

**Work Training Centers:  
A New Model for Workforce Training bringing together Community  
Colleges, Industries, Universities, and State and Community  
Organizations to provide Guided Credential Programs using Blended  
Learning to Support Career Pathways**

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## Executive Summary

America is built on the dream that anyone who works hard enough can have access to the education and jobs they need to provide a good life for themselves and their families. However, this dream has been slipping away in recent years as wages stagnate and inequality grows, leading to widespread frustration and disillusionment. The biggest cause of lost jobs has been the relocation of manufacturing sectors to developing nations offering cheaper labor and fewer regulations. The threat of job loss to automation presents an even more serious threat, as some economists predict robots and automated intelligence could replace up to 800 million jobs by 2030. As technology becomes more advanced, there is more pressing demand for a highly skilled labor force. The United States is currently facing a situation in which there is an unprecedented loss of low-skilled jobs, while at the same time facing a lack of labor in high-skilled sectors approaching “crisis level.” Clearly there is an urgent need to “upskill” the American workforce, providing high paying jobs to those increasingly shut out of the labor force and needed labor to industries.

This paper proposes that the Department of Labor create a funding program to provide resources for a competitively selected series of “Work Training Centers,” based on previous DOL initiatives such as the Trade Adjustment Assisted Community College and Career Training (TAACCCT). These centers will be housed at non-profit organizations such as universities, community colleges, or foundations, and will serve as “technological hubs” to interface between workers, industries, and educators to create a pathway for workers to gain education towards a desired career path.

- These centers will partner with institutions that have **demonstrated expertise** in a given area, and are currently producing high quality research furthering the fields, and with collaborations with industry partners.
- The centers will work to **develop key industry partnerships** in the domain, who will **identify future job opportunities** in that field, and to **develop a training and curriculum plan** to retrain the workforce to fill those roles.
- Center partners will **curate digital education tracks** that will train workers at to be ready to fill these roles, focusing on basic education, soft skills, and technical skills. These digital courses would be designed to be implemented as a **blended learning experience** that will give learners a hands on, community based learning approach while allowing the courses to have **flexible meeting times**, be **implemented quickly and efficiently** and courses run at scale.
- Finally, the centers will coordinate with other Work Training Centers to establish a **unified credentialing and blended learning approach**. These courses will be organized into programs to **support career pathways**. The courses will be offered on an **open library of courses** using a **comprehensive learning management system** easily used or adapted by education institutions, industries, or individual students.

The TAACCCT, the largest federal mechanism for funding workforce training, is set to expire in September 2018. Congress is gearing up to remodel higher education policy, with the PROSPER Act under debate currently and set for a vote in 2018. The Farm Bill under reviewed by the House of Representatives as of April 2018 could potentially change the policies around food stamps to require recipients to be working or pursuing workforce training, and could add a billion dollars to support workforce training efforts to accommodate the influx of enrollees. This is a crucial time to commit resources to strengthen the workforce training system in America. Technological advances such as driverless cars, RFID chips, and more sophisticated artificial intelligence are poised to wreak havoc on many of the largest sectors of the American workforce. Workforce training initiatives funding community colleges have been effective towards creating strong partnerships between colleges and industries that produce skilled, employable workers. However, these initiatives have been too siloed in the past, and are not able to leverage materials, content, or relationships already created by other institutions. Creating a network of workforce training centers dedicated towards building strong industry partnerships across the field, and producing high quality courses and credential programs to train workers will not only help the immediate grantee organizations, but any community colleges, apprenticeship sponsors, or education institutions interested in developing workforce training programs in a particular area quickly and efficiently.

## Policy Topic

This paper proposes that the Department of Labor create a funding program to provide resources for a competitively selected series of “Work Training Centers.” This model is built on previous funding initiatives from the Department of Labor and the National Science Foundation, particularly the TAACCCT and the ATE programs. These centers will be housed at non-profit organizations such as universities<sup>1</sup>, community colleges<sup>2</sup> or foundations, and will serve as “technological hubs” to interface between workers, industries, and educators to create a pathway for workers to gain education towards a desired career path. These centers will partner with institutions that have demonstrated expertise in a given area, and are currently producing high quality research furthering the fields, and with collaborations with industry partners.<sup>3</sup> These centers will be organized into areas in high-growth industries such as Advanced Manufacturing; Clean Energy; Computer Science & Engineering; Business Entrepreneurship; Transportation; Health Care; and so on. The centers will work to develop key industry partnerships in the domain, who will help identify the future job opportunities in that field, and to develop a training and curriculum plan to retrain the workforce to fill those roles. Center partners will curate unique digital education tracks that will train workers at to be ready to fill these roles, focusing on basic education, soft skills, and technical skills. These digital courses would be designed to be implemented as a blended learning<sup>4</sup> experience that will give learners a hands on, community based learning approach. Finally, the centers will coordinate with other Work Training Centers to establish a unified credentialing and blended learning approach. These courses will be organized into programs to support career pathways.<sup>5</sup> The courses will be offered on an open library of courses using a comprehensive learning

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<sup>1</sup> In this paper, “university” is used to signify four year non-profit education institutions who grant degree programs.

<sup>2</sup> In this paper, “community college” is used to signify two year non-profit institutions that have open enrollment, and offer degree and non-degree programs. This term also refers to technical colleges.

<sup>3</sup> Industry Partnerships are mentioned many times in this paper, and can take a variety of forms. When the term “industry partnerships” is used, this could be through “creating work based training opportunities like apprenticeships and paid, or for-credit internships. Employer partners could also help define, develop, and strengthen the connection between student learning and the needs of employers through curriculum development and creation of new certificates or other educational professional certificates.”

<sup>4</sup> Blended Learning is a education method which combines elements of traditional classroom teaching and online education.

<sup>5</sup> Career Pathways and Stacked Credentials: “The term “credential” refers to educational certificates, degrees, registered apprenticeship certificates, occupational licenses, and other industry-recognized certifications. Stacked or latticed credentials are a sequence of credentials that can be accrued, building an individual’s skills to help them along a career pathway or up a career ladder. A career pathway or ladder is a sequence of education and training coursework that prepares individuals for different and potentially higher-paying positions within the same occupation or industry. In the healthcare field, for example, although specific requirements vary by state, a certified nursing assistant license precedes a licensed practical nurse license. Licensed practical nurses may then pursue additional education and training to obtain a registered nursing degree.”

management system easily used or adapted by education institutions, industries, or individual students.

## Problem Framing:

America is built on the dream that anyone who works hard enough can have access to the education and jobs they need to provide a good life for themselves and their families. However, this dream has been slipping away in recent years as wages stagnate and inequality grows, leading to widespread frustration and disillusionment. The biggest cause of lost jobs has been the movement of manufacturing to developing nations offering cheaper labor and fewer regulations. Between 2000 - 2012, the United States lost approximately 30% of its manufacturing sector.<sup>6</sup> Factories closed around the country, and communities saw their entire economy affected like a chain of dominos as all sectors were impacted by job loss and falling profits. There is growing concern about job loss to automation, as some economics predict robots could replace up to 800 million jobs by 2030.<sup>7</sup> Others argue that like technological revolutions of the past, the new technology will create more new jobs than it replaces.<sup>8</sup> The theory of skill-based technical change (SBTC) suggests that technological advances reduce the demand for low skilled workers, which computers can replace in production; but these advances raise the demand for high skilled workers, for whom technology complements production.<sup>9</sup> Thus, “those facing the greatest displacements are less-educated workers who perform fairly routine tasks,”<sup>10</sup> though for middle skill and skill workers employment and wages will continue to rise. This in conjunction with the coming wave of baby boomers retiring, will mean that there will be a steady demand for skilled workers.<sup>11</sup>

The United States is currently facing a situation in which there is an unprecedented loss of low-skilled jobs, while at the same time facing a lack of labor in high-skilled sectors approaching “crisis level.”<sup>12</sup> <sup>13</sup> An indepth research study on the skills gap in manufacturing

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<sup>6</sup> Bonvillian, William, and Peter L. Singer. *Advanced Manufacturing: the New American Innovation Policies*. The MIT Press, 2017.

<sup>7</sup> Manyika, James, et al. “What the Future of Work Will Mean for Jobs, Skills, and Wages.” *McKinsey & Company*, 2017

<sup>8</sup> Autor, David H. “Why Are There Still So Many Jobs? The History and Future of Workplace Automation.” *Journal of Economic Perspectives*, vol. 29, no. 3, 2015, pp. 3–30., doi:10.1257/jep.29.3.3.

<sup>9</sup> Autor, David H, et al. “The Costs of Wrongful-Discharge Laws.” *Review of Economics and Statistics*, vol. 88, no. 2, 2006, pp. 211–231

<sup>10</sup> Holzer, Harry J., and Sandy Baum. *Making College Work: Pathways to Success beyond High School*. Brookings Institution Press, 2017.

<sup>11</sup> Holzer, Harry J. “Creating Skilled Workers and Higher-Wage Jobs.” *Brookings*, Brookings, 28 July 2016, [www.brookings.edu/opinions/creating-skilled-workers-and-higher-wage-jobs/](http://www.brookings.edu/opinions/creating-skilled-workers-and-higher-wage-jobs/)

<sup>12</sup> “Mind the Gap: The State of Skills in the U.S.” – *Third Way*, [www.thirdway.org/report/mind-the-gap-the-state-of-skills-in-the-u-s](http://www.thirdway.org/report/mind-the-gap-the-state-of-skills-in-the-u-s).

found that ~35% of the industries surveyed had long-term vacancies that impacted productivity; the main reason was their inability to find employees with advanced skills.<sup>14</sup> Clearly there is an urgent need to “upskill” the American workforce, providing high paying jobs to those increasingly shut out of the labor force and needed labor to industries. Traditional higher education tracks are very expensive and can take many years of intensive study, making it an unappealing or impossible option for many Americans. Forty-four million Americans collectively owe over 1.48 trillion dollars in student debt, causing serious financial problems in all sectors of the economy.<sup>15</sup> Much of this debt is held by students who attended for-profit colleges, a sector that sought to profit off of the increased appetite for postsecondary training.<sup>16</sup> Community colleges are a low-cost, efficient alternative and have been the target of many work-training initiatives in recent years, though community colleges often struggle to establish and maintain these programs with limited resources.<sup>17</sup>

Online education offers a promising opportunity to bolster traditional community college job training programs. Online education is relatively cheap and scalable, and offers a high degree of flexibility ideal for people with busy schedules or who are based in remote areas. There have been many advances in job training options online, resulting in a myriad of niche credentialing programs that cluster groups of courses together to teach specific skills such as Big Data Analysis, or Supply Chain Management. However, these programs have not been strategically targeted to fill vacancies in the labor market, nor have they been designed in collaboration with unions and industries to ensure maximum utility. Additionally, many learners struggle in independent online programs, and require a supportive learning community to thrive. Both the industry and workforce would benefit from a carefully curated and coordinated series of job training programs, specializing in a variety of skill sets and areas, and available in a blended learning format. The model proposed in this paper would allow for the curriculum to be developed at high-impact specialized institutions that would create more opportunities for high-level collaboration between the course designers and industry leaders to create a more tailored curriculum to current needs, while reaping the in-person community learning benefits of the community college model.

## Background of Problem:

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<sup>13</sup> “U.S. Student Loan Debt Statistics for 2018.” *Student Loan Hero*, [studentloanhero.com/student-loan-debt-statistics/](http://studentloanhero.com/student-loan-debt-statistics/).

<sup>14</sup> Locke, Richard M., and Rachel L. Wellhausen. *Production in the Innovation Economy*. The MIT Press, 2015.

<sup>15</sup> Eyster, Lauren, et al. "Implementation and Early Training Outcomes of the High Growth Job Training Initiative." (2010).

