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PREPARING THE WORKFORCE IN TODAY'S COMMUNITY COLLEGES

Issues and Implications for Higher Education Leaders

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About the Series

On July 30, 2018, the American Council on Education (ACE) convened close to 40 nationally recognized higher education researchers and scholars to discuss strategies to increase completion rates, close equity gaps, and support leaders at our nation’s community colleges. Informed by that meeting, ACE invited proposals from the participants for a series of action-oriented briefs focused on key topics for community college leaders. This brief is the second in that five-part series.



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EXECUTIVE SUMMARY

Serving more than 40 percent of U.S. undergraduates and with a strong history of preparing the workforce, community colleges are a critical piece of the higher education and economic landscapes. This brief describes the two main functions of community college workforce education, credit-based career and technical education (CTE) and noncredit community college education, and it offers a contextualized discussion of these functions in terms of apprenticeships, career-focused associate degree articulation to universities, and credit for prior learning. By documenting these functions and related movements, community college leaders can have a starting point for discussion, and leaders from other sectors can have a more in-depth understanding of these issues.

One of the key drivers of community college workforce education is the “skills gap,” or essentially, the conditions whereby demand exceeds the supply of individuals with particular skills. While there has been some question as to whether a gap actually exists (e.g., Weaver 2017), the discussion alone validates the need for aligning needed skills with a community college education, which relates to both credit-based CTE and noncredit education.

Credit-based CTE focuses on preparing individuals for the workforce in programs yielding industry-recognized credentials specifically through credit-based certificate and associate degree programs. Noncredit education in community colleges occurs through four types: occupational training, sponsored occupational (contract) training, personal interest, and pre-college remediation. Each has its purpose, but the occupational (both sponsored and not sponsored) offers the most flexible delivery format for community colleges to meet the employment needs of their communities.

Considering credit-based CTE and noncredit education as the primary delivery mechanisms, the brief explores three current movements relevant to how community colleges deliver workforce education. Apprenticeships offer an “earn and learn” approach to gaining skills specific to an employer’s needs, and the strategy has gained traction with more than 30 percent growth in the past decade. Community colleges have many potential roles to play, not least of which is to provide related technical instruction through either credit-based or noncredit education.

Associate of applied science (AAS) articulation is an avenue for career-focused community college students to continue their education toward a baccalaureate degree seamlessly. Often, however, students face setbacks along the pathways toward completion, including the loss of earned credits upon transfer.

Credit for prior learning is an umbrella term for earning academic credit through a variety of mechanisms after the learning takes place. This credit is particularly relevant for community colleges in that it is an avenue for noncredit students to earn college credit for prior training that may occur in the military, workplace, or other settings.

The following are four strategic implications that aim to advance opportunities to enhance the workforce development mission of community colleges:

1. Provide equitable opportunities for students in CTE.
2. Build AAS transfer pathways.
3. Advance ties with industry through apprenticeships.
4. Consider organizational culture when awarding credit for prior learning and implementing noncredit-to-credit articulation.

While community colleges can address some of these implications, it will take enhanced understanding of the community college mission and a willingness by community colleges and university leaders, policymakers, and industry partners to provide opportunities to students ensuring that no level of education is a dead end, and that each educational offering makes an individual more competitive for employment.

Introduction

Serving more than 12 million students each year (AACC 2019), community colleges have an undeniable impact on American higher education, state workforces, local communities, and the individuals they serve. This issue brief offers higher education leaders research-based perspectives on the workforce education role of community colleges. For community college leaders, this report documents and contextualizes important pieces of the comprehensive community college mission related to workforce development and connects them with current movements in the field. Additionally, this issue brief offers an overview to leaders not presently working in the community college setting who may be less familiar with community college functions other than college transfer.

The brief is organized into four primary sections: First, it describes the workforce skills gap and the relevance to community college education. Second, it offers a description of the two primary delivery mechanisms for workforce education in the community college: credit-based career and technical education and noncredit occupational training. Third, it contextualizes the two primary functions through a discussion of three important movements associated with community colleges: registered apprenticeships, associate of applied science articulation to the university sector, and credit for prior learning.

