financially independent from their parents, who are parents of dependent children or have other dependents, and who are studying for occupations that are not traditionally associated with their gender.
- 4** While the research designs of studies such as WorkAdvance do not allow them to make definitive determinations about the specific features that make programs effective, the implementation research in those studies does provide some suggestive guidance. See Betsy Tessler, Michael Bangser, Alexandra Pennington, Kelsey Schaberg, and Hannah Dalporto, *Meeting the Needs of Workers and Employers: Implementation of a Sector-Focused Career Advancement Model for Low-Skilled Adults* (New York: MDRC, 2014).
- 5** Jennifer M. Horace, *Conception of Change: A Phenomenographical Study of the Reinvention Initiative at the City Colleges of Chicago* (Clemson, SC: Clemson University, 2016).
- 6** Student outcome data were not uniformly available and were not a part of this analysis.
- 7** Daley College's focus on engineering, and Truman College's focus on human and natural sciences, are more geared toward two-year associate degree programs than shorter-term certificate programs. This research concentrated on the colleges' more CTE-oriented programs in advanced manufacturing and early childhood education.
- 8** Changes to in-person and remote education and work that occurred as a result of the COVID-19 pandemic might have longer-term effects on how colleges, students, employers, and workers approach college and work commutes.
- 9** U.S. Bureau of Labor Statistics, "Occupational Outlook Handbook: Preschool Teachers" (website: <https://www.bls.gov/ooh/education-training-and-library/preschool-teachers.htm>, 2021).
- 10** While Truman College and Daley College both have deans with industry experience relevant to their Centers of Excellence, one college leader said that that is not the case at every college: "It's a thing on the rubric that you have a dedicated administrator with industry experience who maintains and seeks relationships with employers, but it's not a thing that is present at each college at this moment."

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