<sup>16</sup> Cottom, Tressie McMillan. *Lower Ed: the Troubling Rise of for-Profit Colleges in the New Economy*. The New Press, 2017.

<sup>17</sup> Soares, Louis. "Community college and industry partnerships." *Center for American Progress* (2010): 7-15.

## Changing Workforce Education System:

The workforce education system has changed dramatically in recent years, which has contributed to the market failure in workforce skills training and development. In the mid 20th century, employees tended to work for a single company for their career, and these companies provided internal training and skill development as a means to move up through the ranks. However, the size and scale of companies, particularly manufacturing companies, has been in decline<sup>18</sup> which has impacted these traditional work training and career pathways.<sup>19</sup> Smaller companies do not have the same needs or capacities to provide formal or informal training to their employees, and larger companies aren't incentivized to invest in an employee that won't stay for very long. The burden of skill acquisition and job training has fallen to the employees, who are expected to obtain training on their own prior to getting a job and to navigate their own career advancement. Where employer training does exist, it tends to be offered disproportionately to the higher-educated already in high-skill jobs, which only further widens the gap in access to higher skilled, higher salary jobs and between the highly and lowly skilled workers.<sup>20</sup>

A “new skill production system is emerging that relies heavily on training provided by external actors such as community colleges or job training programs.”<sup>21</sup> Education, industry and communities have been slow to adapt to this new system. In the previous system, work training was developed by the industry leading to specific higher skilled and paid internal jobs, and the motivations and pathway for the workers and the companies were clear. The new system decentralizes workplace training, introducing a myriad of stakeholders, programs, and possibilities and has resulted in serious information asymmetries on the part of workers and companies about what skills are needed, what jobs are available, and how to acquire them. To complicate matters further, the education system is not coordinated with industry needs and inadvertently provides training options that do not prepare people adequately, or are developing skills for saturated or disappearing markets. A well coordinated platform is needed to interface between industries and workers to provide the curriculum and training geared towards specific career pathways for in demand jobs.<sup>22</sup>

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<sup>18</sup> Henly, Samuel E. and Juan M. Sanchez. “The U.S. Establishment-Size Distribution: Secular Changes and Sectoral Decomposition.” *Economic Quarterly*, 95, 4 (Fall 2009): 419—454.

<sup>19</sup> Weaver, Andrew, and Paul Osterman. “The New Skill Production System: Policy Challenges and Solutions in Manufacturing Labor Markets.” *Production in the Innovation Economy*, 2014, pp. 51–80.

<sup>20</sup> Acemoglu, Daron, and David Autor. “Skills, Tasks and Technologies: Implications for Employment and Earnings.” 2010

<sup>21</sup> Weaver and Osterman, 2014

<sup>22</sup> Oates, Jane “Increasing Credential, Degree, and Certificate Attainment by Participants of the Public Workforce System,” Employment and Training Administration, US Department of Labor, December 15, 2010, <https://wdr.doleta.gov/directives/attach/TEGL15-10acc.pdf>.



## Role of Community Colleges in Work-Training:

Community colleges date back to the early 20th century, designed to provide a cost-effective, local pathway for students to earn two years of college credit before transferring to a four year college.<sup>23</sup> Community colleges initially focused on general liberal arts programs, though after World War II there was an increased demand in vocational education to meet the growing needs of the post war manufacturing boom. Currently, community colleges offer a blend of college preparatory and vocational education programs that are open to any student who would like to enroll, which attracts a diverse blend of students.

Community colleges are well placed to fill the needs of the new work-training demands, with over 1,100 across the United States enrolling more than an estimated twelve million students.<sup>24</sup> Community colleges are embedded in the region and culture in which they are located and responsive to their students' academic and cultural needs. In addition, community colleges have a culture of openness towards working with industry partners and other stakeholders in designing specific curriculum programs suited to funneling workers into jobs.<sup>25</sup> A study found that of 900 manufacturing companies surveyed, 89% of those that worked with community colleges to develop curriculum reported that it was a positive experience, and 81% judged that the students produced from these programs were well prepared for jobs.<sup>26</sup> However, only 21% of the 900 companies had ever worked with a community college, indicating that although this relationship can prove very fruitful, it is rarely pursued.

Despite their many strengths, community colleges have

struggled to meet the workforce training demand. Community colleges are called upon to do a lot, often with very little funding. Each college is an autonomous actor, thus any relationships

Community colleges are often overwhelmed by the many challenging tasks they are called upon to do with a very small budget to construct an adequate work-training program. The criteria for a successful work-training program include:

- Build a network of industries, state jobs boards, and local support services
- Continuously identify which skills are going to be needed by employers
- Engage local industries in curriculum development
- Recruit and retain high quality instructors
- Provide flexibly scheduled education programs to accommodate diverse schedules
- Provide programs targeted at various points in the career: basic education, entry level job prep, advanced mid-career skills
- Support low-income and vulnerable populations
- Provide career and academic services to their students
- Build a program that is simultaneously financially sustainable, with affordable tuition rates

<sup>23</sup>Bok, Derek. *Higher education in America*. Princeton University Press, 2015.

<sup>24</sup>Osterman, Paul. "Institutional labor economics, the new personnel economics, and internal labor markets: a reconsideration." *ILR Review* 64.4 (2011): 637-653.

<sup>25</sup>Eyster, Lauren, et al. "TAACCCT Approaches, Targeted Industries, and Partnerships." *Washington, DC: Urban Institute*(2017).

<sup>26</sup>Locke, Richard M., and Rachel L. Wellhausen. *Production in the innovation economy*. MIT Press, 2014.

established between industry is made on a one on one basis, and through years of careful planning and partnership. In the absence of these partnerships, a community college creates curriculum based on the resources and capacity they have to provide it, which often preferences liberal arts or humanities programs. A Florida study found that half of all degree seeking community college students were enrolled in “liberal studies”, despite the fact that these had very little market value compared to more technical programs.<sup>27</sup> Expanding capacity in advanced math, computer science, or other technical skills is challenging, as it is hard to retain the instructors with the experience level needed, and to provide sufficient training equipment. In addition, community colleges disproportionately are asked to educate non-traditional students, those who are from disadvantaged backgrounds, who often do not have strong academic skills, or are working full or part-time while taking courses, and thus require support, basic training in literacy, reading and writing, and flexible schedules.<sup>28</sup> Community colleges have been “tasked with reviving social mobility in the midst of growing economy inequality,”<sup>29</sup> asked to prepare students with the greatest academic and economic needs for the modern day workforce, “while simultaneously bearing the brunt of dwindling financial support for higher education.”<sup>30</sup>

## Federal Initiatives for Work-Training Programs:

Federal initiatives and programs geared towards developing work-training at community colleges first began in the 1960s, as community colleges were being created across the country responding to the need for post-secondary education.<sup>31</sup> A spate of programs have been passed in recent years in response to the changing workplace and work-training systems, as well as to mitigate the burden of the Great Recession and loss of manufacturing jobs in the early 2000s. This paper will highlight federal funding programs and initiatives that supported work-retraining programs at community colleges through encouraging the model presented in the box above.

The **Advanced Technological Education Program (ATE)**, was created by the National Science Foundation in 1993 in response to the Scientific and Advanced Technology Act that called for “a national advanced technician training program, utilizing the resources of the nation’s two year associate-degree granting colleges.”<sup>32</sup> ATE primarily funds two year colleges

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<sup>27</sup> Backest et al 2014

<sup>28</sup> Bragg, Debra D., and Brian Durham. "Perspectives on access and equity in the era of (community) college completion." *Community College Review* 40.2 (2012): 106-125.

<sup>29</sup> Century Foundation. (2013). Bridging the higher education divide: Strengthening community colleges and restoring the American dream. New York, NY: Author

<sup>30</sup> The effectiveness of blended online learning courses at the community college level Sarah Ryan

<sup>31</sup> Mellow, G., and C. Heelan. "Programmatic challenges of diverse demographics." *Minding the dream: The process and practice of the American community college* (2008): 257-270.

<sup>32</sup> Scientific and Advanced Technology Act of 1992. Public Law 102-476. 102 Stat 23 October 1992

to build programs to train technicians for high-technology and advanced manufacturing fields. ATE requires that programs develop partnerships between community colleges and industries to create curriculum programs that will graduate highly skilled technicians ready for employment in science and engineering jobs. ATE also often coordinates with other colleges and universities to develop the program content and curriculum, to utilize career pathways and stackable credentials. ATE funded programs tend to be centered around a specific industry such as “advanced manufacturing, biotechnology, renewable energy and environmental, engineering, information technology, and nanotechnology.”<sup>33</sup> This model has proven highly successful, with many thriving ATE centers educating thousands of students a year. However,

**High Growth Job Training Initiative**  
**Years:** 2001 - 2008  
**Sponsor:** US Department of Labor  
**Target:** Adults and Youth  
**Total Funding:** \$300 Million  
**# Programs Funded:** 172  
**Program Lengths:** 6 months – 5 years  
**Recipients:** Community colleges, industry groups, nonprofit training, public workforce agencies  
**Purpose:** To provide industry-focused training and capacity-building models and approaches to expand the skilled workforce needed by high-growth and high-demand economic industries

the programs are still relatively siloed, with the benefits of their course and material development, and industry contacts remaining local to the specific center. For instance, of the 207 programs surveyed in 2017, only 23 made course materials publically available on the internet, and another 21 were available upon request.<sup>34</sup>

The **High Growth Jobs Training Initiative (HGJTI)** was spearheaded by President George W. Bush in 2001, and was focused on promoting skills towards high-growth high-wage occupations across 14 main sectors, and could be based within

industries, community colleges, or state work agencies.<sup>35</sup> This program awarded grants to support training programs, that improved instructional design, created apprenticeships or internships, and did other capacity building activities, or built long-term partnerships between training institutions and employers. The **Community-Based Job Training Grant (CBJTG)** program overlapped with the HGJTI, and was geared more towards specifically funding non-profit education organizations, with a similar instructional design and relationship building focus. Studies of these programs found that the grant activities were highly successful in their training quality, geographic reach and focus on high-growth industries, however all of the programs struggled to achieve long-term sustainability after the grant funding period ended.<sup>36</sup> In depth studies found that industry partners were skeptical upfront about the quality and usefulness of the training the students would receive, and were hesitant to provide monetary resources, though those that did collaborate with the colleges were highly satisfied with the skills of the graduates.<sup>37</sup> Both HGJTI and CBJTG grantees

**Community-Based Job Training Grants**  
**Years:** 2005 - 2010  
**Sponsor:** US Department of Labor  
**Target:** Adults and Youth  
**Total Funding:** \$622 Million  
**# Programs Funded:** 172  
**Program Lengths:** 3 years  
**Recipients:** Community colleges, industry groups, nonprofit training, public workforce agencies  
**Purpose:** To address a critical capacity shortage at community and technical colleges to train workers for high-growth occupations and to help strengthen an industry's regional competitiveness

<sup>33</sup> “National Science Foundation - Where Discoveries Begin.” *Advanced Technological Education | NSF - National Science Foundation*, [www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5464](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5464).

<sup>34</sup> *ibid.*

<sup>35</sup> Eyster, Lauren, et al. “Implementation and Early Training Outcomes of the High Growth Job Training Initiative: Final Report.” *Urban Institute*, 2 Feb. 2013

<sup>36</sup> Eyster, Lauren, et al. “Characteristics of the Community-Based Job Training Grant (CBJTG) Program.” *Urban Institute*, 2 Feb. 2010

<sup>37</sup> Eyster, 2013

incorporated online learning technology into their program design, which allowed them to attract a greater number of non-traditional students, though they found the creation of these online tools burdensome and expensive to create and maintain.<sup>38</sup> These programs laid the groundwork for rich, collaborative and flexible training programs between community colleges and industry groups, though most institutions found the programs challenging to sustain in the long term.