The Workforce Skills Gap

Community colleges play an oversized role in educating workers for labor market demands. This is not by accident; community colleges were designed early on to prepare high school graduates in America for sub-baccalaureate or “semi-professional” occupations and to be “highly serviceable” to local civil and economic needs (Beach 2011, 10). The scale of their collective influence (Jacoby 2017) makes them “the most important locus of relatively job-specific occupational education” in the country (Grubb 1999, 6).

Despite the efforts of community colleges and others, a large chorus of politicians, economists, advocacy groups, and business leaders has warned of a growing skills gap in the U.S. labor market, one characterized by a demand for workers with specific skills and training that outpaces the available supply (e.g., Cowen and Lemke 2011; Dimon and Seltzer 2014; Wilson

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2018). Put differently, there is a rising fear that employees do not have the skills that employers most need. Because the economic principle of supply and demand suggests the market will favor the skilled over the unskilled, the skills gap threatens to further stratify American society along demographic and geographic lines. Those concerned about the skills gap have pointed to our educational institutions as the obvious first-choice solution. Community colleges, in particular, have been called to the task of assuaging the skills gap (Jacoby 2017). There is some debate around the extent of the skills gap, but the fact remains that maintaining an alignment between enrollment and local workforce needs requires constant attention.

Community colleges face at least two hurdles in establishing such alignment. The first is the head-spinning pace at which the world of work is evolving, thanks to globalization and technological disruption. Worse yet, the challenge is not only one of speed but also of direction; for the economic deck is being reshuffled quickly, and it is unclear what hand future employees will ultimately be dealt (Dizikes 2018). A second hurdle is the fundamental reshaping of the demographic composition of the American workforce, which could render some occupational fields (e.g., manufacturing) and geographic areas (e.g., rural regions) with very real supply/demand imbalances.

Fortunately, these issues can be addressed, in part, by the nation's community colleges. For example, while the U.S. economy is evolving from an industrial economy to one dominated by highly technical occupations that require some amount of postsecondary training, many of the jobs supported by this evolving economy pay well and do not necessarily require a four-year degree. These are the "good jobs that pay without a BA" and there are 30 million of these jobs in the nation, with the share of these "good jobs" forecast to grow in the years ahead (Carnevale, Strohl, and Ridley 2017). Community colleges are ideally situated to propel the next generation of workers into these positions. They have a history of doing so; they are dispersed across urban and rural areas in the country; and they have talented educators, substantial off and online course and program offerings, and a diverse student body.

Because of demographic shifts in the nation and strong preferences among employers to locate in areas with a skilled workforce (Gambale 2018), the degree to which community colleges can help with workforce education depends on the degree to which they can operate nimbly, foster close partnerships with local employers in their communities, and use their primary delivery methods to meet evolving needs of communities.

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Primary Workforce Education Functions in the Community College

It is clear even from the perspective of a casual observer that the community college mission is multifaceted. Community colleges are central to fulfilling the needs of their communities in terms of providing opportunities to learn new skills, as well as positioning students to transfer to four-year institutions. Community colleges also serve as a hub for local events, and, in some regions, centers for intercollegiate athletics. But specific to their educational mission, there are four primary functions of comprehensive community colleges:

- Credit-based transfer education that provides a high-quality and affordable start for one's higher education career
- Credit-based career education that leads to certificates and degrees relevant to the workforce needs of states and local communities
- Developmental education for those needing to sharpen skills in math and English, especially prior to engaging in postsecondary-level work
- Noncredit education, through which individuals can complete courses on everything from arts and crafts to advanced manufacturing

While each educational function is important, the primary focus of the brief includes the two functions that are perhaps most overtly focused on the development of workforce-relevant skills: credit-based career education and noncredit education.

Credit-Based Career Education

Credit-based career education in community colleges today most visibly takes the form of career and technical education (CTE), which has gone by many names over time, including manual training, occupational education, career education, and, very commonly, vocational education. Vocational education was rebranded as CTE following the passage of the Carl D. Perkins Career and Technical Education Act of 2006 (i.e., Perkins IV).

In concrete terms, credit-based CTE in community colleges equates to sequential coursework directly related to an occupational field that, upon completion, can lead to industry-recognized credentials, certificates, and/or associate degrees. Credit-based CTE instruction may include competency-based, work-based, or other applied forms of learning. As previously noted, a central goal of credit-based postsecondary CTE

A central goal of credit-based postsecondary CTE programs in the nation is to equip students with the technical skills and training to meet the needs of the workforce.

programs in the nation is to equip students with the technical skills and training to meet the needs of the workforce. The idea that CTE participation should align with observed and projected labor market demand has been an explicit component of both Perkins IV and the newly passed Perkins V legislation. In an effort to capture the current landscape of CTE enrollment and labor market needs, Table 1 shows long-term (2016–26) employment projections and data on the declared CTE program choices of students from a nationally representative sample of community college students collected in 2011–12.¹ We have organized both market projections and major declaration data into the 16 CTE Career Clusters² framework.

Table 1. Reported Majors of Community College Students and Projected Labor Market Growth, by Career Cluster

% Community college students' reported majors (2011–12)*	Career Clusters	% Projected employment growth (2016–26)
--	Overall	7.4%
0.7%	Agriculture, Food & Natural Resources (AFNR)	7.8%
2.7%	Architecture & Construction (AC)	12.1%
4.0%	Arts, A/V Technology & Communications (AV)	4.6%
7.2%	Business Management & Administration (BM)	3.3%
3.5%	Education & Training (ED)	11.5%
1.6%	Finance (FIN)	9.4%
0.1%	Government & Public Administration (GOV)	8.0%
11.7%	Health Sciences (HS)	16.9%
1.8%	Hospitality & Tourism (HOSP)	10.1%
4.2%	Human Services (HUM)	13.3%
3.0%	Information Technology (IT)	14.8%
5.3%	Law, Public Safety, Corrections & Security (LAW)	5.9%
4.5%	Manufacturing & Construction (MAN)	2.8%
0.4%	Marketing (MARK)	8.9%
4.6%	Science, Technology, Engineering & Math (STEM)	11.6%
3.1%	Transportation, Distribution & Logistics (TRAN)	9.0%

**Reported majors in career clusters total 58.5 percent. The remaining 41.5 percent includes those missing, undecided, and indicating general studies/liberal arts (i.e., transfer focused).*

Sources: National Center for Education Statistics, U.S. Department of Education, Beginning Postsecondary Students Longitudinal Study of 2012–14; U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

As Table 1 shows, there is a considerable concentration of students in health sciences (HS) programs (11.7 percent), along with considerable projected employment increases in the coming years (16.9 percent). While the enrollment data reported do not indicate

1 Education data came from the Beginning Postsecondary Students Longitudinal Study of 2012–14. Learn more at <https://nces.ed.gov/surveys/bps/>. Employment statistics came from the Bureau of Labor Statistics Occupational Employment Statistics site, available here: <https://www.bls.gov/oes>.

2 <https://cte.careertech.org/sites/default/files/CareerClustersPathways.pdf>

growth over time, the projected employment figures show areas that should be areas of focus for communities experiencing growth. Examples include information technology; science, technology, engineering, and mathematics (STEM); and hospitality and tourism.

In addition to being mindful of projected workforce needs, there are other important issues to consider. For example, CTE has had a history of tracking low-income and minoritized students into low-wage, unstable occupations, and, while there is less evidence that such tracking occurs today (Giani 2017), it is essential that policymakers and institutional researchers analyze CTE participation disaggregated by student population. The new Perkins V legislation requires eligible agencies to perform these sorts of equity analyses—without ever using the word “equity”—but it is unclear what enforcement mechanisms exist to guarantee these analyses are actually performed and used toward continuous improvement.

Ultimately, the success of community college credit-based career education depends on collaborations between industry and proximal community college institutions, equitable access to and success within high-quality CTE programs, and a keen, watchful eye on what the future of work will look like.

Noncredit Education

Noncredit education is perhaps the least understood segment of community college education from those outside of the sector, the most adaptable from the perspective of the community college, the most flexible from the student perspective, and the most responsive from the perspective of industry.

And with an estimated annual headcount enrollment of 5 million students (AACC 2019), it is far more relevant to national discussions on community college education than one would be led to believe based on the lack of attention it receives.

It is important to establish what we mean by noncredit community college education. The National Center for Education Statistics defines a noncredit course as one “having no credit applicable toward a degree, diploma, certificate, or other formal award” (2016, 22). While accurate, this definition does not capture the essence and value of noncredit community

college education. Following a comprehensive review of literature on noncredit community college education, the highly varied terms used to describe the noncredit function, and an examination of one state’s noncredit community college enrollment, D’Amico et al. (2014) developed a noncredit typology that includes four types (see Table 2).