In response to the financial crisis and great recession, the Obama administration became interested in funding similar work-training partnerships between nonprofit education providers and industries.

**Health Profession Opportunity Grants**  
**Years:** 2010, 2015  
**Sponsor:** US Department of Health & Human Services  
**Target:** Low-Income Adults  
**Total Funding:** \$125 Million  
**# Programs Funded:** 64  
**Program Lengths:** 5 years  
**Recipients:** Community colleges, industry groups, nonprofit training, public workforce agencies  
**Purpose:** To provide training programs in high-demand health care professions to low-income individuals and to expand opportunities for economically disadvantaged individuals to obtain health care jobs while meeting growing employer demand for skilled health care workers

Towards this: the **Health Profession Opportunity Grants (HPOG)**, the **Trade Adjustment Assistance Community College and Career Training (TAACCCT)**, were created. HPOG focussed on creating training programs geared to help low-income adults acquire the skills and experience needed to gain entry or mid-level healthcare positions. Grantees were asked to build strong networks comprised of education providers, state or local work placement offices, and healthcare employers to design and implement the training. It also focussed on developing career pathways and stacked credentials. Courses were designed to be flexible for

student’s work and life schedules, so they could be pursued while working.<sup>39</sup> HPOG programs placed a high priority on providing a holistic package of resources and support needed for low-income students, such as transportation, child care, career and academic advising, as well as helping students find medical and mental health services. Studies showed that the majority of participants completed their courses, and those who completed the program found jobs in health care, and that employers were very satisfied with the quality of training of the graduates.<sup>40</sup> However, despite their success, the programs noted that it will be extremely challenging to sustain these programs without outside funding.<sup>41</sup>

**Trade Adjustment Assistance Community College and Career Training Grant Program**  
**Years:** 2011 - 2018  
**Sponsor:** US Department of Labor  
**Target:** Community Colleges  
**Total Funding:** \$1.9 Billion  
**# Programs Funded:** 256  
**Program Lengths:** 3-4 years  
**Recipients:** Higher Education Institutions  
**Purpose:** To provide eligible institutions of higher education with funds to expand and improve their ability to deliver education and career training programs of two years or less

The TAACCCT program is the largest federal workforce grant initiative to date. The TAACCCT supported programs had enrolled 404,815 individuals, had bestowed 237,979 credentials, and engaged over 2,500 employer partners as of

<sup>38</sup> Eyster, 2013

<sup>39</sup> Bernstein, Hamutal, et al. “Systems Change under the Health Profession Opportunity Grants (HPOG) Program.” *Urban Institute*, 2016

<sup>40</sup> Werner, Alan, et al. “Evaluation of the Health Profession Opportunity Grants Program: Descriptive Implementation and Outcome Study Report.” *Urban Institute*, 2016

<sup>41</sup> Bernstein, 2016

September 30, 2016.<sup>42</sup> TAACCCT provided grants for community colleges to build capacity for workforce education and training programs that offer short-term degrees or certificates of two years or less, towards careers in industries with a labor deficit. These programs were to collaborate with the state work-placement agencies, employers and industries, and other education and training providers to ensure the long-term sustainability of the programs, and that local needs were being met, as well implement studies evaluating the success of their programs. The program stressed that colleges innovate with strategies for helping adult learners obtain industry-recognized credentials quickly, and implement “career pathways, credits for prior learning, competency-based models, online training, strong student support systems,” as well as industry, state and community partnerships.<sup>43</sup><sup>44</sup> The grants were geared towards 16 high demand fields, including manufacturing, healthcare, energy, and Information Technology. In 2016, the TAACCCT created SkillsCommon.org, a library platform to house open source curricula for workforce development. The DOL sent out a notice to all grantees informing them of the resource, and requesting that schools upload information about the curriculum onto the platform, and to use it when designing new programs.<sup>45</sup> This is a major step towards open access educational content, though much of the material was designed prior to the creation of the platform, and does not translate easily onto it. Evaluations indicate that programs enjoyed a higher than average graduation rate, and that participants saw their incomes rise as a result of their studies.<sup>46</sup> The TAACCCT has been the most comprehensive and successful workforce training initiative to date, and is a great model to base future workforce training programs on.

In addition to these workforce development initiatives, the Obama administration oversaw the **Work Innovation and Opportunity Act (WIOA)** which was passed in 2013, updating the Workforce Investment Act of 1998 and well as the Wagner-Peyser Act. A statement summarizing the act by the U.S. Department of Education notes that “the 21st century public workforce development system created through WIOA builds closer ties between business leaders, State and Local Workforce Development Boards, labor unions, community colleges, non-profit organizations, youth-serving organizations, and State and Local officials to deliver a more job-driven approach to training and skills development.”<sup>47</sup> This act created a demand driven, workforce development system comprising of local Workforce Development Boards (WDBs) of local and state government, local industry and education leaders, that oversee a “One-Stop Center” providing and coordinating career and training services. The act used the

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<sup>42</sup>“Program Summary.” *Trade Adjustment Assistance Community College Career Training (ETA) - U.S. Department of Labor*, [www.doleta.gov/taaccct](http://www.doleta.gov/taaccct).

<sup>43</sup> “Program Summary.” *Trade Adjustment Assistance Community College Career Training (ETA) - U.S. Department of Labor*, [www.doleta.gov/taaccct](http://www.doleta.gov/taaccct).

<sup>44</sup> Eyster, Lauren, et al. “TAACCCT Approaches, Targeted Industries, and Partnerships.” *Urban Institute*, 30 May 2017

<sup>45</sup> TRAINING AND EMPLOYMENT NOTICE NO. 22-16, *Employment & Training Administration (ETA) - U.S. Department of Labor*, 5 December 2016

<sup>46</sup> Durham, Christin, et al. “Early Results of the TAACCCT Grants.” *Urban Institute*, 30 March 2017

<sup>47</sup> “UNITED STATES DEPARTMENT OF LABOR.” *WIOA, Employment & Training Administration (ETA) - U.S. Department of Labor*, [www.doleta.gov/wioa/overview.cfm](http://www.doleta.gov/wioa/overview.cfm)., Accessed 30 March 2018

successful “career pathways” programs implemented in the HPOG and TAACCCT. The overarching goal of this act was to reorient career service programs towards a “dual customer” approach, considering the needs of both the individual seeking a job as well as the needs of the employers in designing work-training and placement programs. It also seeks to provide a low-cost, short term postsecondary credentials to learners, to advance their skills beyond a high school diploma. However, critics of the program have pointed out that the WDBs are overly controlled by industry, are thus education services are biased towards job training rather than a blend of adult basic education services such as reading, writing and basic math skills. These critics point out that this could lead to the benefits of the WIOA falling largely on more educated participants, and leave behind the less prepared students, who are predominantly vulnerable, low-income populations.

To address the information asymmetries in the workplace around what jobs were available and what skills needed, the U.S. Department of Labor launched the **Workforce Data Quality Initiative** in 2010 “to fund the development, or enhancement, of state workforce longitudinal administrative databases.”<sup>48</sup> It supports a broad range of state level projects, largely centered around creating a data platform to provide jobseekers with information about available work, supply-demand analysis, and career pathway breakdowns. This program is run in conjunction with the **Statewide Longitudinal Data System** grant program, which is based at the U.S. Department of Education, and seeks to create a national dataset of education data at the individual level. States are expected to develop and run analysis on these two datasets, in order to provide insights into education and employment trends both locally and nationally.

The federal initiatives outlined above are all apart of a wider movement “changing the landscape of community colleges and how they prioritize and provide workforce education and training.”<sup>49</sup> The new model of successful workforce training programs focuses on credentialed skill sets leading towards career pathways, that are designed in collaboration between industry and education partners, and attained through flexible blended classroom training and hands on experience. However, institutions have struggled to maintain these programs long-term, facing challenges with keeping industry partners engaged, updating the curriculum to fit the changing needs of the workforce, and attracting and retaining high quality instructors. Where programs have seen success, their labors still remain highly localized and siloed, as they do not have the broader network or means with which to share the products they have created such as the courses, materials, tools, program plans and market research, or the experience and insights into running these programs.

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<sup>48</sup>“Workforce Data Quality Initiative (WDQI) Grant Information.” *Workforce Data Quality Initiative*, [www.doleta.gov/performance/workforcedatagrants09.cfm](http://www.doleta.gov/performance/workforcedatagrants09.cfm).

<sup>49</sup>Mikelson, Kelly S., et al. “TAACCCT Goals, Design, and Evaluation.” *Urban Institute*, 30 March. 2017

## Methodology:

Through these federal work-training initiatives, key needs for a work-training program have been clearly defined. Thus, any future work-training programs should be evaluated by their ability to fulfill these criteria. These criteria are based on the ideal that education institutions should work in partnership with local industries, business leaders, and government offices to provide timely, needed skills training to suit needs of a wide population from vulnerable, low income individuals to well-educated to prepare for a wide scale of jobs, from entry level to more advanced. This program should not be a financial burden on the student, flexible across diverse schedules and designed in such a way that vulnerable students have the support and access to career and academic services. Finally, the program should be embedded in a strong network of educational institutes in order to share best practices, and curriculum design and materials.

A successful work training program should:

- Build a network of industry group, state jobs boards, local support services, and other education institutions, and engage in program development<sup>50</sup>
- Conduct rigorous market research to identify future job openings, and the skills needed to fill them and update curriculum accordingly<sup>51</sup>
- Recruit and retain high quality instructors<sup>52</sup>
- Provide flexibly scheduled education programs to accommodate diverse schedules<sup>53</sup>
- Provide guided curriculum pathways that result in stackable credentials<sup>54</sup>
- Provide “career pathways”<sup>55</sup>
- Support low-income and vulnerable populations<sup>56</sup>
- Provide high quality career and academic services to their students<sup>57</sup>
- Build a program that is simultaneously financially sustainable, with affordable tuition rates<sup>58</sup>

These criteria are based on priority principles developed in previous funding initiatives from the DOL, particularly from the TAACCCT. The TAACCCT was chosen as the main model for this

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<sup>50</sup>Mikelson, 2017

<sup>51</sup>Mikelson, 2017

<sup>52</sup>Mikelson, 2017

<sup>53</sup>Mikelson, 2017

<sup>54</sup> Bailey, Thomas R., Shanna Smith Jaggars, and Davis Jenkins. *Redesigning America's community colleges*. Harvard University Press, 2015.

<sup>55</sup>*Workforce Professionals, Employment & Training Administration (ETA) - U.S. Department of Labor*, [www.doleta.gov/usworkforce](http://www.doleta.gov/usworkforce).

<sup>56</sup>Mikelson, 2017

<sup>57</sup>Mikelson, 2017

<sup>58</sup>Mikelson, 2017

evaluation because it is currently the largest government mechanism supporting workforce development in community colleges, and it has synthesized lessons learned in previous funding initiatives, and takes into account recent relative research on the best practices in workforce development. Each policy alternative will be scored on a three point scale: “Poor”, “Medium”, and “High Capacity”, where poor indicates the industry is ill-suited, ill-motivated, or incapable of fulfilling that criteria, “Medium” has some strengths in the particular area, though is somewhat flawed due to one or more mitigating factors, and high capacity indicates that the industry is well suited, well motivated, and capable of successfully fulfilling the criteria. A comprehensive dataset of individuals education and employment data does not exist, thus each evaluation determination is supported by pertinent research articles, reports, or datasets. While there are certainly outlier schools or programs whose ability to meet this criteria will not match the general population as a whole, this paper will focus on the strengths and weaknesses demonstrated by these sectors as a whole.