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Table 2. Noncredit Community College Education Typology

Noncredit Type ^a	Description ^b
Occupational Training	"geared toward individuals seeking to gain or improve job skills leading to initial or better employment ...most often available through an open registration process, do not follow a typical semester schedule, and are paid for by individuals through either their own resources or through third-party funding for which they are eligible" (59)
Sponsored Occupational (Contract) Training	"similar to occupational training ... arranged by special contract with organizations ... can be specific training developed for an organization, or it can lead to some particular industry-based standard ... delivered in a way most convenient for the contracting organization ... responds directly to local area needs" (61)
Personal Interest	"common examples include ballroom dancing, cake decorating, and the like ... are demand driven, because students likely self-pay, and often reflect the needs, interests, and priorities of local communities" (61–62)
Pre-College Remediation	"primary programs delivered include ABE, ESL instruction, GED preparation, and even some aspects of developmental studies. These are typically offered at no charge to the student other than testing fees, supplies, etc." (62)

a D'Amico et al. 2014

b D'Amico 2017

When considering the prevalence of each type, historically it has been difficult to make determinations due to the lack of a common understanding of noncredit community college education. Also, noncredit education suffers from the limitations of inconsistent state funding and sparse data reporting. There is general consensus that at least half of states provide funding for at least some noncredit functions (D'Amico et al. 2017; GAO 2004; Oleksiw et al. 2007; Van Noy et al. 2008), and approximately three-fourths of states capture at least some data on noncredit education (D'Amico et al. 2017; Sykes, Szuplat, and Decker 2014; Van Noy et al. 2008). D'Amico et al. (2017) used a survey of state community college leaders and the typology provided above to estimate a near even distribution of enrollment among three types (occupational training, sponsored occupational training, pre-college remediation) with personal interest much lower.

We must explore the importance of understanding noncredit community college education in more standardized ways. First is to be able to communicate the primary functions relevant to the community college workforce mission. Once termed the "hidden college" (Voorhees and Milam 2005), demystifying this delivery mechanism can enhance discussions on economic and workforce development between sectors of higher education, and even clarify roles within institutions.

Additionally, a more nuanced understanding of noncredit can help community colleges make the case for state-noncredit funding (or not). Community colleges can show

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that they are not seeking funds to support personal interest courses, but rather support workforce development through funding for occupational training. In addition, gaining a better understanding may help community college leaders consider which functions should be kept separate from state funding and reporting in order to serve as profit centers for the institution.

Lastly, it is important to consider breaking down barriers between noncredit and credit education, and allowing students to successfully transition between the two. Several previous studies have discussed how this practice is rare (e.g., Oleksiw et al. 2007; Van Noy et al. 2008), and one of the few data-based studies on noncredit education found that only a small percentage of students transition from noncredit to credit education (Xu and Ran 2015). This seems to be a missed opportunity for colleges, as is the lack of credit articulation, which is a topic to be explored later in the brief.

Contextualizing Community College Workforce Education in Current Policy and Practice

Current developments in policy and practice can inform the use and evolution of credit-based career education and noncredit education to meet the needs of students and communities. Three issues, in particular, stand out:³

- Registered apprenticeships and the role of community colleges in facilitating partnerships
- Applied associate degree articulation as a less traditional but important path to the baccalaureate degree
- Credit for prior learning that has connections with prior learning assessments, noncredit-to-credit articulation, and other out-of-the-box thinking that helps individuals progress toward credit-based credentials

Hopefully, the information in the sections below fuels both additional understanding and dialogue on how community colleges interact with many higher education movements relevant to preparing the workforce.

Apprenticeships

Apprenticeship is an “earn and learn” strategy that develops skills and knowledge for those historically in sectors utilizing on-the-job training and related instruction to

³ We also acknowledge potentially relevant topics we chose not to explore further in this brief. Examples include career-focused dual enrollment, through which high school students complete courses that could lead to credit-based certificates and degrees; community college baccalaureates, especially in applied fields, developed in response to local community needs; connections with the Workforce Innovation and Opportunity Act (WIOA); and partnerships with the business community, which are necessary to ensure the relevance of all of the functions explored in this brief.

prepare the apprentice for a skilled occupation. While the configuration of apprenticeship programs can take several forms, community colleges are positioned to play the following roles: related instruction provider, state apprenticeship lead, and/or a registered apprenticeship sponsor (de Alva and Schneider 2018).

The Fitzgerald Act of 1937, known as the National Apprenticeship Act, created the Office of Apprenticeship (OA) within the Department of Labor to provide oversight and formalized apprenticeships. Traditionally, occupations that implement apprenticeships have been grouped by construction trades and manufacturing trades (Martin 2016). The expansion of apprenticeships is reaching other high-growth fields, such as information technology, advanced manufacturing, health care, and financial services, that lack the corresponding growth in the skilled workforce to fill job vacancies (DOL 2018; Martin 2016). In 2018, 238,549 individuals entered the apprenticeship system, and 71,789 completed (DOL 2019) (see Table 3).

Table 3. Total, New, and Completed Apprentices in the United States, by Year

Year	Total	New	Completed	% of Total Completed
2008	442,386	132,782	51,386	11.62%
2009	420,140	110,707	50,493	12.02%
2010	387,720	109,989	51,212	13.21%
2011	357,692	130,391	55,178	15.43%
2012	362,123	147,487	59,783	16.51%
2013	375,425	164,746	52,542	14.00%
2014	410,375	170,544	44,417	10.82%
2015	447,929	197,535	52,717	11.77%
2016	505,371	206,020	49,354	9.77%
2017	533,607	191,563	64,021	12.00%
2018	585,026	238,549	71,789	12.27%

Source: U.S. Department of Labor, “Registered Apprenticeship National Results Fiscal Year (FY) 2018 (10/01/2017 to 9/30/2018).”

An apprenticeship can be registered or unregistered. The Office of Apprenticeship works with 25 states through State Apprenticeship Agencies (SAA) to administer the national program of Registered Apprenticeships, and 25 states work directly with the Federal Registration system. A Registered Apprenticeship Program is one that has been “certified (“registered”) by an applicable government agency as meeting specified standards” (Collins 2016, 1). In July 2018, the DOL issued Training and Employment Notice No. 03-18. The notice outlined the process that allows trade associations, educational institutions, companies, unions, joint labor-management organizations, and other non-governmental entities to develop and deliver apprenticeship programs that meet industry standards. It also provided these organizations the opportunity to become a certifier of apprenticeships (DOL 2018), expanding the role of community colleges to serve as intermediaries or sponsors, as well as to provide related instruction.

The broad growth of apprenticeship programs and expansion of the community colleges' role is particularly relevant when leveraging the two primary functions of credit-based CTE and noncredit occupational training. Already strong points for U.S. community colleges, taking on additional roles in the apprenticeship process leverages community college strengths in meeting the needs of specific employers.

Associate of Applied Science Articulation

While the traditional degree path to successful university transfer is an associate of arts (AA) or an associate of science (AS) degree, there is increasing prevalence and discussion of baccalaureate pathways for degrees commonly associated with credit-based CTE, namely the associate of applied science (AAS). In North Carolina, for instance, those transferring with associate degrees such as the AAS is the fastest-growing segment of transfers from community college to University of North Carolina campuses, with growth of 141 percent from 2007 to 2017. However, despite great successes in improving transfer articulation between community colleges and universities, and the more than 100 identified bilateral articulation agreements in the state

that ease transfer between participating community colleges and universities, graduates of applied associate degrees graduate at lower rates in the four years following transfer and ultimately complete more credit hours upon graduation, a measure of inefficacy (Chapman and D'Amico 2018; D'Amico and Chapman 2018).

While currently an inefficient path to a baccalaureate, we see the increased prevalence of applied associate degree transfers as a great sign and potential leverage point to expand baccalaureate completion. Our point here is that we need to expand awareness of applied associate degree transfer, and mark the importance of predictable, statewide, and systematic transfer articulation policy for this population of students. Earlier research showed the existence of some statewide transfer articulation agreements for applied programs; however, they are program specific and limited to a small number of select programs (Ignash and Kotun 2005; Ignash and Townsend 2000). One challenge when articulating applied degrees, as opposed to articulation of AA or AS degrees designated for transfer, is that the highly technical nature of most AAS programs requires program-specific agreements; thus, it has been seen as a curricular issue (Ignash 2012). These challenges result in great variation of transfer arrangements that may limit the number of credit

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hours that transfer due to applicability to general education or prohibit the transfer of credit entirely (Chase 2011). Thus, policies can result in considerable loss of credit in the transfer process (Giani 2019), resulting in the forfeiture of time, resources, and in many cases financial aid eligibility for those interested in earning a baccalaureate degree.