## Policy Alternatives:

The three policy alternatives explored in this section (For Profit Education, Online Education, and Apprenticeship Programs) all are being considered by the federal government for support in bills currently under the Trump Administration. These would be direct competitors of community colleges, particularly if the Republican sponsored “Promoting Real Opportunity, Success, and Prosperity through Education Reform Act” (“PROSPER Act”) allowed Pell grants to be used at online credential granting institutes, and loosened regulations at for-profit colleges and registered apprenticeship programs.

## For-Profit Education Sector

One policy alternative strongly favoured by the Trump Administration is to allow the free market to handle workforce education. The PROSPER Act is currently being reviewed in Congress, and if passed would loosen the tightly regulated for-profit education industry, and their eligibility for federal education loans and Pell Grants. The for-profit sector is wide, and offers a multitude of training programs, including non-certified credentials, as well as associates, bachelors, masters degrees and PhDs. There are ~1,300 for-profit education institutions in the United States. The largest schools such as the University of Phoenix, Strayer and DeVry tend to focus on technology and business sectors, with coordinated campuses across the national offering a proprietary curriculum program both in person and online. Two of the largest for-profit schools, Corinthian Colleges and ITT Tech closed in 2015 and 2016.

For-profit education has existed in the United States since the early 1900s, through trade schools, or those geared towards a specific industry such as beauty schools, or secretarial administration. This “sleepy” industry saw an enormous increase at the turn of the 20th



century, as enrollment shot up from 400,000 students enrolled in 2000 to 2 million in 2010.<sup>59</sup> These students were overwhelmingly people of color, first generation college students, women, and single mothers. This spike in students seeking a degree from for-profit institutions was driven by a complex confluence of factors. Over the latter 20th century, the responsibility of skill acquisition was transferred from the employer to the employee, as training a workforce was increasingly seen as an expensive burdensome task for companies.<sup>60</sup> Lower skill jobs became more scarce as the manufacturing sector closed factories in the United States and outsourced jobs, or they were replaced by automation.<sup>61</sup> Thus, a candidate needed more education and certification in order to be competitive for an shrinking pool of jobs. Concurrently, as more people were interested in pursuing higher education, federal funding for community colleges was cut drastically under the Bush Administration, as accessibility to private loans and credit increased in the lead up to the Great Recession.<sup>62</sup> Finally, federal welfare policies changed such that recipients needed to either be working or pursuing a degree or certificate to be eligible for aid.<sup>63</sup> All of this translated into millions of people deciding to seek postsecondary education, and the for-profit education industry was quick to step in and meet this need. For-profit schools and Wall Street investors quickly realized the financial potential of the sector, any many of the schools became publicly traded, and recruited investment bankers for their boards and leadership roles.<sup>64</sup> Under this leadership, the focus of non-profit schools became centered on making money for shareholders rather than on providing quality education for students.

For-profit education institutes have been criticized as “agile predators,” using deceptive or fraudulent recruitment practices to entrap vulnerable people in expensive education programs.<sup>65</sup> For-profit schools cost on average 19% more than public universities for bachelors degrees, and associate degrees and certificate programs are four times the average at community colleges.<sup>66</sup> The for-profit loan default rate is much higher than for non-profit students,<sup>67</sup> who typically earn less than their non-profit peers.<sup>68</sup> After a series of high profile court cases<sup>69</sup> and a

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<sup>59</sup> U.S. Department of Education, National Center for Education Statistics [NCES], 2011; U.S. Government Accountability Office [GAO], 2010.

<sup>60</sup> Locke, 2015

<sup>61</sup> Moore, Garrison and Bowman, Robert. *Headcount: Understanding the American Workforce: A Journalists Guide to the Essential Terms, Concepts, and History of Workforce Information*. Independently Published. April 6, 2018

<sup>62</sup> Cottom, 2017

<sup>63</sup> Cancian, Maria, Daniel R. Meyer, and Chi-Fang Wu. "After the revolution: Welfare patterns since TANF implementation." *Social Work Research* 29.4 (2005): 199-214.

<sup>64</sup> Bennett, Daniel L., Adam R. Lucchesi, and Richard K. Vedder. "For-Profit Higher Education: Growth, Innovation and Regulation." *Center for College Affordability and Productivity (NJ1)* (2010).

<sup>65</sup> Deming, David J., Claudia Goldin, and Lawrence F. Katz. "The for-profit postsecondary school sector: Nimble critters or agile predators?." *Journal of Economic Perspectives* 26.1 (2012): 139-64.

<sup>66</sup> Cellini and Golden, 2012

<sup>67</sup> Looney, Adam, and Constantine Yannelis. "A crisis in student loans?: How changes in the characteristics of borrowers and in the institutions they attended contributed to rising loan defaults." *Brookings Papers on Economic Activity* 2015.2 (2015): 1-89.

<sup>68</sup> Deming, Goldin, and Katz, 2012

undercover federal investigation,<sup>70</sup> the Obama Administration implemented a series of regulations on the industry which combined with a economic climate less favorable to easy credit, led to a moderate decrease in the sector after 2012. Proponents of for-profit schools argue that the free market is best suited to resolve market failures in workforce education, though critics point out that it is hardly a free market enterprise if 90% of for-profit tuition is paid for by federal or Pell Grants.

**Key Benefits and Strengths:** Despite the criticism of predatory practices, for-profit schools do provide a valuable service, tailoring programs to fit the needs of their students to help them graduate. Both community colleges and for-profits “serve as the point of entry for students who wouldn’t otherwise participate in post-secondary education.”<sup>71</sup> For-profit schools have excelled at creating a seamless enrollment system, where highly trained enrollment officers walk each student through the process from initial interest in pursuing education, to loan applications, enrolling in classes, and coming to class each day. In comparison, non-profit education institutes tend to have a lengthy admissions process, many bureaucratic hurdles to clear, and little guidance or support once enrolled, all requiring skills that favor middle or upper class students with strong social capital and community support.<sup>72</sup> The centralized corporate structure of for-profit schools allows them to conduct detailed market research, develop and roll out new training programs on campuses quickly in accordance to the needs of the market.

For Profit Education Sector: Evaluation of Work-Training Capacity		
Build a network of industry group, state jobs boards, local support services, and other education institutions, and engage in program development	Poor	For-profit schools struggle to maintain industry and government partners, who favor supporting non-profit education providers. They are also not willing to provide open access to their proprietary curriculum materials or program design. They would struggle to organize this network nexus, and be open to criticism of using partners for private financial gain. <sup>73</sup> Local industry groups have been leery of working with non-profit education providers, both from a financial and branding perspective. <sup>74</sup>
Conduct rigorous market research	Medium	For-profit schools with multiple schools and a large corporate organization

<sup>69</sup>Douglas-Gabriel, Danielle. “SEC Charges Executives at for-Profit College ITT with Fraud.” *The Washington Post*, WP Company, 12 May 2015, [www.washingtonpost.com/business/economy/sec-charges-executives-at-for-profit-college-itt-with-fraud/2015/05/12/d3bb5c24-f8c5-11e4-a13c-193b1241d51a\\_story.html](http://www.washingtonpost.com/business/economy/sec-charges-executives-at-for-profit-college-itt-with-fraud/2015/05/12/d3bb5c24-f8c5-11e4-a13c-193b1241d51a_story.html).

<sup>70</sup> Kutz, Gregory D. "For-Profit Colleges: Undercover Testing Finds Colleges Encouraged Fraud and Engaged in Deceptive and Questionable Marketing Practices. Testimony before the Committee on Health, Education, Labor, and Pensions, US Senate. GAO-10-948T." *US Government Accountability Office*(2010).

<sup>71</sup> Bueschel, Andrea Conklin. "The missing link: The role of community colleges in the transition between high school and college." *From high school to college: Improving opportunities for success in postsecondary education* (2003): 252-284.

<sup>72</sup>Quirke, Linda. "Annette Lareau, Unequal Childhoods: Class, Race, and Family Life, with an Update a Decade Later." *Canadian Journal of Sociology* 37.1 (2012): 89-91.

<sup>73</sup> Kinser, Kevin. "Dimensions of corporate ownership in for-profit higher education." *The Review of Higher Education* 30.3 (2007): 217-245.

<sup>74</sup> Kinser, 2007

to identify future job openings, and the skills needed to fill them and update curriculum accordingly		have the benefit of being able to devote intensive resources to market research, as well as aggregated hiring data from their graduates. However, as noted above, companies are unwilling to provide insider information about future regional hiring. <sup>75</sup>
Recruit and retain high quality instructors	Medium	For-profit schools tend to favor hiring instructors with industry rather than academic or pedagogical experience. Thus, their criteria for hiring is much lower than other colleges. However, traditionally trained academics tend to prefer working for non-profit schools. <sup>76</sup>
Provide flexibly scheduled education programs to accommodate diverse schedules	High	For-profit schools have championed online degree programs, and arranging course offerings so they are available to students with irregular schedules. <sup>77</sup>
Provide “guided curriculum pathways” and stackable credentials	High	For-profit schools have been very successful in creating guided curriculum pathways for their students, and linking these to reasonable careers for their students. <sup>7879</sup>
Provide “career pathways”	Medium	For-profit schools offer both short term certificates as well as traditional degrees in Bachelors, Masters, and PhDs. However, graduates of for-profit colleges tend not to be as competitive or desirable to employers looking to fill more advanced positions. <sup>80</sup>
Support low-income and vulnerable populations	High	They have demonstrated excellence in supporting low-income and vulnerable populations. The completion rates for these groups are consistently higher than community colleges or traditional four year colleges. <sup>81</sup>
Provide high quality career and academic services to their students	High	For-profit schools excel in career and academic services for their students. The industry is strictly regulated such that a certain percentage of students need to be employed after graduation, so these schools invest heavily in completion rates and job placements for their graduates. <sup>82</sup>
Build a program that is simultaneously financially sustainable, with affordable tuition rates	Poor	For-profit schools are often the most expensive option, particularly for low-income students. <sup>83</sup> Certificate programs tend to be 20% more than community colleges, bachelor's degrees are 4x more than traditional four year schools. Students from for-profits are far more likely to default on their loans. <sup>84</sup>

<sup>75</sup> Cotton, 2017

<sup>76</sup> Bailey, Thomas, Norena Badway, and Patricia J. Gumpert. "For-Profit Higher Education and Community Colleges." (2001).

<sup>77</sup> Allen, Elaine, and Jeff Seaman. *Going the distance: Online education in the United States, 2011*. Sloan Consortium., Newburyport, MA 01950, 2011.

<sup>78</sup> Rosenbaum, James E. "The Complexities of College for All." *Sociology of Education*, vol. 84, no. 2, 2011, pp. 113–117.

<sup>79</sup> Holzer and Baum, 2017

<sup>80</sup> Cotton, 2017

<sup>81</sup> Deming, David J., Claudia Goldin, and Lawrence F. Katz. "The for-profit postsecondary school sector: Nimble critters or agile predators?." *Journal of Economic Perspectives* 26.1 (2012): 139-64.

<sup>82</sup>Deming, Goldin, Katz, 2012

<sup>83</sup> Cellini, Stephanie Riegg. "Financial aid and for-profit colleges: Does aid encourage entry?." *Journal of Policy Analysis and Management* 29.3 (2010): 526-552.

<sup>84</sup> Deming, Goldin, Katz, 2012

**Summary:** The For-Profit industry saw a massive increase in enrollment at the turn of the 20th century due to a confluence of social and economic factors. This increase was largely driven by low-income students who were looking to upgrade their skills or acquire a degree to be more competitive in an increasingly competitive job market. The for-profit industry has been very successful in providing compelling options, decreasing social and financial barriers to enrollment, and training these students such that they are able to graduate and get jobs, in comparison to community colleges or traditional four year colleges. For-profit schools have driven technological advances in online courses, as well as creating flexible programs that can accommodate a diverse population of students. However, they have also engaged in predatory behaviour, often misleading students about the prospective earning potential of various occupations, as well as the cost of their education programs. This has led to a crisis of student debt, particularly harmful for students who shouldered immense student debt to prepare for low paying entry level jobs. While the for-profit industry filled a vacuum of need in the early 20th century, it is not equipped to train the U.S. population in a way that is a fair, beneficial to society, and provides a stable pathway to middle class.

## Open online education

Online education is poised to contribute a large share of work-training and upskilling the workforce. Distance learning has been utilized since the turn of the 20th century, through correspondence courses offered by universities and technical schools. For-profit schools, particularly the University of Phoenix pioneered the use of online platforms for courses, offering it as a useful model for teaching small groups of students across wide geographic regions. Online course offerings are pervasive across the education spectrum from community colleges to the Ivy League, with a majority of colleges students taking at least one class online.<sup>85</sup> In 2012, Coursera and EdX were founded, and with it the “massive open online course” or MOOC. Coursera is a for-profit company founded by two professors at Stanford University, and EdX is a non-profit open source platform founded jointly by Harvard and MIT. Both offer a learning management platform for universities or companies to create and host online courses at a massive scale, which are typically available free to students or for a small fee. Millions of students around the world have signed up to take classes on these platforms on topics ranging from Shakespearean Poetry to Quantum Computing. There are a myriad of for- and non-profit open online training platforms geared specifically towards building workplace skills such as Khan Academy, or LinkedIn Learning which is built on Lynda.com, who LinkedIn acquired in 2016.

The pedagogy and design of online courses has developed very rapidly in the 6 years since MOOCs were introduced. Problems with the model arose quickly, as the schools found that

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<sup>85</sup>Allen, I. Elaine, and Jeff Seaman. "Online Report Card: Tracking Online Education in the United States." *Babson Survey Research Group* (2016).

courses had very low completion rates, the course offerings were somewhat random and disconnected from a curriculum path, and the courses were very expensive to make.<sup>86</sup> The main solution for universities to address this problem has been to offer a series of “small private online courses” (SPOCS) or MOOCs, on a specific topic for a higher fee, and grant a degree, certificate, or credential upon completion such as a professional certificate, micromaster or Master’s degree. Education providers have been interested in tailoring these programs towards the development of specific advanced skills in fields which they have a competitive advantage or are a known entity, and that are widely marketable to the labor force and industries. Companies are also requesting and underwriting tailored programs from top research universities, or creating their own custom programs geared towards theoretical training they’d like made available to their employees as well as open to paying students, such as the Systems Engineering program created in a collaboration between MIT, Boeing, and NASA, or Microsoft’s Professional Program in Artificial Intelligence. These programs are much less expensive than traditional education options, with courses costing between ~\$100 - \$500 each. The courses are also setup such that the student can take it at their own pace, access the lecture content, homework and problem sets, and exams on their own schedule and complete it as quickly or slowly as they like.

These open online programs are excellent options for self-motivated individuals looking to gain a new skill set, or who have cultivated an enjoyment of learning. Studies show that the largest demographic user of open online courses are young, employed, and have completed a bachelors or masters degree.<sup>87</sup> However, the model is not particularly well suited to individuals who haven’t acquired a skill set enabling them to direct their own education, without any outside support or community. There are very few remedial or even introductory education offerings on these platforms, and no ability to organize content or courses across schools or programs into a stepped curriculum program geared to move learners from basic to advanced content. Indeed, the model of online education is often ill-suited for people with low-education or coming from disadvantaged backgrounds. Studies of community college have consistently shown that students tend to perform less well in online courses than on-campus courses, though blended learning models outperform both.<sup>88</sup> In addition, there is very little evidence so far to determine how the labor market will reward these online credential programs, and whether employers will see them as indicators of quality training. There is also no career service support embedded in these programs, and no indication of whether or not there will be jobs available for individuals who complete them.

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<sup>86</sup> Fischer, Gerhard. "Beyond hype and underestimation: identifying research challenges for the future of MOOCs." *Distance education* 35.2 (2014): 149-158.

<sup>87</sup> Christensen, Gayle, et al. "The MOOC phenomenon: who takes massive open online courses and why?." (2013).

<sup>88</sup> Deschacht, Nick, and Katie Goeman. "The effect of blended learning on course persistence and performance of adult learners: A difference-in-differences analysis." *Computers & Education* 87 (2015): 83-89.

**Key Benefits and Strengths:** Despite these issues, open online programs offer a good alternative for well educated, highly motivated individuals to gain additional skills towards furthering their career. Previously, in order to gain high quality training in specialized skill areas such as data science analytics, machine learning, or quantum computing a learner needed to enroll in a university degree program that offered these topics, or attend extremely selective and expensive training seminars or bootcamps. With the advent of open online education, learners can enroll in these programs and take classes at their own pace, and complete the coursework on their own schedules. Industries such as Boeing, IBM and Microsoft are closely tied to the production of these programs, often developed as internal training options for their own employees. This improves the quality of the courses offered, motivating skill acquisition through real world problems faced by these industries. On the production side, the courses are easy to be rolled out at small and large scale, and can be updated and re-released as needed.

<b>Open Online Education: Evaluation of Work-Training Capacity</b>		
Build a network of industry group, state jobs boards, local support services, and other education institutions, and engage in program development	Medium	There is a new trend for industries to partner with leading universities to create curriculum packages designed to upskill their current employees, or potential future hires. However, courses are designed either as a collaboration between a university and industry group, or from the university alone. There has not been collaboration with state job boards, or intention for the programs to be registered work training opportunities.
Conduct rigorous market research to identify future job openings, and the skills needed to fill them and update curriculum accordingly	Poor	The program content is largely driven by interested faculty at universities, industry collaborators, or strategic decisions made by the administration. Universities are more incentivized to create programs that will attract a large number of learners, than to ensure that their are jobs in which the learners can use their skills.
Recruit and retain high quality instructors	High	The faculty creating and leading these programs are often the top in their respective fields, at leading research universities. The nature of the platform allows these instructors to create a program that can be released many times with minimal input from the authors.
Provide flexibly scheduled education programs to accommodate diverse schedules	High	The key strength of open online courses is the flexibility they allow to the learner. These programs are often self-paced, allow the learner to complete the course in as little or much time as they choose, at the best time for them.
Provide “guided curriculum pathways” and stackable credentials	Medium	Programs increasingly offer a guided series of courses through a curriculum, such as Microsoft’s Computer Science or Artificial Intelligence certificates. <sup>89</sup> However, they do not offer remedial courses providing more basic information than the introductory course, and they do reference other material available on the platform or internet.
Provide “career pathways”	Poor	The credentials tend to be suited for learners who are already high skilled and high educated, looking to gain a new skill for personal enjoyment or professional advancement. They are not suited for low skilled workers looking to gain entry level employment.
Support low-income and vulnerable populations	Poor	Open online programs require access to a computer and high speed internet. Completing these programs requires a high level of self-motivation,

<sup>89</sup>“Microsoft.” *EdX*, 17 Jan. 2017, [www.edx.org/school/microsoft](http://www.edx.org/school/microsoft).

		drive, patience, curiosity, and problem solving ability, all qualities that have been shown to be diminished when suffering impoverished conditions. <sup>9091</sup> At this point, is no hands on support, or strong learning community needed to assist disadvantaged learners in being successful in these programs.
Provide high quality career and academic services to their students	Poor	There are very few personal support mechanisms built into open online education, particularly for matters not pertaining to the specific material in the course. However, if enrolled in a degree program on the platform, more support is available though not at the level provided in a traditional on-campus program.
Build a program that is simultaneously financially sustainable, with affordable tuition rates	High	Open online courses are a fixed product to create, and can enroll large numbers of learners over a long period of time. Thus can charge very low rates for completion, while still making enough money to be very lucrative for the creators.

**Summary:** Open online courses offering credentials and degrees on platforms such as EdX or Coursera are a technological breakthrough, and offer real solutions towards education at a large scale. They allow learners tremendous flexibility to complete the programs in their own time, and at their own pace. These courses are very cheap, often available for free or a minimal fee. Degrees can be obtained for a fraction of the price of traditional on-campus programs, such as the University of Illinois’s Master of Business Administration available on Coursera for \$22,000 in comparison to the average \$140,000 of traditional programs. This model allows for leaders in the field to create high quality courses and programs, that are openly available to any learner anywhere in the world. Open online courses offer much academic potential, but have yet to demonstrate that they can meet the needs of a diverse population. They are best suited for well-educated, highly skilled learners who already possess the mental and behavioral skills needed to excel without assistance. They are also geared towards sophisticated computer users, who have easy access to high speed internet. In addition, there is no “guided pathway” to ensure that low-skilled learners can build up to the programs being offered through remedial education.

## Apprenticeship programs

Apprenticeship programs are being encouraged by the federal government and labor advocacy organizations as a solution for efficient, cost effective workforce training. Under this model, registered companies would pair entry level workers with a skilled mentor, paying them a nominal wage to work and conduct complementary classroom education. Apprenticeships are widely used in Europe, though have been slow to catch on in the United States. In 2017 there

<sup>90</sup> Spears, Dean. "Economic decision-making in poverty depletes behavioral control." *The BE Journal of Economic Analysis & Policy* 11.1 (2011).

<sup>91</sup> Haushofer, Johannes, and Ernst Fehr. "On the psychology of poverty." *Science* 344.6186 (2014): 862-867.

were about 500,000 apprentices across 21,000 programs.<sup>92</sup> The Obama Administration strongly supported Apprenticeship programs, creating a series of grant programs to support their development funding states, industries, and workforce intermediaries. President Obama aimed to establish 750,000 apprenticeships in the United States by the end of 2018. The Trump Administration has also pledged to support the growth of apprenticeship programs. In 2016, the President issued an executive order to expand apprenticeships in the United States, with an initiative that will nearly double annual funding for the programs to \$200 million, with a goal to create five million positions in the next five years.<sup>93</sup>

The Apprenticeship model has attracted much bipartisan interest as a solution towards work training and skills development in the American labor force. This model shifts the responsibility of training the labor force onto employers, while providing tax incentives and federal funding supports to apprentice sponsors. Apprentices are employed by their sponsor company at a low wage, and are provided on the job training and skills development. Apprenticeship sponsors are registered with the Employment and Training Administration (ETA) of the Department of Labor (DOL), and are either individual employers or groups of employers. “Sponsors recruit, screen and hire apprentices; develop formal agreements with them identifying the length of the program, skills to be learned, the wages to be paid at different points of time, and the required classroom instruction; and work with state apprenticeship agencies” to make sure they meet all federal and state requirements.

Apprenticeship programs have made strong inroads in the construction and manufacturing industries, as well as in industries dealing with basic utilities.<sup>94</sup> These programs tend to offer a limited number of apprentice positions, typically 1 - 5.<sup>95</sup> Sponsors have been pleased with the results of the programs, noting that they believed in raised productivity, strengthened worker morale and pride, improving worker safety, and improved retention rates and ease in meeting licensing requirements.<sup>96</sup> In addition, these programs enjoy very high completion rates, and 91% of apprentices find jobs after finishing their programs, with an average entry wage of \$51,000, without any student debt.<sup>97</sup> Registered apprenticeship programs are required to combine on the job training with classroom instruction. Sponsors either partner with community colleges, for-profit colleges, or provide the classroom training themselves. Often these classes are arranged or offered in the evening or weekends, not during work hours, and the apprentices pay for the costs of education. Advocates for apprenticeship programs have proposed combining the apprentice program with the traditional education track, allowing

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<sup>92</sup>“United States Department of Labor.” *United States Department of Labor*, [dol.gov/](http://dol.gov/).