One might wonder whether those who enter AAS programs had initially intended to earn a baccalaureate degree or whether there were other circumstances around their ultimate community college major choice and later decision to transfer. Our perspective is that one's initial intent should not limit opportunity, and perhaps opportunity can drive aspiration. For instance, a study of students earning the AAS found that their aspirations "heated up" when they learned that an applied baccalaureate degree was available (Kujawa 2013), thus illustrating the importance of pathways to the baccalaureate. Such pathways can be developed through community college-university partnerships or community college baccalaureate efforts (see Townsend, Bragg, and Ruud 2009).

Credit for Prior Learning and Prior Learning Assessment

The awarding of credit for experience outside of the traditional credit-based curriculum and college classroom has occurred for decades. Recently there has been heightened interest in the topic, especially over the past decade, as it is related to workforce education and achieving completion agenda goals. This practice is largely known as either credit for prior learning or prior learning assessment, terms which we use interchangeably in this brief. Definitions are provided in Table 4.

Table 4. Established Definitions and Avenues for Awarding Credit

Term	Definition
Credit for Prior Learning (CPL) – American Council on Education (ACE)	“academic credit granted for demonstrated college-level equivalencies gained through learning experiences outside of the college classroom, using one of the well-established methods for assessing extra-institutional learning, including third-party validation of formal training or individualized assessment, such as portfolios” (Lakin et al. 2015, 3)
Prior Learning Assessment (PLA) – Council for Adult and Experiential Learning (CAEL)	“the process by which an individual’s experiential learning is assessed and evaluated for purposes of granting college credit, certification, or advanced standing toward further education or training” (Klein-Collins and Hudson 2018, 4)
Primary Methods of Awarding Credit	<ul style="list-style-type: none"> • National standardized exams, including Advanced Placement (AP), College Level Examination Program (CLEP), DANTES Subject Standardized Tests, International Baccalaureate, and others • Evaluation providers, such as the National College Credit Recommendation Service (NCCRS) and ACE’s College Credit Recommendation Service (CREDIT®) • Challenge exams, often created by faculty in institutions • Individualized assessments, which may include portfolio assessments guided by institutions or CAEL’s LearningCounts (Lakin et al. 2015; Klein-Collins and Hudson 2018)

In terms of its prevalence, the Education Commission of the States (2017) reports that 24 states have a PLA policy in place through either legislation or state higher education system policy. However, having a policy in place and enacting practice are two separate

issues, since it is policy implementation that will likely drive the awarding of credit. One salient point, however, is the connection with college completion. Recent studies have shown that earning credits by CPL/PLA (e.g., CLEP, portfolio) was associated with higher completion rates (Boatman et al. 2017; Hayward and Williams 2015).

When it comes to community colleges, CPL/PLA is potentially relevant to many credit-based career program areas, as individuals gain knowledge and skills through professional and military experience, for example. This topic is also relevant within community colleges, especially when it comes to articulating learning through noncredit education to the credit side of the house. While it has been established that noncredit-to-credit articulation may not be the norm in community colleges (Oleksiw et al. 2007; Van Noy et al. 2008), there have been great strides in recent years following efforts funded by U.S. Department of Labor Trade Adjustment Assistance Community College Career Training (TAACCCT) grants. For example, one innovative partnership involving seven institutions in Connecticut, Massachusetts, New Jersey, and New York implemented 25 formal pathways between noncredit and credit workforce education programs. The colleges employed a variety of PLA configurations that included internal articulation agreements, industry-recognized certification exams, equivalencies established by third parties, and a combination of these with portfolios, challenge exams, or other mechanisms. A total of 41 percent of noncredit enrollees were able to receive academic credit and 26 percent transitioned into a credit program (Price and Sedlak 2018).

When it comes to community colleges, CPL/PLA is potentially relevant to many credit-based career program areas.

STRATEGIC IMPLICATIONS

Serving a significant portion of U.S. undergraduates, combined with close connections with industry and meeting workforce needs, community colleges will continue to play a critical role in preparing individuals for careers and ensuring that local communities have the skilled workers they need to be economically competitive. While this workforce development role is a long-standing tradition of the sector, meeting needs is not without its challenges and opportunities.