<sup>93</sup>“Presidential Executive Order Expanding Apprenticeships in America.” *The White House*, The United States Government, [www.whitehouse.gov/presidential-actions/3245/](http://www.whitehouse.gov/presidential-actions/3245/).

<sup>94</sup>Lerman, Robert, Lauren Eyster, and Kate Chambers. "The Benefits and Challenges of Registered Apprenticeship: The Sponsors' Perspective." *Urban Institute (NJ1)* (2009).

<sup>95</sup> Lerman, 2009

<sup>96</sup> Lerman, 2009

<sup>97</sup>“ApprenticeshipUSA Is Upskilling America.” *National Archives and Records Administration*, National Archives and Records Administration, [obamawhitehouse.archives.gov/blog/2016/10/21/apprenticeshipusa-upskilling-america](http://obamawhitehouse.archives.gov/blog/2016/10/21/apprenticeshipusa-upskilling-america).



apprentices to take classes and have experience in the program count towards a formal degree. While a number of successful examples have emerged, this approach has not been widely adopted.<sup>98</sup>

Despite the many benefits of these programs, Apprenticeship programs could be easily taken advantage of if not tightly regulated. If done with a strong emphasis on education, the programs can be prohibitively expensive,<sup>99</sup> and if not could provide poor or narrow training that would not benefit the learner over the long term. Often the sponsors leave the pursuit and cost of classroom education up to the apprentices. In addition, apprenticeship positions are extremely competitive, many programs have a multi-year waiting list,<sup>100</sup> or else employers only offer open positions to current employees, or have the candidates take a proficiency test to be considered for the program. This tendency serves to weed out disadvantaged applicants, with poor previous academic training. This along with discriminatory recruitment practices has contributed to apprentice programs being accused of “opportunity hoarding” spots for privileged, white groups. Finally, registering and maintaining these programs can be an extremely high administrative burden on companies, making it a challenging or unappealing choice for small companies for whom the relative cost of training would already be high.

**Key Benefits & Strengths:** Apprenticeship programs can be a strong alternative for individuals looking to start or change careers. They allow apprentices to collect an income, and gain valuable employment experience while they are pursuing a degree or credential. Working experience helps to motivate the theoretical knowledge learned in the classroom, as the learner can immediately apply their skills to the workplace. Apprentices are more likely to complete their program, without debt, and find employment than traditional college students.

Apprenticeship Programs: Evaluation of Work-Training Capacity		
Build a network of industry group, state jobs boards, local support services, and other education institutions, and engage in program development	Poor	Apprenticeships have not worked closely with local job boards and support organizations, and have made few inroads into developing collaborations with community colleges or other colleges. Some states, particularly South Carolina, have seen success in organizing apprentice programs at community colleges grouping small companies together and delivering a complementary curriculum. This model is promising, but has not been widely adopted. <sup>101</sup>
Conduct rigorous market research to identify future job openings, and the skills needed to fill them and update	High	Having companies create apprenticeship programs would ensure that the jobs and skills trained in would be in demand. The necessary skills for the job would be abundantly evident to both employer and apprentice, and would flexibly evolve as the positions required.

<sup>98</sup>McCarthy, Mary, Palmer, Iris, and Prebil, Michale. “Connecting Apprenticeship and Higher Education” *New America Center on Education and Skills*, 2017

<sup>99</sup>Helper, Susan, “The Benefits and Costs of Apprenticeships: A Business Perspective”, Department of Commerce. June 2016

<sup>100</sup>Lerman, Robert. “Expanding Apprenticeship Opportunities in the United States.” *Brookings*, Brookings, 28 July 2016, [www.brookings.edu/research/expanding-apprenticeship-opportunities-in-the-united-states/](http://www.brookings.edu/research/expanding-apprenticeship-opportunities-in-the-united-states/).

<sup>101</sup> Lerman, Robert, Lauren Eyster, and Kate Chambers. "The Benefits and Challenges of Registered Apprenticeship: The Sponsors' Perspective." *Urban Institute (NJ1)* (2009).

curriculum accordingly		
Recruit and retain high quality instructors	Medium	Unless the program were administered in tandem with an education institution, apprentice programs would be forced to rely on pre-existing curriculum at local institutions and thus be subject to the local market standards. <sup>102</sup>
Provide flexibly scheduled education programs to accommodate diverse schedules	Medium	Registered apprenticeship programs have a designated period of time built into the program for the apprentice to participate in classroom training, often 1-2 days per week.
Provide “guided curriculum pathways” towards stackable credentials	Medium	As noted above, unless the company has collaborated on a cohesive education and training program they are subject to local market standards. However, the skills required on the job would be more apparent to the student, from their experience training and working.
Provide “career pathways”	High	The apprenticeship program is in itself a guided career pathway, with the apprentice starting the program as an entry level trainee, and graduating as a highly skilled, adept worker with connections and experience in the field.
Support low-income and vulnerable populations	Poor	Due to the selective nature of apprentice programs, with each company taking ~1 - 5, it is likely that underprepared, disadvantaged workers would not be hired. This has largely been the case in the United States thus far, though some states like South Carolina have made strides towards combating discriminatory recruitment practices. <sup>103</sup>
Provide high quality career and academic services to their students	Medium	By their nature, apprenticeship programs provide excellent career service support. However, most programs have not offered rigorous academic support, often leaving this portion of the training up to the student. <sup>104</sup>
Build a program that is simultaneously financially sustainable, with affordable tuition rates	High	These programs allow apprentices to earn an income while pursuing their education. Most apprentices graduate without any debt. The programs are produced at small scale by the companies, thus easing their financial burden.

**Summary:** Apprenticeship programs are an excellent option for individuals seeking entry into a new field, providing valuable hands on training and allowing the learner to collect an income while pursuing their education. However, these programs could be strengthened by strong networks and partners in state job services and education institutions. Organized by companies alone, programs offer more limited classroom training options, and are subject to discriminatory recruitment practices.

<sup>102</sup> “Connecting Apprenticeship and Higher Education.” *New America*, [www.newamerica.org/education-policy/events/connecting-apprenticeship-and-higher-education/](http://www.newamerica.org/education-policy/events/connecting-apprenticeship-and-higher-education/).

<sup>103</sup> Kuehn, Daniel. “Diversity and Inclusion in Apprenticeship Expansion.” *Urban Institute*, 11 Oct. 2017, [www.urban.org/research/publication/diversity-and-inclusion-apprenticeship-expansion](http://www.urban.org/research/publication/diversity-and-inclusion-apprenticeship-expansion).

<sup>104</sup> Holzer & Baum, 2017

## Policy Recommendations:

This paper proposes a new workforce training initiative, based on previous iterations of Department of Labor initiatives, particularly ATE, HPOG, TAACCCT, and the WIOA. The proposed Workforce Training Centers would be comprised of partners from industry, non-profit two year colleges, state job boards and local community organizations, and nonprofit four year colleges or universities. The centers would be focused on a particular topic in a high growth, in demand industry such as Advanced Manufacturing, Healthcare, or Information Technology. The centers would work with the partners to create curriculum programs comprised of a series of courses that result in a credential geared to teach specific workplace skills at varying levels of difficulty, from entry level to advanced career skills. Credentials would be stackable, so there would be a progression of options from basic to advanced skills. The courses would be organized into guided curriculum pathways, with a logical progression from beginner to more advanced topics in the series. Each course would be produced with the intention of being implemented in a blended learning format, based at a community college. They would also be created in a such a way that they would be easily administered at any institution, and openly available to any interested party to review. The centers would collaborate on a shared overall course design and learning management system, and the courses would be available on a shared platform.

## Workforce Training Centers

Community colleges have been “tasked with reviving social mobility in the midst of growing economy inequality,”<sup>105</sup> asked to prepare students with the greatest academic and economic needs for the modern day workforce, “while simultaneously bearing the brunt of dwindling financial support for higher education.”<sup>106</sup> This shift towards workforce training and development requires establishing productive and collaborative relationships with local industry leaders to help colleges create curriculum programs to train potential workers. These relationships are expensive and time-intensive, requiring social capital, trust, and dedicated administrators.<sup>107</sup> Industry leaders often fail to see the potential of partnering with community colleges, not trusting them to produce adequate graduates.<sup>108</sup> Thus, community colleges often find making and retaining industry partnerships challenging.<sup>109</sup> These partnerships are crucial to

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<sup>105</sup>Century Foundation. (2013). Bridging the higher education divide: Strengthening community colleges and restoring the American dream. New York, NY: Author

<sup>106</sup> The effectiveness of blended online learning courses at the community college level Sarah Ryan

<sup>107</sup> Putnam , R. ( 2000 ). *Bowling alone* . New York , NY : Simon & Schuster .

<sup>108</sup>Durham et al, 2017

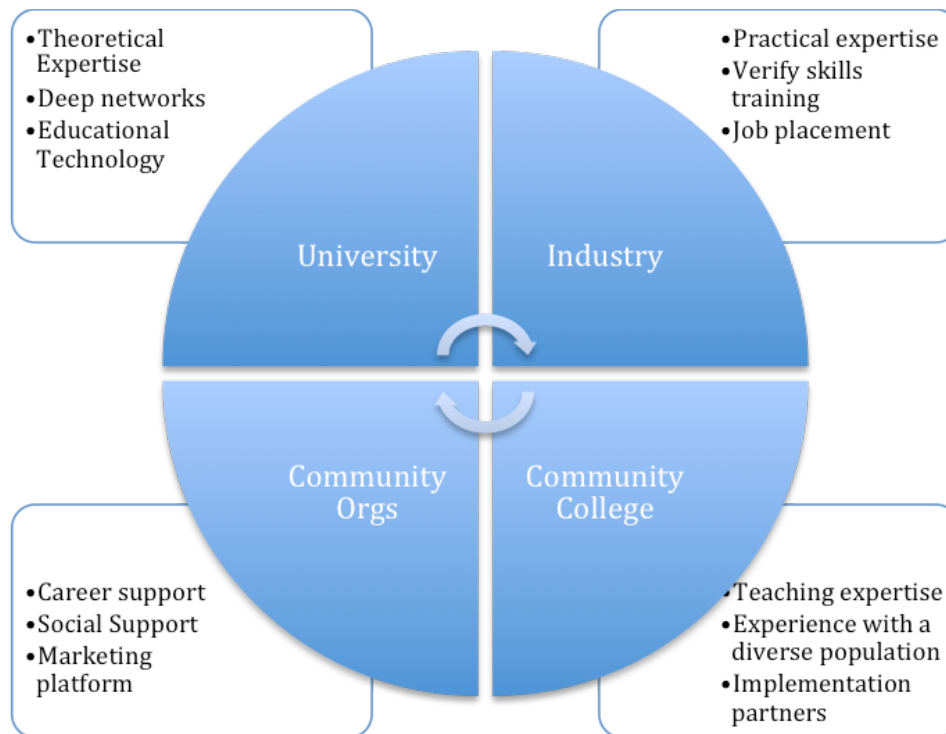
<sup>109</sup> Jr, David W. Sink, and Karen Luke Jackson. "Successful community college campus-based partnerships." *Community College Journal of Research & Practice* 26.1 (2002): 35-46.

developing stacked credential programs, that prepare students for various positions along a career pathway. Colleges can work with industry partners to learn about future job opportunities, and to develop a training and curriculum plan to retrain the workforce to fill those roles. Industries can provide case studies, realistic training equipment and scenarios, and verify that the training is rigorous and satisfactory. They then benefit by having a pool of trained workers to hire, while the college has a job placement plan for their students. Community college and industry partnerships have been supported by federal funding initiatives since the 1990s, and continue to be a productive means to develop a more skilled labor force.

Few work training programs have included universities in this relationship. By partnering with universities, community colleges could have access to their rich industry connections and faculty expertise and teaching acumen. The Georgia Institute of Technology's Manufacturing Program has strong established partnerships with at least 17 corporations including Boeing, General Dynamics, Ford and Coca-Cola, who collaborate on research and innovative new manufacturing practices, as well as internship and employment opportunities for their students.<sup>110</sup> The University of Oklahoma School of Petroleum and Geological Engineering has long standing relationships with Conoco-Phillips and Texaco, and Johns Hopkins Medical School has numerous industry partners in medical fields, from Walgreens to major insurance providers. Including universities partners in the community college work training program would allow the colleges to benefit from their existing relationships, as well as to offer higher level subject matter expertise in curriculum development, instructional design, and course content.

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<sup>110</sup>“Georgia Institute of Technology Georgia Tech Manufacturing Institute.” *Georgia Tech Manufacturing Institute*, [www.manufacturing.gatech.edu/industry-partners-program](http://www.manufacturing.gatech.edu/industry-partners-program).



University faculty could contribute to the creation of courses for work training programs, and utilize their strong networks of researchers and practitioners working at the cutting edge of the field who could be featured in course content, as well as identifying new companies to partner with. Finally, most universities have advanced digital production studios, as well as a dedicated staff to support the creation of course content. Universities could be utilized for their intellectual capital, by including university professors in the development of higher level content; their social capital, by taking advantage of their industry partnerships and those of their faculty; and their infrastructure, by utilizing their centers for digital content creation.

While these strengths can be leveraged to make high quality online courses and develop strong industry wide partnerships, community colleges expertise of working with a diverse student population, including disadvantaged students, older students, or students with poor academic preparation is critical to the programs success. Community colleges would serve as the implementation site, teaching and facilitating the courses, enrolling the students and awarding the certificates or degrees. Community college instructors could create digital tools for existing course content, or develop content to support new programs in collaboration with university professors. Finally, these centers would develop relationships with public workplace agencies such as One Stop Centers, or other job boards or support structures to both find students for the program and to help students find jobs after completion. The centers would also work with local non-profit community organizations to assist with social supports for the students, such as assistance in transportation, child-care, or mental health counseling. Both the HPOG and TAACCCT strongly encouraged grantees to develop partners to help support students who needed these services, and studies of both programs found that this component

was a strong indicator of success.<sup>111 112</sup> Local non-profits drove students to school, assisted them in purchasing books and course materials, and provided access to healthcare, all barriers that would prove prohibitive to disadvantaged students. Public workplace agencies can steer prospective students into suitable programs, and help ensure that the students are able to get all the federal aid available to them.<sup>113</sup> These agencies can also assist in job placement for graduates, working with the community college to make sure all options are being explored.

These centers should be organized into broad thematic domains, and produce numerous course series to build cohesive stackable credentials to support career pathways in the given field. The domains will be growth industry sectors, such as Advanced Manufacturing, Clean Energy, Computer Science, Engineering, Business Entrepreneurship, Transportation, or Health Care. By focusing on a domain, centers can ensure that the partners are all well suited for their contributions, and are producing high quality educational content and curriculum. Previously, federal workforce initiatives have funded individual projects featuring a collaboration between a community college and industry partner to create a single credential program or course geared towards a specific job at the partner company, and thus were domain specific by proxy. It would be more effective for centers to create fruitful partnerships that create many credential programs geared towards a variety of specific jobs in the given industry. The centers will capture large scale skill gaps pervasive in industries, and design curriculum programs to teach these skills. These centers will need to be able to accommodate multiple industry partnerships, as they prepare curriculum that would be suited across different companies and job types.

**Key Recommendations:** The Department of Labor should provide resources for a competitively selected series of “Workforce Training Centers,” that will be housed at non-profit organizations such as community colleges, universities or foundations, that will serve as “technological hubs” to interface between workers, industries, and educators to create a pathway for workers to gain education towards a desired career path. Workforce education requires cross cutting expertise; an in-depth knowledge of the skills needed and problems faced on the job, theoretical expertise of the underpinning science, as well as experience teaching a diverse student population. A collaboration between industry leaders, community or technical colleges, public and non-profit organizations, and universities would ensure that all of these were covered by the strongest possible contributors. The model of community college, industry, and public & community support organizations working together has been the standard for work-training initiatives sponsored by the DOL, such as in the HPOG, and TAACCCT. It is increasingly looked to as the gold standard practice for developing workforce training programs.<sup>114 115</sup> However, these collaborations have rarely included university partners.

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<sup>111</sup>Durham et al, 2017

<sup>112</sup>Anderson, Theresa, et al. “Introduction to the Health Profession Opportunity Grants (HPOG) Program and First Year Implementation and Outcomes.” *Urban Institute*, 2 Feb. 2017

<sup>113</sup> Kennedy, Sharon A. *Classroom at the End of the line': Assembly Line Workers at Midwest Community and Technical Colleges*. CreateSpace Independent Publishing Platform, 2013.

<sup>114</sup>Mann, Elizabeth. “A Toolkit for Building Successful Community College-Employer Relationships.” *Brookings*, Brookings, 31 July 2017, [www.brookings.edu/research/a-toolkit-for-building-successful-community-college-employer-relationships/](http://www.brookings.edu/research/a-toolkit-for-building-successful-community-college-employer-relationships/).

Universities could function as valuable resources in developing work training programs, as they have rich theoretical expertise, work on the cutting edge of the field embedded in an international network of researchers and practitioners, and already have strong industry partnerships.

## Open Online Digital Education Tracks

Online courses are increasingly offered to students at higher education institutions across the spectrum.<sup>116</sup> Online classes do not require classroom space or synchronous meeting times, allowing schools to release enrollment caps for courses. Course content such as filmed lectures and homework materials can be re-used, freeing up time for the faculty. Reduced class time hours and access to high quality self-paced content is also attractive to many students, particularly those who are working, or have other commitments.<sup>117</sup> However, studies have consistently shown that online courses have lower completion and performance rates than traditional classes.<sup>118</sup> This is particularly true for non-traditional students, who require more external support and lack crucial skills regarding academic self-efficacy, time and environment management, and metacognitive self-regulation.<sup>119</sup> Blended learning is a model which combines aspects of online learning and classroom learning. Students watch lectures, and engage in the online parts of the course on their own time, and then the in-class component can focus on more interactive exercises, discussions, or reviewing challenging problems or materials. Many studies have found that students perform on exams, and have higher retention rates in blended courses than in traditional courses.<sup>120121122123124</sup> Blended

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<sup>115</sup>Soares, Louis. "The Power of the Education-Industry Partnership." *Center for American Progress*, [www.americanprogress.org/issues/economy/reports/2010/10/04/8518/the-power-of-the-education-industry-partnership/](http://www.americanprogress.org/issues/economy/reports/2010/10/04/8518/the-power-of-the-education-industry-partnership/).

<sup>116</sup>Babson College. "2015 Survey of Online Learning | News & Events." *2015 Survey of Online Learning | News & Events | Babson College*, [www.babson.edu/news-events/babson-news/Pages/2016-babson-releases-2015-survey-of-online-learning.aspx](http://www.babson.edu/news-events/babson-news/Pages/2016-babson-releases-2015-survey-of-online-learning.aspx).

<sup>117</sup> Shea, P. (2007). Towards a conceptual framework for learning in blended environments. In A. Picciano, & C. Dziuban (Eds.), *Blended learning: Research perspectives* (pp. 19e37). United States of America: Sloan Consortium.

<sup>118</sup>Xu, Di, and Shanna Smith Jaggars. "Online and Hybrid Course Enrollment and Performance in Washington State Community and Technical Colleges. CCRC Working Paper No. 31." *Community College Research Center, Columbia University* (2011).

<sup>119</sup> Lee, Y., Choi, J., & Kim, T. Discriminating factors between completers of and dropouts from online learning courses. *British Journal of Educational Technology*, 44(2), (2013). 328e337

<sup>120</sup> Deschacht, Nick, and Katie Goeman. "The effect of blended learning on course persistence and performance of adult learners: A difference-in-differences analysis." *Computers & Education* 87 (2015): 83-89.

<sup>121</sup> López-Pérez, M. Victoria, M. Carmen Pérez-López, and Lázaro Rodríguez-Ariza. "Blended learning in higher education: Students' perceptions and their relation to outcomes." *Computers & Education* 56.3 (2011): 818-826.

learning provides learners a more interactive, supportive learning experience, while reducing classroom hours, and allowing for the re-use of content.

Blended learning is a promising model for community colleges, incorporating the best of online and in person learning. Unfortunately, it also contains the high upfront costs associated with making digital course content, while still requiring classroom space and instructor time,<sup>125</sup> making it an unfeasible option to colleges strapped for resources. High quality digital course content is very costly to make, as it requires a motley team of experts from videographers and animators to computer programmers and educational technologists. One solution is for schools to re-use existing digital course content created elsewhere. This strategy is being promoted by school such as Harvard with HarvardDART: Digital Assets for Reuse in Teaching program<sup>126</sup> and MIT, with their OpenCourseware Program<sup>127</sup>, or the MIT ReAct pilot program which teaches open online courses to refugees in refugee camps in blended learning classes.<sup>128</sup> This was also adopted by the TAACCCT with the creation of SkillsCommon.org, a website implemented in 2016 designed to host community college course content developed with federal resources.<sup>129</sup>

This is a beneficial model to community colleges for many reasons: the programs are easily adapted into the school offerings, releasing the community college from investing the resources and time of creating a program from scratch. Because the content is pre-developed and openly available, the community college can provide the courses regardless of the class size, which frees the college from needed to focus only on programs with high demand from students. Rather than subject matter experts, instructors can be generally knowledgeable in the field, and work as facilitator and guide of the materials, allowing for more individual support to the students. This model will be particularly beneficial to community colleges located in rural areas, or in subject fields in which practitioners make a substantially higher salary than the community college can pay, or other scenarios in which there are substantial challenges in finding and retaining instructors.<sup>130</sup> Because class time is freed from long lecture material, and the instructor is operating more as a guide than a teacher, they can also provide more hands

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<sup>122</sup> Gonzalez, Beatriz Y. "A six-year review of student success in a biology course using lecture, blended, and hybrid methods." *Journal of College Science Teaching* 43.6 (2014): 14-19.

<sup>123</sup> McKenzie, Wendy A., et al. "A blended learning lecture delivery model for large and diverse undergraduate cohorts." *Computers & Education* 64 (2013): 116-126.

<sup>124</sup> Bower, Matt, et al. "Design and implementation factors in blended synchronous learning environments: Outcomes from a cross-case analysis." *Computers & Education* 86 (2015): 1-17.

<sup>125</sup> Means, B., Toyama, Y., Murphy, R., & Bakia, M. (2013). The effectiveness of online and blended learning: A meta analysis of the empirical literature. *Teachers College Record*, 115(3), 1–47.

<sup>126</sup> "Harvard DART - Digital Assets for Reuse in Teaching." *Harvard DART - Digital Assets for Reuse in Teaching*, [dart.harvard.edu/](http://dart.harvard.edu/). Accessed 23 April 2018

<sup>127</sup> OpenCourseWare, MIT. "MIT OpenCourseWare." *MIT OpenCourseWare, Massachusetts Institute of Technology*, [ocw.mit.edu/index.htm](http://ocw.mit.edu/index.htm). Accessed 23 April 2018

<sup>128</sup> Chandler, David L., and MIT News Office. "New Program from MIT Offers Refugees a Career Boost." *MIT News*, 23 Jan. 2018, [news.mit.edu/2018/react-program-mit-offers-refugees-career-boost-0124](http://news.mit.edu/2018/react-program-mit-offers-refugees-career-boost-0124).