Strategic implications for higher education leaders to consider:

- Provide equitable opportunities.
- Build AAS transfer pathways.
- Advance ties with industry through apprenticeships.
- Consider organizational culture when awarding credit for prior learning and noncredit-to-credit articulation.

First, we must continue to seek equitable opportunities for students participating in credit-based CTE programs. CTE must continue to be a function within community colleges that provides relevant education that is aligned with current employment opportunities in the regions community colleges serve. As with all program areas, leaders should consider access and affordability and also provide the support or “wrap-around” services that so many community colleges need. These may be particularly relevant for CTE students who may already be employed in their field of study while completing

credentials. Finally, colleges should consider building a curriculum that is attuned to the on-ramps and off-ramps students take as they move in and out of the workforce. This may be achieved through programs that build on one another (i.e., stackable credentials) and move toward the articulation of CTE degrees into baccalaureate programs.

Second, though some may view the AAS as a terminal degree for workforce preparation, no associate degree, including the AAS and other applied credentials, should close the door on future education. Unfortunately, it is all too common for AAS earners to seek transfer to a university only to learn they are victims of substantial credit loss and labeled casualties of uninformed decision-making or poor advising. While not the traditional transfer route, more efficient transfer paths through the AAS degree can contribute to more educated workforces that advance both personal and private goods, and serve as engines of social mobility, particularly for populations that may not have thought that a baccalaureate degree was within the realm of possibility. We see two potential paths forward. One is to embrace opportunities for community college and university leaders to partner on the development of local and statewide AAS transfer pathways into applied baccalaureate programs. This approach benefits students in clearing the educational dead end and shortening time to a baccalaureate degree. It benefits employers, who may need individuals with higher-level degrees in their respective fields. And it benefits colleges and universities who wish to promote articulated programs to build enrollment in program areas with increasing employment projections. The second path forward is through community college baccalaureates in the more than 20 states with authorization to deliver such programs. In these cases, applied programs can be wholly delivered within one institution, thus easing the transition process for students.

Third, community colleges can and must continue to embrace their strong ties to industry. This can be done through industry advisory groups informing curriculum, direct partnerships to develop sponsored occupational training through noncredit offerings, and a host of other ways through nimble community colleges working with local and regional partners. Another more formalized route to meeting industry needs highlighted in this brief is the engagement in apprenticeships. The “earn and learn” model through formal apprenticeships has been embraced increasingly in recent years, and marks a movement in community college-industry relationships. Institutions and systems have multiple ways to get involved. One path is the delivery of related technical instruction leading to industry recognized credentials through both credit-based and noncredit education. Now community colleges are also serving as the facilitators of apprenticeships in their states, marking increasing opportunities to lead these efforts.

Fourth, community colleges can and should explore alternative approaches to earning credit, while considering the culture of their organizations. For instance, when implementing CPL/PLA strategies, ACE recommends understanding institutional culture and the perceived value of awarding credit, along with establishing clear policies and procedures and dedicating appropriate resources (Lakin et al. 2015). One of the

sticking points has been the perception of a diminished value of the classroom experience if CPL/PLA is used (Public Agenda 2013). On a related topic, community colleges also have opportunities to award credit for learning that occurs through noncredit courses and programs, and credit for prior learning can assist in these efforts. Toward that end, an important consideration for community college leaders is whether to organizationally integrate credit and noncredit functions. Van Noy et al. (2008) discussed the benefits and challenges when integrating or separating credit and noncredit education organizationally. For example, an integrated approach can consolidate outreach to employers while separating functions can allow a noncredit division to focus on revenue and the credit to focus on degrees and transfer. Another opportunity will be to consider the potential to articulate credit, which may be easier if occurring within the same administrative unit.

Among the many topics covered in this brief, we see two common themes. One is that we encourage colleges and universities to look for synergistic opportunities, and we believe that a shared understanding of the community college workforce development mission can aid in better understanding the nuanced functions and implications for policy and practice. Another is that we hope to advance the notion that no level of education should be an educational dead end. Noncredit education should articulate to credit, credit-based career programs should articulate into baccalaureate programs, and all levels of education should be relevant to workforce needs and make individuals more competitive for employment. Progress will require leaders of community colleges, universities, industry, and governments to commit fully.

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