<sup>129</sup> "Welcome to SkillsCommons Affordable Learning Solutions." *Cool 4 ED*, [als.skillscommons.org/index.html](http://als.skillscommons.org/index.html). Accessed 23 April 2018

<sup>130</sup> Murray, John P. "Recruiting and retaining rural community college faculty." *New Directions for Community Colleges*.137 (2007): 57-64.



on support which will benefit vulnerable or disadvantaged students. Studies of blended courses have shown that students perform higher when the class is led by a “discussion facilitator” rather than a traditional instructor.<sup>131</sup>

While there are many benefits for reusing digital content, this model will be more effective if it is designed for use in community colleges. Simply recreating the traditional university teaching model in a blended learning format will not serve non-traditional students who are looking to community colleges for workforce training and skills development. Digital course content should be developed to support curriculum pathways, geared towards a specific credential or series of stackable credentials towards building skills needed for in demand jobs. This guided pathways model championed by many education reformers<sup>132 133</sup> is an excellent target for the workforce training center collaboration. Rather than a collection of independent, fragmentary courses, the credential series could be developed and conceived of as a whole, ensuring that the students adequately learn the material, practice and grow their skills. University partners could provide the higher theoretical content, as well as the digital production staff needed to create large online course offerings. Community college partners could provide basic education, as well as practical input on implementation and use by non-traditional students. These courses could be developed in consultation with, and verified by industry leaders, making sure that the skills taught will have practical application in the workplace. Industry leaders will also gain exposure to the program giving confidence in the graduates, incentivizing them to hire or create opportunities for graduates. Centers can produce stackable credentials, such that the student can advance through the program learning and mastering more complex skills and material.

**Key Recommendation:** Workforce Training Centers should act as a liaison between the university, industry and community college partners to create credential programs comprised on digital course content to be implemented in a blended learning format. The industry partners will provide insight into the jobs that need skilled workers, and the precise skills needed. They will also verify that the quality of the courses is up to standard, and that the graduates are able to successfully execute the skills learned. The universities and community colleges will collaborate on which parts of the course content each is best suited to tackle, such as community college instructors providing insights into the unique challenges and learning styles of their students, while universities could provide more theoretical expertise. Course teams will produce engaging, high quality lecture videos and interactive learning tools which can be easily taught via a discussion facilitator, who spends class time engaging the students in interactive exercises and creating a supportive learning environment.

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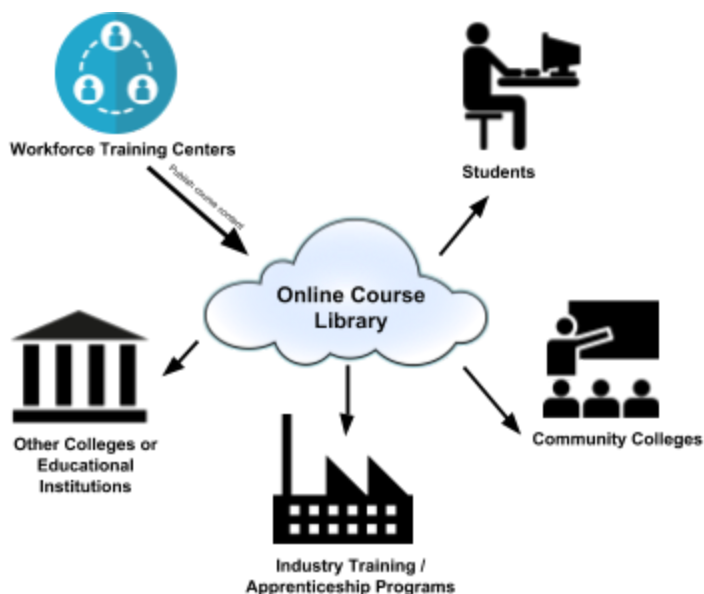
<sup>131</sup> Hung, Min-Ling, and Chien Chou. "Students' perceptions of instructors' roles in blended and online learning environments: A comparative study." *Computers & Education* 81 (2015): 315-325.

<sup>132</sup> Bailey, Thomas R., Shanna Smith Jaggars, and Davis Jenkins. *Redesigning America's community colleges*. Harvard University Press, 2015.

<sup>133</sup> Rosenbaum, James E., Caitlin E. Ahearn, and Janet E. Rosenbaum. *Bridging the Gaps: College pathways to career success*. Russell Sage Foundation, 2017.

## Coordinated Library of Resources

Online course libraries organize content in a central place, in a consistent style format so the user can find and use the materials easily. This is the great benefit of websites like EdX or



Coursera, as individual schools can publish courses to the sites in the learning management platform the sites offer, guaranteeing that the software has been effectively tested, and that the courses will be presented in a unified, consistent format. Schools publishing on these sites also know that learners who want to take open online courses will be looking at these sites for new courses, so they can attract the right target audience. These sites have been widely popular around the world, as of December 2017, EdX had over 14 million users, and Coursera had over 24 million. The DOL implemented this model for

TAACCCT grantees through SkillsCommon.org, a website that allows community colleges to post their curriculum and course materials for other schools to use. However, SkillsCommon.org was introduced in 2016, halfway through the last round of TAACCCT projects. Colleges did not have adequate lead time to design programs for publication online or re-use. Additionally, SkillsCommon.org does not provide a standardized learning management platform, and thus the course materials available vary widely depending on the administrative formats and templates of the hosting school.

This library of courses and credential programs will be a useful tool to community and technical colleges across the United States, as they build their work-training curriculum. Often industries looking to move to a new area, or existing industries that want to fill a gap want community colleges to quickly develop programs to get the future workforce ready for employment as quickly as possible. This has been a major advantage that for-profit schools have had over non-profit, as the corporate center is able to implement course programs developed at other schools at any school branch.<sup>134</sup> This model would be similar, though the community colleges would have the freedom to decide to offer a course or not, and how closely they wanted to align their course with the available materials. Because the materials would be openly available online, community colleges could work with partner industry's to decide how pertinent the materials are, and whether additional courses or sections need to be added.

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<sup>134</sup> Cottom, 2017

Another benefit of an open course library is that it would be accessible to individual learners. Students or individuals would also have access to the materials without having to enroll in the course. This would allow for students who completed the program to go back and review certain lessons or skills they might be rusty on or find they hadn't mastered. It would also allow for prospective students to gain a clearer picture about the content they would be studying, and what exactly the courses would cover. Finally, it would let unenrolled students access the material in case they were merely interested in learning or perusing without committing to participating in a course or attempting to gain a credential. This practice of exploring course material without committing to taking the course has been one of the primary uses of open online courses thus far on other platforms.<sup>135</sup> Making course materials and learning tools available to a broad audience, accommodating a multitude of learning motivations and goals is an increasingly important component of lifelong learning.

**Key Recommendation:** Work Training Centers will work together to establish a unified credentialing and blended learning approach, and publish all courses and degree information onto a coordinated library of resources. Courses will be design to be easily transferable across institutions, or available to individual students. These centers should produce curriculum to be administered in a blended learning classroom, and publish the materials such that they would be easily transferable to other colleges, industries conducting apprenticeship programs or available to individual students for self-study. These resources will be open to use by anyone, and would be particularly useful for community colleges or apprenticeship programs. All the centers would be continuously uploading and updating the content on a shared learning management platform, creating an easy resource to search and preview courses and course materials. Courses will be designed in such a way that they can be easily incorporated into any educational institutions offerings. While the details and design of the course offering would not be mandatory or fixed, the authoring center would make available all materials and details for implementation, including details of how long the course is intended to run, and marketing information.

<b>Workforce Training Centers: Projected Evaluation of Work-Training Capacity</b>		
Build a network of industry group, state jobs boards, local support services, and other education institutions, and engage in program development	High	Each center would be required to have a multitude of partners and stakeholders representing industry, local community organizations, universities and community colleges. In addition, each center would be highly encouraged to be building new networks to create new users of their course materials, and to be receptive to their feedback.
Conduct rigorous market research to identify future job openings, and the skills needed	High	Every course or series offering that the center produced would have to have demonstrated relevance to filling in demand jobs. The industry partners would verify that the course programs being produced were competently training for needed, in demand skills.

<sup>135</sup> Alario-Hoyos, Carlos, et al. "Delving into participants' profiles and use of social tools in MOOCs." *IEEE Transactions on Learning Technologies* 7.3 (2014): 260-266.

to fill them and update curriculum accordingly		
Recruit and retain high quality instructors	High	Universities would be able to provide high quality subject matter experts to create the needed course materials to be implemented in a blended learning format. Because the university would be receiving funding for the courses, and the professors would only need to teach the course once effectively, recruiting extremely high quality instructors on that end should not be a challenge. Facilitators, rather than professors, would be needed to implement the courses, and this simply needs to be an individual familiar with the content and capable of creating a learning community. Thus, community colleges should not have a challenge to find instructors either.
Provide flexibly scheduled education programs to accommodate diverse schedules	High	Due to the nature of blended courses, community colleges implementing the courses would be able to provide a myriad of scheduling options to accommodate diverse schedules.
Provide “guided curriculum pathways” towards stackable credentials	High	The centers would be intentionally creating guided curriculum pathways, or courses meant to be taken in a series which build upon one another. Because the courses would be designed to use the same credentialing system, the student could take many series of these courses over time, “stacking credentials” to demonstrate their proficiency at a wide range of skills in the field.
Provide “career pathways”	High	Each of these series would be designed along a career pathway, such that a student could take courses early in their career design for entry level jobs, or someone in the same field could take a more advanced course to gain a high level skill needed to advance further in their career.
Support low-income and vulnerable populations	High	The programs would be designed specifically to support vulnerable populations. The courses would be taught in a blended format, to create supportive learning communities of students to assist each other. The community colleges would work with local non-profit community partners to offer services to their students, such as child care, transportation, or other services needed.
Provide high quality career and academic services to their students	High	Local state job boards, and non-profits would be partners in these centers to ensure that the programs were supported by high quality career services. The community college implementing partners would be required to provide academic services to their students, to assist them in their decisions and progression through the course offerings.
Build a program that is simultaneously financially sustainable, with affordable tuition rates	High	Each center would be producing course content to be used in hundreds of community colleges. Producing this content once and reusing it allows the colleges to keep enrollment costs very low. Once the grant program ends, centers could charge interested users of the material a nominal fee to access the courses, thus ensuring financial sustainability in the long term.

**Conclusion:**

The TAACCCT, the largest federal mechanism for funding workforce training, is set to expire in

September 2018. Congress is gearing up to remodel higher education policy, with the PROSPER Act under debate currently and set for a vote in 2018. The Farm Bill under reviewed by the House of Representatives as of April 2018 could potentially change the policies around food stamps to require recipients to be working or pursuing workforce training, and could add a billion dollars to support workforce training efforts. This is a crucial time to commit resources to strengthen the workforce training system in America. Technological advances such as driverless cars, RFID chips, and more sophisticated artificial intelligence are poised to wreak havoc on many of the largest sectors of the American workforce. While apprenticeship programs are a worthy option to pursue, it is unlikely that they will be adopted at the rate needed to meet the needs of the workforce displacement. In addition, without a tremendous amount of support and oversight, these programs run the risk of discrimination of disadvantaged workers, or employers merely using it as an excuse to pay incoming workers less. Workforce training initiatives funding community colleges have been effective towards creating strong partnerships between colleges and industries that produce skilled, employable workers. However, these initiatives have been too siloed in the past, and are not able to leverage materials, content, or relationships already created by other institutions. Creating a network of workforce training centers dedicated towards building strong industry partnerships across the field, and producing high quality courses and credential programs to train workers will not only help the immediate grantee organizations, but any community colleges, apprenticeship sponsors, or education institutions interested in developing workforce training programs in a particular area quickly and efficiently.

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